INTRODUCING EGNOS AND GALILEO IN ITS FOR FREIGHT TRANSPORT:

The European M-TRADE Project

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Project Overview

- M-TRADE: Multimodal TRAnsportation supported by Egnos
- M-TRADE’s main goal is to explore and promote GNSS (EGNOS /Galileo) use in Freight Multimodal Transport

*M-TRADE implements and validates an end-to-end “solution” providing user-oriented GNSS services for freight containers and swap bodies tracking & tracing (T&T), and evaluates their introduction in Customs and Border Control applications*

The M-TRADE project is managed by the Galileo Joint Undertaking through EU 6FP funds
The M-TRADE Consortium

15 European Partners, merging complementary competencies and including representatives of the considered User Community

Telespazio is the project coordinator
Project duration and planning

**Duration:** 18 Months, started in mid September 2005

**Planning:**
- Phase I – Critical Analysis
- Phase II – Implementation & Demonstration of an end-to-end “solution” providing GNSS services for freight container and swap bodies tracking & tracing (chemicals, perishable goods, node shunting / combined road, rail, river, maritime port paths)
- Phase III – Result Analysis
- Dissemination & promotion
- Analysis in Customs and Border Control

*Ended, On-going, Not started*

*Today: Demonstrations starting*
Roadmap for Priority Applications selection

Analysis of Freight Multimodality sector, identification of GNSS “priority applications”, and evaluation of main market needs

UC scenario

- Actors
- Decision Makers
- Requirements
- Operation Practises
- Processes
- Standard
- Rules
- Business relations
- Needs of position info
- Use of GNSS and ICT

Candidate Applications

- Questionnaire & Interviews
- Desktop research
- Analysis Criteria
- EGNOS/Galileo differentiator
- Preliminary market sizing
- Not transport mode specific

Key Applications

- Questionnaire & Interviews
- Desktop research
- Assessment Criteria
- Regulatory, standards, data privacy, user acceptance, operations, practises and processes, technology constraints, business relations, policies, market opportunities, social benefits, etc

Priority Applications

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The Multimodal Freight Transport User Community

Rather fragmented and complex User Community:

- **Different** stakeholders/needs/relations
- **Various** transport means and node/terminal operators
- **Multiple** interactions and strands of information flows
GNSS Applications for the Freight Multimodality

**Candidate Applications**
- **Node - Terminal yard management**
  - Haulage delivery and freight collection
  - Shunting Operations
  - Asset and resource management
- **On-route - Supply chain monitoring and “door-to-door” delivery**
  - Normal / perishable / dangerous / high value goods
- **Infrastructure charging**
  - Freight Tolling (Road Haulage)
  - Waterway charges and inland waterways vessel harbour dues
  - Infrastructure charging on rails

**Priority Applications**
1. Shunting Operations
2. Asset and resource management
3. Supply chain monitoring and “door-to-door” delivery (Freight tracking and tracing)

**Key Applications**
- “Node services” - Shunting
- “On-route services” - Freight tracking & tracing and remote asset management

✓“Service packaging”, rather than a “single service”.
✓Reliable “information” availability
The M-TRADE solution

- M-TRADE solution combines existing facilities purposely enhanced / adapted, new developments, and some RFID purposely procured in the project

- Main drivers:
  - Its design, completely based on COTS (Commercial Off-The-Shelf)
  - Use of standard protocols (http/https) for the interfaces
  - The harmonisation of interfaces between M-TRADE MMC and system servers (same XML interface in order to request/exchange data: PVT and RFID info)

- Main elements: MMC (with Web Server), KT Server & KT OBU, ShPIDER Server & ShPIDER OBU, RFID, River Server, DGIS Server, CCS Server, SIMOG
The M-TRADE services

- Services for **increasing safety and efficiency** of the multimodal transportation
- **In Note: Shunting – remote monitoring**
- **On-route:**
  - **Dangerous Goods T&T:**
    - Tank wagons remote localisation & visualisation on digital maps
    - Geo-fencing (position & time wrt pre-defined path / time), alarming in case of deviation / unplanned stops
    - Warning in case of anomalous conditions detection
  - **Perishables T&T:**
    - Reefers (specialised refrigerated swap bodies) remote localisation & visualisation on digital maps
    - Goods temperature monitoring / identification details
    - Shipment monitoring: “right destination / right time”, temperature
    - Alarming in case of unplanned stops, goods information / temperature anomalous conditions
  - **Containers T&T**
    - Shipment remote localisation & visualisation on digital maps
    - Correct loading & unloading of containers on a vessel
The M-TRADE Demonstrations

The pilots are set-up over combined maritime-road-rail-river freight chains selected by M-TRADE Team, based on:

- M-TRADE users’ interests
- Technological feasibility
- Operative constraints
- Covering typical operational scenarios, and all land transport modes (including mode transhipment / intermodality)
- Real-life environments
The M-TRADE Pilots

Four use case scenarios:

- Shunting operations at the Bologna Freight Village
- Multimodal transhipment of swap bodies carrying perishable goods (EGNOS for positioning and RFID use for temperature monitoring) along a real maritime port-rail-road chain;
- Remote asset tracking of empty swap bodies along river from Budapest to Vienna;
- Tracking & tracing of intermodal tank rail wagons carrying chemical products (complete train up to a logistic platform and then distribution to different destinations)

- Pilot 1: IPBO
- Pilot 2: Acireale-Bologna
- Pilot 3: Danube
- Pilot 4: Trecate-Slovenia

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Next steps

Collected data and user feedback are used to:

- Assess applications for which EGNOS/Galileo differentiators have “market” value for the whole downstream value-chain, and related services can be successful commercially exploited also looking to the international nature of the freight trade;

- Validate real business cases;

- Prove use of GNSS (EGNOS) applications and services for:
  - Remote asset tracking of goods
  - Status monitoring and freight identification/authentication
  - Safe transport of hazardous freight
  - Mode transhipment and shunting

- Provide guidelines/recommendations for pushing the adoption of GNSS (EGNOS/Galileo)
Conclusions

M-TRADE implements Real-life demonstrations and trial tests to prove the validity of the M-TRADE solution in terms of main “service enablers”: technology, services, impacts/differentiators on safety and efficiency of operations and practises, user acceptance and awareness, market and business opportunities for EGNOS and Galileo services/products in the sector.

M-TRADE validates how GNSS (EGNOS/Galileo) can support the set-up of necessary technological tools enabling a competitive and efficient freight multimodality, and thus, contributing to the EU White Paper policies and freight transportation security strategies.
Thank You!

www.newapplication.it/mtrade

Any Questions?