



MIT PROJECT



**SEVENTH FRAMEWORK PROGRAMME**

**MIT  
Metrocargo Intermodal Transport**

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FP7-SME-2011

**Final Wikipedia page on the project  
and its results**

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## About the Document

This document is ***Project Deliverable D8.7***

It explains the final Wikipedia page on the project and its results.

The document has been produced by the collaboration of the work package WP8, the participants to the work package have all duly contributed to the activity of the work package and to the production of this document and endorse this report as the conclusion of the work package.

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## GENERALITIES

### Introduction

Today railroad shipment of containers is limited to point-to-point trains, without the possibility of loading and unloading at intermediate stops. The reason is that wagons are loaded and unloaded vertically with gantry cranes or similar equipment, which obviously cannot operate under the overhead electric feeding line. Trains need to be shunted to marshalling yards and back to the regular railway tracks using a diesel locos, which is costly and time consuming, therefore only point to point trains are operated, excluding transfer and collection of load units along the territory they cross.

Since 2004 the Metrocargo initiative is under development, aimed at enhancing intermodal shipment based on an innovative horizontal loading technology capable of working under the catenary.

The EC-funded FP7 “research for the benefit of SMEs” project 222199 VIT- Vision for Innovative Transport, completed in 2009, developed single components, mainly related to computer vision, that were successfully incorporated in a prototypal Metrocargo unit that was constructed with own funding, installed in the port area of Vado Ligure and extensively tested by an independent qualified organization.

An extensive dissemination action will be pursued along two main lines:

- setting up demonstration tools.
- organization of events, including events centred on the Vado Ligure prototype, a road show in at least four EU countries and exhibiting at major trade fairs.

The dissemination plan is part of Work Package 8 of the Dissemination activities and market studies.

The objective of this document is to set out in a detailed and verifiable manner, the terms of use and dissemination of knowledge arising from the Metrocargo technologies. The document provides a detailed overview of all dissemination activities planned during the 24 months of the project.

### Structure of the document

The document includes the following parts:

- The report on the most important activities, which were performed in the Project’s last 24 months

### Identification of opportunities and target groups

A careful mapping of specific opportunities and tasks has to be made in order to support the dissemination activities that will be performed during the MIT project. Therefore, target groups have been constructed for obtaining contacts and opportunities for collaboration and for dissemination.

The target groups identified for MIT project are:

- large shippers
- freight forwarders
- factory transportation and logistics planners
- logistic chain operators and freight integrators
- ports
- railways
- Public Authorities.

## Objectives

The dissemination activities had the objective to promote results and visibility of the project and of the Consortium and to demonstrate the opportunities of Metrocargo through different kinds of commercial promotion.

The activities included in this deliverable were pursued along two main lines:

- setting up demonstration tools
- organization of events in EU countries:
  - o events centred on the Vado Ligure prototype
  - o exhibiting at major trade fairs, in Europe and in China
  - o road shows, speeches and work shops

The activities to set up demonstration tools included:

- preparing promotional material
- setting up a video clip
- setting up a Wikipedia entry
- setting up a MIT website
- updating Metrocargo technology web-site

The activities in order to organize events, contacts and exhibiting at major trade fairs included:

- attending and exhibiting at trade fairs
- public relations and presentations in seminars, etc
- identifying possible customers to visit directly.

## Methodology

This dissemination plan outlines the external public communication and presentation strategy for the MIT project. The dissemination approach for MIT is accomplished through activities encompassed by a dedicated work package. The approach to dissemination is designed to fulfil the following action items, which are considered crucial for further exploitation of the MIT project results. (See the following table).

Plan ↓	Strategic plan for effectively disseminating and exploiting the project Results
Design ↓	Design of comprehensive branding for the MIT project (including logo) and targeted activities and actions to ensure a wide visibility and identification of the project for marketing-driven dissemination
Create ↓	Creation of promotional materials for content-driven dissemination
Distribute ↓	Use of the web to distribute project-information and materials (i.e. Distribute flyers and newsletters)
Represent	Attending and exhibiting at trade fairs, public relations and presentations

## 1. WIKIPEDIA ENTRY

During the first months of activity, a Wikipedia entry illustrating MIT – Metrocargo project and its key features was created.

WIKIPEDIA is a collaboratively edited, multilingual, free Internet encyclopedia supported by the non-profit Wikimedia Foundation. Wikipedia's 30 million articles in 286 languages, including over 4.2 million in the English Wikipedia, are written collaboratively by volunteers around the world. Almost all of its articles can be edited by anyone having access to the site. It is the largest and most popular general reference work on the Internet, having an estimated 365 million readers worldwide.

For this reason, Metrocargo and MIT project were inserted in Wikipedia.

Link to Wikipedia: [http://en.wikipedia.org/wiki/Metrocargo\\_Intermodal\\_Transport](http://en.wikipedia.org/wiki/Metrocargo_Intermodal_Transport)

The page, in particular, has been divided into the following contents in order to explain the most relevant features of the innovative Metrocargo technology:

- 1 The Metrocargo Concept
  - 1.1 The Technology
  - 1.2 Distributed intermodality
  - 1.3 Port to dry-port shuttling
- 2 The MIT Project
  - 2.1 Objectives
  - 2.2 Project partners
  - 2.3 Current status

In the first chapter Metrocargo concept and technology are described.

It is also said that “MIT - Metrocargo Intermodal Transport project is about bringing Metrocargo from research to market stage and promoting its dissemination among logistic decision-makers throughout Europe. Technically, MIT will implement specific technical improvements and the scaling up from single prototypal unit to full industrial installation, developing typical plant design and SW applications to automate and optimise the work flow and provide interfaces with operators and external systems. Promotion and dissemination will be the main goal, carrying out market studies in several EU member states and subsequent market plans to exploit the Metrocargo features in terms of installation and operating costs, limited use of dock area, safety and environmental impact”.

In the third paragraph of the first chapter the main logistics application of the Metrocargo technology (i.e. network for distributed intermodality and port to dry-port shuttling) are explained.

In particular, the efficiency of Metrocargo equipment is well exploited when fast processing of full trains is required, as in shuttling between ports and dry-ports and at gauge-change stations, as at the EC borders with Spain, Russia and Ukraine, and similarly at the border between Russia and China.

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**WIKIPEDIA**  
The Free Encyclopedia

MIT (Metrocargo Intermodal Transport) is a Project partly funded by the EU under the Programme "Research for the benefit of SMEs" - Call ID "FP7-SME-2011" and managed by REA Research Executive Agency. Metrocargo is a concept of intermodal shipment based on horizontal loading and unloading containers and swap bodies on standard filled wagons under the overhead electric feeding line. The system being fully automated and very efficient, it is time and cost effective for the distributed intermodal transport over a territory and for processing full trains in port to dry-port shunting. The promoters constructed a full scale prototype unit and the EC-funded research project VIT Vision for Innovative Transport successfully researched the remaining technical issues. This MIT Metrocargo Intermodal Transport project is about bringing Metrocargo from research to market stage and promoting its dissemination among logistic decision-makers throughout Europe. Technically, MIT will implement specific technical improvements and the scaling up from single prototypical unit to full industrial installation, developing typical plant design and SW applications to automate and optimize the work flow and provide interfaces with operators and external systems. Promotion and dissemination will be the main goal, carrying out market studies in several EU member states and subsequent market plans to exploit the Metrocargo features in terms of installation and operating costs, limited use of dock area, safety and environmental impact. Economic advantages to operators in typical situations will be determined effecting specific feasibility studies. Dissemination events will be organized centred on the full scale Metrocargo prototype installed in the port of Vado Ligure. The SMEs will exhibit the system in main logistic and transport shows in Europe and will organize road-show presentations in several countries, using videos and a dynamic simulation SW tool to illustrate the solutions for specific needs. At the end of this Project the Metrocargo technology will be a fully developed market-ready system that will be widely known among European logistic decision makers.

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    - 2.2 The Project partners
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**The Metrocargo Concept** [edit]

Today railroad shipment of containers is limited to point-to-point trains, without the possibility of loading and unloading at intermediate stops. The reason is that wagons are loaded and unloaded vertically with gantry cranes or similar equipment, which obviously cannot operate under the overhead electric feeding line. Trains need to be shunted to marshalling yards and back to the regular railway tracks using a diesel loco, which is costly and time consuming, therefore only point to point trains are operated, excluding transfer and collection of load units along the territory they cross.

Since 2004 the Metrocargo initiative is under development, aimed at enhancing intermodal shipment based on an innovative horizontal loading technology capable of working under the catenary. The equipment developed to that effect proved to be particularly efficient so it can be used in applications where full trains need to be rapidly processed, such as port to dry-port relationship or at interchange point between different railway gauges (e.g. Spain to EC).

**The Technology** [edit]

Metrocargo is a fully automated technology developed for (un)loading containers horizontally from wagons to track-side stocking areas and vice versa operating under the catenary. Actually containers are lifted for a small height (up to 161 cm to take care of different heights of wagons) acting on the lateral slots of the standard corner fittings every container and swap body is equipped with. Today the technology is implemented in a working prototype set-up at Vado Ligure (IT).

The basic unit of Metrocargo comprises the elements illustrated in the above pictures and effects the operations described hereunder:

- the container is moved from the wagon to the transfer car
- the transfer car discharges the container moves on the appropriate buffer bay
- in the buffer bay the container is moved to a position farther from the track, to make room for new unit being unloaded

The same sequence in reverse order is effected for loading, with the side slots being replaced by the retaining pins on the wagon. In the unloading cycle, the side slots of the corner fitting are as an achievement of the VIT project also partly funded by the European Union. Operating under the catenary, though disconnected during the operation for safety reasons, Metrocargo eliminates the cost and time associated with shunting (coupling and decoupling wagons, transfer to marshalling yards by diesel loco, train breakdown and composition) that take place in traditional terminals, where trains need to be removed from the electrified line for unloading. Metrocargo was originally developed as a technical means necessary for creating a network for the intermodal transport of containers and swap bodies, distributed over a territory. In the process, it proved to be very fast (projections show a 40 wagon train can be unloaded and reloaded in less than one hour), which opened up new business possibilities, typically shunting load units between ports and dry-ports. The construction technology being modular, equipment can be planned according to available space and number of containers to be handled, and increased as necessary. Today the system is fitted with a stand-alone active safety system detecting human presence in the work area, (which means that sound alarms do not have to be used). This system has been developed within the VIT project. Metrocargo is perfectly consistent with the goal of minimizing environmental impact, because both atmospheric and acoustic pollution are almost totally eliminated by the electrically-powered automation system. There are no local GHG emissions other than by trucks servicing the terminal, and noise level is very low. Electro-mechanical parts and plant automation software for load/unload were subjected to an exhaustive stress test under the control of an independent entity with specific knowledge of automated plants. Functionality and performance of all components were analyzed and data collected and validated. The two main applications of Metrocargo are distributed intermodality and Port to dry-port shunting.

The second chapter is dedicated to the MIT project. It presents indeed the main objectives of the initiative which can be summarized as follows:

- Promoting and disseminating the Metrocargo technology, carrying out market studies in several EU member states and subsequent market plans;
- Exploiting the Metrocargo features in terms of installation and operating costs, limited use of dock area, safety and environmental impact;
- Implementing specific technical improvements and the scaling up from single prototypical unit to full industrial installation, developing typical plant design and SW applications to automate and optimise the work flow and providing interfaces with operators and external systems.



## The MIT Project [\[edit\]](#)

### Objectives [\[edit\]](#)

MIT is a European Project partly funded by the EC: the object of MIT is promotion and dissemination, carrying out market studies in several EU member states and subsequent market plans. The goal is to exploit the Metrocorgo features in terms of installation and operating costs, limited use of dock area, safety and environmental impact. Another objective of MIT is to implement specific technical improvements and the scaling up from single prototypal unit to full industrial installation, developing typical plant design and SW applications to automate and optimise the work flow and provide interfaces with operators and external systems.

### Project partners [\[edit\]](#)

The partners of MIT are the following:

ILOG – Genova, Italy (ILOG)

ILOG is an engineering company established in 2004 expressly to develop Metrocorgo, an innovative concept of intermodal shipment based on setting up a network of terminals connected by scheduled trains with fixed composition. Patents for Metrocorgo have been filed in Europe, US, Canada, Russia, China, Japan and Australia, and ILOG hold the world-wide license. ILOG established MCA Metrocorgo Automazioni srl with industrial partners with specific experience in automation and mechanical handling. Partners of ILOG are engineers and corporate managers with experience in company management, logistics and project management. In the past years research and prototyping were advanced using own funds and public contributions, and the results discussed in meetings and workshops.

Molinari Rail AG – Winterthur, Switzerland (MOL)

Molinari Rail AG is an independent engineering company, with strong roots in Switzerland, actively operating throughout Europe. Molinari Rail is specialist in Project Management and Project Controlling for Transportation Systems in general. Molinari Rail customers are transport companies as well as engineering companies and rolling stock manufacturers. The main focus of Molinari Rail in the last years has been in engineering, designing and commissioning issues in rolling stock projects. They were also involved in the streamlining and re-direction of organisations and projects, improving efficiency and improving customer satisfaction in technical and commercial issues. Molinari Rail analyses and redirects processes and develops new tools for an efficient realisation of projects and tasks. The long experience of Molinari Rail staff in engineering and design, in maintenance of rolling stock, in the operation of rail companies as well as the training of engine drivers and the maintenance staff allows the company to offer customised services.

WITT Industrie Elektronik – Berlin, Germany (WITT)

WITT was established in 1972 as a small, committed engineering office. In the following years Witt continuously increased its range of expertise and extended their offer to the field of design, development and manufacture of industrial electronic components and related services. Today it employs 20 highly qualified people. Witt core business is industrial electronics and rail electronics. In the field of industrial electronics Witt manufactures automatic inspection and test units, both as single small units and as complex devices, inclusive of engineering services. In the field of rail electronics Witt provide the full range of electronic devices needed for the power supply of DC traction systems, and have special expertise in the dynamic and static measuring of track components and vehicles.

Systems Navigator – The Hague, The Netherlands (SYS)

Systems Navigator is a system engineering and software company whose activity is targeted to Operation Research type of applications, specialising in discrete event simulation. Systems Navigators provides solutions to a variety of industries and logistics processes in the European market. Systems Navigator designs, implements and maintains complex decision support systems to allow their clients to achieve better utilisation of resources, higher performances and higher quality.

Imavis Srl – Bologna, Italy (IMA)

The company was established in 2000 as a spin-off company of Università di Bologna (Italy) by a group of scientific researchers and IT professionals. Today Imavis is a well established software development company with headquarters in Bologna. The group of developers is constantly growing and at present is composed of 10 people with diversified education qualifications and background: six computer scientists, three engineers, and a web and graphics designer. Since 2002 Imavis is on the market with video-surveillance software and hardware products. The company focuses on image and video analysis, with particular reference to the video-surveillance market. The core business is the design and the development of products and solutions that follow and anticipate the market needs.

Previous THE EU partly funded the research project VIT – [Vision for Innovative Transport](#) that was aimed at providing some complements to the Metrocorgo technology. The object of VIT was the development of specific portions of innovative technologies for automatic and secure handling of containers and swap bodies for intermodal shipment, primarily functional to the Metrocorgo technology though retaining an intrinsic technical value that will make them attractive for the general market. The general strategy of the SMEs that participated together in the MIT research project is to bring Metrocorgo to the market and start selling the equipment, where it can work as a stand-alone container handler (such as in port to dry-port shuttling) or setting up terminal for the distributed intermodal transport.

At the end of this project the Metrocorgo technology will be a fully developed market-ready system that will be widely known among European logistic decision makers.

Partners of the Consortium are then stated and described for their missions and main activities.

## 2. INTERMODAL WIKIPEDIA

In addition, during InnoTrans 2012, some contacts with the Research Group Transport Logistics at the Technical University of Applied Sciences Wildau were taken.

Technical University of Applied Sciences Wildau is the Lead Partner of the European Project FLAVIA -Freight and Logistics Advancement in Central/South-East Europe - Validation of trade and transport processes, Implementation of improvement actions, Application of co-coordinated structures.

The FLAVIA project involves partners from Austria, the Czech Republic, Germany, Hungary, Poland, Romania and Slovakia.

FLAVIA will bring together experienced stakeholders in the field of new intermodal transport services to develop trans-national action plans, concepts and suggestions. Key stakeholders from the whole FLAVIA corridor with logistic background will support the objectives of the project as associated partners. Together they build a triple helix of logistics knowledge competence, government and inter-/multimodal transport industry. All integrated actors are interested in an increased accessibility of the regions and improved trade and transport relations along the FLAVIA corridor.

Link to Intermodal Flavia project: <http://www.flavia-online.de/infopool.html>

Within' the project, the first **Intermodal Wikipedia** has been created. It is meant to be a reference work for forwarders and interested parties in intermodal freight transport.

Technological and organisational solutions for the development of intermodal transports are collected in this common knowledge base.

The Intermodal Wiki gets information on intermodal transports, cargo handling technologies and innovative solution concepts about Intermodal train concepts, intermodal vessel concepts and intermodal terminal development.

Link to Intermodal Wikipedia: <http://www.th-wildau.de/flavia/dokuwiki/doku.php>

Metrocargo concept and technology was inserted and described in the Intermodal Wikipedia.

Link to the Metrocargo section in the Intermodal Wikipedia:  
[http://www.th-wildau.de/flavia/dokuwiki/doku.php/im\\_trains:metrocargo](http://www.th-wildau.de/flavia/dokuwiki/doku.php/im_trains:metrocargo)

In the Metrocargo section in the Intermodal Wikipedia has been divided into the following contents in order to explain the most relevant features of the innovative technology:

- 1.1 Short system description
- 1.2 Equipment
- 1.3 Auxiliary systems
- 1.4 Benefits for customers
- 1.5 References/Useful links

www.th-wildau.de/flavia/dokuwiki/doku.php/im\_trains:metrocargo

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## Metrocargo

*Innovative solution concept for handling intermodal loading units*

### Short system description

**Metrocargo** Automazioni s.r.l. is a company specialized in design and manufacture of equipments and automated handling systems. Headquartered in Genoa, the company is committed to the commercialization of **Metrocargo** system, an innovative concept for the development of intermodal transport designed to improve the efficiency of unit loads loading and unloading process thanks to its horizontal shift technology. Complete automation, quickness, adaptability to any kind of train and container size, low environmental impact, high security and the capacity to be installed under the catenary (without the need for any shunting activities) are the most valuable assets of **Metrocargo** technology, a unique solution for ports, interports, and logistics operators.

**Metrocargo** system is modular with each module consisting of:

- Equipment
  - Four lifting towers
  - One shuttle
  - Platforms
- Auxiliary systems
  - Control room
  - Scheduling
  - Automation
  - Train identification portal

## Equipment

### Lifting tower

Lifting system consists of four independent units that identify and lift a unit load placed on the wagon train. This lifting system operates on the outside of the corner block. The synchronous movement of the towers allows precise positioning through the acquisition of the locations of the 4 corner blocks for all types of cargo units (containers and swap bodies). Each tower is equipped with independent electric panel completed of PLC, wireless communication system, drives for engine, motors for lifting and shifting, control systems and security.



### Shuttle

The shuttle has two semi-shuttles moving parallel to the rail-road track. Each semi-shuttle has a mobile device transfer that moves perpendicular to the rail track. Each semi-shuttle is equipped with electrical power, distribution and full PLC control of coordination and with communication system dedicated. The semi-shuttle adapt its position automatically according to size of the unit load to be moved.



### Platforms

The staking platforms are structures made of steel shaped to accommodate all types of unit load devices and equipped with fixed center and position sensors. The number of bays is a function of operations requested by the customer.

## Auxiliary systems

### Control room

The plant is monitored in a unique place where all systems of management, control and supervision are collected together. The system has an intuitive graphical interface that properly provides information to the operating staff.

### Scheduling

The scheduling system (second level control) controls dispatching and scheduling of missions. The optimization system, user configurable, deals scheduling tasks' sequences to be assigned to each component (dispatching missions) with the objective to minimize handling time.

### Automation

Single components are managed by the "PLC coordination" that, through a dedicated data transmission network, sends different commands to the system. The PLC coordinating represents an interface between the "scheduling systems" and forms of (un)loading freight train.