Cooperative ITS and Datex II for road managers and drivers

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Système Co-Opératif Routier Expérimental Français
French Experimental Cooperative ITS
Contents

- The project
- Aim and use cases
- System Architecture
- Datex II in SCORE@F
- And now... ?
The project

- Duration: 30 months
- Start: 1 September 2010
- Total Budget: 5.6 M€
- Support: 2.7 M€
- More than 20 Partners
Uses Cases

Traffic Management
- Collect of traffic information and centralization to the management center (GT01)
- Legal and contextual speeds limits (GT02)
- In-vehicle signage (MC01)

Road Safety
- Road works warning (SR01)
- Information about obstacle on roads (SR04)
- Information about humans on roads (SR05)

Mobility and Comfort
- Point of interest notification
- Carpooling...
Uses Cases

The tests focus on:
- Alert driver application
- Collision risk warning
- Traffic data exchange

Co-operative Awareness (V2V)
(Info to driver)

Longitudinal Collision Risk Warning
- Forward
- Frontal

Intersection Collision Risk Warning
- Lateral

MOTORWAY
CAM & DENM Processing
Traffic Management Centre
- Speed Limits
- In vehicle VMS
- Detours
General Architecture

Information can come down from the manager center or a patrol, or up from vehicles.
RSU's Internal Architecture

The architecture is in two parts: Datex II Gateway and The use cases apps.

**Datex Webservice**: provides an Internet service that can receive a message in Datex II format from the Road Management Center (PCE in French). It forwards the message to the next bundle for treatment.

**Datex Processing**: can read the line from the Datex II message, extract the useful information, and create a new object for storage.

**Datex Client**: can pull information messages from the Road Management Center and send traffic data messages gathered by RSU to the Management center.
Specification of the Datex II Gateway

Developed as a Webservice
Deployed in the RSU, in a OSGi environment
Communication with the SOAP protocol
Messages defined for each use case from the Data model in Datex II
Push Mode – Center to RSU
Pull Mode – Center to RSU
Push Mode – RSU to TMC
Full scale tests

Various tested environments
- Closed track in Satory: to validate the system and Road Safety use cases.
- Motorway (A10, A86)
- Suburban roads (RD91)
- Urban roads (Versailles)

The three last environments were used to test the others uses cases (Traffic management, mobility and comfort)
Use case « Traffic information management » in Datex II

- Tests on open road: 13 km, 2x3 lanes, with a rest area in each way.
- Important traffic 50000 vehicles by day
- 4 RSU
- 8 uses cases tested
- Selected soluntaries to test the system
- Interview with an ergonomist for system improvement

RSU to RMC by the gateway:
- Speeds
- Number of vehicles
- Number of vehicles using the fog lights, the windshield wipers...
- Visibility, Weather

Informations stocked in the RMC's database
Real time evolution on the RMC's HMI
Not only a HMI but also an OBU

Joint Development – CEREMA/DTerIDF and IFSTTAR/LIVIC
HMI for drivers
Events Alerts / Contextual speeds

Road Work Warning: 20 seconds before the event's localization
Speeds: 10 to 15 seconds before the road sign
Onboard VMS
The patrol vehicle can send certified messages, VMS or Alert Road Safety
Sent directly to the RSU and TMC in DATEX II
by G5 or by 3G if not within range of RSU
Alert notification and VMS sent directly to road’s users in CAM/DENM format
Road safety alert

Date:
- Begin
- End

Point:
- Begin
- End

Contextual Speed limit

Date Début:
- Sep 2012: 21
- Oct 2013: 22
- Nov 2014: 23

Date Fin:
- Sep 2012: 22
- Oct 2013: 23
- Nov 2014: 24

Vitesse limite (km/h):
- 30
- 50
- 70
- 90
- 110
- 130
Project Results

Validation of standard technical platform
Engineering process refinement
Viable business model
Societal benefits assessment
And after that...

**SCOOP@F** : Experimental deployment of 3000 Intelligent Vehicles over 2000 km of connected roads connected.
Appendix
Cerema

- Centre For Studies and Expertise on Risks, Environment, Mobility, and Urban and Country planning (Centre d’études et d’expertise sur les risques, l’environnement, la mobilité et l’aménagement)

- Our key figures
  - 3100 employees
  - 220 national and international experts
  - € 250 M budget
  - 29 sites in France
  - 180 annual publications
  - 66 national expertise hubs
  - 33 associated research teams

- The Territorial Division of Greater Paris Region is part of the RST, Scientific and Technical Network of the French Ministry of sustainable Development and Transports
- In the field of Transports, the Territorial Division manages in particular the Cluster of Competence and Innovation about the Dynamic Regulation of Transport Networks.
- We are involved in standardization bodies (C-ITS and DATEX II) and in several French ITS or C-ITS projects: SCORE@F, SCOOP@F, JACINT...