GEOFENCING MD

Control & Management of Dangerous Goods
Transports in Urban Areas

UNECE Working Group on telematics
Bordeaux – 3-5 June 2014
✓ Project acronym: **GEOFENCING MD**

✓ Title: **Systemic solution based on telematics for dangerous goods transports monitoring in urban areas**

✓ Project proposed by the Think Tank of the LUTB Business Cluster’s Transport System Programme

✓ Registered at FUI 11

✓ Duration: 36 months (2011-2014)

✓ 1st phase financed by the French Ministry of Ecology and Sustainable Development, in charge of Transports (MEDDE)
✓ Major corporate groups
  • Renault Trucks

✓ SMEs
  • ERECA – *project leader*
  • Geoloc Systems
  • AddValentiam

✓ Laboratories & Research Institutes
  • G-SCOP – INP - Joseph Fourier University
  • IRMA
  • CEREMA Centre-Est
Objectives

✓ Develop a tool based on telematics:
  • Efficient, standard, flexible, scalable
  • Useable by all actors involved in DGT (shippers, carriers, public authorities, emergency services, infrastructure operators, etc...)

✓ The Geofencing MD tool should enable:
  • Real-time tracking and tracing of:
    o All DGT on a given route,
    o Specific vehicle in a targeted area.
  • Dynamic risk analysis in case of accident:
    o On line risk analysis and assessment based on DGT information.
Background on Dangerous Goods Transport:

- Multimode land transport: road, train, waterborne,
- On roads: Hydrocarbons (85%), Chemicals...
- ~ 5% of HGVs carrying dangerous goods,
- Identification: Orange plate + Hazmat Labels Pictograms

International Regulation - Legal Instruments:

- UNECE - ADR: The European Agreement concerning the International Carriage of Dangerous Goods by Road

Specific road traffic orders for DGT:

- Tunnels categories,
- Dedicated routes,
- Restricted Access to sensitive areas...
Local and regional context

✓ Rhône-Alps Region
  • Highly industrialized,
  • Considerable DGT activity (notably due to petrochemical plants)

✓ Lyon
  • Heavy DG traffic
  • Major routes (road, rail, waterways)
  • Intermodal hubs

✓ The Greater Lyon area
  • Ideal experimentation area for demonstrators
  • No interactive tool with vehicles currently available.
  • DGT traffic scheme: ahead of other European cities
Local DGT traffic scheme

- Tunnels access prohibited (Dotted red lines)
- Mandatory transit routes (blue)
- Restricted area (orange)
- Time slots for deliveries (6-10am & 4-8pm: prohibited)
- Dedicated local delivery routes (green)
DG identification requirements

- Identify dangerous goods transported (notably multi-tank vehicles)
- Access files relating to the safety/dangerousness of goods
- Supply information in addition to the orange plate

Organizational requirements

- Real time tracking and tracing system based on GNSS
- Electronic documents available via mobile electronic devices
- Goods delivery status
- Traffic status information, journey time updates on certain routes and re-routing options
✓ Safety requirements
  • Plan DGT movements / Pre-trip information
  • Geofencing: protect high-risk areas
  • Guarantee a high level of safety for users
  • Provide safety authorities and emergency services with better information

✓ Statistical requirements
  • Establish statistics of DG movements
  • Knowledge of routes used and statistics for each route
GEOFENCING MD:

✓ First urban application of the « air traffic control tower » concept
  • City / Region managed like an airspace

✓ Efficiency
  • Performance, ergonomics and reliability

✓ Standardisation
  • inter-modality, international (DATEX II compatible)

✓ Compatibility
  • Interfacing with other information systems (carriers, loaders....)
Information on dangerous goods transport

- Information on tours, missions and deliveries
- Information on the transport: truck, trailer & driver
- Dangerous goods packages: name, UN number, volume…
Monitoring of sensitive locations and dense urban areas with geofencing services (Air Traffic Control Tower concept)

Notifications sent either to:
- Authority
- Fleet manager
- Driver
Applications satellitaires / Geofencing

- Management of DGT traffic along regulated and transit itineraries
- Monitoring of dedicated parking areas
GNSS / Geofencing Applications

✓ Information sent to drivers to avoid prohibited routes and tunnels:

Fourvière Tunnel
Risk analysis related to Dangerous Goods Transportation

- On line risk assessment of Dangerous Goods Transportation (G-Scop lab)
  - Building of maps of dangerous good flows using movement history
  - Determination of dangerous areas around DGT
Expected benefits

✓ **Public actors** *(central government authorities, local authorities, infrastructure managers, safety services...):*

→ efficient additional mean to ensure safety:

- Better knowledge & monitoring of DG movements
- Dynamic management of high-risk areas and transit routes
- Critical and crisis situation management.

✓ **Private actors** *(shippers, carriers, logistics operators):*

- Improve customer service and competitiveness
- Maintain and extend their business activities in the urban area
- Anticipate regulations for long-term compliancy
Thank you for your attention

GEOFENCING MD Consortium