EasyWay

DATEX II User Forum - 20/21 March 2012 - Stockholm

SCORE@F the French Field Operational Test to deploy cooperative systems

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On behalf of SCORE@F consortium

Project Summary

- Duration: 30 months since 1st September 2010
- Total funding/budget: 2.7 M€/5.6 M€ (French national and regional funding)
- Mission: to prepare the deployment of Cooperative systems
- Consortium: 20 partners (co-ordinated by Renault)
- Competitiveness Pole: MOV'EO
- Experiment on Test circuit, Motorway and Urban / Rural environment in Yvelines department

Consortium

Automobile

RENAULT

LEADER

PSA PEUGEOT CITROËN

HITACHI
Inspire the Next

UTAC

LAB

Road Infrastructure

COFIROUTE

egis mobilité

neavia technologies

Telecom & Services

senda

Viveris Technologies

orange

DEVERYWARE

Intempora

MARBEN

Research Institutes

EURECOM
Sophia Antipolis

TELECOM Ecole de Management

IFSTTAR

INSTITUT NATIONAL DE RECHERCHE EN INFORMATIQUE ET EN AUTOMATIQUE
INRIA

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

Direction régionale et interdépartementale de l'Équipement et de l'Aménagement ÎLE-DE-FRANCE
CETE Île-de-France

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

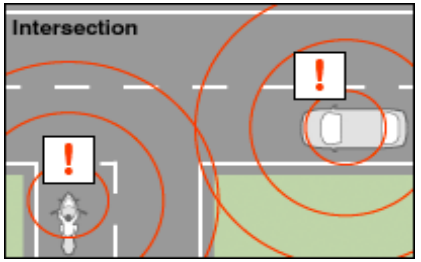
Ministère de l'Écologie, de l'Énergie, du Développement durable et de la Mer

ZELT

Yvelines
Conseil général

Contributions

- **Impact evaluations:**
  - Technical evaluation (technologies, use cases, system architecture)
  - User acceptability / driver behavior
  - Social and economic values
  - Legal and organizational issues
  - Business model
- **Exploitation of results:**
  - Deployment strategy (PPP)
  - System engineering (e.g. Validation)



Road Security

Traffic Management

Mobility and Comfort

- **POI Notifications**
- **Local Electronic Commerce**

Cooperations

SCORE@F Co-ordination

INRIA

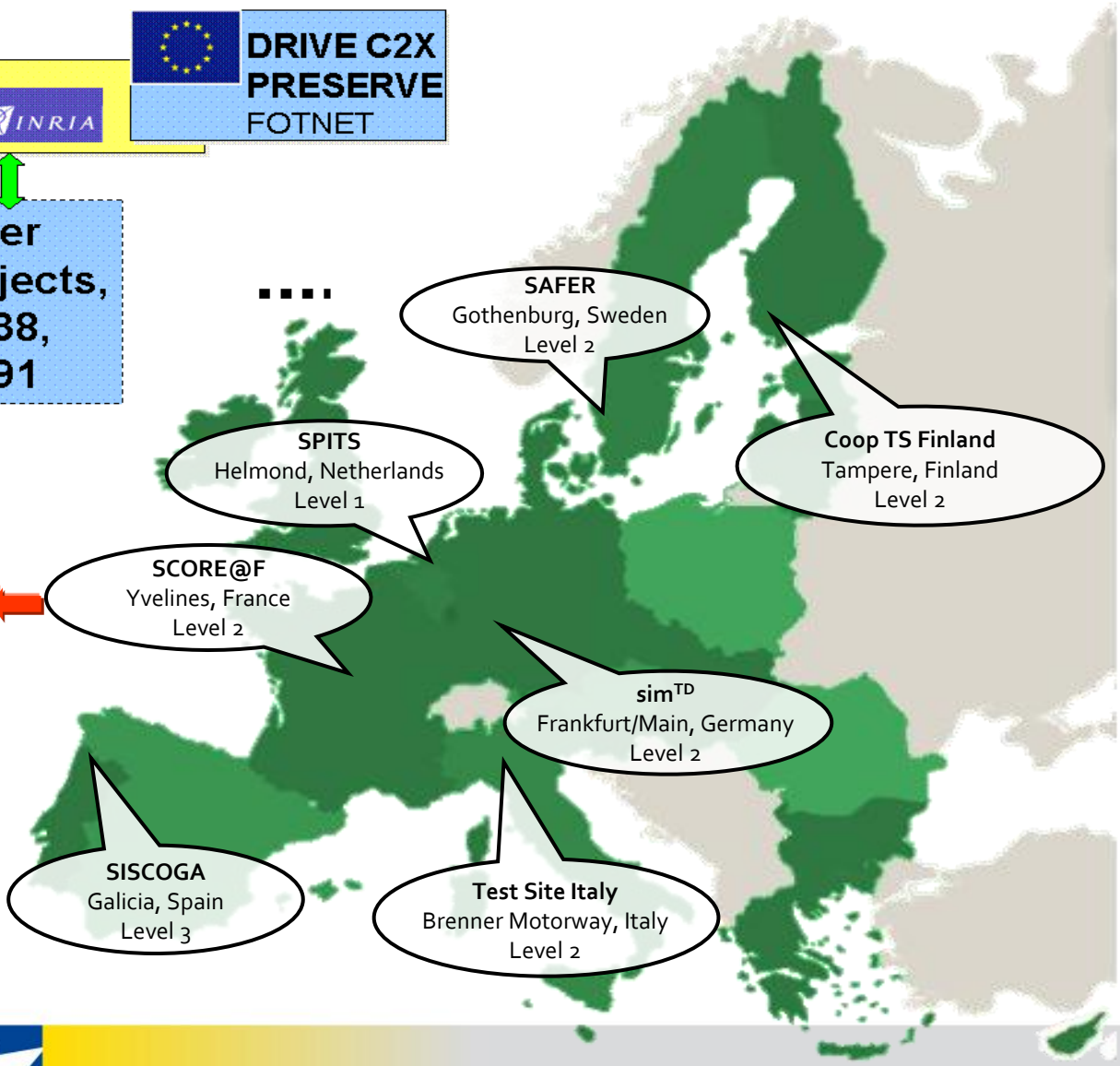
DRIVE C2X
PRESERVE
FOTNET

SCORE@F Technical Platform and Motorway, CG78 Field Operational Tests

CO-DRIVE
Agreement for Integration in Expérimentation @France

Other Projects, CG38, CG91

SCORE@F



FOT Geographical Coverage

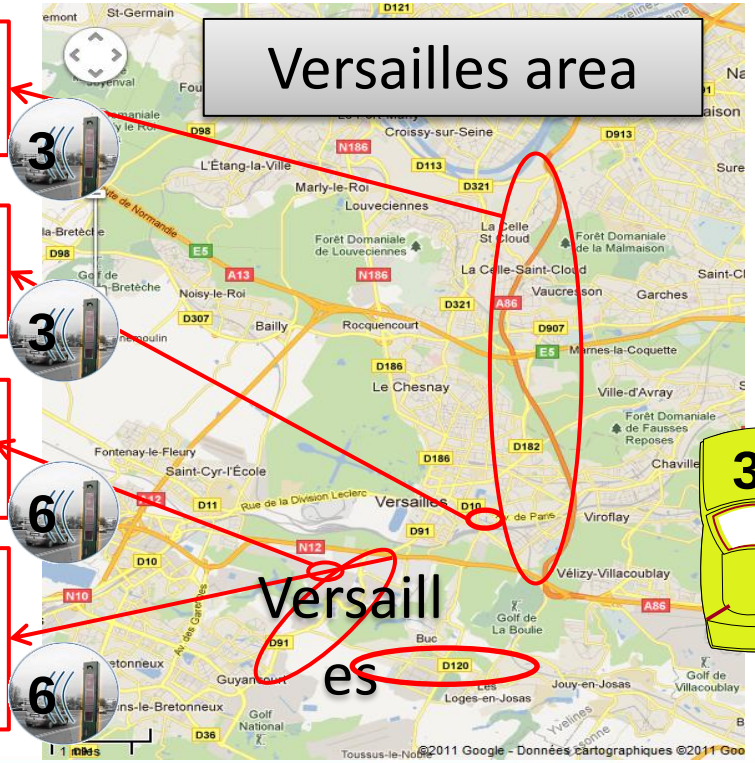
- Two types of test sites in Yvelines area and Orleans area, 28 RSUs:
  - Controlled test tracks (SATORY): for system validation and road safety applications
  - Natural test site: open traffic test in highway, urban/rural roads
- Other test facilities:
  - Laboratory test: 802.11p modem test bench, 802.11n, 3G
  - Simulation

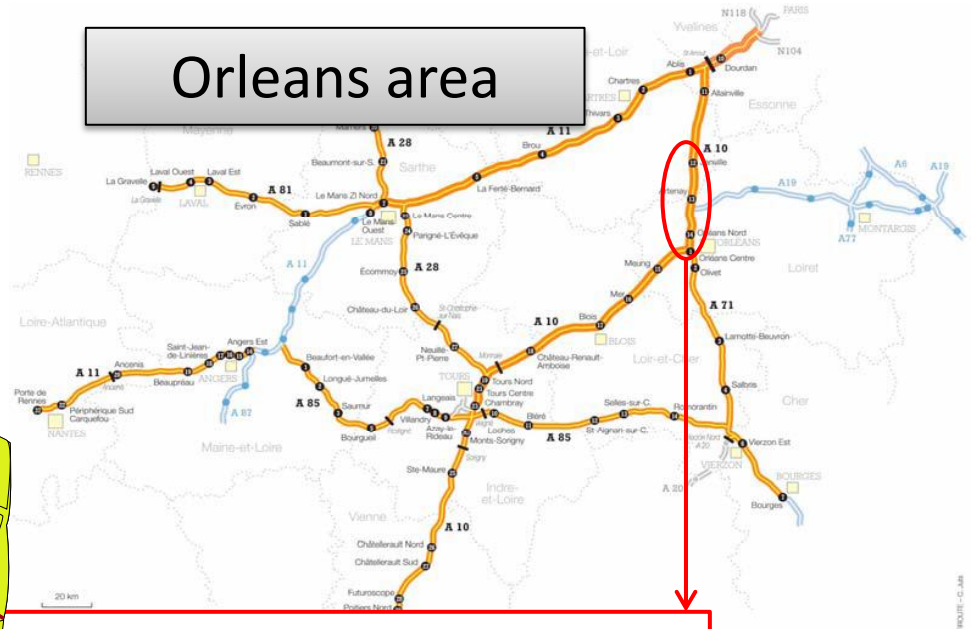
Highway A86:
10km tunnel
No RSU inside the tunnel

Urban road in Versailles: 5 intersections with traffic lights

Close test tracks: SATORY-IFSTTAR 3 tracks from 2-4km, 6 RSUs

N12 / D91: 3.5km / 4.4km,
6 RSUs (main spot) Urban/Rural

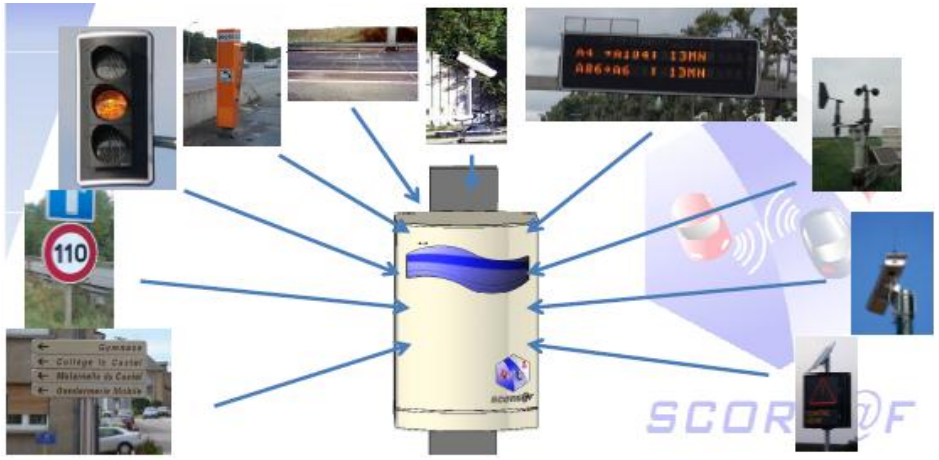




Highway A10 near Orleans (operated by Cofiroute):
13 km, 2x3lanes highway
Equipped with induction loop

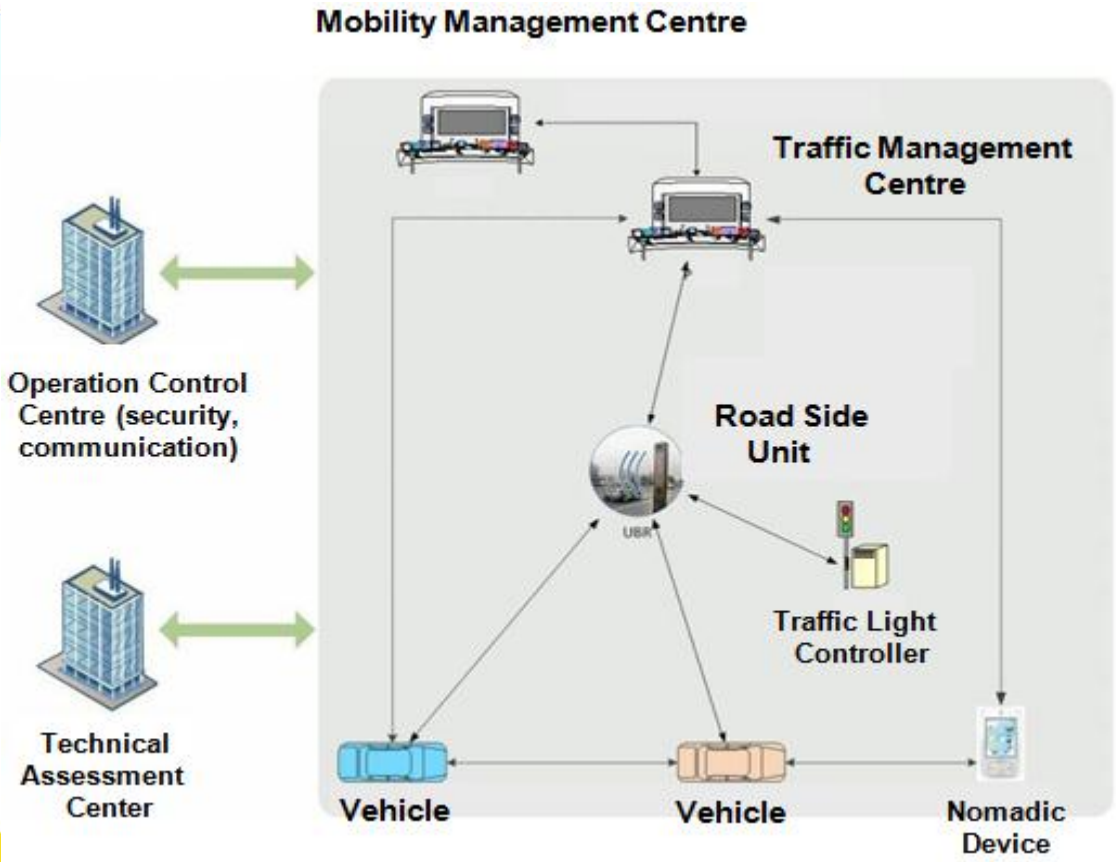
10

Developpment of an Ecological and Economical Road Side Unit

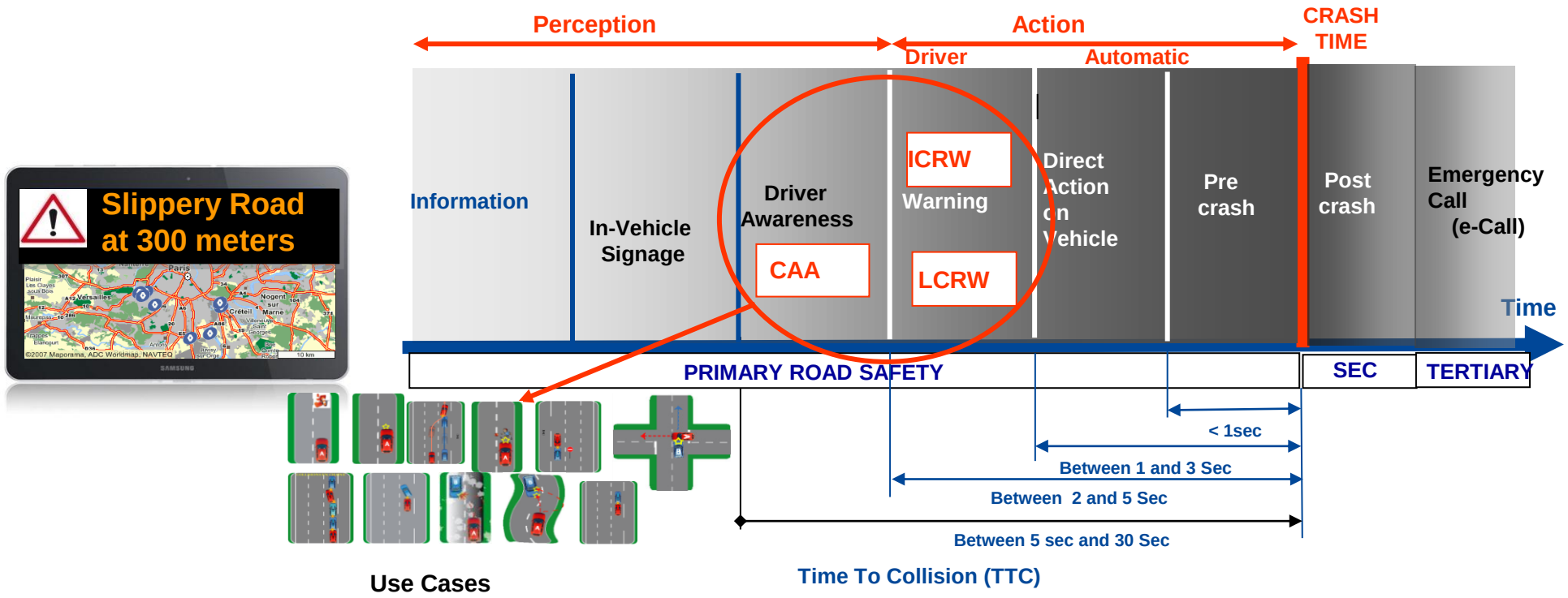


neavia technologies

... in the overall architecture



ROAD SAFETY USE CASES (Based on ETSI TS 101 539 Standard)



SCORE@F tests not only driver awareness (information based) but also collision avoidance applications (warning based).

- The collision avoidance applications are tested in a controlled environment.
- Additional functional/performance requirements:
  - Lane information; Positioning accuracy; Application design

SELECTED USE CASES
Priority 1

	Use Cases	ETSI Reference		
		CAA	LCRW	ICRW
ROAD SAFETY	Road work	●	●	
	Traffic Jam	●	●	
	Stationary Vehicle	●	●	
	Human on the road		●	
	Low stability	●	●	
	Signal Violation			●

	Use Cases	Motorway	RD91
TRAFFIC MANAGEMENT	EFCD	●	●
	Contextual Speeds (CSL)	●	●
	Recom. Itinerary (TIRI)	●	●
	Stop – Start at TL (S-S TL)		●

	Use cases
COMFORT & MOBILITY	In-Vehicle Signage (VMS)
	Intermodality HUB (P&R, OTS)

SELECTED USE CASES
Priority 2

	Use Cases	ETSI Reference		
		CAA	LCRW	ICRW
ROAD SAFETY	Approaching Vehicle		●	
	Counter sens Vehicle	●	●	
	Warning from a Third Party		●	●
	Road Obstacle	●		

	Use Cases	Motorway	RD91
TRAFFIC MANAGEMENT			

	Use Cases
COMFORT & MOBILITY	Electric Vehicle Point of Charge Notification (EVCSN)
	Fleet Management

Reference Specifications

APPLICATIONS	MESSAGES	REF SPEC
ROAD SAFETY	CAM & DENM V2 + SPAT, IT	ETSI TS 101 539
Collect CAM & DENM, transfer to Traffic Management Center	DATEX 2	CEN TC 278 WG16
Contextual Speed Limits	CSM	CEN TC 278 WG16
Traffic Info and Recommended Itinerary	TIRIM	DRIVE C2X ?
Stop – Start at Traffic Light	SPATM + Intersec. topology	ETSI TS 101 539 (SAE / SIM – TD)?
Service Announcement	SAM	ETSI TS 102 890-2
In-Vehicle Signage (VMS)	VMSM	CEN TC 278 WG16
POI Mobility HUB (Public Transport)	HPRM	SCORE@F
POI Mobility HUB (OTS)	HOTSM	SCORE@F
POI Security Management (VIA)	SMM	SCORE@F
POI EV Charging Spot Notification	EVCSNM	ETSI TS 101 556

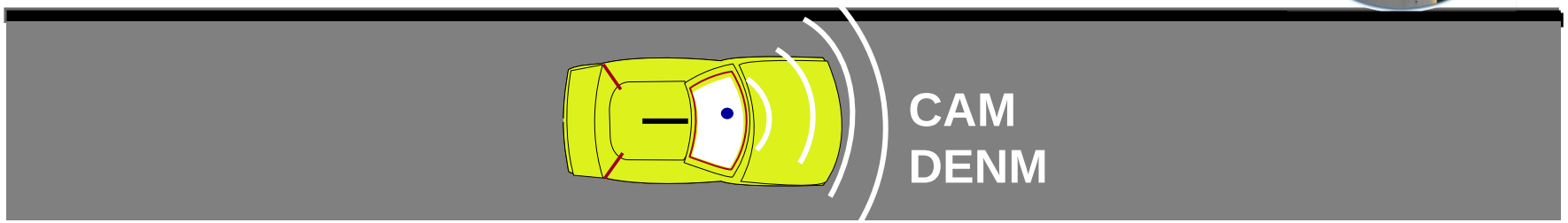
TRAFFIC MANAGEMENT USE CASES

Traffic Management Center

- Transfer pre-processed CAM & DENM
- Contextual Speed Limits
- In-Vehicle Signage
- Traffic Info & Recommended Itineraries

DATEX 2

RSU



GATEWAY DATEX 2

- Messages from RSU to TCC are intended:
  - To transmit measured data, particularly traffic data
  - To supply event information
  - To transmit developed data (incident detection, traffic jam, rain,…)

- Messages from TCC to RSU are intended:
  - To transmit information to users through informative messages about user actions, the impact of an event or non-road event
  - To offer users a recommended itinerary
  - To provide information on available multimodal report
  - To provide value added service

GATEWAY DATEX 2 - Architecture

Data recovery system

Back-office/ TCC

Server

Datex Gateway (generate xml, xml parser, xml2java, Java2xml,..)

RSU

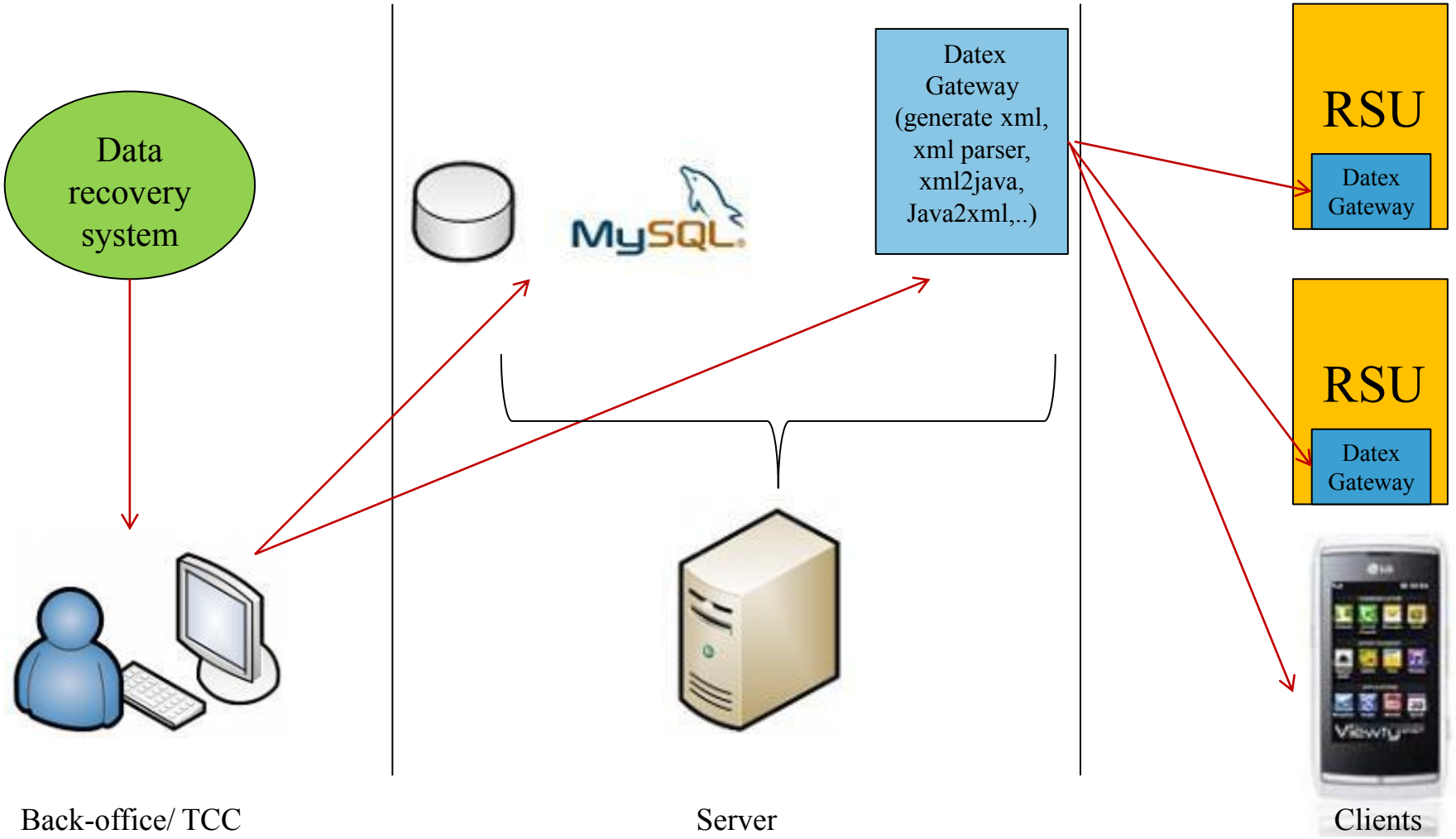
Datex Gateway

RSU

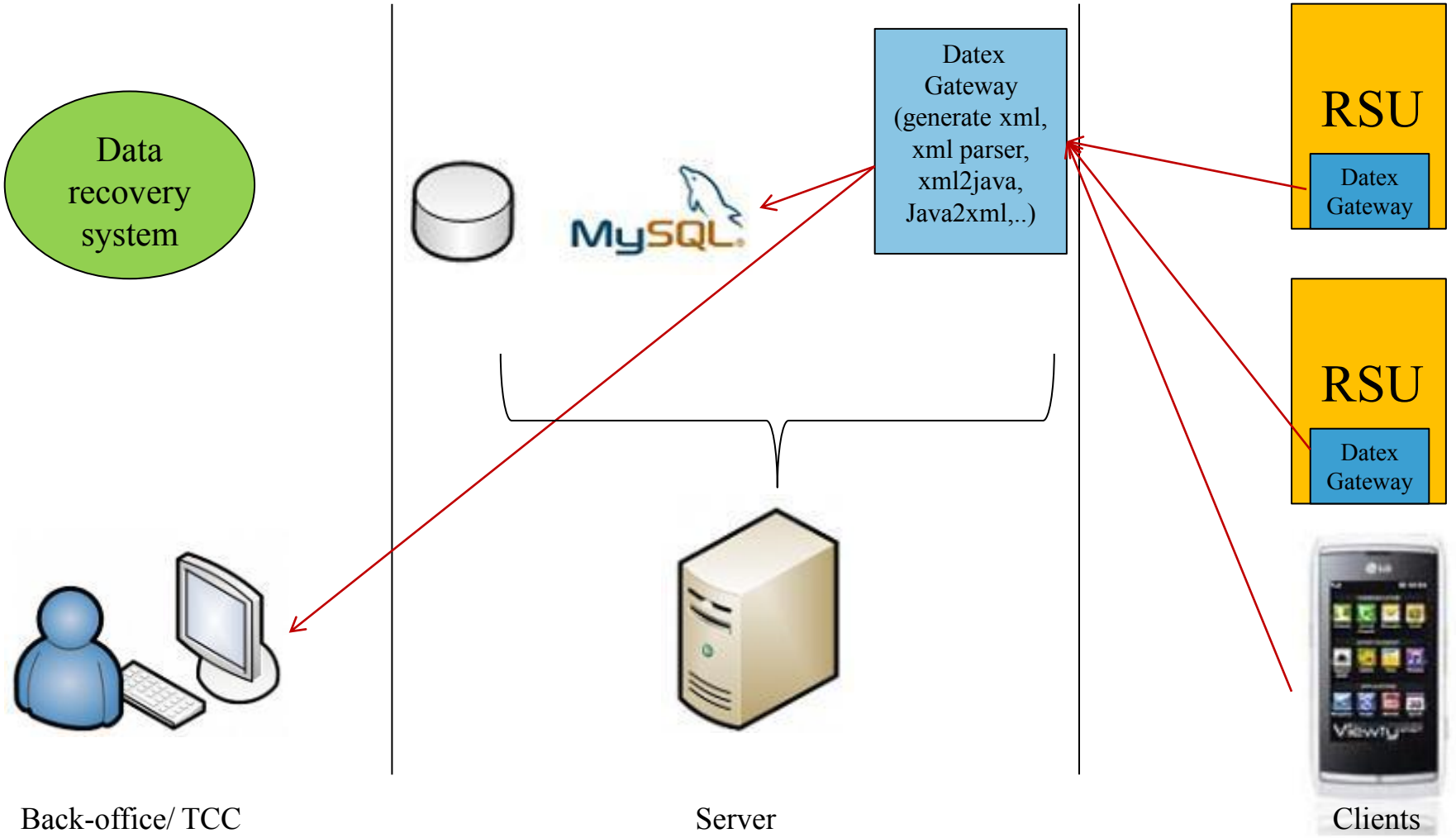
Datex Gateway

Clients

GATEWAY DATEX 2 – Send message push mode



GATEWAY DATEX 2 – Receive message



GATEWAY DATEX 2 – use cases

- Roadworks
- Traffic Jam
- Immobilized vehicle
- Obstacle
- Human presence
- Wrong way vehicle
- Poor visibility
- Traffic data
- Speed limits
- Travel time

- Each use case has its specific application

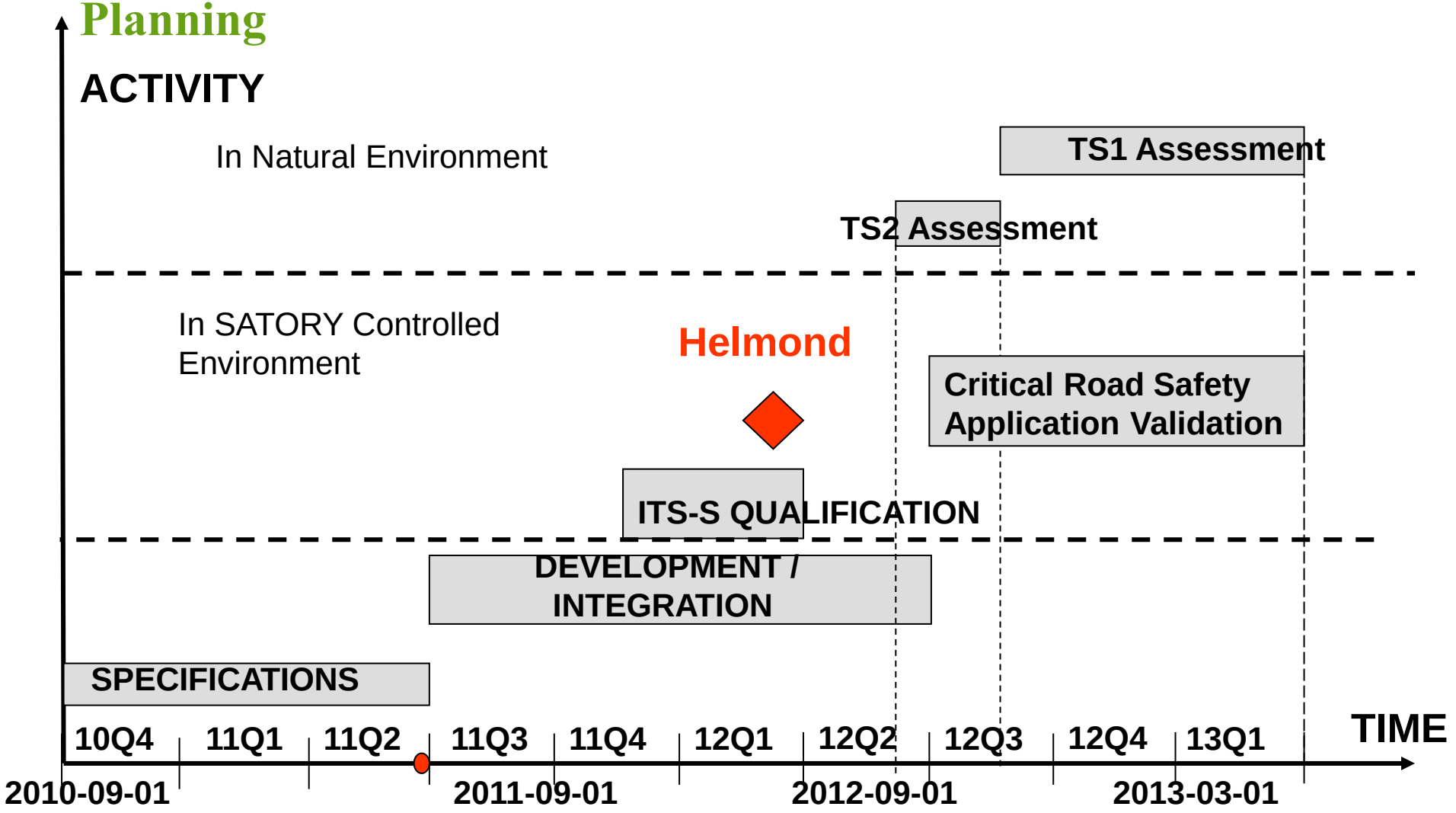
Assessment Purpose

- Technical assessment of critical road safety applications (calibration) in controlled environment
- Conformance Testing, Interoperability, performance testing.
- Driver Behaviour in controlled and natural environment.
- Driver acceptance and customer value

Organizational impact (life cycle management / Security.

- Cross exchange of assessment results with other DRIVE C2X National FOT

Planning


ACTIVITY
In Natural Environment
TS1 Assessment
TS2 Assessment
In SATORY Controlled Environment
Helmond
Critical Road Safety Application Validation
ITS-S QUALIFICATION
DEVELOPMENT / INTEGRATION
SPECIFICATIONS
10Q4
11Q1
11Q2
11Q3
11Q4
12Q1
12Q2
12Q3
12Q4
13Q1
TIME
2010-09-01
2011-09-01
2012-09-01
2013-03-01

Thank you for your attention

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