

Urban Mobility and Freight Distribution Service: the 14 Cities of MEROPE Interreg III B Project

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Abstract – MEROPE is an INTERREG III B MEDOCC (Western Mediterranean) area project started on September 2002 and ending on September 2004. In particular MEROPE aims to face the following axe and measure of INTERREG III B work plan: axe 3 -Transport systems and information society; Measure 3.4 -Innovative communication and information technologies for the development of the territory.

The general objective of MEROPE project is to investigate and develop evaluation models and telematic instruments to manage and control mobility and logistic in urban and metropolitan areas in order to allow the development and application of innovative information and communication technologies (ICT) as a support of integrated transport systems. The expected impacts of the project are: a greater economic competitiveness, an improved mobility and quality of life.

1. The Interreg III B Programme

Interreg III is the initiative of the European Community for the period 2000 – 2006, financed by the FEDER (Fond Européen de Développement Régional).

The MEDOCC programme is included in the Interreg programme (in particular in the section of cooperation among countries) and it allows the realization of projects that aim to a lasting, harmonious, and balanced development and to a better territorial integration within the western Mediterranean area, that includes regions of the south of Spain, of France, of Italy and of Portugal.

The global objectives of the programme are: to increase the territorial competitiveness of the MEDOCC area in order to make it a relevant area of economic integration; make the policy for the territorial development more coherent within the cooperation area through a wider institutional integration; encouraging richer and larger international co-operations.

In particular MEROPE within the Interreg programme faces the axe 3 that aims to encourage the constitution of an integrated system of transport for increasing competitiveness and the economic, social and territorial cohesion of the area. MEROPE project satisfies also the specific objectives of measure 3.4, in particular: promoting the use of telematic instruments on the transport field and encouraging the telecommunications operators to give more importance to the aspect of the territorial development in their investment policy.

2. Introduction

MEROPE (Telematic instruments for innovative services for mobility and logistic in urban and metropolitan areas) is an INTERREG III B MEDOCC (Western Mediterranean) area project started on September 2002 and ending on September 2004.

The MEROPE Consortium includes 12 partners from 3 European countries and 1 partner from South Mediterranean area (Morocco).

The partners belong to a wide range of typologies: municipalities, universities, societies for public transport, and associations for research.

On the whole the cities involved are 16: 14 of them will carry out a project (a study project or a demonstrative project), the other three (Nîmes, Aix en Provence, Barcelona) give their contribution in the horizontal tasks (methodology for data collection, results evaluation, etc.)

The partners and the related region and cities are listed below:

1. Regione Toscana (project leader): Firenze, Siena, San Gimignano and Lucca (I)
2. Regione Emilia Romagna: Piacenza and Modena (I)
3. Regione Umbria: Terni (I)
4. Regione Calabria: Cosenza (I)
5. Comune di Genova: Genova (I)
6. Compagnia Trasporti Pubblici SpA: Pozzuoli (Napoli)
7. Federtrasporto: Roma (I)
8. AICIA: Andalucia-Sevilla (E)
9. Universitat Politècnica de Catalunya: Barcelona (E)
10. Serveis Ferroviaris de Mallorca: Palma de Mallorca (E)
11. Centre de Recherche LGI2P: Nîmes (F)
12. CETE Méditerranée: Aix-en-Provence (F)
13. City of Marrakech (M)

As indicated above, Regione Toscana is the project leader and it is in charge of the general management of the project. In carrying out this task Regione Toscana is supported by Municipality of Siena, which operates by means of its technical company Siena Parcheggi, that is the main referent for operational and technical aspects.



Fig.1 Map of MEROPE Consortium

As shown in the above list, for each partner correspond one or more towns that are the sites where the activities and the applications are carried out.

The MEROPE activities involve the realization of 8 demonstration site projects and 5 feasibility projects, with the common aim of improve the logistic freight distribution chain in the urban/metropolitan areas or managing IT support services (optimising tourist buses city approaches, ticketing systems, integrated parking systems, etc.).

The demonstrative sites are: Firenze, Siena, Genova, Modena, Piacenza, Pozzuoli, Sevilla, Palma de Mallorca.

Instead in Cosenza, Lucca, Roma, San Gimignano and Terni simulation projects are carried out.

Marrakech participates as third country, not being part of the MEDOCC area.

Finally Barcelona (University of Catalunya), Nîmes (LGI2P), Aix en Provence (CETE) realize the methodology for collecting data and evaluating results.

The choice of the sites for local applications has been made carefully trying to include cities with different characteristics and different degrees of advance/maturation with respect to their use of ICT as a support of urban logistic.

This paper aims to describe the overall context, the concept and system approach and innovation in MEROPE.

4. General Context

It's a common knowledge that the actual trend in urban transport is not sustainable and they provoke relevant and harmful impacts. The transport sector is the only one in which the energy demand increases though the efficiency of each single vehicle improves.

MEROPE aims to face the overall urban and metropolitan areas mobility and in particular the aspect of freight distribution, that is less often taken into account by municipalities, though it is together with private traffic flows one of the major sources of energy consumption, noxious gas emissions and noise in urban areas.

This lack of attention to the freight distribution causes not only a deterioration of the quality of life and a damage of the environment but also a reduction of cities' competitiveness because of delays and high costs.

The main reason for the lack of effort directed to the goods distribution is that facing the urban logistic process implies acting on interrelated city management aspects: institutional, city regulatory and mobility policies, political, social and citizens consensus, city operational and business processes, infrastructural/technological service organization.

Nowadays it is also known that rational and sustainable solutions are needed.

The measures foreseen in MEROPE are in line with the set of answers that urban policy makers are implementing, aware of the new features of society and their spatial consequences.

From the IC technologies point of view, several projects have been initiated in many European cities, for the introduction and development of systems for urban logistic and logistic platforms oriented towards the distribution of goods at urban, regional, or urban-regional levels. The level of development differs among the various sites. The adoption of technological solutions and telematic infrastructures often has an experimental and step-wise character, through the realization of pilot or exploratory projects on the different technologies and/or on the different organizational solutions that they imply.

The development of telematic technologies within the last decade has had a primary role in contributing to the development of logistic platforms. Today the technological supply in this sector includes several technologies, methodologies, and tools, such as:

- Communication technologies and fixed networks, primarily the strong development connected to the expansion of internet;
- Mobile platforms (on-board terminals, palmtops and PDAs, code-reading peripherals, etc.) and wireless communication networks (GSM, packet networks, e.g., Mobitex, evolution of mobile phones 2.5G – GPRS, and in future 3G – UMTS);
- Models and software tools for distribution management and planning (route planners, distribution planners, demand-supply managers, etc..)
- Tools and services for message exchange and rationalization of information flows among the different logistics actors
- Tools and systems for the integration of the logistics system with the available information on traffic and mobility (TIC, mobility service centres, etc.)

5. MEROPE Approach and Objectives

The activities in MEROPE are first oriented to the analysis and definition of the features of mobility, transports and logistic chain, with a particular attention to their impacts in terms of environment, sustainability and competitiveness.

Then a methodological approach to the complexity of the problem will be developed together with the definition of guidelines for the realization of telematic systems. A common evaluation plan of the project's impacts through a comparison of results will also be defined.

MEROPE main objective is to activate, in several urban and metropolitan areas, study projects, analysis and simulation for the use of ICT in innovative services for mobility and logistic. Moreover in the sites where the approach and solutions to these issues are more mature, demonstrative projects are realized and will concern: the application of integrated systems of communication as a support to urban logistic; the development of centers for the remote traffic control and to direct vehicles to parking areas; the use of communication networks and telematic equipment to optimise services and information to end users; remote control of tourist buses and online system for booking parking areas; intelligent platform for freights distribution.

Besides MEROPE will develop a common methodology of application and evaluation of ICT services in the management of urban mobility and logistic.

In particular, the logistic platforms and information systems that will be realized will be based on open architectures and on IT standards.

Finally best practices will be defined for the application of these ICT services in mobility and transport policies. The best practices will be spread through the organization and participation to seminars, conferences, and events.

This objective of promoting and diffusing the project and its results, led also to the realization of a web site both for providing information to those that are out of the Consortium (public area) and for the exchange of documents and information among the partners (private area).

Table1: Activities developed in each site.

Site	Territorial and environmental characteristics	Planned activities in MEROPE
Metropolitan area of Firenze	Medium size town of high historic interest relevant tourist flow	Informational/technological platform for mobility, information, monitoring and managing of intermediate services. Distribution of freights in the historic centre with transit-points. <i>Demonstrative project</i>
Siena	<u>Siena</u> Historic town with high flow of tourist. <u>S. Gimignano</u> Town with historic and tourist vocation.	<u>Siena</u> System for the integrated management of tourist buses parkings and traffic flows with panels of variable message. <i>Demonstrative project</i> <u>S. Gimignano</u> Study of feasibility for the automatic control of access in the TLZ and identification of the technological system and of the typology of communication network. <i>Study of feasibility</i>
Lucca Comune	Historic town of great tourist interest.	Feasibility study and design for the creation of a Logistic Services Centre. <i>Simulation project</i>

Lucca Provincia	Historic town of great tourist interest.	Development of logistic systems for the intermobility and freight movement and development of software for the simulation of application. <i>Simulation project</i>
Genova	Metropolitan Industrial / harbour area.	Development of telematic instruments for the optimisation of loads and freight distribution in city centre and metropolitan area. <i>Demonstrative project</i>
Modena	Relevant activity in the industrial, commercial and tertiary sector	Optimisation of freight distribution in the city centre using transit points. Methodology and guidelines. <i>Demonstrative project</i>
Piacenza and wide area	Historic and industrial town with a hinterland.	Planning of an observatory of freight flows. Logistic plan in the wide area with logistic solutions and telematic systems of communication. <i>Demonstrative project</i>
Napoli (Pozzuoli)	Historic and industrial town.	Remote centre for the improvement of the use and management of parkings integrated with public transport. Improvement of accessibility to the islands. <i>Demonstrative project</i>
Roma	Historic city with a relevant tourist flows and important tertiary sector.	Optimised freight distribution in the city centre by means of transit points. Methodology and guidelines. <i>Simulation project</i>
Terni	Historic town with industrial and commercial development.	Study for the improvement of urban logistic through transit points, development of networks for communication internal and for the users. Incorporation of the logistic system into an integrated system for urban mobility. <i>Simulation project</i>
Cosenza	Town oriented to the tertiary sector with administrative, health, commercial and university services.	Feasibility of a control system of freight distribution with simulation techniques to assess the impacts of this new way of managing freight distribution on mobility, to evaluate the effects of different communication strategies to the service users (transport workers), to evaluate the effects of a new structure of the freight distribution process and quantify the impacts of the system. <i>Simulation project</i>
Sevilla	Metropolitan area with a wide historic centre. Services, tourism, agriculture. Increasing industrial activity.	Identification and evaluation of current mobility models and processes. Demonstration of the use of the Internet for booking areas for loading/unloading. Simulation and evaluation ICT on freight distribution. Feasibility study for the integration of the port as a logistic platform. <i>Demonstrative project</i>
Palma de Mallorca	Island with relevant tourist flow.	Study for the definition and implementation of a system for selling train tickets on line. <i>Demonstrative project</i>
Marrakech	Metropolitan area. Wide fortified historic centre (Medina/Casba). Relevant tourist flow Development of handicraft and increasing industrial activity.	Report on the studies relative to the General Plan for management and regulation of traffic and mobility of people and goods. <i>Report</i>

6. Innovation and Added Value in MEROPE

The innovative elements characterizing MEROPE are represented by the three fundamental directions towards which project activities are addressed:

- At local level: ICT services to manage logistic and urban transport will be realized in each MEROPE site in the Medocc area.

- At horizontal level: a common methodology will be elaborated in order to define the functional and technological requirements of ICT services for the towns and to develop models for the evaluation of the impacts of the different schemes and systems.
- Promotion and diffusion of the scientific-technical approach and of the results both from a technical point of view, through several reports on the realized activities, and on a large scale, through the definition of the potential subjects interested and the following definition of the most suitable tools and channels to reach them.

The value of the project stands also in the action of promotion of ICT services in the field of urban logistic and mobility management to achieve an increase in efficiency, effectiveness and environmental care.

The greater opportunities are mainly represented by the innovative applications of information and communication technologies and services that will be defined by the possible interactions with their supply: thus stimulating a positive interaction between the ICT sector and the transport sector.

The implementation of MEROPE local projects and architectures involves in fact a number of advanced enabling technologies:

- Web-enabled information and booking services for the customers (B2C segment), information exchange, resource sharing for e-logistics operators (B2B segment);
- Delivery notification and information through mobile phones and SMS;
- Goods dispatcher software for trip planning and resource (i.e. vehicle capacity) optimisation through the utilization of vehicle routing techniques and algorithms;
- In-vehicle display units and hand-held devices (palmtops, PDAs, new generation mobile phones based on WAP and GPRS) to support vehicle drivers and goods delivery operators tasks;
- GPS-based or GSM/GPRS-based vehicle location systems;
- Long-range, wireless communication channels (GSM, GPRS) to support interactions and information exchange between the logistics planning/management platform and vehicles / goods delivery operators.

Last but not least, the great value and innovative aspect of MEROPE project stand in the fact that it gathers such a big number of cities working together on a single project.

7. Conclusions and Next Activities

At date MEROPE is in phase A- Study of the overall work plan and all partners are doing preliminary studies in their sites in terms of territorial characteristics, mobility and existing ICT services. These studies are necessary for the feasibility analysis and for the specifications for the realizations of the local projects.

These preliminary studies are also useful for identifying the basic requirements of a reference model that satisfies the different regional and national realities.

Meanwhile the elaboration of a common methodology for collecting data and evaluate the project activities and results is carried on by CETE and UPC.

In a few months projects will be defined and all partners will start with the project design of the activities.

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