JOINT ACTION PLAN

DEVELOPMENT OF REGIONAL CLUSTERS FOR RESEARCH AND IMPLEMENTATION OF ENVIRONMENTAL FRIENDLY URBAN LOGISTICS AND ITS

February . 2016

CLUSTER DOROTHY URBAN LOGISTICS

CLUSTER
DOROTHY
URBAN LOGISTICS

CLUSTERING AROUND INNOVATION

The Dorothy project´s clusters represent the means to gather innovations and solutions for a Joint Action Plan in order to implement smart specialisation on a regional scale.

European Commission

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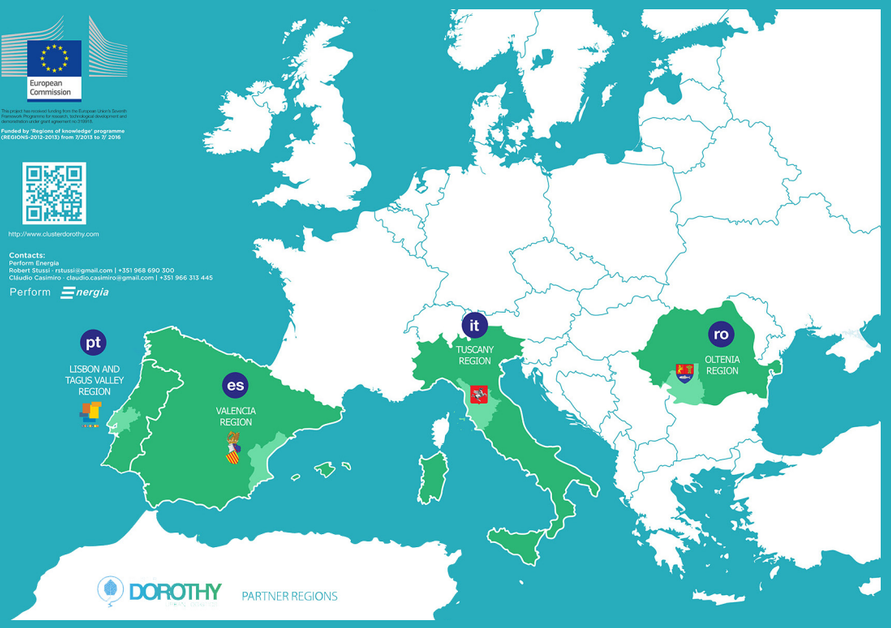

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DEVELOPMENT OF REGIONAL CLUSTERS FOR RESEARCH AND IMPLEMENTATION OF ENVIRONMENTAL FRIENDLY URBAN LOGISTICS AND ITS

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JOINT ACTION PLAN EXECUTIVE SUMMARY

BACKGROUND

Achieving sustainable Urban Logistics has emerged as a growing issue in cities across the world, and has often turned into a critical challenge. Supporting urban communities with expanding populations challenges the urban infrastructure's capability, as some 75% of Europeans already live in cities and the level of urbanisation is expected to rise to 82% by 2050.

Urban Logistics promotes mobility and economic growth through sustainable economic, social and environmental development, providing higher levels of quality of life and supporting the competitiveness of cities.

Therefore, to achieve Urban Logistics sustainability a stronger effort is required in Europe to innovate in this area, requiring the mobilisation of a large range of stakeholders: local and regional administrations, public bodies, operators, economic agents, technology developers, R&D units and participants in Urban Logistics at all levels.

The majority of Urban Logistics development actions contribute to generating new knowledge that builds capacity to develop new solutions, both in engineering and in administration/ organisation schemes. These new solutions have the potential to be applied in cities all around the globe, providing a growing potential of internationalisation for European agents in this area.

Urban Logistics consumes a great part of urban mobility costs, has large energy consumption and could have an undesirable impact on environmental quality.

Current trends of trading exchange of multichannel commerce modes, over Business to Customer and increasingly Customer to Customer, foresees an increasing capacity demand for cities to effectively process these freight flows over the urban infrastructure.

Research and technological innovation results in the field of Urban Logistics have been shown to play a significant role in the improvement of urban sustainability and competitiveness and as such the attractiveness of cities.

Among other initiatives, several EU supported projects in this area sustain this view, although this effort needs to be continued in order to achieve the excellence in advancement that is desired for our cities. With regard to this, the DOROTHY project has contributed to filling the gap between knowledge generated and the industrial and social capitalisation of innovation.

The richness of European cities, with their historical, architectural and dynamic city centres services (shops, retailing, Horeca, public services etc.), requires a balanced approach to solutions for Urban Logistics that, not only respects this social environment but also contributes to the city's development.

The investment in improving Urban Logistics leads to benefits in different dimensions that should be evaluated in order to support investment decisions, together with the economic, social, environmental and urban impact, and relevant potential target markets. This investment results in benefits for the city economic agents, transportation efficiency, energy consumption; it enhances the quality of supplying goods to the city, better logistics services, pedestrian and cyclist safety; and finally , a better quality and reduced cost of life for residents, tourists and visitors.

The DOROTHY project was designed to address these issues, and was supported by the European Commission under the FP7 programme in order to promote innovation in European Urban Logistics and to promote regional specialisation through cluster organisations.

The Joint Action Plan (JAP) relies on the structure developed by the DOROTHY project using the capabilities of the consortium partners at one level, and the group of stakeholders (representatives of public bodies, associations, chambers of commerce, technology developers, consultants, universities and others) at an additional level. This group of agents was mobilised through the dynamics of the Regional Clusters, now a community of capable and mobilised agents to develop and implement innovative actions on Urban Logistics.

These consortium partners were selected for the DOROTHY project based on their capabilities and experience in the sector, both from a solutions development perspective and as an interface with Urban Logistics stakeholders.

This networking and mobilisation approach is founded on the strategic view of Urban Logistics as a multi-profile community of agents, that needs to interact and agree between them the way to achieve innovative Urban Logistics concepts and successful implementations. The JAP is necessary for:

- Local Administration – to realise and implement the strategy.
- Companies – to apply a sustainable strategy and develop concepts, equipment and the systems necessary for the community.
- Universities, R&D entities – to train, research and innovate in the relevant field, to realise a pool of expertise at the local / regional level.

In addition to this multi-profile stakeholder community, local and regional administrations have a pivotal role in the development of Urban Logistics through their administration and policy-making role. These fundamental stakeholders are under pressure to implement solutions for a new smart city, although they face this challenge with a lack of appropriate tools to support the decision-making process.

The most visible agents in Urban Logistics are usually the freight transport operators, who are acting in a highly competitive market and have a great concern about costs. This calls for innovative solutions to operations optimisation, considering the impact of improved efficiency by freight transport operators in the overall effectiveness of the city supply chain.

Economic agents, such as retail and Horeca, have has increasing service levels demands, pushing for advanced Urban Logistics solutions to sustain, or even improve, their urban activities, so as to serve the ever more demanding consumer community.

This community of stakeholders, including people living in the city, are looking for innovative solutions for Urban Logistics. They want to avoid the traditional solution of imposing restrictions on mobility on the one hand, but also want to avoid large public investment, through smart solutions to this challenging modern issue.

Urban Logistics represents, by itself, a relevant market for new information technologies, new vehicles, packaging, warehouse automation equipments and tools; new planning methodologies, decision-support tools and public data provision for wide spread platforms supporting Urban Logistics efficiency. The Urban Logistics main stakeholders could not be considered typical early adopters and users of cutting-edge technologies, innovation and advanced organisational methodologies. This context requires improved Urban Logistics solutions to be delivered by the European market and to provide them to external global markets. This industry could improve competitiveness through higher levels of innovation with collaborative actions with industry agents, public bodies and R&D units, as this JAP provides.

This background calls for a new agenda for innovation in European cities that this JAP paves the way to implement.

JOINT ACTION PLAN OBJECTIVES

The JAP presented in this document aims to define an action plan to address the fundamental issues of Urban Logistics through the defined strategic objectives of the DOROTHY project.

The JAP is conceived through a prioritisation of actions on key themes requiring innovation, using a joint action by agents organised through the Regional Clusters that have been built-up by the DOROTHY project.

The JAP was designed in such a way that it strengthens the specialised capabilities of the regions. It also has the potential to attract relevant stakeholders to participate in the defined agenda for innovation and R&D, in order to strengthen interregional cooperation.

The JAP defines the reference framework for action funding.

The JAP outlines a programme with joint actions among European regions to be translated into projects written for international funding programmes.

It is noteworthy that a large group of JAP actions are actually in preparation, being pilot tested, undergoing proof-of-concept or public discussions in specialised forums and conferences.

To support this development, there is a need to engage a wide range of stakeholders that participate in Urban Logistics and contribute to innovative solutions, mobilising the unique capacities that are available to contribute to Urban Logistics innovation development.

In order to appropriately transfer and implement innovative solutions from R&D to Urban Logistics agents, most of the solutions require coordination of the quadruple-helix stakeholders, considering the following dimensions: legal and regulatory, technology, change management, financing and outcomes evaluation and dissemination.

The majority of actions in the JAP require support from a diverse range of Urban Logistics stakeholders, from public decision-makers to economic agents, in order to contribute to the leading action developers. The Regional Clusters constituted by the DOROTHY project are a natural facilitator to this community.

Through the implementation of the JAP, the Regional Clusters can represent a reference in Europe and abroad with regard to Urban Logistics knowledge, development and innovation.

JOINT ACTION PLAN METHODOLOGY

Considering the large and pressing need for innovation and development in Urban Logistics, selecting priorities and then leaving out interesting actions is a demanding and distressing challenge. For the action prioritisation of the JAP, an approach of merging/combining potential complementary actions was followed, in order to cover the large spectrum of functional coverage in a balanced way.

The criteria for selecting an action were based on:

- facilitation of new products/services on the basis of excellent results;
- promoting collaborative research and technological development among European regions;
- enhancing knowledge transfer from R&D units to business entities, with the particular inclusion of SMEs, through networking supported by the Regional Clusters;
- improving access to public incentives' funding for innovation;
- promoting regional smart specialisations; and
- developing the potential for European networking and internationalisation of Urban Logistics.

To address the defined challenges and priorities, a range of thematic areas for each of the specific aspects of the overall Urban Logistics process was structured in order to organise the action by the JAP:

- Policies and Regulations
- Evaluation and Standardisation
- Regional Clusters' Development
- Training and Education
- Urban Organisation
- Innovation and Scientific Cooperation
- Clusters' Internationalisation

The JAP was developed from 2013 to 2016 using strong interaction with key stakeholders in the participating regions, mainly through the Regional Clusters. This was based on the regional specialised capabilities which looked for the major developments required.

The JAP production involved the active participation of a large group of Urban Logistics stakeholders from the DOROTHY project partners, together with the Regional Clusters members, as well as other public and private entities interested in this subject, which is increasingly attracting more interested parties.

From a range of more than forty evaluated actions, 18 valuable actions on Urban Logistics with potentially high demand were selected to foster the JAP jointly with stakeholders from several regions.

The JAP aims to maximise knowledge sharing and development capabilities for high quality innovation and R&D through key linkages to the local public administration and economic agents.

The identified lines of development began from the manifested demand for innovation from the regional specialisations and market demand, in a multi-regional integrated action plan.

As a result of the capabilities' assessment and regional single specialisations the potential demand was defined. The plan raised the innovation potential for the regions by promoting the local specialisation of each Regional Cluster and its potentialities and the local conditions and the local potential demand for innovation. Outside the project's territories the plan looked throughout Europe as well as outside the EU for further internationalisation.

The regular DOROTHY project meetings, the Regional Clusters' members meetings and public sessions, the workshops, surveys and focus groups identified major demand areas for development and innovation in Urban Logistics generated objectives and guidance for the design of potential actions to be built on the plan for action that is the JAP.

A JOINT ACTION PLAN FOR ACTION ORIENTED CLUSTERS

The development of Regional Clusters has been proved to be a highly efficient model for research and development policy, bringing together agents to collaborate in the achievement of common objectives with mutual benefits. The European Commission has been promoting regional clusters to strengthen the R&D and innovation potential of European regions, bringing together universities, research units, businesses, local/regional authorities and other stakeholders. The clusters developed in the DOROTHY project pursue these objectives, looking to facilitate actions and achieve successful implementations of innovative solutions in Urban Logistics, across Europe regions and beyond.

The concepts of clusters, as promoted by the Regions of Knowledge programme and implemented by the DOROTHY project are a key facilitator to bring together a network of key supporting stakeholders for innovation.

With the support of the Regional Clusters, the local administrations can realise two objectives:

- Conception and implementation of the policy regarding Urban Logistics and a sustainable urban mobility plan in the regions.
- Create added value by developing innovative companies and expertise in the regions by implementing the JAP.

The JAP creates an agenda for research and innovation through networking collaboration amongst the Regional Clusters. The JAP provides the supporting guidance for actions by the Regional Clusters which go on to support the dissemination of results and building knowledge that leads to internationalisation of the clusters.

The actions designed by the JAP are ready prepared projects which can have rapid implementation. They address the thematic areas and look for advanced and ambitious innovative solutions to major Urban Logistics challenges. They consider support for public decision making process planning and policy development and implementation; advanced technologies for effective Urban Logistics; distribution schemes; and enhancing innovation through clusters and networking:

- Develop incentives by national and regional governments for the implementation of Sustainable Urban Logistics Plans (SULPs) to support local public decision makers and stakeholders in order to boost good practices in Urban Logistics.
- Create tools addressed to municipalities, and other local authorities, for easing the decision making process in Urban Logistics.
- Create a quantifiable index to provide decision makers with tools and practical procedures to support policy implementation and the decision making process through informed evaluation and comparison with metrics to measure the performance of Urban Logistics.
- Implement an accreditation process, promote the exchange of experiences among regions and partners, harmonise procedures and regulations.
- Implement an ICT platform to manage Urban Logistics regulation schemes in cities, especially focused on loading and unloading areas and on access control.
- Support the collection and publishing of a valuable and useful open data set in the Urban Logistics domains.
- Develop a sustainable Urban Logistics open data platform, for city hubs, able to collect data sets for the Urban Logistics operations and provide Urban Logistics services, sharing those data in a standardised way at the local and regional levels.
- Develop PDA products and their diffusion, developing strategy/operative modalities to implement a PDA around limited traffic zones, historical city centres and other urban environments.
- Promote the use of cargo bikes in Urban Logistics, addressing the policy framework and improvement of infrastructure.
- Develop proximity delivery points for parcels, to be implemented through an easy and low cost system, based on the needs of cities, consumers and operators, to deliver parcels in city centres.
- Foster advanced training in Urban Logistics for operational staff up to the level of an international Masters degree for strategic decision making process stakeholders and to support high level professional agents of innovation and improvement of Urban Logistics.
- Implement and international observatory for knowledge dissemination and promotion of Urban Logistics development.
- Design actions for streamlining clusters and networking.
- The innovation of solutions development for Urban Logistics contributes to addressing many societal challenges that Europe currently faces. These challenges include demography, smart transportation and mobility, efficient and clean energy, environmental protection, knowledge and innovative society endorsement.

In 2013 the European Commission raised "A call to action on Urban Logistics" identifying its relevance for the European Union with the main challenges to be faced and actions to be taken.

The JAP concept and its actions considered the potential for promotion and implementation based on European Union funding programmes for development and innovation. It clearly defined how the different measures foreseen could be funded by applying for opportunities available at the national and regional / local level, including private investments, as well as EU level structural funds.

JOINT ACTION PLAN - CONTENT DESCRIPTION

The Joint Action Plan on Urban Logistics is composed of the following chapters:

Chapter 1 "The European Strategic Context for Urban Logistics" provides an overview of Urban Logistics, its concept and historical evolution, contextualised with modern urban mobility challenges and trends. This chapter describes how the EU has been addressing and promoting progress on Urban Logistics by developing major projects and how the EU views the advance of Urban Logistics. It describes how one of the major requirements for innovation is addressed by the DOROTHY project, by linking regional innovation clusters with Urban Logistics.

Chapter 2 "The Regions: Problems and Opportunities for Urban Logistics in their Territories" presents an insightful analysis of major challenges on Urban Logistics, both as a widespread approach and on a specific review of the European regions in the scope of the DOROTHY project – Tuscany (Italy), Lisbon and Tagus Valley (Portugal), Oltenia (Romania) and Valencia (Spain) – describing the general logistics structure and regional infrastructure. In this chapter, Urban Logistics is analysed as a market of services and technologies, with the focus on market opportunities, in a segmented approach to supply and demand. This chapter undertakes the development of a research agenda based on regional smart specialisation and innovation clusters.

Chapter 3 "The Strategic Approach to the JAP" describes how the strategy to construct the JAP was conceived, defining thematic areas and promoting stakeholder communities and to promote interaction between the clusters and stakeholders that support the JAP strategy. The stakeholder mix is based on the quadruple helix of clusters bringing together citizens, universities and R&D units, local governments and public bodies, and logistics operators and industry players. The framework for the JAP is presented with a description of targets and the process of elaboration for the expected impacts on several dimensions (economic, environmental, organisational, social and urban).

Chapter 4 "The Regional Clusters" overviews the structure and characteristics of the Regional Clusters, describing the process of mentoring and setting-up the new clusters, aiming to promote innovation in Urban Logistics through the actions planned in the JAP.

Chapter 5 "The Thematic Areas" describes the way to connect Urban Logistics stakeholders on common projects through the base of thematic Urban Logistics areas. There are seven thematic areas: Regulations and Policies; Standardisation and Evaluation; Regional Clusters Development; Training and Education; Urban Organisations; Innovation and Scientific Cooperation; Clusters Internationalisation. Each thematic area is described within this chapter, including its own targets and the connections with the whole JAP design.

Chapter 6 "The Actions" details the actions that make up the JAP with a description comprised of objectives, context, activities, clusters qualifications, stakeholders and beneficiaries, impacts, drivers and barriers to implementation and financial plan for action implementation. The 18 described actions are structured around the several thematic areas for implementation, looking to boost the innovation agenda on Urban Logistics.

CHAPTER 1

THE EUROPEAN STRATEGIC CONTEXT FOR URBAN LOGISTICS

URBAN LOGISTICS: GOING BACK IN HISTORY

Urban Logistics is a very old problem for cities; in the "Lex Iulia"(45 a.c) Julius Caesar tried to define regulations for Urban Logistics, in order to reduce or to avoid any congestion due to the distribution of goods inside Rome.

"QUAE VIAE IN URBAN ROMAN SUNT ERUNT INTRA EA LOCA, UNI CONTINETI HABITABITUR, NE QUIS IN IEIS VIEIS POST K. INANUR. PIRMAS PLOSTRUM INTERDIU POST SOLEM ORTUM, NEVE ANTE HORAM X DIEI DUCITO AGITO, NISI QUOD AUDIUM SACRARUM DEORUM INMORTALIUM CAUSA AEDIFICANDARUM, OPERISVE PUBLICE FACIUMDEI CAUSA, ADVEHEI PORTARI OPORTEBIT, AUT QUOD EX URBE EX VE IEIS LOCIS EARUM RERUM, QUAE PUBLICE DEMOLIENDAE LOCATAE ERUNT, PUBLICE EX PORTAREI OPORTEBIT, ET QUARUM RERUM CAUSSA PLOSTRA H.L. CERTEIS HOMINIBUS CERTEIS DE CAUSEIS AGERE DUCERE LICIBIT"

"On the roads which are in the city of Rome or will be within the area where will be lived joined tightly, no one is allowed after next January 1st to drive or lead a carriage during the day after sunrise and before the tenth hour of the day, except if something will have to be supplied or transported for building temples of the immortal gods or for the implementation of a work for the authorities, or as from the city or from those areas something of those things of which the demolition will be put out to tender by the authorities, will have to be removed on behalves of the authorities, and except for those cases in which it will be according to this law permitted to certain persons for certain reasons to drive or lead a carriage".

Therefore commercial deliveries and pick up were banned from the town before 10am; the reason for this law was residents' complaints about the noise generated by the freight transport operations.

Times have changed, but the cause of the problems is similar! Nowadays, the problem of urban goods distribution is certainly worse from the quantitative point of view and has much bigger implications in terms of nuisance and pollution. However, nowadays the challenges can be met with different paradigms, methodologies and tools.

EU STRATEGIC CONTEXT FOR URBAN LOGISTICS

In a communication to the European Parliament the Commission clearly shows the importance given by the European Union to Urban Logistics and how this topic is significant in our economy [1]:

“Cities are places for the exchange of goods and information which are at the heart of our economy and way of life. For cities to be successful they need to optimise the exchange of goods and information while remaining attractive places to live and work.

Urban logistics ensure that shops and businesses are stocked, equipment is repaired, home deliveries are made, buildings are supplied and waste is removed. Every place of activity requires deliveries and servicing - if these logistic demands are not properly planned for urban logistics can be inefficient (e.g. low load factors) and polluting.

Urban logistics makes up a relatively small share of urban traffic but makes a major contribution to the success of cities. Improving the efficiency of the 'first and last mile' of deliveries is of particular important for economic growth.

Europe's cities continue to grow: 73% of Europeans already live in cities and cities generate 85% of European GDP and the level of urbanization is expected to rise to 82% by 2050. A growing urban population combined with other trends (e.g. home delivery, ageing population, e-commerce etc.) will lead to increased density and increased demand for goods and services with consequently significantly increased demand for urban logistics.

As a consequence a city without an efficient and effective logistics supply, both in terms of services and infrastructure, can see seriously compromised its economic development and its competitiveness.
Congestion has a negative impact on the competitiveness and environment of urban economies; it causes inefficiencies in logistics operations and increases costs. The costs of the 'first' and 'last mile' of supply chains are too high and represent a barrier to growth of home delivery.

The environmental impacts of urban logistics operations can be high contributing to air and noise pollution, road damage and greenhouse gas emissions. Urban freight vehicles contribute disproportionally to air and noise pollution. Due to the proximity and density of people in urban areas the external costs of urban freight transport can be high. On the positive side, efficient and functioning urban logistics operations improve the delivery experience for consumers buying on-line, they can lower delivery costs, and contribute to a sustainable development of delivery solutions.

Urban transport emits approximately 23% of transport CO2 of which about a quarter is urban freight (urban freight is approximately 6% of all transport GHG emissions). Despite the efforts of some cities and Member States, reducing these emissions will require major efforts in the years ahead.

1 Together towards competitive and resource-efficient urban mobility {COM(2013) 913 final}

The short distances, regular start stop, captive fleets and the large number of people exposed to the air and noise pollution provide an opportunity for urban logistics to make an early and significant contribution to optimising transport and foster the early and cost effective introduction of new types of operations, technologies and business models.

Moreover European cities, unlike the so-called pop-up town born from nothing, for example in China, have historical configurations that cannot satisfy an increase in the transport flow to urban centres. Freight transport in urban areas presents requirements and difficulty elements deeply linked to the context in which it operates. On the other hand, the presence of constraints can also be seen as an opportunity, because it can stimulate design of more intelligent and efficient innovative systems.”

We can add some data to those mentioned above. Transport is a major economic sector in the EU, directly employing around 10 million people and representing about 5% of its GDP, with Road Transport contributing to about half of these values. About 44% of goods in the EU are transported by road and a much higher percentage is observed in Urban Logistics. People also travel mainly by road, with private cars accounting for 73% of passenger traffic.

The European communication and the outlined data sum up very clearly the challenges that Europe has to address in the next years in the field of Urban Logistics and frames the context in which the DOROTHY project operated and developed this Joint Action Plan (JAP) focused on Urban Logistics.

A CONCEPT FOR URBAN LOGISTICS

Before continuing, it is necessary to define Urban Logistics. Urban goods transport and logistics operations are concerned with the activities of delivering and collecting goods in towns and cities. By definition, logistics is the part of the supply chain process that plans, implements and controls the efficient and effective flow and storage of goods, services and related information from the point of origin to the point of consumption in order to meet customers' requirements. Every place of activity requires deliveries and servicing: Urban Logistics can be inefficient if these logistic demands are not properly planned, producing higher fuel consumption and pollution, nuisance and congestion (externalities).

The demand for goods distribution in cities is expected to grow, driven by fundamental changes in consumer behaviour. This will possibly further increase the external costs and environmental impacts if businesses continue in the same way. Improving the efficiency of the 'first and last mile' of deliveries is particularly important for the economic growth, livelihood and sustainability of public space within cities. The regulations for transportation of goods in cities should become a fundamental part of the more general concept of urban mobility as a factor in improving the competitiveness of cities.

Urban Logistics implies complex relationships between different players and stakeholders (mostly private businesses), covering the whole chain from production to the supply to different clients and inhabitants. The framework for Urban Logistics results from a multiplicity of factors: the local and regional economy, the transport infrastructures, the environment, the legal and regulatory conditions. This means that cities must be able to identify and implement an appropriate mix of measures and policies to improve the movement of goods in cities. The development of such a capability is one of the targets of the DOROTHY project and its clusters.

URBAN LOGISTICS AS A PART OF URBAN MOBILITY

Cities constitute the backbone of Europe's civilization and they include the large majority of the population. Although connected by one of the world's best transport systems, mobility within cities is increasingly difficult and inefficient. In many urban areas, increasing demand for urban mobility has created a situation that is not sustainable: severe congestion, poor air quality, noise emissions and high levels of CO2 emissions. Many European towns and cities suffer from chronic traffic congestion which is estimated to cost 80 billion Euros annually. The EU evaluates that the current costs for traffic congestion in urban areas will increase by 50% up to 2050.

Urban mobility is still heavily reliant on the use of conventionally-fuelled private cars. Only slow progress is being made in shifting towards more sustainable modes of urban mobility like electric vehicles and soft modes. The same can be said for Urban Logistics, so that its contribution to the environmental problems in cities remains high. Despite the efforts of some cities and Member States, reducing these emissions will require major efforts in the years ahead.

Urban areas also contribute for 38% of Europe's road fatalities, with vulnerable users such as pedestrians being particularly exposed (about 28,000 road fatalities in 2012). Progress in reducing road fatalities has been below average in urban areas, where 69% of road accidents occur.

Having these aspects in mind, the distribution of goods in urban areas has an important impact on traffic congestion and growing externalities' costs. Cities need to make a greater effort to turn past trends around and contribute to achieving the 60% reduction in greenhouse gas (GHG) emissions called for by the Commission's White Paper. With their high population densities and high share of short-distance trips, there is a greater potential for cities to move towards low-carbon transport, through the development of walking, cycling, public transport – and the early market introduction of vehicles powered by alternative fuels.

EU legislation on air quality and increasingly stringent emission standards for road vehicles seek to protect citizens from harmful exposure to air-borne pollutants and particulate matter. However, cities in virtually all Member States are still struggling to comply with the legal requirements. A growing urban population in Europe, combined with other trends (e.g. home delivery, ageing population, e-commerce) will lead to increased demand for goods and services – with consequently significantly increased demand for Urban Logistics.

While there is a reasonable consensus on the problems of Urban Logistics and also widespread knowledge on the possible answers to these problems, the solutions are not implemented in a generalised and systemic way. Urban Logistics is still heavily neglected in terms of city and transport planning.

Few cities have a well-developed and comprehensive Urban Logistics strategy. City authorities focus their attention and resources on passenger transport and neglect the contribution that Urban Logistics can give to the city economy and the potential positive impact that an improvement of Urban Logistics efficiency, and a reduction of costs, could have on cities. Despite its key role in the urban economy, few cities have a clearly identified official responsible for Urban Logistics. Public passenger transport is usually supervised by the competent administrative body, while freight transport distribution is normally a task for the private sector. In their planning activities businesses, operators, infrastructure and service providers need to make reference to a well-considered and stable long term vision for

city logistics. Some cities may decide to focus on reducing costs while others on air quality improvements, safety or reducing greenhouse gas emissions. However, to be effective the vision needs to be integrated with other urban policies, clearly articulated and shared by all stakeholders. In the majority of cases, Urban Logistics is not properly integrated into urban transport, economic and territorial development strategies. Therefore, local authorities must consider all urban mobility related to passenger and freight transport together as a single logistics system and create a strong link between urban planning and the transport system. The improvement of Urban Logistics efficiency with effective and balanced solutions in terms of cost-benefit needs a wide consensus among all the stakeholders- and in particular the logistic operators and the business users.

THE EU PERSPECTIVE AND ACTION ON URBAN LOGISTICS

The increasing demand for passenger and freight transport in urban areas is a challenge for governments and transport authorities in all EU Member States. The European Union has been tackling this challenge with the objective of better meeting the diverse needs of citizens, businesses and industry. According to the EU Green Paper "Towards a new culture for urban mobility" (COM(2007) 551 final), urban mobility policies must cover both passenger and freight transport. The need for more sustainable and integrative planning processes – also in sectors related to urban mobility – has been widely recognised throughout the EU.

The EU Action Plan on Urban Mobility reports the intentions of the Commission to provide help on how to optimise Urban Logistics efficiency, including the improvement of links between long-distance, inter-urban and urban freight transport, with the aim of ensuring efficient 'last mile' delivery. It focuses on how to better incorporate freight transport in local policies and plans and how to better manage and monitor transport flows. In the Freight Transport Logistics Action Plan, "A holistic vision should cover freight transport and pay attention to aspects of land use planning, environmental considerations and traffic management, alongside a number of other factors. Facilitating freight and passenger transport demand management should be an integral part of town planning and offers opportunities for the deployment of innovative ICT-based solutions." Sustainable urban mobility planning is focused on the level of the urban agglomeration. Nevertheless, it is embedded in a wider regional and national framework for planning activities in the field of urban mobility. This includes, for example, regulations, funding streams or higher level strategies for spatial and transport development (e.g. a national transport plan, where one exists). It is crucial to assess the impact of the regional/national framework to fully exploit opportunities and avoid conflicts with higher level authorities at a later point.

The 2011 Transport White Paper announced the Commission's intention to produce "best practice guidelines to better monitor and manage urban freight flows" and to put forward "a strategy for moving towards 'zero-emission urban logistics." This EC White Paper identified ten goals for a competitive and resource efficient transport system, with the objective of achieving the 60% GHG emissions reduction target by 2050, with respect to 1990 levels. Among these objectives, it aims to achieve: "[...] essentially CO2-free city logistics in major urban centres by 2030".

Sustainable Urban Mobility Plans (SUMPs) have gained increased recognition and importance at EU level, and their adoption has been highly incentivised by the European Commission.

The Urban Mobility Package aims to accelerate the take-up of SUMPs in Europe by providing guidance material, promoting best practice exchange, identifying benchmarks, and supporting educational activities for urban mobility professionals. Sustainable urban mobility planning received a further significant push when the EU transport ministers adopted the conclusions in the Action Plan on Urban Mobility in Luxembourg on 24 June 2010. The Council of the European Union "supports the development of Sustainable Urban Mobility Plans for cities and metropolitan areas [...] and encourages the development of incentives, such as expert assistance and information exchange, for the creation of such plans".

The SUMP concept considers the functional urban area and proposes that action on urban mobility is embedded into a wider urban and territorial strategy. Therefore, these Plans should be developed in cooperation across different policy areas and sectors (transport, land-use and spatial planning, environment, economic development, social policy, health, road safety, etc.); across different levels of government and administration; as well as with authorities in neighbouring areas – both urban and rural. SUMPs are about fostering a balanced development and a better integration of the different urban mobility modes. This planning concept highlights that urban mobility is primarily about people. It therefore emphasizes citizen and stakeholder engagement, as well as fostering changes in mobility behaviour. Therefore, a SUMP "should present measures to improve the efficiency of urban logistics, including urban freight delivery, while reducing related externalities like emissions of GHG, pollutants and noise", as presented in the Commission's Urban Mobility Package. Member States and urban authorities need to provide a framework (e.g. delivery spaces, access regulations, enforcement), to ensure that there is a business case for the private logistics operators to invest in new technologies and solutions. They should also facilitate cooperation among players, build the necessary capacity at the local level, stimulate the take-up of good practices, ensure interoperability of local logistics solutions based on Intelligent Transport Systems, and ensure integration with national priorities.

As part of the SUMP it is possible to integrate specific issues related to Urban Logistics by developing a Sustainable Urban Logistics Plan (SULP) that is a step towards the integration between passenger and freight transport and other urban policies envisaged in the EU Green Paper "Towards a new culture for urban mobility". SULPs should set the scene for Urban Logistics policies by: analysing freight distribution processes; defining and choosing among the possible measures and services in collaboration with other relevant players and stakeholders; tailoring the approach and methods to specific local needs and peculiar characteristics. Making urban centres as accessible as possible requires making choices about the use of urban space. Loading and unloading areas, bus lanes, cars, parking, pedestrian facilities, cycle lanes and parking all compete for urban road space and cities have to manage these competing demands according to local priorities and circumstances. Urban vehicle access regulations can help optimise urban access, improve air quality and contribute to the White Paper goal of phasing out conventionally fuelled cars in cities by 2050.

EU PROJECTS ON URBAN LOGISTICS

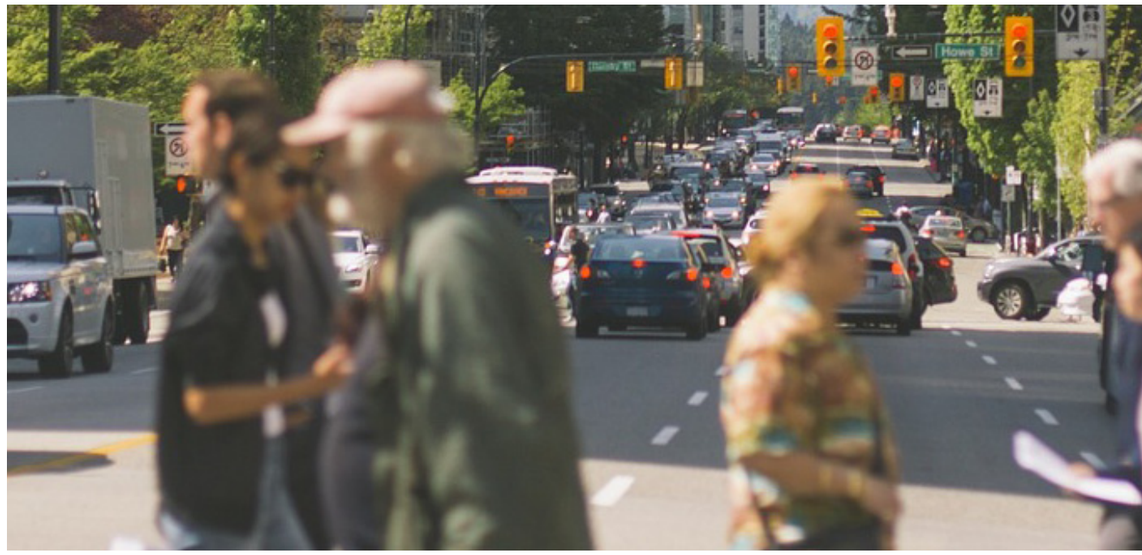
In the field of urban transport and mobility, the EU has financed several applied research and demonstration activities over recent years. Information on many of these projects, as well as best practices, news stories and training material, can be found on ELTIS, the European web portal on urban transport and mobility (http://www.eltis.org). This platform facilitates the exchange of information, knowledge and experiences in the field of sustainable urban mobility in Europe. Created more than 10 years ago, ELTIS is now Europe's main observatory on urban mobility and provides information on how to develop and implement SUMPs. It is financed by the European Union under the Intelligent Energy - Europe (IEE) programme. Also, the CIVITAS Initiative (http://www.civitas-initiative.eu/) helps cities across Europe to implement and test innovative and integrated strategies that address energy, transport and environmental objectives.

Some successful EU-funded projects and solutions have been implemented in the past years, apart from the DOROTHY project. Among these other projects, the following can be mentioned, as they are the most relevant:

SMILE URBAN LOGISTICS: Smart Green Innovative Urban Logistics for Energy Efficient Mediterranean Cities (http://smile-urbanlogistics.eu/): The SMILE project, co-funded by the MED Programme, aims at supporting and developing innovative strategies, plans and measures on energy efficient city logistics solutions in Mediterranean cities, using existing technologies and previous experiences as well as on-ongoing initiatives. SMILE aims to improve the energy efficiency of Mediterranean cities planning, sharing, promoting and testing public policies, strategies and measures for innovative intelligent solutions for urban freight distribution. SMILE will be implementing nine pilot projects in six MED cities, including Barcelona, Bologna, Montpellier, Piraeus, Rijeka and Valencia, promoting sustainable transport, ICT and transport operations optimisation, with a specific focus on waste and green labelling for businesses. To reach these project goals the main steps consist of a wide review of existing solutions and past experiences, identifying the best solutions, and matching them with the partner logistics needs and objectives.

C-LIEGE: Clean Last mile transport and logistics management (http://www.c-liege.eu/): This project aimed to be a showcase for good practices and a helpful hand for all European cities striving for cleaner and sustainable urban transportation. On the basis of good practices, the project defined an integrated framework for energy efficient Urban Freight Transport (UFT) management and planning. A novel set of integrated solutions and "push-and-pull" demand-oriented measures were tested and shared in roadmaps for implementation in European cities. Seven pilot experiments in six European countries ensured the applicability of the C-LIEGE approach: Bulgaria, Italy, Poland, United Kingdom, Germany and Malta.

BUMP: Boosting Urban Mobility Plans (http://www.bump-mobility.eu/en/home.aspx): BUMP was a European project funded under the Intelligent Energy Europe programme. Its objective was to provide support to local authorities in the development of Sustainable Urban Mobility Plans for cities with a population ranging from 40,000 to 350,000 inhabitants. The project targeted senior officers and directors within local authorities, allowing them to acquire the necessary skills to develop their SUMPs. The project aimed to facilitate mutual learning and sharing of expertise among senior local authority staff directly involved in the project, their peers from other local authorities and relevant stakeholders. BUMP created an easily replicable BUMP model for training and coaching. The work programme comprised three main



stages: definition of the model and adaptation to national peculiarities; training (capacity building, exchange of expertise, mutual learning) activities; and assisting local authorities in the development of their SUMPs.

STRAIGHTSOL: Strategies and measures for smarter urban freight solutions (http://www.straightsol.eu/): STRAIGHTSOL was an EU-funded project, comprising seven innovative cutting edge urban freight demonstrations. It ran from September 2011 to August 2014. Urban areas represent particular challenges for national and international freight transport, both in terms of logistical performance and environmental impacts (emissions, noise, accidents, congestion and land use). Urban freight is indispensable for the city's economy, but at the same time freight deliveries significantly affect the attractiveness and quality of urban life. There is a clear need for a comprehensive approach to urban freight solutions, particularly linking urban to interurban freight movements. The objectives of STRAIGHTSOL were: 1) to develop a new impact assessment framework for measures applied to urban-interurban freight transport interfaces; 2) to support a set of innovative field demonstrations showcasing improved urban-interurban freight operations in Europe; 3) to apply the impact assessment framework to the live demonstrations and develop specific recommendations for future freight policies and measures. The demonstrations represented cutting-edge initiatives from leading stakeholders like DHL, Kuehne + Nagel and TNT. By involving these stakeholders STRAIGHTSOL contributed to the Commission's research agenda through: 1) implementing sustainable urban-interurban freight-transport solutions; 2) widely disseminating the experiments and effects from the demonstrations amongst the logistics community; 3) demonstrating the added value of the evaluation tool framework for assessing last-mile distribution and urban-interurban freight activities.

FREVUE: Freight Electric Vehicles in Urban Europe (http://frevue.eu/): This project is dedicated to demonstrating to industry, consumers and policy makers, how electric freight vehicles can provide a solution to many of these problems in logistics. 127 electric freight vehicles will be exposed to the day to day rigours of the Urban Logistics environment and prove that the current generation of large electric vans and trucks can offer a viable

alternative to diesel vehicles; particularly when combined with state of the art Urban Logistics applications, innovative logistics management software, and well-designed local policy. Co-funded by the EU Seventh Framework Programme (FP7), the demonstrations will occur in Amsterdam, Lisbon, London, Madrid, Milan, Oslo, Rotterdam and Stockholm. The demonstrations have been designed to cover the range of conditions that are common across Europe, including goods deliveries, novel logistics systems and associated ICT, vehicle types, climates and the diverse political and regulatory settings that exist within Europe. At the conclusion of the project, the final objective will be to encourage the exploitation of the results through a targeted dissemination campaign aimed at decision makers across the logistics industry and associated policy makers and regulators.

ENCLOSE: ENergy efficiency in City LOgistics Services for small and mid-sized European Historic towns (http://www.enclose.eu/): This project aimed to raise awareness about the challenges of energy efficient and sustainable Urban Logistics in European Small Middle Historic Towns (SMHTs) and about the concrete opportunities to achieve highly significant improvements and benefits by implementing and operating suitable and effective measures, schemes and framework approaches specifically targeted to such specific urban environments. The ENCLOSE project supported the development of Sustainable Urban Logistic Plans in 9 SMHT involving partners from 13 European countries – Austria, Bulgaria, Greece, Ireland, Italy, Norway, Poland, Romania, Portugal, Spain, Sweden, The Netherlands and the UK.

BESTUFS: (http://www.bestufs.net/): the two projects BESTUFS I and II have created an open European network between urban freight transport experts, user groups/associations, ongoing projects, the relevant European Commission Directorates and representatives of national, regional and local transport administrations and transport operators in order to identify, describe and disseminate best practices, success criteria and bottlenecks with respect to city logistics solutions.

EUTP II: (http://www.transport-research.info/project/thematic-network-freight-transfer-points-and-terminals): This project had the purpose of enhancing and creating synergy in the European research effort related to intermodal freight transfer points. EUTP II established a broad dissemination and improved the exchange of knowledge.

CLUSTERS AND URBAN LOGISTICS – DOROTHY IS ADDRESSING THE MISSING LINK

Clusters are usually thematic associations of economic activities in a set of industries and specialised enterprises – often SMEs – and other related supporting actors that cooperate closely together, related through different types of linkages and spillovers. Clusters provide several benefits: having a high concentration of companies with common interests, it is possible to easily launch initiatives and projects with common objectives, as well as achieve synergies and better results. Also, the power to influence the decision makers increases, which is very important. Companies that belong to a cluster have a higher likelihood of growing and achieving internationalisation; furthermore, companies that are looking for connections are more likely to connect to a cluster. In working together SMEs can be more innovative, create more jobs and register more international trademarks and patents than

they would alone. 38% of European jobs are based in such regional strongholds and SME participation in clusters leads to more innovation and growth.

There are about 2000 statistical clusters in Europe, of which 150 are considered to be world-class in terms of employment, size, focus and specialisation. The EU Cluster Portal provides tools and information on key European initiatives, actions and events for clusters and their SMEs with the aim of creating more world-class clusters across the EU. According to the European Cluster Excellence Scoreboard, for a number of selected emerging industries and regions in the period 2010-2013, 33.3% of firms in clusters showed employment growth superior to 10%, as opposed to only 18.2% of firms outside clusters.

In addition, clusters might also be associated with a specific type of competitive behaviour by companies that can be summarised as a 'high road'-strategy. In facing customers, high-road strategies are characterised by a focus on value through high quality and unique features. In production, high-road strategies are characterised by investments in internal assets such as the capital stock, skills and technology. They often also have an external dimension, as companies work with their suppliers and service providers in upgrading their respective capabilities and in jointly developing innovations. These investments are likely to generate positive fallouts that reinforce the cluster through deepening the local supply of specialised skills and adding to the available knowledge stock. In parallel, the presence of the cluster is likely to provide an environment in which companies will find the external inputs that make opting for high-road strategies more likely; they will also be able to access the advanced skills and supplies needed. Regions with a strong presence of clusters are those more likely to settle into an equilibrium where a majority of companies chooses 'high-road' strategies. Regions without clusters are conversely more like to end up with companies choosing 'low-road' strategies where few, if any, companies make investments that contribute to the common business environment.

Some European cluster related Initiatives are:

- European Business and Innovation Centre Network - http://www.ebn.eu/
- European Cluster Alliance - http://www.eca-tactics.eu/eca/about
- Enterprise Europe Network - http://een.ec.europa.eu/
- SME Internationalisation Portal - https://webgate.ec.europa.eu/smeip/

Within the framework of cluster development and specialisation, the DOROTHY project was targeted to develop the potential for innovation and research in four Regions (Tuscany, Italy; Valencia, Spain; Lisbon and Tagus Valley, Portugal; and Oltenia, Romania). Moreover, the project was focused on the field of Urban Logistics, which represent a specific application of the innovative initiatives that can be raised through the development and implementation of regional clusters.

By developing and implementing knowledge sharing activities and innovative actions through the regional clusters the DOROTHY project aimed to:

- Rationalise of the logistics process in cities.
- Contribute to the emission reduction and the improvement of the quality of the European cities.
- Foster cooperation in innovation, defining mechanisms to allow that innovation could be implemented in the economic structure of the Regions.
- Contribute in this way to the economic growth of the Regions.

REFERENCES

EC (2007). Green Paper “Towards a new culture for urban mobility”. COM(2007) 551 final. 25th September 2007

EC (2009). Action Plan on Urban Mobility. COM(2009) 490 final. 30th September 2009

EC (2011). White Paper “Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system”. COM(2011) 144 final. 28th March 2011

EC (2013a). “A call to action on urban logistics”. SWD(2013) 524 final. 17th December 2013

EC (2013b). Annex to the Communication "Together towards competitive and resource efficient urban mobility”. COM(2013) 913 final. 17th December 2013

Project C-LIEGE: Clean Last mile transport and logistics management for smart and efficient Local Governments in Europe. Deliverable D4.1 - Guideline for the development of urban freight mobility plans. 11th June 2012. Contract N.º. IEE/10/154/SI2.589407

Guidelines - Developing and implementing a Sustainable Urban Logistics Plan, based in ENCLOSE Deliverable D5.2: “A Framework for the definition and implementation of Sustainable Urban Logistics Plans in historic small-/mid-size towns”. Contract N°: IEE/11/826/SI2.615930

Guidelines - Developing and Implementing a Sustainable Urban Mobility Plan. Developed by ELTIS - European Platform on Sustainable Urban Mobility Plans, under Contract N.º: EACI/IEE/2009/05/S12.558822

Ketels, Christian, and Sergiy Protsiv. "Clusters and the New Growth Path for Europe." WWW for Europe Working Paper Series, No. 14, July 2013. (WIFO, Vienna.)

Ketels, Christian. "Competitiveness and Clusters: Implications for a New European Growth Strategy." WWW for Europe Working Paper Series, No. 84, February 2015. (WIFO, Vienna.)

European Cluster Excellence Scoreboard - http://www.emergingindustries.eu/scoreboard.aspx

European Commission EU Cluster Portal - http://ec.europa.eu/growth/smes/cluster/index_en.htm

CHAPTER 2

THE REGIONS: PROBLEMS AND OPPORTUNITIES FOR URBAN LOGISTICS IN THEIR TERRITORIES

INTRODUCTION

The scope of this chapter is to illustrate problems and opportunities in the territories of the Regions involved in the DOROTHY project and to define the context in which the Joint Action Plan (JAP) was developed.

Given the huge differences among the Regions, in terms of urban structure, economic development and logistic needs, the JAP has been designed in order to meet those differences in needs. Moreover, all the actions have been designed in order to develop a high potential for replication in most European cities.

Within this chapter the following subjects are examined in detail:
2.1. The Regions
2.2 The Structure of the Urban Logistics market
2.3. The Regions: problems and opportunities for Urban Logistics in their territories
2.4 The Structure of the Market: Supply and Demand
2.5. The regional Research Agenda
2.6. Regional Smart Specialisation and Innovation Clusters

2.1. THE REGIONS

In this subchapter a short description and the general structure of logistics and its importance in the four DOROTHY Regions is reported.
Tuscany is a region located in central Italy with an area of about 22,987 square kilometres and a population of about 3.7 million inhabitants, of which about 10% reside in the capital city of Florence.

TUSCANY REGION

Tuscany is a region located in central Italy with an area of about 22,987 square kilometres and a population of about 3.7 million inhabitants, of which about 10% reside in the capital city of Florence.

The main transport infrastructures of the Tuscany region are: the highways network; the State interest roads network; regional interest roads network; railways network; airports; ports; waterways; freight hubs

Roads and highways: in Tuscany, the highway network has a total extent of 423.9 km. The system of national roads in Tuscany consists of about 900 km state roads. Regional roads extend to a total length of about 1,450 km and are present in all provinces of the territory.

Two different operators currently control the rail infrastructure system in Tuscany.

Airport infrastructures of Tuscany include airports open to commercial traffic and general aviation, such as the Airport Galileo Galilei (Pisa),the Amerigo Vespucci Airport (Florence), the Airport Teseo Tesei (Marina di Campo - Elba Island), the Corrado Baccarini Airport (Grosseto) and the Ampugnano Airport (Siena).

The main structure of the Tuscan ports network consists of the commercial ports of Livorno, Piombino and Carrara in synergy with the important regional structures of the major ports of Viareggio, Portoferraio, Giglio and Porto Santo Stefano.

In Tuscany, there are two freight hubs of regional and national interest:

"Amerigo Vespucci" freight village situated near Livorno;

"Toscana Centrale" freight village situated in Prato.

The logistics area covers a surface of 2,500,000 square meters, and a railway terminal of 150,000 square meters.

The main cities are: Firenze (381.037 inhabitants), Prato (191,002), Livorno (159,542), Arezzo (99,434), Pistoia (90,542), Pisa (89,523), Lucca (89,290) and Grosseto (81,837).

Lucca and Siena developed a very important experience with Urban Logistic Hubs, while Firenze made some research in Urban Logistics under the CATALIST framework.

LISBON AND TAGUS VALLEY REGION

Lisbon And Tagus Valley with its 53 municipalities (and the other 4 Planning Regions of Portugal)

The Lisbon and Tagus Valley Region with its 52 Municipalities is spread over 12,240 square kilometres and is home to 3.64 million inhabitants, which accounts for 36% of the Portuguese population. The region is characterised by medium population density (298 inh/km2).

Lisbon, as the capital of Portugal, presents an important and well connected road and freeway network and is planned to be connected in two TENT-T corridors

Airport infrastructures: Lisbon Airport Air Cargo Logistics Centre, located opposite the main entrance of the airport, currently has a processing capacity of 100,000 tons/year and still has room for expansion up to 150,000 ton/year. The major express cargo companies like DHL, TNT, UPS and FEDEX are present in this logistics centre.

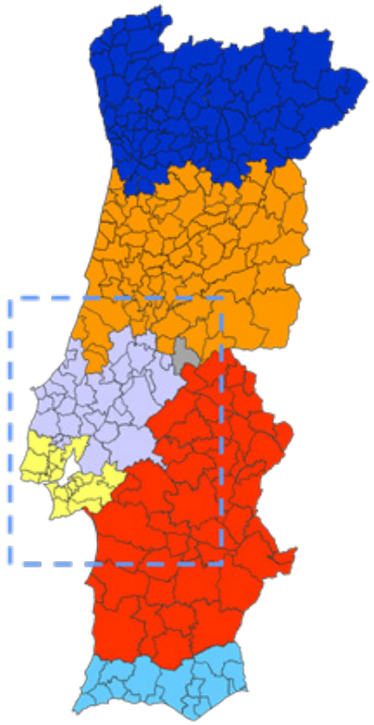
The main port structures of the Lisbon and Tagus Valley Region consist of:

- The Port of Lisbon is located in the Tagus River estuary and is a natural harbour with a liquid basin of 32,000 ha. Shipping activities of loading and unloading are developed in 17 terminals spread on both banks of the Tagus - focusing in the North on containerised cargo, roll-on / roll-off and break-bulk, and in the South on the dry and liquid bulk terminals.
- The Port of Setúbal - located in the estuary of the River Sado - has natural conditions for maritime access and protection. Loading and unloading activities are spread over 10 terminals, 5 for public use and 5 for private operators.

At the superregional and national levels one finds in the Lisbon and Tagus Valley two areas of concentration of logistics activities, strongly focused on servicing the Metropolitan Area. The main freight hubs are:

- Lisbon Metropolitan Region Northern Gate
- Lisbon Metropolitan Area South and East Gate

The municipalities of Lisbon (through its parking and mobility company EMEL) and Almada (through its Energy Agency AGENEAL) have developed several experiences within some European projects dealing with Urban Logistics.



OLTENIA REGION

The South West Oltenia Region – shortened to Oltenia - is situated in the south west of Romania and has five counties: Dolj, Olt, Vâlcea, Mehedinți and Gorj. With a surface area of 29,212 km2 (at 12.25% of the country's surface, it ranks 7th among Romanian regions).

The region includes 40 cities, of which 11 are county capitals and 408 are communes. South West Oltenia Region is, similar to the North East region, one of the "most rural" Romanian regions. The rural environment plays an important role in the economic and social life. The distribution of the communes is as follows: most are situated in Dolj (104), Olt (104), and the fewest are in Gorj (61) and Mehedinti (61).

Romania: South West Oltenia Region in blue

The region has very diverse specialisations in its five counties. Dolj has traditional industries (automotive, tractors, cars, airplanes, agricultural and heavy machinery, oil and gas extraction, chemical industry, clothing, textiles, furs, leather, food and drinks) and agriculture.

Craiova Airport serves both passenger and freight traffic in the south western region of Romania and is connected to other transport systems (road, railway), providing fluent interregional traffic communication.

Oltenia has a well-developed state owned railway network that covers virtually the whole region. Trains are one of the most popular means of getting around Romania.

Craiova developed a small experience in Urban Logistics through the CIVITAS MODERN project.

VALENCIA REGION

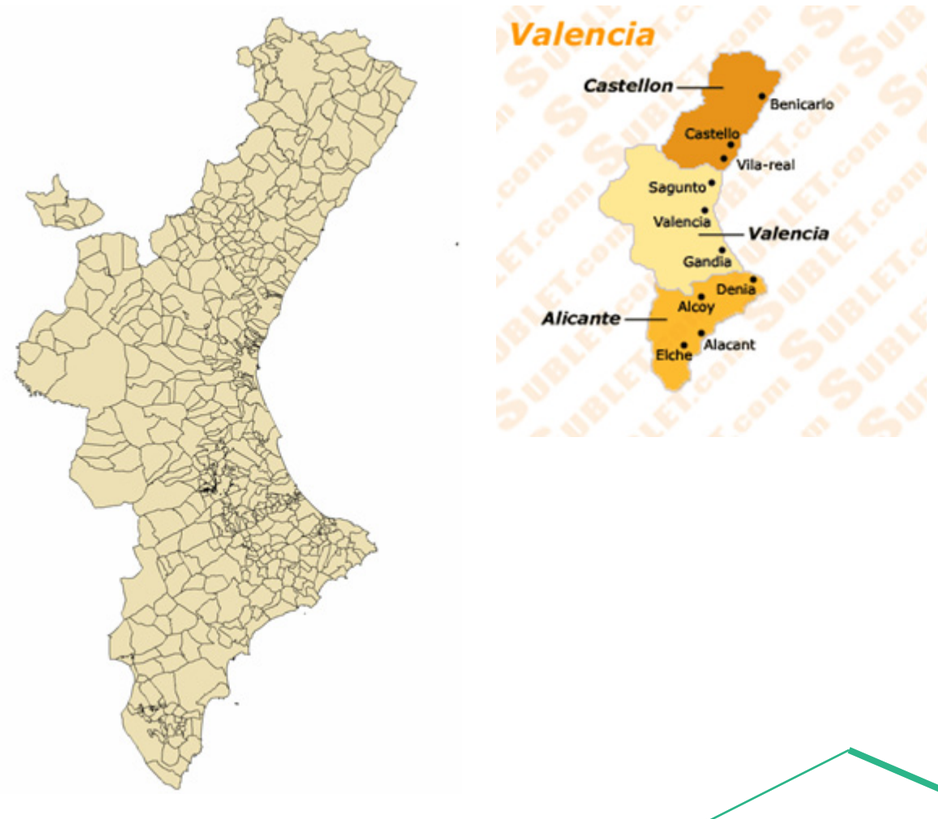
Valencia is the capital of the autonomous Region of Valencia. With around 800,000 inhabitants it is the third largest city in Spain after Madrid and Barcelona. Valencia is also Spain's third largest metropolitan area, with a population of 1.5 million. The Rgion has a strategic geo-location in the Mediterranean area and it is divided into three provinces: Alicante, Castellón and Valencia and their capitals, of the same name, are also the main cities of the Region.

According to the last available Annual Services Survey 2008, transportation in Valencia consisted of 24,188 companies (1.7% more than in 2007), which employed more than 100,000 people. The road transport sector is composed of 19,579 companies: 7.3% of the total number of service industry companies, 10% of GVA (Gross Value Added) of the service industry

Valencia is well interconnected through the Mediterranean TEN-T Corridor with the high speed train (AVE). Freeways connect Valencia with all the main Spanish cities.

The main port is the port of Valencia, which is the 5th busiest container port in Europe and the largest on the Mediterranean Sea, with a trade volume of 4.21 million TEUs.

The Valencia Region has two international airports: l'Altet airport (Alicante) and Manises airport (Valencia). Another airport started to operate in 2015 in Castellón.



2.2. THE STRUCTURE OF THE URBAN LOGISTICS MARKET

The Urban Logistics market has the typical structure of a market of services, but is characterised by a higher number of players and by a more articulated multi-layer structure. Its structure has been studied and classified during the project and it has been the basis for the analysis of the regional productive structure. This chapter reports the outcomes of the analysis and the classification of the market/classes of products that has been used as a methodological basis of the whole project.

URBAN LOGISTICS PROCESS

The whole Urban Logistics process can be classified into four main different typologies:

- The activity of collection and distribution of goods performed by transport operators.
- Transport linked to public services (such as mail, waste collection, etc.).
- The transport generated by retailers, shopkeepers and artisans for their supplies by the wholesalers.
- The transport of equipment used to carry out the professional activity (artisans, construction companies, professionals, etc.).

Apart from the vehicles, only the first two typologies can be considered as an active part of the market. In fact, the part of transport managed by retailers, shopkeepers and other non-professional operators, even if significant in volume, does not express any specific demand related to logistics.

Several players operate within the market of Urban Logistics:

1. Transport and logistics operators.
2. Companies managing Urban Goods Distribution Centres.
3. Public Entities (mainly Municipalities).
4. Shopkeepers, retailers, small and large commercial structures (such as large department stores and chains, shopping malls).

Transport and Logistics Operators

This class is highly differentiated since the operators are generally specialised in the transportation of specific types of goods. They constitute the most important part of the market from a dimensional point of view, but they are very fragmented in size, so that only a part of this segment expresses a real demand. A large part of this class is represented by individual companies, managing a single vehicle and often exclusively working for bigger companies, for the last mile distribution. This practice has become very common in all the DOROTHY regions (but also generally in Europe) as a way of containing distribution costs. It often constitutes a barrier to the adoption of more advanced practices and this is a fact that must be carefully considered in any innovation project for the sector.

Urban Goods Distribution Centres

A particular type of logistics operator is represented by the companies managing Urban Consolidation Centres (or similar structures). These companies are often participated in or owned by the Municipalities. Moreover they manage a specific process with respect to the other operators. At present, they represent a very limited part of the market.

Public Entities

Even if they do not operate directly in the Urban Logistics market, they are one of the major stakeholders, because they have the responsibility for defining the regulations and the constraints for this activity. Often the application of the regulation schemes is supported by technological systems, sometimes connected with the general traffic regulation systems. For this reason Municipalities represent an important part of the Urban Logistics market, mainly with a specific polarisation on ITS systems. Up to now this role has been mainly limited to the most important and large cities where goods distribution regulations can be implemented, while in the small cities regulations are usually simple (loading time and weight restrictions) and generally not supported by technological systems.

Shopkeepers, Retailers, Small and Large Commercial Structures

These subjects, which are the final link in the distribution chain, have never been traditionally considered as subjects expressing demand for assets in this field. The emerging E-commerce technologies could produce a modification in this situation. In fact, they could be active users of these kinds of platforms both for selling and for their own supply needs.

All these subjects express different needs in terms of the products and services they need to exploit their role. Moreover, given their different nature (private and public, big and small, etc.) they require different commercial approaches and strategies. The Urban Logistics market is structured in different layers that reflect the multiplicity of players. This can be represented as shown in the next figure.

The lower level is represented by the level of transportation services provided by logistics operators to the final users. It has all the characteristics of a service market (production and delivering are contemporary, the “product” is immaterial, etc.).

Logistics operators carrying out their services make use of technological systems of different kinds, from vehicles to information systems, to packaging and delivery equipments, warehousing, security systems, etc. Therefore they represent a market for technological and ITS companies specialising in these different products.

This fact is common to a lot of markets, but in the case of Urban Logistics there is a third level, which is represented by the managing authorities, mainly Municipalities or Mobility Agencies. They define regulations for goods delivery whose management is often based on the use of technological support systems. These players constitute a significant market

for other specialised technology providers. As these management systems affect also the logistics operators and need to be interfaced with their information systems, this level of the market also involves logistics operators.

This multi-layer structure represents an opportunity for the development of highly specialised niche products/services.

URBAN LOGISTICS AS A MARKET FOR TECHNOLOGIES

From the technological point of view the field of Urban Logistics is composite, and we can make reference to the following basic technologies and/or competences and applications:

- Engineering, in the specific case mainly related to modelling, simulation and design – new models, methodologies evaluation.
- Information technology - Information systems for goods and fleet management, planning and scheduling, real time traffic information management, among others.
- Electronic equipment – fleet management, on-board equipment for tracking, planning, communication, real time applications.
- Environmentally friendly vehicles – new technologies for clean vehicles and fuels, especially electric vehicles; special purpose vehicles, embedded on-board equipment.
- Mechanic and mechatronic – packaging and handling equipment, warehouse equipment and solutions, loading/unloading systems.

However, taking into account the market/product perspective, the technological classification has limited value, as products are often composed of several components and different technologies which in turn can be built by other products, in a quite complex chain.
Therefore the segmentation adopted by the DOROTHY project for the market analysis and any other analysis linked to demand/supply is the following:

- Goods distribution management systems: we generally refer to the ICT systems that give the possibility to manage all the distribution operations and the warehouse. They can be differentiated in various classes:
  - Simple software systems managing only the reception and delivery from the warehouse, while trips and deliveries are managed by hand.
  - Fleet management systems, with intelligent on-board units, developed to manage operational fleets of different kinds, have been applied in freight distribution. They allow real time vehicle tracking, trip planning, etc.
  - Integrated distribution planning and management systems: they are integrated hardware and software tools which make the real time tracking of the shipment and the support to all the phases of the logistic chains. They generally foresee the use of palm tops or smart-phones as the users' terminals for the management of the deliveries. These systems often can also perform the functions of optimisation of the trips: for this purpose the same portable equipment can be used or the vehicles can be equipped with specific on-board units.

- Special hardware for distribution management. Apart the general purpose hardware that will not be considered in this analysis, the most important hardware components that could be considered are:
  - Palm top for delivery management. They work as special purpose terminals for the above mentioned systems and are widely used by freight distribution operators.
  - On-board devices for freight vehicles which support navigation and other specialised functions.
- Special software for freight distribution systems. Of course all the mentioned systems include special purpose software, but most of it is common to other fleet management systems, warehouse management systems, etc. In this scheme, we mention only the software components that are closely linked to the specialisation and could be offered as a separate package:
  - Software tools for freight distribution optimisation. They include all the functions needed to optimise the whole process, but especially the part related to the last mile and to the urban distribution (grouping/de-grouping, route optimisation).

- Support systems for regulation schemes. Among these systems we can mention the ones especially devoted to freight distribution or which are closely related to it:
  - Access control management / charging systems.
  - Parking management / charging systems.
  - Permissions release and accreditation management systems.
  - Sometimes these systems can be interfaced with other systems devoted to urban traffic control, infomobility and traffic management, but these systems are neither devoted to freight management nor used to support these schemes. Moreover, the players on this market are different from the ones generally operating on the logistics market.

- Automatic warehousing systems and handling systems. Within this category, which includes multi-technological systems (mechanics, electronic and ICT), we can consider both the equipment for warehousing, for picking and for loading/unloading vans, trucks and other vehicles.
  - Warehousing systems.
  - Handling and picking systems and equipment.
  - Loading/unloading systems and equipment.

- Storage systems for transport. This category includes all the mobile devices used for containing and transporting goods on the vehicles and eventually for loading/unloading (such as containers for long-range transportation).

- Non-conventional traction vehicles. This area is wide and could include a multiplicity of products. At this stage of market development, and for the specific purpose of this research, we can neglect the already consolidated technologies of traditional vehicles and the market of specific components (such as the batteries for electric vehicles), as they are general products not directly related to freight distribution. We will consider only two areas:
  - Application of electric vehicles to freight distribution.
  - Application of other non conventional vehicles.

Of course the use of these vehicles is often related to the adoption of new organisational schemes, so that the innovation is not only the use of the vehicle itself, but also the related process modifications.

- Engineering and management. This area includes important innovation elements that are mainly related to immaterial products and services, consultancies, etc. We can split this category into the following areas:
  - New regulation schemes. They are mostly addressed to the cities' administrations and can include a set of different services ranging from concept and design, to modelling, simulation, impact evaluation etc. They mainly refer to the engineering area.
  - New distribution process schemes. They mostly address the freight distribution

professional operators and are related to changes in the process for managing the freight distribution cycle. They can vary from simple organisational interventions closely related to the management consultancy area, to more articulated interventions also requiring technological changes that require integrated organisational and engineering skills.

- E-commerce platforms. Lastly, we can consider this class of products, even if it does not exactly overlap with the logistics market. Notwithstanding this, the new techniques of E-commerce, in the wider meaning of a generalised supply platform, can have a deep impact on the logistics market and processes and could constitute a significant and innovative market. For this reason, we include this class of products in this first analysis. Therefore, with E-commerce platforms we address the following areas:
  - Platforms addressed by specific operators to the end users for on-line buying.
  - B2B Platforms addressed by specific companies to other companies, shopkeepers, and other business subjects used for purchasing and managing orders and shipments.
  - European cities and regions share a significant number of problems related to Urban Logistics which may enable a potential cooperation among the DOROTHY Clusters towards providing solutions for some of them, improving the general state of Urban Logistics and at the same time working as an economic growth factor for the regions.

2.3. THE REGIONS: PROBLEMS AND OPPORTUNITIES FOR URBAN LOGISTICS IN THEIR TERRITORIES

European cities and regions share a significant number of problems related to Urban Logistics which may enable a potential cooperation among the DOROTHY Clusters towards providing solutions for some of them, improving the general state of Urban Logistics and at the same time working as an economic growth factor for the regions.

The DOROTHY project has analysed these challenges as a preliminary framework for defining its JAP; the results of this analysis are shortly outlined in the following.

MAIN PROBLEMS OF THE CITIES

General aspects of the problems related to urban goods transport can be enumerated as follows:

- The urban and land use structure of the cities, typical of the historical centres of ancient origin.
- Many European cities have ancient origins and narrow streets not suitable for car traffic and for goods delivery. Most of these historical centres are still lively and rich in commercial activities, but to adopt suitable Urban Logistics processes is a great challenge.

- The lack of Urban Logistics planning: Urban Logistics is not generally considered a priority in mobility planning. It is perceived as a marginal element, mainly the domain of the private sector and a matter for specialists, like a sort of eco-system capable of self-regulation. Up to now a limited number of cities have developed and adopted a 'Sustainable Urban Logistic Plan'. The definition and adoption of such a plan in a city should improve the comprehension of the problem and the development of relevant solutions.
- The lack of funds for Municipalities to develop suitable policies to solve this problem is another relevant issue.

REGIONAL PROBLEMS

The Urban Logistics sector cannot be considered particularly advanced from the technological and organisational point of view. Therefore research and technological innovation can play a significant role in improving the competitiveness of this sector and could help the development of the Regional economy, giving additional benefits:

- New technologies and products could enlarge the market for a significant number of companies providing equipments and solutions for Urban Logistics.
- The economic competitiveness of the local industrial sector can be increased through a higher level of innovation.

All the DOROTHY partner Regions are facing the same issues: they have territories with a high density of great cultural heritage, important monuments and landscapes to preserve, but at the same time they have to face the challenges of globalisation, increasing their capacity for research and innovation.
From a regional point of view the most relevant problems are:

- The coordination of local policies, in order to harmonise Urban Logistics approaches in their territory according to a general strategy.
- The definition of a regional policy and regional funds allocation (for instance using Regional Operational Programmes trough European funds).

2.4. THE STRUCTURE OF THE MARKET: SUPPLY AND DEMAND

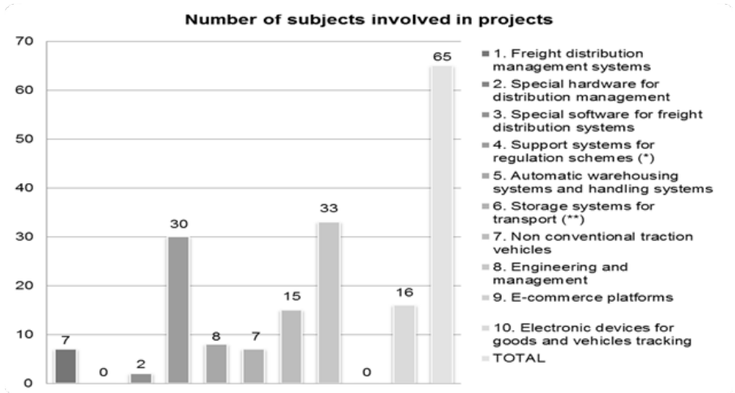
During the first phase of the DOROTHY project a survey for understanding the characteristics of the Urban Logistics maturity in terms of technology and innovation was carried out and a detailed report was prepared. The main objective was to point out the potential of the regions in the field of technologies for supporting Urban Logistics and to understand the most important characteristics of demand and supply as well as the logistics operators' structure and functioning. Concerning this last aspect, the target was not mainly to quantify the number of logistics operators and ITS suppliers and/or municipalities, which are easily classified, but to qualitatively understand the most important problems and weaknesses perceived by the players in this market.

In the following sections a synthesis is outlined in order to demonstrate the JAP context.

TUSCANY REGION

The supply of technological products and solutions in Tuscany is quite large and able to operate in most of the market segments. There are many small software companies that develop or customise management systems or web applications for logistics activities; and there are a few large companies operating primarily as systems integrators, designing and implementing large architectures for the development of systems for traffic monitoring, user information and planning. This industrial situation derives mostly from the relevant number of projects settled and developed within the Tuscany region using European, national and regional funds. More than 180 operators were involved in these projects, and therefore industrial know how was developed and a few operators are competitive within the European Market.

The following figure shows the number of subjects involved in EU projects, segmented by broad categories (see sub-chapter 2.3.)



The most populated market segment is category 10. “Electronic devices for goods and vehicle tracking” with a total of 65 subjects participating in the developed projects. The second most important category is number 7. ”Non-conventional traction vehicles” (mainly their use for city logistics). The third most important (number 4) concerns the design of “Support systems for regulation schemes”.

From the point of view of the demand and logistics needs, the most important considerations are as follows:

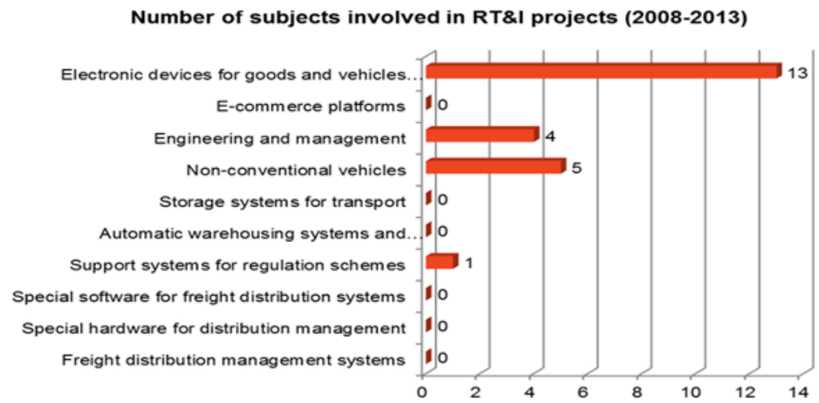
- The majority of logistics operators have a limited knowledge of technological products and solutions. They generally know common and simple systems (i.e. simple software systems in order to manage the reception and delivery of goods from the warehouse, but without any reference to routes and possible optimisations; barcode systems for freight distribution management) or the main functionalities of already integrated systems (i.e. the palm top systems for delivery management; on-board devices for freight vehicles which support navigation and other specialised functions).
- The technology fields where the logistics operators plan to invest in the future (preferably in the next five years rather than the next two) are: simple software systems, palm tops for delivery management, on-board devices for freight vehicles, storage systems for transport, development of other non-conventional vehicles, RFID and transponder systems, GPS systems, Wi-Fi systems.
- Concerning the development of innovative freight vehicles, there is a preference for alternative/non-conventional vehicles rather than the electric ones (this last one is seen as being unable to support a sufficient level of autonomy during the deliveries).

- There is a generalised concern about the changing way of making business: thus, technology innovation seems to be considered as a more expensive way to perform the business in the same way.
- Entrepreneurs in this field seem particularly focused on those issues related to transportation safety (concerning the vehicles and the employers) and security (goods tracking, reduction of robberies, etc.) in terms of a higher efficiency with respect to the current solutions.

LISBON AND TAGUS VALLEY REGION (LVT)

The survey can be summarised as follows:

- There is a limited number of companies operating into the supply of Urban Logistics technologies: this fact is also reflected in the limited number of development projects carried out on this sector in the region in the last decade.
- The following figure shows that only 20 operators were involved in European projects, with large experiences matured only in the field of “Electronics devices for goods and vehicles” and in “Non-conventional vehicles”.



The interviews and the focus group work revealed that a few technological classes seem to be more frequent such as “Automatic warehousing systems and handling systems”, “Freight and fleet distribution systems”, “Storage systems for transport”, “Special software for freight distribution systems” and “Electronic devices for goods and vehicles”.

From the demand side in the LVT Region, the main logistic challenges identified at present are:

- Distribution of fresh food.
- Dedicated channels to wholesale markets.
- Access control management inside the cities.

OLTENIA REGION

Up to now the region has only been involved in one project dealing with Urban Logistics (CIVITAS MODERN, and only a couple of companies were involved, mainly in the development of a new scheme for the logistics organisation of the Craiova municipality). Thus, we cannot talk about a specialised supply system. Notwithstanding this situation, a few companies showed a wide interest in starting to operate in this field; these companies, mainly located in Craiova could provide dedicated equipment and software to ease urban logistics problems.

On the demand side the priorities indicated by the local Municipalities and other stakeholders are:

- Infrastructure modernisation in all areas of interest.
- New regulations to restrict and manage goods deliveries in the historical centre of the city: priorities and privileges for electrical vehicles for final deliveries, definition of specific time intervals for different types of goods, a minimum load factor.
- Achievement of cooperation among different operators to cover the entire distribution in the city thus improving working efficiency and economic activities.
- Testing the innovative ideas for delivery modalities to be used directly by citizens and tourists.

VALENCIA REGION

In recent decades, the city of Valencia has experienced a strong economic growth, especially supported by the tourism, the construction industry and the development of the transport and telecommunications sector. The most important sector of the city economics is the service sector that involves nearly 89% of the working population. The industrial sector also provides jobs to an important percentage of the population (10.9%), especially the construction sector with 7.2%.

There are more than 120 operators already involved in the Urban Logistics and technology market, together with several national operators.

All the sectors are covered by the offer with particular emphasis on:

- Electronic devices (and technology) for goods and vehicles tracking.
- Management systems for urban distribution and ICT technologies (more than 14 companies involved).
- Support systems for regulation schemes: ICT systems and technologies for collection management to drive in restricted areas, access control systems, automatic vehicle identification systems, etc. (>12 companies involved).
- Storage systems for transport through intelligent modules (>20 Companies).
- New processes and schemes for urban distribution (>10 Companies).

From the demand side the facts emerging from the survey are:

- There is a general lack of Urban Logistics regulation schemes in the cities.
- There are not specific ordinances for Urban Logistics.
- The rules are quite different from one Municipality to another: fees, rules, time of access, etc.
- There are no municipal “departments” at the local level dedicated to Urban Logistics.
- There is a lack of collaboration between stakeholders: there is not a space where the stakeholders (public and private) can interact.
- There is a lack of planning about loading-unloading parking spaces. The LTZs equipped with access control systems have a really low degree of penetration in the Valencia region.

- There is regional support (subsidies from IVACE) to renew the fleets and to introduce more sustainable vehicles, such as electric vehicles.
- There is a generalised awareness of the problem, and public administrations are open to introducing changes in the regulations and to implement new solutions.

All the interviewed public administrations were willing to actively participate and collaborate with other stakeholders to make changes in the legislative and operational framework. There is a special interest related to the development of new planning instruments for Urban Logistics.

2.5. THE REGIONAL RESEARCH AGENDA

To define the Regional Research Agenda an exhaustive study was developed on the existing and future research and technological development projects related to Urban Logistics in which regional players are involved. A document presented the information that was obtained by the partners from the different regions with the following objectives:

- To establish an overview of the projects developed in the Regions on goods transport and city logistics and their funding sources, as well as a survey of the projects programmed to be developed.
- To create a comparative analysis of the status of Research and Innovation in the four regions in relation to the European context and trends and the present innovation demand.
- To evaluate the differential of the innovation demand perceived on the local market as compared to European Union averages.

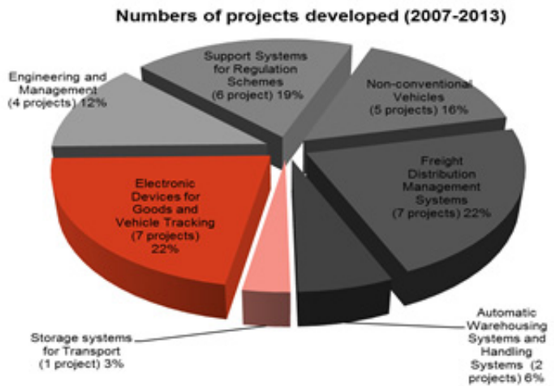
In order to fully understand the potential of each Region, it is important to evaluate on the one hand its position related to the research and innovation trends recorded in Europe and to the general state of R&TI, and on the other hand, the distance from the innovation demand perceived by the local market.

TUSCANY REGION

Between 2007 and 2013 the Regional Office for Economic Development managed a substantial funding programme called “ROP Regional Competitiveness and Employment FESR 2007 – 2013”, with a budget of 1.050 M€, 70% coming from Regional and National funds and the remaining 30% from European Regional Funds. Over 66% of the programme related to RDTI activities (in particular with “R&D, technology transfer, innovation and entrepreneurship” and “Mobility services and telecommunication”), so it was coherent with the spirit of the DOROTHY project. Only the 4% of the amount dedicated to “R&D, technology transfer, innovation and entrepreneurship” was related to projects belonging to the Urban Logistics sector.

In order to define the technology offer potential, the RDTI projects developed during the last ROP period were examined. The market segmentation already described was used in order to quantify the offer. In the last 6 years 34 projects were developed within the domain of Urban Logistics and related technologies.

The figure shows the projects segmentation by technology/products.



Among the 34 analysed RT&I projects, the first three technological fields with the highest number of actions are further highlighted:

- "Freight distribution management systems" (7 projects).
- "Electronic devices for goods and vehicle tracking" (7 projects).
- "Support systems for regulation schemes" (6 projects).

Other technological fields that should be taken into account for future developments are:

- "Non-conventional traction vehicles" (5 projects).
- "Engineering and management" (4 projects).

In terms of economics, the technology fields which mainly benefited from public funding are:

- "Engineering and management" (6.1 M€).
- "Support systems for regulation schemes" (5.6 M€).
- "Non-conventional traction vehicles" (3.4 M€).

This policy allowed the development of an Urban Logistics technology industry. This policy has been pursued in the definition of a new Regional Operational Plan.

LISBON AND TAGUS VALLEY REGION (LVT)

The LVT Region shows several entities that play a meaningful role in the Urban Logistics supply chain. Besides logistics operators, there are ICT companies, local and regional public entities and universities that express their willingness to cooperate, in order to foster innovation and economic development. Consequently, some issues can be emphasised. Only 11 projects were developed within this Region, involving some 23 operators. Notwithstanding this small experience, several RTI institutions are operating in Urban Logistics trying to develop technologies.

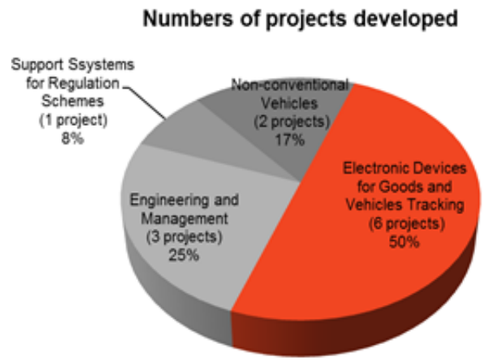
The results are partially in line with the situation in the Tuscany and Valencia Regions, but showing a less developed state.

- In the last five years the main technology field exploited by RTDI projects was "Electronic devices for goods and vehicles tracking" (6 projects) which presents the largest number of projects and participants, followed by the area of "Non-conventional vehicles" (2 projects).

- The importance of RTDI projects related to the "Non-conventional vehicles" technological field derives from the participation of some local partners in large European consortiums, which could erroneously lead to the assumption that this sector is well-developed in the region.

Two sectors in close relationship with local policies developed by public bodies, "Engineering and management" and "Support systems for regulation schemes", shows low funding in comparison with the last two sectors.

The new Regional Operating Programme gave evidence of the necessity to develop policy and new interventions regarding sustainable mobility, but no specific evidence was given to Urban Logistics.



OLTENIA REGION

The Oltenia situation is very different compared to the other regions.

Due to the nature of the region, mostly based on agriculture, in the past the Regional Development Plan gave little importance to the Urban Logistics problems. Only Craiova, the regional capital, experiencing a huge development surge, started to suffer problems related to goods distribution in its historical centre. These problems were examined during the CIVITAS MODERN project, where a new good distribution scheme was designed and experimented.

Nevertheless a group of companies and Craiova University showed new interest in the field and started some studies in this area. At the moment several companies are interested in developing electronics equipment and dedicated software for Urban Logistics activities.

VALENCIA REGION

The analysis of the last seven years' experience is reported in the following figure: 22 projects were developed.

The most exploited technological area is "Freight distribution management systems" (9 projects), followed by "Electronic devices for goods and vehicle tracking" and then "Non-conventional vehicles".

Within these projects 12 RTDI institutions (universities and private research centres) and around 10 companies developed significant experiences.

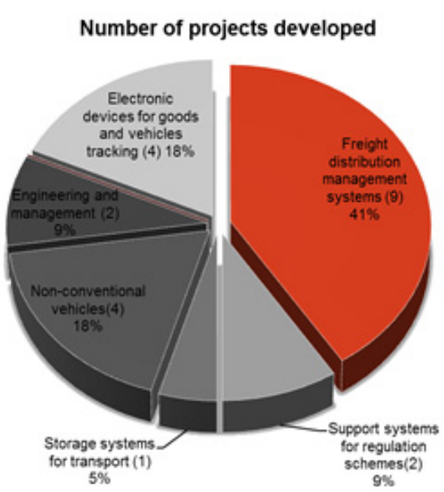
Among the analysed RT&I projects, the first three technology fields that are to be highlighted, highly interesting from a numerical point of view, are:

- "Freight distribution management systems" (9 projects).
- Non-conventional traction vehicles (4 projects).
- Electronic devices for goods and vehicles tracking (4 projects).

Other technology fields that should be taken into account for future developments are:

- Support systems for regulation schemes (2 projects);
- Engineering and management (2 projects).
- This policy allowed the development of a significant offer in terms of industrial production and know-how with a high number of operators in the field.

The objectives already pursued have been confirmed within the next Regional Operating Programme, therefore defining a very interesting research agenda for the future.



2.6. REGIONAL SMART SPECIALISATION AND INNOVATION CLUSTERS

The analysis of the Regional Smart Specialisation Strategies (S3s) has been a concern of the DOROTHY project in the process of defining suitable actions for the JAP, compliant not only with the industrial vocation of the productive t structure, the vision and demand for innovation expressed by the regions, but also to the strategic development lines defined by the regional governments in the framework of the S3 European framework.

THE EUROPEAN CONTEXT

The European Union has set out its vision for Europe's social market economy in the Europe 2020 strategy/framework, which aims at three main priorities:

- Smart growth, based on knowledge and innovation.
- Sustainable growth, promoting a more resource efficient, greener and competitive economy.
- Inclusive growth, fostering a high employment economy delivering economic, social and territorial cohesion.

Within the aforementioned context of Europe 2020 and beyond, the Smart Specialisation Strategies (often referred to simply as S3s) therefore emerge as a key element for place-based innovation policies at any level S3s are innovative policy concepts which emphasise the principle of prioritisation in a vertical logic (to favour some technologies, fields, population of firms, etc.) and define a method to identify desirable areas for such innovation policy intervention.

Overall S3s entail an effective match between a top-down and bottom up process.

S3s can therefore be referred to as the new innovation policy concepts designed to promote the efficient and effective use of public investment and to inspire private investments: National Governments and Regional Authorities should/shall develop S3s to maximise the impact of regional policy combined with EU policies.

Traditionally, a regional strategy for innovation consists mainly of horizontal measures and neutral policy aimed at improving general framework conditions and capabilities (universities and investigation facilities, human capital, intellectual property rights, research and ICT infrastructure, competition and openness, etc.).

The new strategy (the S3) is a process of identification and selection of desirable areas for intervention, implying choices of technologies, fields and sub-systems that could be favoured within the framework of the regional policy guiding the economy development.

In short, S3s concern the generation of unique assets and capabilities based on the Region's distinctive industry structures and knowledge bases, i.e. the local specialisations (including industrial chains) that need/have the potential to be smart.

Among the main S3 guide lines, one is of great importance and must constantly be taken into consideration in view of enhancing/unlocking the networking/innovation potential, i.e. "resources should be concentrated in specially selected clusters of activities".

The orientation toward clusters and clustering processes is a binomial necessary for a correct S3s implementation.

The definition “smart”, in its broader meaning, signifies:

- Firstly, it links research and innovation with economic development in novel ways, such as the entrepreneurial process of discovery and the setting of priorities by policy makers in close cooperation with local actors.
- Secondly, the process is carried out with the view on the outside world, forcing Regions to be ambitious, but realistic, about what can be achieved, while linking local assets and capabilities to external sources of knowledge and value chains.

As a consequence, S3s need to be based on a strong partnership between businesses, public entities and knowledge institutions, i.e. the triple helix, and beyond with the communities, leading to a ‘quadruple helix’.

SMART SPECIALISATION STRATEGIES: THE GOALS

The main aims of S3 are:

1. Facilitating the emergence and early growth of new activities which are potentially rich in innovation and spillovers.
2. Diversifying regional systems through the generation of new options.
3. Generating critical mass, critical networks and critical clusters within a diversified system.

OVERALL: TO CREATE NEW OPPORTUNITIES FOR THE REGIONAL ECONOMY DEVELOPMENT BY:

- Helping Regions to identify high-value added activities which offer the best chances of strengthening their competitiveness.
- Helping policy-makers to identify domains and activities for potential /real specialisation.

S3s are the key solution for avoiding dissipation of EU research funds and for focusing the research, innovation, human and financial resources on those innovative sectors which are high performing, strategic from a socio-economical perspective, eco-friendly and attractive for investors.

THE CLUSTERS’ ROLE WITHIN SMART SPECIALISATION STRATEGIES

Clusters play a very important connection role between policy makers (EU, National and Regional Government) and the entrepreneurial environment.

The cluster mission within the S3 framework is about facilitating innovation and technology transfer processes, in order to increase local production and entrepreneurial capacity.

The team/network of a cluster is made by Start Up, SMEs, large enterprises and research centres.

Clusters are able to catalyse the main skills of public and private regional stakeholders, ensuring the best way to collect the roadmaps and policies suggestions for the right S3 development.

European Clusters of Innovation

Clusters are an emerging European reality, already in place, fully functional and in full expansion, although to different degrees, scales and numbers, as can be easily inferred from above. Among these, many operate in the field of freight and logistics and the sub set of Urban Logistics has played a key role with respect to S3s. One of the clusters is POLIS, a pole of innovation operating in the smart cities and communities field and an example of S3 implementation.

POLIS focuses its attention on the development of actions and projects aimed at urban sustainability, i.e.:

- Mobility.
- Cultural heritage.
- Sustainable building.

POLIS today has a network of over 650 national and international partners involved in research and development. Around this active cluster the DOROTHY project has achieved the result of setting up 3 new regional clusters specialising in Urban Logistics in the other DOROTHY partner Regions

THE S3 POLICIES IN THE DOROTHY REGIONS

A survey about the S3 strategies within the four regions was developed to address the choices of the JAP in terms of coherence between the S3s and the contents of the actions. It is possible to highlight that there are two cross cutting themes in the S3s of all the partner regions, represented by ICT and sustainable urban mobility. The DOROTHY JAP has fully adopted this strategic approach; in fact, sustainable urban mobility fully includes the theme of Urban Logistics in its various aspects and applications, so that the specific subject of the JAP is intrinsically in line with the regional S3s. Moreover, ICT is a central and transversal

point for several of the JAP actions, both from the point of view of technology providers (this is the case of actions targeted at developing new products/applications based on ICT) and of logistics operators and cities (in the case of actions targeted at the adoption of innovative ICT based systems and techniques for the improvement of the Urban Logistics chain).

The most important results of the survey are summarised in the following sections.

TUSCANY REGION

Tuscany has outlined its approach to S3 after a long public consultation process, which began in February 2014. The Region involved experts and representatives of the various production sectors to select the area in which to invest. Tuscany is thus among the first regions to send to the European Commission their plans for Smart Specialisation in relation to the Regional Operational Programmes (ROP) of the European Regional Development Fund (ERDF) and the European Social Fund (ESF).

The strategy is divided into 3 main objectives: research, innovation support and system interventions.

The research will have as priority areas:

- Information and communications technology (ICT).
- Photonics.
- Smart manufacturing.
- Chemistry.
- Nanotechnology.

Support for innovation instead will focus on the fields:

- Supporting start-up.
- Increasing energy efficiency.
- Deployment of renewable energy.

For interventions system priorities are:
Strengthening the technology transfer.

- Business creation.
- Internationalisation and attraction of investments.
- Broadband penetration.
- Industrial restructuring of the steel plant of Piombino.
- Sustainable urban mobility.
- Innovation of the management of cultural heritage.
- Investment for competitiveness.

The JAP is in line with the priorities described above, related to the increase in energy efficiency and to sustainable urban mobility.

LISBON AND TAGUS VALLEY REGION (LVT)

Launched at the end of 2012, the Lisbon Regional Action Plan 2014-2020, developed in the framework of EU's Europe 2020 growth strategy, establishes the strategic priorities of the LVT region and respective policy instruments and investments for the programming cycle 2014-2020.

Together with the Regional Action Plan, a number of other strategic initiatives have been launched such as the "Regional Smart Specialisation Strategy 2014-2020" (RIS3 Lisbon) and the "Regional Operational Programme 2014-2020", which are all necessarily interconnected. The development of the above mentioned initiatives involved about 500 regional actors between April and October 2013.

The Regional Action Plan 2014-2020 focuses on four main strategic areas:

- Smart growth, including the following key fields: production systems and smart specialisation; education, employment and entrepreneurship; and creative and cultural industries.
- Sustainable growth, including the following fields: resources, environmental services and risks; low-carbon economy; and urban renewables.
- Inclusive growth, including the following fields: demographics and proximity-based services; social innovation and inclusion.
- Institutional capacity building through training and modernisation.

The following priority areas have been identified in the framework of Lisbon's S3 (RIS3 Lisbon):

- Tourism and hospitality.
- Mobility and transport.
- Creative and cultural industries.
- Research, technology and health services.
- New knowledge, exploration and exploitation of marine resources.

The JAP developed by the DOROTHY project takes into the account these priorities, dealing with new technologies for mobility, transport and research and development.

OLTENIA REGION

As a consequence of the increasing importance of supporting innovation in Romanian regional policies, the South West Region prepared the 2014-2020 Regional Development Strategy, which will focus on promoting the competitiveness of the regional economy in industry, agriculture and the digital economy sectors, with the two main objectives of sustainable development and reducing economic disparities between the Region and the rest of the Romanian regions. In view of the specific objective of enhancing the regional economic competitiveness, there are several investment priorities related to innovation:

- Developing business support infrastructure and supporting cooperation and cluster networks.
- Consolidating the Research, Technological Development and Innovation (RTDI) infrastructure and supporting innovative start-ups and spin-offs and the creation of economic activities around the regional RTDI performers.
- Increasing SMEs' competitiveness.
- Reducing the informational disparities in the Region.

The South West Regional Development Agency (RDA) also started a series of its own initiatives in 2011-2012, in order to accelerate regional development. Thus, the RDA established two competitiveness poles in the region. In 2012, the automotive pole for South West Oltenia was founded as an RDI Cluster focused on the production of automobiles, through a cooperation partnership between the South West RDA, the City Hall of Craiova, the Faculty of Mechanical Engineering at the University of Craiova and the Ford Company. At the same time, the South West RDA founded the competitiveness pole for innovative tourism, establishing cooperation in this field between the five counties in the Region.

Due to the DOROTHY project a new pole, dealing with Urban Logistics, was founded and is in operation with 12 operators among the universities, research and development centres, Local Administrations and companies (mainly in ICT sectors).

Although not explicitly previewed in the Regional Action Plan, taking the fast development of the JAP into the account will represent an important contribution to solving the emerging problems of logistics in Oltenia.

VALENCIA REGION

The Valencia Region has defined its strategy for using European funds for supporting R & D coming from the Cohesion Fund (ERDF and ESF), through the definition of the S3 plan that addresses priority technologies and sectors that will be preferentially supported.

The technologies selected within the S3 strategy are:

- Biotechnology, with applications in the health and agri-food sectors.
- Nanotechnology, with applications in sectors such as footwear, textiles and the packaging industry.
- Advanced manufacturing technologies, with applications in the plastics industry and the metalworking sector.
- Photonics, chemistry, ICT and related technologies to logistics, all applications are very "horizontal" in the amount of industrial sectors that can benefit from them.

The plan includes specific measures regarding the development of sustainable growth including specific paragraphs dealing with logistics; part of it is reported in the following:

"Within the S3 logistic was put in evidence; an efficient and competitive logistics sector is key to the economic development of any region, therefore the contribution to the sector itself and its ability to condition competitiveness of other economic sectors.
The three major challenges facing the logistics industry and transport of passengers or goods are reduction of emissions of greenhouse gases – sustainability, the safety and efficiency in the service – competitiveness.

The Plan of Action for Energy Saving and Efficiency improving energy efficiency in transport, included in three main measures:

- *actions designed to encourage modal shift in the mobility of people and goods to incorporate technological advances or increased energy efficiency;*
- *and actions to more efficient use of transportation.*
- *Specific areas addressed among others to promote technological innovation and promote the application of new technologies."*

RTDI should be reoriented to fulfil (amongst others) the following objectives:

- Create chains of transport for people and goods through efficient adoption and development of technologies enabling innovative solutions.
- Boost the development of the next generation of transportation and handling, especially through automation and clean technologies, satellite navigation, etc.
- Enhance the international leadership of agents with existing scientific, technological and entrepreneurial skills in the analysis of the physical environment and construction techniques and operation of infrastructure and railway superstructures, high-speed transport, and high performance in general (ports, airports and roads works.)

Given the current economic situation (the profound changes in business models and organisation, and increased competition from international markets), transport and logistics are configured as strategic factors for business competitiveness. In this sense, the industrial strategy on energy saving measures envisaged that Valencia will directly or indirectly promote the development of research and application of technologies oriented towards sustainable, secure and competitive transport.

Again, DOROTHY's JAP is well in line with the priorities described above, related to the increase of energy efficiency and to sustainable urban mobility.

CHAPTER 3

THE STRATEGIC APPROACH TO THE JAP

INTRODUCTION

The analyses developed during the DOROTHY project and reported synthetically in the previous chapters were the main drivers for the definition of the DOROTHY JAP structure, strategy, and actions. They have been designed to contribute as much as possible to:

- Improve the weaknesses observed during the analysis.
- Provide answers to territorial needs.
- Create opportunities for economic development in the fields where the local productive players have got points of strength and where the local and European markets show opportunities.
- Contribute to the Regional S3s.

The DOROTHY JAP on Urban Logistics has been jointly developed by the four partner regions.

The scope of this chapter is to illustrate the strategic approach to the JAP, that is the rationale of the structure adopted and of each of the actions structuring the JAP itself.

Within this chapter the following subjects will be explored in detail:

3.1 The Joint Action Plan: Definition
3.2 Cluster Approach and DOROTHY JAP
3.3 DOROTHY's Joint Action Plan Targets and Process
3.4 Expected Impacts
3.5 Thematic Areas

3.1. JOINT ACTION PLAN: DEFINITION

According to the EC Region of Knowledge Programme, a Joint Action Plan (JAP) is an instrument able to drive economic development through research and technological development activities in a selected topic or economic sector and enhance the whole value-added chain of innovation.

In general terms a JAP should develop the following activities:

- Analyse the development needs and objectives justifying the JAP.
- Analyse information on the geographic coverage and target groups of the JAP itself.
- Identify the partners, activities (what to do) responsibilities (who does what) and schedule for trans-national and cross-regional cooperation.
- Set out a business plan, defining how to finance the JAP by using possibilities available at national/local level, including the private sector, or at Community level.
- The expected implementation period of the JAP.
- Make clear the complementarities between the proposed actions and the EC regional policy programmes of the Region(s) concerned.
- Consider the use of financial instruments such as Horizon 2020, the Competitiveness and Innovation Programme, and Structural Funds, as well as national and regional resources and financing from the private sector, to implement the JAP.
- An analysis of the effects of the JAP on the promotion of sustainable development, where appropriate.

A JAP must be composed of a set of actions:

- Exhaustive: capable of involving all the stakeholders and addressing all the elements of the mentioned scheme.
- Integrated and complementary: to maximise the effects.
- Compliant with the structure and the interests of the cluster.
- In line with the smart specialisation of the Region.
- Effective: capable of significantly improving the state of Urban Logistics along its whole chain.

Moreover a JAP may be comprised of regionally specific activities. It can include the design of measures such as:

- Innovation measures to facilitate the development of new products, services and processes on the grounds of excellent research results and recruitment of innovation assistants.
- Improving and sharing RTD infrastructure and other facilities.
- Identifying relevant (collaborative) research and technological development related projects.

3.2. CLUSTER APPROACH AND DOROTHY JAP

Since the beginning of the DOROTHY project the quadruple helix clusters seemed the best way to organise the project. Therefore, citizens, universities, Local Governments and operators and industry should cooperate in a positive way to pursue the targets and to develop new ideas.

During the DOROTHY project more than 100 entities - companies, universities, research centres, public, private and associative institutions were involved in the clusters and in different ways in the JAP design.

The DOROTHY project has developed its JAP as a result of a long process carried out in the four partner Regions that analysed the following topics.

- The level of development of Urban Logistics and the structure of the market.
- The characteristics of the demand and the offer of Urban Logistics services/products.
- The activities of companies operating on all the segments of this market and their offer.
- The work developed by universities and research centres active in the field of Urban Logistics.
- The research agendas and the Regional S3s.

Based on this information, an analysis of the strengths/weaknesses points of the structure of the sector in the Regions has been carried out identifying:

- The excellence points and the available factors on which a development trajectory, based on innovation, can be defined and develop a consequent strategy.
- The barriers preventing the implementation of this strategy.

This was the starting point for the definition of the DOROTHY JAP.

3.3. DOROTHY'S JAP TARGETS AND PROCESS

After the definition of the general target of the JAP, i.e. to identify the technological development lines for RTDI in the specific application area in the four Regions, taking into account different factors such as the local specialisations, the specific market demand etc., the process to elaborate the JAP was defined. Starting from the detailed analysis carried out from the beginning of the project, the specific innovation and research (RTDI) areas potentially interesting for the clusters were defined. The analysis focused on:

- The local specialisation of each cluster and its potential.
- The local conditions and the local potential demand of innovation.
- The possibility to exploit the innovation outside the territorial environment, at national/ international level.

From the technological point of view, the main sectors that have been considered to be included in the JAP are:

- ICT systems to support Urban Logistics, both from the side of the logistics operators' support systems and from the side of the cities, in supporting the implementation of access regulation and control schemes.
- New distribution systems and concepts using innovative vehicles (with special attention on electrical vehicles) and loading/unloading equipment, and small warehousing systems.
- New distribution schemes to be applied in the urban environment and the related support systems.

The analysis pointed out additional elements that were considered in defining the RTDI lines and areas:

- Economic, social, environmental and urban benefits expected by the exploitation of the RTDI actions.
- Framework conditions to be implemented to exploit at best the analysed RTDI actions.

The definition of the actions to be included in the JAP and their priorities was carried out, taking into consideration the potential impact on the economic local structure and on the level of local services.

The general target of DOROTHY's JAP is the improvement of the state of Urban Logistics in the Regions through:

- The constitution of specialised clusters capable of increasing the level of innovation.
- Strengthening the cooperation among all the stakeholders of the Urban Logistics framework.
- Setting up a long lasting cooperation among the various clusters.

3.4. EXPECTED IMPACTS

The expected improvements of the JAP implementation are the following:
Economic: a stronger competitiveness of the industries of the sector operating on all the market levels (Urban Logistics operators, technology providers, engineering/consultants) with the relevant occupational implications through:

- Innovation: stronger relationships between universities/research institutes and ICT companies and logistics operators.
- Higher quality and shorter time to market: cooperation among companies with common or complementary interests within the regional cluster and the other clusters.
- Easier access to European funds for innovation.
- More engaged policies by the regional Governments for supporting innovation.
- Market enlargement: cooperation with companies of other European regions and generally supporting internationalisation.

Environmental: reduction of the environmental impact for unitary delivery, so as to improve the urban environment by reducing the negative effects of city logistics.

Organisational: by improving the rationality of the processes with the use of more information systems.

Social: by achieving consensus among all the stakeholders about Urban Logistics schemes and solutions with a fair distribution of costs and benefits.

Urban: improving the organisation and the use of urban spaces, limiting interferences between the different urban functions.

3.5. THEMATIC AREAS

Such a complex framework requires an articulated set of actions to achieve the expected outcomes. To comply with the peculiar characteristics of the Urban Logistics market, the large number of stakeholders involved, and the direct impact on urban and social issues, the DOROTHY team was forced to widen the visual angle. So different kind of actions have been considered, addressing not only the clusters' economic development but also targeted at complementary but very important objectives:

- Sensitising the public administrations.
- Creating the local conditions for an improvement of the market.
- Ensuring the long-term stability of the clusters.

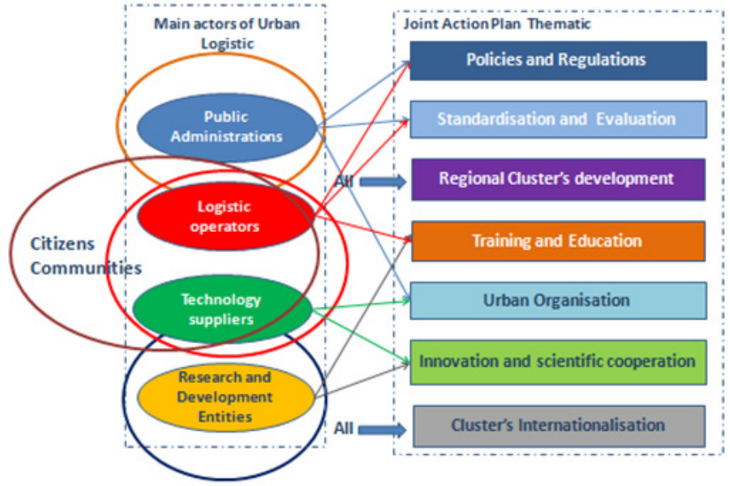
According to this philosophy, DOROTHY has defined a structure of the JAP based on 7 Thematic Areas, each of them containing a set of specific actions. Each Thematic Area addresses a specific aspect of the overall Urban Logistics process and of the clusters' organisation, and is targeted to specific stakeholders. These Thematic Areas are integrated and complementary but can be approached separately with specific actions capable of achieving concrete results by themselves.

The DOROTHY Thematic Areas are:

- Policies and Regulations
- Standardisation and Evaluation
- Regional Clusters' Development
- Training and Education
- Urban Organisation
- Innovation and Scientific Cooperation
- Clusters' Internationalisation

The philosophy and the interaction between clusters, stakeholders and JAP Thematic Areas are represented in the following picture where the circles represent the four elements of the clusters and the main players of the city logistics are put in evidence with their connections with each specific Thematic Area. This organisation seems the best way to comply with the general specification of a JAP itself in terms of:

- Exhaustiveness: capable of involving all the stakeholders and addressing all the elements of the Urban Logistics process.
- Integration and complementarity in order to maximise the effects of the JAP as a whole.
- Compliancy with the structure and the interests of the clusters.
- Effectiveness: capable of significantly improving the state of Urban Logistics along its whole chain.



In Chapter 5 the JAP Thematic Areas will be described in detail.

CHAPTER 4

THE DOROTHY REGIONAL CLUSTERS FOR INNOVATION

This chapter gives a short overview of the four DOROTHY regional clusters, mainly pointing out their composition and characteristics.

THE SET UP AND MENTORING OF THE REGIONAL CLUSTERS

Clusters represent the means to generate innovations and solutions in order to implement smart specialisation on a regional scale.

The triggering event, which started within European boundaries the development of the so-called Innovation Cluster (IC), was the pronunciation of the Comm. 323/2006 by the European Union called *"Community framework for state aid for research and development and innovation". This act defined ICs: "groupings of independent undertakings, innovative start-ups, small, medium and large enterprises as well as research organizations, operating in a particular sector and region and designed to stimulate innovative activities by promoting intensive interactions, sharing of facilities and exchange of knowledge and expertise and by contributing effectively to technology transfer, networking and information/dissemination among the members of the cluster".*

Innovation clusters are characterised by proximity, thus, the DOROTHY consortium decided to structure its network by setting up a regional cluster specifically focused on Urban Logistics. However, the cluster must be, accordingly to EU and National doctrine, open to members beyond the regions (as, conversely, members located within a Region often operate outside the region and are therefore interested in participating in other clusters).

This was made possible by starting from the experience of an already existing cluster named "POLIS – the innovation pole of the technologies for the sustainable city" based in the Tuscany Region. This cluster, established into 2011, has three main business areas (Mobility, Energy Efficiency, Cultural Heritage and Tourism) and provided DOROTHY's partners with its experience of supporting and mentoring the start-up of three new clusters focused on Urban Logistics in the regions of Lisbon & Tagus Valley, Oltenia and Valencia.

The experience of POLIS was useful in order to mentor and support the partners to set-up an IC into the above mentioned regions: the mentoring phase during the first year and half of the project, characterised by the set up of the three new clusters, was carried out through the production of a guideline document reporting characteristics of an IC and a set of suggestions and possible alternatives to solve the different problems related to the administrative, legal and business model topics.

Moreover, the Foundation for Research and Innovation (FRI - project coordinator of DOROTHY and leader of the managing board of POLIS) has organised several direct on-site mentoring sessions held in the four regions.

Other supporting documents produced by FRI produced and distributed among the partners are:

- The state of the art concerning the other existing cluster focused on Urban Logistics in Europe.
- A checklist to support, guide and monitor the state of development and operation of the three new clusters established in the Lisbon & Tagus Valley, Oltenia and Valencia regions.

These efforts contributed to achieve, within the deadline scheduled for December 2014, the positive result of having three new operative clusters focused on Urban Logistics and able to foster innovation through the quadruple helix model.

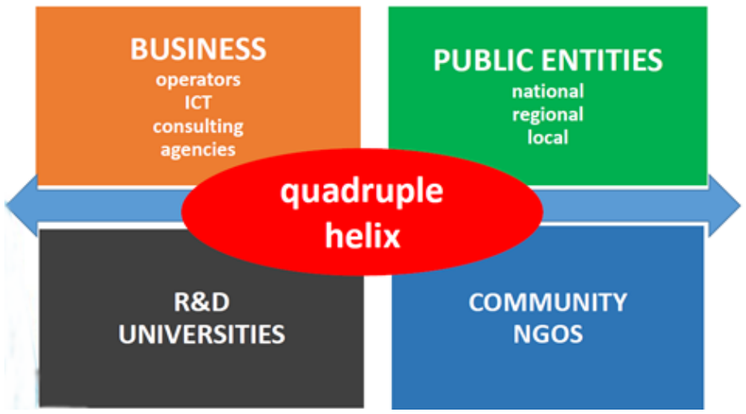


Fig. 1 - The quadruple helix model adopted to structure the DOROTHY clusters

THE STRUCTURE OF THE 4 DOROTHY REGIONAL CLUSTERS

The existence of four specialised clusters, gathering industries (especially SMEs), research institutes and public administrations, three of which have been created during the project, is one of the main outputs of the DOROTHY project. The number of members belonging to the different regional clusters is shown in the following tables:

Urban Logistics CLUSTERS		Full Members	Associated Members	Support Entities
		(October 2015)		
CLUSTER	**Tuscany Region**	33	3	2
CLUSTER	**Lisbon and Tagus Valley Region**	49	0	2
CLUSTER	**Valencia Region**	17	0	0
CLUSTER	**Oltenia Region**	19	0	0
	TOTAL	**118**	**3**	**4**

Tab. 1 – Situation of the 4 DOROTHY clusters

In the case of the Tuscany cluster, associated members are public entities (Municipalities, Provinces/Metropolitan City, Region) who, by law, cannot be full cluster members. Support entities are not cluster members, but give support to them (as a technology cluster active at the national level, on cross-cutting technologies with several interesting fields and not just Urban Logistics).

Itis important to point out the significant number of entities that joined the new clusters, notwithstanding their limited life time. This level of participation might be a good indicator that the stakeholders involved in Urban Logistics recognise the need for a strategy or at least for a common platform of communication within the Region.

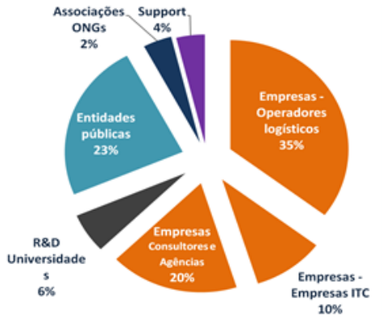
In order to classify the cluster members according to the quadruple helix concept, each cluster member was catalogued and profiled according to the following rule:

QUADRUPLE HELIX		
1	Business	Operators
		ICT Companies
		Consulting + Agencies
2	R&D | Universities	
3	Public Entities	national |regional | local
4	Community | NGOs	
Supporting entities		

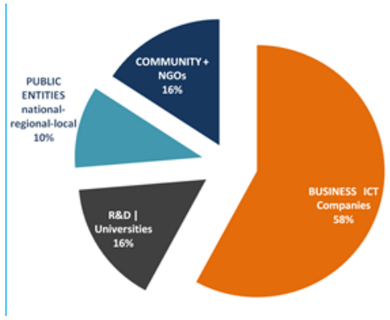
Tab. 2 – Structure of the 4 DOROTHY clusters

The next pie charts offer a further insight into the structure of the four regional clusters.

Lisbon and Tagus Valley



Oltenia Region



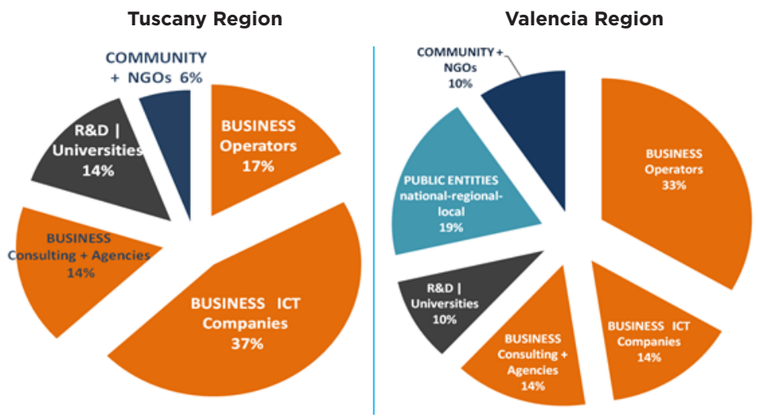
The Lisbon and Tagus Valley Region Urban Logistics cluster was formally constituted with 35 entities. The activities of Urban Logistics cluster of the Lisbon and Tagus Valley Region are focused on the following 5 anchor initiatives:

- ITS applied to Urban Logistics solutions.
- Planning, harmonisation and regulation of logistics in urban public space.
- Eco zones and city logistics.
- Consolidation solutions in cities.
- Micro Urban logistics.

The Oltenia Region Urban Logistics cluster has among its partners entities focused on the following topics:

- Special software for freight distribution systems.
- Support systems for regulation schemes.
- Storage systems for transport.
- Non-conventional vehicles.
- Electronic devices for goods and vehicle tracking.

The main aim of the logistics cluster is to support the Oltenia Region stakeholder to adapt and innovate its industrial structures in order to unlock the potential of regional economic development, in order to face societal challenges such as: reducing CO2 emissions, optimising electricity consumption, improving resource efficiency and environmental protection.



The Tuscany Region Urban Logistics cluster POLIS, settled by the Tuscany Region on 2011, is composed of more than 650 partners. The partners belonging to the field of mobility and logistics are interested in the following topics:

- New vehicles.
- Intermodal integration.
- Info mobility and systems for supporting regulation.

The aim of the cluster management board is to consolidate the results achieved in the past years and support the internationalisation of Tuscan enterprises through a flagship initiative as described inactions focused on the collaboration with additional EU countries included in the DOROTHY JAP.

The Valencia Region Urban Logistics cluster is composed of logistics operators, carriers, regional and local authorities, universities and other research institutes as well as technology suppliers associated with Urban Logistics and other companies with special relevance in the distribution of goods. Settled in 2014, there are currently 17 main partners, including the university, one large supermarket chain, large technological companies, large delivery companies, foundation on transports and logistics promotion, city councils, public service companies and one electric vehicle manufacturer.

The main industrial interests are concerned with:

- New schemes for urban freight distribution (such as use of cargo bikes, etc.)
- ICT for supporting Urban Logistics.
- Vehicles for goods distribution.

FINAL REMARKS

The clusters are well balanced, as all the categories of stakeholders are represented, even if the 4 clusters are market oriented and business driven, due to the high percentage of companies that are part of the composition of the clusters. This aspect is rather important for another of the objectives pursued by the consortium: the adoption of the JAP.

The JAP has been designed to define and implement a set of the actions targeted at improving the quality of Urban Logistics in the Regions and qualifying the economic structure of the sector. These actions can achieve significant economic, social and environmental benefits and are collected in this Joint Action Plan.

The clusters are the best environment in which to seed those actions and support their concrete development in the regional territories and the implementation of the DOROTHY JAP.

CHAPTER 5

THEMATIC AREAS

INTRODUCTION

The scope of this chapter is to illustrate the Thematic Areas in which the JAP is organised. As already explained in Chapter 3 the Thematic Areas are the way to connect clusters, operators, Public Administrations and research centres and to enable all these stakeholders to share their work within the same general project. There are seven Thematic Areas and their general targets can be summarised as follows:

ACTION FIELDS	General Objectives	Main Players
Policies and Regulations	To support the application of specific policies by the Regions and the cities to improve the state of Urban Logistics in the Regions.	Regions, Cities
Evaluation and Standardisation	To set up a standardisation process in regulatory frameworks and other related aspects to ease the implementation of Urban Logistics processes in the cities. To define tools to improve the knowledge of Urban Logistics schemes and related aspects by the cities.	Regions, Cities, Urban Logistics operators, universities and specialised companies
Regional Clusters' Development	To identify actions to foster the development of the Regional Urban Logistics clusters.	Cluster's companies, universities and research institutes
Training and Education	To identify actions capable of increasing the level of knowledge about Urban Logistics in the Regions. To increase the skill of personnel involved in Urban Logistics in the Regions. To create competence centres in the Regions about Urban Logistics capable of ensuring continuity in the development and to create a better links between research institutions and companies.	As promoters and organisers: Regions, universities, specialised companies. As users : cities, Urban Logistics operators; other companies.
Urban Organisation	To identify models of organisation of urban spaces and infrastructures targeted at improving the state of Urban Logistics in cities.	Cities, Urban Logistics operators, specialised companies
Innovation and Scientific Cooperation	To promote cooperation among the different Clusters. To identify actions targeted at supporting innovation and cooperation among clusters' companies and universities and research institutes. To identify possible funding sources for the aforementioned activities.	Regions, clusters, universities, research institutes
Clusters' Internationalisation	To identify actions to support the internationalisation process by the clusters' companies.	Regions, clusters, companies

Each Thematic Area is described within this chapter, illustrating its own targets and the connections with the whole JAP design. This chapter and the table above show the main players involved in each Thematic Area, leaving the detailed description of the single actions to the next chapter.

5.1. POLICIES AND REGULATIONS

The regulation of goods transport to and within cities is a fundamental aspect of the broader theme of urban mobility, which represents a competitiveness factor for cities and has also a relevant impact on the quality of the urban environment and on transport efficiency and, consequently, costs. All Urban Logistics operators are subject to regulations and this strongly affects their operation, their efficiency and costs.

Regulations reflect the policies that cities want to adopt in the specific field of Urban Logistics. Nowadays, cities have the objectives of drastically improving Urban Logistics in terms of efficiency, lower emissions and less impact on the urban environment. This requires more sophisticated policies and, consequently, more sophisticated rules and regulations. Complex rules can ensure the implementation of sophisticated and efficient goods distribution schemes but require technological support for their management. This creates a qualified market for technological systems for Urban Logistics.

During the analysis carried out in the Regions by the DOROTHY project, some facts have been identified that represent a significant limit to the adoption of innovative Urban Logistics schemes in cities and they can be summarised as follows:

- Urban logistics, even if an important part of mobility, is not perceived as important as mobility of persons. It is considered a "matter for specialists" with limited attention by policy makers. So, planning activities on Urban Logistics are often limited or neglected. A strong effort to include Urban Logistics in the framework of mobility and urban planning must be made.
- There is a lack of knowledge by cities about innovative Urban Logistics management schemes, technological support and solutions and how they can support specific policies. The potential of technologies as key factors for contributing to the solution of problems is not known and this prevents their current use in the urban environment. We should spread the knowledge of the adopted good practices, technological systems and innovative regulation schemes. However, above all we must give a clear idea of the relationships between policies (they reflect policy makers' visions), regulation schemes and technological support.

This Thematic Area is targeted at improving these situations: for this purpose particular attention has been paid to the initiatives set up at the European level.
In fact, the European Commission identified a number of specific measures and objectives for the urban mobility of goods (the so-called "last-mile transport"), which aim to have a positive impact not only on air quality but also on the efficiency of the distribution schemes[2].

In particular, the European Commission invites Member States and European cities to make freight distribution more efficient in urban areas, to improve the quality of the urban environment and to reduce significantly CO2 emissions, with the clear objective of achieving 'nearly-zero-emission Urban Logistics' by 2030[3].

[2] For more details, please refer to the EC "White Paper on Transport" 2011.

[3] See in particular COM (2008) n. 433 "Making transport greener", COM (2009), n. 279 "A sustainable future for transport: Towards an integrated, technology-led and user friendly system" and COM (2011) n. 144 "White Paper - Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport".

As a central strategy to achieve these objectives, the 2013 Urban Mobility Package[4] sets out a concept for a Sustainable Urban Mobility Plan[5] (SUMP), a long-term strategy for future development of the urban area, with a delivery plan for its short-term implementation. As its central goal, a SUMP aims to improve accessibility of urban areas and provide high-quality and sustainable mobility and transport to, through and within the urban area.

The European Commission is working closely with the Member States to ensure the SUMP concept is adapted to the specific requirements and existing planning practices in each Member State and is actively promoted at national level, in order to reach hundreds of cities in Europe.

Since Urban Logistics is a key element in the whole urban mobility governance, a SUMP should present measures to improve its efficiency, while reducing related externalities like emissions of GHG, pollutants and noise.

The importance of the logistics sector for economic wealth and development has prompted national governments to elaborate National Logistics Plans with long-term strategic visions to 2020 and 2030[6]. At local level, whilst efforts and city logistics innovation projects have been undertaken in most European capitals and major cities, small and mid-sized towns, (particularly those with historic centres) have been lagging behind, as they have to face and overcome several peculiar barriers (e.g. shortage of resources, competences, organisational structures, institutional backing) to be able to effectively embrace innovation, adopt and implement appropriate plans and measures towards sustainable city logistics.

Given the relevance of Urban Logistics, guidelines have been developed to support city stakeholders and technicians for developing Sustainable Urban Logistics Plans (SULPs)[7], as a separate document to SUMPs, specifically focused on the optimisation of urban freight logistics processes.

SULPs should more and more become the strategic framework for all cities for implementing smart Urban Logistics regulation policies, especially because the implementation of these strategies and measures often requires a cooperative approach among different players. So, the first action suggested by the DOROTHY JAP is to foster the diffusion of SULPs among the cities belonging to the partner regions. This action is directly related to the lack of planning capabilities about Urban Logistics in the regions and reinforces the European action on regions to support the adoption of SUMPs and SULPs.

Of course any solution requires a deep analysis linked to local conditions. In fact, freight distribution flows are strictly dependent on the organisation of the freight operators, but cities also have to tackle additional issues related to their specific commercial, territorial, social and economic characteristics (e.g. difficult mobility and freight distribution flows, local air quality). This peculiarity implies, at the town level, the need for efficient solutions to address different and (often) conflicting interests of the various players involved (such as the Municipality, citizens, shopkeepers, transport operators).

[4] http://ec.europa.eu/transport/themes/urban/urban_mobility/ump_en.htm

[5] COM (2013) n. 903 "A Concept For Sustainable Urban Mobility Plans".

[6] In Italy, such Plan, "Piano Nazionale della Logistica 2011-2020", was approved in 2010.

[7] See, in particular, the IEE ENCLOSE project "Guidelines for developing and implementing a sustainable urban logistics plan" (www.enclose.eu/upload_en/file/deliverables/ENCLOSE_D5_2_SULP%20methodology_final%20version.pdf).

Decisions on policies to be adopted should follow a thorough and careful evaluation of their potential environmental, social and economic effects, both at the local level and in a larger territorial context. During the design and planning phase of the mobility policies, continuous discussion and negotiation is advisable with all main players involved in urban freight distribution processes.

Moreover, from the more technical point of view, today, especially in Europe, there is a considerably growing consensus on the idea that more sustainable urban freight operations can be achieved by an appropriate mix of different "soft" and "hard" measures. (Soft measures do not require high-value investments, but may produce complex and significant impacts, e.g. measures such as as new/enhanced regulations dealing with access restrictions to the historic centre or to parking rules for freight vehicles. Hard measures require significant investments, structures and specific organisational and operational dimensions).

All this requires a high level of management capacity and a high level of knowledge of regulations and technical instruments, of their potential, their role and the way they can be used.

A significant number of projects have been carried out and successful experiences implemented at the European level can be a fruitful stimulus to local policy makers to implement more advanced solutions for Urban Logistics and can increase the level of awareness about these topics.

For this reason, the second action foreseen by the JAP in this Thematic Area is the realisation and diffusion of a "catalogue" of regulation policies and related supporting technologies and organisational measures. The catalogue should favour innovative solutions and could further include assessments of the urban profile of cities, in order to establish tailor made solutions to maximise economic, social and environmental benefits.

5.2. STANDARDISATION AND EVALUATION

Although general logistics is an activity with a quite high level of standardisation (e.g. barcodes, containers, racks, pallets) a lack of specific standards is observed for Urban Logistics.

In fact, one of the weakness points revealed by the DOROTHY project is that there is a very low level of standardisation in different cities, even in the same region, about all the aspects related to Urban Logistics. This lack of standardisation is often linked not so much to logistics operators, but to the different regulations and procedures adopted by cities. This makes the work of logistics operators more difficult and often expensive and it duplicates efforts.

This low level of standardisation is often worsened by the scarce information about the goods distribution process made available by the cities. The nature of Urban Logistics activities implies the interaction of several agents, with different roles and motivations, operating in a common territory with the objective of making logistics operations in the last mile sustainable and more efficient. Better information means better management of Urban Logistics operations.

Another very important and related problem is the low capacity by cities to evaluate their needs in terms of Urban Logistics and how far they are from their expected (or desired) targets. Often local decision makers have a scarce awareness of the state of Urban Logistics in their city or it is not in line with "acceptable qualitative and quantitative standards". This difficulty in carrying out a correct diagnosis also makes it more difficult to adopt suitable policies and regulation schemes.

For improving this situation, the DOROTHY JAP has foreseen three different and complementary actions in this area.

OPEN DATA AVAILABILITY AND STANDARDISATION

The first is therefore devoted to stimulate cities to make data available and information accessible by adopting the paradigm of open data. Open data platforms and applications have been raised as one of the most promising solutions to support Urban Logistics improvement with flexible, effective and low cost services. The profusion of mobile devices, sensors and geo-referred data offers additional opportunities and material for the publication and use of open data to implement new vertical solutions for Urban Logistics purposes. However, an effective use of open data requires shared standards and protocols for data collection and interchange, and this is the reason why this JAP action takes into consideration not only policies for increasing the use of open data, but also the definition and adherence of standards for Urban Logistics data.

This action is particularly important as it is linked to other actions in this and other areas, which are targeted to develop products/applications based on the availability of these data.

REGIONAL ACCREDITATION SYSTEMS

A particular aspect of the management of the Urban Logistics process is the one linked to permissions delivery by the cities to logistics operators. The total lack of standardisation, the different regulatory frameworks and administrative procedures – which can be very different, even in neighbouring cities – makes the management of this process very heavy and complex for logistics operators.

Following the positive experiences carried out in other sectors, this action foresees the creation of a regional accreditation platform for Urban Logistics operators. This platform, based on the availability of on-line information about local regulations for goods distribution, gives the possibility of releasing permissions with a standardised on-line administrative procedure. While each city can adopt its own rules for regulating access, parking and all the other aspects, it does use a standardised procedure for managing the permissions release procedures. The platform will also represent a general marketable product.

EVALUATING URBAN LOGISTICS PERFORMANCES: URBAN LOGISTICS PERFORMANCE INDEX

The third action is about evaluation in Urban Logistics. As already seen, appropriate instruments are required to support decision makers, mainly the public authorities. These instruments are still lacking: while theoretical works and comprehensive index systems for the evaluation of logistics chains are available, it lacks a tool that only requires a limited set of data to be used, which is conceived for urban realities and can represent a common

ground for understanding for decision makers and specialists about the local status of Urban Logistics. The action is targeted at developing a methodology for giving aggregate and quality information to support the decision making process. This methodology will give the possibility of benchmarking different cities and regions, so as to compare how far each city is from achieving its own objectives. In this sense, this action is strictly integrated with the actions about policies and regulation schemes, as the evaluation methodology can be a preliminary interpretative tool that can address the consequent decisions about Urban Logistics regulation schemes.

5.3. STANDARDISATION AND EVALUATION

This specific Thematic Area is devoted to regional clusters' development. Clusters are the focus of the DOROTHY project. They gather important economic realities and different kinds of companies and research institutes whose development will have beneficial impacts at the local level such as:

- Clusters are key drivers of job and wealth growth, new business development, and innovation.
- An improvement in Urban Logistics will be a competitiveness factor for cities and will improve the quality of the urban environment, the transport efficiency and, consequently, the costs.

This Thematic Area is directly linked to the business development of the clusters and of the member companies. It contains actions targeted at the development of specific innovative products/services that can strengthen the position of the clusters' companies on the market, open new opportunities and qualify them from the technological point of view. It can be said that this Thematic Area is one of those where short term achievements are expected and whose actions are closer to the immediate interests of the clusters' industrial environment.

A limited number of potentially interested initiatives have been identified, on which the effort will be focused in the initial clusters' development phases. Their selection has been carried out in close relation with the clusters' companies.

At first, some specific market/technology areas have been selected as interesting for the clusters, taking into account some specific elements:

- The reference markets, to which companies belonging to the clusters are already present and are interested in developing their business lines and in strengthening their position.
- The basic technological skills and experiences are already present in the clusters.
- Particular attention has been paid to those markets/technologies compliant with the regional Smart Specialisation Strategies
- The reference technologies pointed out have been:
  - Information and communication technology (ICT) with its specific applications to Urban Logistics.
  - Mechatronics.
- The main markets to which the selected products are targeted are:
  - The market of Municipalities, and other authorities managing the Urban Logistics as main target.
  - The market of Urban Logistics operators.

Based on this analysis, a second deeper analysis has been carried out for defining a set of products/services to be developed within the clusters with the target of having marketable products in a short-medium period. Three specific product/service lines have been identified, according to the following criteria:

- They are compliant with the above explained strategy.
- They can have a potential wide market in Europe and can also be suitable for international development.
- They require a sustainable effort for the current capacities of the clusters.
- They can be developed in the short-medium period.
- They can be implemented and tested in the "captive" environment of the clusters.
- They outline a concrete cooperation framework among the clusters.

Each of the identified product/service lines has been associated with a single action foreseeing its development and testing. They are the following:

INNOVATIVE ICT SOLUTIONS TO SUPPORT ADVANCED URBAN LOGISTICS REGULATION SCHEMES

- Several companies of different clusters can operate on this action, whose objective is to specify and develop this class of innovative products. At the same time a specific objective of the action is to push regions to include this subject in their support actions (e.g. launching targeted tenders for the implementation of this kind of initiatives and to identify possible funding sources). This action is complementary to those included in Thematic Area 1 about regulations. In fact, while Thematic Area 1 is aimed at creating a normative and policy environment, this action is targeted at developing the relevant support systems based on ICT.

OPEN DATA ARCHITECTURES TO SUPPORT URBAN LOGISTICS

- Specific platforms devoted to Urban Logistics specialised in managing open data can have a growing importance and are a focus of interest for the clusters' companies. The approach to this action is the same as mentioned for the preceding one. This action is complementary with the one reported in Thematic Area 2 about the availability of Open Data by public bodies. Another strong link is with the regional accreditation system for Urban Logistics operators, which represents a specific application of this philosophy and this platform.

PROXIMITY DELIVERY AREAS

- This case is related to a topic of peculiar importance for historic cities and generally speaking for city centres. It makes reference to innovative classes of products that are the evolution of the existing ones, targeted at exploiting a specific market that at the moment is a niche, but can grow significantly when suitable products become available. In this case, as in the previous, the target is to specify and develop this class of innovative products and to carry out pilot applications for testing and dissemination purposes.

Two additional actions have been defined as actions intended to have longer time fallouts and to create a suitable environment in the cluster for innovation.

Cooperation agreement among the DOROTHY Clusters

- The first is the definition and signature of a cooperation agreement among the clusters for the implementation of the JAP and to define further collaborations after the end of the DOROTHY project.
- The four clusters have already signed a first version of the Memorandum of Understanding (MoU), on 28th October 2015, during the Policy Event in Valencia.
- It commits all four clusters participating in the DOROTHY project to develop the actions provided by the JAP and, in the next step:
  - To collaborate as clusters and as members of the clusters.
  - To participate in joint research and innovation projects on Urban Logistics to be self financed or for which funding sources/programmes will have to be sought.
  - To support members of the clusters when applying for and participating in joint projects for research innovation and Structural Funds for development, growth and competitiveness under the Urban Logistics topic.
  - The cooperation agreement contains some specific themes and some first form of cooperation is envisaged.
  - This MoU will be updated according to the evolutions of the clusters and of their scientific and productive interests.

Cooperation with other existing Clusters and networks

- The second one is devoted to enlarging the international cooperation framework and consists of identifying already existing clusters and European or international networks or platforms to connect with. This will ease the future set up of research consortia for

5.4. TRAINING AND EDUCATION

The DOROTHY project has considered devoting a specific Thematic Area to the themes of training and education. This area has a cross-cutting character and can have fallouts over all the other areas.

The qualification of human resources is a topic of paramount importance in working for innovation. One of the main objectives of the DOROTHY clusters, namely innovation, can be pursued only with a continuous programme of qualification of personnel, at all levels. Moreover, putting together companies, public institutions and research institutions belonging to the clusters with middle-long term objectives for planning the development of the skills and qualification of their personnel and fleet managers is an effective way of creating permanent links between the research, local administrations and the industrial environment. This approach has several beneficial effects:

- It pushes industrial companies to link technological and market development to human resources qualification with a foresight of future trends. This can result not only in an improved qualitative level of personnel, but also in better capacities for strategic planning.
- It can fill the cultural gap between industrial companies and research institutions, creating osmosis between these two worlds. This can feed future joint development and trigger further innovation mechanisms.
- It stimulates companies to overcome the short-term vision of immediate interest and to cooperate with other companies on more ambitious targets.

- The need to focus the clusters' attention on education and training is also strengthened by the fact that, in the academic world and in the wide market of professional training, there is a lack of specific initiatives in Urban Logistics.
- It is possible to distinguish two types of different needs and related actions to fulfil these needs:
  - The first is a general growth of specialised knowledge in the field of Urban Logistics, including all the related basic methodologies and technologies. This need is linked to a medium-term strategy of growth in the regions of a high qualified scientific and technological environment that could support the future development of the clusters.
  - The second is related to the needs of the clusters, mainly their industrial and service companies, engaged in the effort of developing innovative products and approaching new markets as well as of their local administration bodies. This action is focused on specific targets and for this reason can vary very much in time, implementation modes, etc.
  - Reflecting this situation, this area includes **two actions** designed to satisfy the above mentioned needs.

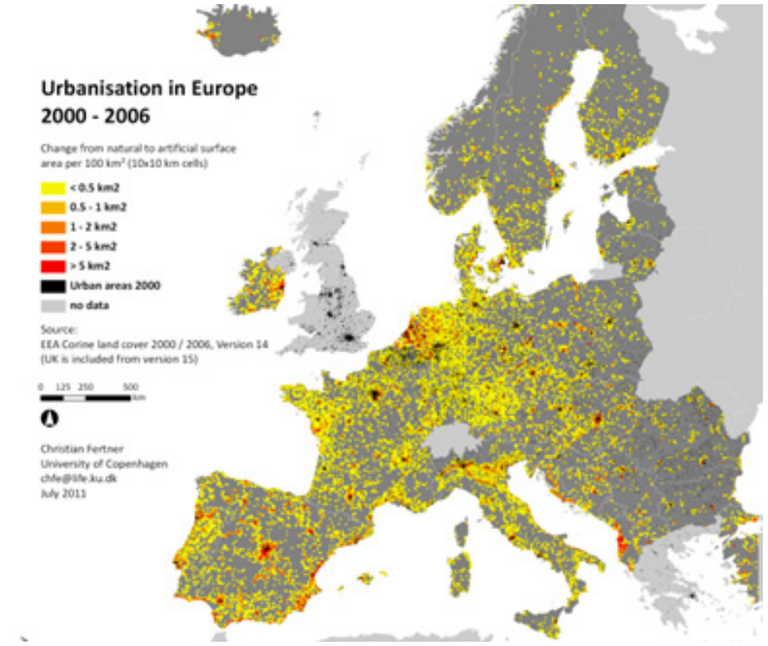
The first action is a **typical educational action**, consisting of a high level international Master´s degree in Urban Logistics. Its fundamental objective is to achieve a high level of specialisation in Urban Logistics, with a periodic character (annual or biannual), to be targeted at graduate students or selected staff from the different stakeholders involved in Urban Logistics. This will be a vocational environment of international cooperation among the clusters, but will also be open to the stimulus coming from the local territories, to be compliant with the local needs.

The second is a **typical training action,** addressed to specialist personnel from companies, fleet managers from local administration or research institutes for improving their knowledge about specific innovative themes required for their professional activities. This can include both specific topics related to the implementation of defined projects or professional updating to follow technological or methodological innovations. These training activities will be generally limited in duration but continuous over the time. The training methodologies could be different from time to time, ranging from traditional lessons to meetings, workshops, technical visits and other activities.

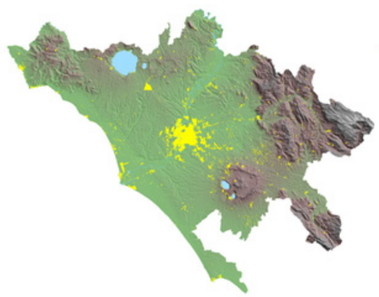
It is important to point out that these actions will have in time the character of continuity and will be the most important point of continuous contact between the industrial, local administration and the academic world represented in the clusters.

5.5. URBAN ORGANISATION

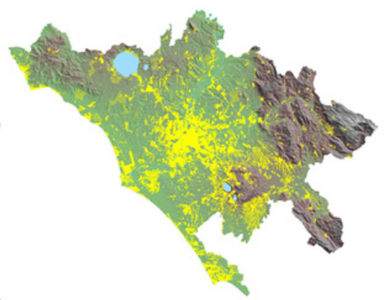
Europe is one of the most urbanised continents in the world: about 75% of its population lives in urban areas.



Not only in Europe but around the world, we are seeing a profound revolution in living: the urbanisation rates are increasing, and cities have now surpassed dimensional thresholds and spaces that were once unthinkable. Over the past 20 years, the extent of urbanised areas in Europe has increased by 20% against a population increase of 6%. These phenomena of increased urban extension, sometimes of low density, are producing a higher incidence of “environmental costs” and of “use of land”.



Rome (Italy) – Urban area in 1961



Rome (Italy) -Metropolitan area in 2005

European cities, unlike American ones for example, developed around an original core, often thousands of years old (the historic centre), with limited capacity roads and spaces, difficult to modify to suit changing social needs and logistics. Historic centres are places of aggregation of all the major activities of the city, namely administrative, financial services major businesses; and increasingly they are protected with large pedestrian zones or areas restricted to traffic. Around the old city, large peripheral areas develop, often with a concentric shape, sometimes characterised by industrial activities and less intensive building zones. The road system which is organised around the historic centre, often through major roads, tends to create accessibility along the peripheral ring. This accessibility essentially creates a new centrality that attracts businesses requiring large spaces, and that can be accessed mainly by private car.

Not only do urban centres create a high demand for goods supply, it is difficult to make logistic operations compatible with this urban structure. Goods distribution, in fact, has an important impact on historic centres in terms of space occupation, traffic flows, quality of air, noise and general interference with pedestrians.

In this particular case, several cities belonging to the four DOROTHY Regions are historic cities with important architectural heritage to be protected and with a particular centrality of the historic centres that represent the most vital and valuable part of the city. To improve the quality of the urban environment by satisfying the needs for movement of goods, more sophisticated and smart solutions are needed.

The DOROTHY project has faced this problem through specific actions already described in other Thematic Areas targeted at improving the adoption of more sophisticated regulations and policies (see Thematic Areas 1 and 2) and to provide tools to manage these new schemes (see Thematic Area 3). Within this Thematic Area, the problem is approached from the point of view of the direct impact on the cities. This Thematic Area deals with innovative techniques for distributing goods that interfere less with the liveability of urban centres.

The analysis carried out during the DOROTHY project has in particular identified two actions that are suitable for the local realities:

- Local distribution using zero-emission vehicles such as "cargo bike" or "e-bike".
- Distribution of parcels and other not bulky items using local commercial operators (shops or other activities) as the last ring of the “last mile” operations.

All these general techniques require a high degree of customisation of the service to the local reality, but at the same time they represent models that can be replicated almost everywhere in the Regions and that can be widespread, with significant advantages from the urban point of view.

The DOROTHY project has identified these two solutions as significant because they not only create direct benefits in cities, but can also be a means of economic development.

- The first one can create occupation through new small specialised enterprises.
- The second can sustain some categories of economic operators and can also be an opportunity for technological development as this technique requires technological supports to manage the operations.

Cargo Byke

Cargo Byke for Urban Logistics

5.6. INNOVATION AND SCIENTIFIC COOPERATION

Innovation is a principle on which the DOROTHY clusters were founded; since it represents the key element to increase the competitiveness of clusters and of their companies. Cooperation is the other cornerstone of the DOROTHY architecture, as it can strengthen the position of the clusters appraising complementarities and integrations among all the clusters' members.

The actions developed within this topic are specifically targeted to boost the cooperation among the clusters themselves and all the clusters' members with the purpose of promoting innovation in the Urban Logistics sector.

The analysis carried out during the DOROTHY project has detected the following issues:

- The existence of a significant number of RTDI initiatives in the Regions, but with a very low level of integration. This is an indicator of a good qualitative level in the productive environment in the Regions, especially in the technological and market sectors that have been included in the JAP as reference targets. On the other side, the lack of integration towards common objectives leads to duplication of activities, lower critical mass and dispersion.
- There is insufficient cooperation between universities and companies. This is an old trait of the relationships between these two worlds, which is still hard to be overcome. In this sense, the clusters are definitely a suitable response, but the structure itself cannot ensure the result and must be supported with targeted specific actions.
- The clear indication coming from the performed analysis is that there is a large potential for innovation in the regions that should be adequately appraised. The clusters themselves offer opportunities, constituted by the possibility of dialogue among different companies and with the academic environment and the existence of a continuous coordination provided by the clusters' management. The DOROTHY project targets the leverage of these strength points for improving links among all the different realities of the clusters and for enhancing their cooperation and capacities.

In this context, the JAP recommends **three integrated actions**:

- The definition of a cooperation protocol among the research centres and the university partners of the clusters. Some of the research bodies (both universities and research centres) represented in the four clusters constitute excellence in the specific field of Urban Logistics or in technological and methodological fields closely related to it. Their cooperation on common matters could give an impulse to further development in the regions, giving experience and knowledge capable of being achieved through a closer relationship with the productive environment through innovation. This will contribute to the regional development of S3s, namely with respect to resource-efficient technologies. Areas of intervention such as Urban Logistics performance, electro-mobility, sustainable regional development, automotive components, ICT systems may be explored.
- The implementation of a matchmaking web-based platform to facilitate knowledge sharing and to build relationships between enterprises and research groups of the DOROTHY clusters. This platform is conceived to become a daily working tool for the clusters and their companies and can be used for different purposes: finding partnerships for specific projects within but above all outside the clusters, sharing information, exploring business opportunities, etc. It will be a working tool creating a permanent link among the clusters. In fact, it will enable the development of joint activities (e.g. technological practices, operational measures, online seminars,) to approach Urban Logistics problems, improving efficiency and innovation acceptance in this area. The platform is open to future developments for integrating other tools for exchanging information and knowledge, creating communities, etc.
- The conception of a web based Observatory on Urban Logistics technologies and good-practices: it will be an important "database" (in the wide sense of the term, as it will use a multiplicity of tools and techniques) of knowledge regarding Urban Logistics. It will be useful in updating the information about the most advanced solutions in the field and, thanks to the academic skills, also about basic technologies that could be applied in innovative Urban Logistics projects. This initiative will also be a concrete point of cooperation among universities and research centres within the framework of the aforementioned cooperation protocol. This means that the evaluation of deployment of innovative solutions and the most adequate best-practices in this field will be also a valuable tool for stakeholders to assess their specific situations and decide on the most adequate way forward.

It should be noted that this Thematic Area is closely linked to others, and in particular with:

- Thematic Area 4, as the educational and training initiatives could be addressed by the outcomes of the observatory or by the outcomes of the cooperation among universities; and
- Thematic Area 3, especially concerning the cooperation with other clusters and European bodies.

5.7. INTERNATIONALISATION OF CLUSTERS

The DOROTHY project highlights the importance of expanding the horizons of the project outputs beyond the European Union. A specific activity, whose objective is to foster the internationalisation of the regional clusters, has been carried out, and a set of actions to create the best conditions to set up a cooperation framework with non EU countries have been defined. This work represents the starting point for an internationalisation process that will last over time, taking advantage of the support that the regions offer to endorse it and the network of other companies in the regional clusters.

The internalisation strategy has to be conceived over a medium-long term perspective and is an ambitious target, being very demanding in terms of economic resources and time. This

effort is particularly heavy for SMEs that are the focus of attention of the DOROTHY clusters. To support this effort, a specific Thematic Area has been foreseen and a series of specific actions have been designed.

Due to the recent creation of the regional clusters and the complexity of the matter, the structures of cooperation and strategic internationalisation lines for the clusters as a whole are not yet clearly defined. The adopted strategy followed a "bottom-up" approach. In fact, the main driver for the definition of the target foreign markets has not been a theoretical analysis of the market potential, but a practical analysis of the network of international contacts and experiences existing among the clusters' partners, interlinked with the appeal of the specific geographical area in terms of market potential, environment and existing barriers. This approach gives the possibility of starting to operate in an international perspective in a short period of time and creates a profitable framework to generate synergies for businesses inside the clusters in the future.

The internationalisation strategy has defined three working lines devoted to **generate presence** (marketing and communication strategies addressed to non-EU market players), **knowledge transfer** (improve awareness about new products) and **investments**. According to this, some activities have been defined to be carried out during the project and some after its completion. A mix of different actions can be used in different situations, depending on the degree of maturity of the existing contacts.

A.Networking.
Organisation of meetings and bi-lateral events between companies in the sector (B2B, trade shows, conferences, etc.). This approach is used when the penetration in the local situation is quite mature and there is the possibility to interact with the local productive environment.

B. Training programmes.
Exporting know-how and general knowledge through universities and research centres is a good way of extending the links toward companies from a pure scientific perspective.

C. Partnership in R&D projects.
Introducing non-EU partners in research projects to exchange experience and improve the local situation is an opportunity for creating operational cooperation and for defining specific research programmes targeted at the development of new products for these markets.

D. Definition of commercial and productive agreements between companies for supplying products and/or services.
This is clearly the last link of the penetration chain and is the final target of the above mentioned activities.

These different kinds of activities have been used to set up three different actions.
The first is addressed to countries where already active relationships with some of the clusters' members exist. It considers a set of short term activities to strengthen this presence and enlarge it to other clusters' members in a cooperation perspective. On the basis of the experience in non-EU markets of some regional clusters' companies, a first strategy to approach some significant market has been defined, with precise actions (events, training courses, potential partners, etc). In some cases the first steps have been already undertaken.

The second is focused on a potentially interesting situation where the existing contacts are academic; in this case a more general strategy for enlarging the contacts' network has been adopted.

The third action is aimed at including the DOROTHY clusters in the general programmes of internationalisation that the regional institutional bodies carry out for the benefit of their productive (industrial and commercial) subjects.

This approach has already led to some significant results and will constitute a short-term catalyst for aggregating other companies around this effort, identifying common goals between the regional clusters and creating a favourable environment for the companies to address new markets.

CHAPTER 6

THE JAP ACTIONS

This chapter contains the detailed description of all the identified JAP Actions, classified into the 7 Thematic Areas described in chapter 5.

Each action has been described according to a standard template containing:

- A summary.
- Objectives.
- Urban Logistics Framework, that describes the general conditions in which the action is framed and its relations with the general state of the Urban Logistics sector (in the regions or generally in Europe).

  Description of the action, divided into:
  - Content, that describes the activities foreseen by the action.
  - Skills and expertise, which analyses the existence of the required qualifications in the clusters to implement the action and identify eventual measures to adapt the existing situation to the requirements.
  - Existing products/experiences, reporting about similar existing products or experiences and takes into account those ones on which the action can be based.
  - Stakeholders and beneficiaries of the action, which defines the stakeholders interested to a different extent in the action whether or not they belong to the clusters), how they can be affected by the action and what should be their role in its implementation

- Impact, containing:
  - Normative framework, devoted to analysing the appropriateness of the existing legislative and normative framework for the implementation of the action and to identify possible solutions, and to outline the eventual impact of the implementation of the action on the existing normative framework.
  - Reference market and economic impact, defining the potential market addressed by the action and reports its evaluation (sometime qualitatively and sometime quantitatively) and the economic impact that the action implementation can have on the regional clusters.
  - Environmental impact, reporting about the results of the action implementation on the environment.
  - Social and urban impact, analysing the social effects of the implementation of the action, or some specific point that should be taken into account in its implementation.

- Drivers and barriers, including a short analysis of the main barrier to be overcome for the implementation of the action and the main drivers that could facilitate it.
- Financial plan, which reports a quantification of the economic resources needed to implement the action itself, describing, when necessary, the related implementation hypothesis.
- References.

This exhaustive structure has been followed as much as possible for all the measures, but they are very different each other. So, when some point was not applicable to the specific action it has been omitted. This is true in particular for the section on impacts. In this case different actions can have very different kinds of impacts, so that all the mentioned perspectives (normative, economic, environmental and social) are not always significant. In this case only the significant points have been analysed.

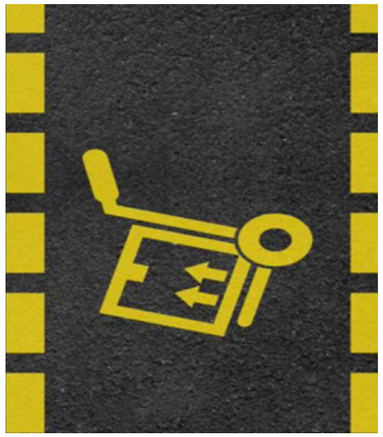
In particular, the quantification of the market can be very different from case to case, as some actions can have a European or even international perspective, while another action is very local or cannot have a direct influence on the market. In some other cases a precise estimation can be very difficult when the action is related to innovative concepts or products or the specific market is in an early stage of exploitation. In all these cases, the point related to the reference market and the economic impact reports a description of the hypothesis adopted for the evaluation.

In addition, the analysis of drivers and barriers has been included only when significant to the characteristics of the action.

ACTIONS	
1.1.	Sustainable Urban Logistics Plans (SULPs)
1.2.	Urban Logistics Policies, Regulations and Supporting Technologies
2.1.	Urban Logistics Performance Index
2.2.	Availability of Open Data for Urban Logistics
2.3.	Regional Urban Logistics Accreditation System
3.1.	Innovative ICT Solutions to Support Advanced Urban Logistics Regulation Schemes
3.2.	Open Data Architectures to Support Urban Logistics
3.3.	Proximity Delivery Areas
3.4.	MoU – Cooperation Framework between the DOROTHY Regional Clusters on Urban Logistics
3.5.	Strengthening Cluster Collaboration
4.1.	High Level International Master's Degree in Urban Logistics
4.2.	Staff Training in New Schemes and Techniques
5.1.	Supportingthe use of " Cargo bike" for delivery in urban centers
5.2.	Organising a Network of Operators in the Cities for Implementing Proximity Delivery Points for Parcels
6.1.	A match making web based platform for Urban Logistics Clusters
6.2.	Cooperation between the Research Centres and the Universities of the Regions for Developing Common Research Lines
6.3.	Observatory on Urban Logistics
7.1.	Regional Clusters' Catalogue
7.2.	Targeted Action Towards non-EU Countries
7.3.	Coordination with Already Planned Regional Initiatives
7.4.	International Meeting in Colombia: "DOROTHY Project and New Solutions for Urban Logistics"

ACTION 1.1.

SUSTAINABLE URBAN LOGISTICS PLANS (SULPs)



ABSTRACT

The action is focused on the development of incentives by national and regional governments for the implementation of Sustainable Urban Logistics Plans (SULPs) to support local public decision makers and stakeholders in order to boost good practices in Urban Logistic distribution inside the regional area, and to enhance freight distribution processes towards meeting the objectives of economic, energy/environment and equity efficiency.

A SULP is an essential component of a Sustainable Urban Mobility Plan (SUMP) and it aims to address the issue of Urban Logistics from an integrated perspective The SULP involves a set of stakeholders, with a focus on local authorities, to define strategies, measures and rules in order to increase the overall sustainability of Urban Logistics, which corresponds to less energy consumption, less congestion in urban areas, less air pollution, noise and GHG emissions, and enhancement of urban quality of life. The diffusion of SULPs also has beneficial effects for the clusters such as:

It pushes cities to adopt innovative rules for the regulation of freight distribution.

It expands the market for consulting and engineering companies.

KEYWORDS

SULP, Incentives, Regulation, Clusters, Cooperation

OBJECTIVES

This action has the objective of pushing regions to define regulations targeted at supporting and incentivise the elaboration of a SULP for cities over a certain population.

The SULP is the main planning instrument for the definition of the overall framework of logistics in cities. It addresses local public decision makers and stakeholders towards achieving the objectives of economic, energy/environment and equity, efficiency, satisfying the mobility needs of people and business in cities and their surroundings, in order to achieve a better quality of life. It is also a significant participative moment for all the stakeholders in the decision making process.

The development of SULP will promote a higher level of awareness and the consequent adoption by cities of advanced solutions for regulating urban goods distribution. This, in turn, will not only improve directly the traffic and living conditions in cities, but will also enhance the market of advanced tools and techniques to manage Urban Logistics. Finally, the market for consulting and engineering companies will also benefit from this action.

URBAN LOGISTICS FRAMEWORK

Increasing demand for urban mobility has created a situation of severe congestion, increased energy consumption, poor air quality, noise and high levels of CO2 emissions. Urban congestion jeopardises the European Union (EU) goals of a competitive and resource efficient transport system. Giving special concern to these issues, the EU has taken a leadership role in the development of mitigation policies, especially the commitments set out in the 2020 Energy Package - Climate 20-20-20 targets. The European Commission released several documents (e.g. Action Plan on Urban Mobility - COM(2009) 490 final or White Paper Roadmap - COM(2011) 0144 final), which gave significant attention to urban transport and set the goal of achieving essentially CO2 free city logistics in major urban centres by 2030. The White Paper also proposed to examine the possibility of a European support framework for a progressive implementation of SUMPs in European cities. Europe is currently strongly pushing the adoption of SUMPs, but their spread is difficult, as they must be developed and adopted locally by the single cities. SULPs should consider all the components of mobility, but often the problems of urban goods distribution are neglected or under-estimated. In fact, they require a different methodological approach and specific solutions. The level of awareness of the importance of the problems generated by goods distribution in cities is not sufficiently developed.

From this fact, there is the need to push cities to integrate in their strategic mobility framework the specific theme of logistics, through the elaboration and adoption of SULP. On the other hand, most cities, especially in the countries to which the DOROTHY clusters belong, have little or no experience in managing such a complex process as the elaboration of a SUMP and a SULP and

often have limited resources. This is the reason why support is needed. Implementing SULPs require a financial investment from local authorities (sometime, even if it is not so great, it can be a barrier for the medium-small cities). Moreover, it requires specialised skills often not available in the municipalities. So the support to the elaboration of a SULP can be given through a direct financial contribution and/or providing specialised support to municipalities.

This action of course requires the availability of local authorities to adopt a favorable regulatory framework for Urban Logistics. A SULP can be constituted by an integrated mix of different policies and actions, such as: Urban Consolidation Centers (UCC), optimised urban freight transport and delivery plans, clean vehicles and low emission technologies, restrictions to traffic circulation and public incentive policies, use of ICT platforms, last mile and value added services, integration of city logistics processes within the overall management of urban mobility. In any case several of these measures require a strong political commitment and complex implementation processes. The elaboration of SULPs is a moment of paramount importance for developing an effective strategy for achieving consensus by all the stakeholders on the defined actions and to prepare the municipalities for their application.

ACTION DESCRIPTION

Content
The action will be carried out through:

- An in-depth analysis of the experiences already carried out regarding the promotion of the development of the SUMP and of the existing national and local guidelines.
- An analysis of the role played by Urban Logistics in the already developed SUMP.
- An overview of the characteristics of the developed SULP.
- The elaboration of a set of proposals for regional regulations targeted at supporting the adoption of the SULP.
- The promotion of this set of proposals toward the regional authorities.

This work will be carried out locally in the different regions, as the local conditions differ, but with a strong interaction to ensure the exchange of knowledge and experiences is finalised during the elaboration of the proposals.

Examples of possible policies and measures to be taken are the following.

Couple financing schemes within the framework of ERDF 2014-2020 to the mandatory existences of SUMPs and SULPs.

Increase the funding rate of the financing mechanism to local authorities which have developed and approved a SULP.

Introduce financial mechanisms to support investments (both by local authorities and private companies) on sustainable Urban Logistics solutions, realised within the SULP framework and objectives.

Lobby within the EU/national governments/regional authorities to accelerate the development of policies that support the adoption of SULPs at a local level as an integral part of SUMPs.

Development, upgrading and dissemination of SULP guidelines to help local authorities develop their own processes.

Development of Regional Competence Centres capable of supporting cities (mainly the middle-small size ones) in developing SULP.

Increase integration between urban planning, sustainable mobility and climate change policies by

reinforcing the role of Urban Logistics as part of local policies and commitments for GHG emissions reductions and energy efficiency targets – incentives to make local authorities develop integrated planning.

Each region could adopt a different mix of these different measures related to its specific conditions.

Skills and Expertise
A SULP shares the same methodologies and practices needed to develop a SUMP, but requires specialised skills in the field of Urban Logistics. The development of a SULP is a quite complex process that needs capabilities in collecting and analysing data, in defining suitable solutions to improve the situation, but also a significant effort in communication and active participation to involve all the stakeholders.

Knowledge and experience of good practices in implementing SULPs and other Urban Logistics measures are required.

Moreover, experience and knowledge of EU regulations, legislation and strategic plans, as well as EU structural funds management are also relevant.

For these reasons the normal procedure for developing a SULP is that the municipality will, under its direct political and technical supervision, entrust one or more specialised companies to carry out all the different jobs necessary for the overall project.

Existing Products/Experiences
A specific methodology to develop SUMPs has been defined at the European level (see “Developing and implementing a Sustainable Urban Mobility Plan” from ELTIS) and it also includes all the aspects related to logistics. Some specific EU funded projects were devoted at fostering the diffusion of SUMPs (POLYSUMP, PUMAS, ENDURANCE), specifically notwithstanding the importance given to SUMPs, its adoption is still rare in the European environment, and a lot of work has to be done for its diffusion.

For this purpose the involvement of regions in the SUMP development process has already been highlighted as a unique opportunity by the European Commission in its Communication 2013/913: “[…] EU-wide action on urban mobility needs to involve Member States: Commission initiatives cannot reach out to each of the thousands of towns and cities across Europe […]” but “[…] to be effectively and broadly deployed, concepts and tools developed at the European level should be adapted to the particular circumstances of each Member State and then actively promoted at national and regional levels”.

This action is in line with the requirements by the EU for involving all the regional players in the improvement of urban sustainability.

In this environment, a SULP has an even more limited diffusion, in spite of the fact that several EU-funded projects at the European level were developed within the scope of sustainability and energy efficiency in Urban Logistics, and whose experiences and knowledge might provide a valuable starting point: ENCLOSE (ENergy efficiency in City LOgistics Services for small and mid-sized European Historic Towns), SMARTSET (Sustainable MARket driven Terminal Solutions for Efficient freight Transport), C-LIEGE (Clean Last mile transport and logistics management for smart and Efficient local Governments in Europe), TRAILBLAZER (Transport and Innovation Logistics by Local Authorities with a Zest for Efficiency and Realisation).

Among the members of the DOROTHY project and of the four regional clusters there are several partners that meet these requirements and could directly support the action and then benefit from its implementation. Firstly, there are qualified engineering companies working both in the specific field of logistics and generally in the field of transport and mobility planning. Moreover, four important European regions are represented and could be the test-bed for innovative policies of policy support for the implementation of SULPs in cities. Finally, important cities are represented; they could be the first beneficiary of these policies and could play an important role of amplifiers in their national contexts.

Stakeholders and Beneficiaries of the Action
The development of incentives, regulatory framework and policies to boost SULPs will require a strong involvement and collaboration from different stakeholders since it requires a participatory approach.

The achievement of the objectives of the action will require a mainly joint effort by:

National/ regional authorities: these are key stakeholders since they are responsible for providing a national / regional framework and incentives for the adoption of SULPs in each region. In particular regions have the role of adopting the measures for supporting the adoption of SULPs by cities, while national authorities can have the role of issuing guidelines and standards for the development of SULPs.

Local public authorities: these are relevant stakeholders, since usually these authorities have the responsibility for developing regulations that define urban mobility (transport of people and goods), traffic and parking management, land use and planning. Local public authorities will be important beneficiaries of this action, since the incentives for the implementation of SULPs will be mainly directed to them. Because of this, local public authorities will have a crucial decision making role in the definition of a local framework and the best incentives for the development and implementation of SULPs, in connection with the orientations and guidelines of national and regional authorities. Finally they can provide a test-bed to evaluate the effectiveness of the defined policies.

Additional stakeholders will be involved mainly during the elaboration of SULPs
Freight transport service providers and/or logistic companies/enterprises: these stakeholders are the main target of the SULP, and the most likely to be affected by restrictions to freight distribution which might arise from this type of action; they are also direct beneficiaries of the SULP implementation (e.g. increasing the efficiency of logistic operations due to less congestion and more effective use of loading/unloading areas). Logistics companies must be actively involved in the elaboration of SULPs.

Shopkeepers and other economic subjects operating on the territory: they are the final beneficiary of the logistics services, whose efficiency defines to some extent the costs they will support. All these subjects must also be involved in the SULP development.

The same can be said for citizens, as the solutions that will be adopted will influence their conditions of life. They must be involved through citizens' associations.

Lastly, engineering companies (providing planning skills and services) and Universities: they can provide the expertise needed to gather and elaborate all the information and knowledge needed to develop the proposals for promoting the adoption of SULPs and generally to carry out all the analytic work required by this action. Moreover, these stakeholders could be involved in this action for the development of SULPs and to support their implementation and the evaluation.

EVALUATION OF IMPACTS

Normative Framework
In the DOROTHY regions, there is no direct experience in sustaining the preparation and adoption of SULPs. At the national level in some countries, like Portugal, initiatives for pushing cities toward SUMPs are under development. No specific initiative on logistics is in any case foreseen or has been adopted.

Moreover, no specific guidelines have been elaborated and adopted in the DOROTHY regions. The only reference standard for Urban Logistics is at the municipal level, since there are no national or regional, regulations or guidelines that municipalities have to implement on the subject of Urban Logistics.
However, there are experiences of several Italian regions who have defined an implementation framework, related to Urban Logistics issues, to be submitted to different local realities like the SULP guidelines produced in the ENCLOSE project. In order to implement an efficient and functional SULP it would be useful to standardise the definition of these guidelines or regulations: regional modalities; logistics functional objectives and environmental objectives.

Reference Market and Economic Impact
In the four DOROTHY regions, the number of cities that can potentially develop and implement SULPs (small, mid and large cities with at least 50,000 inhabitants) is 31, with an estimated population of about 4 million people (encompassing about 31% of the total population of these regions). Hundreds of logistics companies and SMEs can directly benefit from SULP adoption. This is a clear reflection of the large economic potential of adopting incentives for the implementation of SULPs in these cities.

From the point of view of the potential market directly created by such an initiative, we can assume as an average reference for the economic value for the development of a SULP the amount of 75,000€/SULP; in this case a potential market of about 2,500,000€ would be raised.

We should underline that, since this market is at the very beginning, for companies belonging to the regional clusters, the possibility to achieve experience and good references in developing SULPs can represent a very important chance and qualification for approaching more general markets at the national European and international level.

The economic benefit coming from the application of the developed SULP cannot be evaluated at present, as it depends on several factors, mainly the contents of the plans that will be developed.

Environmental Impact
Although it is not possible to envisage/estimate a direct connection between the action and environmental impact, from an indirect point of view it is possible to state that the support for the implementation of SULPs will trigger innovative projects which will reduce the environmental impact and increase the sustainability of Urban Logistics operations. In fact, the concept itself of a Sustainable Urban Mobility Plan, including its logistics aspects, make reference to environmental improvement as a cornerstone of the policies to be adopted and environmental benefits are one of the main evaluation references for the quality of SUMPs/ SULPs. In any case, the incentives for the support and adoption of SULPs could take into account aspects related to reduction of environmental impact connected to Urban Logistics, in terms of air and noise pollution.

Social and Urban Impact
The importance of a SULP (such as a SUMP for general urban mobility) is very important from the point of view of the social and urban impact. In fact a SULP should be the main planning instrument for the regulation of Urban Logistics in the cities and, if properly developed, represents a tool for building shared policies and achieving consensus by all the stakeholders. Final results of the SULP are of course very important as they reflect urban daily life, but more important is the process for developing the SULP. The common roadmap for achieving the final results creates common understanding of the problems among all the stakeholders, a proactive behaviour and an attitude to cooperate in solving problems. At last all this results in a shared consensus on the adopted measures, particularly important in a field like Urban Logistics, where the interests of the different players are often conflicting. We can say that the process to adopt a SUMP/SULP can represent for cities a new starting point in mobility planning.

From the point of view of urban impact, it will depend on the specific objectives and on the measures adopted from time to time by the SULP. Its nature of being a "master plan" for Urban Logistics will, in any case, push decision makers to face structural, long-term and highly impacting topics, so that the SULP will generally have a strong impact on the quality of urban logistics and consequently on cities. Elements such as access restrictions, time windows for distributing goods, limitations on polluting vehicles, reserved space for loading/unloading operations, certification of operators, technological support for freight distribution and many other can be considered in the SULP, so that results can radically improve the overall urban goods distribution process.

DRIVERS/BARRIERS

There are two main barriers to implement this action: the first is related to the lack of knowledge by the technicians of the local administration about SUMPs and SULPs; the second one relates to how to finance the SULP preparation.

Both these two barriers should be overcome by the intervention of the regional governments, and should be called to support municipalities and local administrations willing to adopt SUMPs/ SULPs and this is the aim of this action.

FINANCIAL PLAN

As seen above, the overall direct value of the action could be evaluated as about 2.5 M€ in the four regions.

The cost of the implementation of the action could be very variable, as it is related to the initiatives that will be taken from time to time (see Stakeholders and Beneficiaries of the Action). In any case we can assume that the possibility of the regions covering 50% of the costs of the SULP development could be reasonable. This would mean a cost of 1.2 M€ over a period of 2 years.

SULP adoption could be boosted by the new European structural funds, mainly the different ROP instruments in each region in the Thematic Objective "Transition to a low-carbon economy", in order to support and incentivise the development and implementation of SULPs.

Other initiatives could have different costs that should be evaluated specifically. In particular it could be important to elaborate technical guidelines at the regional level; this task could be developed jointly by the regions and could have an overall cost of about 350,000 - 400,000€. This topic could eventually be economically supported by some European initiative.

The institution of a Competence Centre for supporting the cities in their choices will have very different costs from region to region, related to the different costs of salaries, but an average evaluation could be about 200,000 - 250,000€/year for having a good pool of professionals working on this specific theme supporting cities.

REFERENCES

"Guidelines - Developing and implementing a Sustainable Urban Logistics Plan", based in ENCLOSE Deliverable D5.2: "A Framework for the definition and implementation of Sustainable Urban Logistics Plans in historic small-/mid-size towns". Contract N°: IEE/11/826/ SI2.6.

ACTION 1.2.

URBAN LOGISTICS POLICIES, REGULATIONS AND SUPPORTING TECHNOLOGIES

ABSTRACT

This action aims to create a tool addressed to municipalities and other local authorities for easing the decision making process on Urban Logistics.

In fact, European cities are forced to tackle a wide range of problems linked to urban freight distribution, but, while urban transport is the focus of attention, Urban Logistics is frequently neglected, notwithstanding it has a direct important economic and environmental impact on cities. The importance of this topic is also testified by the fact that the EC Transport Policy White Paper set up CO2 free Urban Logistics as one of the 10 objectives to reach by 2030.

One of the main problems encountered in cities is the low level of knowledge about how innovative solutions could contribute to improving the state of Urban Logistics. For this reason the need to spread this knowledge is a pre-requisite for the introduction of innovation.

For this reason, a useful tool could be the design of a “catalogue” of regulation policies and related supporting technologies and organisation measures. The catalogue should favour innovative solutions and could further include assessments of the urban profile of cities for establishing tailor made solutions to maximise economic, social and environmental benefits.

KEYWORDS

Urban Logistics, Policies, Regulation, Technologies

OBJECTIVES

This action has the objective of creating a tool to support municipalities and local authorities to make informed decisions on policies, regulations and supporting technologies for sustainable Urban Logistics solutions.

The catalogue will include all the information needed by decision makers to evaluate the possibility of implementing the described solutions in the specific application environment. In particular, the relationship between policy objectives (such as emission reduction, traffic flows reduction, limitation of the time windows) and the various regulation schemes included in the catalogue.

Considerations on economic, social and environmental impacts and on drivers and barriers will be associated with the described practices and solutions.

In addition, specific indicators should be provided to better assess the requirements and characteristics of towns and suggest tailor made measures for Urban Logistics and freight distribution, including access restriction schemes.

The action will investigate the possibility of finding the best way to develop a full catalogue.

URBAN LOGISTICS FRAMEWORK

While there is a clear need by cities to adopt intelligent policies for regulating urban freight delivery, the framework of rules and techniques adopted by local administrations are often poor and based on traditional schemes.

Nowadays theoretical engineering development can provide more powerful and effective schemes and advanced ICT technologies can support their implementation in real environments. But very often this reality is not very well known by local policy makers and decision makers, which delays the adoption of more advanced and innovative solutions that could improve the state of Urban Logistics and could represent a trigger for innovation in local economies.

A set of initiatives is required in the DOROTHY regions to increase the level of awareness about the possibilities provided by innovation in the Urban Logistics field. In particular, a clear view of the usefulness of advanced regulation schemes and related supporting technologies for solving practical problems is required.

ACTION DESCRIPTION

Content
Starting from the information provided by EC Strategic documents and previous works carried out in other EU projects (e.g. INTERREG IVC SUGAR (Sustainable Urban Goods logistics Achieved by Regional and local policies), IEE ENCLOSE (Energy efficiency in city logistics services for small and mid-sized European historic town), FP7 STRAIGHTSOL (Strategies and measures for smarter urban freight solutions) and FP7 BESTFACT (Best Practice Factory for Freight Transport), this action is aimed at building a comprehensive and up-to-date handbook for the selection, the definition and the implementation of state of the art policy measures and regulation for sustainable Urban Logistics.

This handbook is mainly targeted at local administrations, transport authorities and mobility agencies and should be easy to read and capable of giving all the information needed to policy makers and decision makers (both at the political and executive level).

The tool will contain specific regulation schemes selected through some of the following mechanisms:

- Good practices adopted by municipalities within the regions.
- Innovative solutions that the clusters are interested in supporting and promoting.
- Particularly significant practices adopted outside the DOROTHY regions and partners.

Some of these regulations have already been identified as of particular interest for/by the DOROTHY clusters and should thereby be included in the catalogue already:

- New regulations schemes to allow and endorse the implementation of access control systems and the creation of logistics areas.
- Inclusion of Urban Logistics considerations in the drafting of planning documents, such as the SULP.
- Definition of the minimum level of technology necessary to support Urban Logistics.
- Creation of a methodology to measure and control the improvements in Urban Logistics.
- Relationship with the rest of the actions of the JAP: a new regulation framework to promote the inclusion of innovative vehicles, cargo-bike, etc.
- Implementation of Proximity Delivery Areas.
- A further development of the action will be the implementation of an ICT tool for local authorities. This tool will be constituted by an interactive decision support system guiding through a formal procedure during the steps of analysis of the existing situation and of the possible regulation schemes (and other solutions considered in the catalogue) that could be adopted in relation to a set of desired targets and to the urban context. The tool will not produce any kind of "automatic solution" but will help the user to move within the network of possible solutions and alternatives according to criteria that can be selected by the users themselves.

Skills and Expertise

- The compilation of the catalogue requires a deep knowledge of:
- The state of the art in the field of Urban Logistics.
- The needs of municipalities and other local administrations in the specific field.
- The problems of Urban Logistics operators and commercial operators in the territory.
- Innovative ICT solutions, architectures and their application in the Urban Logistics field.

Within the DOROTHY clusters, there are several companies and research centres that have this diversified knowhow and are willing to cooperate in the compilation of the catalogue, under all the aspects, including the local economic and social context, as well as the assessment of their impacts. Moreover, in the clusters significant cities are also represented, which can support and address the specialist work to ensure its effectiveness towards other local administrations.

Existing Products/Experiences
Previous EU projects such as SUGAR (www.sugarlogistics.eu/) and ENCLOSE (www.enclose.eu/), among others, have made extensive analyses at the European level on Urban Logistics best practice, regulations, distribution schemes and measures, etc

More specifically, the output of the SUGAR project was the publication of "City Logistics best practices: a Handbook for Authorities". The policy leverages covered include a variety of logistics measures and schemes, subdivided into four categories: transport, environment, space and territory and harmonisation.

The SUGAR approach was structured into three main strands: the refinement of urban freight policies of "Good Practice Sites"; the development of urban freight policies in "Transfer Sites"; and the creation of interest, knowledge, tools and exchange for new administrations.

The main objective of the IEE ENCLOSE project was to raise awareness about the challenges of energy efficient and sustainable Urban Logistics in European small-mid-size historic towns and about the concrete opportunities to achieve highly significant improvements and benefits by implementing and operating suitable and effective measures, schemes and framework approaches specifically targeted to this class of urban environments.

The objective of BESTFACT (www.bestfact.net/) was to develop, disseminate and enhance the use of best practices and innovations in freight transport that contribute to meeting European transport policy objectives with regard to competitiveness and environmental impact. It integrates four interrelated areas of the key freight logistics challenges which confront the EU. The resulting three main working areas (clusters) are:

- Urban freight
- Green logistics and co-modality
- eFreight.

STRAIGHTSOL (www.straightsol.eu) was launched to support the creation of a new concept of Smart Urban Freight Systems:

- Develop a new impact assessment framework for measures applied to urban-interurban freight transport interfaces.
- Support a set of innovative field demonstrations, effectively showcasing improved urban-interurban freight operations in Europe.
- Apply the impact assessment framework to the live demonstrations and develop specific recommendations for future freight policies and measures.

All this information was updated in the first year of the DOROTHY project, mainly from the technology point of view, in particular by considering the demand expressed and the expertise present in the four partner regions.

In addition, the following document has been recently made available by the European Commission to support the decision making process and the impact evaluation of policy measures: European Commission, JRC Technical Reports (2013): Quantifying the Effects of Sustainable Urban Mobility Plans, which includes two specific chapters on city logistics and Distribution and Access Restriction Schemes.

This latter document investigates the following measures and regulatory policies:

- Freight distribution centres and freight delivery points.
- Improvement in the efficiency of city logistics by the use of ICT.
- Measures to improve the energy efficiency of vehicles and/or the use of alternative modes.

- Access Restriction Schemes
- Urban pricing.
- Congestion charging zones.
- Low emission zones.

Stakeholders and Beneficiaries of the Action
The main stakeholders of the action are represented by:

- Specialised companies of the clusters and other Urban Logistics experts.
- Universities and research institutes.

They will provide the knowledge necessary to compile the catalogue.

The main beneficiaries will be the local administrations and especially the municipalities of the four DOROTHY regions.

In any case the catalogue can be used by the companies belonging to the clusters as a tool for promoting advanced solutions, also supported by their expertise outside the DOROTHY regions.

EVALUATION OF IMPACTS

Normative Framework
This action aims to create a tool addressed to municipalities and other local authorities for easing the decision making process on Urban Logistics, through a clear and exhaustive presentation of the different kinds of regulations, policies, practices and supporting technologies.

So the constraints coming from the existing normative framework are one of the main topics to be considered, in terms of national traffic laws, municipal regulations and so on.

On the other hand the setup of a complete catalogue of innovative solutions should be an opportunity to know the best practice and the way to study, to adapt and to implement new solutions, so inducing positive effects on the current normative.

Reference Market
The main product of this action is a new complete catalogue of regulations and supporting technologies, so as a matter of principle no reference market should be foreseen.

Nevertheless, the indirect market that should be opened by the application of some of the proposals described in the catalogue could affect the Urban Logistics organisation inducing a possible cost increase for operators. For instance, the application of time windows to access the city centre could cause an increase in the number or vans necessary to perform the due deliveries, such as access being limited to just environmentally friendly vehicles (based on the Euro classification) could require significant investments and so on.

On the other hand the application of some of the described measures could open wide the market for technology suppliers.

So it is very difficult to define a reference market, because it is strictly dependent on the local situation, and on the type of measure locally adopted.

Environmental Impact
It is expected that cooperation between the different stakeholders in innovative projects, will result in decreasing environmental impacts by Urban Logistics in the cities, with more urban sustainable logistics due to reduced traffic in city centres.

This is the target of many of the schemes and measures already operative in many cities, and one of the most important parts of the catalogue should be the description of the expected environmental effects of each measure.

Moreover, the combined effects of several integrated measures should be evaluated on the basis of the existing experiences and the literature already existing.

Social Impact
The organisational impacts can be positive with the dissemination of new technological and methodological solutions in the urban context.

This action has positive social impact in the improvement of workers' qualifications, job creation and improvement in the quality of life.

Finally, in the urban structure, this action will have a positive impact on the practices carried out in Urban Logistics.

DRIVERS AND BARRIERS

One of the most important drivers of this action is the evolution of EC policy, such as the growing willingness to increase cities' quality of life. Moreover, the possibility to disseminate in a cheap way possible solutions for Urban Logistics should represent an important opportunity for local operators.

The barrier is represented up to now by the difficult economic situation of most local administrations, as they often face a lack of resources to be able to pursue any kind of innovative policy for traffic or Urban Logistics.

To overcome this problem a part of the catalogue will be dedicated to funding opportunities for local governments.

FINANCIAL PLAN

This action could be performed in different steps, with different levels of detail, each requiring significantly different economic and time efforts.

a) A first level could be a synthesis and an update/completion of previous works, including the activities already conducted within the DOROTHY project,

Objective: definition of a (sub-)list of Urban Logistics policies and regulations, with basic guidelines on how to develop the policies, and information on the state of the art, the technological solutions and the relevant stakeholders to be involved. This basic approach would require only the involvement of Urban Logistics consulting companies, possibly from each cluster, in order to have an accurate understanding of the local current scenario. This first level could be completed within the DOROTHY lifetime, taking about 3 months.

b) A second level of activities could aim at realising a comprehensive catalogue of Urban Logistics policies and regulations, with guidelines for their implementation and detailed descriptions of the supporting technologies. This second level should also include a description of the typical urban context (economic activities, environmental issues and current goods distribution schemes), best suited for each solution, in order to guide the municipalities in the selection and development of suitable policies and regulations.

Such a catalogue could already be a valuable tool for local authorities, supporting them both in the understanding and consequently choice of Urban Logistics solutions, and (mainly) in the implementation of well-defined policy measures and regulations, including the supporting technologies, with an estimation of the expected environmental impacts.

In addition to consulting companies, this second level would require direct involvement by technology suppliers and local authorities. Considering the involvement of all the 4 regions an estimated budget could probably be in the range of 40,000-60,000€ and the activities could take about 6-12 months.

c) The third level consists in the full deployment of the action with the implementation of the above described . ICT tool for local authorities. .

The development of such a tool would require a strong involvement by research organisations for the development of the ICT tool and the calculation of environmental, social and economic impacts.

The development of the action at this level of detail goes beyond the scope of the DOROTHY project and requires the realisation of an ad-hoc project, with access to external funding, to be carried out in a timeframe of 2-3 years with a rough budget of 200,000€.

REFERENCES

IEE ENCLOSE - Deliverable D2.3 - “Sustainable logistics in European small/mid size historic towns: challenges, opportunities and priorities”

IEE ENCLOSE - Deliverable 5.2 – “Guidelines for developing and implementing a sustainable urban logistics plan. Enclose project”

FP7 BESTFACT - Deliverable 2.1: Best practice handbook

FP7 BESTFACT - Deliverable D3.1: Recommendation and policy tools

FP7 BESTFACT - WP3: IR 3.1 Final Best Practice Impact Evaluation Methodology

FP7 STRAIGHTSOL - Deliverable 2.1: Urban freight and urban-interurban interfaces- Best practices, implications and future needs

FP7 STRAIGHTSOL - Deliverable 6.2: Recommended future measures:

FP7 STRAIGHTSOL- Deliverable 6.3: Analysis to the transferability opportunity to other urban-interurban contexts

FP7 STRAIGHTSOL - Deliverable 6.4: Implementation strategies and roadmaps

European Commission, JRC Technical Reports (2013): Quantifying the Effects of Sustainable Urban Mobility Plans, which includes two specific chapters on City Logistics and Distribution and Access Restriction Schemes.

ACTION 2.1.

URBAN LOGISTICS PERFORMANCE INDEX

ABSTRACT

Urban logistics public policy imposes significant challenges to public bodies with competences in the subject of Urban Logistics, who have to define local policy strategies and planning with insufficient information and supporting tools. The need to provide decision makers with concepts and practical procedures to make informed evaluations and comparisons constitutes the pillar for proposing the creation of a quantifiable index for Urban Logistics.

The index for Urban Logistics consists of a metric to measure the performance of Urban Logistics in cities, to highlight cities that have the best organisations and the highest level of Urban Logistics performance. Such a procedure allows the identification of high priority areas with potential for improvement and supports the choice of policies to be adopted by local authorities.

The usefulness and global applicability of the Performance Index on Urban Logistics will be directly linked to its ability to integrate an all inclusive approach that reflects the expectations and perspectives of local and regional government, logistics service providers, retailers, consumers and citizens.

KEYWORDS

Urban logistics, Benchmarking, Urban policy, Urban Sustainability Performance index

OBJECTIVES

The main objective of this action is to develop an index and benchmarking model for Urban Logistics, which allows the evaluation of the performance level of Urban Logistics. In more detail, in order to perform a fair evaluation of how efficiently Urban Logistics achieves its objectives, an aggregated measure, which integrates an ecosystem community of stakeholders and is capable of being comparative between cities of any region, is required.

This Performance Index for Urban Logistics will be a valuable guiding tool that helps authorities to take strategic decisions on Urban Logistics policies and to define the actions to be implemented. For private entities, the index will provide a competitiveness tool for valuable orientation. It will provide information for logistics operators on major obstacles in each city and, subsequently, facilitate the demand for the required solutions, identifying more “logistics friendly” cities and providing information for producers of solutions and technologies on key local and global needs. The Performance Index will also be important for consulting and planning companies as a diagnosis tool and for having an effective and synthetic means of presentation and discussion. The Performance Index will enable the identification of critical areas of intervention for which tailor-made technological solutions may be developed, also making it a valuable tool for consultants companies and technology providers.

URBAN LOGISTICS FRAMEWORK

Policy and decision makers are often obliged to take difficult decisions about matters such as Urban Logistics with a limited level of knowledge. In fact, even when sufficient data and analysis are available, there is a lack of tools capable of giving synthetic information about the state of Urban Logistics that is also comprehensible to non specialists. Moreover, it is very difficult to link the available information on Urban Logistics to the strategic lines that policy makers want to follow on this topic. There is limited knowledge about the relations between strategies and measures and tools to implement these strategies. Of course, a general action for increasing knowledge and awareness about Urban Logistics is necessary. In addition, the creation of a synthetic tool capable of giving clear and aggregated information about the state of Urban Logistics in cities, and about how this state is compliant with the strategic objectives defined by decision makers – or how far it is from them – can be very important in achieving a more rational decision making process. Moreover, it can also be a fruitful basis for involving all the stakeholders in the definition of the objectives and in the definition of the measures to be adopted, in line with the philosophy of SULP.

It must be underlined that the elaboration of KPI (Key Performance Indexes) has been identified by the ALICE platform as one of the more interesting research topics in Urban Logistics:

"Urban freight KPIs and assessment models pursuing international standards (to ensure the quality, safety and security, social and environmental management, etc.) and benchmarking tools should be developed to define types of cities/districts, governance schemes and suitable solutions for specific cities/districts and situations."(1)

The document targets the period between 2015 and 2020 as the horizon for developing an exhaustive analysis of basic methodologies like data collection methods, load factor analysis and, indeed, urban freight distribution KPIs.

ACTION DESCRIPTION

Content
The development of the index implies the definition of methodologies for a multiplicity of purposes: collecting, filtering and analysing data, processing and clustering them according to the needs of the index, etc. Of course, these methodologies must be quite general to be applicable to a significant number of different cases and cities and must be capable of working with quite simple data. In fact, a too high level of refinement would require great efforts and significant resources making its use complicated and expensive. The idea is to develop a tool that could become a real working tool in real cases and not simply for academic research.

Other attempts have been performed to develop a Performance Index for Urban Logistics, due to its importance in local policy making.

One relevant example is the Global Competitiveness Index, which is one of the largest disseminated indexes used around the world, capturing the insight of more than 13,000 experts into critical drivers of their respective countries' development. This is a major reference point for building a methodology, complementing traditional engineering measurements with a similar approach to DOROTHY, as "this methodology is not intended to be scientific, but it represents a normative approach aimed at stimulating discussions on policy priorities and possibly stimulating scientific research in this field". (in "The Global Competitiveness Report, 2014").

Another important reference for logistics index construction is the World Bank Logistics Performance Index which states an important point for our work in the methodology: "Because logistics has many dimensions, measuring and summarising performance across countries is challenging. (...), many critical elements of good logistics (...) cannot be assessed using only time and cost information".

At the national level, Performance Indexes on smart cities and quality of life exist, which include indicators on smart mobility and transport. As an example, it is relevant to mention here the Italian Smart City Index Between (www.between.it/SmartCityIndex/Between_SmartCityIndex2014.pdf). Nonetheless, such indexes are not focused on Urban Logistics and only consider very few, if any, specific indicators on Urban Logistics. Melo and Costa (2011) define a list of indicators to perform the evaluation of Urban Logistics, although without weighting those indicators into an index.

Skills and Expertise
The DOROTHY regional clusters have, among their cluster members, partners with skills and expertise to contribute to the successful development of this Performance Index. Within these partners, the role that research partners can play with their skills and expertise must be highlighted.

Existing Products/Experiences
Several activities have been developed in the direction of comparing Urban Logistics measures or city performances, mainly through R&D projects, some of them via European funding. The most relevant examples for the development of the index are:

- BESTLOG (Establishing a Dissemination and Promotion Platform for Logistics Best Practice), http://www.bestlog.org/
- CITY FREIGHT project information available at http://ec.europa.eu/transport/extra
- LAMILO last mile logistics http://www.lamiloproject.eu/
- NICHES (New and Innovative Concepts for Helping European transport Sustainability)
- SMILE Supporting and developing innovative strategies http://smile-urbanlogistics.eu/
- SUGAR http://www.sugarlogistics.eu/

Given this general background, the implementation of the action can start from these points and will need in-depth methodological work involving several players capable of providing both the theoretical and the application points of view.

Possible participants for the development of this action may be research organisations, logistics consultants, other institutions such as public authorities and municipalities, and eventually potential participants in a proof-of-concept.

Stakeholders and Beneficiaries of the Action

A range of benefits and contributions to stakeholders' mission objectives will be provided by the Urban Logistics Index development and implementation. The following table presents a list of major benefits and contributions per stakeholder group, although many others can be found for the comprehensive range of stakeholders that are actually involved in Urban Logistics.

Stakeholder Group	Benefits and Contributions
Public Administration	Clear view of current local Urban Logistics status, highlighting major local achievements. Instrument to provide systematic methodological support for local policy development and Urban Logistics measures implementation. Support to Sustainable Urban Logistic Plans (SULP) integrated with Sustainable Urban Mobility Plan (SUMP). Alignment with European Union directives on Urban Logistics. Leading local assessments. Benchmarking the adopted / foreseen policies versus the current state of Urban Logistics in cities.
Private Operators	Benefit from enhanced local Urban Logistics policies, improving efficiency of operations. Better information and local policy planning visibility to support technology implementation decisions. Active involvement in providing feedback and contribution to local assessments to Urban Logistics local policy planning.
Technology Pproviders	Input on local areas requiring technological developments for supporting local Urban Logistics policy.
Other Stakeholders	Integration of the entire Urban Logistics community framework stakeholders (e.g. economic agents such as shopping, horeca, goods distribution, and others, e.g. consumers and environment representatives) through participation in local assessments.
Consulting and Planning Companies	Availability of a working tool for analysing Urban Logistics and for presenting and illustrating its current state. Support for involving stakeholders in the decision making process.

EVALUATION OF IMPACTS

Reference Market and Economic Potential

From the economic point of view the most important beneficiaries could be the consulting and engineering companies that are also the main players for the action development. This tool could qualify their work by providing a methodology applicable in the development of SULP and other analysis on Urban Logistics. Moreover, the diffusion of this methodology could also enlarge the market in cities with a demand for the development of specific studies based on this method.

Environmental and Energy Potential

The impacts of the implementation of this action will be indirect.

Major foreseeable impacts are:

- To provide decision makers with an instrument to build a strong Urban Logistics strategy.
- To adopt new and improved environmental policies and measures; to have new environmental regulations.
- To reduce environmental hazards; to have city development based on environmentally friendly actions.

The action will enable the identification of critical areas of intervention for which tailor-made technological solutions may be developed. These impacts may only be indirect through the identification (and possible deployment) of more sustainable and effective innovative measures for Urban Logistics. This action aims to perform an evaluation and benchmark the cities'' logistics performances, thereby increasing awareness of the local logistics impacts among public authorities, stakeholders and citizens, and giving them opportunities for improvement by comparison with top rated cities and available best practice at the national and European level. Overall, the action has an important indirect energy and environmental impact because it supports municipalities and other public authorities to make well informed decisions and it fosters the development and implementation of the best suited actions. In the end, this action boosts the environmental benefits of all other actions.

Possible indicators for assessment of the energy and environmental performance are: number of cities included in the evaluation and benchmarking; visibility of the Performance Index; quality of the performance indicators; energy and environmental benefits associated with the Urban Logistics performance indicators.

Social Impact

The major social impacts of this action are found at institutional levels. Local authorities will be provided with more supportive local policy decision processes and information, allowing them to develop more advanced and sustainable Urban Logistics strategies. This will generally increase the governance capacity on Urban Logistics processes, but will also accustom policy makers and public servants to a decision making process that is supported by clear methodologies.

This action will advance knowledge from research institutions on Urban Logistics, by providing a framework for studies on impact evaluation through the structure of the indicators built-up by the Index. This action will offer an increased reputation for organisations participating in the Index, built-up through public dissemination, both for public organisations, e.g. municipalities and research institutions, as well as private companies, e.g. Urban Logistics operators and technology providers. Through this action there is expected to be direct and/or indirect contribution to job creation for companies and organisations.

Urban Impact

This action is expected to have a low level impact on urban structure, because the Urban Logistics Performance Index action is mainly an applied research action to support strategic decision making processes. This action can contribute to change urban structure only after an analysis and benchmarking with the Index from other cities. A possible indicator is the level of the Index for each city.

DRIVERS/BARRIERS AND RELATED ACCOMPANYING ACTIONS

Some obstacles are identified for the action development, e.g. the complexity of defining indicators and measures for it; building an efficient and altogether simple methodology;, ensuring a wide geographic scope that potentially allows its use at the global level.

For the methodology after-delivery phase, implementation of cities assessment, some obstacles are already predictable.

- Lack of participation by enough entities for sufficient collection of data and information.
- Data is usually not available due to commercial confidentiality and other reasons; however, some approaches could work around this problem with industry representatives and key-stakeholders evaluations, surveys and/or interviews for qualitative measurements.

To overcome the foreseeable obstacles, in the scope of the DOROTHY project execution, a proof-of-concept development for a Urban Logistics Performance Index will be developed, with the participation of a range of entities participating in DOROTHY project. This development will provide valuable design and methodological development knowledge for the action. To accomplish this proof-of-concept development, a group of cities' stakeholders will contribute to assessing and comparing the Index for an experimental pilot assessment.

Moreover, dissemination and communication actions to raise index awareness, holding press events and workshops to highlight the results at the national level to the business community, the public sector and other stakeholders can be other useful tools to help overcome the identified barriers.

The major driver is represented by the concrete interest of several companies and research institutes in the DOROTHY team in developing such a tool that also represents a challenging research topic, capable of interesting future developments. Moreover, the DOROTHY project has created, through the clusters, a good environment for cooperation between these players and municipalities for testing and validating the developed methodologies.

FINANCIAL PLAN

The evaluation of the expected costs of the action is planned in two stages: the first is to develop the required methodology to build the index; the second stage is to implement the index assessment.

For the first stage, the development, it is expected that the build up of the methodology could be achieved with a project lasting 1 to 2 years, with a team comprised of:

- 1 Project Manager
- 1 Advisor
- 3 FTE Senior Researchers/Consultants
- 3 FTE Junior Researchers/Consultants

A communication and dissemination activities plan should be integrated. The estimated cost is in the range 250k€-400k€. The cost of implementation varies depending on the model:

ACTION 2.2.

AVAILABILITY OF OPEN DATA FOR URBAN LOGISTICS

ABSTRACT

This action's goal is to stimulate the collection and publishing of valuable and useful Open Data set in the Urban Logistics domain, not yet available or scattered in the Urban Logistics stakeholders' database, by all the cities where Urban Logistics assumes a relevant importance. To this end, the action will establish the preliminary activities required to define and collect complete, reliable, standardised and useful Urban Logistics Open Data sets. These Open Data sets will be available to the general public. In the framework of this JAP, the idea is to use these data to feed an Urban Logistics Open Data Platform (ULODaP), object of Action 3.2, and the Regional Urban Logistics Accreditation (RULAS) platform too, object of Action 2.3, as first examples of real use. However, the Open Data definitions will be available to everyone for information or development of new applications.

Urban Logistics is a specific part of the transport demand and offers a field relevant to last mile logistics where there is a lack of data and which is not yet analysed, studied and optimised as well as passenger mobility.

The action will also study some actions to be put in place by Regions, for encouraging or pushing cities to embrace the diffusion of Open Data according to the guidelines defined by this action.

KEYWORDS

Open Data, Open Services, Urban Logistics, Supporting Policies and Regulations, Harmonisation and Standardisation

OBJECTIVES

The general goal of this action is to promote the collection of harmonised and standardised data related to Urban Logistics by cities, to make them available as Open Data to the potential interested subjects, and to promote their dissemination and usage at the regional level.

To achieve this general goal two main specific objectives have to be pursued:

- The identification of a comprehensive list of valuable data sets which are considered significant in the Urban Logistics domain and which should be collected, made available and accessible to the public in standard digital formats through a unique access point at each city level.
- The adoption by the regions of specific policies to (a) stimulate cities to gradually adopt these standards and to implement open data sets according to specifications and (b) disseminate these standards and Open Data sets among the stakeholders.
- This action is closely linked to Action 3.2 as provides the general framework that could lead to a concrete implementation of the Urban Logistics Open Data Platform (ULODaP, scope of Action 3.2) in different regional areas. This approach could also lead to the implementation of other applications, based on the Open Data sets made available by the cities.

URBAN LOGISTICS FRAMEWORK

The current framework of Urban Logistics in relation to this action and to the possible definition, use of Open Data and the active promotion of their adoption, can be analysed from different points of view.

The first point of view is the one related to harmonisation and standardisation of the Open Data format.

The application of standards has benefits for all participants; in fact, standardisation contributes significantly to following issues:

- Standards enable the interoperability of products and services.
- Standards encourage innovation and open up new markets for suppliers.
- Standards expand the markets, enable economies of scale and encourage greater competition.
- Standards facilitate trade by diminishing trade barriers.
- Standards support greater confidence in procurement.
- Standards help to prevent duplication in effort.
- Standards reduce dependencies on manufacturers for installed systems and increase the interchangeability of system component suppliers.

Here we also mention the fact that although the application of standards is voluntary, the legal status of standards is rather strong if used in tendering processes.

The logistics domain involves various application areas where the data availability, accuracy, accountability, reliability and their exchange are mainly relevant, such as:

- Document process management: waybills, delivery notes, international certifications, etc.
- Traffic information and road conditions.
- Fleet management: delivery plan, routing planner, vehicle tracking.
- Vehicle to Driver communication.
- Vehicle to Vehicle communication.
- Vehicle to Infrastructure communication.
- Goods and vehicle information.
- Warehouse management.
- Weather conditions.

In recent years, much has been done to create and standardise data in these areas (and promote their adoption), mainly pertaining to the so called ITS (Intelligent Transportation Systems), C-ITS (Cooperative ITS) and IoT (Internet of Things) technological domains, also with the great support of the EC. Here we mention only the most significant, recent actions, along with a few EU funded projects under FP6, FP7, H2020, DG MOVE, INEA (Innovation & Networks Executive Agency), etc., such as:

- EC Standardisation Mandates: M453 (October 2009) "Standardisation mandate addressed to CEN, CENELEC and ETSI in the field of Information and Communication Technologies to support the interoperability of co-operative systems for intelligent transport in the European Community".
- ELTIS (2005–on going): ELTIS (The urban mobility observatory) facilitates the exchange of information, knowledge and experience in the field of urban mobility in Europe.
- EASYWAY (2007-2020): European road operators and authorities teamed up with the European Commission to foster European harmonisation of ITS to improve the situation on European roads, concerning safety, mobility and environmental impact.
- CO-GISTICS (2014-2016): Deploys cooperative ITS services for logistics. The integration of currently existing freight and transport systems and services, with innovative solutions such as cooperative services and intelligent cargo, will lead to increased energy efficiency and more sustainable mobility of goods.
- MOBiNET (2012 – 2016): The MOBiNET harmonised service platform aims to simplify and stimulate the Europe-wide deployment of connected mobility services by creating an "Internet of Mobility" that will link travellers' and transport users' requests with data and services offered by providers.
- iMobility (2013-2015): The iMobility Forum is a joint platform open to all road stakeholders interested in ICT-based systems and services.
- Clean Fleets (2013-2015): The Clean Fleets project assists public authorities and fleet operators with the implementation of the Clean Vehicles Directive (CV Directive 2009/33/EC) and the procurement or leasing of clean and energy-efficient vehicles.
- POSSE (2012-2014): The POSSE (Promoting Open Specifications and Standards in Europe).
- DRIVE C2X (2011 – 2013): DRIVE-C2X (Drive – Car to everything) is an Integrated Project to deploy a set of cooperative ITS functions at seven test sites in Europe in order to run Field Operational Tests. DRIVE-C2X supports the development of standard compliant (EU mandate M/458) cooperative systems implementations as well as their integration into vehicles (cars and motorbike) and roadside infrastructure.
- e-Freight (2010-2012): The e-Freight Integrated Project (European e-Freight capabilities for Co-modal transport) addresses the development, validation and demonstration of innovative e-Freight capabilities.
- CVIS (2004-2009): CVIS (Cooperative Vehicle-Infrastructure Systems) was a major European research and development project aiming to design, develop and test the technologies needed to allow cars to communicate with each other and with the nearby roadside infrastructure.
- CESARE I-IV (up to 2008): CESARE (Common Electronic Fee Collection System for a Road Tolling. European Service) deals with the harmonisation of tolling highways in European Area, to realise an interoperable EETC - European Electronic Toll Service - based on OBU with RFID and/or GNSS.

Some of the main outcomes, directly or indirectly linked to the previous list of projects and actions, which are relevant in this context, are the supporting to the standardisation actions in:

- ITS: CEN TC278, ETSI TC ITS, ISO/TC 204.
- European Electronic Toll Service (EETS) and electronic fee collection (EFC) interoperability: ISO 14906:2004, ISO 24534:2010, ISO 17261:2012.
- DATEX II v2.3: provision of information exchange mainly between the actors of the road traffic management.
- EU-wide eCall.

The second point of view is that related to policies and rules by regional public authorities, for promoting and sustaining in a structural way the cities' Open Data collection and sharing in the Urban Logistics domain. Indeed, considering all the specific contexts in various countries, regions or clusters, it is useful to define a common general normative framework as a reference framework for defining proper and specific policies and regulations able to push (at least) major cities to implement a Logistic Open Data Platform supporting Urban Logistics, along with the responsibilities in the collection and maintenance processes. Some examples of such normative frameworks should consider: guidelines, White Papers, Directives, implementing regulation, public tendering schemes, licenses, terms of service, SLA, data protection, etc.

The third point of view is related to the technological aspects. While the analysis of a possible implementation of an ULODaP is developed in Action 3.2, within this action it is important to assess some technical aspects, as for example:

- Definition of the requirements for a common and shared technological infrastructure, software and hardware that all different stakeholders should use to support the ULODaP implementation and maintenance (data update, provision of new data, etc.).

Finally, from an economic point of view, the availability survey, the classification and the definition of a set of relevant and standardised Open Data in the Urban Logistics domain, to be accessible by an ULODaP, could only require a "limited" cost if most of the interesting data (static and dynamic) are already available or, at least, collected. It is clear that increasing the number and type of data to make accessible to all users would require higher costs; this would eventually also result from the adoption of new technologies by cities for managing Urban Logistics (i.e. parking sensors, RFID gates, On Board Units, etc.)..

ACTION DESCRIPTION

Content

The action firstly focuses on the activities required for Urban Logistics Open Data sets creation and management. Open Data architectures are based on open data standards and protocols, and usually comprise 3 layers: data models, routing logic and APIs. Therefore, the action has to:

- Identify available data sets.
- Identify required data sets (not already available).
- Define:
  - data formats and data models
  - transmission protocols
  - available standards and to be pursued,
  - harmonisation processes to be pursued
  - privacy issues
  - proper data licenses for their use and re-use
  - accessibility
  - term of use and term of services
  - SLA

- management structure
- dissemination procedure
- etc.

With this background, from the technological point of view, two main aspects will be addressed:
A) Open Data identification for the ULODaP creation.
A huge amount of detail has to be considered, as for example (not exhaustively):

- Data mining: a wide set of existing heterogeneous data must be analysed and elaborated to verify their consistency, reliability and accuracy.
- Data format: several regional, national and international standardisation organisations pay attention to continuously defining standard data format (closed and open); and Open Source platforms often pay strong attention to open formats and standards.
- Data hosting, availability and accessibility: all data should be available and accessible even in real time for a huge number of users; and it also requires a specific capacity of the overall infrastructure.
- Data exchange/transmission: a huge amount of data, to be transmitted (to and from the Urban Logistics Open Data Platform) also in real time, should require a proper powerful hardware and software infrastructure; a well-designed architecture; and efficient functionalities / automatisms.
- Data Protection: in this case pure "technological" aspects refer to protocols and securing databases.

With regard to these specific issues, the heterogeneity of data must be duly considered, and, in particular, the fact that in some cases (i.e. most technical data, specific regulations, etc.) the initial format of data could require complex computations to make these data easily accessible, understandable and useful to anyone.

B) Data collection process.
From this point of view, the Urban Logistics Open Data set should include a wide number of data that concerns a great number of aspects and come from different sources. The real number and nature of the data that will be made available in cities will depend on case to case. However, it is important to point out that:

- The process of implementing the Open Data structure can be gradual, starting from the data already available or easy to collect with limited costs.
- The Open Data structure can be upgraded and enriched when new data becomes gradually available.

This approach opens the possibility of also adopting this philosophy to medium sized cities or to cities that, even if they have a limited set of data, are willing to implement this structure.

We must consider also that while an optimal ULODaP should contain a wide range of data, to achieve its full implementation the adoption of a gradual approach is more reasonable. So, initially, the action will focus "only" on already available or easy-to-collect data, reducing the overall effort required in terms of time, direct costs and/or human resources (referred to as time and costs).

Another important part of the action is the identification and definition of a (as much as possible) common reference framework of policies and rules to push at least the most important cities in the partner regions to implement an ULODaP (defined in Action 3.2) based on the outcomes of this action.

Such policies may include:

- Strategic level: definition of guidelines and White Papers, adoption of incentives for cities.
- Operational and dissemination level: Directives, implementing regulations, public tender schema, use licenses, terms of service, SLA, data protection, etc.

Skills and Expertise
Experts in hardware, software, Cloud, IoT and harmonisation / standardisation processes applied to the (Urban) Logistics domain are required. Knowledge of already available technologies, experience in use of data provided by these technologies and "R&D" and technology development/provision skills are required.

From the policies and rules point of view, the following skills and expertise are required:

- Knowledge of existing policies and regulations at local, regional and national levels affecting urban mobility and especially Urban Logistics.
- Knowledge of the Urban Logistics processes and procedures.
- Experience in legally regulating the use of data acquisition and collection by ICT/ITS technologies and providing Open Data
- Experience in managing harmonisation and standardisation processes in the ITS domain.
- Knowledge and experience in defining policies, rules and actions to push cities to implement an Urban Logistics Open Data structure.

Existing Products/Experiences
In the European panorama, there are quite a few mobility Open Data sets, which are mainly focused on passengers or, even more specifically, on public transport systems, with only a few exceptions. Examples include some of those provided by the Open Data platforms of the major European cities (i.e. London) or TransportAPI, PlannerStack, Navitia, One.Stop. Transport.

Some other more specific sources of Open Data are already available on the market, even if they may have a specific or eventually limited set of contents, i.e. OpenStreetMap, it-city. census, etc.

Moreover, different research projects including those that are publically funded, have been working and/or are still working on this issue:

- SUPERHUB, strongly committed to the realisation of an open source platform and mobile app able to plan customised urban routes, combining in real time all mobility offers.
- CITADEL on the move, aiming to make it easier for citizens and application developers from across Europe to use Open Data to create the type of innovative mobile applications they want and need.
- iCity, aiming to develop and deploy an approach to allow these interested parties to create, deploy, operate and exploit services based on the use of available public information, digital assets and infrastructures in cities.
- CitySDK, aiming to provide better and easier ways for the cities throughout Europe to release their data in a format that is easy for the developers to re-use.
- "Urban Access Regulation in Europe": a website providing all the information you need (accessible only via the web) for urban access regulations in Europe, provided by the CLARS (Charging, Low Emission Zones, other Access Regulation Schemes) platform and funded by the European Commission.
- "Osservatorio Regionale per la Mobilità ed i Trasporti" of the Tuscany Region: the Tuscany Region has set up this mobility and transport observatory in order to support the planning, programming and administration activities. The observatory ensures the collection, processing and dissemination of data on demand for public transport; the

production characteristics of the services; and the effectiveness and efficiency of the public transport companies.

So far, these platforms, their contents (data), their architecture and so on, can be some examples of a starting point for this action.

Stakeholders and Beneficiaries of the Action
Different stakeholders will be involved in this action, with different roles and benefits.

The active stakeholders, i.e. the actors that will play a direct role in the action realisation, are:

- Regions: they have the crucial role of coordinating the overall technical work about the definition of data and standards and will define the incentives for cities for making Open Data available according to the defined guidelines.
- Public authorities, i.e. provinces, metropolitan areas, cities, each with its specific role and competence areas such as:
  - Institutional policy makers in charge of defining general guidelines for the public interest and actively stimulating and promoting their adoption.
  - Institutional regulatory body in charge of defining data sets and technical standards.
  - Institutional body owner and manager of public infrastructures and related services, also collecting and using huge amounts of information and data in everyday activities which are not yet publicly available.

- (Freight) transport service providers, ULOs and even their associations: they can provide all or some of the data they internally manage and that could be useful to "directly share" or at least be used for better managing urban (freight) mobility. They also have the role of being beneficiaries of the action, as some of the information that will be made available will have a direct usefulness in their day-to-day operations.
- Consultants and transport planners: to support the definition of all possible information that could be useful to include in the Open Data Platform and to evaluate and analyse different factors regarding "data collection and use".
- Universities and research institutions specialising in transport and logistics: to support the definition of all possible information and contribute to the harmonisation and standardisation processes.
- ICT/ITS technology providers: the identification of Urban Logistics Open Data sets that are not already available requires experienced and skilled staff able to identify new hardware/software infrastructure to put into service for data collection/provision. At the same time, they will benefit from the action implementation, as they will have a lot of data available to be used for developing further marketable applications.
- Infrastructure managers: even by focusing on Urban Logistics, the logistics chain is also affected by the transport systems "around" cities (intended to be comprehensive for road/rail infrastructures, location of intermodal nodes, seaports, etc.).
- Logistics operators: as one of the main beneficiaries of the action they will be able to obtain a reliable and easily accessible set of data for developing applications and systems rationalising internal processes and operations.
- Private companies operating in the ICT field: they will have the possibility to develop and market specific applications based on the available set of data.

EVALUATION OF IMPACTS

Normative Framework
Central to the action goal for collecting and publishing valuable and useful Open Data sets in the Urban Logistics domain, not yet available or dispersed in the Urban Logistics stakeholders' database and by all the cities where Urban Logistics assumes a relevant importance, is the public authority stimulus, at the regional level, through the normative lever. The regions should develop policies and adopt normative frameworks that can take care of several types of actions, according to their sensitivity and spending power. In particular, they should define the regional strategy for

promoting the action objectives. These should be in line with the EU and the national vision and guidelines for spreading and adoption of ICT/ITS systems in the Urban Logistics domain, such as:

- Action vision and high-level goals.
- Specific goals, e.g. coordination goals, technical goals, operative goals.
- Roles for the involved stakeholders: local and regional public authorities, Urban Logistics operators, ICT/ITS enterprises, citizens.
- KPIs for continuously measuring the effectiveness of the regional legal framework action outcomes.
- Economic budget.

In this time of spending reviews and budget cuts, we spend few words regarding what we consider the best strategy by which the normative framework could incentivise the promotion of the action outcomes among cities. Instead of trying to impose new direct expenses on the cities, we mention two alternatives:

- Use of European funds for Research and Innovation (e.g. H2020, ERDF ROP, etc.)
- Imposing the use of the envisaged standards and publication of relative Open Data in tendering processes.

Some reference examples for stimulating initiatives for Open Data collection, publication and maintenance, according to selected standards are:

- eCall process development and its EU-wide mandatory adoption.
- EC Urban Mobility Package (end of 2013) with special reference to the: "A call to action on urban logistics" document.
- "Tuscany Regional Document addressing infomobility 2008-2010", approved by Regional Council Resolution n. 639 - 04/08/2008.
- • Tuscany Region ERDF ROP 2007 – 2013, Asse 4 "Accessibility to transport and telecommunication services", Activity 4.4 - "Creation of an IT infrastructure for geographical accessibility: i-mobility project".
- Tuscany Regional Law 18 February 2015, n. 19: "Disposizioni in materia di dati aperti e loro riutilizzo".

In conclusion, we evaluate that the action will have a medium to high impact at the normative level, in defining new standards for Open Data sets in the Urban Logistics domain and some ways for their promotion among cities.

Reference Market and Economic Impact
The action is mainly an institutional supporting action for promoting the definition, collection and publishing of Open Data sets in the Urban Logistics domain by all the stakeholders, which will contribute to the further development of the data driven economy, which is also in the Urban Logistics domain.

In this sense, the action reference market must be read in a wide sense, indicating all the professional operators working in the Urban Logistics domain, which will be affected by this action, such as: Urban Logistics service providers, shippers, municipalities and urban mobility companies, ICT and ITS companies developing technological components / systems / services for Urban Logistics, independent software vendors developing technological components / systems / services for Urban Logistics, etc.

According to Frost & Sullivan (Mega Trends Impact on Urban Logistics, 2013), this Urban Logistics market at the global level in 2011 had a spending of $5,950 trillion and forecasts a spending of $7,020 trillion in 2020 (+20%).

Quantifying the forecasting of the economic impacts for this type of action is very hard, because they are mostly wide ranging, indirect and heavily dependent on the commitment of the public administrations in supporting, promoting and disseminating the action among the stakeholders and citizens.

Although indirect effects are hard to quantify, they can be listed and described as follows:

- Stimulation of the development of innovative applications and services by ICT companies, scientific community and developers, also leading indirectly to an important cost saving for public authorities and logistics operators, beneficiaries of applications, services and solutions developed by third parties.
- Overall optimisation of the Urban Logistics from anyone's point of view: public authorities, transport service providers, final users of these services and citizens.
- Increase in efficiency of logistic services within the urban area, due to (not exhaustively):
  - Better planning at a general level, due to all the information about regulations (i.e. windows time accessibility) and/or network characteristics (one way roads, reserved lanes, etc.).
  - Better planning of vehicle routes due to available information and continuous optimisation in real time, due to the timely provision (and availability) of data.
  - Reduction of loss time (this means also average delivery time) due to the availability of information in real time about congestion affecting all routes, possible critical issues occurring unexpectedly in the overall network, parking bays availability and occupancy.
- Clear improvement of the overall mobility system and "eco-system" deriving from (not exhaustively):
  - Reduction of the number of commercial vehicles in service and of their routes length and travel time, consequently producing less pollutants and/or noise emissions.
  - Reduction of congestion, bottlenecks, unexpected events affecting efficiency of logistic services in urban areas and of possible indirect critical issues (i.e. risk of accidents), due to the availability of information to all stakeholders, the continuous update of these data sets and the real time monitoring of all relevant parameters and variables (traffic flows, congestion, accidents, etc.).

All these benefits could contribute to:

- For public authorities:
  - Direct benefits: cost savings, being beneficiaries of solutions developed by third parties, which can be used for other relevant interventions, even focused on mobility (i.e. implementation of sensors to collect more data); cost saving, due to the use of standard, well documented formats and protocols; easier procedures to detect and enforce illegal behaviours.
  - Indirect benefits: improvement in the efficiency of those processes affecting (also) mobility in urban areas, e.g. planning road maintenance / works, spatial and urban planning, services to citizens.
- For transport service providers: cost savings as a result of being beneficiaries of solutions developed by third parties, increased efficiency due to reduction of delivery time, and of fuel consumption due to the availability of all information to optimise deliveries (network characteristics and regulation, real time traffic conditions, parking bays availability and occupancy, etc.).
- For citizens: availability and usability of ICT applications developed by third parties and, as an indirect benefit of the overall system, reduction of congestion, noise and pollution.

Environmental and Energy Impact

From an environmental point of view, this action could lead to some "indirect" benefits (not exhaustively):

- Mobility improvement, thanks to the availability of data which impacts on the optimisation of processes of different stakeholders (optimisation of deliveries for transport service providers, better accuracy in transport system planning/management, etc.).
- Optimisation of transport systems, including of course Urban Logistics, leads to a reduction of congestion, pollution and noise, which means a really much more sustainable and environmentally friendly mobility.
- An overall reduction of negative effects of "mobility" (congestion, pollution, noise, etc.) on the urban environment and consequently a clear improvement in the quality of life for citizens.

Social and Urban Impact

This type of action usually has medium social and urban impacts with a mid-term horizon and it is indirect, because it is generally difficult to quantify the long link between the availability of new, standardised, reliable Open Data set (and their promotion) and their effects.

The most important effect is generally related to the production of new applications created by private companies and made available according to different business schemes. These new applications, in turn, will provide benefits according to their specific scope.

Here we can only mention the most important potential effects:

- Environmental impacts, as described in the previous section.
- Improvement of city image and reputation / city liveability.
- Improvement of the general state of Urban Logistics due to the implementation of targeted applications.
- Creation of new jobs related to the use of the available data sets for new applications.

DRIVERS/BARRIERS AND RELATED ACCOMPANYING ACTIONS

The main barrier is still due to the limited awareness by the public administrations of the importance of Open Data and the lack of technical knowledge about this topic. The situation is quickly going to change as a growing interest in Open Data is being raised by several initiatives. Notwithstanding this, promotional actions to spread the culture of Open Data and architectures should be carried out in less advanced situations.

On the other side, an important driver for the development of an Open Data structure by the public administrations can be the interest of the logistics operators in having a complete set of updated data to develop useful applications that can increase their productivity and lower their operational costs.

FINANCIAL PLAN

The following items for developing the activities foreseen in the action are included in this financial plan:

- Coordination activities between all the stakeholders actively involved in the action (regions, province, municipalities, ICT/ITS technology providers, R&D agencies, ULOs, institutional regulatory body, freight transport service providers, consultants and transport planners, infrastructure managers etc.)
- Technological analysis: scouting, analysis, definition of (open/closed) data sets, available and to be collected or made available in the Urban Logistics domain (data mining, data format, data hosting, availability and accessibility, data exchange / transmission, data protection, etc.)
- Harmonisation and standardisation processes.
- Definition and implementation of policies and rules.
- Dissemination activities.
- Supporting activities.

For performing all these activities, a gradual and modular approach should be adopted. A first amount of 450,000 € can be assumed as the cost included in this financial plan for the first two years of activity.

This cost does not include the budget which each region will eventually allocate for actively promoting the action results (e.g. through public tenders, economic incentives to cities) and which will vary according to the extent of the regional political action and the number of cities involved and their dimension. For a mid-sized city of 100,000 citizens, we estimate a further mean cost of 25,000€ for the “set up activities” plus 1,500 - 2,000€/year for the platform runtime and maintenance.

REFERENCES

“Mega Trends Impact on Urban Logistics”, Frost & Sullivan 2013: http://goo.gl/zUq37v.
“Urban Access Regulation in Europe”, EC funded project: http://urbanaccessregulations.eu/
Urban Mobility Package, 12/2013 (http://goo.gl/6Y8C4r).
EU-wide eCall: eCall page of the European Commission: http://ec.europa.eu/digital-agenda/ecall-time-saved-lives-saved.
Tuscany Region: “Infrastrutture Immateriali per la mobilità”, 11/2012 (http://goo.gl/uXxbiV).
Tuscany Region: “Documento Regionale di indirizzo per l’Infomobilità 2008 - 2010”, Delibera di Giunta Regionale n. 639, 04/08/2008 (http://goo.gl/l3h2PG).
Tuscany Region: “Osservatorio Regionale per la Mobilità ed i Trasporti”, instituted by the “Art. 21, Legge Regionale 31 luglio 1998 n. 42: Norme per il trasporto pubblico locale”:
http://www501.regione.toscana.it/osservatoriotrasporti/
Tuscany Region ERDF ROP 2007 – 2013, Asse 4 “Accessibilità ai servizi di trasporto e di telecomunicazioni”, Activity 4.4 - “ Realizzazione di una infrastruttura informativa geografica per l’accessibilità: i-mobility”.Tuscany Region: Legge Regionale n. 19, 18/02/2015: “Disposizioni in materia di dati aperti e loro riutilizzo”.

ACTION 2.3.

REGIONAL URBAN LOGISTICS ACCREDITATION SYSTEM

ABSTRACT

The purpose of this action is to encourage the regional authorities to implement an accreditation process, promoting the exchange of experience among regions and partners, harmonisation of procedures and regulations, with the goal of using synergies to improve Urban Logistics and achieve a positive impact on citizens' quality of life.

To ensure the success of this action in the field, it is proposed to develop a cloud, web-based platform, the Regional Urban Logistics Accreditation System (RULAS) that provides the process sustainability and is to be available to all involved entities.

Due to each region's singularities, a coordinator must be found in each one with the appropriate skills in the area. Urban Logistics operators and all the stakeholders should be heard, so that the procedures can be harmonised as much as possible, taking the region's specificities into consideration.

This action should be developed in close coordination with the regulatory authorities.

It is expected that there will be significant economic, environmental and efficiency returns, and a qualitative and efficiency leap in the services provided by municipal authorities. Possible returns should greatly exceed the planned investments, as well significant positive impacts on the environment and tourism. Last but not least, collaborative and harmonisation work can be the anchor for more exchange and harmonisation processes and projects between European regions.

KEYWORDS

Accreditation, Harmonisation, RULAS Platform, Regulation and RC Cooperation

OBJECTIVES

This action aims to encourage the regional authorities to implement a logistic operators' accreditation process, promoting the exchange of experience between regions, and harmonisation of procedures and regulations, with the goal of improving Urban Logistics and achieving a positive impact on citizens' quality of life.

This can be done with the implementation of an IT web-based platform, called the RULAS platform, operating at the regional level with the following characteristics:

- Implementing a regional data base with all the information required from logistics operators, documentation of rules and procedures for the distribution of goods in all the main cities.
- Managing all the information about requests from logistics operators for obtaining access or other kinds of permissions by municipalities.
- Allowing the possibility of requiring and obtaining, through a unique web-based access point at the regional level, the permissions for the logistics operators in all the cities supported by the platform.

This platform must have a general use and can be seen as a product that can be marketed in other regions and territorial environments. So an additional objective is to support the industrial qualification of the clusters developing a product with a significant commercial potential.

The implementation of the platform will have three main benefits:

- It will ease the process of permits delivery that represents a significant effort for both logistics operators and municipalities.
- It will encourage the harmonisation and convergence of all the different regulations and procedures for managing permits for urban goods distribution.
- It will qualify the offer of some regional ICT companies on the internal, European and possibly international market.

The RULAS platform will be able to:

- 1) Permanently collect valuable and updated information related to: (a) Urban Logistics Operators (ULOs) at the regional level, for their accreditation, (b) the urban goods distribution regulations schemes in several cities at the regional level.
- 2) Provide a single access Point at the regional level to ensure effective services for the stakeholders, for optimising procedures and services related to urban goods distribution, such as: (a) making available online the updated and trusted information usually dispersed in the municipal ordinances and in the data base of the ITS siloed system deployed; (b) sharing among all regional cities common information related to ULOs; (c) releasing all kind of permits; (d) open to integration with other regional and/or national logistics platforms (present and future).

- 3) Provide a flexible permits management platform to small/mid-sized municipalities, which would benefit from Access Regulation Schemes (ARS) and other regulation policies, but have too a low budget to be able to acquire an ad-hoc, tailor made system.

This action is logically linked with other actions, namely Actions 2.2 (Availability of Open Data for Urban Logistics), 3.1 (Innovative ICT solutions to support advanced Urban Logistics regulations schemes) and 3.2 (Open Data Architectures to support Urban Logistics). In particular, this action takes advantage of the availability of qualified Urban Logistics data sets collected and provided by the ULODaP platform. Interface mechanisms will be proposed among the different platforms.

URBAN LOGISTICS FRAMEWORK

The White Paper on Transport, adopted in 2011 by the European Commission, identifies measures and specific goals for the urban mobility of goods (the so-called “last mile transport”), designed to have a positive impact not only on air quality, but also on the efficiency of the method of distribution. Urban transport of goods has become more and more a key issue of the more general concept of urban mobility as a factor in the competitiveness of cities, able to determine significant effects on the quality of urban life, reducing the time of transport and, in parallel, its costs. To achieve the goal of breaking the 60% emissions in the atmosphere by 2050, the White Paper identifies a number of actions, including in particular the use of technologically advanced tools for the management of transport infrastructure and devices to support mobility and the use of fuels and sustainable power supply systems (e.g. LPG, CNG, electricity).

The Urban Mobility Package, delivered in 2013 by the EC, aimed to reinforce its supporting measures in the area of urban transport. Two of four Staff Working Documents are specifically targeted at Urban Logistics and urban access regulations, where better co-ordination and data sharing between urban logistics actors (public and private) are expected to be key factors in improving the negative impacts of Urban Logistics.

Finally, the Sustainable Urban Mobility Plans promote the incorporation of freight transport in local mobility policy by the development of “Sustainable Urban Logistics and Mobility Plans”.

From the city side experience, more and more cities in Europe, and in the rest of the world, are introducing Access and/or Parking Regulation Schemes as a preferred tool for regulating the use of urban roads and infrastructures for commercial vehicles, to limit their impact on the urban environment:

- Traffic and traffic jams (economic sustainability).
- Air and noise pollution (environmental sustainability).
- GHG emissions (environmental sustainability).
- Energy/fuel waste (environmental and economic sustainability).
- Road safety (social sustainability).
- Wild parking: vehicles parked outside the provided parking bays/zones, on sidewalks, driveways, in the middle of the street, and so on (socio-economic sustainability and quality of life).

The implementation, deployment and diffusion of these policies are increasing together with the development of technological systems and solutions (ITS systems) available on the market for monitoring their application, avoid infractions and helping to enforce against offenders. This continuous technological innovation makes these tools more and more flexible and adaptable to different city needs and sizes.

However, the growing diversity of different Access and Parking Regulation Schemes are jeopardising economies of scale, penalising all the stakeholders, as stated in the EC 2013 Urban Mobility Package.

This fragmentation of policies and schemes leads to the need for the logistics operators to follow different rules in each city and to repeat administrative procedures for obtaining permissions and keeping them informed in each city where they operate. So, while the decisions about accreditation and the introduction of access regulations should be taken at the local level, there is considerable potential for a more common and coordinated approach to regulations, procedures and services at the regional level, in particular on issues such as sharing of information (vehicle characteristics, logistics operators, Urban Logistics schema, permits, city enforcement methodologies / systems, etc.) and permits issuing. This approach aims also to reach economies of scale while preserving the investments already carried out by the cities.

ACTION DESCRIPTION

Content
This action picks up the challenge of Urban Logistics accreditation, with the scope of achieving an integrated vision and implementation in different regions.

To achieve an integrated vision with other platforms, this action proposes the implementation of a cloud web based Regional IT tool, the RULAS platform usable by all the municipalities and the other transport authorities in the regions.

The RULAS platform will be a scalable solution for:

- Collecting all the common data for accessing and use of logistic infrastructures of each city in the region and of the ULOs working in the region, which can be shared among the cities and regional authorities to conciliate and simplify the Urban Logistics procedures.
- Providing a unique access point at the regional level for the Urban Logistics permits services for ULOs.

The platform will provide access to ULOs via web interfaces and, if possible, also to their management systems (i.e. through standardised web services/APIs exposed by the platform to third parties), to enable the integration of processes for issuing permits with the final end users. The resulting processes automation will promote and improve efficiency in the Urban Logistics distribution and public authorities, so freeing resources for handling bureaucracy that can then be assigned to other needs and save money.

Municipalities will provide to the RULAS platform (through data exchange and services integration) the most common Urban Logistics services, such as:

- Data related to ULOs (e.g. ULO accreditation, trucks accredited and their type, ULO permits status, etc.)
- Permits and authorisations acquiring / renewal / suspension for each city.
- Useful information about the available parking, access roads and possible constraints.

In addition to the sharing of information to the Urban Logistics actors in the regional area, it will give the ULOs the possibility of obtaining all the kinds of urban access permits for distributing goods from different local authorities without repeating every time the same, long bureaucratic and administrative processes in each city.

This will ease the work related to the release and management of the permits for delivering goods in the urban areas both for ULOs and for public authorities and it will produce:

- A unique, continuously updated access point to trusted information related to all the city logistics regulation schemes and monitoring/enforcing systems in the regions (Urban Logistics infomobility/infoparking), so reducing the waste of time looking for them and reducing the risk of pointless fines.
- A simplification of the process for releasing/renewing all the permits related to Urban Logistics, so reducing the waste of time for ULOs in obtaining them.

- A significant resulting saving in time and effort for the city authorities for all the operations related to permits management.
- A better knowledge of the ULOs realities for all the local authorities, both at the local and regional level.

The reason for this action comes from the fact that local rules for accessing urban areas and distributing goods can be very different from one city to another and different urban local authorities (municipalities, mobility agencies, local police authorities, etc.) are in charge of the release of access permits. The burden for obtaining valuable information and, above all the permits, is quite heavy, and is replicated in all the different cities, notwithstanding that the basic information to be provided is, to a large extent, always the same. The existence of a regional data warehouse containing such information related to access and parking regulations, ITS control systems and the logistics operators, which is accessible both by the local authorities (interfaced with the local information tools for permitting management – and ULOs) and their order and fleet management systems, would facilitate the overall process management.

A proper design and architecture for the RULAS "IT web-based platform" should be required, in order to simplify everyone's activity. Due to clear differences in policies and regulations even within the same region, it would be really useful to design an IT tool that, using a suitable logic, proper filters and/or cross data analysis, it should be able to analyse and evaluate data uploaded and update it in real time. This should, avoid any kind of problem or mistake, for example in permits predisposition for the access to LTZ of different cities. The same system should most of all be able to cancel expired permits, to communicate the cancellation to all interested stakeholders (ULOs and all stakeholders involved in controls and eventual enforcement) and, possibly, to transfer this information to any other ITS system used to verify proper use of issued permits.

Moreover, a wider knowledge of the Urban Logistics realities could push the standardisation process among cities, at least starting from the common administrative aspects. At the same time the availability of data about the entire regional environment and the simplification of the processes could also push the adoption of more advanced schemes.

In addition, an easier access to information about policies in the regions could facilitate comparison and could support:

- Public authorities in refining their specific rules or in implementing new on field technologies (access controls, transit controls, parking management, etc.)
- Logistics operators in establishing their internal policy and marketing strategies (e.g. a decision to switch from gasoline to electric or, in the near future, hydrogen vehicles) possibly pushing them towards more sustainable services (a combination of the general approach to Urban Logistics, delivery/pick-up scheduling, type of vehicles used, etc.).

Skills and Expertise
The envisaged skills and expertise required to implement this action, define, design and develop the RULAS platform are:

- An experienced project manager, with good dialogue and communication skills.
- Transport consultants, specialising in Urban Logistics normative and regulations, at least at the EU level.
- ICT companies developing ITS tools for Urban Logistics, with deep knowledge and experience in Access Regulations and Parking Schemes, Urban Logistics permits management and related technologies (e.g. experience in developing complex IT solutions, permits issuing and enforcement processes, platform applied to Urban Logistics).
- R&D researchers to promote innovative solutions and technology transfer.

Existing Products/Experiences
To date we are not aware of any similar regional platforms for Urban Logistics in the clusters' regions, either in the EU or worldwide.

We know of only two similar projects, which are under development in Italy, but specifically targeted at disabled people, to facilitate their movement within the LTZ of the participating Municipalities. Many Italian cities with LTZ/LEZ ARS, to limit the habit of CUDE counterfeiting – Contrassegno Unificato Disabili Europeo (EU blue badge) – for access to city centres monitored by automatic sanctioning LTZ gates (but also for parking in the reserved spaces), require disabled people to register, in a city DB, the number plate of the most used vehicles with which they access the city centre, usually up to a maximum of 3 or 4 vehicles. This greatly limits their mobility in the city and among the cities too; in fact they have to register in every city with an LTZ system. So, the two projects aim to allow the exchange of information between cities, in order to reduce the mobility troubles of disabled people in these urban centres: (1) MIRTO - Mobilità Interoperabile in Regione Toscana (Interoperable Mobility in Tuscany Region) - project promoted by Tuscany Region, (2) Emilia Romagna Region SDI (Interchange Data System) system.

If we look on the city side, there are many management platforms for all types of urban permits: LTZ access, pedestrian area access, residential, disabled, Urban Logistics, tourist buses, etc. However, in our experience, these platforms have been usually introduced over time to solve one specific problem at time, without an organic approach, for most of the time by a local system integrator/ICT company. This produces the so-called fragmented "siloed system" panorama and also fragments the market of the ITS systems. In this field, Italy makes the lion's share at the EU and international level, with over 230 cities adopting Urban Access Regulation and Parking Schemes. We can list only few permits management platforms, which have already reached the market as "on the shelf" products:

- SirioWeb, by Kapsch TrafficCom AG: a platform for managing LTZ gates, with a web based access/transit permits management system for LTZ/LEZ.
- CEyeClops, by Bridge129 Srl: another platform for managing LTZ gates, with a web based access/transit permits management system for LTZ/LEZ.
- CityPass, by Brav Srl: a permits management platform for LTZ/LEZ, pedestrian areas, and parking, with client-server technology and strictly focused on Italian market.
- Scoop, by Q-Free: web-based applications for car park management, on-street and off-street traffic related enforcement, access control, tracking, based on an integrated platform.
- INES Cloud, by Kiunsys Srl: a single access point for managing urban mobility, a SaaS, integrated, interoperable, web-based platform for managing: all types of urban permits (paper, digitalised, RFID), access controls, on-street/off-street parking bays / areas / lots, permits and payments, tracking, on street PGI, permits and parking enforcement, etc.

The Role of the Stakeholders
The active stakeholders of this action, the ones that are directly involved in the action promotion and execution, are:

- Regional authorities, as promoter of the initiative (being the institutional body responsible for regulatory, harmonisation and organisational actions at the regional level) and as customers of the product of the action.
- Municipalities, as local institutional players in charge of establishing Urban Logistics ARS at the city level; also establishing, acquiring and managing tools for their implementation, so participating in the implementation phase of the action as direct beneficiaries of the action.

- R&D institutions to promote innovative solutions and technology transfer.
- ICT/ITS companies, participating in the implementation phase of the RULAS platform and potential market players for its commercial exploitation.

Beside these active stakeholders, there are also the final beneficiaries stakeholders:

- ULOs, as the final end user of the action.
- Citizens, companies and retailers, as beneficiaries of any measures aiming at improving the logistics services while reducing the negative impact of the Urban Logistics on the city traffic and environment.

IMPACT

Normative Framework
In general, transport is a competence of the EU Member States and urban mobility is primarily a local responsibility, i.e. regions, provinces, and municipalities.

Usually the local authorities may define, regulate and administer the local road infrastructures and the use of technologies according to local needs but respecting the national laws, which define the action perimeter of the local authorities.

In Italy the institution, definition and management of a new LTZ/LEZ in a city, as a consequence of the municipal authority's wiliness to adopt an ARS, must firstly comply with the national road traffic regulations, which give the general rules for their creation.

Italy is one of the European countries where ARSs are most used, but in recent years it has led to an excessive fragmentation of ARSs - for accessing city centres and using road infrastructure - and the use of different technologies for managing, monitoring and sanctioning. The fragmentation is so high to the point that the citizens are finding it increasingly difficult to find and respect the jungle of different rules to follow, which change from city to city.

Portugal has not yet implemented ARSs in any city and regulations that exist for mobility and logistics vary from city to city, as it falls within their competence.

There is sensitivity to the importance of this issue and to work in a harmonised way, but the absence of national legislation creates difficulties. The DOROTHY project with some of the actions planned can be the catalyst for some action.

The situation in many other European countries is similar to the Italian, although less extensive, to the point that the European Commission, in particular DG MOVE as responsible for the field of transport, has decided to:

1. Study the EU ARS phenomenon: list the cities and their ARS, classify the regulations and type, how they are applied, the impact of ARS in respect of stated expectations, maybe KPIs.

2. Share experience and information among the various European cities, by financing projects, actions and urban mobility observers (e.g. ELTIS, CIVITAS).

3. Initiate studies and harmonisation and standardisation processes at the EU level in relation to the regulations and technologies, to meet the demands of citizens.

The Urban Mobility Package, delivered in 12/2013 by the EC, aims to reinforce its supporting measures in the urban transport area. Two of five Staff Working Documents are specifically targeted to Urban Logistics and urban access regulations, where a better co-ordination and data sharing between urban logistic actors, public and private, are expected as key factors for improving the negative impacts of Urban Logistics.

Reference Market and Economic Impact
The implementation of this action and the development of the RULAS platform has as a reference market the regional authorities and municipalities. We can give an estimation of the dimension of this potential market considering that in Europe we have almost 350 regions, each one being potentially interested in acquiring a similar system.

Based on the experience of similar systems and taking into account the cost for developing and engineering the system, we can quote the average value of a single installation as about 50,000€.

In addition, it must consider also the necessary integrations which have to be performed to the existing city permits management platforms, to become compliant with the RULAS platform at API level, which can be roughly estimated as 15,000€/city on average. The dimension of this market is potentially huge: estimating a mean value of 10 municipalities for each region requiring integration with the RULAS, there are 3,500 potential clients at the EU level.

The goal is to sell a platform for each region, and make the platform installation in at least 10 cities / regions.

From the economic point of view, this action can have direct and indirect impacts.

One direct effect is the one generated by the availability of an ICT product that could be marketable in a medium time. In the previous paragraph, we have provided an estimation of the value of this impact.

Another direct benefit will be for logistics operators. This benefit can be very different from case to case and so we will give only an example for making the effect clear. We consider a company operating in a single region in 10 cities requiring to obtain permissions for freight delivery for each vehicle, and an average number of 10 vehicles per city. If we consider a saving of just 2 hours work per vehicle due to the automation of permissions delivery, we have a yearly saving of 200 hours for this company with an average economic saving of at least 4,000€.

A similar effect could be recorded for municipalities, saving time for permits release, even if in this case a precise computation is harder due to the characteristics of public work.

Environmental Impact
This action has no direct impact on the environment, but provides many indirect impacts, some more obvious and easy to reach and others dependent on external factors of the action.

However, it is possible to identify some positive organisational direct impacts, namely:
- Better organisation, control and efficiency of the logistics distribution process, namely a better control of the chaotic parking in delivering products.
- Reducing the number of oversize vehicles in the inner city provides an overall improvement in the urban environment, with decreasing noise and gas emissions.
- Reduction of the ULOs' travelled km, and of the related energy/fuel waste.
- Reduction of paper use, thanks to the full digitisation of the entire permits release/ renewal workflow.

These contribute to positive direct environmental impacts:
- Better work environment in the authorities and operators that use this tool, by the organisation improvement, resulting in a better service to operators, easier troubleshooting, operation services are easier and more fluid and with lower workload and stress.
- Better quality of life for citizens, due to the lower impact of distribution logistics in cities.

DRIVERS/BARRIERS AND RELATED ACCOMPANYING ACTIONS

The implementation of this action can be strongly facilitated by the interest of the logistics operators in having a simpler procedure and a web-based tool to manage all the permissions at the regional level. An additional driving force could be the interest by IT companies in developing a specific product that could have interesting market perspectives.

The main barrier is constituted by the need for a regional involvement and by the differences existing in the local regulation schemes. The first barrier can be overcome through an active involvement of the regional administrations in this topic, supported by the most interested stakeholders. The second can be faced through a careful analysis of the existing regulations and a gradual action of homogenisation that could be managed by the regional administrations themselves, once actively involved in the project.

FINANCIAL PLAN

According to our experience, we estimate the following items for realising a prototype of the RULAS platform:

- Coordination activities between all the stakeholders actively involved in the development phase (regions, municipalities, ICT companies, R&D institutions and operators).
- Travel and meetings.
- Normative and regulation analysis in the most relevant cities (over 100,000 citizens) of the 4 DOROTHY countries.
- Technological analysis (analysis and definition of platform requirements, market scouting for technological components and standards).
- Platform design (central platform and city component).
- Development and testing.

Target Group of the Action

The RULAS platform has as a reference market the regional authorities, regional municipalities and regulators in the European Union.

Product Description

This action proposes the implementation of a cloud web based tool (RULAS).

The RULAS platform will be a scalable solution for:

- Collecting all the common data for accessing and use of logistic infrastructures of each city in the region and of the ULOs working in the region, which can be shared among the cities and regional authorities to conciliate and simplify the Urban Logistics procedures.
- Providing a unique access point at the regional level for the Urban Logistics permits services for ULOs.

The platform can be accessed by Logistic Operators and, if possible, by their O&M Systems, to also enable processes integration for permits issuing with the final end users.

The resulting processes automation will promote and improve efficiency in the Urban Logistics distribution and public authorities, so freeing resources for handling bureaucracy that can then be assigned to other needs and save money.

Evaluation of the Expected Costs of the Action

This action has a real ambitious objective, in providing a platform prototype whose final goal is to become a reference point for the entire EU. Having this in mind, it is difficult to forecast the necessary global investment for performing all the activities required by the action, because it is difficult to evaluate with some accuracy the complexity and costs of the requirements identification and of the harmonisation and standardisation processes for ARS rules and software components interoperability. The development part is the easiest part to evaluate, in accordance with the requirements, but we can express some considerations for estimating the costs.

Fortunately, the action can be split into more than one sub-project, according to a gradual and progressive development approach, from the technological, and application point of view. In this case, according to our expertise and experience, we envisage an initial investment of 700,000 – 800,000€ for starting a prototype with a regional dimension, involving one regional authority. Of course, the prototype will have a good degree of generality for what concerns the IT functions, but will take into account a limited number of application aspects, policies and standardisation aspects. The application environment will be gradually extended to other regional and national realities through incremental upgrading parallel to the extension of the market.

In this way the cluster's partners also have the possibility of accessing available national and regional financing funds.

In addition, considering also the opportunity for accessing some European funds, we suggest that to completely realise the entire project in all its complexity with an EU dimension, a consortium with up to 15 partners from the four DOROTHY regions - Italy, Spain, Portugal and Romania - should manage the project. The consortium should be composed at least of:

- 2-3 regional authorities with at least 1-2 cities for each region;
- 3-4 ULOs (or professional associations), representing the end-users needs at each regional level.
- 2-3 R&D institutions, to ensure: the scientific guidelines, the required R&D technical development, the harmonisation and standardisation processes for ARS rules and the RULAS platform integration and interoperability stack.
- 1-2 ICT/ITS companies that will contribute to the development and market exploitation.

Considering all these aspects a project duration of about 3 years is foreseeable and we expect an investment of 2.5 – 3.0M€. this figure, related to the development of a complex integrated project will not be considered, in the financial plan.

Evaluation of the expected incomes of the action
The action has both indirect and direct economic returns.
For the indirect economic returns, we can only list the main advantages for some of the stakeholders, because no scientific analysis and/or measured KPIs are already available:

- ULOs: costs optimisations due to the ICT integrated system for obtaining all the city logistics permits by a unique regional one-stop-shop, instead of requiring them from each single city (usually by hand).
- City's public administrations: costs optimisations due to less people at the desk for providing permits, and process digitalisation of the permits management.

We can mention also another indirect economic benefit due to the bottom up harmonisation process: the adoption of the RULAS platform will contribute to standardising and harmonising the Urban Logistics permits processes in each region and through the EU regions, so contributing to reducing the excessive fragmentation stated in the EC 2013 Urban Mobility Package.

On the other side the action has two main direct economic impacts, in terms of expected

incomes:

- Incomes for the Municipalities

For the ULOs the access to the EU city centres, and the use of (un-)loading parking bays and other road infrastructures, is increasingly conditional on obtaining a permit. Such permits can be free of charge, but also for a fee, according to the access regulation policies and fares that the municipality wants to implement.

For example in the city of Pisa the 2015 LTZ permit for goods vehicles costs between 119.00€/year (hauliers with fully loaded vehicles with weight <5t) and 186.50€/year (removals and porterage, home deliveries, cash transport, banks and purging cesspools <5t, fast couriers, urgent delivery of medicines, bread transport, etc.). In 2015 about 1750 permits were sold, for a mean total revenue of around 300,000€, which broadly covers the service costs.

- Incomes for ICT/ITS companies, in terms of business opportunities/development due to the market which will be opened due to this EU RTDI action

We can give an estimation of the dimension of the potential market considering that in Europe we have almost 350 regions, each one being potentially interested in acquiring a similar system. Based on the experience of similar systems and taking into account the cost for designing, developing and engineering the system, we can quote the average value of a single installation as about 50,000€.

If such a platform was sold to each region (license based business model) we can estimate an overall potential market value of 17.5M€.

In addition, it must be considered also some tasks required for the full implementation of the platform, namely:

- The integrations with the existing city permits management platforms, to become compliant with the RULAS platform at API level, which can be roughly estimated as 10,000€/city on average.
- The platform adjustment for some specific requirements of each organisation, for full integration in the internal processes, that we can estimate as 5,000€/city on average.

Thus, we can evaluate this potential return stream as about 15,000€/city for each platform implementation/ integration.

The dimension of this market is potentially huge: estimating a mean value of 10 municipalities for each region requiring the integration with the RULAS platform, there are 3,500 potential clients at the EU level producing a potential revenue stream of 52.5M€.

Finally, we should add also a further typical 15/ year for maintenance, help desk, formation, etc., corresponding to a further market of 10.5 ÷ 14M€/year over the whole set of installations..

In conclusion, the expected dimension of the overall European market linked to this action can be estimated to be around 80M€.

The development of the market is of course incremental. If we consider a product lifetime of 7 years and a distribution of sales as in the following table, we obtain the corresponding potential market over the period

The cumulated total over the 7 years period is of about 80 M€.

	Y1	Y2	Y3	Y4	Y5	Y6	Y7
sales %	10,0%	15,0%	20,0%	25,0%	15,0%	10,0%	5,0%
Installation value (M€)	7,0	10,5	14,0	17,5	10,5	7,0	3,5
Maintenance and upgrading (M€)	1,1	1,6	2,1	2,6	1,6	1,1	0,5
Total yearly market (M€)	**8,1**	**12,1**	**16,1**	**20,1**	**12,1**	**8,1**	**4,0**
RC market share 15%	1,2	1,8	2,4	3,0	1,8	1,2	0,6
RC market share 20%	1,6	2,4	3,2	4,0	2,4	1,6	0,8

An acceptable market share of 15 -20 % for the companies of the DOROTHY regional clusters would mean a cumulated revenues over the period of 12 -16 M€, with an annual turnover varying from 0,6 to 4 M€.

REFERENCES

"Policy recommendations. For EU Sustainable Mobility Concepts based on CIVITAS Experience" (2014) - ISBN-978-80-86502-77-9.

"Urban Mobility Package", European Commission (2013): http://goo.gl/2s75hT.

"White Paper on Transport. Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system", European Commission (2011): http://goo.gl/l6Fq7D.

ACTION 3.1.

INNOVATIVE ICT SOLUTIONS TO SUPPORT ADVANCED URBAN LOGISTICS REGULATION SCHEMES

ABSTRACT

This action is devoted to implementing an ICT platform to manage Urban Logistics regulation schemes in cities, specially focused on the loading and unloading areas and on access control. It will Iso consider the possibility of managing the demand for parking spots.

The description of the action considers regulatory and technological aspects. It also describes the general technological requirements to implement a new management platform with the objective of improving the management of the loading and loading spaces, taking into account the relationship between the offer and the demand.

KEYWORDS

ICT, Parking Management, Access Control

OBJECTIVES

The objective of this action is the development of an ICT platform capable of supporting the implementation by local administrations of advanced goods distribution regulation schemes in cities.

In fact, local administrations are often required to “increase the efficiency of the goods distribution process” in their cities.

This can be done in several ways but, more and more, the application of complex regulation schemes is required, whose management needs to be supported by adequate tools.

This opens the way to new applications of advanced ICT technologies specifically tailored to support Urban Logistics regulation schemes. They mainly address public administrations, but also local goods distributors and logistics operators.

URBAN LOGISTICS FRAMEWORK

The RTDI agendas analysed during the project pointed out that management systems for Urban Logistics and ITC technologies are between the points of interest for the regions. In this area a key role is played by the local authorities, namely the municipalities that are in charge of defining the regulations for the freight distribution process within their territory.

When municipalities face the problem of organising goods distribution in their territories, they have a lot of potential chances to regulate it that often are not used as they are too complex and require sophisticated tools to be managed. These schemes can vary from case to case according to the local conditions or the policy the single local administration wants to pursue.

The most common objectives are the following:

- To limit the interferences by the goods distribution vehicles with pedestrians or general urban life in particular areas of the city.
- To decrease the level of congestion on roads due to goods distribution.
- To limit as much as possible the distribution time windows.
- To limit pollution coming from the goods distribution operations.
- To limit as much as possible the accesses to defined urban areas.
- To make the flows of goods distribution vehicles compatible with specific urban structures (for example when the capacity of the streets is very limited or no parking places are available).
- To expand the distribution capacity (for example, in the case of fast growing commercial facilities in a certain area).

- To facilitate as much as possible the logistics operation, reducing the time necessary to carry out their deliveries and increasing the efficiency (km reduction, fuel reduction).
- To improve the quality of the services related to Urban Logistics according to the specific needs of certain kinds of business (for example, the catering industry can be managed with specific criteria).

Of course, in many cases of the above mentioned objectives are conflicting and a careful analysis should be carried out before stating credible objectives and defining effective regulation schemes. When defined the set of rules reflecting the desired policy, management and control of the operations are required.

At the moment a limited number of supporting tools is available, and most of them are fall-out from the general tools for regulating traffic in cities, while specific platforms devoted to Urban Logistics are very rare.

ACTION DESCRIPTION

Content
The market of ICT systems for supporting municipalities in implementing their policies in the Urban Logistics field has been selected as one of the most promising for the DOROTHY clusters for several reasons:

- There is sound experience on these technologies in the clusters.
- The potential market is wide and with a significant added value.
- The activity is fully in line with the Regional Smart Specialisations for almost all the DOROTHY regions, so that a tangible support can be envisaged.
- The cooperation set up during the DOROTHY project among companies and Municipalities gives the opportunity to ease the development process.

So the objective of developing an Urban Logistics management platform can be achieved in the short-medium term.

A platform is a concept that means an integrated set of hardware components and specific customisable software applications that can be composed in different configurations to support a wide set of possible Urban Logistics regulation schemes defined by the public administrations.

The platform will be composed of two main classes of components that will be described separately:

a. A set of diversified peripheral components to be installed on-street or on-vehicle to monitor parking stalls, accesses, vehicles.

b. A central software suite (running on standard computer architectures defined according to the required performances and on a standard software environment) of applications capable of managing the different foreseen regulation schemes.

The peripheral components will be of course connected to the central application through a data connection; different kinds of the most common data connection techniques can be managed by the system. The peripheral devices can be assembled in different configurations according to the specific application needs.

The foreseen devices are the following:

- I. Parking sensors: the parking sensors will give the possibility of continuously monitoring the state of each single stall. They are connected to an intelligent controller equipped with a wireless communication gateway. Parking sensors are low cost components, self-powered by a long-lasting battery, easy to be installed directly embedded in the asphalt or nailed to the road surface. This component will have the fundamental role of detecting the state of the parking stalls giving information to the central application that will manage the rest of the process.
- II. Smart phones: they can be powerful devices supporting software apps for different applications. In this way they play different roles within the integrated architecture:
  - i. Personal device for the on-street operators to access all the software functions directly connected with the central software applications. In fact, the freight distributors will have the possibility to access different functions on-street to such as stall reservation, visualisation of the state of the stalls. (See further description of the functions).
  - ii. Identifier through short range communication protocols such as NFC or others. Through the smartphone, the driver can identify via an app or via short range communication, the vehicle parked on a certain stall, and to send it to the central application to allow the parking management functions. The same function can be performed for the access control.
  - iii. A “light” version of an on-board terminal for all the functions related to the vehicle management. The smartphone can be “coupled” with a Radio Frequency Identification (RFID) tag resident on the vehicle and can continuously communicate with the centre to allow the management of functions such as vehicle tracking.
  - iv. Control device given to the municipal police or other operators devoted to parking/access control.
  - III. Access control gates based on the above mentioned UHF mobility gate, Bluetooth, or similar technologies, capable of reading moving vehicles equipped with RFID tags or equivalent devices.
  - IV. Short range tag readers that can be based on different technologies (RFID, Bluetooth, etc.): they are devices capable of reading a tag at a short distance and can be placed close to reserved parking stalls to allow vehicle/driver identification with simple RFID cards or other similar elements.
  - V. Local controllers and concentrators: This last class of components is devoted to locally concentrate information coming from other on-street devices and to manage (when necessary) the communication with the centre.
  - VI. A suite of software modules (platform) operating on a general purpose IDC (Internet Data Centre) architecture, providing a set of services to manage Urban Logistics regulation schemes. The suite will be modular and the different modules will be used according to the needs of the specific regulation scheme to be supported. The overall architecture will be web-based so that the customer will be able to access the service from any remote station. All the data regarding the logistic process (in all its aspects, from vehicles, to distributors etc.) will be centralised and managed in a unique system to allow their consistency and a unitary vision by the system’s operators. All the modules that will support the implementation of the regulation schemes will be configurable by an operator, so that they will be adaptable to different situations. All the interfaces will be based on the current most advanced state-of-the-art techniques, so that the use of the tool will be simple and intuitive: this implies that the operator, even if without any specific skill about the information system, will be able to customise the tool and to define regulation rules without any specialised assistance.

The platform will be able to implement the real time on-street monitoring and control of almost all of the regulation schemes. In fact, it will fully support the following types of schemes:

- a. Parking management:
- Simple parking bays reservation.
- Time-limited dedicated parking places.
- Time limited dedicated parking places with reservation possibility.
- Dedicated parking places with reservation possibility diversified for different product groups.
- b. Access restrictions for:
- Time windows.
- Classes of vehicle emissions.
- Time windows diversified for different product groups.
- Non-certified operators.
- Loading factor.
- c. Limited time of stay within a restricted area.
- d. Routing restrictions (eventually coupled with access restrictions).
- e. Incentives to operators through operators' certification.
- f. Economic incentives / disincentives based on charging policies.
- g. Use of non-polluting non-conventional vehicles.

The action development synthetically requires:

- Detailed specification of the product to be developed, its modularity and components, and its functionalities. This process will start from the products and expertise available in the clusters and will also be supported by the cooperation of the municipalities involved in the clusters.
- Development of one or more business models and market strategy for the procurement, installation and management of the platform suitable for the foreseen market.
- Development of one or more prototypes for testing and validation, engineering of the technological solutions and tuning of the final product.

The presence within the DOROTHY project of important municipalities will give the possibility of implementing some pilot applications for testing and tuning the product and the business and operation models, and to disseminate the concept and the product.

Skills and Expertise

The analysis carried out on the regional clusters has pointed out the existence at a regional level of companies owning significant basic technologies, skills and expertise to implement specific products devoted to support the implementation of regulation schemes for Urban Logistics by public authorities. There is a set of technologies/application products that can be considered as building blocks to implement this kind of system. They are:

- Access control management systems.
- Integrated parking management systems.
- Certification management and permits issue and management systems.
- Vehicle identification and tracking/tracing systems.
- Short range communication solutions: such as RFID, Bluetooth.

The integration of these products and technologies in a unitary suite specifically devoted to implement Urban Logistics schemes and to support their daily operation can produce an innovative product specifically targeted to public administrations and agencies.

- The basic technologies on which these products are based are represented by:
- Contactless identification: to develop applications such as:
  - Permission issue.
  - Automatic vehicle / permission identification.

- Smartphone applications: to use low cost and widely spread equipment to carry out functions such as:
  - Vehicle/permission matching.
  - Vehicle/permission verification.
  - Vehicle tracking/tracing.
  - General on-street operator interface.
- Stall occupation sensors: specific sensors (based on different technologies) that can detect the occupation by a vehicle. They are important as a basic component to implement the identification of the presence of a vehicle over a defined stall.
- - Web based and mobile software development techniques: these basic software development techniques represent the binding agent of all the different pieces of technologies in order to set up the different applications.

There are companies that have already developed some specific products that can be applied to Urban Logistics and that represent the basis for further developments toward the foreseen integrated platform. Moreover, this set of existing products can also enable a short-term cooperation among the different regional clusters to increase the market perspective for the companies and to contribute to their internationalisation.

An important requirement for developing an effective platform is also the knowledge of the needs of local administrations and logistics operators. In this sense the clusters' structure can provide useful cooperation with these players that belong to the clusters themselves.

It must always be considered that each scheme and methodology, to be adopted in a real environment, requires adaptation to the local conditions, to be implemented through design work carried out by skilled personnel, from the municipalities or from specialised companies/ professionals.

Stakeholders and Beneficiaries of the Action

The main stakeholders of this action are:

- Company members of the clusters operating in the ICT field: they will be the main developers of the action and will benefit from the possibility of offering on the market an innovative solution for Urban Logistics.

Another important class of stakeholders will be:

- Municipalities: they will be the main addressee of this action. They constitute the reference market for this product and they will at the same time be the main beneficiary. The ICT platform to manage Urban Logistics will provide an efficient tool to implement the desired policies and to improve the state of goods distribution in cities.
- Logistics operators: they will have to deal with this platform in managing distribution operations. The platform should also be a chance for them: in fact, the possibility for municipalities to implement more effective delivery schemes should result in a more efficient and less expensive delivery process.

The last but very important players are:

- Regions: they are required to support through different kinds of initiatives (economic, normative, communication) the effort for achieving the mentioned results.

IMPACT

Normative Framework

The implementation of the platform necessarily has to take into consideration the current regulation framework.

In fact, the possibility that municipalities have for defining schemes is limited by the national legislations (often including the Highway Code).

In this sense we have to underline that the situation is quite different in different countries, so that what is allowed (or not forbidden) somewhere cannot be implemented elsewhere.

The analysis has shown a general lack of regulations to support this measure, especially in the regions of Oltenia, Valencia and Lisbon. In these regions, at the moment only a part of the potential of the platform could be exploited due to normative limitations. Interventions at the national and local level would be necessary to allow a full exploitation of the platform functions.

The most important topics to be analysed about the normative framework are the following:

- Possibility to reserve stalls on public ground for loading/unloading operations; this possibility is accepted in almost all the countries.
- Possibility to reserve the occupation of a single stall for a certain time by a single vehicle; this practice is not allowed in all the countries.
- Possibility to define access limitation to commercial vehicles in certain areas at certain times; this is widely diffused and included generally in the normative framework.
- Possibility to track commercial vehicles; this is a controversial matter, because it is subject to privacy legislation. Several approaches are possible to overcome this problem, but the matter must be approached each time with a specific analysis.
- Possibility to detect the passage of vehicles with electronic systems and to enforce on the basis of this detection. Again, in this case the legislation varies very much from country to country and is linked to norms on privacy.

Given this normative framework, it has to be underlined that the analysis of the European legislation is an important part of the design work to implement the platform, for ensuring a modularity of functions capable of giving the possibility of applying the platform in the majority of European countries.

Reference Market and Economic Impact

The reference market for the action is represented by the municipalities or the local mobility agency; in fact, they are the bodies in charge of implementing and controlling the regulation strategies defined by the local councils.

The action platform is conceived to support two different approaches to the market:

- The first consists of the sale of the hardware and the software license to operate the system on the final customer's information system facilities. In addition, this model can provide customisation to a large extent and integration of the platform within more complex ITS (Intelligent Traffic System) architectures. It is a traditional market approach, appropriate for large cities having their own IT skills and facilities, and could be interested in interfacing other systems and platforms. A yearly fee for maintenance of the systems (hardware and software platform) is foreseen.
- The second one is represented by the delivery of a service to the cities, in which all the IT infrastructures to deliver the service are provided by the supplier in its own data centre and the final customer can access the service via the Internet. In this case the reference model foresees that all the hardware and software components are provided by the supplier and the customer pays an annual fee for the overall service. The fee is proportional to the number of software modules and hardware components used. In this model no initial investment is required and this significantly enlarges the number of cities that can adopt the platform.

It came to light during the regional analysis that several cities have not yet adopted a specific regulation for goods distribution in their territory, though there is a common perception of the importance of similar rules and there is a quite widespread availability for approaching the problem.

It seems realistic that in the next years a growing number of cities in the partner regions will adopt measures to regulate the goods distribution process, and this will significantly expand the potential market of technological systems to support the adopted schemes.

Taking into account these considerations, the reference market for the first market approach can be considered to be the large/medium size cities. We can consider the ones with more than 100,000 inhabitants.

The second approach can be adopted by a large number of medium cities, and even by small towns, especially when they have significant historical centres.

A rough estimation of the dimension of the potential market in Italy can be the following. The first model refers to the cities with more than or about 100,000 inhabitants: in Italy there are about 50. For these cases we can make hypotheses for two different sizes of systems:

- An average value of 750,000€ for the 10 largest cities with more than 300,000 inhabitants for a global value of 7.5M€.
- An average value of 400,000€ for the 40 other cities for a global value of 16M€.

This value is related to investment in a system whose lifecycle can be estimated as about 10 years.

- During this period we must also consider two additional sources of revenues: an average level of incremental investments for upgrading and adapting the system (quite common in large systems) that can be evaluated as approximately 5% of the value of the market yearly.
- The value of the maintenance and assistance that can be considered as 7.5% of the value of the market yearly.

The second approach that can be considered is the potentially interested cities with more than 50,000 inhabitants, in Italy there are about 100. Additionally, we can consider another 50 cities that, even though they are smaller, due to their characteristics they could be interested in the platform.

In the case of this model a yearly fee for the service is foreseen and the following hypothesis can be made:

- An average value of 35,000€ for the yearly fee, for an annual value of the potential market of 5.25M€.

So, a first evaluation of the potential market over a 5 year period leads to the following values:

- An accumulated value of 64.75M€ Composed of:
- An investment of 23.5M€.
- Services for 41.25M€.

Over the considered period of 5 years, a realistic market goal in Italy is to reach a share of 20% of the market, with a turnover of about 13M€.

If the same criteria are used to evaluate the market in Spain, there are 61 cities with more 100,000 inhabitants.

The analysis sums up accumulated values of 41M€ from the market. In the case of Spain, it is thought that the realistic market would be inferior in comparison to Italy and the market will be able to reach 15% of the global potential, with a turnover of 6.15M€.

To approach the market, it is very important to have the possibility of demonstrating the platform in a real environment, possibly installed and used by a municipality. This makes it possible to have a "peer-to-peer" reference for the system. For this reason, as a support

action to the market development, the implementation of a demo system in a municipality partner of the DOROTHY project is foreseen. This will be an important part of the commercial strategy for developing the market and to ensure the presence of the clusters' companies from the early stage of its development.

Environmental Impact
As direct effects, there may be mentioned:

- Less pollution coming from the goods distribution operations.
- Lower queues in traffic.
- As indirect effects, there may be mentioned:
- Increasing the distribution capacity.
- Improvement in the quality of the services related to Urban Logistics.

The action intends to optimise Urban Logistics obtaining, among other objectives, more fluid traffic flows and fewer kilometres travelled by vehicles related to loading/unloading activities. The action aims also to stimulate a better use of parking places in loading/unloading areas for commercial vehicles. For these reasons, in general its impact on the city and its inhabitants will be clearly positive. Of course the real environmental impact will depend on each specific application. We can only define a methodology for evaluating the impact through a set of indicators.

The basic indicator is:

- Overall driven kilometres (km).

This indicator is dependent on several variables such as load factor, number of deliveries so that its evaluation is generally quite complex. The target is in any case to evaluate the saving in driven kilometres; in fact it can give the possibility to evaluate the following main environmental benefits:

- Pollution reduction (gr/tons).
- Fuel reduction (gr/tons).
- Noise reduction (dB).

Another effect can be represented by the overall improvement of the traffic condition in the area linked to a lower congestion level in some time windows. This effect is more difficult to evaluate as it refers to the overall traffic flows in the considered area; it can be appreciated by measuring:

- Average speed of traffic flows in the area.
- Number of vehicles entering the area

The last effect is the one related to the use of urban space that is approached in the paragraph related to the urban impact.

All this complexity underlines the importance of defining an accurate methodology for the environmental impact evaluation that have to support the design of the regulation scheme and the related technological system.

Social Impact
The adoption of similar systems is always linked to the adoption of some regulation schemes that often have important social impacts on the local commercial operators and logistics operators. The process of designing and adopting them must be carefully managed for achieving an adequate level of consensus among these stakeholders. This is a very important aspect of the initial phases of the design process that must not be underestimated and that heavily involves not only specialists but also policy makers. The potential of intelligent regulation schemes supported by innovative ICT technologies gives the possibility to develop win-win strategies where benefits can be fairly distributed among all the stakeholders.

Another very important organisational effect is related to the adoption of advanced technological systems by municipalities. They require qualified skills in order to be managed and for this reason generally lead to an improvement of workers' qualifications.

Lastly, we have to consider that this action envisages the development of an innovative product to be exploited in a market perspective. This will have the effect of direct and indirect job creation for technology suppliers and research institutions.

Possible Indicators:
Quantitative:

- Estimation of direct and indirect job creation (in number of jobs).

Qualitative:

- Worker qualifications increase.
- Citizen's life quality improvement. Quantitative or environmental indicators may be used.
- Improvement of reputation of involved companies and institutions.

Urban Impact
At the urban level the impact is not defined by the implemented system itself, but is linked to the specific objectives of the scheme it supports. It can be very different in different cities so that so that we cannot identify precise effects they can have. They can be strong or negligible, positive or negative. This is the reason why the design phase of any implementation of this kind must accurately consider all the aspects of the scheme and adopt a clear methodology for evaluating its impacts.

Possible indicators:

- Variation in time windows for freight delivery.
- Number of stalls (that is space) devoted to loading/unloading.
- Number of commercial vehicles entering the analysed area.
- Adoption of restricted routes for commercial vehicles in the analysed area.
- Number of driven kilometres by commercial vehicles in the area (linked to emissions).
- Number of enforced violations by commercial vehicles.

DRIVERS/BARRIERS

The main drivers can be the following:

- The interest by some manufacturers in exploiting this potential market.
- The interest by municipalities in having a tool to manage their schemes at affordable prices and with a low level of demand for human resources.
- The interest by the regions in supporting this project in line with the S3 guidelines.

The barriers are represented by:

- The cost of the platform: a suitable business model should be conceived to also allow the use of the platform by the middle sized municipalities.
- The different normative frameworks existing in the different countries that could limit the diffusion of the platform by increasing the implementation maintenance costs. A careful design is needed to face this risk.
- The resistance of logistics operators which can see this tool as a mere control instrument. This opposition must of course be managed locally during the design phase in the cities, but, it is important to conceive the system in such a way that logistics operators can have a part of benefit, making their operations faster and cheaper.

FINANCIAL PLAN

Considering the technologies available on the market, to complete the described platform and implement a pilot case in a medium size city, it will be necessary to invest in:

- Engineering: project for the specifications, design of the application and tracing the development.
- Software: a central software suite of applications capable of managing the different foreseen regulation schemes.

The implementation phase will last about 10 - 12 months, and the testing and reshaping a period of 6 - 8 months, both reaching a total of 350,000 – 500,000€.

The estimated value was considered taking into account that the company or consortium will develop the software starting from the basic solutions already present in the market.

For the implementation of a pilot test case the following activities have to be carried out and the following resources will be necessary:

- Specific design of the application.
- Hardware: a set of diversified peripheral components to be installed on-street to monitor parking stalls, accesses, vehicles.
- Configuration, installation and testing.
- Monitoring.

The pilot test case would have an overall cost of about 100,000 - 150,000€.

The total resources needed to carry out the action will be 600,000 - 800,000€.

Then, as an example, taking into account the Spanish and Italian markets, and extrapolating the figures to the European market (the forecast was described above), the global market is estimated to be approximately 300M€. The DOROTHY Clusters could have a share of 10% so the accessible market is between 25- 30 M€.

So, it is important to enter the market rapidly in order to have a preference status which will attract customers.

ACTION 3.2.

OPEN DATA ARCHITECTURES TO SUPPORT URBAN LOGISTICS

ABSTRACT

The aim of this action is to incentivise new, better and more integrated services for Urban Logistics, for public authorities and ULOs, in line with the EU SULP trends, freeing the potential hidden in the Urban Logistics stakeholders' data, not yet publicly available and/or shared. For this goal, we propose to develop a sustainable Urban Logistics Open Data Platform (ULODaP), a city HUB able to (1) collect data sets useful for the Urban Logistics operations and (2) provide Urban Logistics services, sharing those data in a standardised way at the local and (inter-) regional level.

This action is strictly complementary to the action "Availability of Open Data for Urban Logistics" as it can ensure the availability of Open Data contents by the public administrations. Moreover, it can also be related to the action "Regional Urban Logistics accreditation system" that can be seen as a specific application of this general platform. Urban Logistics operators and all the stakeholders should be seen to harmonise procedures and protocols for the interchange format, whilst respecting the local specificities.

The action must have the support of the regulatory authorities, at local, regional and national levels.

KEYWORDS

Interoperability, Harmonisation of Services, Urban Logistics Data and Services HUB, ULODaP

OBJECTIVES

This actions propose to design and implement a standard architecture of an Urban Logistics Open Data Platform (ULODaP), an inexpensive city HUB for data (mainly open, closed, static, dynamic, rarely varying, in near real time, etc.) verticalised on the Urban Logistics domain, which can be developed and/or adopted by a city of any size at the regional level.

The implementation of such an IT scalable, cloud and web-based platform complements Action 2.2 and Action 2.3, in fact:

- A2.2 - Open Data for Urban Logistics, is focused on the preparatory actions for Urban Logistics data set scouting, analysis, harmonisation, standardisation and collection and publishing.
- A2.3 – the Regional Urban Logistics accreditation system will be a first example of an application taking advantage also of the Urban Logistics open / closed data set availability, providing new, better and integrated services.

URBAN LOGISTICS FRAMEWORK

The theme of urban freight transport is vital to the economic activity of the city and its citizens. Cities, in fact, must be continually replenished and fed in order to play their essential role of being places of production and consumption of goods and services, as well as social relationships. At the same time, there is increasingly the need to reduce the negative impacts caused by Urban Logistics on our cities. However, it is impossible to achieve these objectives without having the right and promptly available information. There is still a lack of trusted, affordable and continuously updated data in the Urban Logistics domain, which needs to be accessible and shared by all the stakeholders, public and private, and citizens. This situation prevents the rise of new, more integrated, sustainable and efficient services which penalises all the stakeholders and the liveability of the urban area.

Open Data published by governments and private institutions, and a company's own data shared with stakeholders, may also provide additional scope for big data applications, enabling entirely new developments in studies, analytics, operations and, generally speaking, innovative services. More and more Open Data may be published and integrated with traditional and new data sources, contributing to innovative big data-based analytics, useful both for public authorities and the freight transport system. On this side, it is likely to have its highest impact on improving the efficiency of freight operations, enhancing capacity and asset utilisation, and adjusting and synchronising transport schedules. To meet this aim, it is increasingly important to identify Open Data and data sharing use cases, and provide tools for their use and adoption into corporate data.

These considerations are in line with:

- The specific measures identified by the EC 2013 UMP, which recommends better co-ordination and data sharing between Urban Logistics actors, both public and private, as key factors for improving the negative impacts of Urban Logistics.
- The launch of the EU Open Data portal in November 2015 (EU +28: 28 European countries plus Liechtenstein, Norway and Switzerland), financed by the European Commission with the aim of improving accessibility and increasing the value of Open Data in the EU.

In accordance with the EC recommendation, and in line with their Open Data vision and strategy, we see room to design, implement and promote a standard, modular Urban Logistics reference architecture with direct and indirect benefits for all the Urban Logistics stakeholders.

ULODaP represents an application layer that can be adopted by all cities at the regional level to open, and often integrate, the existing ITS siloes platforms. They can offer together open and closed data and services related to Urban Logistics, in a standard, interoperable and sustainable way, which safeguards the local policy maker's autonomy and the existing investments.

ACTION DESCRIPTION

Content

The action foresees the implementation of a special platform (called conventionally the ULODaP platform) for making available to all the potential users Open Data regarding Urban Logistics in a simple and inexpensive way.

The definition of such a flexible platform implies the solution of several technical challenges to find the best technical solution with acceptable costs.

The platform will allow the publication, management and consumption of open / closed datasets identified in Action 2.2, providing tools to:

- catalogue
- upload, also automatically
- manage
- collect
- share, also automatically
- find
- use

open datasets and data sources provided by the city - and, where available and/or feasible, their ITS systems, also in a continuous way - while supporting searching, browsing, visualising or accessing Open Data.

From the technical point of view, the platform will satisfy the following specifications:

- Web based, providing access from everywhere to all.
- Cloud, so taking advantage of low cost, affordable cloud infrastructures.
- Scalable (horizontally and vertically), able to adapt to the possibly huge amount of data provided by small, mid-sized and large cities and also from different ITS subsystems of the Urban Logistic domain.
- Expandable, able to adapt over time to the needs of small, mid-sized and large cities.
- Easily installable and manageable.
- Accessible, for gathering and providing data, also via well documented and, possibly, standardised API, the key feature for enabling the rise of an entire ecosystem of innovative and integrated services and applications.
- Able to realise a federation of ULODaPs, enabling a common search and data exchange.

The architectural characteristics (cloud, scalable, expandable) with its main feature (easily accessible both via web interfaces and through API rest/Web Services) will make it general and adaptable to each city's needs and dimensions which can be marketed in SaaS (Software as a Service) modality to all the cities in the cluster's regions, in EU and potentially worldwide. This is another qualifying objective of the cluster's activity, which will realise a product with a high impact on the market.

Skills and Expertise

Not only is the implementation of the ULODaP central to this proposal, but also to provide tools for its sustainability over time, without which the platform is destined to fade away in a short time, by also providing closed, enriched data and added value services typical for managing Urban Logistics operations at the city level.

Although the specific objective of the action is mainly technological (analysis, design and development of the ULODaP), the following skills and expertise are needed for its achievement, its effectiveness and maintenance:

- Legal and administrative: (a) knowledge of national, regional and municipal laws and norms underlying the definitions of ARS for the Urban Logistics, (b) knowledge of national laws and standards for the citizens' privacy and data protection/retention.
- Transport engineering consultant / analyst: (a) comparative analysis of the processes and procedures for the Urban Logistics management, for each region / cluster / country.
- Standardisation processes and R&D activities: analysis and development of standardisation activities in the domain of ITS applied to Urban Logistics, along with the development of the required new technologies envisaged for the realisation of the ULODaP.
- Technological level: deep knowledge of worldwide ITS technologies (HW and SW) already available and of best practices, for providing and managing data and services in the Urban Logistics domain, along with the ability to design and develop ITS platforms for Urban Logistics.

Finally, the definition phase of the platform should also involve representatives of public authorities, both at the city and regional levels, as:

- Institutional bodies responsible for regulating and managing the entire urban mobility, through the definition of policies, rules and the deployment of appropriate technology tools.
- Institutional actors which will be in charge of ULODaP ownership and management.

Among the partners of the DOROTHY project and the regional clusters' members, different ones could guarantee all or some of these skills and expertise so that any initiative in this field could be approached by the clusters.

Existing Products/Experiences

As already described in Action 2.2, a real and complete Logistics Open Data Platform specifically developed to support Urban Logistics is not available in European cities, so that it is not possible to provide a list of the existing "products" (meaning overall hardware/ software solutions merged in an Open Data Platform).

However, we can provide some very good examples of Open Data Platforms regarding more general passenger mobility such as those of London and Madrid. Some indicators of the London Open Data Platform are presented:

- More than 5,000 developers registered, consisting of around 30 feeds and APIs focused on enabling provision of high-quality travel applications, tools and services. Developers have created hundreds of applications, reaching millions of active users.

- Data are presented as XML wherever possible (but also the more lightweight JSON format is taking place), in three main ways:
  - a. Static data files: data files which rarely change.
  - b. Feeds: data files refreshed at regular intervals.
  - c. API (Application Programming Interface): enabling a query from an application to receive a bespoke response, depending on the parameters supplied.

Having said that, it is well-known that other Open Data are available on the market, even though they may have a specific or eventually limited set of contents (i.e. OpenStreetMap, it-city.census, etc.), therefore these examples could be considered as a starting point.

Moreover, different research projects have been working and/or are still working on this issue:

- "Urban Access Regulation in Europe": a website providing all the information you need (accessible only via web) for Urban Access Regulations in Europe, provided by the CLARS (Charging, Low Emission Zones, other Access Regulation Schemes) platform and funded by the European Commission.
- "Osservatorio Regionale per la Mobilità ed i Trasporti" of the Tuscany Region: the Tuscany Region has set up this mobility and transport observatory in order to support planning, programming and administration activities. SUPERHUB is strongly committed to the realisation of an open source platform and mobile app able to plan customised urban routes, combining in real time all mobility offers.
- Citadel on The Move, aiming to make it easier for citizens and application developers from across Europe to use Open Data to create the type of innovative mobile applications they want and need.
- iCity, aiming to develop and deploy an approach to allow these interested parties to create, deploy, operate and exploit services based in the use of available public information, digital assets and infrastructures in cities.
- CitySDK, aiming to provide better and easier ways for cities throughout the Europe to release their data in a format that is easy for the developers to re-use.

Stakeholders and Beneficiaries of the Action
Such an action has direct and indirect beneficiaries.

As direct players, we shall mention:

- Regions, as main promoters of this social innovation action, with the role of Institutional Policy Makers in charge of promoting activities and tools which may concretely stimulate new form of economy by innovation, facilitating the matching of supply and demand for digital services by the enterprise system in favour of citizens.
- Regional Municipalities, as main public owner and provider of Urban Logistics Open Data, in charge of providing and maintain a local instance of the Urban Logistics Open Data Platform.
- (freight) Transport service providers, ULOs and even their associations: they should contribute to feed ULODaP with companies' own data shareable with the stakeholders.

As indirect beneficiaries/players of the action there are:

- (freight) Transport service providers, ULOs and even their associations: they are also the primary indirect beneficiaries of such a city HUB for new open, and also closed, data specific for the logistics domain.
- Consultants and transport planners: to support the definition of all possible information that could be useful to include in the Open Data Platform and to evaluate and analyse different factors regarding "data collection and use".
- Universities and research Institutions specialised in transport and logistics: they will have new valuable information for a deeper insight on logistics flows at urban and inter-urban level.
- ICT providers for the ULOs:' value chain: they will be able to realise new integrated services.

- Citizens: they will benefit from the diffusion of the access regulations policies for Urban Logistics as an effective tool for reducing the negative impacts of Urban Logistics on the city traffic and environment.

EVALUATION OF IMPACTS

Normative Framework
In order to realise the ULODaP, we will take into account the following normative framework:

- Public Open Data publishing regulations at the EU and national level. Different regulations in each country may exist, which must be taken into account.
- Privacy: part of the Urban Logistics dataset may concern personal data belonging to ULOs, drivers, businesses, etc., so EU and national laws must be taken into account for their correct collecting and "persistence".
- Closed Data management regulations: the ULODaP may as well also collect and provide some specific closed datasets. In this case, all the privacy, non-disclosure and intellectual rights and legal/normative implications will be duly managed during the implementation of the action.

Reference market and Economic Impact
This action focuses on Urban Logistics of cities of any size (small, mid-sized and large), so the reference market is potentially global.

Using a low estimation of the initial market size at the EU level, the number of cities interested in adopting the platform can be estimated to be about 850, according to EC 2012 "Cities in Europe – The New OECD-EC Definition" which has identified 828 (greater) cities with an urban centre of at least 50.000 inhabitants in the EU 28, Switzerland, Croatia, Iceland and Norway.

For evaluating the total market value, we make the following assumptions:

- A mean target market price of 40,000€ for each ULODaP installation, including setup and configuration.
- A mean of 10,000€/city, for API integration with on field IoT/ITS systems.
- A mean of 2,500€/year for the cloud infrastructure.
- A mean of 2,500€ for yearly maintenance
- The reference period is 7 years
- During this period only 70% of the considered universe of cities will adopt this kind of systems

Considering all these figures, the overall market value is greater than 29M€ from direct selling. Another revenue stream will be generated by the maintenance service (hardware and software) whose yearly value can be estimated in more than 2.5 M€.

Looking at these figures, it can be said that the overall European potential market can be estimated in 30- 35 m€

If it can be certainly considered small, the indirect impacts are huge.

In fact, due to the ULODaP providing data and enabling the integrated services, it will be possible to:

- Enable an entire ecosystem of innovative Urban Logistics applications and services, by facilitating the matching of supply and demand for digital services by the enterprise system in favour of citizens.
- Optimise the Urban Logistics processes at city and regional level, from anyone's point of view: public authorities, transport service providers, final users of these services and citizens.
- Increase the efficiency of logistic services within the urban area:
  - Better planning of the delivery process, at a general level.
  - Better planning of vehicle routes.
  - Reduction of lost time.

- Reduction of unexpected events affecting the efficiency of logistic services in urban areas.

All these benefits could contribute to:

- For citizens: enjoy reduction of time wasting in traffic congestion, noise, pollution, GHG emissions, energy wasting.
- For city administrators and public authorities:
  - Direct benefits: better control and management of the overall mobility in urban areas, more efficient enforcement of illegal behaviours, reduction of congestion and improvement of the quality of life for citizens.
  - Indirect benefits: improvement in the efficiency of those processes affecting (also) mobility in urban areas, as for example planning of road maintenance / works, spatial and urban planning, services to citizens, etc.
- For transport service providers: Increase in efficiency due to reduction of delivery time and access to integrated services; cost savings due to fuel consumption reduction.
- For transport planners and consultants: access to valuable, punctual, standardised and certified information, which are not yet available in the market.

Environmental and Energy Impact

The aim of Action 3.2 is to incentivise new, better and more integrated services for Urban Logistics, for public authorities and ULOs, in line with the EU SULP trends, freeing the potential hidden in the Urban Logistics stakeholders' data, not yet publicly available, accessible and/or shared.

The Open Data platform will have indirect environmental and energy impacts, as a possible consequence of the acquisition of new knowledge concerning Urban Logistics (enablement of BigData analysis), and stimulating the birth of innovative and more integrated Urban Logistics processes and services:

- Air and noise pollution reduction due to: a potentially lower number of commercial vehicles, from their shorter routes and travel time, a lower impact on city traffic congestion.
- Fuel consumption reduction for freight transport service providers, due to a potential increase in efficiency resulting from a reduction in delivery time and access to integrated services.

DRIVERS/BARRIERS AND RELATED ACCOMPANYING ACTIONS

As already described in Action 2.2, the main barrier is still due to the limited awareness by the public administrations and by the logistics operators of the importance of Open Data and the lack of technical knowledge about this topic. The situation is quickly going to change as a growing interest about Open Data is raised by several initiatives. Notwithstanding this, promotional actions to spread the culture of Open Data and architectures should be carried out in the less advanced situations.

On the hand an important driver for the development of Open Data structure by the public administrations can be the interest of the logistics operators in having a complete set of updated data to develop useful applications that can increase their productivity and lower their operational costs.

Another barrier is represented by the investment and the running cost of the platform. New public private cooperation schemes should be the right solution to these kinds of difficulties.

As a general comment we can say that there is no technical barrier to be overcome, because all the tools and instruments are now ready.

FINANCIAL PLAN

According to our experience, we estimate the following items for the design and realising a prototype of the envisaged ULODaP:

- Coordination activities between all the stakeholders actively involved in the development phase (regions, municipalities, ICT companies, R&D institutions and operators).
- Travel and meetings.
- Normative analysis Open Data licensing and on data protection.
- Technological analysis (analysis and definition of platform requirements, market scouting for technological components and standards).
- Platform design (central platform and city component).
- Development and testing.
- Cloud infrastructure/year.

For performing all these activities, we envisage an overall cost of 200,000€.

To implement almost two demonstrators, , a further budget of 300,000€ is required..

The total investment to start the implementation of this action is around 500.000 €.

REFERENCES

"Urban Mobility Package", European Commission (2013): http://goo.gl/2s75hT
"Cities in Europe – The New OECD-EC Definition" (EC - RF 01/2012): http://goo.gl/ulz2uZ
"European Data Portal": http://www.europeandataportal.eu/

ACTION 3.3.

PROXIMITY DELIVERY AREAS

ABSTRACT

Proximity delivery areas (PDAs) are basically urban trans-shipment platforms, where it is possible to provide assistance for the sorting of deliveries in the last mile, direct to business/consumers located in specific areas (often the city centre). The goods are unloaded from incoming vehicles, and loaded on pallet trucks, electric vehicles and bicycles for the final segment of the distribution. Proximity delivery areas can be developed in different shapes/sizes/operational modalities, according to the specific urban constraints such as morphology, activities distribution, volume of the incoming goods. This flexibility can be assured of attracting and managing a large share of the goods directed to city destinations, reducing congestion problems that affect those areas. This action is devoted to the development of PDA products and their diffusion and it suggests a strategy/operative modalities to implement a PDA around limited traffic zones, historical city centres and other urban environments.

KEYWORDS

Proximity Areas, Last Mile Distribution, B2B Solutions, Smart Pick-up Parcels Solutions, Goods' Tracking Solutions

OBJECTIVES

The action is targeted to develop within the clusters the development of products and applications based on the PDA schemes and concepts.

With this aim two different specific objectives have to be pursued:

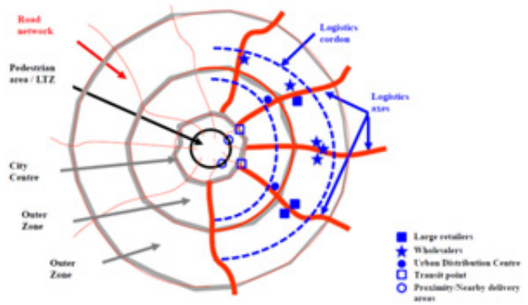
- Development of innovative design criteria for the implementation of PDAs around limited traffic zones (LTZ), historical centres and other urban environments, and the definition of their main effects/impacts. These criteria will include not only technical aspects, but also all the aspects linked to their implementation in cities.
- The diffusion of the adoption of the PDA schemes in the cities of the DOROTHY regions.

This will produce an economic and environmental improvement in logistics performances in urban areas. Furthermore, the development of an action such as this one focused on PDAs, could:

- Trigger the involvement of logistic operators with the aim of developing accreditation criteria for vehicles and platforms, in order to create a short-list/register of the logistics operators working in selected areas.
- Endorse technology fertilisation, knowledge transfer on open and interoperable solutions, economic affordability and use of applications to manage those areas.

THE LOGISTICS FRAMEWORK

The general framework that encompasses all the issues related to proximity/delivery areas can be described focusing on sources and destinations of goods' flows in cities.



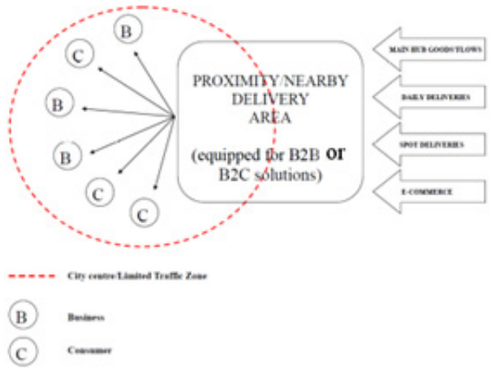
A large number of flows come from the outer zones of urban areas directed to the city centre or other areas with high concentrations of business and commercial activities (see figure 1). The picture clearly explains how urban area can be subdivided, for logistics purposes, into the following zones:

- The city centre, with a maximum density of residents and tertiary activities on an urban scale. It often includes the historic centre, which can be further decomposed into:
  - One or more limited traffic zones (LTZ).
  - One or more pedestrian zones.
  - Rest of the urban centre.

Roads here, especially in old cities, are often narrow with a limited number of parking bays and with large numbers of interferences between vehicles and pedestrians.

- Outer zones, typically two main areas, characterised by the following peculiarities:
  - The first one (closest to the city centre) generally residential, with tertiary activities at a local level, where the main road network is characterised by neighbourhood-streets and whose outer limit is constituted by a main road network ring.

The second one, generally with a low population density and prevalence of secondary activities or the services sector, or industrial plants where the main logistics hubs like urban distribution centre, large retailers, wholesalers, etc., are located.



PDAs are generally located on the boundary of the city centre, collecting goods' flows from the logistics hub located in the outer zones. Zooming in on the city centre, it is possible to observe the phenomenon described in Figure 2.

This approach can be applied to Business to Consumer (B2C) or Business to Business (B2B) deliveries. It is important to remember, in order to properly design and realise PDAs, that technological solutions are different in the two cases.

ACTION DESCRIPTION

Content
The implementation of this action is quite complex.

As described more in detail in a later part of this document, the main applications in the field have been implemented by single operators for B2C applications. The DOROTHY project has envisaged the possibility of developing a special segment of this market that:

- Is specialised in B2B applications.
- Is particularly suited to applications in historic centres or in any case valuable parts of the cities.

- Can handle goods from different distributors as it will be able to serve a whole, even if limited, territorial area.
- Can allow self management by the final users (shopkeepers and other business operators).
- As an additional feature, can be easily installed for temporary uses.

Of course the typology of goods that can be handled should be limited to a definite set (for example goods such as frozen or fresh foods and jewels are not included).

Lastly, as the application of the PDA scheme can significantly differ from case to case, depending on the specific city and local situation, this product must be modular and applicable in different environments with different sizes, management rules, etc. (as is the case of automatic warehouses).

The action development synthetically requires:

- Detailed specification of the set of PDA applications to be developed, starting from the expertise available in the clusters. This activity will also define the typology of goods to be handled, the maximum size, the components and their modularity etc.
- Definition of the design criteria for applying this technique to different urban environment and needs.
- Development of a sustainable business model for the procurement, installation and management of the PDA.
- Development of one or more prototypes for testing and validation; engineering of the technological solutions and tuning of the final product.

It should be emphasised that the presence of important municipalities within the DOROTHY partnership gives the possibility of carrying out pilot applications in one or more of the cities.

Skills and Expertise
A multiplicity of specialised skills are required to carry out the action:

- Systems for temporary warehousing, including software and hardware for its management.
- Security systems and equipment for goods tracking and delivery to businesses/consumers.

In this way it will be possible to cover the whole supply chain of activities starting from the goods tracking following their order, passing through the warehousing in the PDA up to the final delivery to the business/consumers (this last step does not exist if the business/consumers collect the good by himself in the PDA).

Existing Products/Experiences
To define the list of existing products it is fundamental to refer to other good practices, developed at the European level. In this sense, the innovative projects developed as "Pick up Points" (PuP) in public locations, private facilities or parking areas could represent a good reference point. Furthermore, the experiences analysed to define a project scheme are:

- The Pick-up Points (PuP) operated in public locations (e.g. public buildings). A reference for this scheme is the Packstation™ system operated by DHL-German Post in several cities and towns in Germany. This solution is devoted to B2C applications.

PuP based delivery services, involving facilities from other service chains, e.g. using petrol stations as in the Kiala service, operated in Benelux, TNT, UPS and Shell partnership, etc (for further details see: https://www.kiala.com/).

- PuP based delivery services integrated with other mobility related services, e.g. delivery services at parking and Park & Ride locations, like the Park & Buy scheme piloted in Siena, Italy, or a similar scheme operated in Ipswich, UK, and Trondheim, Norway (for further details see:
- http://www.enclose.eu/upload_en/file/deliverables/ENCLOSE_D5_2_SULP%20methodology_final%20version.pdf).

Another model is called “smart boxes” where it is possible to temporarily store goods and parcels directed to the city centre:

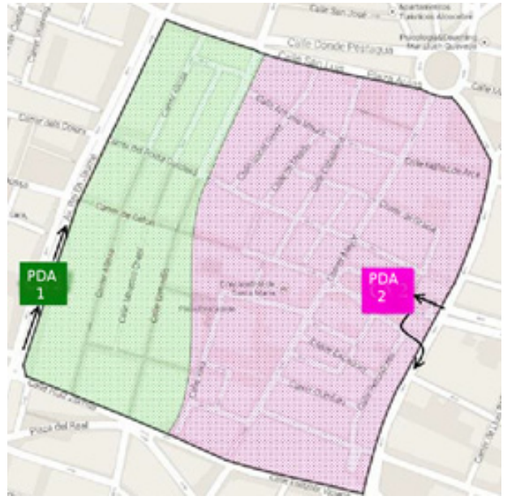
- Smartbox Inc. offers moving and storage solutions, able to store each unit in secure, temperature controlled storage facilities. The storage facility can be moved with a forklift and loaded on a truck. This way the systems can easily support retailers seasonal storage and temporary event storage. http://www.smartboxmovingandstorage.com/home).
- PODS containers are weather resistant, breathable (which allows for the movement of air and the prevention of moisture related problems) and are designed to minimise content shifting while the container is loaded and unloaded (see http://www.pods.com/commercial/).

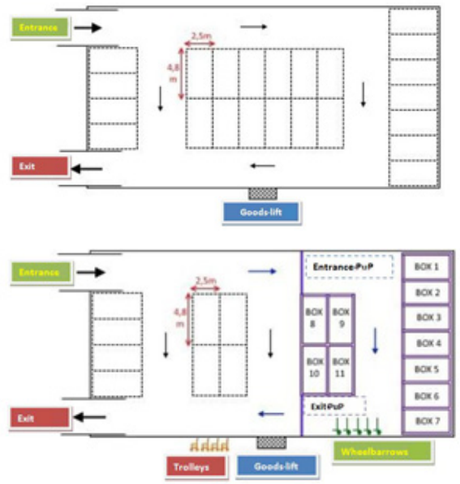
The pods have been designed with a lift system in order to allow easy relocation/repositioning which eases, among the other options, seasonal refurbishment of goods.

Development of a Pilot Application
As mentioned above, the development of a pilot is of great importance for the development of the action. For this reason the DOROTHY project tried to define a possible application in a real environment. The following figures show how, in a suitable study area internal to a limited traffic zone and characterised by a high density of shops/retailers, an innovative PDA can be developed. The aim is to transform part of the parking slots into a PDA equipped with a smart box, trolleys and all the necessary systems necessary to allow:

- Easy unloading of the parcels by logistics operators.
- The possibility of storing parcels with a wide set of dimensions within the box.
- The possibility for the final business and/or consumer to unlock and collect the parcels from the boxes through a suitable application based on apps or similar IT applications.

The following figures outline a specific scheme applied to a real case in a DOROTHY partner city.





Stakeholders and Beneficiaries of the Action
The development of such an action, according to the size and the scale of the planned intervention, could involve both public and private stakeholders. Concerning the public sector, the entities that could be interested are the municipalities. Concerning the private sector, the companies interested in the development of this action are those active in the following fields: transport companies, couriers and all the city logistic operators. To develop the PDA technology: companies involved in the development of systems and equipment for warehousing management.

As it is the final product composed of several components and technologies, other kinds of companies can be interested as providers of specific technologies:

- Security systems designed for logistics, goods handling and access control.
- RFID and bar code systems for freight and goods' tracking systems.
- Specialised software companies.
- Electronic components and systems providers

Each application should be designed specifically on the situation of the city, its targets, etc, so that significant players can be the engineering companies operating in the field of urban logistics.

EVALUATION OF IMPACTS

Normative Framework
Generally the adoption of a PDA scheme is coupled with a restricted access or some specific regulation for encouraging the use of the PDA. This means that the relevant normative framework to be considered is the one related to these accompanying schemes more than the PDA itself. The most significant problem related to the set up of PDAs, especially the permanent ones, is related to their implementation and management: it is quite complex and expensive, as it implies the definition of specific agreements among all the interested parties.

The pilot application, as it is proposed, does not have any specific requirement from the normative point of view. In case the PDAs are located occupying public land, specific agreements/duties have to be negotiated with the local public authority.

Environmental Impact
The environmental benefits of this action are mainly linked to the reduction of kilometres driven by the logistics operators in order to carry out the deliveries.

Additionally, if the scheme foresees the use of electrical vehicles or cargo bikes, there is an additional benefit linked to the additional lower CO2 emissions.

The impact can be different from case to case and is also linked to the business models adopted and the regulatory framework supporting the deployment of the PDA. So a general measure cannot be given. On the other hand it is possible to point out the elements that contribute to the overall environmental evaluation.

Possible Indicators:

- Kilometres travelled.
- Type of vehicles used for delivery to / from the PDA.

These two data can give the savings in terms of pollutants with respect to the ex-ante situation. The same data give the possibility of evaluating:

- Fuel reduction.
- Noise reduction (dB).

Of course the number of kilometres travelled is influenced by multiple factors such as:

- Load factor of vehicles.
- Number of deliveries.
- Average distance between logistic centre and delivery points (km).
- so that an accurate evaluation must be carried out on a case by case basis in order to define appropriately the specific application conditions and the relevant assumptions.

Lastly, there is another variable that could affect the environmental performances, that is:

- Impact on traffic flow (veh/hour)
- due to the lower number of vehicles circulating in some time windows, but this effect is generally negligible.

The last effect that should be evaluated is the balance in terms of public spaces devoted to freight distribution. It can be done by evaluating the balance between

- The space devoted to the PDA; and
- The number of loading/unloading points cancelled in the area.

Social Impact
The adoption of PDA schemes has important social and urban impacts on different stakeholders.

Logistics operators are generally in favour of such schemes as they generate economic savings for them and a simplification of the delivery process. Where the adopted scheme includes the use of electric vehicles for delivering the goods to the PDA, it is often also accompanied by the improvement of the reputation of the companies due to the use of clean and new technologies.

Sometime the use of PDAs can also be a means for job creation or reconversion for the management of new technologies. This is the case when the delivery from the PDA to the final addressee is carried out by specialised companies using cargo bikes.

The perception can be different from the side of shopkeepers and other final business users. At the moment they are used to having the delivery at “home” so that the need to change their habits can generate resistances. To overcome them, there are different issues to be used. Firstly, they do not the need to be present (often early in the morning or late in the evening) for the delivery. The second is a better level of service (for example through the use of cargo bikes during the day) or a lower cost.

Another important aspect is the location of PDAs. If we refer to temporary PDAs, cities must point out proper spaces for leaving the physical PDA during the selected periods. They must be accessible by vans for the delivery and also by foot, bikes, etc. for the pick-up and must be conveniently located to serve a defined area. The selection of the areas is the most critical point and must be carried out very carefully, as it is a key success element. The need to devote an area to this is generally balanced by cancelling a certain number of loading/unloading spaces in the same area, so that a fair balance can be found.

On the other hand a permanent PDA can be set up for certain commercial areas. In this case the location is not on street but in parking places or within buildings (which can be of very different types). In this case the cost can be higher and a proper financial scheme to support them is needed. Solutions can be very different, but there is the need to balance in some way the economic benefits to the logistics operators with the additional effort required for the local shopkeepers, achieving a fair distribution of savings and extra costs.

In any case it is important to underline that any scheme using PDA techniques addressed to B2B applications must be properly designed according to the local characteristics and needs and through the involvement of all the local stakeholders. It is particularly important to find a solution that can balance the advantages and benefits.

In terms of effects on the urban environment that the action can trigger in the municipality interested in the adoption of PDAs we can list:

- Improvement of quality of life of the citizens, because of of the reduction in traffic volumes and related pollution and noise.
- Better use of space, avoiding a certain number of loading/unloading parking stalls in the areas served by PDA.
- Improvement of the city’s image and reputation.

Reference Market and Economic Impact
Although PuPs and/or other similar systems have been developed not only by DHL, but also by Amazon and other e-commerce platforms, in order to ease the delivery process of goods acquired on-line, there is still no systematic application of PDAs able to satisfy B2B needs and not directly

managed by the logistics operators, but available as a solution for the needs of cities or groups of economic operators. According to the specific request of customers and businesses located in LTZs/city centres there is a huge economic potential related to the diffusion of PDAs. The main target market is European cities, most of which have significant and precious historic centres.

Another important market could be represented by other cities looking for temporary solutions for specific/seasonal needs (i.e. for fashion/industry). Seasonal cycles, indeed, often require temporary flexible space for distribution and storage. The development of this solution implies the need to allow, from an administrative and legal point of view, the possibility of occupying public land/parking slots where temporary warehouses can be installed.

The economic impact is twofold. The first one is related to the development of new PDA products and their implementation. The second one is related to the local PDA operation.

The cost of a PDA application can vary according to its characteristics, including:

- With/without concrete infrastructure / building.
- Temporary / stable.
- Fully automated or not.

The total market of PDA solutions has still to be evaluated. According to a very preliminary market evaluation it is possible to estimate the potential market at the EU level in 150 applications in a period of 7 years, with an average value between 200,000 and 400,000 €. An additional yearly value of 10% can be foreseen for maintenance and upgrading. This will lead to a potential EU market of about 50 Millions €. A share of 15% of this market has been assumed for the regional clusters' companies so the expected market should be around 7 million €.

The local operation of each PDA is heavily dependent on the adopted organisational scheme. The associated costs can be roughly evaluated between 30,000 - 80,000€ /year, according to the specific situation (surface/ number of deliveries / technology/ PDA management, etc.). Assuming these figures, a yearly market between 3 - 8M€ for the PDA systems operation can be estimated.

The action, in general, has an important economic impact on the different stakeholders involved.

The costs for setting up a PDA can be significant for logistics operators and, especially, municipalities; but the expected incomes or saving in terms of shorter route distances and times can be very important when analysing this scheme. From the point of view of the logistics operators the adoption of PDAs is generally beneficial, as they can save time and driven kilometres, but a real balance of costs and benefits must be carried out case by case.

Furthermore, this action entails important business opportunities for research institutions and technology suppliers.

DRIVERS/BARRIERS

The main drivers can be the following:

- The interest by municipalities in having a solution to critical situations especially in historical centres.
- The savings that logistics operators can achieve by adopting PDA techniques.
- The interest by some manufacturer in exploiting this potential market.

On the other hand, several barriers exist:

- The cost of the application of this technique. This barrier can be overcome by defining appropriate business models for the whole life-cycle of the PDA, taking into account that, to a different extent, all the players can have benefits that could be economically evaluated.
- The resistances of shopkeepers, retailers, vendors that are used to doorstep delivery. Theoretically they can benefit from this solution in terms of flexibility and lower costs, but a significant action of information and conviction must be carried out case by case.
- A strong commitment by local administrations is needed as a complex design and implementation process is required and the involvement of the local stakeholders is needed through a participative process which is not easy to carry out.

FINANCIAL PLAN

This financial plan includes the costs necessary to develop all the design of the product and the implementation of a first prototype in a DOROTHY partner city. It will work as a test for the technological solutions and the operational schemes. The foreseen costs are:

- - Research and design costs 350,000€
- - Implementation pilot test 350,000€
- - Total700,000€

REFERENCES

http://www.civitas-initiative.eu/http://www.edrul.org
https://info.kiala.com/concept
http://www.niches-transport.org/
http://ec.europa.eu/transport/themes/urban/urban_mobility/ump_en.htm
http://ec.europa.eu/transport/extra
http://www.cometa-project.com/uk/ukproj0c.htm
http://www.freight-village.com/fv2000/
http://www.bestufs.net
http://www.tfl .gov.uk/tfl /low-emission-zone/
http://www.civitas-mobilis.org/
http://ange.archangelis.com/typo3/niches/
http://www.civitas-initiative.org/project_sheet?lan=en&id=1

ACTION 3.4.

MOU – COOPERATION FRAMEWORK BETWEEN THE DOROTHY REGIONAL CLUSTERS ON URBAN LOGISTICS

ABSTRACT

The DOROTHY project has achieved the result of setting up three regional innovation clusters in

- Valencia – Spain,
- Lisbon – Portugal and
- Craiova – Romania

under the mentoring action of the already existing Tuscany Cluster in Firenze. They operate in the field of Urban Logistics. This achievement should be durable such that the cooperation among the DOROTHY clusters must be ensured after the end of the project. For this reason, among the other activities carried out by the project, a Memorandum of Understanding (MoU) has been signed among the four clusters in the form of a multilateral and mutual agreement among them.

The MoU for the clusters contains:

- A set of specific actions to be carried out in the JAP framework.
- A set of proposals about specific thematic areas to be addressed by the cooperation among clusters.

The MoU presents the clusters, their statute, profiles and expertise, and it represents a tangible engagement in cooperation not only in a research and innovation perspective, but also for developing the business potential of companies.

KEYWORDS

Memorandum of Understanding, Cluster, Joint Action Plan (JAP), Innovation

OBJECTIVES

The DOROTHY project has achieved the result of setting up three regional innovation clusters operating on Urban Logistics in

- Valencia – Spain,
- Lisbon – Portugal and
- Craiova – Romania.

under the mentoring action of the already existing Tuscany cluster in Firenze. This achievement must be made durable in time and the cooperation among the DOROTHY clusters must be ensured after the end of the project. For this reason, among the other activities carried out by the project, a Memorandum of Understanding (MoU) have been signed among the four clusters, defining a multilateral and mutual agreement among them.

The main objective of this MoU is to define a cooperation framework among the four regional innovation clusters coming from the DOROTHY project, not only as a strategic perspective, but also for exploiting short and medium term cooperation opportunities based on complementarities or common interest.

The main purpose of the MoU is to engage the four clusters and the participating entities in cooperating on common areas of interest for:

- Finding and exploiting funding opportunities by European and/or National RTDI Programmes focused on specific projects of common interest.
- Fostering cooperation among the is themselves and also among the companies' members of the clusters in the four regions.
- launching joint research and innovation projects on urban logistics (to be self financed or for which funding sources/programmes will have to be sought).
- Coordinating the efforts of the regions and of the members of the clusters to use innovation and structural funds for the development, growth and competitiveness of Urban Logistics in the regions.
- Favouring the exchange of knowledge and information among the clusters and their members.
- Creating a common understanding of the problems of Urban Logistics and of the possible actions to improve its state.

URBAN LOGISTICS FRAMEWORK

The DOROTHY project has the mission of promoting Urban Logistics solutions to improve the distribution process of urban goods by enhancing environmental standards; the project aims to improve the regional competitiveness in this specific field and the quality of life in European cities.

By using the approach of clustering around innovation, the DOROTHY project seeks to develop the potential for innovation and research in Urban Logistics, across the European regions of Tuscany (Italy), Valencia (Spain), Lisbon and Tagus Valley (Portugal) and Oltenia (Romania).

The DOROTHY project is helping to boost up the competitiveness of all the clusters themselves and strengthen their focus on advanced technological areas, with a high potential for innovation in the Urban Logistics field.

Enhancement of the clusters' research and development capacities will contribute to the regional development of Smart Specialisation Strategies (S3s) for the development and use of resource efficient technologies, according to the latest European Union/Commission guidelines. The clusters focus on new developments and on the potential creation of specialisation niches.

For pursuing its objectives, the DOROTHY project has defined a JAP containing a set of coordinated actions that will be implemented gradually after the project's termination, having the regional clusters as the main players.

The MoU is the basic tool to achieve the overall goal, and the method to specify the forms of collaboration among partners/parties.

In fact, the MoU commits all four clusters participating in the DOROTHY project to develop the actions foreseen by the JAP and to analyse other future forms of cooperation.

ACTION DESCRIPTION

Content
The MoU represents an agreement among the Parties in cooperating with the implementation of the DOROTHY JAP and to promote other future common actions coming from the joint analysis and work in the field of Urban Logistics.

The JAP contains not only the plans for the future RTDI actions to be funded by the regional governments and agencies, but the indicators of concrete actions of coordination, exchange and common development among the different clusters.

The MoU specifies the relationship among the parties, in particular concerning the organisation of the work between the parties, the management and the rights and obligations of the parties concerning inter-alia liability, access rights and dispute resolution.

This scope shall be pursued either involving the clusters' organisations or single or several clusters' partners.

In the MoU two levels of cooperation are foreseen:
- Among the four DOROTHY clusters.
- Entities to entities.

At the same time the MoU specifies the role of the partners for:
- Modality to implement the MoU.
- Entry into force, duration and termination.
- Methodology for international co-operation on the existing innovation lines.
- Roles and responsibilities of the partners.
- Management of intellectual property in knowledge transfer activities.
- The possibility of third parties being able to subscribe.

The parties have caused this Consortium Agreement to be duly signed by the undersigned authorised representatives during the Valencia Policy Event, on 28th October 2015.

Stakeholders and Beneficiaries of the Action
The stakeholders of the action are the clusters themselves and the main beneficiaries will be the single entities belonging to the clusters that in the future will be the main players of the initiatives carried out within the framework of the cooperation agreement.

FINANCIAL PLAN

The cost of this action originates by the efforts sustained by the Clusters to develop this collaboration. It can be estimated in 1 person month per year for the next 4 years.

This lead to a total amount of around 80.000 €.

The possible funding sources for the development of this action are:
- Clusters 'own funds
- Public funding: European Union, regional or local authorities devoted to cluster's operations. . and functioning.

REFERENCES

Business Dictionary - Memorandum of Understanding
http://www.businessdictionary.com/definition/memorandum-of-understanding-MOU.html
How a Memorandum of Understanding Works
http://people.howstuffworks.com/memorandum-of-understanding.htm
Memorandum of Understanding – European Commission
http://ec.europa.eu/economy_finance/assistance_eu_ms/greek_loan_facility/pdf/01_mou_20150811_en.pdf
Memorandum of Understanding - European Cluster Collaboration Platform
http://www.clustercollaboration.eu/documents/10147/254518/ South+Korea+MOU+signed+.pdf
How a memorandum of understanding differs from an agreement
http://articles.economictimes.indiatimes.com/2013-02-04/news/36743089_1_mou-document-parties
Joint Action Plan – European Commission
http://eeas.europa.eu/statements/docs/2013/131124_03_en.pdf
Memorandum of Understanding on the establishment and operation of a Regional Innovation cluster in the South West Region of Ireland
http://www.swra.ie/contentfiles/pdfs/SWRARICMOU.pdf?uid=1265646232937

ACTION 3.5.

STRENGTHENING CLUSTER COLLABORATION

ABSTRACT

The action launches activities that reinforce cooperation among DOROTHY's clusters, with a view to exploiting growth opportunities, maximising synergies and accelerating regional economic convergence across the different European region partners, in line with similar Urban Logistics priorities. This is achieved through a common identification and fulfilment of joint activities and initiatives for the purpose of easing the set up for requesting investments, in order to maximise the innovation uptake and productivity increases, by identifying R&D/innovation solutions and challenges, value chain linkages, business opportunities for collaboration across borders and sectors, notably between SMEs.

The action will constitute a remarkable follow up of the DOROTHY project that not only has been able to set up three new clusters, but will provide and develop a common framework to continue growing.

KEYWORDS

Cluster Collaboration, Cluster Cooperation, Maximise Synergies, Regional Economic Convergence.

OBJECTIVES

The main objective of this action is to strengthen collaboration between clusters within regions participating in the DOROTHY project as well as with other European clusters.

This collaboration will be developed in order to reinforce mutual cooperation and joint work in setting up research consortia for European and international programmes dedicated to R&D funding or other initiatives dedicated to clusters, e.g. for promoting business, industrial innovation and technological research; for building relations between the private sector and institutions; and for promoting the internationalisation of small and medium enterprises and research institutes of the DOROTHY clusters.

URBAN LOGISTICS FRAMEWORK

Several programmes funded by the European Regional Development Fund (ERDF), such as the European Territorial Cooperation programmes (ETC), support the harmonious development of the EU's territory at different levels and implement joint actions and policy exchanges between national, regional and local actors from different Member States, in accordance with the design of the European Cohesion Policy 2014-2020 and the targets set out in Europe 2020. Calls for ETC, known as INTERREG V for the 2014-2020 period, allow the exchange of experience between regional and local bodies in the different countries of the DOROTHY partners. In detail, the fifth period of INTERREG is based on 11 investment priorities laid down in the ERDF Regulation contributing to the delivery of the Europe 2020 strategy for smart, sustainable and inclusive growth. Investment priorities include mobility. In particular, through the calls of the interregional co-operation programme, known as INTERREG Europe, and the URBACT III networking programme, a framework for exchanging experience between regional and local bodies in different countries is supported.

Furthermore, the calls for financing actions in the specific field "Market for Goods and Sectorial Policies" of the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, assign strong attention to smart specialisation priorities. Its main objective is to reinforce cooperation among clusters and related technology centres in line with regional smart specialisation priorities with a view to exploiting growth opportunities and accelerating regional economic convergence across the EU.

The call "Knowledge Innovation Community (KIC)", promoted by the European Institute of Innovation and Technology (EIT), brings together major players from higher education, research and business to stimulate innovation in the areas of urban mobility, and is planned under Horizon 2020. Based on EIT priorities 2014-2020, during the next years it is expected that a new KIC will be created, the EIT Urban Mobility, that will address challenges in the field of urban mobility and Urban Logistics issues as well. It will be a very important objective for the DOROTHY clusters.

ACTION DESCRIPTION

Content
In detail, the action is organised along the following specific actions:

- To identify already existing European clusters focused on Urban Logistics, in order to link with new potential strategic partners that could offer additional and complementary competences and added value.
- To identify available European and/or international networks and platforms in the field of Urban Logistics, in order to connect with them. In detail, it will be identified networks and platforms dedicated to: a) joint business promotion in Europe; b) joint European innovation, in order to support SMEs in the innovation of their products, services, processes and business models; c) facilitation of the exchange of ideas, experiences, information and knowledge between the different subjects committed to introducing new Urban Logistics strategies.

These specific actions have the final purpose of easing the way to innovation, mainly through the future set up of research consortia for European and international programmes dedicated to R&D funding or other initiatives and of strengthening the competitiveness of the clusters' companies.

An already identified, the objective of this effort is the participation in a large and qualified consortium able to participate in the call promoted by the EIT, concerning the creation of a European KIC focused on mobility (and Urban Logistics issues) topics; the participation in programmes supporting European territorial cooperation (through the INTERREG call) or supporting growth opportunities and accelerating regional economic convergence across the EU; and the participation in programmes supporting innovative, industry driven, pre-competitive R&D projects in the area of software-intensive systems and services (like the ITEA 3 call).

Skills and Expertise
In Europe, organisational efforts focused on mobility technologies have delivered 199 cluster initiatives in this sector. Many of the strongest clusters are also able to exhibit a strong organisational capacity, e.g. Göteborg, Karlsruhe, Hannover and Linz (see Table 1). In 2014, there were three initiatives related to clusters in the mobility sector in the Tuscan Region, Italy, three in Andalucía, Spain (see Table 2) and a remarkable one in the cluster set in Romania (Vest-Timisoara, see Table 1) that is growing quite rapidly.
The call "Knowledge Innovation Community (KIC)", promoted by the European Institute of Innovation and Technology (EIT), brings together major players from higher education, research and business to stimulate innovation in the areas of urban mobility, and is planned under Horizon 2020. Based on EIT priorities 2014-2020, during the next years it is expected that a new KIC will be created, the EIT Urban Mobility, that will address challenges in the field of urban mobility and Urban Logistics issues as well. It will be a very important objective for the DOROTHY clusters.

The knowhow, technology readiness, professional skills, expertise and capabilities of the members that joined the DOROTHY clusters located in the Tuscany Region, Region of Lisbon and Tagus Valley, Oltenia Region and Valencia Region, are related to Urban Logistics. In detail, they operating mainly in the fields of logistics, cargo, freight transport, info-mobility, traceability, unconventional low emission vehicles, fleet management, routing, traffic forecasting systems, traffic monitoring systems, sustainable transport, intermodality, car sharing, electric vehicles, accessibility, supply chain, truck load/LTL/cartage supply chain, logistics planning and land freight.

Country	Region	Name	Largest city	Employees 2012	Annual Growth 2007-2012	Stars
Germany	DE14	Tübingen	Tübingen	121030	2.50%	4
Germany	DE27	Schwaben	Augsburg	100378	3.25%	4
Germany	DE23	Oberpfalz	Regensburg	79187	9.98%	4
Germany	DE11	Stuttgart	Stuttgart	329460	-0.15%	3
Germany	DE90	Niedersachsen	Hannover	261991	-0.20%	3
Germany	DE21	Oberbayern	München	177845	0.80%	3
Germany	DE12	Karlsruhe	Karlsruhe	144026	0.53%	3
Germany	DE25	Mittelfranken	Nürnberg	99585	-0.96%	3
Turkey	TR41	Bursa	Bursa	95385	4.27%	3
Turkey	TR42	Kocaeli	Kocaeli	85060	2.92%	3
Slovakia	SK02	Zapadne Slovensko	Nitra	82336	2.91%	3
Germany	DEG0	Thüringen	Erfurt	79518	3.07%	3
Germany	DE26	Unterfranken	Würzburg	77553	-1.55%	3
Austria	AT31	Oberösterreich	Linz	71024	0.04%	3
Germany	DE22	Niederbayern	Landshut	70715	2.06%	3
Romania	RO42	Vest	Timisoara	70394	4.84%	3
Germany	DED1	Chemnitz	Chemnitz	68964	3.21%	3
Sweden	SE23	Västsverige	Göteborg	65351	-3.15%	3
Germany	DEC0	Saarland	Saarbrücken	60265	-0.20%	3
Sweden	SE12	Östra Mellansverige	Uppsala	54800	-2.40%	3
Germany	DE24	Oberfranken	Bayreuth 51	51791	2.22%	3
Belgium	BE23	Oost-Vlaanderen	Gent	30439	4.96%	3

The knowhow, technology readiness, professional skills, expertise and capabilities of the members that joined the DOROTHY clusters located in the Tuscany Region, Region of Lisbon and Tagus Valley, Oltenia Region and Valencia Region, are related to Urban Logistics. In detail, they operating mainly in the fields of logistics, cargo, freight transport, info-mobility, traceability, unconventional low emission vehicles, fleet management, routing, traffic forecasting systems, traffic monitoring systems, sustainable transport, intermodality, car sharing, electric vehicles, accessibility, supply chain, truck load/LTL/cartage supply chain, logistics planning and land freight.

Country	Region	Name	Largest city	N. of Initiatives	Initiatives per Million Employees
Italy	ITD3	Veneto	Venice	10	61
Sweden	SE23	Västsverige	Göteborg	7	107
Germany	DE12	Karlsruhe	Karlsruhe	7	49
Slovenia	SI00	Slovenija	Ljubljana	6	80
France	FR71	Rhône-Alpes	Lyon	6	38
Germany	DE90	Niedersachsen	Hannover	6	23
Italy	ITC4	Lombardia	Milan	6	17
Germany	DED1	Chemnitz	Chemnitz	5	73
France	FR10	Île de France	Paris	5	30
Spain	ES70	Canarias	Tenerife	4	3 189
Bulgaria	BG41	Yugozapade	Sofia	4	165
Germany	DE40	Brandenburg	Potsdam	4	107
Austria	AT31	Oberösterreich	Linz	4	56
Italy	ITD5	Romagna	Bologna	4	23
Spain	ES61	Andalucía	Sevilla	3	106
Italy	ITE1	Toscana	Florence	3	52
France	FR51	Pays de la Loire	Nantes	3	44
Italy	ITD3	Veneto	Venice	10	61
Sweden	SE23	Västsverige	Göteborg	7	107
Germany	DE12	Karlsruhe	Karlsruhe	7	49
Slovenia	SI00	Slovenija	Ljubljana	6	80
France	FR71	Rhône-Alpes	Lyon	6	38

Existing Networks
European networks focused on urban mobility are summarised in Table 3, including high quality networks like ETP ALICE and POLIS. In detail, ETP ALICE is set-up to develop a comprehensive strategy for research, innovation and market deployment of logistics and supply chain management innovation in Europe. It is based on the recognition of the need for an overarching view on logistics and supply chain planning and control, in which shippers and logistics service providers closely collaborate to reach efficient logistics and supply chain operations.

Below are listed the existing platforms that provide online quality information and networking support for clusters (organisations and members) aiming to improve their performance and increase their competitiveness through the stimulation of trans-national and international cooperation. These online platforms can be a useful tool to ease communication among clusters belonging to the same or a different sector; and to identify new potential strategic partners that could offer additional and complementary competences and an added value for a widening of the partnership.

Existing platforms:
- ECCP platform
- (website: clustercollaboration.eu)
- EU Cluster Portal
- (website: ec.europa.eu/growth/smes/cluster/index_en.htm)
- Cluster Observatory
- (website: clusterobservatory.eu)

N°	Name	Description
1	European Technology Platform ALICE	Platform set-up to develop a comprehensive strategy for research, innovation and market deployment of logistics and supply chain management innovation in Europe.
2	CIVITAS Initiative	Initiative launched in 2002 to redefine transport measures and policies in order to create cleaner, better transport in cities. CIVITAS is designed as a programme that allows cities to learn from each other and facilitate exchange of ideas.
	CIVITAS Forum Network	Platform for the exchange of ideas and experiences between all the participating CIVITAS I, CIVITAS II, CIVITAS PLUS and CIVITAS PLUS II demonstration cities, and other cities that are committed to introducing ambitious, clean urban transport strategies. The Network is an active community that currently incorporates 232 cities.
	National Networks called CIVINET	Group of city networks that promote the CIVITAS approach at a local level, overcoming language and contextual barriers for local authorities and organisations interested in urban sustainable mobility. Members exchange information in their own language working together to engage with the European Union and national governments, about transport policy issues, legislation, regulations, and funding. Networks include: CIVINET Italia, CIVINET España y Portugal.
	CIVATES Thematic groups	Open community to share experience and knowledge of urban mobility solutions, learn more about the CIVITAS approach and contribute to developing mobility policies and innovative measures in other local contexts. Thematic Groups reflect the CIVITAS thematic categories and cover, among others, the following main topics: Car-Independent Lifestyles, Clean Fuels and Vehicles, Collective Passenger Transport, Integrated Planning, Mobility Management, Transport Telematics, Urban Freight Logistics.
3	Allinx - European Association of mobility management professionals	European Association of professionals working in the field of mobility management and sustainable mobility. Allinx has more than 1,100 members from 34 countries.
4	Covenant of Mayors	The Covenant of Mayors is a European initiative in involving local and regional authorities, voluntarily committing to increasing energy efficiency and use of renewable energy sources on their territories, which signatory authorities commit themselves to improve energy-efficiency and the use of renewable energy to reduce CO2 emissions by at least 20% by 2020.
5	POLIS – European Cities and Regions Networking for Innovative Transport Solutions	Polis is a network of European cities and regions working together to develop innovative technologies and policies for local transport. The activities are organised around the thematic pillar of Mobility and Traffic Efficiency.

Collaboration Pilot Programme
The action is articulated in two main parts, covering the total lifespan of the action. This pilot project constitutes a remarkable follow up of the achievements of the DOROTHY project and provides a common framework to continue growing.

Activity 1	To join specific European initiatives about clusters, thematic networks and platforms for clusters focused on Urban Logistics.
Participant Organisations	Local/regional institutions, enterprises and research institutes of DOROTHY's clusters

Objectives:

O1.1: To identify already existing European clusters focused on Urban Logistics, in order to link with new potential strategic partners.

O1.2: To identify available European and/or international networks and platforms in the field of Urban Logistics, in order to connect with them.

Description of work*:*

Task1.1: ***Joining thematic networks focused on logistics and urban mobility.*** In particular, participation with the European Technology Platform ALICE is a short term objective of the clusters.

Task 1.2: Joining platforms for cluster focused on urban mobility.

In particular, two platforms are interesting for the DOROTHY clusters: European Cluster Collaboration Platform-ECCP platform; Cluster Observatory.

Task 1.3: Joining specific initiative about clusters.

Partners of the DOROTHY project will participate in EU-ASEAN Cluster Matchmaking Event, organised by Enterprise Europe Network.

Measurable outcomes:

MO1.1: Report of a document attesting to membership/joining/participation in networks and/or platforms and specific initiatives for clusters and work carried out.

Activity 2	To prepare the participation in European and international programmes.
Participant Organisations	DOROTHY's clusters and single companies members of the clusters

Objectives:

O2.1: The final purpose is to ease the future set up of research consortia for European and international programmes dedicated to R&D funding or other initiatives.

Description of work*:*

Task 2.1: *To ease the future involvement of DOROTHY's cluster organisations in consortia for participation in programmes aiming to stimulate innovation in the areas of urban mobility, i.e. the KIC EIT Urban Mobility call.*

Task 2.2: To involve DOROTHY's cluster organisations in consortia for participation in programmes aimed at supporting European territorial cooperation, i.e. IINTERREG ***V calls, in particular the INTERREG Europe call.***

Task 2.3: *To set up a research consortium of DOROTHY's cluster organisations for the participation in programmes aimed at supporting the internationalisation of clusters, growth opportunities and accelerating regional economic convergence across the EU, i.e. the TREC call.*

Task 2.4: *To involve DOROTHY's cluster organisations in consortia for participation in programmes aimed at supporting innovative, industry-driven, pre-competitive R&D projects in the area of software intensive systems and services, i.e. the ITEA 3 call.*

Measurable outcomes:
MO2.1: Report of a document attesting to participation in the meeting and work carried out.
MO2.2: Project proposal (INTERREG Europe call).
MO2.3: Project proposal (ITEA 3 call).

Stakeholders and Beneficiaries of the Action
The main stakeholders are:

- The DOROTHY clusters themselves that will carry out directly the action and in particular SMEs operating in the sector of Urban Logistics.
- The companies that have already joined the clusters (or that will join it), and mainly the SMEs that will be the main beneficiaries of the action.
- Regions (Tuscany Region, Region of Lisbon and Tagus Valley, South West Oltenia Regional Development Agency in the Oltenia Region, Valencia Region), metropolitan areas, and other public bodies who are able to make available their knowhow, strategic guidance, technical assistance and financial resources to support the initiative.
- Available proactive and reactive local authorities.
- Europe's strong clusters and new cluster initiatives in mobility technologies outside the DOROTHY partnership members; to share experiences.
- Networks and associations of institutional authorities and/or private entities; to facilitate the creation of new synergies

EVALUATION OF IMPACTS

Reference Market and Economic Potential
The action does not foresee a direct economic impact in terms of growth of the clusters' companies on the market. The target is to link them with the most important networks in the European realities. Through this approach the expected economic result is to achieve economic resources for feeding their innovation activities during the forthcoming years.

From the qualitative point of view the integration of the DOROTHY clusters in the major European networks will provide them with additional capacity for pursuing innovations and an easy access to European funds for innovation.

Social and Urban Impact
The expansion of networks of clusters will impact on industry integration and internationalisation of the European Urban Logistics community and clusters, thus contributing to solutions for future sustainable and competitive urban transport and Urban Logistics in Europe.

Environmental and Energy Potential
No direct impact of the action in this sense. The possible impact will come from the implementation of innovation projects coming from the established cooperation.

FINANCIAL PLAN

The estimated budget for implementation the described activities is detailed below. Costs related to participation in events are calculated for each organisation (company / cluster / research / R&D centre, etc.) involved.

Activity 1: To join specific European initiatives about clusters, thematic networks and platforms for clusters focused on Urban Logistics: 30,000€
Activity 2: To prepare the participation in European and international programmes: 60,000€
All the mentioned costs should be incurred during the next four years .
The possible funding sources for the development of this action are:

- Clusters 'own funds
- Public funding: European Union, regional or local authorities devoted to cluster's operations and functioning.
- Eureka Clusters

REFERENCES

European Cluster Panorama 2014, October 2014, European Cluster Observatory - Enterprise and Industry Directorate-General of the European Commission.
Cluster Collaboration and Business Support, Tools to Facilitate Entrepreneurship, Cross-sectoral Collaboration and Growth, September 2014 - European Cluster Observatory - Enterprise and Industry Directorate-General of the European Commission.
www.civitas-initiative.eu
www.civitas.eu
www.allinx.eu
www.eumayors.eu
www.polisnetwork.eu
www.etp-logistics.eu
www.cluster-analysis.org
www.adl.com/Urban_Mobility

ACTION 4.1.

HIGH LEVEL INTERNATIONAL MASTER'S DEGREE IN URBAN LOGISTICS

ABSTRACT

The main objective of this action is to design and prepare the launch of an academic international high level master´s degree in Urban Logistics with a high level of qualification.

The master's degree would be recognised by the universities and research institutions from the involved regions, such as Universidad Politécnica de Valencia (UPV), Universitatea din Craiova, Instituto Pedro Nunes, Associacao para a inovacao e desenvolvimento em ciencia e tecnologia, University of Firenze, and other interested institutions. Its students would be required to be university graduates and its length should be 60-120 ECTS credits.

One of the main objectives is that the degree will have an inter-university character. This target will be achieved through the involvement of several universities or superior educational entities. This cooperation will be one of the first results of the cooperation agreement between the universities foreseen by this JAP.

General features of the master´s degree:

- International trainers and students.
- Location: one part of the face-to-face teaching can be carried out in other countries.
- Practical content: visit cities, logistics centres, industrial partners, etc.
- Mixed character: combine face-to-face with distance training modules (e-learning).
- Language: English.
- Addressed to: logistics operators, local staff, technology providers and university staff and training centres.

Teachers from different environments, not just from university.

KEYWORDS

Training, Master's Degree, Urban Logistics

OBJECTIVES

Due to the growing importance of Urban Logistics, the technical qualification of the operators is becoming more and more important. For this reason, the main objective of the action is to design and run an academic high level Master's Degree in Urban Logistics every two years.

This course will be dedicated to:

- Logistics operators.
- Suppliers of technology related to Urban Logistics.
- Public servants (technicians and managers) of public administrations working on Urban Logistics.
- Practitioners
- Research and training staff from universities and technological institutes.
- Other important actors in Urban Logistics: merchants' associations, other associations, etc.

The academic course will be characterised by a high qualitative level and will be a catalyst to facilitate the introduction and start up of innovation in different Urban Logistics environments. At the same time, it will stimulate research and technological development in the area of Urban Logistics.

The master's degree course will be one of the first acts of the international cooperation promoted within this JAP. For this reason, the academic course:

- Will be targeted at professionals in different countries.
- Will be provided in more than one country.
- Will be taught by professors and experts from different countries.
- Should include technical visits and practical sessions in cities and/or industrial partners in different countries.

URBAN LOGISTICS FRAMEWORK

One of the clearest findings of the DOROTHY project was the awareness that in all the regions there was a lack of knowledge about, not only the solutions for Urban Logistics, but often about the real terms of the problems themselves. This lack of knowledge was quite widespread among public bodies but also among companies that could potentially work on this market and contribute to its development.

Moreover, this situation represents one of the most important barriers to the introduction of solutions already available on the market and to spread innovation.

For this reason, among the other initiatives, the need to set up a high-level educational initiative focused on Urban Logistics was considered as crucial.

The results of this action are expected to be in the medium period, but the effects can be long lasting as the result will be in an increased average awareness, knowledge and attention to the Urban Logistics environment and potential.

The frame of reference for this action is clearly international. The action needs to be carried out with previous agreements between the Regional Clusters, and more specifically, between the academic institutions involved in the clusters. Each region can contribute with the aspects in which they are leaders or specialists.

STAKEHOLDERS INVOLVED AND COLLABORATION AMONG THE REGIONAL CLUSTERS

In order to carry out the action, the involvement and collaboration between the different stakeholders, and between the different clusters, is absolutely necessary:

- Collaboration among Regional Clusters to set up the organising committee, the manager and the programme.
- Cooperation among universities and academic institutions to sign agreements and to validate the programme. The current academic and research members of the DOROTHY project (UPV, IST, UNIFRI, UCV) should promote this cooperation.
- Involvement of qualified stakeholders in Urban Logistics as trainers: logistics operators, suppliers of technology related to Urban Logistics, professionals, engineering companies, etc.
- Involvement of industrial partners, cities, etc for organising visits and other initiatives.

The organising committee and its general manager will define in detail the specific role of each stakeholder in relation to the work programme.

DESCRIPTION OF THE ACTION

Content

The different regulations existing in European universities allow the consideration of two different options:

- Establish a master's degree organised by a single university which delivers the degree with the participation of other universities.
- Establish a joint international master's degree recognised by all the involved universities. In this case, the course would be delivered by all the participating institutions.

The cooperation agreement process is more complex in the second case than in the first, because each university has different regulations.

As an example, the approval of a master's degree in the UPV is a process that lasts approximately one year and it contemplates both academic and financial aspects. No master's degree can be approved without a clear and guaranteed financial framework.

Establishing a joint programme with other universities requires previous cooperation agreements that must be ratified by the universities' governments at the highest levels. This process has an approximate duration of 18 to 24 months and also concerns both academic and financial aspects.

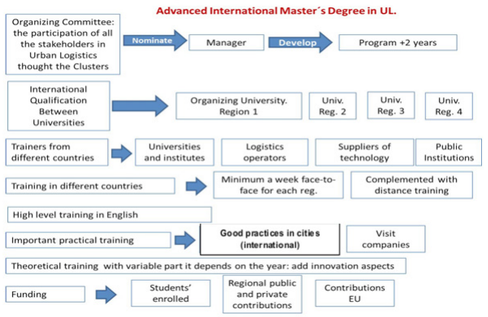
In any case, the implementation of the action will be a quite complex process that requires transnational cooperation among different universities and research centres. A possible roadmap for the implementation of the action can be the following (the outlined structure is liable to changes and further adaptations according to its development).

The main steps are:

- As a prerequisite, a cooperation agreement among universities and academic entities which are members of the clusters has to be signed to promote a joint master's degree with an international character. UPV has a wide experience in that area and could lead the process.
- Other institutions from the different DOROTHY regions like IST (Lisbon), FRI (Toscana) and UCV (Oltenia) are equally skilled and would be able and interested in joining or leading the process.
- To coordinate the organisation, an organising committee with the participation of all the main players of the clusters will be set up. This committee will nominate a managing director for the master´s degree. At the same time it will develop, well in advance, a programme to be taught every two years and will take care of all the organisational aspects (recruiting, locations, schedule, support staff, teaching material, etc.).
- The qualification will be international and recognised by the universities which contribute to the academic course. For this reason, an organising university should be appointed and institutions from other regions will contribute to the training.
- The trainers will be teachers from the universities or institutes, professionals, logistics operators, suppliers of technology or public servants from different countries. The selection will be based on their qualifications related to the work programme that will be defined.
- The training will be complemented with on-line training.
- The training will be a high quality level master's degree in English. The best experiences and the best practices at international level will be studied to be incorporated in the training.
- Practical training will be important too. During the course the students of the international master´s degree will visit industrial partners and will study the good practices in international cities.
- The theoretical training will have a very important part depending on the most recent innovations in Urban Logistics. The committee, also profiting from other initiatives foreseen in this JAP, will continuously monitor the state of the art and will add innovative aspects to the programme.
- The funding will be provided by students, regional public and private contributions. The possibility of having patronage by the European Union or to access European funds allocated to training will be analysed. To submit a demand for patronage, all the aspects of the master's degree, should be detailed (the participating universities, detailed academic programme, etc). For this reason, it is important to start the action with the direct involvement of the clusters and the cooperation agreement between participating universities.

- The role of other members of the DOROTHY clusters will be essential from two points of view:
  - Direct contribution as trainers or managers of some particular aspects of the course.
  - As trainees of the master's degree courses.

A summary table is shown below where the main aspects of the proposal are included.
In order to start the development of the action, the following pre-requisites are required:



- Clusters must proceed to create an organising committee with participation from the different regions.
- The committee should nominate and hire a manager (with an adequate budget) who will coordinate all the processes relating to academic and financial requirements.
- The involved universities must define and sign a specific cooperation agreement for the organisation of the master's degree.

The planning of the action can be the following. After the clusters' agreement and the appointment of the organising committee, we should differentiate two periods of time in the process of preparation for the master's degree:

- A start-up phase dealing with the detailed design of the academic course and its approval, with an approximate duration of 12 months.
- Launching the first edition in two phases:
  - Students' enrolment (includes promotion of the master's degree): 3 months.
  - Master's degree: 12 months.

The master's degree should start at the beginning of September or the natural year due to organisation needs. The schedule is reported in the following chart.

	month 1	month 2	month 3	month 4	month 5	month 6	month 7	month 8	month 9	month 10	month 11	month 12
Constitution of Organizing Committee												
First meeting with Organizing University												
Nomination of the General Manager of the Master												
Development of Academic and Economic Reports												
Official procedures for approval and for cooperation between academic institutions												
Search for external financial resources												

	month 13	month 14	month 15	month 16	month 17	month 18	month 19	month 20	month 21	month 22	month 23	month 24	month 25	month 26	month 27
Student enrollment															
First Master Degree															

Skills and Expertise
The action involves continuous training about recent innovations, research projects and developments that are being carried out in Urban Logistics.

For this action to be successful, it is important to involve different companies with important technologies and the specialists in Urban Logistics at universities and technological institutes; and to consider the new procedures and processes applied by logistics operators and the good practices implemented in different cities at the international level.
Several universities in the Regional Clusters have extensive experience in post-graduate training programmes. In Valencia there is the Permanent Training Centre (CFP) within the university; specifically skilled; it could lead the first implementation of the master´s degree.

Other important experiences are available in the Lisbon Cluster and in Tuscany, both in postgraduate programmes and well as professional training courses.

The Tuscany Region has already expressed interest in the creation of a multiple or joint master's degree on this topic.

Existing products / Experiences
The majority of existing specialised education is focused on the general logistics topics, including long distance transportation. Some specific initiatives on Urban Logistics have been carried out in the past, mainly as single edition courses. Sometimes the topics of Urban Logistics are approached as specific aspects of a more general framework.

So it can be said that there is no specific experience in an advanced international master's degree specifically focused on Urban Logistics. Some short courses with durations of 5-20 ECTS credits do exist in different settings, but they are not comparable to this proposed action.

EVALUATION OF IMPACTS

Reference Market and Economic Impact
The action has a very moderate direct economic impact on the different stakeholders.
Getting involved in the training of professionals in Urban Logistics at a high level can entail very moderate costs for the interested stakeholders, but will potentially provide long-term savings from optimisation in Urban Logistics activities.

On the other hand, this action entails important business opportunities mainly for research institutions and also technology suppliers.

Environmental and Energy Impact
INDIRECT EFFECTS:

- International collaboration at different levels.
- Technical visits in different cities and companies.

The action is oriented to facilitate the introduction and the start up of innovation in Urban Logistics. So the action does not have a direct impact on energy or the environment. These impacts may only be indirect through knowledge transfer to Urban Logistics stakeholders on more sustainable solutions.

Social and Urban Impact
From the social point of view, this action will have a direct positive impact on the qualification of the students that receive the training. Indirect impacts on the number and qualification of jobs related to Urban Logistics can be significant in the long-term.

As usual there is no direct impact of this action on the urban structure. However, since the training is primarily addressed to public administrations' staff, public servants and practitioners in the field of Urban Logistics, it will improve their competence and experience in Urban Logistics. So it is likely to have some positive feedback on the territory linked to the adoption of innovative Urban Logistics solutions or regulation schemes. This will have a positive impact on the liveability of cities.

DRIVERS / BARRIERS AND RELATED ACCOMPANYING ACTIONS

Normative Framework
There are important experiences in high level training with an international character involving several universities and agencies. The existence of these experiences facilitates the elaboration of the required cooperation agreements between the involved institutions.

Even though this process may last several months, if universities are really interested in developing the master's degree, no special difficulties are foreseen form a normative point of view.

Socio-organisational Aspects
This action calls for close cooperation between universities and stakeholders involved in Urban Logistics, where the organising committee plays a major role.

Master's degree programmes and ost-graduate programmes designed on the basis of a strong interaction between universities and businesses are important points of interaction, with very positive impacts at the organisational and knowledge levels. It should be regarded by organisations from three perspectives:

- Update and preparation of the human resources for the adoption of new methodologies and new technologies.
- Motivation of human resources.

- Incorporation of new knowledge in the organisation.

FINANCIAL PLAN

Regarding this action, we should distinguish two separate budgets:

Budget for the action start up: (estimated 30,000 - 45,000€)
An initial budget that covers the expenses until the approval of the master's degree by the organising university. This budget should include:

- Initial meetings for the constitution of the organising committee and the nomination of a general manager.
- Meetings among the organising universities.
- Development of all necessary documentation for the approval.
- Meetings and contacts of this phase.
- Funding sources for this phase can be:
- Interested clusters.
- A public programme that can finance this kind of action (typically European funds targeted at education and managed by the regions). This should be one of the first topics that the general manager focuses on once the action starts its development.

Budget for the first edition of the master's degree
The exact budget should be defined and approved by the general manager and the organising committee during the start-up phase of the action. However, from similar experiences in the past, a rough estimation could be approximately 200,000 – 300,000€ for each edition. This budget should include:

- Teaching.
- Material for the master's degree course.
- Master's degree course secretary.
- Computer support.
- Trips during the master's degree for activities.
- Student logistics.
- Classrooms, etc.
- Other aspects.

The possible funding sources for the development of this action are:

- Student fees: It should be an important part of the budget, or even all of it if other funding sources are not found.
- European programmes that can consider these types of actions.
- National or regional programmes from the involved countries and regions.
- Private sponsors such as technology suppliers, logistics operators, etc.

If we consider a two year time framework for the organisation of a single edition of the master's degree course, we can envisage a total budget between 250,000 and 350,000€.

ACTION 4.2.

STAFF TRAINING IN NEW SCHEMES AND TECHNIQUES

ABSTRACT

This action is a response to the need for specialisation coming from the companies belonging to the clusters, and from other companies related to Urban Logistics, for keeping their level of qualification high and for being able to innovate. Companies, in developing their lines of products/services, often need to increase their competences about specific topics, often innovative, using a limited amount of resources.

In particular, at the moment the implementation of the measures outlined in the JAP frequently involves the introduction of new technologies that lead to the application of different schemes and techniques to those that are currently being used for urban freight distribution.

The action of training personnel about innovative topics is focused on increasing the knowledge and overall competence of the involved actors (logistics operators, technology providers, staff from councils, governments and local administrations who are in charge of urban freight logistics services and other stakeholders) in new technologies and techniques.

This action is targeted at providing clusters with the capacity to develop continuous professional education aimed at innovation. This means that clusters must set up appropriate mechanisms capable of:

- Identifying the training needs a suitable time in advance of being required.
- Organising targeted training events that can be very diversified in topics, beneficiaries and methodologies.

Students are not required to be university graduates, as the training will address the different kinds of staff and different stakeholders.

KEYWORDS

Training Staff, Urban Logistics

OBJECTIVES

The objective of this action is to create within the clusters a mechanism for ensuring a continuous updating of knowledge on crucial and advanced topics related to Urban Logistics. While the action about the Master degree in Urban Logistics is targeted to provide general knowledge about all the aspects of Urban Logistics in an more academic perspective, the scope of this action is to provide training on advanced and specialised topics in a limited time with an intensive programme.

The goal of this training will be:

To improve the knowledge of companies and other subjects belonging to the clusters about innovative topics related to their specific interests.

To provide companies specific skills necessary to improve their general qualification and to carry out specific projects.

To increase the capability of companies in planning their future developments linking their strategies on the market to the formation needs and the enhancement of human capital.

To improve of the qualification of Urban Logistics operators towards a better optimisation of resources and sustainability.

To prepare the involved actors about innovative approaches in the field of Urban Logistics. A good training will provide them with a better understanding of new schemes and techniques, which will lead to a better use of the available tools.

To ease the successful and faster implementation of new distribution schemes.

URBAN LOGISTICS FRAMEWORK

This action is a response to the need for specialisation arising from the companies belonging to the clusters, so as to keep their level of qualification high and to be able to innovate.

This action is focused on permanent training and is targeted at creating within the clusters the capability to implement permanent education.

However, to be able to organise and carry out this kind of actions, clusters must set up appropriate mechanisms capable of:

- Identifying the training needs a suitable time in advance of being required.
- Organising targeted formative events that can be very diversified in topics, beneficiaries and methodologies, ranging from traditional short courses to on-line courses to refresher events, etc.

Due to the characteristics of the action, its framework is very wide, as the training purpose can be applied to many topics. A particular characteristic is that, given the characteristics of the action, the beneficiaries of the action can be all the stakeholders belonging to the cluster but eventually also other players on the territory (logistics operators, technology providers, staff from councils, governments and local administrations who are in charge of urban freight logistics and other stakeholders).

From the technological point of view, training about new techniques and new schemes in Urban Logistics will improve the actors' knowledge of the use and the application of new technological advancements in this area. An example of this might be to provide information about the application of ICT systems and the benefits that can be gained by the implementation of more efficient logistics systems or the best use of resources in the distribution process.

Regarding the economic framework, the cost of training actions does not represent a high expense. However, it is still important for this action and must be taken into account in the JAP.

STAKEHOLDERS INVOLVED AND COLLABORATION AMONG THE REGIONAL CLUSTERS

In the training programme, all the stakeholders involved in Urban Logistics will play an essential role.

Universities and research institutions will provide, within their cluster, the capability of: identifying interesting topics; defining the methodologies for assessing the training needs; and designing the suitable training actions.

The rest of the stakeholders will not only be involved as beneficiaries of the action, but they will have also additional roles. First of all they must become active players in the process of defining training needs. Then they can also be training providers according to their specific qualifications.

The international collaboration between the Regional Clusters must be very close and intense because, although each region has its own characteristics, there are many factors in common regarding training needs. In addition, an important number of training actions could be addressed in common (at least in a high percentage of cases). In this way, clusters can propose training activities for common topics for every region and a specific part for each one, which should be developed individually by each Regional Cluster. This cooperation in the field of training will also be a catalyst for enhancing the collaboration on innovation and the development of joint market strategies.

DESCRIPTION OF THE ACTION

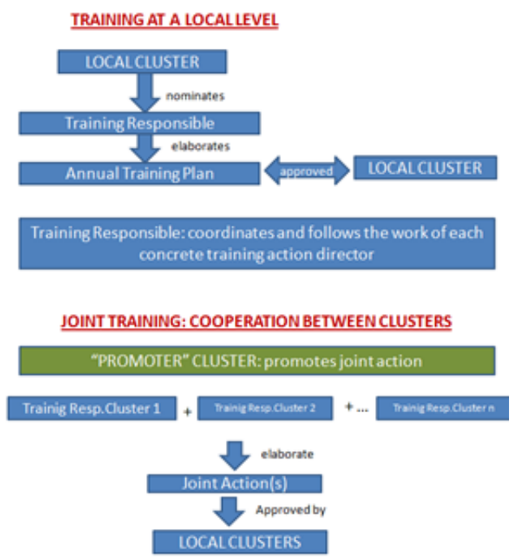
Content
Each cluster should nominate a Training Responsible who should compile the training needs from the different cluster members in order to establish an Annual Training Plan and to share these needs with the different clusters from other regions.

For the definition of the Annual Training Plan the Training Responsible must carry out continuous monitoring of the training needs by opening and maintaining channels with the clusters' participants (companies, research institutes, public bodies, etc.). To be really effective, the training needs must be detected a suitable time in advance with respect to the implementation needs of companies. In this sense it is very important for the Training Responsible to have a clear view about the state of the art and the innovation in the field of Urban Logistics and a deep knowledge of the reality of the cluster.

Training Responsibles from the four regional clusters will be in close contact to identify the possibility of organising joint events or to carry out shared plans. This point is quite important and is also related to the cooperation agreement signed by the clusters.

The Training Responsible will not only define the plans but will also organise and coordinate the different initiatives included in the Training Annual Plan from all points of view. He/she will really be the real executive manager of the whole process of continuous training. Of course not all the training courses necessarily have to be autonomously organised within the clusters. It will be a duty of the Training Responsible to have a clear view of the other initiatives on training in logistics and evaluate if they can be a suitable tool for answering to specific training needs. This evaluation must be carried out each time on the basis of considering costs, the number of interested subjects and the strategic importance of the specific topic and other considerations.

It has to be underlined that this work is not only very important but also very demanding in terms of organisation skills and professional levels. For this reason , local companies working on the regional territories could be involved as active players in this action. They should be companies operating in the field of professional training, capable of giving the organisational support to all these initiatives. They could be involved in the clusters with a very clear and specific role and with the perspective of qualifying their structure on this specific kind of training on urban logistics that could also be replicated outside their territorial environment, enriching their presence on the market. In this way a tool for qualifying the clusters' companies can also become an opportunity for local enterprises to open a new and innovative sector of their presence on the market.



Even though each cluster has to define the specific training actions to develop, a list of different kinds of training actions that can be considered is included. They are the result of the work carried out during the DOROTHY project and reflect the reality at the time of the survey. Of course they can significantly change when the action is implemented.

It is important to note that current technologies allow a multiplicity of different methodologies, such as distance e-learning tools, in order to share content between the different clusters. For each possible training action, the appropriate methodology has to be defined through specific design work.

Training Action	Elaboration Management	Addressed to	Duration
Training in the application of New Technology (NT) related with Urban Logistics	Company / Institution that develops the NT	Possible users of the NT and the responsibles of applying it	Short (1 to 3 weeks with 15-20 h/week)
General Training about Urban Logistics and instruments for its improvement within the city	Universities or research institutions in collaboration with public administrations	Local responsibles in charge of Urban Logistics	Medium (4 to 10 weeks with 15-20 h/week)
Training about new distribution schemes to be implemented	Administration responsible of the implementation	All agents	Separated by agents. Short courses (1 week with 15-20 h/week)
Seminars for sharing proposals and actions related to Urban Logistics between the different clusters	Training Responsibles from the involved clusters	Different agents depending on the specific topics.	1 to 5 days (full journey)
Other training actions: visits, specific aspects, etc.	Training Resposible	Different agents depending on the specific topics.	1 to 5 days (full journey)

Skills and Expertise
The different regions that participate in the DOROTHY project offer a wide range of training opportunities, since some of the partners are universities and research centres with a vast experience in the field of training. Their expertise and skills in the fields of training and education can be conveniently used for the purpose of this action

Moreover, there is a wide availability of specific professional and research experience and qualifications in the specific area of Urban Logistics, such as companies operating in the specific professional training and education fields.

This means that the clusters already have all the skills, expertises and resources to manage this action for the benefit of the clusters themselves and all the regional economic structure.

Existing Products / Experiences
There are a lot of training and educational initiatives in the field of logistics, some of them are organised as on-line courses. In general, they address the overall theme of logistics, often with the major attention on the whole chain and less on the problems of the last mile.

In any case these initiatives can be useful for the scope of this action as they can complement the initiatives directly organised and managed by the clusters.

Moreover, an important source of experience for teaching comes from European projects. The DOROTHY project has assessed dozens of research projects related to technologies and supply chain logistics products participated by the four clusters' members. These projects cover topics ranging from management of freight distribution systems (SMARTFREIGHT), support systems for regulatory measures (PPU SIM) to unconventional vehicles (PRO-E-BIKE, FREVUE and CITYMODEL) and engineering management of regulatory measures and new distribution processes (OPTICUDS, CITYMODEL and SMILE), among others.

All these projects could be used as an example of good practices and can provide materials to train actors in implementing innovations in urban freight distribution.

EVALUATION OF IMPACTS

Reference market and Economic Impact
This action entails important business opportunities mainly for universities, research centres and specialised companies that can provide these services. As mentioned above, this action can be an opportunity for local companies operating in the market of professional training and education to open a new segment of their market and to develop new kinds of training products to offer on the external market.

Professional training on Urban Logistics is a market that could be exploited at national or even international levels by companies and universities that have acquired a sound experience through the implementation of innovative courses within this action.

A reasonable evaluation of the outcome in terms of potential market for this action is as follows. The clusters over a period of 7 years could organise 6 professional training courses each year for 15 persons with an average income per person of 300€ in each region. This would produce in the four regions a potential market of about 750,000€.

Environmental and Energy Impact
The action contributes to spreading awareness about urban freight distribution among all the stakeholders. It has a very low immediate impact on energy and environmental impacts. These impacts may only be indirect through knowledge transfer to Urban Logistics stakeholders on more sustainable solutions.

Social and urban Impact
The action has positive social impacts derived from the improvement of dispatcher's / operator's / planner's qualifications; there is also possible direct and indirect job creation, especially for technology suppliers and research institutions.

In general, the action has a very indirect and moderate impact on urban structure. The main impact could come, indirectly, from the training of municipalities' technicians and decision-makers.

DRIVERS / BARRIERS AND RELATED ACCOMPANYING ACTIONS

Normative Framework
There are no legislative problems affecting the action.

Socio-organisational Aspects
The implementation of this action requires very close collaboration between the universities (or other training and research institutions) and the clusters' members, in order to identify the type of training to promote.

This action can improve the quality of companies and organisations in three ways:

- Updating and preparation of the human resources for the adoption of new methodologies and new technologies.
- Motivation of human resources.
- Incorporation of new knowledge in the organisation.

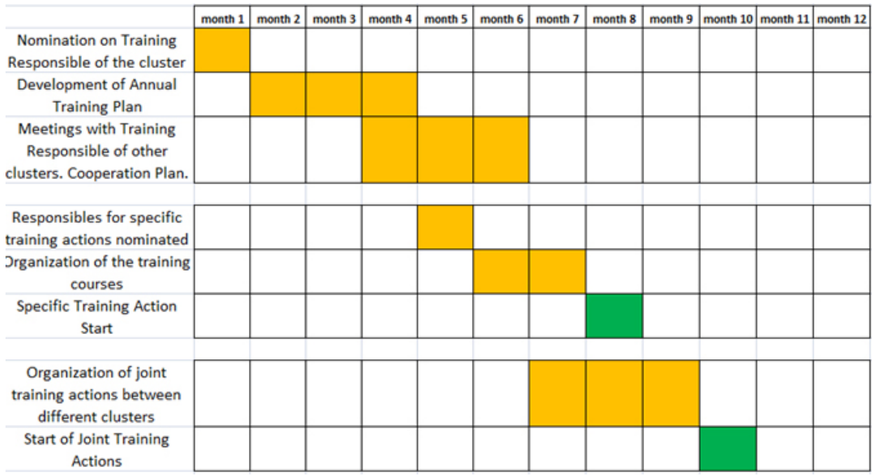
From this point of view the social impact on the regions can be very important in the medium-long period. In fact, a successful implementation of the action will consolidate the role of leadership in the field of Urban Logistics in the regions; it will enhance the qualifications of companies and their capacities in innovating products and processes; and it will increase capacities of the local administrations to manage all the topics related to Urban Logistics.

PLANNING OF THE ACTION

As a first step, DOROTHY partners and cluster members from the four regions should nominate a Training Responsible and identify, through direct analysis and survey, the training needs, skills to be attained, attendees profile, course extension, etc.

Once a Training Responsible for the cluster is nominated and the training necessities are studied, a Training Annual Plan should be developed and shared with the rest of the clusters in order to start organising the concrete initiatives.

An indicative schedule for the development of the first set of activities is reported in the following figure.



FINANCIAL PLAN

The possible funding sources for the development of this action are:

- Student fees.
- Private funding: technology suppliers, logistic operators.
- Public funding: European Union, regional or local authorities.

The Training Responsible of each cluster should study the different funding options, taking into account the programming of the different courses developed by each cluster.

The total cost of a course will vary depending on its topic, the country in which it takes place, the expert's travel costs, etc. so this financial analysis should apply to each single course.

Just for indicative purposes, the cost of organising a 2 day course can be estimated as 5,000€ for 15 trainees and 5 trainers.

If we consider a set of 6 courses for each cluster in a period of 2 years we have an estimated budget of 120,000€.

ACTION 5.1.

“CARGO BIKE” FOR DELIVERY IN URBAN CENTERS

PROMOTION OF CARGO BIKES FOR DELIVERY IN URBAN CENTRES

This action is devoted to promote the use of cargo bikes in Urban Logistics. For that, it will address the policy framework and improvement of the infrastructure.

The use of cargo bikes aims to guarantee a regular delivery service for all the commercial activities located in urban areas, especially in the city centres, in a more sustainable way. The area and the residents, then, can benefit from environmental enhancements, and logistic companies can obtain notable cost savings and better reputations.

The action is feasible for large and medium size cities and sprawling urban areas, where an appropriate regulatory framework can stimulate the usage of cargo bikes for urban freight transport.

KEYWORDS

Cargo Bike, Bike based Urban Delivery, Sustainable Logistics

OBJECTIVES

The objective of the action is to increase the use of cargo bike services operating in urban areas.

In particular the action is targeted at creating the framework conditions to spread the use of this kind of service for goods delivery, mainly through two mechanisms:

- Experimenting with new applications and distribution schemes in urban environments, to be further extended to an increasing number of realities.
- Defining and experimenting with a set of incentives and regulations capable of supporting the use of cargo bike services by cities.

This action has been identified as important as cargo bikes can offer a significant alternative for last mile deliveries, especially in city centres, contributing to the achievement of other general objectives, such as:

- Reduction of the number of freight vehicles operating within the city.
- Reduction of empty freight vehicles.
- Reduction of km travelled with polluting vehicles.

Cities can play a very important role in achieving this purpose as they can define policies to promote cargo bike schemes and make their use more convenient and easy through appropriate regulations, incentives and suitable infrastructure.

It is also necessary to raise the awareness of stakeholders about the available technological solutions to support cargo bike schemes (vehicles, software and hardware).

These general objectives will be pursued through a set of pilot projects that will be implemented in the DOROTHY regions to speed up this process:

- Implementation of pilot experiences and applications in significant cities including:
  - Innovative services.
  - Supporting regulation and incentive schemes.

Finally, keeping an integrated vision of the Urban Logistics system, it is important to highlight the relationship of this action with other measures:

- Creation and promotion of Proximity Delivery Areas (PDAs) (using cargo bikes for the last mile delivery).
- ITC to support Urban Logistics.
- Open data schemes.
- Integration of the SULP.

URBAN LOGISTICS FRAMEWORK

Traditionally vans and trucks are the mode of transport for long distance freight haulage, but they are also part of the urban distribution of goods in our cities, increasing negative externalities and generating inefficiencies.

Furthermore, our cities are struggling to implement more efficient management of public spaces, recovering them for citizens to the detriment of road traffic. Measures such as the creation of LTZs, low emission zones, traffic calming, etc. are also encouraging the implementation of new business models in the field of urban freight distribution Thus, the cargo bike has a high potential for development in cities of medium to large size and in conurbations. Taking into account that only 20% of all cargo trips are related to heavy vehicles (>3.5t) and 12% of all urban trips are related to parcels and small deliveries, it is possible to argue that in urban transport there is enough room for bikes to take over part of the goods flow. Furthermore, studies, such as those conducted in the CycleLogistics project showed that bicycles could do 51% of all commercial deliveries in cities.

The increasing number of LTZs in cities, the growth of e-commerce and customer demand for faster delivery of products, leaves a space for low capacity vehicles but with high flexibility in terms of time and routes, such as cargo bikes.

In this context, it should be mentioned the importance of the introduction of electric bicycles (e-bikes) and technological developments adapted to support couriers and customers.

ACTION DESCRIPTION

Content

The action addresses the promotion of cargo bike schemes in urban areas in order to increase the number of these services for Urban Logistics. In general, cargo bike schemes have a high potential in urban areas, especially those characterised by large old centres, a compact urban structure and large pedestrian areas. This is the case of most cities in the DOROTHY regions, but also in the whole Europe. So the potential field of application is really huge.

For these reasons it is important to develop significant experiences in the DOROTHY regions, which could generate not only benefits for the cities' liveability but also new opportunities for economic growth and occupation.

Even if cargo bike services are intrinsically suitable in our cities, their adoption should be encouraged by the adoption of traffic regulation measures such as:

1. LTZs and time windows

The promotion and implementation of traffic restrictions to standard vehicles for urban delivery will endorse the use of alternative modes of transport, such as cargo bikes.

2. Parking spaces

The regulation of parking spaces should be considered in order to facilitate cargo bike operations. Currently, the regulation of these spaces does not specifically include their use by cargo bikes. This is a problem for cargo bike services because, without clear rules, they can be fined or the use of the stalls by cargo bikes causes complaints by the standard logistics operators.

Regulatory changes should be adopted to define parking conditions for cargo bikes.

3. Urban traffic management

Another critical point is the interaction of cargo bikes with traffic. Cargo bikes cannot circulate on bike-lanes because of their size and speed. So, they have to circulate together with the rest of the traffic. The implementation of new regulations giving cargo bikes certain advantages, such as the use of the bus lane, could represent an improvement in their operation.

Other supporting measures should be:

4. Tax incentives scheme

As in other initiatives, tax incentives can make a real difference in terms of the use of new schemes, such as cargo bikes. This policy should be applied to the purchase of vehicles but also to develop attractive and competitive services and for implementing charging points for delivery companies using electric vehicles.

5. Development of dedicated management systems

The increase of cargo bike services will also generate new markets to manage these types of fleets, such as:

- Adapted software and hardware for route optimisation.
- Parking spaces with facilities such as charging points.
- Battery management and/or substitution schemes.
- Delivery control and on-line management.

The action foresees two different measures:

- An effort for pushing regional and local authorities to adopt a common policy framework to endorse cargo bike schemes.
- The implementation of a series of pilot innovative applications in some cities of the DOROTHY regions, with the purpose of experimenting and validating new services, schemes and even business models that could be progressively extended.

Action for Developing a Regulatory Framework to support Cargo Bike Services

The regional clusters will push for the adoption of specific regulations supporting cargo bike use. The logistics operators, ICT companies, the public authorities and R&D institutions represented in the clusters are able to influence the adoption of specific regulations in the regions and the cities. The types of rules and actions that will be suggested to enhance the success chances for this action differ from region to region.

In the Lisbon region, it must be at national and local level, while in Tuscany and Valencia at regional and local level:

- In it Lisbon should contain licensing, parking regulation, road circulation regulation, vehicle emission regulation, taxation, etc. Local authorities can create pedestrian areas where access by conventional vehicles is banned and only bicycles/trolleys can have access for the delivery of goods; only licensed operators would be allowed to distribute goods in these areas; and at national level, fiscal/economic incentives can be implemented for the acquisition of (e-) cargo bikes.
- In the Tuscany and Valencia Regions, regulation should contain licensing, road circulation regulation, etc. Here, the regional regulation has to define the general guidelines for the transport of goods by cargo bike, and local regulation also has the task of defining more specific aspects (access zones, schedules and license management).
- The Oltenia Region should adopt licensing, parking regulation and road circulation regulation, where all these regulations must be established by municipalities, in order to regulate the cargo bikes activities in downtown areas.

Pilot Projects

- Home deliveries in the LTZ.
- Home deliveries in areas close to markets located in the city centre.
- Involvement of cargo bikes in delivering goods to shops inside the LTZ from PDAs.
- Home deliveries in LTZ

Usually, the LTZ attracts a large number of shops and customers. However, the inability to have access by car can be a barrier to certain purchases. To avoid this problem, offers like “we bring it home”, with cargo bikes, can have its place in order to support business development.

The stakeholders of this initiative are:

- Public administrations
  They have to promote this cargo bike service by adopting some of the above mentioned measures or supporting its application in an already regulated area, also considering economic support.

- Logistic operators and consultancy services
  Logistics operators should raise viable business models to take advantage of the use of bicycles in certain urban environments.
  Consulting firms can get involved by proposing the development of projects for the creation and management of logistics centres, the design of new urban spaces, etc.
  These agents should be those who have the initiative to develop and implement new Urban Logistics services with cargo bikes.

- Technology providers
  They can take advantage of the diffusion of cargo bikes that could extend the specific market for software and hardware and design / development of new adapted vehicles applied to these kinds of new logistics services.

A first implementation has been proposed in the Valencia Region, in the downtown area of Valencia, where the municipality is intending to carry out this initiative.

The agents involved in this pilot experience are:

- Public administrations:
  The City Council of Valencia is promoting sustainable mobility, paying special attention to the creation of pedestrian-friendly areas. In this context, it will endorse the creation of a LTZ (2016) in the city centre, where a lot of business activities are concentrated. Although the council is still working on the definition of this area, it is expected to include some of the above described measures which are in favour of cargo bikes.

- Logistic operators and consultancy services.
  The companies joining the Valencia regional clusters ENCICLE, VANAPEDAL (cargo bike operators) and MOVUS (consultancy services) are developing a proposal to manage a pilot experience inside the future LTZ of Valencia.

- Technology providers
  For the development of this initiative it will also be necessary to develop appropriate hardware solutions.

To summarise, the pilot application will be organised according to the following structure:

- Membership programme for stores and dissemination between customers. An identification logo is created.

- Development of software and hardware to support the delivery: customers can choose the time and place for the delivery, the store can label the package properly and the carrier can have access to route planning.
- Design of a vehicle that can be efficiently adapted to the characteristics of the cargo and routes, with extended range and specific parking spaces where charging or replacing batteries can take place.

In terms of setting a proper framework for this pilot application, cooperation between the Valencia region and Tuscany is foreseen.

In fact, among the DOROTHY regions, Tuscany is the one with a higher development of cargo bikes linked to a greater presence of restricted areas in its cities. The municipality of Firenze, thanks to the restrictions on circulation in the historic centre of the city, LTZ and pedestrian areas, since 2011 has encouraged the use of cargo bikes by the major stakeholders of distribution logistics. In fact, the current legislation allows cargo bikes to deliver goods from 00:00 to 24:00 in each core area, unlike other vehicles, both electric and petrol, which can deliver goods in the LTZ only from 07:30 to 09:00.

The cooperation will provide a sound experience basis for defining appropriate solutions.

- Home deliveries from markets in city centres
  Traditional fresh food markets located in city centres often have the same problems described above and the lack of an offer for parking spaces is a barrier to sales.

  To expand the sales potential of traditional markets, cargo bikes provide a good solution. Furthermore, when it is feasible, the creation of small logistics centres in the same building or really close would facilitate and reduce the cost of delivery.

  The stakeholders involved in this initiative and their roles are the same as those in the case of “Home deliveries in LTZ”: public administrations, logistics operators, traders, technology providers.

  As an example a recent market survey developed in Torrent (Valencia) in the framework of a study by the Polytechnic University of Valencia reveals that over 70% of customers go to this kind of market on foot and, consequently, they have their homes in the surrounding area. In addition, the city of Torrent has recently renewed its central market. There is now enough space to organise a logistics centre in this building. Although this pilot case is still at a very early stage, the parties involved are:

- Public administrations:
  The city council has to promote and enhance the use of the space for the creation of a logistics centre. The renewal of the local market facilities has been done, taking into account the benefits of such a solution. Other support measures can be also adopted (see support measures defined above).

- Logistics operators
  These stakeholders should raise viable business models.
- Traders
  Local traders appreciate the service as a value added element to their products and are available to exploit it.

The funding for this initiative will be provided by private capital. This is on condition that viable business models could be defined, taking advantage of new market niches.

- Interaction with Proximity Delivery Areas
  Another pilot experience to be developed is the use of cargo bikes for serving PDAs, as defined in the JAP, close to a specific LTZ.

  In this way the flows of commercial vehicles can be concentrated in certain periods of time, such as in very early hours, and they will only need to reach the PDA. Then, with cargo bikes, the goods can be distributed to shop, allowing flexibility in the delivery schedule which facilitates both the first carrier and the final trade. Obviously, this scheme is not efficient for large distribution, but could serve small shops, mainly located in areas with access control, as well as serve as a load breakpoint or small storage area.

  The stakeholders involved are again the same as above.

  In the Valencia Region, and in relation to the pilot case of home delivery, the city council of Valencia is evaluating the possibility of creating a PDA close to the new planned LTZ of the city of Valencia. It is expected to involve technology providers in order to define and design adapted cargo bikes.

  Pilot projects in the Lisbon and Tagus Valley (LVT) Region

  In this framework, the LVT has launched a tender to study and explore the potential of cargo bikes in the region. This includes the development of a case study methodology in the scope of the “Cargo Bikes” initiative in Portugal, and the development of technology based solutions and innovative solutions for system management (not only technological but also from the standpoint of procedures and interconnection between agents - customers, logistics operators, retailers, etc).

  The cities of Almada and Lisbon will implement two pilot projects based on the outcomes of the aforementioned study. They can be developed in cooperation with other clusters and the final products can be replicated in other locations.

Skills and Expertise

In order to implement this action the following skills are needed:

- Companies operating or experienced in the cargo bikes business.
- Logistics consultancy companies which are able to define an appropriate scheme for cargo bike operations.
- Technology company that can design appropriate software applications for running cargo bike services.

In most of the DOROTHY regions these skills are present and willing to cooperate for the success of the action.

Existing Experiences
Cargo bike services are well known and within Europe huge experiences have been developed in the past.

The site pro-e-bike.com reports the latest experiences in many European countries. Several experiences have been developed in Florence, Lisbon and Valencia too.

Stakeholders and Beneficiaries of the Action
This action involves several stakeholders. Given the structure of the foreseen action, the most important are the following:

- Logistics operators (logistic operators, bike couriers, home delivery business).
- Users (customers and citizens).
- ecommerce demand generators (Amazon, Alibaba, eBay, etc.).
- Supermarkets and department stores.
- Local fresh food markets and local shops.
- Public administrations.

Additionally we can mention other stakeholders that could be interested as technology and service providers:

- Manufacturers and other professionals related to vehicle production.
- Manufacturers and other professionals related to battery production and charging stations.
- Manufacturers and other professionals related to the infrastructure.
- Manufacturers and other professionals related to cargo development (especially for those for refrigerated goods).
- Universities and research institutes from their research profile in order to improve the system.
- Consulting engineering and technical services.

EVALUATION OF IMPACTS

Normative Framework
The EU has officially recognised the importance of cycling as an alternative mode of urban transport, generating environmental, economic and health benefits (ECMT, 2004).

The authorities should create the necessary incentives and promote joint initiatives in order to create economies of scale to reduce the costs associated with the vehicles in order to speed up the adoption of e-cargo bikes. For example, land use policies can generate shorter trip distances that are more easily done by bicycle. Restrictions on car use also positively affects bicycle use. Limited car parking, car-free zones, comprehensive traffic calming and lower speed limits all reduce the overall convenience and attractiveness of car use. Furthermore, a complete system of cycling infrastructure, such as lanes, paths, cycle tracks, traffic signals, parking and so on, may have far more impact than the sum of its individual effects.

The appropriate set of policies should be designed for each particular situation, taking into account the context of the city, which requires careful planning and on-going inputs by citizens.

At the European level, there are many cities that impose limitations based on environmental characteristics. Certain polluting vehicles are banned from streets, zones or entire cities. Mostly, limitations are based on the Euro type (1 to 6, 1 being the most polluting) of the vehicle. For electric, hybrid and other low emission vehicles, exceptions are made. There are other cities which use ‘eco-zoning’ where only low-emission vehicles can enter certain areas. In addition, certain cities have implemented congestion charges whereby motorised vehicles must pay to access city centres. The EC has made an appeal to ban all conventionally fuelled vehicles from city centres by 2050 (ECF, 2012).

Reference Market and Economic Impact
Cargo bike services are businesses that are intrinsically local, so the valuation of the market has considered only the four DOROTHY regions and has taken into account just the direct services provided by the cargo bike operators.

It would also be in this perspective important to consider the continuous growth of e-commerce as a positive factor.

Additional business opportunities could arise if, after the development of the pilot projects, some innovative technological product or application (about the vehicles or the ITS applications associated with the service) is developed. This could open a new market on a larger scale (national and maybe European) to technology providers. However, at this stage, this aspect has not been considered in this evaluation.

In the Valencia Region, the action to promote the implementation of cargo bike schemes could have special interest for large and medium size municipalities (17 municipalities with more than 50,000 inhabitants) and metropolitan areas. All of the regulatory framework should be improved and adapted in order to endorse this kind of last mile transport.

According to the Spanish CNMC (National Commission of Market and Competition), the courier market had in 2013 a total turnover of 2.372M€, with a total of 21,304 employees (excluding franchises). For the Valencia Region, the potential yearly market in the medium term for cargo bike couriers reaches 11M€.

The action can be implemented in at least ten Tuscan cities which have historical city centres with a huge artistic and cultural impact. It is clear that the need for the service changes depends on the size of the cities considered: Firenze is the administrative centre for Tuscany: the level of population is higher and the business market is bigger, which requires a different type of study of the action compared to smaller cities. For the Tuscany Region, the potential annual market in the short term is estimated at 13M€.

Also in the LVT Region there is a potential for development of B2C applications using existing experiences with cargo bikes (Torres Vedras, Almada and Lisbon) by enlarging and facilitating infrastructures and including existing courier operators. This will be focused on local markets, historical areas and traffic restriction zones covering a fraction of the roughly 750,000 inhabitants of these cities. Pilot projects are to be tested in different settings to allow for an easy replication in different locations targeting medium and large cities. For LVT, the potential annual market in the short term is estimated as 6M€.

The Oltenia Region has not expressed interest in this action.

Globally in the three regions we can expect a potential annual market for this kind of service of about 30 M€.

If we consider to reach this target in 7 years and assume a market share for the clusters of 30% we obtain a cumulated value of the potential market for the clusters of about 33 M€.

Environmental Impact
The use of cargo bikes can substantially reduce the environmental impact in terms of air pollution, noise and vibration. On average, each cargo bike (with electric or traditional engine) travels 40km daily. If we consider the same distance driven by car (bikes are more flexible and they travel fewer kilometres to perform the same number of deliveries) and taking into account that a normal car in urban areas emits 287.14 gCO2/km (Corinair 2009), a fleet of 1,000 cargo bikes would avoid, at least, 11,486kgCO2 per day.

Regarding the urban impact, it will be really low.

Social Impact
The social impact of this action is mainly related to changing the model for goods distribution in the areas where the cargo bikes are adopted. In fact, the use of such schemes introduces new logistics operators using cargo bikes instead of the well established organisations mainly based on a network of individual artisans managing one or a few vehicles working for large logistics operators. This will modify the whole organisation of the last mile delivery and the professional profiles required. The overall occupational balance must be accurately evaluated from time to time and in any case these aspects have to be carefully considered when designing a cargo bike scheme for a specific city.

When the use of cargo bikes is associated with new services, this could effectively create new working places, if a sustainable business model could be defined.

DRIVERS/BARRIERS

The most important barriers to the implementation of this action (already reported within the description of the action) are the following:

- Lack of clear regulations for cargo bikes' circulation and freight stalls within the cities' centres.
- Lack of specific facilities, for instance electrical charging points / dedicated areas within the cities.

One of the aims of this action is specifically to remove these barriers.

An important driver in this sense will be the increasing interest for this kind of service by the cities and especially by the main cities in the DOROTHY regions.

FINANCIAL PLAN

The financial plan for this action includes the following costs

- definition of the schemes to be implemented and of the necessary supporting tools
- implementation of the foreseen pilot actions described above and evaluation of their impact and their potential
- definition of a general service scheme to be replicated in other realities
- definition of a set of possible incentives for the adoption of cargo bike services in cities.

In particular the four pilot applications are:

- Home deliveries in LTZs and interaction of cargo bikes with PDA in Valencia.
- Home deliveries from markets in city centres in Torrent.
- Pilot application in Almada.
- Pilot application in Lisbon.

All the design and evaluation activities have an estimated cost of 250,000 €.

For the two pilot applications in Valencia a budget of 300,000€ is estimated.

For the Torrent application the foreseen budget is about 100,000€.

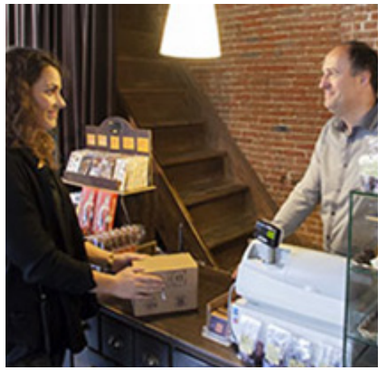
For the two pilot applications in the LTV region an overall budget of 100,000€ is foreseen.

As a whole for the short term, a financial need for about 750,000€ is needed.

Funding sources can be different from case to case. In Spain we have already verified the availability of private companies to sustain a significant part of the investments (about 50%) with support for the remaining 50% by public authorities.

ACTION 5.2.

ORGANISING A NETWORK OF OPERATORS IN THE CITIES FOR IMPLEMENTING PROXIMITY DELIVERY POINTS FOR PARCELS



ABSTRACT

The action of "Organising a network of operators in the cities for implementing proximity delivery points for parcels" aims to define an Urban Logistics scheme for the last mile delivery and to identify measures and incentives for setting up a proper systems' governance.

The idea is to implement an easy and low cost system, based on the needs of cities, consumers and operators, to be adopted by the cities as the only or strongly suggested way to deliver parcels in the city centres.

The system will consist of equipping appropriate locations, i.e. small businesses like drugstores, dry cleaners, cafes, kiosks, with a small storage area where couriers' drivers can leave packages for customers to retrieve later.

The use of this kind of proximity delivery point means cost savings for logistic operators, in terms of fewer repeat deliveries at homes will be required for the consumers, who could go to a delivery point near their home by walking, and for the city, due to the reduction in the number of vehicles circulating on the roads.

KEYWORDS

Parcels Delivery, Delivery Points, Parcels Tracking, Technological Platform, Low Cost System

OBJECTIVES

The action is based on the implementation of a network of operators in a different way and according to the local needs and characteristics, in order to achieve the following objectives:

- To realise an Urban Logistics scheme for the last mile delivery of parcels where the most convenient way for the operators and couriers would be to refer to the proximity delivery points in the city centres, rather than home/business delivery.
- To promote urban rules and planning tools for the cities in order to support the development of the operators' network with the aim of achieving sustainable Urban Logistics.
- To implement a technological logistics platform to manage the proximity delivery points (hardware and software. This platform must be able to manage loading and unloading from the local store and all the related operations, and to provide information to the final addressees.

It has to be underlined that in the proposed scheme each proximity delivery point will collect parcels coming from all the Urban Logistics operators and will be defined to ensure a good territorial distribution and coverage.

This approach leads to the need for an ICT platform on which the single delivery point operator will work, interfaced with the Urban Logistics operators' information systems for managing the deliveries. The platform permits parcel's trip to be followed with a specific tracking system, able to keep all the subjects up-to-date on the delivery status: operators, customers and delivery points. The ICT tools could also manage all the process of giving new permissions to new delivery points and identify the best location for the departure of the parcel in relation to the operator, time and place of delivery. Moreover, it would be possible to customise the platform's features according to the specific needs of the subjects. The strong point of the platform is the management and coordination of all the Urban Logistics operators in a specific territory, in order to optimise the time and costs of the delivery.

URBAN LOGISTICS FRAMEWORK

The scheme of the Urban Logistics framework for the proximity delivery points for parcels is the following:

- Goods come from outside of urban areas, where the main logistics hubs are located.
- Goods move from the logistics hubs outside the urban areas to the proximity delivery areas/points, located within the boundary of the city centres.
- Finally, goods are delivered for their last mile path.

In urban areas light commercial vehicles are responsible for almost 50% of environmental impacts and 20% of total traffic, so the organisation of a new scheme for proximity delivery points could be a good solution in terms of commercial vehicles circulating in urban areas.

The analysis of the Urban Logistics market carried out in the DOROTHY project framework reveals that the whole process of Urban Logistics can be classified into 4 main different typologies:

- Activity of collection and distribution of goods performed by professional transport operators.
- Transport linked to public services (such as mail, waste collection).
- Transport generated by retailers, shopkeepers and artisans for their supplies by the wholesalers.
- Transport of equipment used to carry out the professional activity (artisans, construction companies, professionals, etc.).

A scheme for Urban Logistics based on the use of the operators' network could be useful for the first three process typologies.

Moreover, it emerged from the surveys and focus groups carried out in the project that there is a lack of strategic coherence between the single product/project developed and the whole supply chain of operators. If the operators are not aware of the available solutions, bottle-necks could be created that affect performances in the logistics supply chain. In this sense, pushing the use and development of the commercial operators' network for the management of proximity delivery points could be the way to increase the awareness of the network potentiality.

One of the solution fields for the management of Urban Logistics that could benefit from an integrated approach is engineering and management. This means a new regulations scheme and new distribution process schemes. Indeed, one aspect of engineering and management for the Urban Logistics chain is higher standards of energy efficiency and environmental quality, which can be achieved by the implementation of innovative and efficient solutions to improve city logistics distribution process schemes. The impacts on city logistics can be reduced by both the adoption of innovative infrastructures models and the use of zero-emission vehicles for last mile deliveries. The analysis of recent experiences of European cities shows the use of three main infrastructure models:

- Urban distribution centres and load consolidation, including centres for transhipment, transit points, Urban Logistics platforms and goods collection points.
- Dedicated load/unload areas inside urban areas and historic centres.
- Last mile B2C services.

ACTION DESCRIPTION

Content

The action can be implemented city by city and its implementation will reflect the local characteristics of each site. On the other hand, the possibility of applying this technique in different cities will rely on the possibility of having an ICT platform available for managing check in/out of the parcels by the proximity delivery points. The implementation of such a system is a pre-requisite and a core version of it can be developed with the first local application, to be enriched and upgraded to be more general and cover a wider spectrum of local applications.

Skills and Expertise

The skills required to implement the action from the technical point of view are mainly:

- Engineering for designing the general scheme and analysing and planning their local applications.
- ICT for implementing and supporting the management system.

There are several partners within the DOROTHY clusters that have this kind of expertise and potential to implement this action and be partners of municipalities where the technique could be applied. They are planning and engineering companies and ICT developers, but it must be underlined that the fundamental knowledge of the Urban Logistics process needed to define a general effective and efficient scheme must also be present in the clusters. This knowhow can be ensured by Urban Logistics operators and companies managing consolidation and distribution centres. In addition, research institutes represented in the clusters can contribute to the definition of the scheme and the specification of the ICT platform.

It has to be stressed that the local implementation of such a scheme requires a strong commitment by the municipalities and difficult work has to be carried out locally for the identification and setting up of the network, the definition of the regulation framework capable of making its use convenient, and the achievement of consensus by all the interested local stakeholders. So, the active and direct involvement of local administrations is necessary. It is important to note that important municipalities are participating in the DOROTHY clusters which are capable of offering significant test sites for the development of the scheme and its supporting tools.

Existing Products and Experiences

Some positive experiences have been carried out by logistics operators that have invested in a fast and convenient Urban Logistics scheme, which gives sustainable results for the cities:

- KIALA IN EUROPE: Kiala was probably the first company to offer a new service of delivery and return of parcels to close-by collection points. The idea of the service started in Belgium with the concept that, for consumers, missing the delivery of a parcel to their home often means the beginning of a complicated process of going to get the parcel from a place with limited opening hours, long queues or in a depot situated in a distant industrial zone. Kiala offers fast delivery of the parcels to a convenient collection point. The delivery process to these near stores is supported by a unique and brand new technology platform that ensures a very high quality service. The customer can track his or her parcel on the internet and is notified by text, e-mail or phone as soon as the parcel has arrived at the delivery point. In this way Kiala allows the consumers to: receive or return parcels easily, e.g. goods bought for home delivery (ordered online, from a catalogue, on TV), supplies for professionals on the road (technicians, salesmen), promotional gifts won in competitions. The network of Kiala is distributed in 5 European markets: France, Belgium, Luxembourg, Netherlands and Spain. In 2012 Kiala joined the UPS group. Since then the model has been deployed under the name of UPS Access Point.
- UPS ACCESS POINT IN EUROPE AND USA: UPS Access Point is the deployment of the Kiala service, distributed also in the UK, Germany, Italy and Poland. The network is now available also in Chicago and New York City and is being deployed in Canada and Mexico. The whole network expects to have increased the number of locations to 20,000 in key markets in Europe and the Americas by the end of 2015. The concept of the UPS Access Points is the same as the Kiala network: the customers shop online because it is convenient. Customers are even using their mobile devices more to make purchases. These on-the-go shoppers may not always be at home to accept a delivery, so it is no surprise that a growing number of people prefer alternative options to home delivery. The UPS network of locations offers the customers the flexibility to pick up their packages when and where it is best for them: with weekend and evening hours,

UPS Access Point locations fit the customers' schedules. So the customers have the flexibility to choose a convenient delivery location during online checkout and receive email or text alerts when their packages are ready for pickup. The Application Programming Interfaces (APIs) and plug-in tools make it easy to integrate the UPS Access Point option into the e-commerce site. This offers the customers all of the available delivery locations, up-to-date hours, and contact information with the locator API or plug-in, to integrate the customisable shipping API into the e-commerce site so the customers can choose the speed and services they need and there is no need to toggle between systems.

- LOCKER SYSTEMS IN EUROPE AND USA: As online shopping becomes more common, parcel delivery services and retailers who are plagued by the failed package delivery problem are experimenting with ways to eliminate the often inefficient, maddening last mile of the supply chain. E-commerce has not turned out to be as profitable as delivery companies had hoped. Dropping off items purchased online at homes scattered across a neighbourhood adds time, miles and costs to each delivery. Dropping off packages in bulk and creating incentives for consumers to fetch their parcels at nearby retailers or locker banks dramatically improves the economics of delivery. As a result, UPS, FedEx Corp. and Deutsche Post DHL Group's DHL unit are investing heavily in new systems geared towards getting e-commerce customers to collect their orders from anywhere, rather than deliver to their homes. FedEx offers a 24-hour locker system called Ship&Get in 31 cities in Texas, as well as Memphis, Tenn., situating most lockers outside FedEx stores or Walgreens pharmacies. In August 2014, the U.S. Postal Service installed 17 Gopost lockers in New York and Washington as part of a pilot programme. DHL, whose Packstation lockers are ubiquitous in Germany, is testing lockers in Plantation, Fla., and it plans to install more of them in Orlando, New York and Miami in summer 2015. In Chicago, UPS is testing brown-and-yellow, ATM-like smart lockers adjacent to a Staples store and an Aldi supermarket. Customers enter a numeric code to retrieve their packages. Self-service pickup stations and lockers have been popular for years in Europe, where home delivery can be difficult and more of the population lives in dense urban centres than in the U.S. DHL started building self-service lockers in Germany in 2001. Since then, the company has installed 2,700 locker banks, mostly in train stations, and opened 12,000 staffed parcel pickup points, including newsstands and small shops. The company hopes to expand the locker programme elsewhere in Europe and the USA. The cost of maintaining locker banks is offset by the savings that result from not having to deliver each package to an individual customer's address. Most business-to-consumer deliveries are paid for by the shipping fees on each package. By leaving as many as 100 packages at a time at bulk drop-off points, DHL can spread the cost of each delivery over many shipping fees, because "the more parcels you can deliver to a single location, the lower the cost".

Stakeholders and Beneficiary Definition and Roles

The main stakeholders involved in the action are the following:

- Public administrations: municipalities of the small and medium cities should be the first promoters of an Urban Logistics scheme that would reduce the number of vehicles entering the city centres and increase the quality level of the old town centres, adopting proper rules and introducing specific planning tools for sustainable Urban Logistics. They are both the main players and beneficiaries of the action. Another public administration that could support the action is the regions. Given the potential benefit coming from a widespread application of this technique in cities, they could support the development of the first pilot applications.
- Engineering and planning companies: they are interested in the development phase for the definition of the scheme, the management process, the criteria to define the delivery points etc. In the replication phases they can be interested as each single local application should be designed and supported by specialists. This can open a specific new sector of the market.
- Technology providers: the role of the technology providers, in collaboration with the research institutes, is the implementation of the platform for the distribution scheme. Of course, then they will be interested in commercially exploiting the new product.

- Universities and research institutes: they are involved in the studies on energy and environmental aspects. Research institutes should also develop an IT platform for managing the logistics system of delivery based on the proximity delivery points.
- Logistics operators: they are the main beneficiaries of this action, being directly interested in the development and diffusion of a distribution scheme that could reduce their delivery costs in terms of fuel travel costs, loading factor, fast and easy access to the city centre. The most involved operators are the small and private operators, i.e. those that deliver on behalf of a third party, and also those that deliver on their own account inside the cities.

The benefits deriving from the implementation of this action could be the following:

- For the cities:
  - Reduction of pollution and noise due to fewer vehicles circulating in the cities.
  - Improving the efficiency of the last mile movements.
  - Improving the efficiency of the current rules for restricted traffic zones.
  - Reduction of traffic congestion due to the optimisation of loads and routes.
  - Increasing pedestrian safety.

- For the logistics operators:
  - Reduced logistics costs: avoiding second or third return trips and so reducing delivery time and kilometres travelled by vehicles.
  - Reduced warehousing space due to undelivered items.
  - Greater customer loyalty due to offering the costumers an alternative delivery option that is more flexible and more in tune with their lifestyles.
  - New customers: attracts new customers who are not at home during the day.

- For the proximity delivery points:
  - Increase in new customers to the shop and so their income: in a short space of time a number of new customers will visit the shop daily to collect or return a parcel; a percentage of them are likely to buy some goods in the delivery point when collecting their parcel.
  - A flow of returning customers: a large number of the new customers will become loyal customers even when they have no parcel to collect.
  - An exclusive service to differentiate the store: the shop will be one of the few proximity points in the neighbourhood to propose this kind of service, differentiating the shop from its competitors.
  - Source of income: an income that covers the time spent to give the service.
  - Non-investment on time lost: the process will be completely automated and easy to understand, with no investments needed.

- For the consumers:
  - The parcels are delivered quickly to a store close to the consumers: it allows optimisation of the time while collecting the parcel in the chosen store.
  - Long opening hours: early in the morning, at noon, during the evening, the week or the weekend.
  - Easy exchange or return: taking back the parcel to the proximity delivery point.
  - Tracking of the parcels: notification of the arrival by phone, text or email, tracking on the website.
  - Speed of the delivery: possibly within 24 hours.

Implementation Process
The implementation process needs one or more pilot applications for the development of the scheme, the ICT system etc.

Based on the role of the stakeholders and the beneficiaries, the first applications could be organised as follows:

- To organise a consultation group with municipalities, logistics operators, confederations of craftsmanship, practitioners and every trade association involved in the Urban Logistics process in order to identify different needs, problems and opportunities and make a clear context analysis.
- To involve the municipalities of small and medium cities in order to incentivise the development of an operators' network. The policy to be adopted can be very different and we can mention some of them:
  - Gradually forbidding access to the city centre by old and polluting commercial vehicles (Euro 0, 1 and 2).
  - Introducing high fares and very limited times during the day for access to the city centre by non-ecological vehicles.
  - Giving free 24 hour access to the city centre for electric vehicles.
  - Collaborating or sharing the management system of the proximity delivery points.
  - Organising a strict control system for the accesses in the city.
  - Addressing the logistics operators in order to identify the best locations to be organised as proximity delivery points in the city centres.

To involve the technology providers, in association with research institutes and municipalities, in implementing a system able to manage the distribution system based on the proximity delivery point and interfacing through standard features and techniques different Urban Logistics operators' information systems.

EVALUATION OF IMPACTS

Normative Framework
The normative framework in the field of last mile delivery and access to city centres is highly varied and fragmented for different cities in the same cluster and for different clusters. So, an important action to be developed in order to allow this action to be successful is to study specific rules and policies that let the implementation of the network system be more convenient for the stakeholders than any other system.

Another very important point is a clear definition of responsibilities and liabilities for the goods in this new configuration of the delivery. All the procedures and the relevant contractual aspects must be carefully analysed and studied.

Reference Market and Economic Impact
The implementation of this action could have different impacts from the economic point of view.

At first there is a change in the composition of the urban delivery process costs for the operator. A significant saving in time and driven kilometres can be achieved as well as in the need for warehousing space due to undelivered items. On the other hand there are rising costs due to the fees due to the delivery points' operators and to the investments related to the adoption of the technological management platform.The spread of this technique can also have other important economic effects linked to:

- The need for studies and plans for the local implementation of this technique; it would represent a potential market for engineering and transportation planning companies.
- The need for the ICT management platform for each local application: it will represent a new market.

The potential market is large, as each city having a significant centre, even if medium or small, could benefit from the application of such a scheme. But the real exploitation of this potential will be linked to finding a trade-off between the implementation costs and complexity and the increasing benefits. This point will be the crucial one to be faced during the first pilot applications and the development of the basic schemes and technological supports.

Environmental Impact
This measure may have a good impact on energy and environmental impacts, not only in terms of energy consumption and emission of pollutants, but also through traffic reduction.

In effect, it would have direct effects on:

- Reduction of delivery time.
- Reduction of kilometres travelled.
- Reduction of pollution and noise.
- Improvement of the efficiency of the last mile movements.
- Improvement of the efficiency of the current rules for restricted traffic zones.
- Reduction of traffic congestion due to the optimisation of loads and routes.
- Increasing pedestrian safety.
- Increasing the use of low emission vehicles.

Social and Urban Impact
The action has positive social impacts derived from improvement of workers' qualifications, possible direct and indirect job creation, (especially for technology suppliers and research institutions) and from an improvement in the quality of life due to the effects of better traffic organisation.

The action has also associated positive impacts that, to some extent, are also environmental, such as reducing the number and size of vehicles in the inner city provides an overall improvement in the urban environment, with decreasing noise and gas emissions.

Organisational Impact
The main organisational impacts of this action are:

- Adoption of new schemes of circulation and parking in the cities, penalising larger vehicles and private vehicles.
- Improving the logistics response in urban centres, adopting smaller and less polluting vehicles.

DRIVERS/BARRIERS AND ACCOMPANYING MEASURES

The implementation of these measures is not easy from an organisational point of view as it implies modifications in the organisation of the logistics chain and procedures. Notwithstanding this fact, it can be facilitated by the convergent interests of the logistics operators and the local economic operators. Both can have an economic benefit if, as described above, the adopted scheme is balanced in terms of costs and benefits.

The application of this technique can be easily accepted also by citizens and final users, as can provide a better level of service.

The most important barrier is in the low level of awareness by the local commercial operators and the logistics operators of this possible organisational scheme.

Joint initiatives involving shopkeepers, logistics operators associations and municipalities can be a useful tool to increase awareness and raise interest. In any case a participatory design process is necessary in every city and situation where this kind of solution is to be applied in order to achieve a consensus about the adopted solutions.

FINANCIAL PLAN

In this plan only the implementation of the pilot cases needed to develop both all the methodological and technological tools and the expertise for the application of this new technique will be considered.

In particular, we consider it necessary to implement at least two pilot experiences in two different medium-sized cities to validate the approach and to test the organisation and its technological support.

The related costs can be evaluated in:

- The implementation of a first version of an ICT tool in order to manage the delivery of the parcels, from the warehouse to the customer: about 200,000€. This first management system should interface the information system of some logistics operators to be validated.
- The study to define all the normative and operational aspects of the service and the related business model : about 50.000 €
- The implementation of 2 case studies to validate the scheme, the business model, the IT tool and all the operational aspects for at least 1 year.
- The fee to be paid by the operator to the delivery point for the service: about 0.80€ per parcel.

Globally the financial resources needed to carry out the actions can vary according to the business model adopted. In any case an estimation of 0,5 – 0,6 M€ can be assumed.

REFERENCES

Description of the Kiala service from its website: www.kiala.com
Description of the UPS Access point from its website: www.ups.com
International Business Times: “UPS launches pickup locations to cut costs, serve big cities” by Meagan Clark
International Business Times: “UPS pickup locations could be essential to improving profitability” by Meagan Clark
Retail Wire: “Will store pick-up alter the course of home delivery?” by Tom Ryan
Forbes: “UPS Access Point network could help improve margins and competitive edge” by Trefis Team
The Wall Street Journal: “Parcel-delivery firms and retailers: experiment with package pickup points” by Robbie Whelan

ACTION 6.1.

A MATCH MAKING WEB BASED PLATFORM FOR URBAN LOGISTICS CLUSTERS

ABSTRACT

The MatchMaking platform is a tool to facilitate relationships and contribute to the development of a new culture and new business planning in order to organise events where enterprises meet research groups and institutions.

The action involves different targets:

- Enterprises (SMEs) working in: Urban Logistics, ICT and all the other related technical fields.

Groups of research and innovation projects.

- Public administrations, Universities.

The interactions of these targets will realise events with different scenarios: B2B, B2R to facilitate the construction of innovation projects; R2R to create trajectories of innovation and training innovation; B2I to listen to the needs of the territory and implement new policies; and R2I to create a bridge between innovation and territory.

This platform will be a basic tool to support and enhance the cooperation among the regional clusters and their companies.

KEYWORDS

MatchMaking, Urban Logistics, Innovation, Networking, Mobility

OBJECTIVES

The objective of this action is to develop an online platform focused on Urban Logistics issues especially devoted to Match Making whose main targets are:

- To facilitate knowledge exchange and to build relationships between enterprises and research groups of the DOROTHY clusters.
- To build innovation projects and endorse networking in the Urban Logistics setting.
- To support the internationalisation of the clusters.

The Match Making platform is a fundamental networking tool and the matchmaking event is a quick and easy way to meet potential cooperation partners.

URBAN LOGISTICS PLATFORM FRAMEWORK

Currently, there is no Match Making platform specifically devoted to the Urban Logistics framework with the objective of creating innovation projects and focused on the interaction between the following skills: engineering, information, technology electronic equipment, electric vehicles, mechanics and mechatronics.

In recent times, there has been an increasing interest in networking tools showing the capacity to facilitate relationships and create interactions between different sectors in complex systems.

ACTION DESCRIPTION

Content

The MatchMaking platform is a tool to facilitate relationships and contribute to the development of a new culture and new ways of planning and developing business. The main feature is the possibility of organising events where enterprises meet research groups. Furthermore, the platform allows the web publication of enterprise/laboratory profiles in order to enlarge the possibility of their cooperation with international entities.

The Match Making platform

- Accelerates the acquisition, distribution and capitalisation of institutional and personal knowledge.
- Establishes and strengthens the cohesion within the community of practice.
- Promotes the sharing of information and ideas among users, and the emergence of individual and team skills.
- Improves users' loyalty and awareness of brands.

As a first step, the implementation of this action foresees the use of a specific existing tool adapted to the needs of the clusters. In the future this tool could be embedded within the web tools (sites, IT systems, etc) of the regional clusters, enlarging their overall functionalities.

The implementation of the platform is of course not sufficient by itself, as a very important step will be the involvement of all the clusters in filling the data base with data about local companies profiles, their needs, their requirements and so on, so that the use of the platform will be profitable for the clusters' companies. The meaning of this action is to implement a working instrument that the four clusters will share and will maintain and enrich over time. This will strengthen their cooperation and will offer efficient exchange opportunities.

Skills and Expertise
Within the Tuscany Cluster a Match Making platform is already available, mainly working at the regional level. It was born from collaboration between: DISIT (Distributed Systems and Internet Technologies Lab), Laboratory of the University of Florence; EFFECTIVE KNOWLEDGE, spin-off of the University of Florence; and APRE Toscana, Regional Agency for Promotion of European Research. These partners were very well skilled in the basic fields required to develop such an application: ICT, marketing and communication, project management for innovation projects, business support, events' organisation.

The implemented Match Making platform is a modular and scalable solution that can be easily customised to meet several application environments:

- Community management for institutions, companies and public bodies acquiring and maintaining skills and semantically organised information.
- Best practice networks, knowledge management and business intelligence.
- Social media network, collaborative work on content and their distribution.
- Enterprise social network, project management.
- Social learning management system with any type of content and accessible with any device.
- WebTV, Smart TV with user support, support for content distribution for PC and mobile devices.

The solution exploits artificial intelligence technologies achieving excellent organisational and training performance by integrating tools and solutions for: knowledge management, data mining, social collaboration, project management, intelligent content and social media.
Companies and research institutions can use the platform to promote their competencies and products by filling in a company/lab profile. Each company can have more than one profile that can be promoted for different purposes. The platform supports Multilanguage as a user interface but also in the company lab profile. The Match Making support tool allows matching offers/requests for competencies, and also integrates a meetings booking support tool.

By using the platform, institutions/various entities can make queries to search for specific competencies and solutions they are interested in by using an advanced search tool (also multilingual).

The platform gives the possibility of organising not only virtual meetings and matching, but also real matchmaking events. In this case the platform allows each user to manage its agenda for meetings autonomously by defining time slots of meetings, rejecting appointments of no interest and printing the agenda and the profiles of the users booked for a meeting.

The potential of the Match Making platform is remarkable, due to its characteristic of being a customisable platform with many functionalities that can be activated or not according to specific needs. The following list offers various examples of available functionalities:

- User managem ent and networking:
  - Registration of knowledge and skills of persons.
  - Social Graph to display and navigate on the content, users and relationships among them.
  - User generated content acquisition and management.
  - Private and/or open and moderated groups management.
  - Customisation of group pages, website, blog, forums.
  - Automated promotion on social media.
  - Monitoring and statistics, best practice network analysis.
  - Multi-tenancy for customising group graphic layout.
- Content Management:
  - Cross media content: audio, videos, courses, slides, animations, 3D, braille, document, HTML5, eBook, open to any format.
  - Access to content from the Web and with any mobiles.
  - Multilingual indexing and advanced search.
  - Content acquisition and download via QR code.
  - Geo-location of content.
  - Intelligent and interactive content management (calculators, procedures, check lists).
  - Support for embedding content on external web pages.
  - Promotion of content on social media.
- Optional services:
  - CAS-DRM: advanced control system and protection of content, including IPR Wizard.
  - Project management, project definition, Gantt diagrams, deliverables, personal planning and control.
  - AXCPCloud: scalable support for managing large amounts of incoming content to the system.
  - Management of the end of residential or remote events: surveys and questionnaires; reviews and opinions; verification, certification etc.
  - Content organiser: personalised mobile content organiser tool for iPhone, iPad, Android, to access content, local search, chat, personal tags, access via QR, etc.
  - Integration with other services and data bases.

Starting from this platform which is already available, a MatchMaking tool specifically customised to the needs of the DOROTHY clusters will be developed. Several customisations will be implemented in terms of services, tools and graphic layout. All of the platform will be set up to be used specifically and autonomously by DOROTHY partners and the clusters' participants and to be open – when necessary – to dialogue with external third parties. The registration forms for all users and companies will be customised according to the specific needs. Specific tools will be set up if necessary and integrations with other services will be developed if needed. The Match Making platform, however, is available as a virtual machine and this will ease its future hosting and maintenance.

As a future option, the Match Making platform could be embedded in the websites of the DOROTHY Clusters becoming a part of their operational tools.

Stakeholders and Beneficiaries of the Action
This action is directed to the clusters and will be implemented by some of the partners of the clusters themselves for the benefit of all the remaining ones. The main players of the action are:

- Tuscany Region.
- Municipality of Florence.
- University of Florence.

They will have an active role in implementing and operating the platform. Moreover other important stakeholders are all the DOROTHY partners and clusters' members. Moreover, associations, innovation poles, chambers of commerce, technological poles, public administrations, companies, consulting companies and other promotion entities may take advantage of Match Making with their network. In addition to the possibility of organising Match Making events, these entities may directly enter business profiles and then delegate the management to stakeholders in order to provide a service for entrepreneurs and researchers.

They will be the main beneficiary of the action, especially in the first phases of its implementation.

However, the real potentiality of the platform could be fully exploited only if the partners are gradually able to attract new subjects from outside the networks which are already set-up.

The beneficiaries are SMEs, groups and research centres, institutions interested in innovation and creating relationships in the field of Urban Logistics. The advantages for beneficiaries are:

- Visibility for the profiles of enterprises and research centres.
- Opportunity to meet companies and research groups to discuss your idea to develop or to solve problems.
- Understand the trends in innovation. In fact, participating in a thematic Match Making event is a good opportunity to learn about hot industrial topics from many stakeholders.
- Expand the relationships network.
- Be informed about research calls and funding opportunities.
- Discuss with companies and capture the real innovation needs from stakeholders.
- Accelerate the development of communication marketing, promotion skills and multi-disciplinary skills.
- Meet more companies and researchers in a short time. Individual meetings have a limited duration, but enough time to identify the people you want to meet again to deepen their knowledge.
- Create collaborations between research/business and create innovative projects.

The implementation of the new platform will be carried out by APRE Toscana in collaboration with the laboratory of the University of Florence DISIT LAB www.disit.org, the spin-off of the University of Florence Effective Knowledge www.effective-knowledge.com/mm/ and Fondazione per la Ricerca e l'Innovazione dell'Università di Firenze www.fondazionericerca.unifi.it .

The four clusters will cooperate in defining all the necessary integrations to the existing platform and all the eventual new functions and in defining the final specifications. This work will be led by Fondazione Innovazione e Ricerca.

A specific agreement among the clusters (in the framework of the general cooperation agreement already signed) will be defined for all the management aspects of its operation and maintenance.

EVALUATION OF IMPACTS

Reference Market and Economic Impact

This tool is not conceived to be sold or to offer services to other subjects, but only to be used by the DOROTHY clusters, therefore no direct market can be envisaged for it.

On the other hand it can be an effective means to develop the market of the clusters' companies, mainly SMEs, offering the above described opportunities. The extent to which this opportunity will be exploited, and consequently the potential economic impact, depends on how many business relationships, innovation projects and other marketable initiatives are born through the use of the platform and the Match Making events.

Cultural Impact
The Matchmaking platform impact will be very important in terms of cultural change because it is an accelerator of innovation. It facilitates networking and growth of innovation projects. Although it is not possible to envisage/estimate a direct connection among the action and environmental impact, from an indirect point of view it is possible to foresee that the platform will probably trigger innovative projects targeted to lowering the environmental impact of Urban Logistics.

Social and Urban Impact
The Match Making platform is an important tool to promote social change towards collaboration between enterprises, laboratories/groups of research, institutions and to create innovation.

DRIVERS/BARRIERS AND RELATED ACCOMPANYING ACTIONS

Cultural Barriers
Bring together SME and Research Centres is a difficult task because they often have different languages and difficulties in collaborating.

The Match Making Platform is a tool to facilitate the communication, the construction of networks and the promotion of a cultural change.

Opportunities to Discover
The Match Making platform is a big opportunity to discover the innovation trend in a specific field, in this case Urban Logistics field.

FINANCIAL PLAN

The financial plan in this case is composed of:

- The costs related to the set up of the platform and its customisation.
- The recurrent costs related to the management, operation and maintenance of the platform.

Even if the level of customisation cannot be at the moment clearly defined, the implementation costs can be evaluated as about 20,000 – 25,000€.

The yearly costs for the hosting and maintenance of the platform can be estimated as 5,000€ for licences and support; the cost of the operation can be variable, as it is related to the organisation that will be adopted, the frequency and mode of use of the platform, etc. In any case, assuming that a system administrator will be devoted part time to the operation and management of the platform, an indicative yearly cost of 25,000€ can be hypothesised.

There is an additional custom budget to organise a matchmaking event about the costs of organisation, promotion, marketing and communication and personnel involved in the event. This cost can be estimated in 2.000 € per event.

By supposing 2 events per year in the next three years the total cost for the period will be the following:

- Platform customization: 25.000 €
- Operational costs (4 years): 120.000 €
- Events organisation (8 events during 4 years) 16.000 €

So the total costs will be around 161.000 €

The possible funding sources for the development of this action are:

- Clusters 'own funds
- Public funding: European Union, regional or local authorities devoted to cluster's operations and functioning.
- ROP and Competitiveness Operational Programs

REFERENCES

Y.Huang, X.Zhang, P.S.Alexander. "A Heuristic Algorithm for Optimizing Business Matchmaking Scheduling". International Journal of Operations Research and Information Systems (IJORIS), Volume: 3, Issue: 4, 2012. DOI: 10.4018/joris.2012100104

F.D'Aubeterre, L.S.Iyer, R.Ehrhardt, R.Singh. "Discovery Process in a b2b eMarketplace: a semantic Matchmaking approach". International Journal of Intelligent Information Technologies, Volume 5, Issue 4. IGI Global, 2009. DOI: 10.4018/jiit.2009080702

A.F.Salam. "Semantic Matchmaking and Decision Support System for Dependable Supplier Selection in the Extended Enterprise Supply Chain". International Journal of Dependable and Trustworthy Information Systems, 2(1), 50-80, January-March 2011. IGI global, 2011. DOI: 10.4018/jdtis.2011010103

P.Bellini, I.Bruno, P.Nesi, M.Paolucci. "Institutional Services and Tools for Content, Metadata and IPR Management", accepted for publication on International Journal on Software Engineering and Knowledge Engineering, World Scientific Publishing Company, 2014.

P. Bellini, D. Cenni, P. Nesi, "Optimization of Information Retrieval for Cross Media contents in a Best Practice Network", International Journal Multimedia Information Retrieval, 10-04-2014. http://link.springer.com/article/10.1007/s13735-014-0058-8?sa_campaign=email/event/articleAuthor/onlineFirst

DOI: 10.1007/s13735-014-0058-8

F.Brenzini, N.Mitolo, M.Paolucci, P.Nesi. "Matchmaking. Un servizio per la crescita delle imprese". Leadership and Management n. 32, May-June 2015.

Apre Toscana White Paper. Effective Knowledge S.r.l., 2014. Source: http://www.effective-knowledge.com/docs/docs/SS-APRE_TOSCANA-ENG.pdf

ACTION 6.2.

COOPERATION BETWEEN THE RESEARCH CENTRES AND THE UNIVERSITIES OF THE REGIONS FOR DEVELOPING COMMON RESEARCH LINES

PROMOTION OF CARGO BIKES FOR DELIVERY IN URBAN CENTRES

The main target of the DOROTHY clusters is to enlarge as much as possible the cooperation between the four regions, research actors and regional research-driven clusters for the benefit of the SMEs and the overall regional competitiveness and growth.

As a concrete action in this sense, Universities and research entities which are members of the DOROTHY clusters undertake the commitment to strengthen their cooperation in the field of Urban Logistics in order to support the development of the clusters. As a first step in this direction a cooperation agreement is going to be established in specific areas of interest.

One of the targets of the action is the gradual enlargement of the partnership to other subjects in the regions, especially industrial,in order to spread innovation.

KEYWORDS

Memorandum of Understanding (MoU), Research Development, Innovation, Cluster, Joint Action Plan (JAP)

OBJECTIVES

The DOROTHY project is targeted at developing the potential for innovation and research in the four regions which comprise the Consortium, in the field of Urban Logistics that represents the specific application topic, and is one of the main focuses of attention of the European Flagship Initiative.

The main instrument is the constitution of specific thematic innovation research driven clusters in the regions. The clusters have been created during the project's lifetime, with the goal of enhancing mutual learning processes and collaborative relationships among them. Private companies, academia, research entities and local administrations are represented in such a way that transnational actions could be established, directed at developing innovative measures in Urban Logistics related issues.

Clusters are open to participation by any other bodies interested in Urban Logistics development in the regions.

One of the main concerns of the DOROTHY project is to give future continuity to the cooperation established among the clusters and to foster the diffusion of innovation.

This action is specifically devoted to this aim and as a first step it has identified the definition of a cooperation agreement among Universities and research institutions belonging to the clusters, in the form of a Memorandum of Understanding (MoU).

The MoU follows the general philosophy of the clusters and offers the possibility of third parties (new Universities or research entities in the regions) subscribing to the agreement after its signature.

The cooperation framework is the tool to achieve the overall goal, and the method to specify the forms of collaboration among partners/parties.

The general objective of this cooperation framework is just to find short-term cooperation opportunities based on the JAP, research priorities, complementarities and common interest in the existing innovation lines.

The specific purposes of the cooperation between the parties are as follows:

- To promote cooperation among the different clusters.
- To identify actions targeted at supporting innovation and cooperation among the clusters' companies and Universities and research centres / institutes.
- To identify possible funding sources for the previously mentioned activities, with particular attention the European Programmes dedicated to research-development / education / training / industrial development. Joint participation in future calls for funding at the EU level, as well as national and/or inter-regional level, will be a priority of the cooperation.

- To promote interest in education, innovation and research activities of the respective institutions.
- To promote research and innovation for the benefit of SMEs.
- To deepen the understanding at each institution of the economic, cultural and social issues relating to its counterparts.

ACTION DESCRIPTION

Content

This MoU is part of the JAP that may comprise specific regional activities and will include all or some of the following measures:

- Increasing research potential and researcher mobility, including inter-sectorial mobility between research and industry.
- Improving and sharing RTDI infrastructure.
- General knowledge sharing among the parties.
- Supporting relevant research projects.
- Enhancing knowledge transfer between business entities and between research entities and business entities, in particular SMEs, through networking.
- Improving availability of, and access to, SME support services.
- Facilitating access to private and/or public funding for RTDI.
- Other relevant business support measures.

The regional innovation clusters will operate in order to maximise critical mass in terms of the European research area, maximising opportunities for enterprises to access research and innovation, to transfer knowledge and expertise, together with seeking joint venture opportunities, sharing best practice.

The MoU is open to other researchers and initiatives agreed by the partners.

Several cooperation opportunities will be investigated in the following areas and implemented as much as the means of each allow:

- Carry out events putting together business environment and research entities aiming to identify and understand the needs of SMEs.
- Implement research and innovation project proposals according to the necessities of the clusters and SMEs.
- Organise symposia, conferences, short courses and meetings on research issues.
- Receive visiting staff from clusters and SMEs for periods of study and/or research.
- Carry out joint research and continuing education programmes; and
- Exchange information pertaining to developments in entrepreneurial formation and research at each cluster.

The MoU is a general cooperation framework and the terms and conditions to carry out specific initiatives will be agreed upon separately, involving those partners directly interested to the initiative.

The MoU specifies at the same time, the role of the partners for:

- Rules and modalities for cooperation
- Roles and responsibilities of the partners.
- Entry into force, duration and termination, rights and obligations, force majeure.
- Management of intellectual property in knowledge transfer activities.
- The possibility of third parties subscribing.

Entities involved the cooperation between research centres / Universities and between members of the clusters are particularly seen as the key resource for giving responses to the innovation needs of the clusters.

By signing the MoU, the parties have created conditions to establish close cooperation between the research institutes in the four regions in the fields of science, research development, innovation and technology.

The MoU specifically refers to the seven Thematic Areas in the field of Urban Logistics which are taken into consideration by the JAP.

Specific scientific and technological cooperation areas are under evaluation and will be investigated; they are to be included as the starting point of the Mou:

EVALUATION OF IMPACTS

Normative Framework

Although there is no specific related normative framework on this kind of action (beside the one related to privacy and non disclosure of intellectual property rights) all the legal/ normative implications will be duly managed during the implementation of the action.

Indirectly, the normative framework generated by the eventual international projects set up within the MoU framework must to be duly managed during the implementation of the action.

Reference Market and Economic Impact

The action does not address directly any kind of market, but is focused on developing the future position of the clusters and their companies on the Urban Logistics market through innovation. In accordance with the strategic development lines of the JAP, the innovation actions will be mainly focused on ICT and electronic products for Urban Logistics, mechatronics, environmental improvement of Urban Logistics operations, Urban Logistics planning and economy, urban sociology, and mobility.

It is not possible to identify exactly the economic impact the action will have, as on the one hand it depends on how the research results will be transferred to the market and on other hand on how many initiatives and innovation projects will be born through the application of the MoU.

FINANCIAL PLAN

The cost of this action is related to the efforts sustained by Clusters to develop the collaboration among themselves, the Universities and the Research Centres.

It can be estimated in 1 person month per Year for the next 4 years.

This lead to a total amount of around 80.000 €.

The possible funding sources for the development of this action are:

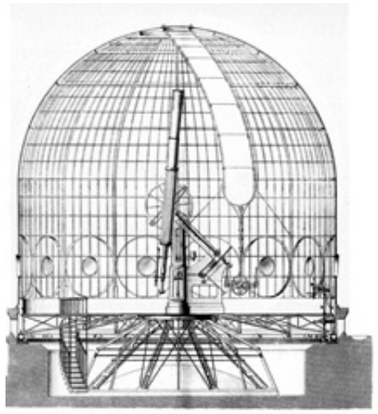
- Clusters ‘own funds
- Public funding: European Union, regional or local authorities devoted to cluster’s operations. . and functioning.
- University funds for internationalisation

REFERENCES

Europe 2020 Strategy
http://ec.europa.eu/europe2020/index_en.htm
Innovation Union
http://bookshop.europa.eu/en/innovation-union-pbKI3213062/
MoU – European Commission
http://ec.europa.eu/economy_finance/assistance_eu_ms/greek_loan_facility/pdf/01_mou_20150811_en.pdf
Knowledge Transfer Study
http://www.knowledge-transfer-study.eu/home/
Programme of Strategic Cooperation
http://www.hea.ie/en/funding/research-funding/programme-strategic-cooperation
A new approach for research and innovation in Europe
http://www.sciencebusiness.net/pdfs/innovationboard/ANewApproach_to_EU_RDI-joint_statement.pdf
Cooperation between the EU - Joint Research Centre and the Research Institutions
https://ec.europa.eu/jrc/sites/default/files/events/20140401-infoday/20140401-infoday-kanellopoulos.pdf
A Memorandum of Understanding between research institutions
http://www.vttresearch.com/media/news/a-memorandum-of-understanding-between-research-institutions-of-slovakia-and-finland
Opportunities, Challenges and Good Practices in International Research Cooperation
http://www.oecd.org/sti/sci-tech/47737209.pdf

ACTION 6.3.

OBSERVATORY ON URBAN LOGISTICS



ABSTRACT

The objective of this action is to design an Urban Logistics observatory, aiming in its first phase to compile and evaluate good practices and implemented actions for 'self-benchmarking'. A future development could lead to a numeric data base aimed at quantitative evaluation and benchmarking.

Such an observatory facilitates at a cluster and action level - pilot experiences and generically implemented solutions as well as good practices - the exchange of information, knowledge and experiences and benchmarking. It can also help to define objectives and contents for research and training in the field of Urban Logistics.

The action will have a role of enabler to provide information and to stimulate the participation of the stakeholders - operators, technology providers, R&D institutions, public and private entities, etc. - working in the field of Urban Logistics as well as in related disciplines, including urban and regional development, urban planning, transport, energy and environmental sciences. It also concerns the beneficiaries of Urban Logistics, mainly wholesales and end users, but also the regulatory entities and the responsibles for traffic and urban space.

The observatory will also constitute a resource platform for several tools developed within and outside the DOROTHY project, as for instance a good practices portfolio, initiatives, training materials, photos/videos and dissemination of EU funding opportunities.

This Action is intimately related to two other DOROTHY actions:

6.1 Urban Logistics MatchMaking Platform for SMEs, Institutions and Research.

6.2 Cooperation between the Research Centres and the Universities of the Regions for Developing Common Research Lines.

OBJECTIVES

Notwithstanding the importance of Urban Logistics, there is a gap related to a lack of information on this matter at a disaggregated (company/activity) and local/ regional level. The collected information is fragmented and there is a great lack of reliable statistics. Most of the time, the methodologies and common definitions that would facilitate comparisons between cities, regions and countries are missing. The growing importance of cross-cutting agendas that are key to the sustainable development of the regions, such as the facilitation of transport and commerce, Urban Logistics, and climate change, only widens this information gap.

Thus, the observatory for Urban Logistics aims to set up the basis for the regions to coordinate and promote the development and adoption of Urban Logistics initiatives in order to increase economic efficiency of distribution in urban areas, while minimising the environmental and social impacts.

The main objective of the action is to develop an Urban Logistics observatory to assist clusters and interested entities to understand and evaluate the impact of implemented actions. The specific objectives of the observatory are the following:

- Disseminate results of pilot experiences, good practices and implemented solutions.
- Develop a portfolio of initiatives oriented to increase access to innovative Urban Logistics good practices.
- Disseminate technical tools (guides, handbooks and reports) that reflect key issues to be considered in order to further the development of Urban Logistics by clusters and in regions.
- Develop indicators and gather data on Urban Logistics topics.
- Inform about policy developments and regulations/legislation.
- Establish links and stimulate cooperation between stakeholders and clusters in order to develop joint initiatives.
- Assist the regional policy makers to develop policy and regulatory frameworks and to support market facilitators and players.
- Provide information about EU funding programmes which are accessible for local/ regional public and private entities and companies, in particular SMEs.
- Present a calendar of important conferences, meetings, workshops and networking events.

ACTION DESCRIPTION

Content of the Action
The observatory will be an open web based participatory platform that enables all the stakeholders, and in particular clusters, to obtain information and data concerning Urban Logistics policies, solutions and actions.

Since no specialised platform exists where Urban Logistics stakeholders can submit contents and comment on uploaded ideas and initiatives, the observatory for Urban Logistics will provide such a tool. Here, stakeholders can register good practices and discuss new and innovative ideas on Urban Logistics. Emphasis will be given to regularly exploit the data base to produce news round-ups of Urban Logistics at the local, regional and European levels and contribute to roadmaps, policy making and training. For this work special expertise related to communications will be needed.

Two points have to be stressed:

- The observatory can only be gradually implemented and the respective parts incorporated into the observatory, since they embrace a wide spread of subjects in a field that is little consolidated and has a shortage of published data and results. This is the case for several reasons: so far Urban Logistics has been carried out mainly by the private sector (with some exceptions such as waste collection) and little regulated by the public sector (delivery parking restrictions like time slots or weight limits).
- The conception and implementation of an observatory is a medium-long term project and needs large initial and continuous financing; it especially needs a stable host organisation (and respective web platform). However, to respond to the first 2 objectives mentioned above, some existing open platforms are available to receive (but not treat) information.

For this reason the frame of reference will initially focus on European experiences, clusters and countries. However, as a web tool, the observatory is automatically open to contributions and consultation worldwide.

Moreover, a first development stage of the observatory will be focused on cooperation with existing platforms and on the gradual development of the DOROTHY platform (see interactions with action 6.1).

As a first step – and still during the DOROTHY project – actions (partially) implemented by the project or examples collected in the process can be uploaded on the ELTIS, ENDURANCE, CIVITAS and other platforms.

A second activity will be to select among the various existing platforms the ones that could be interesting for the DOROTHY observatory and to contact their organisers and projects, in order to analyse the feasibility of the DOROTHY good practice database being integrated into an existing platform or observatory.

In the meanwhile the organisation of the Urban Logistics observatory will be gradually designed and implemented, and suitable funding sources will be investigated. The driving idea is to base this organisation on the academic institutions by taking advantage of the convergence existing with some other DOROTHY actions, and in particular:

- The memorandum of understanding for research centres and the universities in the four clusters (action 6.2) will provide the institutional framework for the development of the specific cooperation.

- The Urban Logistics MatchMaking Platform for SMEs, Institutions and Research (action 6.3) will gradually implement a web based platform that could host the observatory.
- Action 4.1 is focused on a high level International Master's Degree in Urban Logistics can provide the ideal environment for nourishing the initiative, by profiting from the convergence between the purpose of the master's degree initiative and the targets of the observatory.

The final configuration of the DOROTHY Urban Logistics observatory will be a web based platform open to different users, with a specialised and reserved section for the exclusive use of the clusters' members. This web based platform will also gradually integrate other tools such as the MatchMaking platform (action 6.3). It will offer the following services and information:

- Information about implemented solutions and good practices.
- An observatory about innovative technologies that could be promising for Urban Logistics and their applications.
- Develop a portfolio of initiatives oriented to increase access to innovative Urban Logistics good practices.
- A specialised library containing publications, guides, handbooks and reports on Urban Logistics provided by different sources (European projects, initiatives, conferences, etc.) with a search engine for accessing the documents via keywords which reflect topics.
- Statistical data on Urban Logistics topics.
- Information about important legislation and policy developments on Urban Logistics.
- Links for stimulating cooperation between key stakeholders and clusters.
- Provide information about specialised EU funding programmes focused on Urban Logistics that are accessible for local/regional public and private entities and companies, in particular SMEs.
- Calendar of important conferences, meetings, workshops and networking sessions devoted to Urban Logistics.
- DOROTHY clusters' catalogue.

Existing Experiences
At the European level no observatory especially devoted to Urban Logistics exists.
There are some observatories which were constructed – and were substantially funded – with a wider scope, such as the Electric Vehicle observatory (still not very operational and very deficient in the segment for Urban Logistics vehicles).

eafo
European Alternative Fuels Observatory

In most platforms and projects we can find a great predominance of cases of transport of persons, not goods. This is the case for instance in Spain which has published since 2003 the results of the 'Metropolitan Mobility Observatory' which is also the basis for an annual conference. It is also very important to interpret and exploit the results for practitioners and policy makers.

Metropolitan Mobility OBSERVATORY (MMO)

There are also several ongoing EU projects on Urban Logistics or including specific aspects such as the FREVUE project (for other projects see links in the DOROTHY website) which could provide inputs to an observatory, but not without the need to work the data (and have the resources to do so).

The European Technology Platform ALICE has recently been set up to develop a comprehensive strategy for research, innovation and market deployment of logistics and supply chain management innovation in Europe. Its main objective is to support and assist the implementation of the EU Programme for research: Horizon 2020. This platform is mainly project and network oriented, which is especially useful for clusters and Urban Logistics stakeholders. Although this platform does not plan to function as an observatory in the classic sense a strong relationship could be developed with the initiative of the observatory as a source of knowledge about innovation and as a link to a wider European world. ALICE has already published a set of Roadmaps, one specifically on Urban Logistics, whilst others are more ICT oriented.

alice | Alliance for Logistics Innovation through Collaboration in Europe

Te five ALICE Roadmaps

There are examples of observatories devoted to logistics, such as the one promoted by the region of Cataluña with parameters developed from a wide variety of information and entities; the result presents interesting indicators and results, but not a platform and database which could be easily transferred to other regions.

http://www.cimalsa.cat/observatori/observatori_en.htm.

CIMALSA Centres logístics de Catalunya

Observatori de la Logística

On a national level in 2014 Spain presented a national observatory Observatorio del Transporte y la Logística en España More common are the examples of observatories in the framework of transport and mobility projects and they include some Urban Logistics themes.

OTLE Observatorio del Transporte y la Logística en ESPAÑA

European Platform on Mobility Management (http://www.epomm.eu) or the ENDURANCE project (http://www.epomm.eu/endurance/index.php again concentrating more on SUMPs and not SULPs).

By far the most interesting case is ELTIS, financed for many years by the EU. In addition to providing tools and policy guides (especially stemming from CIVITAS projects), there is a data base on which any entity can upload or consult good practices in several categories relating to transport and mobility. Urban Logistics is one of the 13 topics accounting for less than 5% of the 900 cases. The use is free but no concrete data are delivered, only contact addresses.

Eltis

Some projects, such as CIVITAS Plus, have developed a sophisticated impact evaluation process. However, the results reported publicly are mainly examples and results of good practices - including a chapter on Urban Logistics – which are excellent and convincing, but not easy to integrate into observatories. Nevertheless, the CIVITAS portal presents many mobility solutions: the CIVITAS demonstration measures and their results; the CIVITAS Knowledge Base documents; and the policy notes.

One policy note is on urban freight, which aims to share experiences and best practices in order to trigger alternative and more sustainable approaches to urban freight planning. Another one is on the use of social media in urban mobility: it explores how cities can make the best use of information providing and offer them guidelines on developing and exploiting a social media strategy media in urban mobility. A third policy note is on urban ITS: it provides information about recent developments in ITS and traffic management and is intended to provide support to urban professionals in the initial selection of measure types suitable for their situation.

'Civitas Plus in Numbers' 10/2014

See also the policy note 'Smart choices for cities - Making urban freight logistics more sustainable'. It incorporates a large bibliography; however, there is nothing specific on the matter of observatories.

The **UITP** has an excellent but very expensive online database reserved for their members and exclusively focussing on passenger transport. Nowadays they publish statistics publicly accessible and free of charge; this is very interesting as an example of outputs from an observatory for the use of policy makers and professionals.

At the international level some observatories being implemented are not focused on Urban Logistics but on the macro scale of logistics/freight. For example, in **Latin America the Inter-American Development Bank** (IDB) is endeavouring to constitute the Mesoamerican Observatory on Freight Transport and Logistics. The observatory is aimed at generating information and statistics to enhance policy making to address increasing competitiveness in Mesoamerica - more information here. To achieve this objective Chile, Colombia, Ecuador, Paraguay and Uruguay work with the support of the IDB to implement their national observatories. Also, at the national level Panama has also developed an observatory focused on logistics. The Panama Logistics Web Portal (http://logistics.gatech.pa) is a tool that facilitates access to a wide and centralised repository of information about trade and logistics activities in Panama, as well as to enable shippers and logistics service providers to optimise the existing value of the logistics platform and expand their productive capacities.

There are also benchmarking exercises which are very important and useful, but rarely focused on goods transport.

There are some more global platforms with new style approaches to observatories; however they are not easily placed in relation to the specific aims of the Urban Logistics observatory proposed by the DOROTHY project (see references).

Skills and Expertise
For the technical contents of the observatory, logistics and transports expertise will be needed. For the first phase, operating mainly through collecting and exploiting good practices, no special skills will be needed beyond the cluster members' competencies. In a future stage, to provide all the information and to update the platform according to the described contents, several competencies will be needed. For this reason the cornerstone of the initiative will be the academic institutions. The permanent structure of the observatory will be set up around them. In particular, the memorandum of understanding for research centres and the universities provides a framework of targeted and specific cooperation in this field.

For the web based tool back office an IT professional will be needed in order to maintain the web platform.

The DOROTHY project through its partners, both research and training oriented and practitioners (operators, ITS companies, cities, agencies, consultants) have the knowhow and specialists needed to guarantee the consolidation of the initial steps of this action's concept during the project lifetime.

Stakeholders and Beneficiaries
The stakeholders' involvement should be in line with the activities of the Regional Clusters. Each Regional Cluster should create an information network involving universities and research centres, operators and ICT providers, municipalities/regional policy makers, companies and the community. This information network should nominate a focal point entity that coordinates the stakeholders' contributions and aggregates information in order to provide a bidirectional information flow to regional, national and European stakeholders and projects in a step by step collaborative approach.

Collaboration should be developed in the following way:
- Teamwork among Regional Clusters to set up the organisation committee.
- Active participation of all Regional Cluster members and stakeholders in gathering information to feed the observatory.
- Contributing to the development of data exploitation with the aim of making them accessible to practitioners, policy makers and regulators.

After the end of the project these 'in-house' competences and staff efforts will have to be built up and financed independently or in cooperation with an existing platform.

IMPACTS, DRIVERS AND BARRIERS

Direct impacts of the observatory, in the short run, are limited by several factors and barriers:

- Over a long period the set up and maintenance of the observatory has important costs and represents a significant effort. For this reason it must be complementary with a stable body whose institutional mandate could include the targets of the observatory. In any case the problem of fund raising will be the main barrier.
- The development of a specific platform should find agreement and support from the existing similar realities working in the field of Urban Logistics (at least some of them). For this reason the relationships with important realities such as ALICE and ELTIS are very important. They are complementary and could be available to share a medium-term project such as the DOROTHY observatory. However, there is a small number of such potential allies and it will be difficult to negotiate access rights with existing compatible platforms. However, the gradual approach outlined in the strategy of the action could facilitate this effort.

The impacts of the observatory will be mainly qualitative. It will:
- Contribute to the qualifications of the companies belonging to the clusters, providing them with valuable information, documents, links etc.
- Create networking with other players for developing initiatives oriented not only to innovation but also to the market.
- Spread the culture of Urban Logistics among different stakeholders and other players.
- Create a lobbying effect (especially if coordinated with other existing platforms and entities) about the most important normative aspects, innovation trends, regional policies etc.

- Support benchmarking exercises.
- Contribute to future certification projects in the sector.

The Urban Logistics observatory will be a tool for continuously assessing the needs of the economic sectors related to Urban Logistics, and to address market players and policy makers. The development of bridges between these actors generates win-win situation that creates add values for companies and the society.

FINANCIAL PLAN

After the DOROTHY project's lifetime
In the short term:
Activities:
Maintenance of the DOROTHY website platform and tools (catalogue, etc.) and promoting feeds and good practice uploads to other platforms such as **ELTIS and ALICE.**

This task should ideally be assured by one of the partners of DOROTHY's '**Memorandum of understanding for research centres and universities'** whose website could be used to host the existing DOROTHY website and the observatory.

One of the tasks to be included should be the elaboration of candidacies for **Horizon 2020** or national funding or specific cluster projects (such as the one already submitted to the World Bank by the Lisbon and Tagus Valley Region DOROTHY cluster).

Cost:
To feed existing platforms and disseminate organised results, a minimum equivalent of half a man months over 3 years should be assured (possibly shared among several participants). That would amount 20,000€ for 3 years.

In the medium-long term:
Costs can vary considerably according to the complexity of observatories, the type of outputs desired, whether they are sporadically updated or in real time (for feeding apps). This kind of project would need substantial funding or an international host organisation) with the capacity to take on such a project, which does not specifically exist in this field.

Most countries have observatories which could cooperate, but they are seldom versatile enough to integrate such a specific observatory as one for Urban Logistics. There are some international similar projects such as the VE observatory: this started some years ago and was never fully operational despite significant EU funding. Now a new tender has been awarded to AVERE/POLIS/

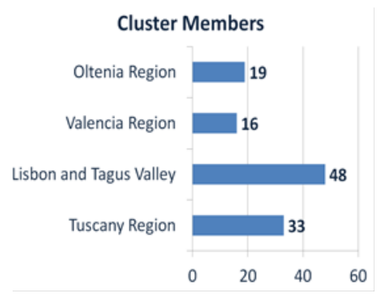
VUB/TNO to re-launch this observatory.

REFERENCES

European Technology Platform ALICE
Logistics observatory Cataluña http://www.cimalsa.cat/observatori/observatori_en.htm.
National Observatory Spain Observatorio del Transporte y la Logística en España
ELTIS - The urban mobility observatory (www.eltis.org)
CIVITAS POLICY NOTE 'Smart choices for cities - Making urban freight logistics more sustainable'
European Platform on Mobility Management (http://www.epomm.eu)
Endurance project (http://www.epomm.eu/endurance/index.php
Panama Logistics Web Portal (http://logistics.gatech.pa)
Mesoamerican Observatory on Freight Transport and Logistics Latin America the Inter-American Development Bank
Urban Observatory http://www.urbanobservatory.org/
Global Urban Observatory / UN-HABITAT http://unhabitat.org/urban-knowledge/global-urban-observatory-guo/
The Urban Observatory / Esri http://www.esri.com/special/urban-observatory/

ACTION 7.1.

COOPERATION BETWEEN THE RESEARCH CENTRES AND THE UNIVERSITIES OF THE REGIONS FOR DEVELOPING COMMON RESEARCH LINES



PREGIONAL CLUSTERS' CATALOGUE

The objective of this action is the realisation and promotion of the Regional Clusters' Catalogue conceived for disseminating the knowledge both of the clusters in their completeness and of their single members, describing the clusters' qualifications, skills, development lines and products.
The catalogue has an important role for:

- Disseminating the cluster concept in the field of Urban Logistics.
- Promoting the image of the cluster's members.
- Improving the possibilities to create partnerships (business, research and innovation, regional development, etc).
- Supporting the internationalisation cooperation possibilities.

The catalogue presents the clusters in general and each member of the four clusters with a detailed description of each entity (logo, contact address, domain, activity, products, etc.)

The Regional Cluster's Catalogue is another contribution to the consolidation of the idea of clusters and to the identification of the single partners into their cluster. It supports a cultural change towards an attitude of cooperation, exchange of best practices and it hopefully will work as cohesion tool.

KEYWORDS

Catalogue, Cluster, Internationalisation, Joint Action Plan (JAP), Innovation

OBJECTIVES

The DOROTHY Regional Innovation Clusters operating on Urban Logistics in:

- Valencia – Spain,
- Lisbon – Portugal,
- Craiova – Romania, and
- Florence - Italy

have the specific objective of boosting the environmental, economic and social performances concerning Urban Logistics' activities.

Particular attention is devoted to the business development in general of the companies and in particular of the SME members of the clusters. This effort is also targeted at their internationalisation which must be ensured over time after the end of the project.

As a contribution to this effort, the objective of this action is the realisation, promotion and continuous updating of a Regional Clusters' Catalogue.

The catalogue is conceived for disseminating the knowledge both of the clusters in their completeness and of their single members, describing the clusters' qualifications, skills, development lines and products.

The scope of the catalogue is:

- Disseminating the cluster concept in the field of Urban Logistics.
- Promoting the image of the cluster's members.
- Improving the possibilities of creating partnerships (business, research and innovation, regional development, etc).
- Supporting the internationalisation of companies (especially SMEs) and the cooperation possibilities.
- Favouring the exchange of knowledge and information among the cluster and their members.

URBAN LOGISTICS FRAMEWORK

The framework of this action is represented by the willingness of the clusters to extend their activities over their current limits. It also concerns the need to mainly support the effort of member companies in order to overcome the barriers to wider diffusion of their competences, products and consequently to develop their market.

The added value of being integrated in a cluster must be exploited in the best way, emphasising the integration of complementary skills and expertise within the clusters themselves.

This is why an integrated catalogue of the clusters can provide companies with an additional tool for disseminating and promoting their image, not only toward the internal market but also on the international market.

ACTION DESCRIPTION

Content
The action consists of implementing a catalogue that provides an exhaustive and appealing overview of the clusters and their members.

The catalogue will be implemented in digital form, and will have different uses:

- Internal to the clusters: to develop partners' cooperation, pursuing the quadruple helix concept.
- Promotional: to disseminate the cluster concept, to develop the market to establish new connections with international partners.

Printed examples of the region's catalogues – possibly with the introduction translated into local language - may be used in some cases for important events and other particular promotions.

The catalogue contains:

- The presentation of the DOROTHY clusters and their philosophy (quadruple helix, integration among competences, internationalisation, etc.)
- A general description of the four clusters in terms of:
  - Number and typology of the members.
  - Skills, qualifications, expertise.
  - Cooperation with other European initiatives.
- For each member of each cluster a synthetic and exhaustive presentation containing:
  - Keywords.
  - General contacts / website link.
  - Presentation of the partner with skills, products, specialisations, etc. according to the specific nature of the partner.
  - Key business / research interests.

The catalogue uses captivating graphics and pictures and the presentations of the partners are published on a standard graphical template to clearly give the idea of an integrated set of partners.

The catalogue will be edited in English. Most of the information will be data which is easy to be understood (even by non-English speakers). The catalogue requires constant updating to accommodate:

- New members.
- Updating the information about existing members.

This will be a task allocated to the four clusters' structure after the end of the DOROTHY project.

The periodical updating of the catalogue with the request of information from the partners is also an additional means of maintaining the clusters' identity and of enhancing the identification of companies and other participants with the clusters.

The DOROTHY project itself has already implemented, as a draft version of the catalogue, as a proof of concept, with a synthetic description of each entity involved in the cluster (activity, products, contacts, etc.)

This version of the catalogue was presented, by the four DOROTHY clusters, during the Valencia Policy event in October 2015. It is organised as follows.

Clusters Composition

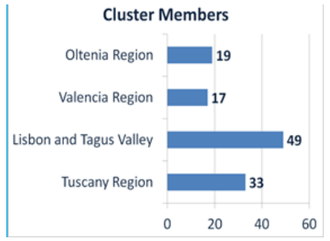
Urban Logistics Clusters	Full Members	Associated Members	Support Entities
	(October 2015)		
Tuscany Region	33	3	2
Lisbon & Tagus Valley Region	49	0	2
Valencia Region	17	0	0
Oltenia Region	19	0	0
TOTAL	118	3	4

Associated members, in the case of Italy, are public entities (municipalities, region) who, by law, cannot be full members. Support entities are not members but give support to them.

Classification
The catalogue classifies the cluster members accordingly to the quadruple helix concept and provides the profile of each cluster member.

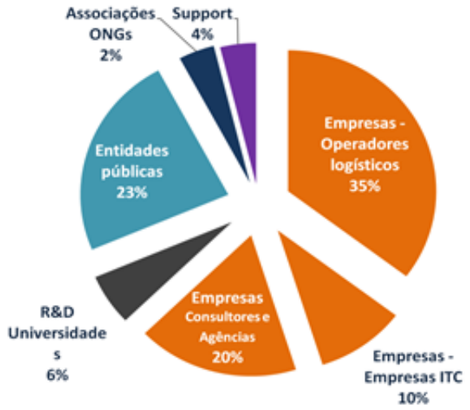
Quadruple Helix		
1	Business	Operators
		ICT Companies
		Consulting + Agencies
2	R&D | Universities	
3	Public Entities	national |regional | local
4	Community | NGOs	
Supporting entities		

The number of cluster members in the four regions is reported in the following pictures:

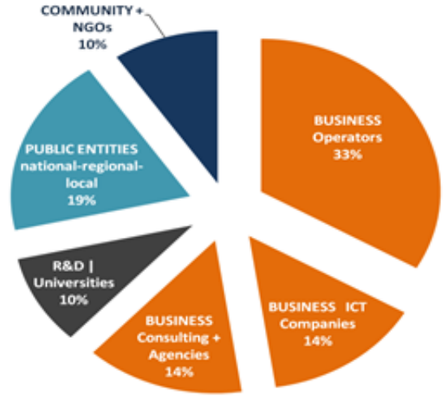


he following graphs and tables give the distribution of the type of cluster members, for each of the four regions.

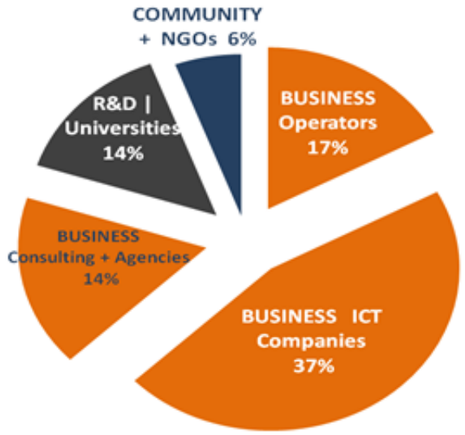
Lisbon and Tagus Valley Urban Logistics Cluster



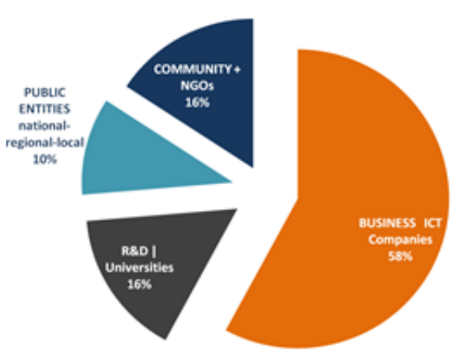
Valencia Urban Logistics Cluster



Tuscany Urban Logistics Cluster



Valencia Urban Logistics Cluster



Entity Profiles

For each cluster member a summary sheet gives the essential information and contacts which allows for direct cooperation among the cluster members of the four DOROTHY region clusters and other clusters or entities.

Lisbon and Tagus Valley Urban Logistics Cluster			Members October 2015
1	Business	Operators	19
		ICT Companies	4
		Consulting + Agencies	10
2	R&D | Universities		3
3	Public Entities	national |regional | local	12
4	Community | NGOs		1
	Total		49

Oltenia Region Urban Logistics Cluster			Members October 2015
1	Business	Operators	0
		ICT Companies	11
		Consulting + Agencies	0
2	R&D | Universities		3
3	Public Entities	National |regional| local	2
4	Community | NGOs		3
	Total		19

Tuscany Region Urban Logistics Cluster			Members October 2015
1	Business	Operators	6
		ICT Companies	12
		Consulting / Agencies	6
2	R&D | Universities		5
3	Public Entities	National |regional | local	3
4	Community | NGOs		1
	Total		33

Valencia Region Urban Logistics Cluster			Members October 2015
1	Business	Operators	5
		ICT Companies	2
		Consulting + Agencies	3
2	R&D | Universities		2
3	Public Entities	National |regional| local	3
4	Community | NGOs		2
	Total		17

Organisations in the clusters are encouraged to use this catalogue as a pathfinder to find the right partners for the joint development of innovation projects that mutually benefit them.

This draft of the catalogue will be improved by updating the information on existing or new cluster members and by verifying the classification of the members.

Stakeholders and Beneficiaries of the Action
The stakeholders of the action are the clusters themselves and the main beneficiaries will be the single entities belonging to the clusters, other entities that aim to cooperate which will, in the future, be the main players of the initiatives carried out within the framework of the Cluster's Catalogue.

EVALUATION OF IMPACTS

Normative Framework
No particular legislative restriction exists, but issues related to privacy and non-disclosure of intellectual property rights must be considered, as a general matter of the relationships between the single partners and the clusters are also linked to communication and dissemination.

These issues can be treated under the Memorandum of Understanding 'Cooperation Framework between the DOROTHY Regional clusters on Urban Logistics' guidelines or case by case in bi- or multi-lateral agreements.

Reference Market and Economic Impact
The action is targeted to improve professional qualifications in the regional clusters and to strengthen the presence on the market of the companies who are members of the clusters. In particular, the catalogue can be a direct marketing tool for the companies.

The economic impact cannot be directly quantified and will depend on the capacity for capitalising the initiative by the companies and research institutes in the clusters.

Social Impact
The Regional Clusters' Catalogue is another contribution to the consolidation of the idea of clusters and single partners sense of membership in their cluster.

It supports a cultural change towards an attitude of cooperation, exchange of best practices and hopefully it will work as a cohesion tool.

FINANCIAL PLAN

It is important to remember that the clusters' catalogue is an instrument which supports many other actions included in the JAP, in particular cooperation, internationalisation, innovation, competiveness.

The version of the catalogue which is currently implemented:
- Is an e-catalogue in English, accessible on the DOROTHY website www.clusterdorothy.com/.
- Will be continuously updated until the end of the project.

The 'regional' catalogues (containing only the cluster members of a given region) may be printed, if so desired.

In the future, after the conclusion of the DOROTHY project, the regional clusters will have to carry out additional activities related to the clusters' catalogue, and in particular:
- The improvement of the first version of the catalogue.
- Its continuous updating.
- The translation into local language of the four sections for use at the national level or in foreign countries (using the Spanish or Portuguese language).
- The production of all the necessary dissemination materials (CD-ROMs or printed materials for catalogues, flyers, JAP, studies for solutions, short movies, TV/Radio, web site, etc) for supporting their activities.

The catalogue will be finally implemented on a web platform/site (see interaction with Action 6.1).

It will consist of four independent sections – one for each region - with an identical structure, which can be used separately as regional catalogues or as a whole. Each region would provide access (through web links) to the catalogues of the other regions.

The four clusters will finance their budget, through project applications, sponsorship, possibly membership fees or other funding sources.

A reasonable budget necessary for these activities over a period of two years after the completion of the Dorothy project is 25,000€ per region over two years for a total of 100,000€ in the next 4 years.

The possible funding sources for the development of this action are:
- Clusters 'own funds
- Public funding: European Union, regional or local authorities devoted to cluster's operations.

REFERENCES

Clusters and regional development: critical reflections and explorations, Asheim, Bjorn Terje; Cooke, Philip
http://capitadiscovery.co.uk/brighton-ac/items/1271921
Cluster's collaboration
http://www.clustercollaboration.eu/documents/2736637/2945987/Metanetwork_Clusters_Band+1.pdf/13b01db3-7c14-4131-bea8-b8293166a17b?version=1.0
Regional Good Practices and Pilot / Demonstrator Projects for Advanced Manufacturing
https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/advanced_manufacturing/instructions
Clusters and clustering policy: a guide for regional and local policy makers
http://cor.europa.eu/en/Archived/Documents/59e772fa-4526-45c1-b679-1da3bae37f72.pdf
Platform-based Open Innovation Business Models: Bridging the gap between value creation and value capture, Michael Seminer
http://www.lse.ac.uk/media@lse/research/mediaWorkingPapers/MScDissertationSeries/2009/Seminer.pdf
Regions of Knowledge – Work Programme
http://ec.europa.eu/research/participants/data/ref/fp7/88410/q_wp_200801_en.pdf
Eurostat
http://ec.europa.eu/eurostat
Regional Innovation Monitor Plus
https://ec.europa.eu/growth/tools-databases/regional-innovation-monitor/
Better Behavior – Better Learning - A Joint Action Plan
http://www.gov.scot/Resource/Doc/158371/0042903.pdf

ACTION 7.2.

TARGETED ACTION TOWARDS NON-EU COUNTRIES

ABSTRACT

This action is devoted to supporting the internationalisation of the DOROTHY clusters' companies. After having analysed the existing market, network and partners' potential, some non-EU countries have been identified as more attractive to develop the international strategy using the framework of DOROTHY. The most important action to endorse internationalisation of the DOROTHY clusters is an initiative targeted at Mexico.

KEYWORDS

Internationalisation, Non-EU Countries, Networking, Knowledge Transfer, Mexico

OBJECTIVES

The objective of this action is to carry out a set of preparatory initiatives to start the cooperation between DOROTHY's clusters and homologous Mexican institutions.

Moreover, the aim is to define partnership agreements between cluster members and local companies, research institutes and local governments to develop Urban Logistics (and to market DOROTHY's product within the local market).

During the DOROTHY project, a detailed analysis of the regional clusters' potentials has been carried out, considering existing network and market opportunities, drivers and barriers. This analysis led to the final selection of the following countries as not only interesting, but also capable of being approached by the DOROTHY clusters in the short term:

- Mexico: it represents the reality where the existing networks are more developed and it has been identified as the main focus of the DOROTHY activities in the short term.
- Colombia is another interesting reality where academic relationships exist and can be developed through a specific action.

Three additional countries have been taken into account, where the relationship networks are not so well developed as the first two, but where some action to penetrate the market will be carried out. They are:

- Moldova
- Ukraine
- Angola

As already mentioned in the description of the general strategy adopted about internationalisation, the specific objectives of the action are different in the different countries, given the various local conditions and the relationships already established.

MEXICO

The first short term objective of the action is to promote the DOROTHY clusters, the JAP and its developments through local stakeholders, such as Mexican clusters, municipalities, companies and research centres.

The second objective is to establish a continued collaboration framework in the country.

To boost the objectives, an international workshop with partners of the DOROTHY and RCs will be organised in Mexico. The mission will be preceded by contacts with municipalities, companies, research institutes and universities.

COLOMBIA
Based on a consolidated relationship between Universities in Valencia and Bogotá, a specific action to widen this network through educational and dissemination activities will be set up. This is the specific focus for one of the actions of this JAP and is described specifically in the relevant chapter, so it will not be detailed in this context.

OLDOVA
The objective in Moldova is to find direct business opportunities mainly for consulting and engineering companies.

UKRAINE
Through existing networks of companies and contacts between Ukraine and Romanian research institutes, the target is to achieve a more stable relationship framework and to find preliminary business opportunities through knowledge exchange.

ANGOLA
Angola is a traditional Portuguese partner. Links between the Portuguese cluster's companies and the Angolan reality exist on which an action to identify potential business opportunities will be carried out.

INTERNATIONAL FRAMEWORK

MEXICO
There is a huge potential within Mexico in terms of European companies exchanging knowledge and selling consultancy services and technology. For the transport sector, actions to improve and renew the city centres, promote pedestrian and bicycle mobility, improve traffic conditions, introduce new ICT for mobility, etc. are helping to create an attractive market.

Points of strength for the country include:

- A recognised macroeconomic stability.
- Wide availability of mineral resources (especially oil, gas and silver, but also gold, lead, graphite, fluorite, antimony, uranium).
- A rather large consumer market (given the data on population and per capita income).
- The geographical proximity of the United States (reinforced by the NAFTA / ASPAN Agreement).
- The high number of preferential trade agreements (including, in addition to NAFTA, those with the EU and Japan).
- A workforce (46 million people) young, qualified and relatively cheap.

At the moment the economic situation is offering a series of opportunities:

- Infrastructure development.
- Creation of a favourable environment for foreign investment.
- Opening of trade with foreign countries, through new trade agreements (in particular with China) and the unilateral reduction of the tariff barrier.

Another important aspect that has been considered was the fact that some companies of the regional clusters (mainly Spanish companies) have already detected this potential and have tried to establish stable relations in the country.

MOLDOVA
According to the World Bank, Moldova's economic performance over the last few years has been relatively strong, aided by improved fiscal, monetary and exchange rate policy. Another positive point is the free trade agreement with the EU, which facilitates trade relations. More specifically, the IT market of Moldova is extending. After a few years of solid growth, the Moldovan IT market is likely to boom. The signs are all there. The IT market is currently hardware dominated but: the 5 year average software and services spending growth rate exceeds the hardware rate; broadband penetration is rapidly expanding among businesses; and competition in telecommunications is driving the uptake of handsets and household internet. Moreover, the government is committed to utilising ICT to facilitate business. It has already implemented electronic reporting in major cities, will make permits and licenses easier to apply for online, and has plans to expand electronic services for the commercial sector.

As in other Central and Eastern European countries, the net impact will drive demand for IT generally and for industry specific solutions, fostering innovation and technical savvy. In short, there is an enormous potential in Moldova where European companies have scope to exchange knowledge and sell consultancy, services and technology.

UKRAINE
There is an enormous potential in the Ukraine where European companies have scope to exchange knowledge and sell consultancy and other services and technology.

Four factors will play a key role in the economic development of the Ukraine:

- Proximity to the EU and association agreement with the EU.
- Low wages and an educated workforce.
- Rich resources such as highly fertile land and deposits of iron ore and other minerals.
- Technological catch-up, improved governance and war on corruption.

ANGOLA
Angola is a country with a high potential for the development of logistics, due to its strong economic growth and widespread lack of infrastructure and services. To overcome the difficulties, the Angolan government selected four strategic development axes: information technology conditions; infrastructures development; urbanisation and urban improvement and a historical relationship that brings a privileged relationship into trade.

Europe, particularly Portugal, has an historical advantage regarding the relationship with Angola. According to EU data, the EU is overall the largest exporter to Angola and the third largest trading partner. One of the main indicators of the influence of Portugal in Angola is the position of Portugal as the first origin country for Angolan imports, with a share of 16% in 2013 (National Bank of Angola). The Portuguese exports to Angola are also quite significant: in 2013, there were 9,401 Portuguese companies exporting to Angola. Those companies were SMEs from different economic sectors, which confirm the widespread influence of Portuguese companies in the Angolan economy. Portugal is not only one of the main trade partners of Angola, but is also one of the main investors in Angola.

Specifically, there are already two companies in the Portuguese cluster that are working in the country in the specific field of logistics, providing consulting services and fleet management solutions integrated with Enterprise Resource Planning (ERP).

ACTION DESCRIPTION

MEXICO

As a preliminary approach, after the desk analysis carried out during the project, the DOROTHY project organised a mission to Mexico to establish a first contact with the local administrations and companies. A specific state of the Federal Republic has been selected, Veracruz, where the existing contacts allowed the organisation of the mission. This was the first step in order to have a clear idea about the organisation of the sector in the region and to evaluate the potential for collaboration with the DOROTHY clusters.

The Spanish company MOVUS, as the responsible for the project activities on internationalisation, carried out this mission. As a result of the mission and of the following work permanent relationships with companies and local administrations in Mexico have been established.

Then, following the regional clusters' philosophy in the framework of the DOROTHY project, other companies from the clusters have expressed interest in the country.

The action will deepen, together with the Mexican partners, the characteristics of the local market. The study should identify the strengths and weaknesses of the Mexican Urban Logistics market; and identify its main stakeholders for defining an overall strategy for the clusters. The cooperation axes between the regional clusters and the local partners are:

- For public administrations:
  - Policy and Best practices.
  - Professional exchanges.

- For technological companies, consultants and logistics operators:
  - Market expansion.
  - Establishment of permanent trade relationships.

- Universities and research institutes:
  - Policy and best practices transfer.
  - Professional exchanges.
  - International project collaboration.

A first set of activities to strengthen the presence of the regional clusters in Mexico have been defined. The proposed working plan is the following:

- Preparation of a catalogue (in Spanish) with the main information about the companies in the regional clusters and the DOROTHY project.
- Identification of products and services with a high potential for the Mexican market that could be targets for the regional clusters' companies.

At the moment, in line with the lines defined by the JAP, the main products which are interesting for the identified market are:

Action of the JAP	Product	Action to be carried out
International master´s degree in Urban Logistics	Master / students exchange.	Collaboration with local Universities
Staff training for operators and dealers to share new schemes and techniques	Training program	Agreements with local stakeholders (municipalities, regions, chambers of commerce, etc.)
IT system to support Urban Logistics regulations schemes	Technological products (fleet control, Access control, etc.)	Agreements with local dealers, logistic operators and municipalities.
information system based on Open Data for Urban Logistics		
Urban delivery area	Project and planning of load and upload operations.	Agreements with local stakeholders (municipalities, regions, chambers of commerce, etc.)
Cargo bike	Vehicles, business model exchange, urban adaptation projects.	Agreements with municipalities and logistics operators.

JAP & bi-lateral mission to Mexico.

Identification of regional clusters' members interested in the country and assessment of the feasibility for a future business or knowledge exchange relationship.

Identification of local business and potential partners. Public and private companies, public administrations, universities and educational institutions have been already contacted.

Organisation of an international workshop during 2016 in cooperation with the local identified partners in Cordoba.

The workshop will be promoted at the Mexican national level. The duration of the event will be four days.

The workshop days will be distributed as follows:

- 2 days of conferences on urban transport and Urban Logistics. The objective of these conferences will be to focus the problem and show good practices in order to attract the local interest. Policy makers, representatives of regional clusters and local companies and institutions will be present. The workshop will include roundtables and, if possible, an exhibition of products and projects.

- 2 days of training for local stakeholders. It will be organised as an intensive training course on Urban Logistics addressed to professionals. It will be prepared in collaboration with the DOROTHY partners.

MOLDOVA
At the moment, ARoTT, member of the DOROTHY consortium has already established contacts with the Moldovan Technology Transfer Network (MTTN) (www.rttm.md). MTTN has the following roles: to apply and commercialise the scientific results, increasing the level of usage of human and material resources from Universities and R&D centres; to sustain the creation of innovative SMEs; to create and develop the partnership between scientific and business partners, and similar ones in the field of RTDI transfer and business innovation.

ARoTT has disseminated the D OROTHY cluster during conferences in Moldova and has established contacts with Moldovan partners potentially interested in developing a new Urban Logistics cluster.

The first step, already done, has been the identification of cluster members with interest in the country and the assessment of the feasibility of a future business or knowledge exchange relationship. Also, public and private companies, public administrations and University and educational institutions from Moldova have been contacted. As a result of these contacts, a network has been built in order to strengthen business relationships, and an international workshop will be organised during 2016. One of the targets of this workshop will be the promotion of the DOROTHY clusters and the involvement of the above mentioned stakeholders.

UKRAINE
The relationships with the Ukraine comes from the actions carried out which include the RC in some initiatives already planned by the Oltenia Region in partnership with the Chamber of Commerce and Dolj County for the internationalisation of companies.

The proposed steps for Ukraine are:

- Partnership Agreement/Memorandum of Understanding, between the coordinators of the DOROTHY project and the NoGAP project.
- Exchange promotion of information into the DOROTHY – NoGAP Newsletters. Organisation of a common event.

NoGAP aims to promote the cooperation of the EU and its Members States/Associated Countries with the Eastern Partnership Countries (namely: Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine) bridging the gap between research and innovation. NoGAP contributes to taking advantage of the innovation potential of SMEs, innovation in the products and processes, based on better cooperation with researchers, transferring and using knowledge resulting from research.

The overall objective of the NoGAP network is to reinforce cooperation with Eastern Partnership countries to develop a 'Common Knowledge and Innovation Space' on the societal challenge 'secure, clean and efficient energy including into the cities'.

In all these countries, some interest has been identified in knowing more about clusters, and all the aspects related to cluster set up and management. This could be the common ground for developing new projects in non-EU countries.

During 2016 it is foreseen that new bilateral meetings will be held with stakeholders from the Ukraine. The DOROTHY project has already identified the clusters' members' interest in the country.

ANGOLA
The proposed initiatives are:

- Hold a meeting with the Angola embassy to identify their interests and suggest a conference to address the selected topics. The conference will be developed in Portugal and will have as audience entities, companies or Angolan businessmen that the embassy wants to invite, who are interested in Urban Logistics. The DOROTHY project will also invite the clusters' companies with some kind of interest in the Angolan market.
- Success stories publication: the publication of success stories has the objective of facilitating new interested companies in approaching and also to stimulate the country's in the interest market for those who are still looking for a new market to invest in.

To achieve some success, AICEP Portugal Global - Trade and Investment Agency has been involved to get support.

Stakeholders and Beneficiaries of the Action
The stakeholders of the action will mainly be the companies and research institutes interested in extending their business and relationships to Central America, East Europe and Africa

The actual stakeholders will differ from country to country according to the specific interests of the different players. The same players will also be the main beneficiary of the action itself.

The clusters will try to involve local chambers of commerce and other local entities for export support to coordinate their eventual actions in these countries.

In this sense we have to underline the complementarity of this action with Action 7.3, which is specifically devoted to coordinate the actions of regional and local bodies working in the field of supporting international relationships with those foreseen by the DOROTHY JAP.

EVALUATION OF IMPACTS

Reference Market and Economic Impact
The potential market related to Urban Logistics includes areas such as ICT, Smart Cities, transport sustainability, etc. So, consultancy services, technological developments and knowledge transfer will include a high number of regional Clusters companies that can profit from an international mission in the framework of the project.

This action does not have any immediate economic impact on the stakeholders, other than those associated with the cluster's functions. But, undoubtedly, to encourage international cooperation among the clusters will have a moderate indirect positive economic impact on the stakeholders involved in Urban Logistics in the long or medium term.

Given the number of companies that have expressed interest in taking part in the different missions to be organised in the short term, it can be estimated that between 5 and 7 of them will close profitable deals relating to the export of products, with an average estimated turnover of approximately to 250,000€/year Mexico, 125.000 €/year for Ukraine and 60,000€/year for Colombia Moldova and Angola (in fact we consider Mexico as the more mature and promising situation, Ukraine with a medium potential and the others countries with a lower potential).

We can assume a gradual growth of this potential market over a period of 7 years with the following trend

Country	Y1	Y2	Y3	Y4	Y5	Y6	Y7
growth rate	5,0%	25,0%	40,0%	60,0%	80,0%	100,0%	100,0%
Mexico	75	375	600	900	1200	1500	1500
Ukraine	37,5	187,5	300	450	600	750	750
Moldova	18	90	144	216	288	360	360
Colombia	18	90	144	216	288	360	360
Angola	18	90	144	216	288	360	360
TOTAL	166,5	832,5	1332	1998	2664	3330	3330

Estimated market value for the Clusters (values in 000 €)

In this way the cumulated value for the potential market in 7 years is about 13,5 M€, with an annual turnover This supposes a global yearly turnover in full-swing estimated in more than 3.3 M€/ year,.

Environmental Impact
Although it is not possible to estimate an environmental impact at the moment, it is obvious that the focus of the innovative projects and products will be the improvement of the sustainability of the transport.

Social Impact
As a part of the internationalisation strategy, the importance of the knowledge transfer as a tool to enter a new market has been pointed out.

The action has a positive impact on the clusters and their companies as it pushes them to extend their vision to other international markets and to develop their organisation for this purpose. This will also lead to an improvement in workers' qualifications, and possible direct and indirect job creation, especially for technology suppliers and research institutions.

FINANCIAL PLAN

The financial plan includes the estimated costs to carry out the first missions and to carry out all the activity needed to finalise and strengthen business relationships.

In fact the achievement of a consolidated presence on international markets requires continuous contacts, exchange and integration, joint analysis of business opportunities and development of appropriate business models involving local partners. A period of three - four years for reaching a situation of stable presence on the market can be considered appropriate. During this period a gradual growth of the turnover generated in these countries could be assumed.

The following table reports the costs needed to prepare and consolidate the commercial presence of the Clusters in each one of the considered Countries over the mentioned time span. .

Country	Other short term activities
Mexico	130,000€
Colombia	30,000€
Moldova	70,000€
Ukraine	70,000€
Angola	30,000€

Estimated costs of the action.

The cumulated cost to complete the action can be evaluated as 330,000€.

ACTION 7.3.

COORDINATION WITH ALREADY PLANNED REGIONAL INITIATIVES

ABSTRACT

The internationalisation is a driver for business performance.

Internationalisation and international entrepreneurship among SMEs is a topic of considerable relevance, principally owing to the observed growth effects of cross-border ventures and the demonstrated capacity of SMEs to drive economic development at national, regional, and global levels.

In Urban Logistics cluster, they are a heterogeneous group with a diverse range of company sizes, capabilities and business activities: from the artisan producing for the local market, to sophisticated engineering or software firms selling in overseas markets.

Their integration into the global economy has prompted them to innovate and develop new international activities such as attempting to open new markets, adding more value to their products and services; and reducing their cost base.

This action is aimed at including the DOROTHY clusters in some already planned initiatives for supporting the internationalisation of companies by the regions or by local Chambers of Commerce.

KEYWORDS

Memorandum of Understanding, Cluster, Internationalisation, Innovation

OBJECTIVES

The new competitive international landscape is prompting regional authorities to take creative, comprehensive, and proactive approaches to develop innovation led economies.

The growing global challenges have also prompted fresh discussion and experimentation with closer collaboration between agencies and local administration and local bodies to improve innovation capacity and boost industrial competitiveness.

The objective of this action is to include the DOROTHY clusters in some initiatives already planned for the internationalisation of companies developed by the regions, professional associations or by local Chambers of Commerce.

Internationalisation is the process of increasing the involvement of enterprises in international markets.

Internationalisation for the DOROTHY clusters has two objectives:

- To extend the presence on foreign markets of the DOROTHY clusters' companies
- To cooperate with other clusters or between partners on development or innovative projects

INTERNATIONAL FRAMEWORK

A step-change in the approach to urban mobility is needed not only in Europe's urban areas, but especially in newly developing countries, where the problems of pollution and the risk of unbalanced development are higher. This is true not only for passengers, but also for freight transport.

Some international markets are representing an opportunity for the DOROTHY clusters to spread their products and solutions, at the same time helping these countries to adopt more efficient and innovative solutions.

More stable relationships with local companies operating in these markets will also offer a chance to develop new solutions closer to their needs.

For these reasons the DOROTHY clusters are carrying out an effort to strengthen their position in some specific countries, and are looking for cooperation opportunities with other regional bodies that carry out actions to support internationalisation.

ACTION DESCRIPTION

Content
The clusters are carrying out different coordinated actions to foster internationalisation, collected under this Thematic Area. The majority of the foreseen actions imply a direct commitment by the clusters (see Actions 7.1 and 7.2).

In addition, this specific action is aimed at profiting from the initiatives that other regional bodies have already planned, or are going to plan, for fostering the internationalisation of the companies based in the regions.

This is important as it can give a first contact with new realities and countries can enlarge the network of contacts and can create further synergies with other companies and entities with specific skills in internationalisation.

For this purpose the DOROTHY project has carried out specific scouting of the existing opportunities in the four regions.

Several contacts have been made with different regional/national bodies to find out the various planned internationalisation actions and to discuss with them the possible support these bodies can give to the clusters (such as organisation of specific local meetings, missions, etc.).

The results of this analysis are briefly reported in the following and represent the action to be carried out in the near future.

Possibility of including the DOROTHY clusters in some future initiatives (already planned or to be planned) for the internationalisation of companies:

1. Tuscany Region

- The Tuscany Region promotes and incentivises the internationalisation of firms through its agencies, projects, and tenders.

In particular, since 2000 the Tuscany Region has created a dedicated "participated company" focused on this topic named Toscana Promozione. Toscana Promozione is the Economic Promotion Agency of Tuscany that, thanks to a network of professional associations, institutions, enterprises, Universities and research centres, is a platform for overseas enterprises interested in doing business in or with Tuscan firms.

- Concerning the tenders financed by the Regional Operational Programme, in recent years specific calls were promoted, financing in particular:
  - Incoming foreign operators.
  - Bilateral meetings between Italian and foreign operators.
  - Workshops / seminars abroad or in Tuscany.
  - Support the participation in exhibitions and fairs in order to promote innovative products/ services rather than merely a single brand/firm.
  - Communication and advertising in international markets.
  - Organisation of promotional activities on international markets.
  - Creation of websites, portals and other web-based environments in English or in the language of the target country of the programme of internationalisation.
  - Web marketing targeted at international markets identified as target markets.
  - Support innovation for the commercial feasibility of new markets.

The call has now closed, but it is scheduled to have a new edition for 2016. In 2016 it is already foreseen that the new edition of the tender will promote and finance the cluster of innovation as POLIS (the case study of DOROTHY).

The Tuscany Region is also managing the capitalisation of European project developed by Tuscan entities through the participation in the next call by INTERREG-MED. This decision is triggering cooperation between DOROTHY's Tuscan partners with the project MEDITA (http://meditaproject.eu/) "Mediterranean Information Traffic Application - Building a logistic community".

2. Lisbon and Tagus Valley Region
In the Lisbon and Tagus Valley Region, several activities have been undertaken with the view to informing and laying the base for future collaboration between entities and (ongoing) projects.

- Inquiry and focus groups

In an earlier stage all those potentially interested in the LVT Urban Logistics cluster and in the DOROTHY project, were issued with an online questionnaire and focus group meetings were held with groups of entities (operators, technology providers, public entities etc.)

- International and national events to foster potential cooperation

Members of the LVT cluster participated in selected international events from which a number of permanent cooperation resulted, including cooperation in EU projects.

In one of the conferences an agreement was made with the largest German logistics cluster (Effizienz Cluster Logistik RUHR) which led to their participation in a LVT cluster event and the preparation of an international proposal for the World Bank.

- Project cooperation

The DOROTHY project was presented in project meetings of other related EU and national projects with the objective of future cooperation with them and possible follow up projects. Some of the projects are the following: FREVUE, Por E Bike, E Bridge, Ele.C.Tra, Smartfusion.

- TICE.pt http://www.tice.pt/

This government supported platform for clusters and their internationalisation is a supporting member of the LVT cluster and our DOROTHY member IPN is represented on its board.

- AICEP

A meeting was scheduled with the government supported body for internationalisation of the support of companies.

- Research, development and Training

Members of the LVT cluster (especially IST) are involved in the international research platform on logistics NECTAR; at their event held in Portugal DOROTHY was discussed with them and also a coordinator of NECTAR participated in a subsequent LVT cluster event as keynote speaker.

- Direct contacts

Some of the LVT cluster members have activities and working relations abroad, especially in the former Portuguese territories, like Angola.

Also some contacts were made with embassies and the Angolan embassy attended cluster events with an interest in fostering future cooperation.

- Media Partner

The LVT cluster and the DOROTHY project have two media partners with some international impact:
TransportesemRevista http://www.transportesemrevista.com/ and LogisticaModerna http://www.logisticamoderna.com/(with an online platform on logistics) and newsletters

3. Oltenia Region
In partnership with the Chamber of Commerce, Dolj County and ARoTT

Partnership with the NoGAP project

Aim:

- To promote the concept of the DOROTHY network of clusters in Ukraine, Georgia, Belarus, Armenia and Moldavia.
- To promote partnerships between Member States with the Eastern Partnership Countries.
- To promote partnerships for European projects.

The DOROTHY project was promoted in the NoGAP newsletters, the clusters were presented and the possibilities to collaborate were discussed during the NoGAP events.

In all these countries, we have identified the interest in knowing more about clusters, cluster management, rules to create clusters, legislation, necessary skills and the interest in fostering cooperation.

In our opinion there is the feasibility of a cooperation to share experiences and to develop new projects on new markets in non-EU countries.

Bi-lateral relationships between DOROTHY partners, cluster's members and these third countries can be strengthened to develop and implement the actions.

In the next years we plan to promote the DOROTHY concept by aiming to create new Urban Logistics clusters in the Ukraine, Georgia, Belarus, Armenia and Moldavia, to create partnerships between companies and entities, to extend the presence on foreign markets and to internationalise the business activity in these countries.

Partnership with an Archimedes Erasmus+ project

Aim:

- To promote the concept of DOROTHY network of clusters in Lithuania, Ireland and Germany.
- To present the Archimedes ICT platform for training oriented to the needs of SMEs.
- To promote partnerships for European projects.

The aim of the Archimedes project is to address some of the problems SMEs have with current training.

This is done by developing a solution to develop skills that address their real needs while maximising ROI and minimising time spent away from the workplace.

The project is run by a collaboration of industrial and educational partners from Lithuania, Romania, Portugal, Ireland, and Germany.

We promoted the DOROTHY project, clusters and possibilities to collaborate during the Archimedes events.

In the next years we plan to promote the DOROTHY concept by aiming to create new Urban Logistics clusters in Lithuania, to create partnerships between companies, entities, to extend the presence on foreign markets, to cooperate with other clusters or with new partners on development or innovative projects, and to internationalise the business activity in this country.

Partnerships with the Enterprise Europe Network(EEN) Local Contact Points

The EEN helps SMEs to make the most of business opportunities in the EU and beyond. The EEN offers many services free of charge by the 600 member organisations, including Chambers of Commerce and industry, technology centres, Universities and development agencies.

The EEN also organises matchmaking events where companies, members of the Urban Logistics clusters can meet potential business partners face-to-face. Matchmaking events often take place at international fairs, which helps keep travel and accommodation costs down.

Whether our DOROTHY cluster's members find new business partners via the EEN database or at an event, the Local Contact Points in partnerships with clusters representatives can advise and assist them from the initial contacts to making the deal.

The services that the EEN provides are:

- Consulting to go international.
- Funding support for internationalisation.
- Partnerships.
- Company missions and brokerage events / Business to Business events.
- Technology Offer / Technology Request – doing business with TO / TR
- Business Offer and Business Request.
- Contacts in corresponding countries and regions.

Other initiatives already planned for the internationalisation of companies

- Partnership between Chamber of Commerce from Craiova and Hampshire, UK.
- To promote the DOROTHY concept in the Hampshire region and to identify clusters in Urban Logistics in this region.
- Business to business events.
- Partnerships for European projects especially for new products, systems and services, innovation of products and processes.
- Internationalisation of activities with the support of structural funds.
- Transfer of knowledge for specific points of JAP implementation.
- Technological transfer for specific needs of communities and Urban Logistics.

4. Valencia Region
The Valencia region is boosting its regional cluster of Urban Logistics in the international framework:
- Institutional support

The Valencia Region, through IVACE, supports the activity of regional companies abroad. Cluster companies will benefit from this. The main support lines that are active are:
- Support to define the international strategy.
- Commercial services to companies.
- Definition of a Regional Plan for Internationalisation.
- Economic support.
- Specific training.

Within the framework of the Regional Plan of Internationalisation, cluster participation is feasible in the following actions:

ACTIONS FOR REGIONAL PLANS OF INTERNATIONALISATION				
Date	Action	Partner Agency	Sector	Country
2016	Seminar for providers at NY-visit Washington	ICEX	Multi sector	EEUU, Spain
2016	Trade mission to Bolivia & Ecuador	ICEX	Multi sector	Bolivia, Ecuador

The economic support of IVACE is focused on:
- International support for the products and brands of the Valencia Region.
- Financial instruments for promoting the implementation of the international plans.
- Aid for recruitment specialising in export.

The Valencia Region is boosting its regional cluster of Urban Logistics in the international framework.

- Promotion of the DOROTHY project and the regional cluster

Intense activity has been performed to promote the concepts and actions of the DOROTHY project. Local partners have collaborated in different events and activities and this activity will continue during 2016.

The main activities that are being organised are:
- Bilateral meetings between Valencia regional cluster and stakeholders in Mexico.
- Workshops and seminars. The next seminar will be held in February 2016, involving cluster companies for submitting proposals for EU projects.

- Presence of the Valencia regional cluster in exhibitions and fairs at the national and international level.
- Creation of a website for the cluster and marketing campaign.

Improvement of skills
The Valencia Region finances training activities aimed at improving company skills for internationalisation. This activity is available for regional companies according to the following items:

- Tutoring: business training.
- International digital marketing.
- Introduction to export.
- International financing.
- International procurement.
- International consulting.

ENTERPRISE EUROPE NETWORK – LOCAL CONTACT POINTS

Tuscany Region

CONFINDUSTRIA TOSCANA,
PIAZZA DELLA REPUBBLICA 6 PALAZZO LEVI, 50123Firenze
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Web: http://www.promofirenze.com

Lisbon and Tagus Valley Region

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Tel: 34 963103900
Email: seimed@camaravalencia.com
Web: http://www.camaravalencia.com

EVALUATION OF IMPACTS

Reference Market and Economic Impact
The action is targeted at increasing professional qualifications in the regional clusters and to strengthen the presence on the market of the companies, members of the clusters.

The action does not address directly any kind of market, but is focused on developing the future position of the clusters and their companies on the Urban Logistics market, through innovation, internationalisation and coordination with already planned regional initiatives.

The economic impact cannot be directly quantified and will depend on the capacity of the companies and research institutes of the clusters best exploiting the initiative.

The cost of this action comes from efforts sustained by the Clusters to develop this actions. It can be estimated, for each Cluster in 1 person month per Year for the next 4 years.
This lead to a total amount of around 80.000 €.

The possible funding sources for the development of this action are:
- Clusters 'own funds
- Public funding: European Union, regional or local authorities devoted to cluster's operations. . and functioning.

REFERENCES

Communication from the Commission to the European Parliament and the Committee of the Regions. Together towards competitive and resource-efficient urban mobility.
http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:52013DC0913
Globalization versus Internationalization, Herman E. Daly
https://www.globalpolicy.org/component/content/article/162/27995.html
Clusters and Regional Initiatives
http://www.ncbi.nlm.nih.gov/books/NBK100322/
Internationalization, Wikipedia
https://en.wikipedia.org/wiki/Internationalization
International Association of Universities
http://www.iau-aiu.net/content/internationalization
A comparison of internationalization strategies, Roland Kirstein
http://www.fww.ovgu.de/fww_media/femm/femm_2013/2013_03.pdf
Cases of internationalization, Valentine Bitouze,
http://www.slideshare.net/stephlynnwebb/internationalization-strategies
Initiatives at the European level supporting urban freight
http://www.polisnetwork.eu/uploads/Modules/PublicDocuments/20131205-initiatives-uf-polis-overview.pdf
About Internationalization and Localization
https://developer.apple.com/library/mac/documentation/MacOSX/Conceptual/BPInternational/Introduction/Introduction.html
V4 common position to the Communication on the future Role of Regional Initiatives
http://www.mfa.gov.pl/resource/77563935-7945-4777-b965-5607bbcc1092:JCR
Regional Models of Cooperation
https://www.fhwa.dot.gov/innovation/everydaycounts/edc-3/regional.cfm

ACTION 7.4.

INTERNATIONAL MEETING IN COLOMBIA: “DOROTHY PROJECT AND NEW SOLUTIONS FOR URBAN LOGISTICS”

ABSTRACT

This action consists of organising an International Seminar about Urban Logistics in the city of Medellín (Colombia).

This seminar will be an international event with the objective of sharing experiences about Urban Logistics in Europe and Colombia, with a possible extension to other nations of Latin America.

In this event, the characteristics of the DOROTHY clusters will be explained, as well as the new experiences carried out and solutions studied by the DOROTHY project.

Colombia has been selected as one of the countries with the potential for the internationalisation of the DOROTHY clusters as it has had one of the highest GDP growth rates during the last 5-10 years. This economic growth has been accompanied by an important concentration of the population in urban areas (currently about 75% of the total population).

The complicated topography of many mountainous cities and their urban characteristics generates severe problems for Urban Logistics.

KEYWORDS

Training, International Cooperation, Colombia, Urban Logistics

OBJECTIVES

The action consists of organising an International Seminar about Urban Logistics in the city of Medellín (Colombia).

This action would be an international event with the objective of sharing experiences about Urban Logistics in Europe and Colombia, with possible extension to other nations of Latin America

The objectives of the International Seminar are:

- To analyse the problems of Urban Logistics in Europe and Colombia.
- To study existing solutions in different geographic areas.
- To analyse new proposed solutions.
- To discuss and exchange different experiences and know-how
- To contribute to the international dissemination of the DOROTHY project.
- To get useful contacts in an economically growing area for analysing any possible future cooperation which is interesting for the clusters.

URBAN LOGISTICS FRAMEWORK

Colombia has been selected as one of the countries with the potential for the internationalisation of the DOROTHY clusters as it has had one of the highest GDP growth rates during the last 5-10 years. This economic growth has been accompanied by an important concentration of the population in urban areas (currently about 75% of the total population).

The complicated topography of many mountainous cities and their urban characteristics generates severe problems for Urban Logistics. For these reasons Colombia could be an interesting potential market for the clusters’ companies and an area of cooperation between Europe and South America. However, in this country the contacts between the regional clusters and the local reality have not been assessed and for this reason preliminary work is needed.

The idea is to use the academic cooperation framework already existing between Spain and

Colombia to start a wider initiative which is enlarged to other economic players in the clusters.

The seminar will take place in Medellín, the capital of the Antioquia region. This region is the most industrial and dynamic region in Colombia in economic terms. About 20% of Colombia’s exports originate in Antioquia.

Transmitting the “cluster” idea, which is not very much developed in the country, will be very interesting. A possible extension of this initiative to other countries in the area will be further analysed.

STAKEHOLDERS INVOLVED AND COLLABORATION AMONG THE REGIONAL CLUSTERS

The basic idea of the seminar in Colombia is to gather all the possible Urban Logistics players in Colombia which are potentially interested in the solutions and knowledge resulting from the DOROTHY project and are present within the DOROTHY regional clusters.

Possible interested entities in Colombia are:

- Municipalities, the entities who must organise Urban Logistics. In this case the municipality of Medellín will participate and the main cities of Colombia will be invited.
- Regions and supra-municipal authorities with planning competences. Antioquia region will participate and will invite the other Colombia regions.
- Private companies. They will be represented by the most relevant national associations. The associations from Antioquia will participate and will invite partners from the rest of the regions.
- Universities. The Universidad Nacional de Colombia and the Universidad Pedagógica y Tecnológica de Colombia will be directly involved in the organisation of the event.

On the side of the DOROTHY regional clusters, the action will be disseminated and communicated by the individual clusters to all their member companies and other entities that will be invited to participate.

The decision to participate directly in the meeting will be taken individually. In any case the clusters will organise an international representative that will attend the seminar and will take the appropriate contacts.

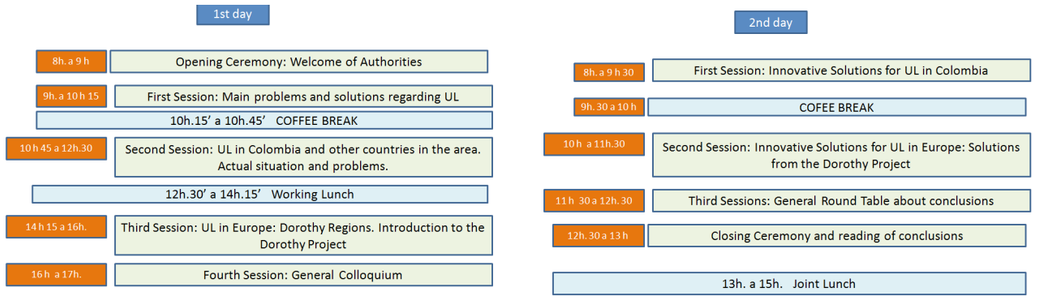
ACTION DESCRIPTION

Content

The organisation of the Joint International Seminar is currently ongoing. It will be held approximately on February or March 2016.

The final structure of the seminar is currently under discussion with our partners in Medellín, but the preliminary session schedule is shown below.

Generally, a single session may include two or three interventions and can be structured as a debate or Round Table. The details are currently being defined with the Colombian partners.



Framework Program of the Conference

The event will be the occasion to start up debate between the European and the Colombian partners. For this purpose specific bilateral sessions and meetings will be organised. They will be prepared in advance between the European and the Colombian subjects, companies, universities and research centres and municipalities, interested in potential forms of cooperation.

This preparatory work will be carried out locally by each individual cluster.

The action is scheduled to take place between September 2016 and March 2017, with the agreement of the Colombian partners.

Skills and Expertise

The commercial relationship between Colombia and Spain is very important. Just in the period between 2011 and 2013, the number of Spanish companies in Colombia has grown from 160 to more than 400. Spain is the third overall investor in Colombia with more than 3.6 billion dollars accumulated until 2012, according to the Banco de la República.

Technology suppliers could be very interested in exporting technological solutions relating to Urban Logistics,. As an example, the Valencia company ETRA is already present in Colombia implanting technological solutions. There are more than 20 Spanish engineering companies with a branch in Colombia.

The relationship between the Universidad Politécnica de Valencia and Colombia is also very intense. The UPV is the European university with the closest relationship with Colombia, with more than 150 doctoral degrees from Colombia being trained at the UPV. The UPV has had a permanent office in Colombia for more than 20 years.

The action will leverage on this consolidated presence of the Universidad Politécnica de Valencia for enlarging the set of relationships to the other clusters offering this opportunity in the cooperation framework set up by the DOROTHY project.

EVALUATION OF IMPACTS

Reference Market and Economic Impact

This action is just a preliminary initiative to open a new market to the four regional clusters' members. It will not have any immediate economic impact on them. However, encouraging international cooperation among the clusters will undoubtedly have indirect positive economic impacts on the stakeholders involved in Urban Logistics in the medium-long term even, if it is practically impossible to give a quantitative evaluation of the potential market for the clusters' companies.

Environmental and Energy Impact

There is no direct impact on this perspective. In the future some impacts could be envisaged linked to the implementation of some concrete initiatives coming from the bilateral cooperation.

Social and Urban Impact

The action can generate exchange of experience and ideas on Urban Logistics and can contribute to adapting urban structure to the demands of modern Urban Logistics. As stated before, all the impacts that this action may have will be the result, in the mid-long term, of the cooperation and knowledge exchange.

FINANCIAL PLAN

Due to the characteristics of the event, the financial framework can be divided into two different classes of costs:

- Speakers and participants from the Regions of the DOROTHY Project:
- The clusters will cover the expenses with their own resources
-
- The costs for the clusters (which is estimated to be 10,000€) have been included in the general budget for internationalisation reported in Action 7.2.
- Organisation of the Event:
- The expenses of the meeting place, materials, coffee breaks, lunches, Colombian speakers, etc. will be covered by the partners in Medellin.
- The Colombian partners may establish a subscription fee to cover these expenses. The management of the entire event will be their responsibility.

CHAPTER 7

THE NORMATIVE FRAMEWORK

This chapter sums up the normative framework applicable to the actions of the JAP in the four regions represented by the project partners: Italy, Spain, Portugal and Romania. Nevertheless, it can be used as a reference for other regions, as it is based on EU recommendations and best international practices in Urban Logistics.

The information here is of interest to regional authorities, municipalities, regulators, Logistic Operators (LO) and all the stakeholders that can be involved directly or indirectly in the actions development.

The first part of this chapter describes the significant European legislation and recommendations for Urban Logistics, the normative framework and the regulations applicable to the JAP actions in each region, if any.

In the second part the actions whose implementation is subject to some legislative or regulation intervention are presented. Moreover, some additional recommendations regarding norms and regulations are reported in order to support the success in the implementation of each JAP action.t must be emphasised that the possibility for municipalities or regions for defining Urban Logistics regulation is limited by the national legislations, and the situation is quite different in different countries, and what is allowed (or not forbidden) in a given area may not be implemented elsewhere.

7.1. EUROPEAN LEGISLATION AND REGULATION

There is no specific European legislation on Urban Logistics, but there are many recommendations and guidelines. Here, those most significant to the JAP actions are referenced.

The European Commission published, in 1992, a White Paper on the common transport policy, which was essentially dedicated to opening up the market. Almost ten years later, the 2001 White Paper emphasised the need to manage transport growth in a more sustainable way by achieving a more balanced use of all transport modes. In 2011 the White Paper on transport and Horizon 2020 set ambitious targets for the reduction of CO2 emissions from city logistics. The goal is to achieve “essentially CO2-free city logistics in major urban centres by 2030 with the aim of an ‘essentially carbon free’ city logistics by 2030.” [1]

The European Commission adopted a roadmap [1] of 40 concrete initiatives for the next decade to build a competitive transport system that will increase mobility, remove major barriers in key areas and fuel growth and employment. At the same time, the proposals will dramatically reduce Europe’s dependence on imported oil and cut carbon emissions in transport by 60% in 2050.

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From the 40 initiatives adopted by the EC, we selected those related to Urban Logistics and that are linked to some of the JAP actions and highlight their importance . NB: The most important parts with regard to the JAP actions are underlined.

Road Freight

- Review the market situation of road freight transport as well as the degree of convergence on, among others, road user charges, social and safety legislation, transposition and enforcement of legislation in the Member States, with a view to further opening road transport markets. In particular, the elimination of remaining restrictions on cabotage should be pursued.
- Review the rules on the tachograph to make it more cost-effective, give access to the EU register on road transport undertakings to police and enforcement officers when they carry out roadside checks; harmonise sanctions for infringement to EU rules on professional transport; harmonise training of enforcement officers.
- Adapt the legislation on weight and dimension to new circumstances, technologies and needs (e.g. weight of batteries, better aerodynamic performance), and to make sure it facilitates intermodal transport and the reduction of overall energy consumption and emissions.

Multimodal transport of goods: e-Freight

Create the appropriate framework to allow tracing goods in real time, ensure intermodal liability and promote clean freight transport:

- Put in practice the concepts of 'single window' and 'one-stop administrative shop'; by creating and deploying a single transport document in electronic form (electronic waybill), and creating the appropriate framework for the deployment of tracking and tracing technologies, RFID etc.).
- Ensure that liability regimes promote rail, waterborne and intermodal transport.

A technology roadmap

Fragmentation of research and development efforts in Europe is most harmful, and joint European efforts will bring the greatest European added value in areas such as:

- Clean, safe and silent vehicles for all different modes of transport, from road vehicles to ships, barges, rolling stock in rail and aircraft (including new materials, new propulsion systems and the IT and management tools to manage and integrate complex transport systems).
- Technologies to improve transport security and safety.
- Potential new or unconventional transport systems and vehicles such as unmanned aircraft systems, unconventional systems for goods distribution.
- A sustainable alternative fuels strategy including also the appropriate infrastructure.
- Integrated transport management and information systems, facilitating smart mobility services, traffic management for improved use of infrastructure and vehicles, and real-time information systems to track and trace freight and to manage freight flows; passenger/travel information, booking and payment systems.
- Intelligent infrastructure (both land and space-based) to ensure maximum monitoring and inter-operability of the different forms of transport and communication between infrastructure and vehicles.
- Innovations for sustainable urban mobility following up the CIVITAS programme and initiatives on urban road pricing and access restriction schemes.

A regulatory framework for innovative transport

Identify the necessary regulatory framework conditions through standardisation or regulation:

- Appropriate standards for CO2 emissions of vehicles in all modes, where necessary supplemented by requirements on energy efficiency to address all types of propulsion systems.
- Vehicle standards for noise emission levels.
- Ensure that CO2 and pollutant emissions are reduced under real-world driving conditions by proposing at the latest by 2013 a revised test cycle to measure emissions.
- Public procurement strategies to ensure rapid up take of new technologies.
- Rules on the interoperability of charging infrastructure for clean vehicles.
- Guidelines and standards for refueling infrastructures.
- Interface standards for infrastructure-to-infrastructure, vehicle-to-infrastructure, and vehicle-to-vehicle communications.
- Access conditions to transport data for safety and security purposes.
- Specifications and conditions for transport related smart charging and payment systems.
- Better implementation of existing rules and standards.

Vehicle labelling for CO2 emissions and fuel efficiency

- Review the labelling Directive to make it more effective. This will, inter alia, consider the extension of the scope to light commercial and L-category vehicles, and the harmonisation of the label and vehicles fuel efficiency classes throughout the Member States.
- Support the market take-up of fuel efficient, safe and low-noise types beyond the performance requirements set in type approval.

Carbon footprint calculators

- Encourage business based on GHG certification schemes and develop common EU standards in order to estimate the carbon footprint of each passenger and freight journey with versions adapted to different users such as companies and individuals. This will allow better choices and easier marketing for cleaner transport solutions.

Eco-driving and Speed limits

- Include eco-driving requirements in the future revisions of the driving license directive and take steps to accelerate the deployment of ITS applications in support of eco-driving.
- Fuel saving techniques should also be developed and promoted in other modes – for example continuous descent for aircrafts.
- Examine approaches to limit the maximum speed of light commercial road vehicles, in order to decrease energy consumption, to enhance road safety and to ensure a level playing field.

Urban Mobility Plans

- Establish procedures and financial support mechanisms at the European level for preparing Urban Mobility Audits, as well as Urban Mobility Plans, and set up a European Urban Mobility Scoreboard based on common targets. Examine the possibility of a mandatory approach for cities of a certain size, according to national standards based on EU guidelines.
- Link regional development and cohesion funds to cities and regions that have submitted a current, and independently validated Urban Mobility Performance and Sustainability Audit certificate.
- Examine the possibility of a European support framework for a progressive implementation of Urban Mobility Plans in European cities.
- Integrated urban mobility in a possible Smart Cities Innovation Partnership.
- Encourage large employers to develop Corporate/Mobility Management Plans.

A strategy for near- 'zero-emission urban logistics' 2030

- Produce best practice guidelines to better monitor and manage urban freight flows (e.g. consolidation centres, size of vehicles in old centres, regulatory limitations, delivery windows, unused potential of transport by river).
- Define a strategy for moving towards 'zero-emission urban logistics', bringing together aspects of land planning, rail and river access, business practices and information, charging and vehicle technology standards.
- Promote joint public procurement for low emission vehicles in commercial fleets (delivery vans, taxis, buses…).

The European Commission, in the 2011 White Paper, identified by 2050 the following key goals [1]:

- No more conventionally-fueled cars in cities.
- 40% use of sustainable low carbon fuels in aviation; at least 40% cut in shipping emissions.
- A 50% shift of medium distance intercity passenger and freight journeys from road to rail and waterborne transport.
- All of which will contribute to a 60% cut in transport emissions by the middle of the century.

In April 2012, DG MOVE at the European Commission released a study on Urban Freight Transport (UFT) [2] with a chapter describing their recommendations for policy measures at the European level in the area of UFT, which have been developed within the context of the European Commission's vision for UFT that is set out in its March 2011 Transport White Paper [1]. The following table summarises the 9 policy recommendations (see also Annex for more detail) proposed:

EU Policy recommendation	Timescale
1: Internalisation of external costs in urban areas	Long-term (after 2020)
2: R&D into zero & low emission vehicles	Short- and medium-term (2012-20)
3: Research into organisational, institutional & business models for the deployment of ITS for UFT in urban areas	Short-term (2012-15)
4: Investigation of standards for low noise equipment for freight vehicles	Short-term (2012-15)
5: TEN-T (Trans-European Transport Networks) funding for UFT	Short, medium and long-term (2012-30)
6: Urban Logistics Plans (ULPs)	Short-term (2012-15)
7: CIVITAS Programme	Short and medium-term (2012-20)
8: Definition & dissemination of good practice	Short, medium and long-term (2012-30)
9: Promoting sustainable UFT in Europe	Short and medium-term (2012-20)

This study emphasised that the European Union has a clear role in promoting sustainable urban distribution while respecting the principle of subsidiarity and should also focus on introducing legislation that provides the private sector with appropriate economic incentives that encourage it to collaborate in the demand for and supply of UFT, promoting the widespread take-up of low emission vehicle technology.

Later in April 2013, the European Commission DG MOVE published a final report [3], with the results of a public consultation about 'The urban dimension of the EU transport policy' carried out in the period between 17/09/2012-17/12/2012.

The consultation focused on three topics highlighted in the 2011 Transport White Paper 'Roadmap to a Single European Transport Area' [1]: Sustainable Urban Mobility Plans, access restrictions and urban pricing schemes, and urban logistics. Furthermore, the public consultation addressed EU financial support for urban transport projects.

Concerning urban logistics, the three top priority policy actions at the EU level are:

- The development and exchange of best practices.
- Support for R&D projects.
- The development of guidelines and recommendations.

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- The development and exchange of best practices.
- Support for R&D projects.
- The development of guidelines and recommendations.

Overall, the results show the necessity for an integrated urban mobility scheme and stronger EU commitment, but also Access Restriction Schemes, EU financial support for urban transport projects and urban freight logistics.

ERTRAC, the European Road Transport Advisory Council, and ALICE, the Alliance for Logistics Innovation through collaboration in Europe, published in January 2015 the Urban Freight research roadmap [4].

The section "Political objectives anticipating technological developments and the implementation of innovation", emphasises that in the past 15 years a significant number of research and innovation initiatives to improve the efficiency of urban freight have not so far resulted in a broad gain in efficiency in the sector.

"When trying to tackle the above-mentioned challenges, urban logistics should be considered as part of a geographically broader logistics activity. Urban logistics is where most supply chains have the end consumer as its primary end target. Therefore, a holistic approach should be followed to understand what can be done upstream to the supply chain to optimise urban logistics. But the cities' peculiarities and their differences (in legislation, regulation, infrastructure network, urban configuration, social habits, etc.) also call for a focus on the urban logistics itself. Different business models, new processes and technologies should be researched and implemented."

"Finally, one should not forget that freight transport serves human activities. The development of the city and people's lifestyles will have a significant impact on urban freight patterns. Factors such as the development of teleworking, an ageing population, the development of land use towards more densely populated urban areas, or the growth of e-commerce will have a direct and potentially very significant impact on urban freight patterns."

Finally, in the preparation of all the actions' documentation and their implementation it should be taken into account the EU and national legal frameworks about privacy, non-disclosure and intellectual rights, namely the Directive 95/46 / EC of the European Parliament and of the Council about Data Protection [6].

7.2. REGIONAL ASSESSMENT

The main stakeholders for all regions regarding the implementation of regulation for urban logistics are the municipalities. . Of course they work in the framework given by the regional directives and the national laws, but they have a fundamental role in defining all the regulation schemes for the distribution of goods in their territory.

In the following, some synthetic information and conclusions regarding the state of the adopted regulation schemes and other initiatives regarding Urban Logistics in each region is given: it allows the evaluation of the Urban Logistics' state of maturity in each one and the measures necessary to be taken for developing this sector.

The **Tuscany Region** has been proactive in the deployment of new regulatory schemes with the final goals of reducing congestion, air and noise pollution, risks for historic buildings and increased pedestrian safety and quality of life. The most relevant actions taken in Tuscany are:

- Limited access.
- Limited traffic zones (LTZs).
- Development of a mobility plan with a focus on Urban Logistics (e.g. Prato).

The **Craiova Metropolitan Area** envisages new regulation schemes in the following areas:

- Access perimeters bounded by signaling traffic signs.
- Policy for freight distribution schemes in Craiova, with a new scheme for goods distribution vehicles in the city of Craiova.
- Restricted areas in Craiova, in order to implement the access restriction for private cars in a central area of the town by the installation of barriers and bollards.

In the **Valencia Region**, access control for deliveries is already established in city centers (namely, in Alicante), with an attempt to reorganise the loading/unloading parking spaces and increase their number.

The **Lisbon and Tagus Valley Region** currently reports local regulations on parking, transit, loading and unloading and/or tariffs. Furthermore, there are specific, lower hierarchy (municipality and neighborhood) regulations being developed in some municipalities of the region. Some local regulations will be revised in a short timeframe, enabling these regulations to adapt to new challenges such as sustainable mobility concerns and new logistics frameworks.

The main objectives of these adjustments include:

- Improve parking regulations.
- Define loading/unloading rules (in terms of areas, time windows, etc).
- Improve the public space occupation; and
- Optimise transit flow, with minimum impact for logistic activities and the general transit.

The above reported analysis shows that there are many ongoing initiatives, but there remains much to do in order to comply with the EU recommendations.

The DOROTHY JAP represents a step forward in fostering the adoption of innovative regulation policies and schemes in the partner regions. The measures contained in the JAP are subject to the local normative framework, so that in some cases they may have to be adapted at a regional level to maximise their success possibilities or simply to make them applicable.

The following table reports the normative framework evaluation performed for those JAP actions that are closely influenced by the matter of legislation and norms.

JAP action		Normative Framework	Responsible
1.1	SULPs - Sustainable Urban Logistics Plans	In the DOROTHY regions, there is no direct experience in sustaining the preparation and adoption of SULPs. At the national level in some countries, like Portugal, initiatives for pushing cities toward SUMPs are under development. No specific initiative on logistic is in any case foreseen or has been adopted. Moreover, no specific guidelines have been elaborated and adopted in the DOROTHY regions. The only reference standard for Urban Logistics is at the municipal level, since there are no national or regional, regulations or guidelines that municipalities have to implement on the subject of urban logistics. However, there are experiences in several Italian regions which have defined an implementation framework, related to Urban Logistics issues, to be submitted to different local realities, like the SUMP guidelines produced in the ENCLOSE project. In order to implement an efficient and functional SULP it would be useful to standardise the definition of these guidelines or regulations: regional modalities; logistics functional objectives and environmental objectives.	AGENEAL
2.3	Regional Urban Logistics accreditation system	The rules for releasing permissions are different in each country and even in between different cities in the same region, but are always based on an accreditation system. Accreditation can always be obtained by submitting documents, following administrative and bureaucratic procedures and making payments. A system having these basic features in configurable patterns can be be applied to very different realities. Moreover, access and parking regulations can be generally described with a limited number of attributes and variables regarding territory and itineraries, time windows, vehicles and operators' characteristics. These features can also be described in a parametric way by the application, to be applicable in different environments. The solution we consider will have these kinds of characteristics and, as a first step, will take into account the different regulations in the DOROTHY countries. Moreover, consideration about possible harmonisation will be developed. In fact, the EC is committed about regulations harmonisation, sharing of experiences and skills between countries, and solutions replication in the EU. All the privacy, non-disclosure and intellectual rights and legal/normative implications will be duly managed during the implementation of the action.	IPN
3.1	Innovative ICT solutions to support advanced Urban Logistics regulation schemes	The implementation of the platform necessarily has to take into consideration the current regulation framework. In fact, the possibility that municipalities have for defining schemes is limited by the national legislations (often including the Highway Code). In this sense we have to underline that the situation is quite different in different countries, so that what is allowed (or not forbidden) somewhere cannot be implemented elsewhere. The most important topics to be analysed about the normative framework are the following: • Possibility to reserve stalls on public ground for loading/unloading operations; this possibility is accepted in almost all the countries. • Possibility to reserve the occupation of a single stall for a certain time by a single vehicle; this practice is at the moment not allowed in all the countries. • Possibility to define access limitation to commercial vehicles in certain areas at certain times; this is widely diffused and generally included in the normative framework. • Possibility to track commercial vehicles; this is a controversial matter, because it is subject to privacy legislation. Several approaches are possible to overcome this problem, but the matter must be approached each time with a specific analysis. • Possibility to detect the passage of vehicles with electronic systems and to enforce on the basis of this detection. In this case the legislation also varies very much from country to country and is linked to norms on privacy. Given this normative framework, it has to be underlined that the analysis of the European legislation is an important part of the design work to implement the platform, in order to ensure modularity of functions capable of giving the possibility to apply the platform in the majority of the European countries.	MOV
3.2	Open data architectures to support urban logistics	For realising the Urban Logistics Open Data Platform, we will take into account the following normative framework: • Public Open Data publishing regulations at the EU and national level. Different regulations in each country may exist, which must be taken into account. • Privacy: part of the Urban Logistics dataset may be concerned with personal data belonging to ULOs, drivers, businesses, etc., so EU and national laws must be taken into account for their correct collecting and "persistence". • Closed Data management regulations: the ULODaP may also collect and provide some specific closed dataset. In this case, all the privacy, non-disclosure and intellectual rights and legal/normative implications will be duly managed during the implementation of the action.	LIB
3.3	Proximity Delivery Areas	Generally the adoption of a Proximity Delivery Area (PDA) scheme is coupled with a restricted access or some specific regulation for encouraging the use of a PDA. So the relevant normative framework to be considered is the one related to these accompanying schemes more than the PDA itself. The most significant problem related to the set up of PDAs, especially the permanent ones, is related to their implementation and management that, being quite complex and expensive, implies the definition of specific agreements among all the interested parties.	FRI
3.4	Cooperation agreement among the DOROTHY clusters	Although it does not exist, a specific related normative framework on this kind of action (beside the one related to privacy and non-disclosure of intellectual property rights) all the legal/normative implications will be duly managed during the implementation of the action.	IPA

5.1	Supporting the use of cargo bikes for delivery in urban centres	The EU has officially recognised the importance of cycling as an alternative mode of urban transport, generating environmental, economic and health benefits (ECMT, 2004). The authorities should create the necessary incentives and promote joint initiatives in order to create economies of scale to reduce the costs associated with the vehicles to speed up the adoption of e-cargo bikes. Moreover, the adoption of specific regulations for favouring the use of cargo bikes in city deliveries should be considered by the municipalities. For example, land use policies can generate shorter trip distances that are easier to travel by bicycle. Restrictions on car use also positively affects bicycle use: e.g. limited car parking, car-free zones, comprehensive traffic calming and lower speed limits, reduce the overall convenience and attractiveness of car use, etc. As an example of positive incentives we can mention the possibility of widening the time windows for the distribution to those subjects that use cargo bikes and so on. Furthermore, a complete system of cycling infrastructure such as lanes, paths, cycle tracks, traffic signals, parking and so on, may have far more impact than the sum of its individual effect. The appropriate set of policies should be designed for each particular situation, taking into account the context of the city, which requires careful planning and on-going inputs by citizens. At the European level, there are many cities that impose limitations based on environmental characteristics. Certain polluting vehicles are banned from streets, zones or entire cities. Mostly, limitations are based on the Euro type (1 to 6, 1 being the most polluting) of the vehicle. For electric, hybrid and other low emission vehicles, exceptions are made. There are other cities which use 'eco-zoning' where only low-emission vehicles can enter certain areas. In addition to that, certain cities have implemented congestion charges whereby motorised vehicles must pay to access city centres. The European Commission has appealed for all conventionally fuelled vehicles to be banned from city centres by 2050 (ECF, 2012). There are several stakeholders involved (operators, ICT companies, public authorities R&D institutions) and all of them are able to influence the implementation of regulation in their regions.	MOV
5.2	Organising a network of operators in the cities for implementing proximity delivery points for parcels	The normative framework in the field of last mile delivery and access to city centres is very various and fragmented for different cities in the same cluster and for different clusters. So, an important action to be developed in order to let this action be successful is to study specific rules and policies that let the implementation of the network system be more convenient for the stakeholders than any other system. There is no specific legal barrier for the implementation of this measure. In any case, a specific critical point can be related to the responsibilities that the logistics operator and the proximity delivery point for taking charge of the goods. This point must be accurately studied in the specific application contexts, also under the profile of liabilities and contracts.	ALP
6.2	Cooperation protocol among the research centres and the universities of the regions for developing common research lines	Although it does not exist, a specific related normative framework on this kind of action (beside the one related to privacy and non-disclosure of intellectual property rights) all the legal/normative implications will be duly managed during the implementation of the action. Indirectly, the normative framework generated by international projects must to be duly managed during the implementation of the action.	RDAO
7.1	Regional Clusters' Catalogue	No particular legislative restriction exists, but issues related to privacy and non-disclosure of intellectual property rights must be considered, as a general matter of the relationships between the single partners and the clusters. The problem of the correct use of industrially sensitive communication is also linked to communication and dissemination.	IPA

Taking into account the recommendations and EU guidelines, the objectives and the normative framework evaluation carried out for each JAP action, we have defined some recommendations that should be taken into account for a successful implementation of the actions.

JAP action		Recommendations
1.1	SULPs - Sustainable Urban Logistics Plans	The elaboration of SULPs should take into account the EU recommendations. Some regions are more advanced in implementing measures to ensure the EU recommendations, but others are at an earlier stage or still have no guidance on this. It would be useful to implement in different regions similar guidelines or regulations.
2.3	Regional Urban Logistics accreditation system	We found no guidelines or regulations on this topic. For this action to be successful, it is important to do a process of "approach" or harmonisation of regulations, taking into account the limitations of national laws and specificities of each region. It will be mandatory to be aware of all the privacy, non-disclosure and intellectual rights and legal/normative implications in processing the data.
3.1	Innovative ICT solutions to support advanced Urban Logistics regulation schemes	For the success of this action, it is necessary to carry out a careful analysis of the European/national legislation and regulation in the design process of the platform, to ensure the possibility of applying the platform in the majority of the European countries. The stakeholders affected by the regulation include operators, ICT companies, public authorities and R&D bodies, and all of them are able to influence the regulation implementation.
3.2	Open data architectures to support urban logistics	In the design and implementation of this action, the EU and national legal frameworks about Open Data, privacy, non-disclosure and intellectual rights in processing and making information available must be taken into account.
3.3	Proximity Delivery Areas	The main point to be accurately analysed are the agreements to be defined in the design phase among all the interested stakeholders to ensure an economically viable and efficient operation of the PDA
3.4	Cooperation agreement among the DOROTHY clusters	Is necessary to take into account the different national legal frameworks that are applicable.
5.1	Supporting the use of cargo bike for delivery in urban centres	The recommendation of the type of regulation that should be implemented to enhance the success possibilities this action differs between each region: – In the Lisbon and Tagus Valley Region, it must be at national and local level, and in Tuscany and Valencia at the regional and local level: – In Lisbon the adopted policies could contain some of the following elements: licensing, parking regulation, road circulation regulation, vehicle emission regulation and taxation with a different mix appropriate to the local realities. Local authorities can create pedestrian areas where access by conventional vehicles is banned and only bicycles/trolleys can have access for the delivery of goods; and only licensed operators are allowed to distribute goods in these areas. At the national level, fiscal/economic incentives can be implemented for the acquisition of (e-) cargo bikes. – In the Tuscany and Valencia Regions, local regulations could take into consideration measures such as license management, road circulation regulation (access and parking) and time schedule , while the regional regulation has to define the general guidelines for the transport of goods by cargo bike. The Oltenia Region should comprise licensing, parking regulation and road circulation regulation, where all these regulations must be established by the municipality in order to regulate the cargo bikes activities in downtown area.
5.2	Organising a network of operators in the cities for implementing proximity delivery points for parcels	There is no EU legislation on the logistics for the last mile delivery, but there is specific regulation approved in several cities and regions. Thus, it is recommended to collect and evaluate the regulations that exist in the cities of reference, and search for the best solutions to design similar regulations that promote the implementation of good solutions which are economically sustainable. Carefully consider all the contractual aspects related to liability and linked to the introduction of an intermediate subject between the logistics operator and the delivery addressee that takes in charge the goods.
6.2	Cooperation protocol among the research centres and the Universities of the regions for developing common research lines	It is necessary to take into account the different national legal frameworks applicable and the by-laws of each institution.
7.1	Regional Clusters' Catalogue	It should take into account the EU and national legal frameworks about privacy, non-disclosure and intellectual rights concerning the availability of information.

7.3. CONCLUSIONS

This analysis shows that, to maximise the success opportunities of the JAP measures, it is vital to have the support and cooperation of the stakeholders involved to some extent in the action. Municipalities, public authorities (at local, regional or national level), parking management companies, logistics operators, trade associations, ICT companies, R&D institutions, etc., should be involved in the implementation of the actions from the beginning, from the design phase, adopting a cooperative approach to the definition of all the rules, norms and regulations that will affect all the parties.

At the same time, the successful implementation of some important JAP actions could give a concrete contribution in pursuing some of the goals contained in the EU recommendations. In particular the specific topic of the harmonisation of legislation and norms in the field of urban logistics could receive a significant contribution from some of the DOROTHY JAP actions. In fact, they can achieve a revision of the existing regulations and norms and some harmonisation of procedures among the partner regions that could be transferred to other European regions.

REFERENCES

[1] EUROPEAN COMMISSION 2011 Transport White Paper - Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system, http://ec.europa.eu/transport/themes/strategies/2011_white_paper_en.htm, 28-3-2011

[2] EUROPEAN COMMISSION DG MOVE: Study on Urban Freight Transport - FINAL REPORT, http://ec.europa.eu/transport/themes/urban/studies/doc/2012-04-urban-freight-transport.pdf, April 2012

[3] EUROPEAN COMMISSION DG MOVE: Results of the public consultation 'The urban dimension of the EU transport policy' - FINAL REPORT, http://ec.europa.eu/transport/themes/urban/studies/doc/2013-a032862-urban-mobility-public-consultation-report.pdf, April 2013

[4] Urban Freight research roadmap, ALICE / ERTRAC Urban mobility WG, http://www.ertrac.org/uploads/documentsearch/id36/ERTRAC_Alice_Urban_Freight.pdf, November 2014.

[5] Final Report of Task 3.1: Regulations requirements and actions, Dorothy Project, GA no. 319918,14-10-2015.

[6] Data Protection rules at the EC level: Directive 95/46/EC of the European Parliament and of the Council of 24th October 1995. http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:31995L0046

ANNEX - POLICY RECOMMENDATION ON UFT

Policy recommendations proposed in the DG MOVE European Commission study on Urban Freight Transport (UFT) [2]:

EU POLICY RECOMMENDATION 1: INTERNALISATION OF EXTERNAL COSTS IN URBAN AREAS
The EU should continue to develop its road pricing policy based on the internalisation of net external costs and it should be applied to all kinds of road vehicles that operate in urban areas as well as to strategic freight and passenger transport movements. The system should replace existing forms of taxation on the ownership and use of road vehicles, including duty on fuel, rather than being an additional charge. Any net revenues from the road pricing scheme should be used to improve urban mobility.
Timescale: Long-term (after 2020)
EU POLICY RECOMMENDATION 2: R&D INTO ZERO & LOW & EMISSION VEHICLES
The EU should continue to fund integrated R&D on a technology-neutral basis into low emission vehicles, fuels and infrastructure for UFT, taking into account safety and legal considerations and also considering how to overcome barriers to their market take-up and use by industry and the public sector.
Timescale: Short- and medium-term (2012-20)

EU POLICY RECOMMENDATION 3: RESEARCH INTO ORGANISATIONAL, INSTITUTIONAL & BUSINESS MODELS FOR THE DEPLOYMENT OF ITS FOR UFT IN URBAN AREAS
The EU should fund research into the most appropriate organisational, institutional and business models for the deployment of ITS to move towards the rapid implementation of ITS on an interoperable basis by the relevant local, regional and national authorities in partnership with private sector providers. The research should include consideration of including charges for ITS within road user charging schemes.
Timescale: Short-term (2012-15)

EU POLICY RECOMMENDATION 4: INVESTIGATION OF STANDARDS FOR LOW NOISE EQUIPMENT FOR FREIGHT VEHICLES
The EU should carry out a cost-benefit analysis for the inclusion of low noise equipment in manufacturing standards for freight vehicles and associated loading and unloading equipment, so that future generations of vehicles and other equipment are more likely to be suitable for night-time deliveries without additional capital investment.
Timescale: short-term (2012-15)

EU POLICY RECOMMENDATION 5: TEN-T FUNDING FOR UFT
The EU should fund projects of common interest in urban nodes on the TEN-T that: (1) develop intermodal freight terminals in logistics zones for the transfer of freight between rail/waterborne transport for medium to long distance flows and road for "last mile" deliveries; (2) develop refuelling infrastructure for LEV freight vehicles; (3) deploy ITS that specifically improves the efficiency of UFT operations; (4) removes bottlenecks on inter-urban TEN-T links. (*) TEN-T - Trans-European Transport Networks
Timescale: Short, medium and long-term (2012-30)

EU POLICY RECOMMENDATION 6: URBAN LOGISTICS PLANS (ULPs)
The EU should develop guidance on the development of Urban Logistics Plans (ULPs) as an integral part of Sustainable Urban Mobility Plans. The completion of a high quality ULP should be a prerequisite for the receipt of EU funding for UFT measures from CIVITAS, TEN-T and Cohesion Funds.
Timescale: Short-term (2012-15)

EU POLICY RECOMMENDATION 7: CIVITAS PROGRAMME
The EU should focus on the following key priority areas within the CIVITAS Programme: (1) development of Urban Logistics Plans, including data collection and evaluation methodologies; (2) development of demand-side rather than supply-side UFT measures; (3) implementation of demonstrations of ITS projects in urban areas with specific UFT applications; (4) implementation of innovative UFT measures at an European level. Effective dissemination of results, following a high quality ex-post evaluation of results, is essential for the Programme future success.
Timescale: Short and medium-term (2012-20)

EU POLICY RECOMMENDATION 8: DEFINITION & DISSEMINATION OF GOOD PRACTICE
The EU should develop "best practice" guidelines for sustainable UFT and then disseminate these guidelines by means of a single already established website that "showcases" examples of innovation in sustainable UFT measures and practices at a local level.
Timescale: Short medium and long-term (2012-30)

EU POLICY RECOMMENDATION 9: PROMOTING SUSTAINABLE UFT IN EUROPE
The European Commission should promote the development of sustainable UFT through: - An annual award scheme for sustainable UFT that "showcases" examples of innovation in sustainable UFT measures and practices at a local level. - Making sustainable UFT a "political priority" within the Marco Polo Programme so that a proportion of the total funding is reserved for services that involve sustainable UFT practices within long distance door-to-door transport chains.
Timescale: Short and medium-term (2012-20)

CHAPTER 8

A POSSIBLE FINANCIAL FRAMEWORK FOR THE JAP SUPPORT BY THE REGIONS

8.1. INTEGRATION OF THE JAP IN THE FRAMEWORK OF THE REGIONAL POLICIES

The DOROTHY JAP is an ambitious programme for supporting regional economic and social development in a territorially balanced and sustainable way in the specific field of Urban Logistics.

Urban Logistics has been identified as an important social and urban issue, as the large majority of cities are directly affected, but at the same time it can be an important element of economic development as the problem of the "last mile" is one of the most relevant in the overall supply organisation.

The DOROTHY project has identified a set of coordinated actions, collected in this JAP; and it has defined financial resources required for their implementation. This chapter will analyse all the topics linked to the definition of a suitable financial framework for the implementation of the JAP actions.

When dealing with such complex and articulated programmes such as the one defined with the DOROTHY JAP, it is very important to build synergies between different funding sources: ESIF, Horizon 2020 and other research, innovation and competitiveness-related European Union programmes.

Another very important point is to consider all the possible synergies with the Regional Smart Specialisation Strategies. Synergies means joint or coordinated efforts to achieve greater impact and efficiency. Different kinds of synergies can be achieved through:

- Using Horizon 2020 and European Structural and Investment Funds (ESIF) money in the same project in a complementary way (this could be a single action or a group of coordinated actions/operations, but always provided that there is no double funding).
- Successive separately funded projects that build on each other.
- Parallel projects that complement each other and are funded by different sources.

ESIF programmes could also be designed and implemented to take up high quality project proposals from Horizon 2020 or other centrally managed programmes, for which there is not enough budget available in the respective programmes.

The JAP actions are diversified in terms of the nature of the actions and the degree of innovation, so that different funding strategies should be pursued for different actions or sets of actions.

Two of the main objectives of the clusters are:

- To define new lines of research and innovation for the clusters compliant with the specific technological and territorial specialisations.
- To address the research-driven clusters on Urban Logistics in the four regions towards common development areas and to set up operational collaboration on these topics, through networking activities.

REGIONAL FUNDS

The most important contribution to the development of Regional Clusters and to the implementation of the JAP could come from the regions. For this reason particular attention has been devoted to analyse the possible funding sources managed by the regions.

These initiatives could support the DOROTHY actions in all regions, through the various regional instruments based on Structural Funds and the additional European initiatives to fund regional development.

Education, professional training and entrepreneurial formation (Thematic Area 4) have a fundamental role in the JAP. All the four regions, through Structural Funds, devote resources to these types of initiatives. The tables reported in the following include these types of funds.

The four DOROTHY clusters are currently discussing with the regional and national bodies responsible for the use of Structural funds (Regional Operational Plans and Competitiveness Operational Plans) the possibility to analyse how to include the JAP actions in the plans for the use of Structural Funds (or other regional instruments), and, in general to include Urban Logistics in the regional and national planning.

A series of meetings and regional events to promote the JAP are already planned and will be carried out during the DOROTHY project. The topic of the financial support for the JAP will be e included in the Agendas as one of the main topics to be addressed.

This action has been prepared during the DOROTHY project and will be facilitated by the fact that all the regions and/or the regional authorities for the ROPs are linked with the DOROTHY project and clusters. Table 1 shows a short summary of the situation in the four regions.

The Regional Authority for ROPs		Relations between the Regions and the DOROTHY partners			
		Member of the DOROTHY Consortium	Member of the Regional Urban Logistics cluster	Participated at the elaboration of the JAP	Other relation (please comment)
Firenze	Tuscany Region	Yes	No	Yes	Although Tuscany Region could not be a direct partner of the regional Urban Logistics cluster (being its solely financier), it supports and politically endorses all the actions promoted by the clusters.
Valencia	Regional Ministry of Economy, Industry, Tourism and Employment through IVACE (Valencian Institute of Business Competitiveness)	Yes	Yes	Yes	The Regional Ministry of Economy, Industry, Tourism and Employment has participated in the DOROTHY project, but it would be necessary to involve also the Regional Ministry of Transport.
Lisbon & Tagus Valley	Lisbon Regional Coordination and Development Commission (*CCDR-LVT*)	Yes	Yes	Yes	
Oltenia	Regional Development Agency (RDAO)	Yes	Yes	Yes	Under the Guide for ROP and COP

Tab. 1 – Relations of the Regional Authority for ROPs with the Clusters, Regions and the DOROTHY partners

In the following a detailed analysis of the possibility to use regional funds in each region is reported. Each region has compiled a table reporting the different financial instruments that can be used and the actions that could be funded through each one of them. The actions are indicated with #area.#action as reported in chapter 6 of the JAP.

TUSCANY REGION, ITALY

R&I Strategy 2014-2020
On 30th June 2014, the Tuscany Region approved the "Regional Programme ERDF - Cycle 2014-2020. Implementation guidelines for the selection of project proposals in the field of research, development and innovation."

The objective is to increase Tuscan businesses' investment in research and development of new products and services; and also to support the SMEs investments in innovation activities.

By supporting industrial research, experimental development and innovation projects, the intervention aims to increase the intensity of private spending on R&D. It will do this by directing the investment demand of the enterprise system towards enabling technologies and activities with a high degree of innovation in the context of smart specialisation, as defined at the regional level.

Further details can be found at the following link: http://s3platform.jrc.ec.europa.eu/regions/ITI1/tags/ITI1 .

This reinforces the idea that innovation clusters are a strategic asset for regional and national development: the Tuscan Smart Specialisation Strategy (RIS3) has also been developed due to the effort of all the 12 regional innovation poles (the Tuscan clusters).

The intervention foreseen by the Regional Programme will be carried out through three calls:
- Call 1. Strategic research and development projects.
- Call 2. Research projects and development of SMEs.
- Call 3: Aids for SMEs innovation.

The above mentioned calls are intended to be released in 2016 and in the next months POLIS (the Innovation Pole concerning technologies for the sustainable city) and P12 (the Innovation Pole concerning mechanics and automotive sectors) is likely to interact with the Tuscany Region to express the need to finance Urban Logistics topics through these calls.

The poles have already established a negotiating framework concerning Urban Logistics topics within the process of defining the local RIS3 programme, which is the background to the Regional Programme ERDF - Cycle 2014-2020.

Human Capital Operational Programme
The Programme is able to cover projects focused on the following objectives:
- Employment support.
- Social inclusion and fight against poverty.
- Education and training.
- Institutional and administrative capacity.

Priority Axis Funding Scheme – ERDF Objectives	Support by the EU (Euro)/Proportion (%)	Investments Priorities	JAP Actions Financing
Human Capital Operational Programme (FSE)	351,822,344.00€, able to cover projects focused on the following objectives: 1) Employment support (191,303,399.00€); 2) Social inclusion and fight against poverty (73,296,322.00€); 3) Education and Training (84,290,770.00€); 4) Institutional and administrative capacity (2,931,853. 00€).	Planning and introducing reforms into the education, training and employment systems, to improve their integration and to develop employability, with a particular focus on guidance. Increasing participation in lifelong learning opportunities, raising levels of learning and knowledge Building networks linking universities, technology research centres and the industrial, commercial and institutional sectors, with a particular focus on the promotion of research and innovation.	4.1-4.2.
Strengthening research, technological development and innovation	126,514,145.17€ /31.93%	Strengthen the infrastructure for research and innovation and the ability to develop R&I excellence, promoting centres of competence, in particular those of European interest.	3.4; 3.6; 6.2; 6.3.
		Promote business investment in innovation and research and develop links and synergies between business, R&D centres and higher education institutions, in particular the development of products and services, technology transfer, social innovation, eco-innovation, public service applications, demand stimulation, networks, clusters and open innovation through smart specialisation as well as support the technological and applied research, pilot lines, the actions of early product validation, the ability to advance manufacturing and the first production, especially in Key Enabling Technologies, and diffusion of general purpose technologies.	2.3; 3.1; 4.1-4.2; 6.1; 7.1-7.3
Ease and improve the access to ICTs as well as their quality	39,796,682.56€ /10.04%	Extending the spread of broadband and the launch of high-speed networks and supporting the adoption of networks and emerging technologies in the field of digital economy.	
		Developing the ICTs' products and services, e-commerce and the demand for ICTs.	
		Strengthening ICT applications for e-government, e-learning, e-inclusion, e-culture and e-health.	2.2; 3.2.
Promote SMEs competitiveness	76,272,061.74€ /19.25%	Promoting entrepreneurship, in particular by facilitating the economic exploitation of new ideas and fostering the creation of new businesses, supporting business incubators.	
		Developing and implementing new business models for SMEs, with a particular focus on internationalisation.	7.2; 7.4.
		Supporting the creation and expansion of advanced capabilities for development of innovative products and services.	
To support the transition to a	98,342,024.46€ /24.82%	Promoting energy efficiency and renewable energy use in businesses.	2.1; 3.5.
low carbon economy in all sectors		Promoting low-carbon strategies for all types of territories, particularly in urban areas, including the promotion of a sustainable, multi-modal urban mobility.	1.1; 1.3; 3.3; 5.1-5.2.
Urban areas	39,447,847.44€ /9.96%	Supporting energy efficiency, intelligent management of energy and the use of renewable energy public infrastructure, including public buildings, and in the building sector/housing.	
		Preserving, protecting, promoting and developing the cultural and natural heritage.	
		Supporting the regeneration of physical, economic and social development of disadvantaged communities in urban and rural areas.	

Tab. 2 – Regional Operational Programme (ROP) in Tuscany Region

VALENCIA REGION, SPAIN

1. Research & Innovation Strategy 2014–2020

National Science and Technology Strategy

Spain has developed its National Science and Technology Strategy for the period between 2013 and 2020, which sets out the outlines of the scientific and RTD policy. The Strategy has three basic principles: to place R&D and innovation at the service of citizens; to convert it into a factor of business improvement; and to promote it as an essential element in the generation of new knowledge.

For additional information see:
http://www.idi.mineco.gob.es/stfls/MICINN/Investigacion/FICHEROS/Estrategia_espanola_ciencia_tecnologia_Innovacion.pdf

The following priority axes have been defined:

- Promotion of an environment conducive to development of R&D.
- Aggregation and specialisation of knowledge and talent.
- Transfer and management of knowledge.
- Internationalisation of the Spanish system of science, technology and innovation and its stakeholders.
- Regional specialisation and development of innovative and competitive territories.
- Scientific, innovative and entrepreneurial culture.

R&D in Valencia

At the regional level, Valencia has developed the Valencia Scientific Research, Technological Development and Innovation Plan (PVIDI).

The strategic lines of action are defined below in terms of these criteria:

- Encouragement, promotion and support for new technologies
  - ICTs.
  - Biomedical sciences and technologies.
  - Sciences and technologies associated with genetics.
  - Transport and logistics.
  - Environment and water resources.
  - Renewable energies.
- Reinforcement of business competitiveness through technological innovation

There is also another strategic plan: the General Plan of Science and Technology 2010-2015 for the Valencia Region (PGECYT), with the following objectives:

- Axis 1: Human Capital.
- Axis 2: I+D Funding.
- Axis 3: Infrastructure and equipment.
- Axis 4: Knowledge transfer.
- Axis 5: Scientific culture and society.

Other Plans:

- Valencia Competitiveness Plan.

Funds dedicated to the topic of urban mobility, Urban Logistics and local development.
The local government has a financing line called the **Programme for Energy Efficiency and saving**, which is managed by IVACE.
The investments in fleets and control systems also for Urban Logistics are included in this programme.

For more information see:
http://www.aven.es/index.php?option=com_content&view=frontpage&Itemid=1&lang=castellano

The objectives of this programme are:

- Formulation of SUMPs or integral studies of urban mobility, including measures and strategies to promote the modal change towards more efficient modes of transport.
- Implementation of pilot experiences related to electro-mobility, with the objective of introducing electric vehicles in the Valencia Region.
- To promote the compatibility of public bike sharing systems to create big integrated areas.
- Modernisation of commercial vehicle fleets related to road transport (buses and trucks) to take advantage of the increased energy efficiency of new vehicles.
- Development of new electric charging stations in order to promote the acquisition of vehicles using this type of energy, to take advantage of the increasing energy efficiency of new vehicles.

1. The FEDER regulation for the period 2014-2020 provides for a mandatory minimum allocation of 5% of the resources of the fund for sustainable urban development and a maximum allocation of 0.2% of the annual funding for innovative actions in the field of sustainable urban development.

Priorities for local administrations are:

- Promotion of energy efficiency and the use of renewable energy for companies and in particular implementation of home-to-work mobility plans.
- Endorsement of energy efficiency and the use of renewable energy for public buildings and housing.
- Promotion of strategies to reduce carbon emissions, especially in urban areas, by endorsing sustainable urban mobility:
  - Mobility in public transport:
    - Implementation of bus lanes in areas with traffic congestion.
    - Promotion of the use of public transport. Improvement of the network and stops.
    - Implementation of interchange stations and efficient management of transfers.
    - Optimisation of lines, timetables and frequencies.
  - Improvement of the car occupancy rate: promotion of car pooling, efficient driving,implantation of charging points for electric cars, limited access for cars.
  - Design and management of the urban network: regulation of the use of the streets, reduction in the capacity of the network, traffic planning, traffic light network management.
  - Technological innovation in vehicles and fuel: fuel switching, replacement of old vehicles with electric ones, natural gas or hybrid, installation of regenerative braking on the underground.
  - Urban Logistics: access restrictions by type of vehicle and load, efficient fleet management.

Human Capital Operational Programme
The Programme aims to boost economic growth in the region and contribute to achieving the Europe 2020 targets for smart, sustainable and inclusive growth.

Priority Axis Funding Scheme – ERDF Objectives	Support by the EU (Euro) / Proportion (%)	Investments Priorities	JAP Actions Financing
Human Capital Operational Programme	RDF: 568,024,839.00 € Knowledge and innovation (53%); Enhancing SME's competitiveness (19%). Supporting the shift towards a low carbon economy in all sectors (12%) and preserving and protecting the environment and promoting resource efficiency (10%)	• Economic growth. • Smart, sustainable and inclusive growth. • SME's competitiveness. • Low carbon economy in all sectors preserving and protecting the environment and promoting resource efficiency.	4.1; 4.2.
01. Reinforcement of research, technological development and innovation	163,450,000€ /28.78%	1.a. Improve EU research and innovation capacities by supporting research infrastructures. 1.b. Endorsement of industrial investments.	2.1; 4.1; 4.2; 6.2.
02. Improve the use and quality of information technology and communications and access to them	139,260,000€ /24.52%	2a. Further deployment of broadband and high-speed networks and supporting the adoption of emerging technologies and networks for the digital economy.	
04. Supporting the transition to a low-carbon economy in all sectors	68,500,000€ /12.06%	4e.Promoting low-carbon strategies for all types of territory, especially urban areas; include the promotion of sustainable multimodal urban mobility and adaptation measures with mitigation effect. 4e1. Promoting sustainable urban mobility: clean urban transport, collective transport, urban-rural connection, better road network, bike transport, pedestrian, electric mobility and development of clean energy systems.	1.1-1.2; 2.3; 3.1-3.2; 5.1.

Tab. 3 – Regional Operational Programme (ROP) in Comunidad Valenciana

LISBON AND TAGUS VALLEY REGION, PORTUGAL

1. **Portugal 2020 – Partnership Agreement 2014-2020**
   Portugal 2020 sets out the interventions, investments and funding priorities needed to promote smart, sustainable and inclusive growth. The intervention of European structural funds and investment will be logically organised around thematic areas:

- Competitiveness and internationalisation.
- Employment and social inclusion.
- Human capital.
- Sustainability and resource use efficiency.

Only two of them are of interest to DOROTHY:

- Competitiveness and Internationalisation - Thematic Objective 1 (Strengthening research, technological development and innovation):
  - 1.1.3. Enhance the transfer of scientific and technological knowledge to the business sector, promoting greater efficiency in the regional innovation system and the creation of economic value.
  - 1.2.1. Increasing business investment in R&D&I, reinforcing the connection of businesses to entities in the scientific and technological system; and promoting the intensification of economic activities in knowledge and value creation based on innovation.
  - 1.2.2. Strengthen networks and other forms of partnership and cooperation aimed at innovation and internationalisation of enterprises and value chains (clustering), favouring the alignment with the strategy of smart specialisation in the region.

- Sustainability and Resource Use Efficiency - Thematic Objective 4 (Support the transition to a low carbon content in all sectors):
  - 4.5.1. Promote eco and low-carbon mobility.

2. **Sustainability and Efficiency in the Use of Resources Operational Programme (POSEUR)**
   Overall Objective: The POSEUR aims to contribute to the affirmation of the Europe 2020 strategy, especially in the priority of sustainable growth, responding to the challenges of transition to a low carbon economy, based on more efficient use of resources; it aims to promote greater resistance to facing climate change and disasters.

Funding Opportunities
Priority Axis 1: Support the transition to an economy with low carbon emissions in all sectors.

Investment Priority 4: Promotion strategies for low carbon content for all types of territories, particularly urban areas, including the promotion of sustainable urban mobility and multimodal adaptation measures relevant to mitigation.

Specific Objective 2: Support for promoting the use of environmentally friendly transport and their networks (charging stations and networks for electric mobility.

3. **The Lisbon Region Operational Programme**
   Overall Objective: Continuing the trend of strengthening regional competitiveness by increasing efforts on innovation, R&D and diversification and strengthening of SMEs, towards their internationalisation and participation in the processes of growth and innovation.

Funding Opportunities
Priority Axis 1: Strengthen research, technological development and innovation.

Investment Priority 1.2: Promote business investment in innovation and research; developing links and synergies between business, corporate R&D and the higher education sector. In particular:

Promote the development of products and services, technology transfer, social innovation, eco-innovation and public service applications.
Stimulating demand in networks, clusters and open innovation through smart specialisation.
Support technological applied research, pilot lines, actions of early product validation, advanced manufacturing capabilities and first production, in particular with regard to the key enabling technologies and the diffusion of technologies of general interest.

Specific Objective 1: Increase business investment in R&D&I, reinforcing the connection of businesses to entities in the scientific and technological system and promoting the intensification of economic activities in knowledge and value creation based on innovation.

Specific Objective 2: Strengthen networks and other forms of partnership and cooperation aimed at innovation and internationalisation of enterprises and value chains (clustering), favouring the alignment with the Regional Smart Specialisation Strategy of Lisbon.

Specific Objective 3: Increase business investment in innovative activities, promoting increased production and tradable internationalisation and progression in the value chain.

Priority Axis 2: Enhancing the competitiveness of SMEs.

Investment Priority 3.3: Support the creation and expansion of advanced capabilities for development of products and services.

Specific Objective 1: Strengthen managerial capacity of SMEs to develop products and services.

Priority Axis 3: Support the transition to an economy with low carbon emissions in all sectors.

Investment Priority 4.5: Promote strategies for low carbon content for all types of territories, especially urban areas, including the promotion of sustainable urban mobility and multimodal adaptation measures relevant to mitigation.

Specific Objective 1: Promote eco-mobility and low-carbon.

Priority Axis Objectives	Support by the EU /Proportion (%)	Investments Priorities	JAP Actions Financing
1.Strengthen Research, Technological Development and Innovation	17,710,983€ / 20.61%	Strengthening of infrastructure for research and innovation (R&I) and abilities aimed at developing excellence in R&I and promoting centres of competence, in particular those of European interest.	4.1-4.2.
		Promoting business investment in R&D, developing links and synergies between businesses, research and development centres and the higher education sector , especially promoting investment in product and services development, technology transfer, social innovation, eco-innovation in public service applications, stimulating demand, networking, clusters and open innovation through smart specialisation, and supporting technological and applied research, pilot lines, early validation actions of products, enhanced production capabilities and first production, particularly with regard to key enabling technologies, and diffusion of general purpose technologies.	2.1; 3.1 -3.2; 4.1-4.2; 6.1.
2. Enhancing the Competitivenes s of Small and Medium Enterprises	202,713,177.00€ / 24.33%	Promoting entrepreneurship, in particular by facilitating support for the economic exploitation of new ideas and fostering the creation of new firms, including through business incubators.	3.1; 5.1; 6.1.
		Developing and applying new business models for SMEs, especially with regard to internationalisation.	5.1; 3.1; 2.3.
		Providing support for the creation and extension of advanced capacities for product and services development.	2.1; 3.1-3.2; 4.1-4.2; 6.1.
3.Support the transition to an economy with low carbon emissions in all sectors	55,000,000.00€ / 6.60%	Promoting energy efficiency and renewable energy use in enterprises.	5.1.
		Supporting energy efficiency, intelligent energy management and the use of renewable energy in public infrastructures, including in public buildings and in the housing sector.	1.1-1.2.

Tab. 4 – Regional Operational Programme (ROP) in Região de Lisboa e Vale do Tejo

OLTENIA REGION, ROMANIA

Research & Innovation Strategy 2014–2020

The Plan is defined as the main instrument for the implementation of the National Strategy for Research, Development and Innovation. National Plan programmes:

General Objectives
OG1. Increasing the competitiveness of the Romanian economy through innovation. The strategy involves developing the capacity of firms to absorb the latest technology, to adapt these technologies to the needs of underserved markets, developing in turn technologies and services that enable them to progress on value chains.
OG2. Increasing the Romanian contribution to the advancement of the knowledge frontier. The strategy assumes increasing international visibility of research and experimental development in Romania.

OG3. Increasing the role of science in society. The strategy aims at both solving the problems of society through innovative solutions and providing expertise in public policy.

For more information see:
http://uefiscdi.gov.ro/articole/3698/Strategia-de-Cercetare-si-Inovare-2014-2020-versiunea-tehnica.html

Remark
If a company from the European Union intends to develop an innovative company in Romania or to establish a subsidiary in Romania, they can access Structural Funds. Regarding the opportunities for the DOROTHY cluster: through Structural Funds for clusters and members of the clusters, the following have been identified:

- Competitiveness' Operational Programme (COP) – National level with two Axes:
  - Priority Axis 1. Exploration, development and innovation (RDI) to support economic competitiveness.
  - Priority Axis 2. Information and Communication Technology (ICT) for a digital competitive economy.
- Regional Operational Programme (ROP).
- Human Capital Operational Programme (POCU).

Structural Funds

Romanian partnership agreement for the 2014-2020 programming period

The global objective is to reduce the economic and social development disparities between Romania and the other EU member states by tackling five development challenges:

1. The competitiveness and local development challenge.
2. The people and society challenge.
3. The infrastructure challenge.
4. The resources challenge.
5. The administration and government challenge.

Based on the analysis of the RDI market in Romania, and according to the methodological guidelines specified in the European "Guide for Research and Innovation Strategies based on Smart Specialisation" (RIS3), the National RDI Strategy identifies the following thematic priorities for the public RDI investments in the period 2014-2020 (correlated with DOROTHY priorities):

- ICT, space and security.
- Energy, environment and climate changes.
- Eco-nano-technologies and advanced materials.

For more information see: http://www.fonduri-ue.ro/res/filepicker_users/cd25a597fd-62/2014-2020/acord-parteneriat/AP-17.03.2014.EN.pdf

Competitiveness Operational Programme (COP)

The Competitiveness' Operational Programme is meant to be one of the key factors that meets the needs of intervention in terms of improved access and high-quality use of information technologies and communication, and strengthening of research, technological development and innovation in order to promote economic competitiveness and local development.

Priority Axes

1. Exploration, development and innovation (RDI) to support economic competitiveness:

- Investments for R&D departments of companies.
- Innovating clusters.
- Innovating start-up and spin-off companies.
- New innovative companies.
- Attracting staff with advanced competences from abroad.
- Investment projects for public institutions of R&D and universities.
- Partnerships for knowledge transfer.

For more information see: http://www.poc.research.ro/

2. Information and Communication Technology (ICT) for a digital competitive economy:

- Consolidation of the ICT applications for e-government, e-learning, e-culture, e-health and digital inclusion.
- Development of ICT products and services, e-commerce and requests for ICT.
- Extension of broadband and high speed networks; support for emergent technologies and networks for digital economy.

For more information see: http://www.fonduri-ue.ro/res/filepicker_users/cd25a597fd-62/2014-2020/po/Prezentare.POC.2014-2020.pdf

Regional Operational Programme (ROP)

The general objectives are economic competitiveness and improvement of living conditions for local and regional communities by supporting business development, infrastructural conditions and services to ensure sustainable development of the regions, able to effectively manage resources, to exploit their potential innovation and assimilate technological progress. For more information see:

http://www.fonduri-ue.ro/por-2014

Human Capital Operational Programme (POCU)

With integrated interventions planned in the field of employment, education and social inclusion, HCOP will function as a means of stimulating economic growth and cohesion and also will support the achievement remit and objectives established in other developmental challenges, thus fulfilling the objectives assumed in the context of the Europe 2020 strategy for smart, sustainable and inclusive growth.

For more information see: http://www.fonduri-ue.ro/res/filepicker_users/cd25a597fd-62/2014-2020/po/POCU-17.03.2014.RO.pdf

Priority Axis Funding Scheme – ERDF Objectives	Support by the EU (mill. Euro)	Investment Priorities	JAP Actions Financing
Human Capital Operational Programme (POCU) – National			
Priority Axis 5 - Education and competence	949.79€	Education and competence. Stimulating economic growth and cohesion and also will support developmental challenges, competitiveness, infrastructure, administration and governance.	4.1-4.2.
Competitiveness Operational Programme(COP) - National			
Exploration, development and innovation (RDI) to support economic competitiveness	53.716€	Innovating clusters.	3.4; 3.6; 6.1; 6.3.
Information and Communication Technology (ICT) for a digital competitive economy	630.20€	ICT for a digital competitive economy.	3.1-3.2; 6.1.
Regional Operational Programme (ROP) - Regional			
Priority Axis 1 - Strengthening research, technological development and innovation	175.53€	Research, technological development and innovation.	3.4; 3.6; 6.1; 6.3.
Priority Axis 2 - Improving the competitiveness of SMEs	744.68€	Competitiveness of SMEs.	5.1-5.2.
Priority Axis 3 – Supporting the transition to a low-carbon economy	2374.57€	Promotion of strategies to reduce carbon dioxide emissions for all types of territories, based on SUMPs, in particular for urban areas, including the promotion of SUMPs and measures to mitigate the relevant adaptations.	1.1-1.3; 2.1-2.3.
Priority Axis 4 - Urban development support reducing carbon emissions at county / municipality level through investments based on SUMPs	1386.86€	Urban transport measures (cycling routes / acquisition of means for green /electrical transportation, etc.).	5.1-5.2.

Tab. 5 – Operational Programmes in Oltenia Region

EUROPEAN INITIATIVES

1 Horizon 2020 (2014-2020)
Horizon 2020 is the financial instrument implementing the Innovation Union, a Europe 2020 flagship initiative aimed at securing Europe's global competitiveness.

Projects that can be funded: research and innovation projects.

Collaborative projects: most of the EU funded projects are collaborative projects with at least 3 organisations from different EU member states or associated countries.

Horizon 2020 also aims to enhance EU international research cooperation so that there are more opportunities for cooperation with and participation by researchers from non-EU countries.

Eligible entities: R&D, including universities, NGOs, industrial companies and SMEs.
For more information see http://ec.europa.eu/research/participants/portal/desktop/en/opportunities/h2020/master_calls.html

Smart, Green and Integrated Transport (2014-2020)
The specific objective of the Transport Challenge 'Smart, green and integrated transport' is "to achieve a European transport system that is resource-efficient, climate- and environmentally-friendly, safe and seamless for the benefit of all citizens, the economy and society".

Horizon 2020 will provide funding for resource efficient transport that respects the environment by making vehicles cleaner and quieter in order to minimizes the impact of transport's on climate and the environment, by developing smart equipment, infrastructures and services and by improving transport and mobility in urban areas.

Horizon 2020 also aims at better mobility, less congestion, more safety and security with a substantial reduction of traffic congestion; with a substantial improvement in the mobility of people and freight; by developing new concepts of freight transport and logistics; and by reducing accident rates, fatalities and casualties and improving security.

Horizon 2020 targets socio-economic and behavioural research and forward looking activities for policy making.

The aim is to support improved policy making which is necessary to promote innovation and meet the challenges raised by transport and the societal needs related to it. These activities are addressed by three Calls for proposals:

1. Mobility for Growth.
2. Green Vehicles.
3. Small Business and Fast Track Innovation for Transport.

Eligible entities: R&D, including universities, NGOs, SMEs.

For more information see: https://ec.europa.eu/programmes/horizon2020/en/h2020-section/smart-green-and-integrated-transport

Secure, Clean and Efficient Energy
The Energy Challenge is designed to support the transition to a reliable, sustainable and competitive energy system. To make the transition to a competitive energy system, we need to overcome a number of challenges, such as increasingly scarce resources, growing energy needs and climate change.

The Energy Challenge is structured around seven specific objectives/research areas:
1. Reducing energy consumption/carbon footprint.
2. Low-cost, low-carbon electricity supply.
3. Alternative fuels/mobile energy sources.
4. A single/smart electricity grid.
5. New knowledge/technologies.
6. Robust decision making/public engagement.
7. Market uptake of energy/ICT innovations.

Eligible entities: R&D, including universities, NGOs, industrial companies and SMEs

For more information see: https://ec.europa.eu/programmes/horizon2020/en/h2020-section/secure-clean-and-efficient-energy

EUROPEAN TRANSPORT

In the transport sector, research is at the core of developing new technologies for greener, smarter, more efficient transport means and innovative solutions for safer, more sustainable and inclusive mobility.
European research aims to strengthen the competitiveness of transport industries, to develop a better transport system for the benefit of all.

Eligible entities: R&D, including universities, NGOs, industrial companies and SMEs
For more information see: http://ec.europa.eu/programmes/horizon2020/en/area/transport

DIGITAL AGENDA - MOBILITY

Human error is involved in 95% of all traffic accidents on Europe's roads, in which more than 30,000 people are killed and 1.5 million injured every year. Road transport also burns one quarter of the European Union's unnecessary energy consumption, with one fifth of the EU's CO2 emissions caused by road vehicles. eSafety "smart" technologies, based on the powers of computers and telecoms, can make a major difference to these figures.

Eligible entities: R&D, including universities, NGOs, industrial companies and SMEs
For more information see: http://ec.europa.eu/digital-agenda/en/life-and-work/mobility

URBAN MOBILITY

The question of how to enhance mobility while at the same time reducing congestion, accidents and pollution is a common challenge to all major cities in Europe. Efficient and effective urban transport can significantly contribute to achieving objectives in a wide range of policy domains for which the EU has an established competence.

ICT can improve energy efficiency, reduce energy use in homes, in factories, shops and offices. Reducing energy use saves money, reduces the amount of CO2 emitted into the atmosphere, which is then a major driver of climate change.

ICT can also make our neighbourhoods and our cities more efficient by improving our transport and reducing congestion. Adding ICT to vehicles can reduce their energy use and make our roads safer. ICT can help to make our cities better places to live, to work and do business in.

In Smart Cities, ICTs are used to improve public services and quality of life, improve the use of resources and reduce environmental impact.

Some themes are:
- Smart living
- Intelligent car
- EU investments
- Smart cities

Eligible entities: R&D, including universities, NGOs, industrial companies and SMEs, local administrations.

For more information see: http://ec.europa.eu/transport/themes/urban/urban_mobility/

Freight Distribution Systems
Urban freight transport and logistics operations are concerned with the activities of delivering and collecting goods in town and city centres. These activities are often referred to as 'city logistics' as they entail the processes of transportation, handling and storage of goods, the management of inventory, waste and returns, as well as home delivery services. Many of these processes, or parts of them, are often undertaken outside urban areas, but they still have impacts on urban operations.

The overall objective is the promotion of sustainable urban distribution.

This concept combines maximising the economic efficiency of distribution in urban areas, minimising the environmental and social impacts, taking into account the complete door-to-door transport chain.

Eligible entities: R&D, including universities, NGOs, industrial companies and SMEs

For more information see: http://ec.europa.eu/transport/themes/urban/studies/doc/2012-04-urban-freight-transport.pdf

Interreg Europe Programme (formerly Interreg IVC)
The programme will contribute to smart, sustainable and inclusive growth in Europe by supporting (and facilitating) knowledge sharing and good practice transfer among actors of regional relevance, in order to improve regional/cohesion policy.

The objective is to improve the implementation of policies and programmes for regional development, principally of programmes under the Investment for Growth and Jobs goal and, where relevant, programmes under the ETC goal, by promoting exchange of experience and policy learning among actors of regional relevance.

Funding for Interreg Europe projects is allocated through 'calls for project proposals' which are certain times during the year when applications can be submitted. Applications are submitted online, via Interreg Europe's online system. Terms of reference is published for each call.

Eligible entities: Local Administration, universities, NGOs

For more information see: http://www.interreg4c.eu/interreg-europe/

EUREKA Individual Projects

Aim/Objectives/Targets: EUREKA individual projects follow a bottom-up approach which means that any project in any kind of technology can receive support, so long as the business plan is good.
The consortium is coordinated by a SME in partnership with a R&D entity. Each country has a consortium. Only EUREKA member countries can participate.
For more information see: http://www.eurekanetwork.org/individual-projects

EUREKA / EUROSTARS

Aim/Objectives/Targets: Eurostars aims to stimulate SMEs to lead international collaborative research and innovation projects by easing access to support and funding. It is fine-tuned to focus on the needs of SMEs, and specifically targets the development of new products, processes and services and the access to transnational and international markets.
The consortium is coordinated by a SME in partnership with a R&D entity.

For more information see: http://www.eurostars-eureka.eu/ ; http://www.eurostars-eureka.eu/home/guidelines

Priority Axis	Investment Priorities / Objectives		JAP Actions Financing
Horizon 2020 Programme			
Smart, Green and Integrated Transport	Smart, Green and Integrated Transport (SGI-T)		1.1; 2.1.
Secure, Clean and Efficient Energy	Clean and Efficient Energy (CEE)		2; 5.2.1.
European Transport	European Transport (EurT)		5.1-5.2.
Digital Agenda	Digital Agenda –Mobility (DA-M)		2.2; 3.1-3.2.
Transport	Urban mobility (T-UM)		3.1-3.6.
	Freight distribution systems (T-FDS)		3.3.
Interreg Europe Programme			
Priority Axis 1 - Research, Technological Development and Innovation	Investment priority 1(a): Enhancing R&D&I infrastructure and capacities to develop R&I excellence and promoting centres of competence, in particular those of European interest.	Specific Objective 1.1 Improve the implementation of regional development policies in particular programmes for Investment for Growth and Jobs and, where relevant, ETC programmes, in the field of research and innovation infrastructure and capacities.	1.1-1.3; 2.1-2.3; 5.1-5.2.
	Investment priority 1(b) Promoting business investment in R&I and developing links and synergies between enterprises, R&D centres, in particular product and service development, technology transfer, eco innovation.	Specific Objective 1.2 Improve the implementation of regional development policies, in particular programmes for Investment for Growth and Jobs and, where relevant, ETC programmes, in the field of research and innovation infrastructure and capacities. Investment for Growth and Jobs that support the delivery of innovation by actors in regional innovation chains in areas of "smart specialisation" and innovation opportunity. Development of R&D driven clusters, support for triple-helix cooperation and business activities in innovation.	1.2 3.1; 3.6; 4.1-.4.2; 6.1-6.3. 7.3
Priority Axis 3 - Low Carbon Economy	Investment priority 4(e) Promoting low-carbon strategies for all types of territories, in particular for urban areas, including the promotion of sustainable multi-modal urban mobility.	Improve the implementation of regional development policies and programmes, in particular programmes for Investment for Growth and Jobs and where relevant, ETC programmes, addressing the transition to a low-carbon economy.	1.1-1.2; 2.1; 2.3; 3.1-3.3; 5.1-5.2.
EUREKA	EUREKA Cluster		3.4-3.6; 7.3.
	EUREKA individual projects		3.1-3.3.
	EUROSTARS		3.1-3.3.

Tab. 6 – European initiatives

JAP ACTIONS AND THEIR POSSIBLE FUNDING

The following table summarises the outcomes of the analysis. It reports the possible regional or international funding sources for each action of the JAP.

Action	FUNDING INSTRUMENTS - REGIONS				INTERNATIONAL
	Firenze	Valencia	Lisbon	Oltenia	
1.1	ROP	ROP	ROP	ROP	INTERREG H2020 SGI-T
1.2	FSE	ROP	ROP	ROP	INTERREG H2020-CEE
1.3	FSE	ROP	-	ROP	INTERREG
2.1	ROP	ROP	ROP	ROP	H2020 SGI-T H2020-CEE INTERREG
2.2	ROP	ROP	ROP	ROP	H2020- DA-M INTERREG
2.3	ROP	ROP	-	ROP	INTERREG
3.1	ROP	ROP	ROP/POSEUR	COP	EUREKA/EUROSTARS EUREKA IP H2020- DA-M H2020- T-UM INTERREG
3.2	ROP	ROP	ROP	COP	EUREKA/EUROSTARS EUREKA IP H2020- DA-M H2020- T-UM INTERREG
3.3	ROP	ROP	ROP/POSEUR	ROP	EUREKA/EUROSTARS EUREKA IP H2020- T-UM H2020-T-FDS INTERREG
3.4	ROP	ROP	-	COP ROP	EUREKA Cluster H2020- T-UM INTERREG
3.5	ROP	ROP	-	ROP	EUREKA Cluster H2020- T-UM INTERREG
3.6	ROP	ROP	-	COP ROP	EUREKA Cluster H2020- T-UM INTERREG
4.1	ROP	HCOP	ROP	POCU A5	INTERREG
4.2	ROP	HCOP	ROP	POCU A5	INTERREG
5.1	ROP	ROP	ROP/POSEUR	COP ROP	H2020-EurT INTERREG
5.2	ROP	ROP	ROP	COP ROP	H2020- EurT INTERREG
6.1	ROP	ROP	ROP	COP ROP	INTERREG
6.2	ROP	-	-		INTERREG
6.3	ROP	ROP	-	COP ROP	INTERREG
7.1	ROP	-	-	-	-
7.2	ROP	ROP	-	-	-
7.3	ROP	ROP	-	ROP	EUREKA Cluster INTERREG
7.4	ROP	ROP	ROP	-	-

Explications for the acronyms in the table:

ROP = Regional Operational Programme

POSEUR = Resources Operational Programme

COP = Competitiveness Operational Programme

HCOP = Human Capital Operational Programme (Valencia)

FSE = Human Capital Operational Programme (Firenze)

POCU = Human Capital Operational Programme (Romania)

REFERENCES

Enabling synergies between European Structural and Investment Funds, Horizon 2020 and other research, innovation and competitiveness related European Union programmes
http://ec.europa.eu/regional_policy/sources/docgener/guides/synergy/synergies_en.pdf
Europe 2020 Strategy
http://ec.europa.eu/europe2020/index_en.htm
Regions of Knowledge – Work Programme
http://ec.europa.eu/research/participants/data/ref/fp7/88410/q_wp_200801_en.pdf
Innovation and growth
https://ec.europa.eu/jrc/en/science-area/innovation-and-growth
Flagship Initiative for a resource-efficient Europe under the Europe 2020 strategy
http://ec.europa.eu/resource-efficient-europe/
Innovation Union flagship
http://ec.europa.eu/research/innovation-union/index_en.cfm
Horizon 2020 and possible synergies with Structural Funds through Smart Specialisation Strategies, Dimitri Corpakis
http://www.apre.it/media/64424/corpakis_roma_may1612.pdf
Horizon 2020, Synergies with Structural Funds
Joerg Niehoff
https://ec.europa.eu/research/era/pdf/cofund-2014-infoday/7_synergies_p2p.pdf
EU Structural Funds; Optimising synergies between ESIF and H2020
http://ec.europa.eu/research/infrastructures/index_en.cfm?pg=structural_funds
Smart Specialisation Strategy, Tuscany Region
http://s3platform.jrc.ec.europa.eu/regions/ITI1/tags/ITI1
Strategy for R&D and Innovation in Spain
http://www.idi.mineco.gob.es/stfls/MICINN/Investigacion/FICHEROS/Estrategia_espanola_ciencia_tecnologia_Innovacion.pdf
Strategy for Science and Innovation in Portugal
http://www.oecd.org/portugal/sti-outlook-2012-portugal.pdf
Strategy for R&D and Innovation in Romania
http://uefiscdi.gov.ro/articole/3698/Strategia-de-Cercetare-si-Inovare-2014-2020-versiunea-tehnica.html

8.2. SHORT TERM ACTIVITIES AND FINANCIAL PLAN OVERVIEW

The JAP has been structured so that it describes the strategies for the medium-long period, and also for achieving specific objectives for each action in the short term by defining the actors and the necessary means for the its success of the JAP and its short term objectives.

It also identifies the specific actions that have to be carried out in order to achieve the specific targets.

Therefore, the objective of this chapter is to give a synthetic and unitary view of the actions, their overall objectives and of the specific activities to be developed in the short term and their priorities.

For “short term targets and activities” we mean those to be carried out in the last part of the DOROTHY project and just after its termination (6 - 12 months after).

These activities are aimed at launching the implementation of the actions, developing in the privileged context of the DOROTHY project and, under the mentoring framework of the more experienced clusters, the preliminary steps to facilitate the further development of the actions themselves.

Based on the elements included in all the action descriptions, an overall financial plan for the JAP has been synthesised and reported in this chapter.

In particular, for each action the reported elements are:

- The objectives of the overall action.
- The short term targets and activities.
- The players involved in the actions and other stakeholders.
- The resources needed for the implementation of the full actions over a medium term horizon (1 - 3 years) and the hypotheses under which the evaluation has been formulated.
- The potential European market that the implementation of each single action could generate for the Regional Clusters (only for the actions where this information is significant).

Finally a synthetic table reporting the overall financial plan for the JAP is reported.

Thematic Area: Regulations and policies
The main actors of this group of actions are public administrations, as they are responsible for regulations and policies. The DOROTHY project includes among its partners public authorities at the local and regional level, facilitating the dissemination and implementation of these actions.

ACTION ID & TITLE:
1.1. SULP
Objectives for the action:
The final target of the action is the adoption of a SULP by the local municipality of the cities in the territory of the DOROTHY clusters. To reach this target this action has been designed in order to give the regions instruments to define regulations targeted at supporting and incentivising the elaboration of a SULP for cities over a certain population.

Short term targets and activities
The clusters will activate contacts with the regional body responsible for mobility in order to evaluate the strategy about SUMP/SULP and discuss possible incentives to cities for the adoption of a SULP. In the meetings at least the DOROTHY partner cities must be involved. The use of structural funds or other regional funds for the purpose must be discussed.

The meeting will be prepared through the preparation of suitable documentation (eventually in the local language).

Each local team has to report the results of the meetings and the agreements reached.

Role of the clusters and of the main stakeholders:

Local cluster as a whole	To prepare and to submit to the region a detailed design of the action.
Regions	To reach a final decision on the basis of the clusters' proposal. To define a financial framework for the action. Implementation and to set up incentives for municipalities.
Municipalities	To develop SULPs co-financed by the regions.
Industrial Partners	To cooperate with clusters to set up the proposal. Active participation in SULP development as interested stakeholders.
Consultancy Companies	To participate in tenders for consultancy and SULP development.
RTI and Universities	Active participation in the cluster activities to define the design of the action. Possible consultancy to regions and municipalities during the implementation.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Studies, drafting of projects and technical assistance. - Elaboration of technical guidelines. - Support by the regional administrations in the implementation of the SULP in the most important cities in the four regions, according to different situations (to be partially funded {max 50%} by local municipalities). TOTAL	200,000€ 1,000,000€ 1,200,000€
Possible funding sources	
Regional Operational Plans for the four regions. Specific regional funds. Municipal funds. Interreg programme in its various editions. Horizon 2020 Smart, Green and Integrated Transport.	

Potential market for the Regional Clusters	
Quantification criteria	Potential EU Business volume
With reference to the four DOROTHY regions, the number of cities that can potentially develop and implement SULPs (small, mid and large cities with at least 50,000 inhabitants) is 31, with an estimated population of about 4 million people (encompassing about 31% of the total population of these regions). From the point of view of the potential market directly created by such an initiative, we can assume as an average reference for the economic value for the development of a SULP the amount of 60,000€/SULP; in this case a potential market of about 2,000,000€ would be raised. The main effect is that the development of specific SULPs within the DOROTHY regions can improve the scientific qualification and references of the clusters' companies, giving them the opportunity to be more competitive on the market of SUMP-SULP development and Urban Logistics planning generally, even outside the DOROTHY regions However, it is very difficult to quantify a specific economic benefit for the clusters.	Not determined

ACTION ID & TITLE:
1.2. Urban Logistics policies, regulations and supporting technologies
Objectives for the action
The target of this action is to create a tool addressed to the cities for spreading the knowledge of innovative solutions for Urban Logistics and easing the decision making process.

Short term targets and activities
To design a guidebook or catalogue of regulations policies and related supporting technologies and organisational solutions (structure of the document, table of contents, writers, etc.). A specific objective for the short term will be the publication of a first short document to be distributed to politicians, public servants and decision makers; it will be composed of forms describing the most important regulations and their characteristics.

To create a directory of the available publications about the same themes that could be useful for the purpose of having a clear view of the state of the art in the sector.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare and to submit to the region a detailed design of the action.
Regions (the 4 together)	To evaluate the cluster proposal and finance the unitary development of the tool.
Municipalities	End users of the tool.
Industrial Partners	Cooperate with clusters to set up the proposal.
Consultancy Companies	To participate in the tender for the preparation of the handbook.
RTI and Universities	Active participation in the clusters activities to define the design of the action. Possible involvement during the implementation phase.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Comprehensive catalogue of Urban Logistics policies and regulations, with guidelines for their implementation and detailed descriptions of the supporting technologies – over a period of about 12 months. - Development of an interactive decision support system for local authorities, supporting the analysis of the current Urban Logistics situation and of possible different solutions according to selected targets and the specific urban context over a period of about 24 - 36 months. TOTAL	40,000 - 60,000€ 200,000€ 250,000€
Possible funding sources	
Regional Operational Plans for the four regions. Specific regional funds. Municipal funds. Interreg programme in its various editions. Horizon 2020 programme.	

Potential market for the Regional Clusters	
Quantification criteria	Potential EU Business volume
It is an action for supporting municipalities, so no market is forecast.	Not determined

Thematic Area: Standardisation and monitoring

ACTION ID & TITLE:
2.1 Urban logistics performance index
Objectives for the action:

The main objective of this action is to develop an index to evaluate the performances of the Urban Logistics system of cities, and a benchmarking model for comparing the level of development between different situations. Moreover, this index will be used for the evaluation of the coherence between the existing structure of the Urban Logistics system in a certain city and the strategic targets defined by decision makers. This is mainly an RTI action, devoted to improving the awareness of municipalities and to facilitate the decision making process; moreover it can improve the professional qualifications and the competitiveness of the clusters' companies working on Urban Logistics planning.

Short term targets and activities:
To draft a project proposal for the development of the Urban Logistics performance index and submitting it for funding.

To activate contacts with the European ALICE Platform searching for synergies in developing the strategic project.

Development of a proof-of-concept application

Role of the cluster and of the main stakeholders:

Local clusters as a whole	Support the RTDI centres in fund raising.
Regions	Provide a suitable field test in accordance with local municipalities.
Industrial Partners	Cooperate with RTDI centres in the action development supplying the all the needed data.
RTDI and Universities	Main actors for this action development.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Development of a proof-of-concept application – over a period of 6 - 8 months. - Development of the methodology for the implementation of the Urban Logistics index – over a period of 18 - 24 months.	400,000€
Possible funding sources	
Horizon 2020 programme. RTDI dedicated funds (national and international).	

Potential market for the Regional Clusters	
Quantification criteria	Potential EU Business volume
Currently this is an RTI action; the market benefit could result from higher competitiveness of the companies operating in the market of the SUMP-SULP development. No quantification possible.	Not defined

Objectives for the action:
The general goal of this action is to promote the collection and the availability of harmonised and standardised data related to Urban Logistics by cities, to make them available as Open Data to the potential interested subjects and promote their dissemination and usage at the regional level.

Short term targets and activities:
To define the classes of data that could constitute the basis of a regional Open Data repository for Urban Logistics. To present this structure at least to the body responsible for mobility and information systems in the regions.
To evaluate the state of the art and the application of suitable policies for activating the practice.
To set up pilot actions in some cities.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare and to submit to the regions a detailed design of the action.
Regions	To promote the development of the action by defining a suitable set of incentives for municipalities and other relevant data owners. To put data at disposal in a suitable format. To give financial support to this action using relevant funds (ROP for instance).
Municipalities	Cooperate with the action implementation, getting available data and make them available to set up pilot projects.
Industrial Partners	Cooperate with clusters to set up the proposal. Could participate in future tenders for the implementation of the foreseen platform.
Consultancy Companies	Should participate to future tenders for implementation of the foreseen platform.
RTI and Universities	Active participation in the clusters' activities to define the design of the action. Assistance to the regions to follow up the action development.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Technological analysis: scouting, analysis, definition of (open/closed) data sets which are available and to be collected or made available in the Urban Logistics domain (data mining, data format, data hosting, availability and accessibility, data exchange / transmission, data protection, etc.). - Harmonisation and standardisation processes (specification). - Definition and implementation of policies and rules. - Dissemination activities. - Supporting activities. - Implementation of a pilot case.	450,000€
Possible funding sources	
Regional Operational Programmes for the four regions. Specific regional funds. Interreg programme in its various editions. National funds. Horizon 2020 programme.	

Potential market for the Regional Clusters	
Quantification criteria	Potential EU Business volume
The scope of this action is to start up the process to get relevant data available and ready to be processed. The market potential of the Open Data platform is examined in action 3.2, which is related to the industrial exploitation of Open Data.	Not determined

ACTION ID & TITLE:
2.3. Regional Urban Logistics accreditation system

Objectives for the action:
This action aims to encourage the regional authorities to implement a regional logistics operators' accreditation process; this is to be supported by a specific regional ICT platform for managing all the information about requests from logistics operators for obtaining access or other kinds of permissions from the municipalities.

The target is to develop a specific marketable product which addresses a wide number of European realities.

Short term targets and activities:
To develop a comprehensive plan in cooperation with the interested companies and the clusters.
To carry out meetings with the regions for discussing the adoption.
To define the structure of the possible product and a test field to validate the prototype.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare and to submit to the regions/municipalities a detailed design of the action.
Regions	To define a financial framework for the implementation of the action. To cooperate in the specification of the platform. To define a test field for the pilot action.
Municipalities	Cooperate with regions for pilot action (s).
Consultancy and Technology Companies	To participate in tenders for the design and implementation of the platform (both pilot and commercial phases).
RTI and Universities	Active participation in the clusters' activities to define the design of the action. Possible consultancy to regions and municipalities during the implementation.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Implementation of the platform in a first marketable version.	750,000€
Possible funding sources	
Regional Operational Programmes for the four regions. Specific regional funds. FTI programmes. Interreg programme in its various editions.	

Potential market for the Regional Clusters	
Quantification criteria	Potential EU Business volume
The European reference market is 350 regions with an average number of 10 cities per region. The average value of the single installation can be of 50,000€ per region and 10,000 – 15,000€ per city. In addition, an annual value of about 15 – 20% for maintenance and upgrading of the installed systems can be assumed. Globally we have a 70M€ for investments and an annual additional market of 10.5 - 14€ (considered over the whole market). If we consider a product lifetime of 7 years and a typical distribution of sales over the period, globally we obtain a potential European market of about 80M€ over the period. A market share of 15 -20 % by the companies of the DOROTHY Regional Clusters would mean cumulated revenues over the period of 12 -16M€, for an annual turnover varying from 0.6 - 4M€	European: about 80M€ Regional Clusters' potential market: 12 - 16M€

Thematic Area: Regional Clusters' development
ACTION ID & TITLE:
3.1. Innovative ICT solutions to support advanced Urban Logistics regulation schemes

Objectives for the action:
The objective of this action is the development of an ICT platform capable of supporting the implementation by local administrations of advanced goods distribution regulation schemes in cities.

Short term targets and activities:
To start identifying and specifying a possible class of products to be developed.

To evaluate the possibility setoff setting up a team for the submission of proposals for the development of products/ projects in the field and identifying other possible funding sources.
To prepare a match-making event for the specific application field.
To evaluate the possibility setoff setting up a pilot project.
To push regions to launch specific tenders for the implementation of similar tools.

Role of the clusters and of the main stakeholders:

Local cluster as a whole	To prepare a match making event to facilitate the building of an international team devoted to developing the ICT platform. To sensitise regions in order to promote ICT platform use within their territory.
Regions	To sensitise municipalities about the ICT Platform. Provide (if possible) funding for its implementation through ROP or other sources.
Municipalities	End users of the platform.
Industrial Partners	To be proactive in the design, development and deployment of the platform.
RTI and Universities	Active participation in the cluster activities to define the design of the action / product. Possible consultancy to regions and municipalities during the implementation.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
Foreseen activity for the next 2-3 years: - Product specification and development. - Implementation of a pilot project for testing and validating the product.	700,000€
Possible funding sources	
Regional Operational Programmes for the four regions. Specific regional funds. FTI programme. EUREKA / EUROSTARS programmes. Horizon 2020 programme (including SME instrument).	

Potential market for the Regional Clusters	
Quantification criteria	Potential EU Business volume
The reference market for this product is constituted by cities over 50,000 inhabitants. A first evaluation of the Italian and Spanish market has been carried out and then extrapolated to the value of the potential market in Europe over a period of 7 years. Assuming different market shares for the different realities, an overall value of the potential cumulated market for the Regional Clusters has been defined.	Total potential EU market over 300M€ Regional Clusters' potential market: over 28M€

ACTION ID & TITLE:
3.2 Open data architectures to support Urban Logistics

Objectives for the action:
This action aims to stimulate social innovation in the Urban Logistics domain, by incentivising new, better and more integrated Urban Logistics services for public authorities, transport consultants, freight transport managers, Urban Logistics operators and citizens, by freeing the potential still hidden in the Urban Logistics stakeholders' data, not yet publicly available and/or shared.

These actions propose to design and implement a standard architecture of an Urban Logistics Open Data Platform (ULODaP), an inexpensive city HUB for data (mainly open, closed, static, dynamic, rarely varying, in near real time, etc.) specialising in the Urban Logistics domain, which can be developed and/or adopted by a city of any size at the regional level.

Short term targets and activities:
To evaluate the possibility of setting up a team for the submission of proposals for the development of products/ projects in the field.
To evaluate the implementation of a match-making event for the specific application field.
To evaluate the possibility of setting up a pilot project.
To activate a debate with the regional authorities and some significant cities in the regions to push for the implementation of the action.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare a match making event to facilitate the building of an international team devoted to developing the Open Data project. To sensitise regions in order to promote a pilot test case within the clusters' territory.
Regions	To sensitise municipalities about the Open Data platform opportunity. Provide (if possible) funding for pilot implementation through ROPs or other sources.
Municipalities	Data suppliers and end users of the Open Data system. Provide test sites for the prototype.
Industrial Partners	To be proactive in the design, development and deployment of the system.
RTI and Universities	Active participation in the cluster activities to define the design of the action / Open Data system. Possible support to companies, regions and municipalities during the implementation.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Draft of a project proposal. Design and implementation of a prototype of the envisaged Urban Logistics Open Data platform. - Implementation of a marketable version of the platform and implementation of 4 pilot cases.	500,000€
Possible funding sources	
Regional Operational Programmes for the four regions / Competitiveness Operational programme. Specific regional funds. FTI programmes. EUREKA / EUROSTARS programmes. Horizon 2020 programme (SME instrument).	

Potential market for the Regional Clusters	
Quantification criteria	Potential EU Business volume
For evaluating the total market value, we made the following assumptions: The reference market for this product is constituted by cities over 50,000 inhabitants. An evaluation of the European market has been carried out with a hypothesis of a growing adoption rate over a 7 year time horizon. Moreover, a 10% market share for the clusters' companies has been considered. Revenues both from direct sales and from yearly services have been considered. Moreover, there is an indirect market represented by the apps developed starting from Open Data system; this market is probably greater than the one of Open Data itself but has not been quantified in this document.	Total potential EU market over 31M€ Regional Clusters' potential market: 3.2M€

ACTION ID & TITLE:
3.3 Proximity delivery areas

Objectives for the action:
The action is targeted at developing within the clusters products and applications based on the PDA schemes and concepts devoted mainly to B2B applications.
Two different specific objectives will be pursued:
Development of innovative design criteria for the implementation of PDAs around limited traffic zones (LTZ), historical centres and other urban environments, and the definition of their main effects/impacts. These criteria will include not only technical aspects, but also all the aspects linked to their implementation in cities.
The diffusion of the adoption of the PDA schemes in the cities of the DOROTHY regions.

Short term targets and activities:
To evaluate the possibility of settingup a team for the submission of proposals for the development of products/projects in the field.
To evaluate the implementation of a match making event for the specific application field.
To evaluate the possibility of setting up a pilot project for developing the technical solutions and the operational schemes.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare a match making event to facilitate the building of an international team devoted to developing the PDA systems. To sensitise regions in order to promote at least one pilot case test within the Regional Clusters' territory. To sensitise logistics companies and commercial operators (shopkeepers etc.) about this opportunity.
Regions	To sensitise municipalities about the PDAs opportunity. To provide a financial framework for the implementation of a pilot through ROP or other sources.
Municipalities	Beneficiary and end users of the PDA system. To facilitate the implementation of such a system. Directly by financing it, indirectly by providing conditions to support their set up.
Industrial Partners	To be proactive into the design, development, deployment of the system.
RTI and Universities	Active participation in the cluster activities to define the design of the action. Possible support to companies, regions and municipalities during the implementation.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
Development of a first prototype, including all the engineering work; first pilot application in a DOROTHY partner city.	700,000€
Possible funding sources	
Regional Operational Programmes for the four regions. Specific regional and municipal funds. FTI programmes. EUREKA programmes. Horizon 2020 programme (SME instrument). Interreg programmes.	

Potential market for the Regional Clusters	
Quantification criteria	Potential EU Business volume
The total market for PDA solutions has still to be evaluated. According to a very preliminary market evaluation, it is possible to estimate the total market at the EU level in 100 applications with an average value between 200,000 and 400,000€. For estimating the potential market a period of 7 years has been assumed. A 15% market share has been assumed for the Regional Clusters' companies.	Total potential EU market: 50M€ Regional Clusters' potential market: 7M€

ACTION ID & TITLE:
3.4 Cooperation agreement among the DOROTHY clusters
Objectives for the action:
Definition of a cooperation framework among the four regional innovation clusters coming from the DOROTHY project as a strategic perspective for the implementation of the JAP, but also for exploiting short and medium term cooperation opportunities based on complementarities or common interests.

Short term targets and activities:
To prepare the text of the agreement.
To sign the agreement within the deadline for the preparation of the JAP.
To point out possible future modes and themes for cooperation among the clusters and their individual members.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
The four Regional Clusters signed the agreement during the Policy Event workshop organised in Valencia in October 2015. This represents a first step towards strengthening cooperation between the companies of the clusters, which is aimed in the short term at implementing the actions of the JAP. The cost of this action originates from the efforts sustained by the clusters to develop this collaboration. It can be estimated as 1 person month per year for the next 4 years.	80,000€
Possible funding sources	
Clusters' own resources.	

ACTION ID & TITLE:
3.5. Cooperation with other existing clusters and networks
Objectives for the action:
The objective of this action is to strengthen collaboration between clusters within regions participating in the DOROTHY project as well as with clusters of regions outside the project.

Short term targets and activities:
To identify already existing clusters and European or international networks or platforms to connect with.
To evaluate the possibility of joining some specific European initiatives about clusters (clusters' networks or thematic Urban Logistics platforms).
To evaluate the possibility of including the DOROTHY clusters in some consortia for the participation in significant European and national calls specifically addressed to clusters and to carry out the preliminary actions.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Analysis of the existing platforms, networks and initiatives about Urban Logistics which can be attractive for the DOROTHY clusters. - Selection of the initiatives to be participated in by the clusters and set up the collaboration. - Establishment of permanent relationships with other clusters at European level but also in non-EU countries (mainly South America and Eastern Europe). - Participation in thematic initiatives. - Scouting the most promising European calls specifically addressing clusters.	90,000€
Possible funding sources	
Clusters' own sources. European and national funds for clusters' development. EUREKA cluster.	

Thematic Area: Training and education

As a common point in all regions the need was detected to promote actions aimed at specific training in Urban Logistics. Two training levels have been designed: one planned as courses aimed at a specific skilled audience and a second one devoted to high-level training to create a master's degree qualification.

ACTION ID & TITLE:
4.1. High level international Master's Degree in Urban Logistics

Objectives for the action:
Definition of a Master's Degree in Urban Logistics to be supported by the regions in a unitary perspective.

Short term targets and activities:
To prepare an operational plan for setting up the initiative including all the elements to present the proposal to possible sponsors or funding institutions (educational plan, targets, budget, organisation, possible skills for teaching, etc.).

Signature of an agreement among the organising bodies.

Definition of possible sponsors and funding institutions (public and/or private) and activation of the relevant contacts.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare and to submit to the regions a detailed design of the action. To promote a real internationalisation of the master's degree course by developing the collaboration among universities and research centres.
Regions	To support the action through specific funds for high level education and training.
Industrial Partners	Cooperate with clusters and universities to set up the action.
Universities	Main stakeholders of this actions.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Definition of an agreement among all the participating universities and institutes. - Organisation of the master's degree course. - Set up a first edition of the course.	Around 300,000€
Possible funding sources	
Interreg (for definition of common policies). Specific national and regional funds on education. Regional Operational Programme. Human Capital Operational Programme. European programmes regarding education. Students' application fees. Private sponsorships.	

ACTION ID & TITLE:
4.2 Staff training for personnel on new Urban Logistics schemes and techniques

Objectives for the action:
To create within the clusters a mechanism for ensuring a continuous updating of knowledge on crucial and advanced topics.
Provide professional training on advanced and specialised topics in a limited time with an intensive programme.
Definition of a set of training initiatives to be included by the regions in their planning for professional training and education.

Short term targets and activities:
To present the initiative to the regional bodies responsible for education and professional training for including the initiative in the use of funds.
To set up contacts with the other organisations eventually needed to carry out the action.
To define the first set of courses to be delivered on the market (contents, duration, targets, organisation, budget, etc.).

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare and to submit to the regions a detailed design of the action. To define training fields and priorities according to the needs of clusters' companies.
Regions	To include these courses in the framework of the initiatives funded by European resources for education and training. To involve the regional bodies in charge of organising professional courses and training activities in the organisation of these initiatives.
Industrial Partners	To cooperate with clusters and universities to set up the action and especially in defining the most appropriate training needs.
RTI and Universities	Together with industrial companies, that represent the market for this action, universities are main stakeholders of this action.

Evaluation of resources needed to implement the action	
Quantification criteria	Action budget
- Organise a set of 6 courses for each cluster in a period of 2 years with an average cost of 5,000€/course.	120,000€
Possible funding sources	
Interreg (for definition of common policies). Specific national and regional funds on education. Regional Operational Programme. Human Capital Operational Programme. European programmes regarding education. Students' application fees. Private sponsorships.	

Potential market for the Regional Clusters	
Quantification criteria	Potential EU Business volume
6 editions of courses each year for 15 persons with an average income per person of 300€ in each one of the four regions.	750,000€

Thematic Area: Urban Organisation
The JAP aims to create a major impact at the urban level in the organisation of urban space, forms of access for goods, land use, etc. The actions of this Thematic Area will directly affect the urban structure of the city.

ACTION ID & TITLE:
5.1. Supporting the use of "Cargo bike" for delivery in urban centres

Objectives for the action:
The action is targeted at creating the framework conditions to spread the use of this kind of service for goods delivery, mainly through two mechanisms:
Experimenting with new applications and distribution schemes in urban environments, to be further extended to an increasing number of realities.
Defining and experimenting with a set of incentives and regulations capable of supporting the use of cargo bike services by cities.

Short term targets and activities:
To increase the interest of freight distributors, cities, regions to define possible incentives to use this specific distribution technique.
To evaluate the possibility of setting up a team for the submission of proposals for the development of products / projects in the field.
To evaluate the possibility of setting up a pilot project.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare and to submit to the regions and to the Urban Logistics operators a detailed design of the action.
Regions	To set a possible incentives framework for municipalities to increase the use of this Urban Logistics modality. To sensitise municipalities to the use of cargo bikes To finance the development of innovative schemes for the use of cargo bikes in cities.
Municipalities	To define municipal plan / supporting actions to increase the use of this clean modality. To carry out innovative pilot projects for the use of cargo bikes.
Industrial Partners	Logistics operators: taking into the account the synergetic actions made by local government they have to increase the use of this modality.
RTI and Universities	Active participation in the cluster activities to define the design of the action.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Design of the schemes to be implemented and the supporting tools. - Implementation of 4 pilot experiences in 4 cities of the DOROTHY regions with different service schemes. - Assessment of the pilot projects carried out and definition of efficient service and business schemes. - Definition of a set of possible incentives for the adoption of cargo bike services in cities.	750,000€
Possible funding sources	
Regional Operational Programmes for the four regions. Competitiveness Operational Programme. Specific regional and municipal funds. Horizon 2020 programme. Interreg programmes. Clusters' own resources.	

Potential market for the Regional Clusters	
Quantification criteria	Potential EU Business volume
The potential European market for this kind of service is huge. However, this market at the moment is mainly exploited at a local level, so that the reference market for the clusters' companies has been considered only for the DOROTHY regions over a 7 year period.	Regional Clusters' potential annual market: 33M€

ACTION ID & TITLE: 5.2 Organising a network of operators in the cities for implementing proximity delivery points for parcels

Objectives for the action:
The action is based on the implementation of a network of operators in different ways and according to the local needs and characteristics, in order to achieve the following objectives:
To define an Urban Logistics scheme for the last mile delivery of parcels, where the most convenient way for the operators and couriers would be to refer to the proximity delivery points in the city centres rather than home/business delivery.

To promote urban rules and planning tools for the cities in order to support the development of the operators' network with the aim of achieving sustainable Urban Logistics.
To implement a technological logistics platform to manage the proximity delivery points (hardware and software) for "collecting and distributing" the delivery information to all the subjects involved.

Short term targets and activities:
To stimulate the interest of the cities to adopt a similar methodology of parcels' delivery.
To study a set of incentives for setting up a similar system, discussing it with the cities and the local Urban Logistics operators.
To define the characteristics of an ICT tool capable of managing this scheme, so that it interfaces the information systems of different logistics operators.
To define all the regulations and normative aspects of this kind of service.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare and to submit to the regions and to the Urban Logistics operators a detailed design of the action.
Regions	To set a possible financial framework for the implementation of some pilot projects. To sensitise municipalities to the use of this Urban Logistics scheme.
Municipalities	Define policy tools to support this modality. Support the definition of an adequate normative framework. Facilitate the pilot deployment and evaluation.
Industrial Partners	Logistics operators: to define all the operational and normative aspects of the scheme; to specify interfaces between the ICT platform to manage this schemes and their information systems; to make them available to carry out pilot projects.IT companies: to specify and develop the ICT platform for managing this scheme.
RTI and Universities	Active participation in the cluster activities to define the design of the action. Support companies in the definition of all the operational and normative issues.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Definition of the characteristics of the ICT tool and implementation of a first pilot case. - Definition of all the normative and operational aspects of the service and the related business model. - Implementation of 2 pilot experiences in different cities from the DOROTHY regions for validation of the adopted solutions.	600,000€
Possible funding sources	
Regional Operational Plans for the four regions Competitiveness Operational Programmes. Specific regional and municipal funds. FTI programmes. EUREKA programmes.	

Thematic Area: Innovation and scientific cooperation

This Thematic Area is focused on the adoption of tools to increase the level of innovation in the clusters.

ACTION ID & TITLE:
6.1 A web based platform for supporting match making and cooperation among the clusters for industrial cooperation and fund searching

Objectives for the action:
To define a platform for the management of information about the Regional Clusters and allowing electronic match making and searches and other useful functions to support the future cooperation.

To set up a first preliminary version of the platform for hosting the profiles of the clusters' members, and some other functions.

To make this platform a permanent part of the IT tools used by the clusters and embedded in their web tools.

This action will be one of the first achievements of the already signed clusters agreement

Short term target and activities:
To define the main characteristics of the platform, budgeting its implementation, finding the organisational model to make it available to the clusters.
To evaluate the organisation of a test event with the platform.
To evaluate a first step implementation of the platform.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To approve and to finance directly this action.
Industrial Partners	Participate in all the initiatives set up by clusters.
RTI and Universities	Active participation in the clusters initiatives.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Adoption and customisation of a first version of the platform. - Set up of a first test event. - Cost of the management of the platform for 3 years .	160,000€
Possible funding sources	
Clusters' own resources. European and national funds for clusters' development. Regional Operational Plans for the four regions. Competitiveness Operational Programmes.	

ACTION ID & TITLE:
6.2 Cooperation protocol among the research centres and the universities of the regions for developing common research lines

Objectives for the action:
Definition of a cooperation agreement among research centres and universities.
Development of common research lines and activities.

Definition of a set of specific actions to improve cooperation among research institutions and companies within the clusters.

Short term target and activities:

To involve all the universities or the research centres active in Urban Logistics belonging to the regions in the debate about possible forms of cooperation.

To organise an event, with the participation of universities, open to the Regional Clusters for exchanging information about research activities and existing products.

To define a set of possible cooperation areas and to sign an agreement protocol about universities and research centres (and eventually companies) for developing joint activities in the field.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To integrate the activities of industrial and research partners.
Industrial Partners	To enhance their motivation to innovate and to cooperate with universities and research centres.
RTI and Universities	To exchange information; to define common research and innovation lines; to integrate their activities with the industrial companies.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Promotion of local events. - Endorsement of Regional Clusters' cooperation over a 4 year period.	80,000€
Possible funding sources	
Clusters' own resources. European and national funds for clusters' development. University funds for internationalisation.	

ACTION ID & TITLE:
6.3. Set up of an international observatory on Urban Logistics technologies and practices

Objectives for the action:
Definition of the objectives, structure, organisation, players to be involved, eventual IT platforms etc. for setting up the observatory.
Definition of the interfaces with other European or national networks, platforms and institutions in the field useful for this purpose.

Short term target and activities:
To evaluate the opportunity and possibility to set up an Urban Logistics Observatory for the clusters, taking into account the general framework of the data sources about Urban Logistics and the existence and characteristics of similar initiatives.
To define the contents, the format, the organisation and the budget for the action and scouting for eventual funding sources.
This could be the first practical cooperation matter for the above mentioned protocol and is also related to action 3.6.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare a detailed design of the action.
Industrial Partners	Cooperate with clusters to set up the proposal. Use of the observatory to innovate their activities.
Consultancy Companies	Should participate in developing the observatory's activities.
RTI and Universities	Leadership by developing concept and coordinating the action and In particular to manage the development and operation of the observatory.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
To feed existing platforms and disseminate organised results: an equivalent of half a man month over 3 years should be assured (possibly shared among several participants).	20,000€
Possible funding sources	
Clusters' own resources. European and national funds for clusters' development. Regional Operational Plans for the four regions. Competitiveness Operational Programmes. Interreg programmes.	

Thematic Area: Clusters' internationalisation
ACTION ID & TITLE:
7.1Regional Clusters' catalogue

Objectives for the action:
Implementation and maintenance of a catalogue for disseminating and promoting the clusters' qualifications and products, etc.

Implementation of a brochure with a detailed description of each company involved in the cluster (activity, products, contacts, etc.)

Short term target and activities:
To produce a catalogue of the companies, skills, expertise, research potential, etc. available in the 4 clusters.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare, update and develop the catalogue itself. To take care of the dissemination and its improvement.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
To produce and update a catalogue of the companies, skills, expertise, research potential, etc. available in the 4 clusters and in particular: - Improvement of the first version of the catalogue. - Its continuous updating. - Translation into local language of the four sections for use at the national level or in foreign countries (using the Spanish or Portuguese language). - production of all the necessary dissemination materials (CD-ROMs or printed materials for catalogues, flyers, JAP, studies for solutions, short movies, TV/Radio, web site, etc) for supporting their activities. These activities have been considered for a period of 4 years.	100,000€
Possible funding sources	
Clusters' own resources. European and national funds for clusters' development.	

ACTION ID & TITLE:
7.2 Targeted Action Towards non-EU Countries

Objective of the action:

Organisation of a series of events and initiatives to support the internationalisation of the DOROTHY clusters.

To set up a cooperation framework between the DOROTHY clusters and homologous international institutions in a series of potentially interesting countries that have already been identified.

Short term targets and activities:
Organisation of a set of actions with partners of the DOROTHY and Regional Clusters in Mexico. In particular the following initiative is foreseen:

- An international meeting (Vera Cruz or other large city) between European and Mexican main players.
- Dissemination of the all information about DOROTHY and the Regional Clusters by a delegation from DOROTHY to other institutions and public administrations.
- Operational contacts for the clusters' firms with the Mexican reality.
- Definition of other possible initiatives according to the local clusters' interests.

Contacts between research institutes and university members of the clusters and the equivalent in Colombia, Ukraine and Moldova.

Involvement of the Angolan Embassy in Portugal in first preliminary contacts.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To prepare a detailed design of the action. To organise in connection with the action leader of the mission to Mexico. To develop bilateral contacts with Colombia, Ukraine and Moldova.
Industrial Partners	Cooperate with clusters to set up the proposal. Active participation in the international mission.
RTI and Universities	Support the clusters activities involving non-EU universities for contacts and exchange of experiences.

Local clusters as a whole	To prepare a detailed design of the action. To organise in connection with the action leader of the mission to Mexico. To develop bilateral contacts with Colombia, Ukraine and Moldova.
Industrial Partners	Cooperate with clusters to set up the proposal. Active participation in the international mission.
RTI and Universities	Support the clusters activities involving non-EU universities for contacts and exchange of experiences.

ACTION ID & TITLE:
7.3 Coordination with already planned regional initiatives

Objective of the action:
Including the DOROTHY clusters in some initiatives already planned for the internationalisation of companies by the regions or by local Chambers of Commerce.

Short term targets and activities:
To scout in the different regional/national bodies for the various planned internationalisation actions and discuss with them the possible support these bodies can give to the clusters.
Organisation of specific local meetings.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	To contact all the relevant subjects involved into the deployment of internationalisation activities. To define an agenda for the cooperation with them.
Regions and Cities	To facilitate the contacts and agreements between the clusters and the bodies in charge of regional and local internationalisation.
Industrial partners	To be proactive in the participation in meetings and initiatives to present the clusters to local bodies involved in internationalisation support.

Evaluation of resources needed to implement the Full action	
Quantification criteria	Action budget
- Organisation of local meetings and promotion of the DOROTHY clusters towards regional/national bodies targeted at supporting internationalisation.	80,000€
Possible funding sources	
Clusters' own resources. European and national funds for clusters' development. Regional Operational Plans for the four regions. EUREKA cluster.	

ACTION ID & TITLE:
7.4 International Meeting in Colombia: "DOROTHY PROJECT AND NEW SOLUTIONS FOR URBAN LOGISTCS"

Objective of the action:
The action consists of organising an International Seminar about Urban Logistics in Colombia. This action would be an international event with the objective of sharing experiences about Urban Logistics in Europe and Colombia, with the possible extension to other nations in Latin America.

Short term targets and activities:
The organisation of the event within the framework of the internationalisation activities.

Role of the clusters and of the main stakeholders:

Local clusters as a whole	Contributing to the event (with the active participation in the seminar).
Universities	Organising and participating in the event.

Evaluation of resources needed to implement the full action	
Quantification criteria	Action budget
- Participation in the event; the cost has been already included in action 7.2.	Not determined
Possible funding sources	
Clusters' own resources.	

THE JAP FINANCIAL PLAN AT A GLANCE

The following table sums up the financial information reported above.

The total forecast for the JAP implementation budget is about 7.7M€. Clusters will be involved in financing actions with their own resources with about 800,000€.

The other actions should be financed by ROP, regional funds or other funding opportunities. The total EU potential market for the Regional Clusters triggered by the JAP implementation is about 87M€ over a time period up to 7 years.

Joint Action Plan Fields	action id	Action title	Cost for the implementation of the JAP action (€)	Clusters' internal efforts (€)	Potential market generated for the clusters (Europe) (€)
Regulations and Policies	1.1.	SULP	1,200,000	0	Not determined
	1.2.	Urban Logistics policies, regulations and supporting technologies	250,000	0	Not determined
Standardisation and Evaluation	2.1.	Urban Logistics performance index	400,000	0	Not determined
	2.2.	Availability of Open Data for Urban Logistics	450,000	0	Not determined
	2.3.	Regional Urban Logistics accreditation system	750,000	0	15,000,000
Regional Clusters' development	3.1.	Innovative ICT solutions to support advances in Urban Logistics regulation schemes	700,000	0	28,000,000
	3.2.	Open data architectures to support Urban Logistics	500,000	0	3,200,000
	3.3.	Proximity Delivery Areas	700,000	0	7,000,000
	3.4	Cooperation agreement between DOROTHY clusters	80,000	80,000	Not determined
	3.6.	Cooperation with other existing clusters and networks	90,000	90,000	Not determined
Training and education	4.1.	High level international Master's Degree in Urban Logistics	300,000	0	Not determined
	4.2.	Staff training for personnel on new Urban Logistics schemes and techniques	120,000	30,000	750,000
Urban Organisation	5.1.	Supporting the use of "Cargo bike" for delivery in urban centres	750,000	0	33,000,000
	5.2.	Organising a network of operators in the cities for implementing proximity delivery points for parcels	600,000	0	
Innovation and scientific cooperation	6.1.	A web based platform for supporting match making and cooperation among the clusters for industrial cooperation and fund searching	160,000	160,000	Not determined
	6.2.	Cooperation protocol among the research centres and the universities of the regions for developing common research lines	80,000	80,000	Not determined
	6.3.	Set up an international Observatory on Urban Logistics technologies and practices	20,000	20,000	Not determined
Clusters' internationalisation	7.1.	Regional Clusters' catalogue	100,000	100,000	Not determined
	7.2.	Targeted action towards non-EU Countries	330,000	150,000	13,500,000
	7.3	Coordination with already planned regional initiatives	80,000	80,000	
	7.4	International Meeting in Colombia: "DOROTHY PROJECT AND NEW SOLUTIONS FOR URBAN LOGISTCS"	included in act 7.2	included in act 7.2	
			7,660,000	790,000	86,950,000

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