MULTIS

MULTimodal freight TRANsport INTERoperable management SYstem

Project outline
Executive Summary

The development of multimodal transportation systems is a key issue for Italy, Spain and Portugal because:

- It represents an extraordinary opportunity to enhance the position of these Mediterranean countries as the access point to Europe in the international trade flows;
- It is coherent with the research capabilities and the industrial players that have a relevant presence grounded in the three countries;
- It is a focus of the research priority agenda established by the European Union;
- It has a direct impact on the competitiveness and the attractiveness of the three countries.

Further to this common vision, Finmeccanica (Italy), Elsag (Italy), Centro Ricerche Fiat (Italy), DMR-Consulting Spain, DMR-Consulting Portugal e INOV Portugal are deeply interested in developing a new and integrated multimodal freight transport interoperable management system putting a particular emphasis on the dimensions of security, efficiency and ecological sustainability.

Supported by the COTEC Foundations for the coordination and fund rising tasks, the pilot initiative MULTIS (MULTimodal freight Transport Interoperable management System) is launched by the above mentioned enterprises. The goal of the project is the production of a system that is expected to optimise the management of both physical and information flows through the implementation of leading hedge technological solutions. Subsequently firms operating in the railway, motorway and sea sectors will be involved in this project.

As a pilot initiative, the project will be focused on the integration of the supply chain flows of containers from ship unloading operations to their shipment by railways or road transportation.

The developed solution could be applied to significant segments of the international supply chain like Corridor V, which includes all the three countries involved in the project: Spain, Portugal and Italy.

The expected output of the project is a standardized, scalable and modular system developed by a consortium of top industrial partners, showing both an Atlantic and Mediterranean profile.
The project is likely to propel the virtuous circle “Research-Innovation-Competitiveness-Development”, leading to positive social, operational and technological repercussions for both industrial partners and countries involved.

**Aim and description of the project**

The dynamics of globalisation have enhanced the intensity of economic relationships and trading flows on world-wide scale. The outcome of that change gives to the transportations issue a key role in the development of economic systems.

Being aware of the increasing importance acquired by logistics in the short run and in terms of strategic perspectives, European Union has set in its priority agenda an articulated projects’ portfolio devoted to logistics and transportations problems. This set of initiatives aims at boosting research and development activities and harmonizing logistics capabilities either in each member state and in the European and intercontinental community system.

In this context Italy, Spain and Portugal have the possibility to acquire a competitive and economic advantage within national boundaries by developing transportation systems and logistics infrastructures.

The MULTIS project, promoted by COTEC Foundation and developed by a group of important Italian, Spanish and Portuguese enterprises in the fields of technologies, transportation and infrastructures, is a concrete initiative aimed at organising specific competencies and operational capabilities in order to build an integrated and innovative system to manage the multimodal freight transports.

<< The general European policy and common objective are currently focused on the need for regulation in transport reinforced by enhanced inter-modality, in order to help the use of existing environmentally friendly transport resources and shift the balance between the modes >>

-- European Commission “White Paper - European transport policy for 2010: time to decide”

The goal of the project is to optimise the physical and information flows between the different actors involved in the multi-modal transport scenario, in order to assure safe, fast, efficient and environmental friendly Intermodal Operations in Freight Transport.
Taking into account the results of a number of research projects performed on this theme, the Directives and the intervention measures issued by the European Union, MULTIS aims at implementing a new system able to optimize the management of the physical layer and the information flow of a multimodal logistic chain, adopting innovative technological solutions.

The expected output of the project is a standardized, scalable and modular interoperable system with different domains to perform an efficient bus needed in the supply chain and developed by a consortium among top industrial partners.

Special consideration will be devoted to the management of the information flow supporting the coordination of the physical aspects of the intermodal transport, where an effective approach to the data processing and coordination in decision making is a key factor for achieving an efficient overall performance of the logistics system (both in exploiting the transportation carriers and in utilizing the fixed infrastructure).

In such a context, a high level architecture of the intermodal system (in compliance with current ITS architectures, such as ACTIF, KAREN, ARTIST) includes the following main elements:

- **Mobile Units** able to provide users with positioning functions (for fleet management, freight transport status monitoring, resource planning and route optimisation).
- A flexible and scalable **Network of Intermodal Centres**, capable of providing services to the different users.
- **Service Centres**, proficient in operating in the Network by collecting, harmonising and distributing data in order to optimise the involved resources.

The implementation of the project will be composed of:

- Scenario Analysis: definition of Key Performance Indicators and Sustainability evaluation scoreboard for all Stakeholders (including Business and Socio-economic dimensions);
- Assessment and evaluation of existing knowledge/technologies in the inter-modal freight transportation field;
- Definition of an open multi-modal framework for information and management systems (functions and tasks, information, organisation, data, and communication);
- Design of mode-independent freight transport and logistics management systems and applications for all unitised cargo (containers, swap bodies, semi-
trailers etc.) in a number of specified intermodal logistics chains, optimising the co-operation between the different actors involved and reflecting organisational and financial aspects.

- Integration and consolidation of ICT solutions (across modes, borders and organisations) towards coherent and interoperable systems which will enable mode-independent information on the transport process to be secure and efficient.
- Prototype of the model to verify the actual ability of the system to pass information through the supply chain to support the freight and facilities management usefully.

The COTEC Foundations involved an outstanding selection of industrial partners giving to the initiative both an Atlantic and Mediterranean profile, since its very beginning. This feature can be taken as evidence to outline the modularity, scalability and standardization needed to give the project a key role in the field of multimodal logistics.

The initiative is remarkably worth for its technical aspects and international dimension; moreover it can represent a propelling input for research and development, which is widely acknowledged to play a key role in the competitiveness of the industrial systems of the countries involved.

Furthermore the project guidelines, which are security, efficiency and environmental sustainability, largely meet the demand coming from the European arena on multimodal transportation and push towards some important technological challenges which are likely to stir the most innovative and dynamic components of the industrial sector (especially ICT and components manufacturing of transportation industry).

In particular the main characteristic of scalability of the MULTIS project can lead to further applications, thus involving an increasing number of industrial sectors both in terms of supplier of devices needed to develop the project and final users of the implemented logistic services. The project, even if not explicitly linked to a local specificity, can find a concrete outcome through a demonstrative application testing its performance.

Besides the operational part of the project, it is important to underline its relevance from a strategic point of view. It is in fact essential to focus on the complex dynamics of standard-setting which concern either the European context and the international industrial community.
Hence MULTIS’ technological outcomes can be a valuable example of the way to sustain industrial development by defining those standards which are supposed to heavily influence the technological and industrial competition in the multimodal transportation in the near future.

**Concluding remarks**

It must be highlighted that MULTIS encompasses the activities of innovation engineering, prototypal realization, on field experimentation and industrial applications, so that strong social and industrial fall-outs can be achieved from all the enterprises involved in the project and from the logistics hubs willing to adopt the implemented solutions.

The improved efficiency of the logistics systems developed in the project will be demonstrated through a Test Case, consisting of the identified and implemented elements, that will be applied on significant segments of an international supply chain.

Corridor V represents a possible target venue for the "state of the art" identification of supply services and facilities working in the different logistics and intermodal key points (railways, roads and ports) along a contemporary industrial supply chain.