



7th Framework Programme  
INFORMATION AND COMMUNICATION  
TECHNOLOGIES  
Collaborative Project  
Grant Agreement n°: 270447----

## **D1.1 Project Presentation**

**FOTsis\_WP1100\_DE\_D1.1\_M6\_V0.3**

Version number: 0.3  
Dissemination Level: PU  
Lead Contractor: Coordinators  
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## Authors

Emilio Cacheiro  
Federico García-Linares  
José Luis Pérez Iturriaga  
Isaac de Frutos  
Elena Cano  
Paulo Gomes

## Revision and history chart

VERSION	DATE	EDITOR	COMMENTS
0.1	26/09/2011	Emilio Cacheiro	1 <sup>st</sup> draft. The main updates respect to the deliverable in M1 are: <ul style="list-style-type: none"><li>• New template</li><li>• New Structure sketch</li><li>• WPs summary of activities</li></ul>
0.2	29/09/2011	Emilio Cacheiro	1 <sup>st</sup> draft updated with: <ul style="list-style-type: none"><li>• WP2000 summary of activities</li><li>• S6 and S7 description: new sketch</li></ul>
0.3	30/09/2011	Emilio Cacheiro	1 <sup>st</sup> draft updated with Alfonso Basabe and Miguel Seisdedos (IRIDIUM) comments



## European Field Operational Test on Safe, Intelligent and Sustainable Highway Operation



< date >

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- **Overview**
- **Objectives**
- **Services**
- **Work Plan**
- **Test-Sites**
- **Consortium**
- **Project Main Figures**

## OVERVIEW

- Many EC-funded research efforts have approached cooperative systems from a vehicle perspective
- Some current projects related to cooperative systems have influence in the infrastructure
- There are almost not private Infrastructure Operators involved in ICT for Transport projects
- Spanish OASIS initiative for developing the Highway of the Future, starting point for Infrastructures participation in European projects: FOTsis

**FOTsis is one of the two Integrated Projects approved in the Call ICT for Mobility of the Future (FP7-ICT-2009-6)**

**FOTsis** is a large-scale field testing of the road infrastructure management systems needed for the operation of close-to-market cooperative I2V & V2I technologies, in order to assess in detail both 1) their effectiveness and 2) their potential for a full-scale deployment in European roads



**FOTsis** represents a **step forward** to better connect vehicles, infrastructures and traffic management centres



FOTsis will test 7 **services** in several experimental environments throughout Europe:

- **S1: Emergency Management**
- **S2: Safety Incident Management**
- **S3: Intelligent Congestion Control**
- **S4: Dynamic Route Planning**
- **S5: Special Vehicle Tracking**
- **S6: Advanced Enforcement**
- **S7: Infrastructure Safety Assessment**



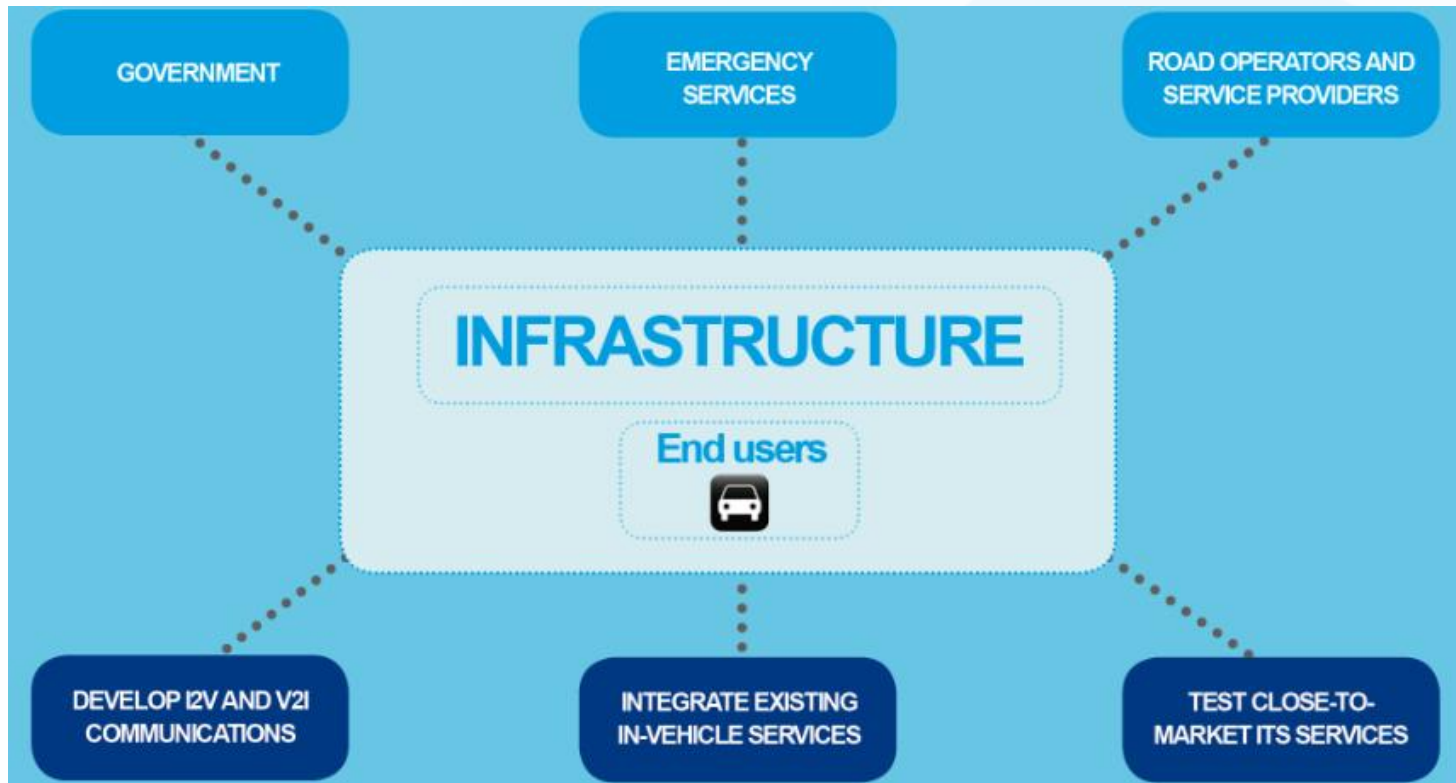
FOTsis can contribute to a **safer, more intelligent and more sustainable** road transport system

**FOTsis** main objective is to test the infrastructure's capability to provide the aforementioned 7 **services**

**FOTsis** will review the following elements in connection to the **infrastructure**:

- Communication networks
  - Integrated ITS Systems
- Interaction between Infrastructure and Users
- Infrastructure Management Tools for Safety and Mobility
  - Regulatory Framework
  - Stakeholders' Relations
- Impact on Safety, Mobility and Sustainability

Infrastructure as cooperative services provider :



## OBJECTIVES

## FOTsis General Objectives:

- FOTsis can contribute to a Safer, more Intelligent and more Sustainable road transport system
- Develop a common ITS & Communication Architecture for the European infrastructures
- Develop and test FOTsis Cooperative Services
- Promote the implementation of this Architecture and these Services in the existing and future highways
- Generate Business Models to promote these Services
- Dissemination Cooperative Services vs. Infrastructure
- Ensure that the Infrastructure is prepared to current and future Cooperative Services

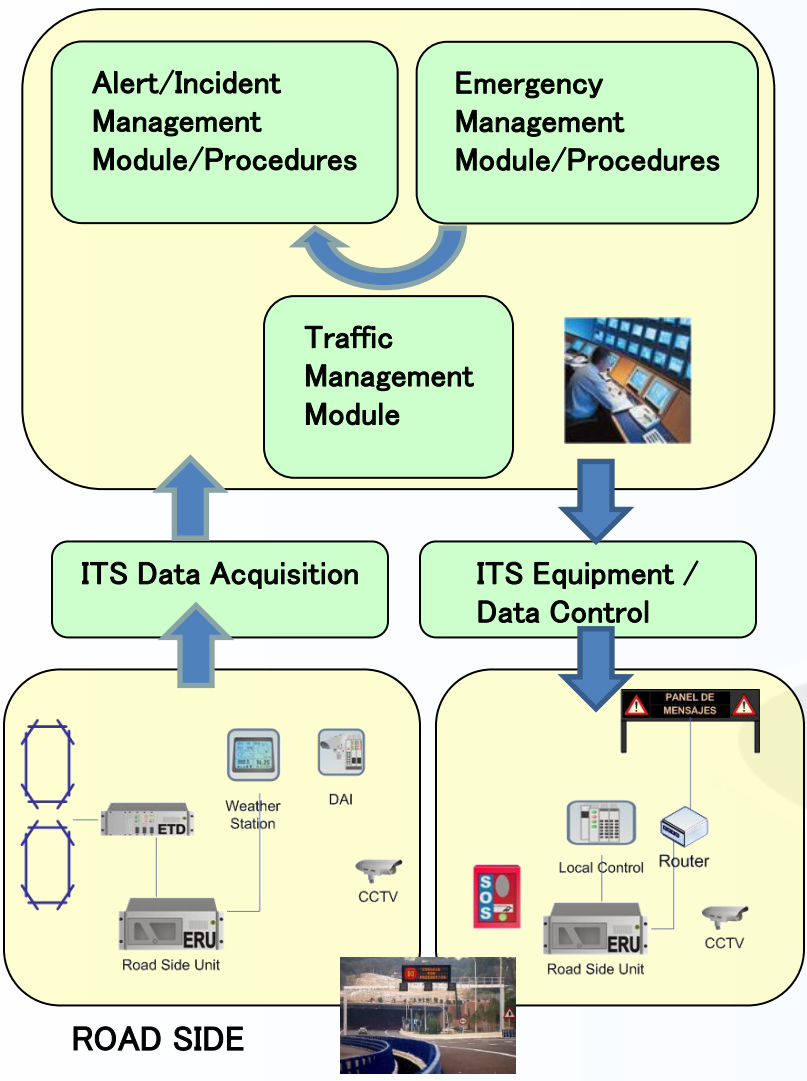
## FOTsis Technical Objectives:

- FOTsis will develop its General Architecture according to European Standards
- FOTsis aims to integrate different existing solutions of:
  - ✓ On Board Units
  - ✓ Road Side Equipment
  - ✓ Communication access
  - ✓ Control Centre Systems
- FOTsis will cooperate with parallel FOTs and related R&D initiatives towards an European interoperability & standardization of Cooperative Services

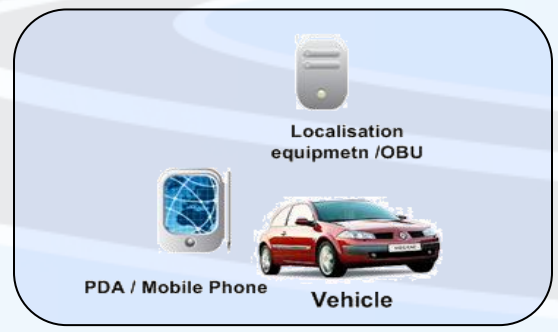
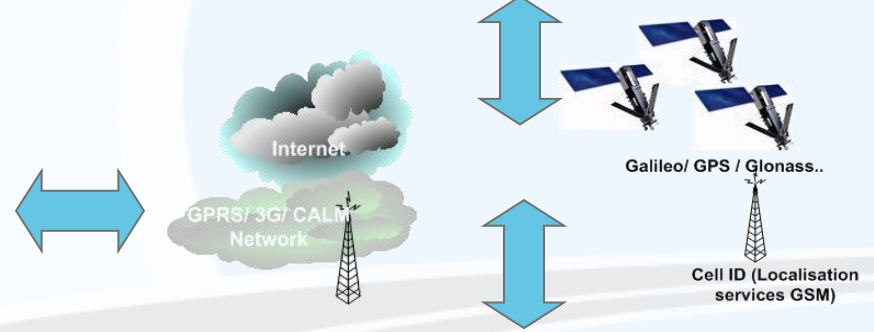
**FOTsis** will be open to disseminate technical tools promoting the deployment of ITS Cooperative Services in European motorways network

## SERVICES

# GENERAL ARCHITECTURE



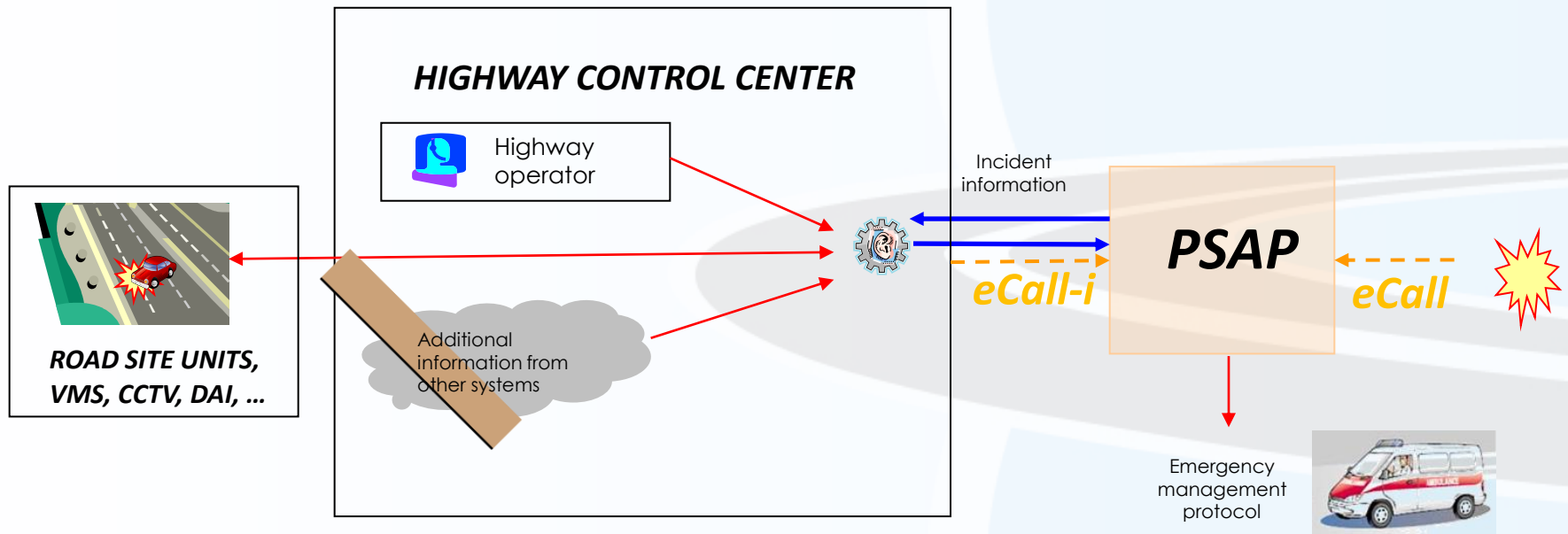
## EXTERNAL ACTORS



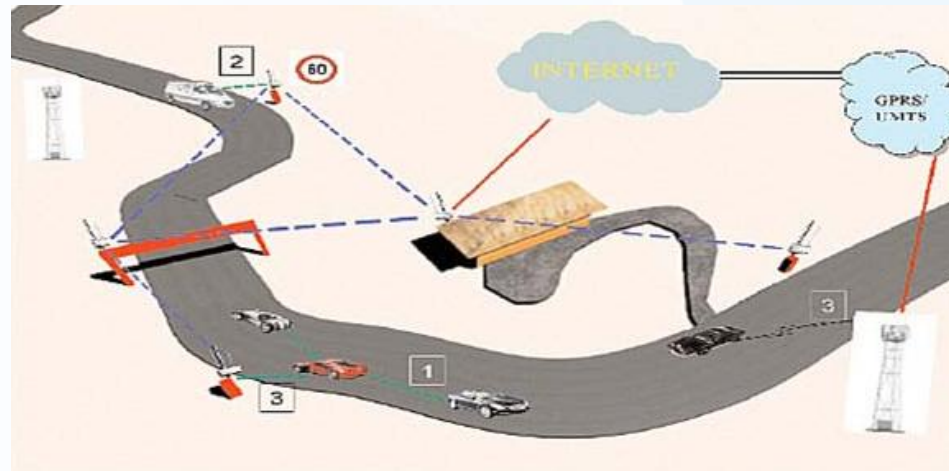
## VEHICLE



- Accident detection (vehicle & infrastructure)
- Infrastructure data emission to the PSAP and generation of the eCall-i
- Emergency management protocol activation including emergency vehicles recommendations and information disseminated to drivers

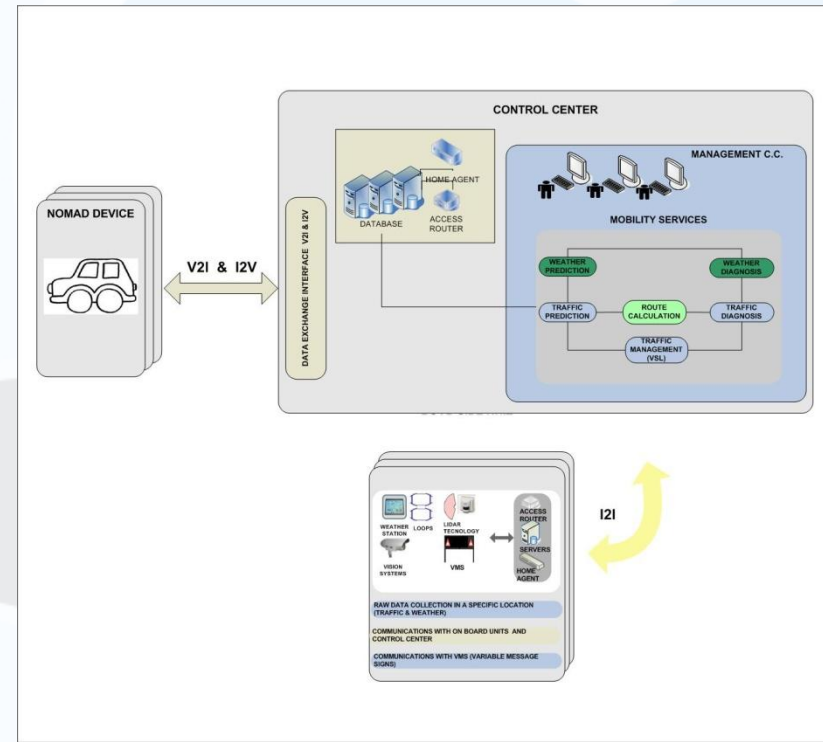


- Incident detection by roadside equipment. Starting automatic action management protocols should an incident occur
- Processing and analysis of data in control centre, taking into account the implications to existing traffic
- Information disseminated to drivers/users of the infrastructure by means of different media formats (I2I & I2V communications)

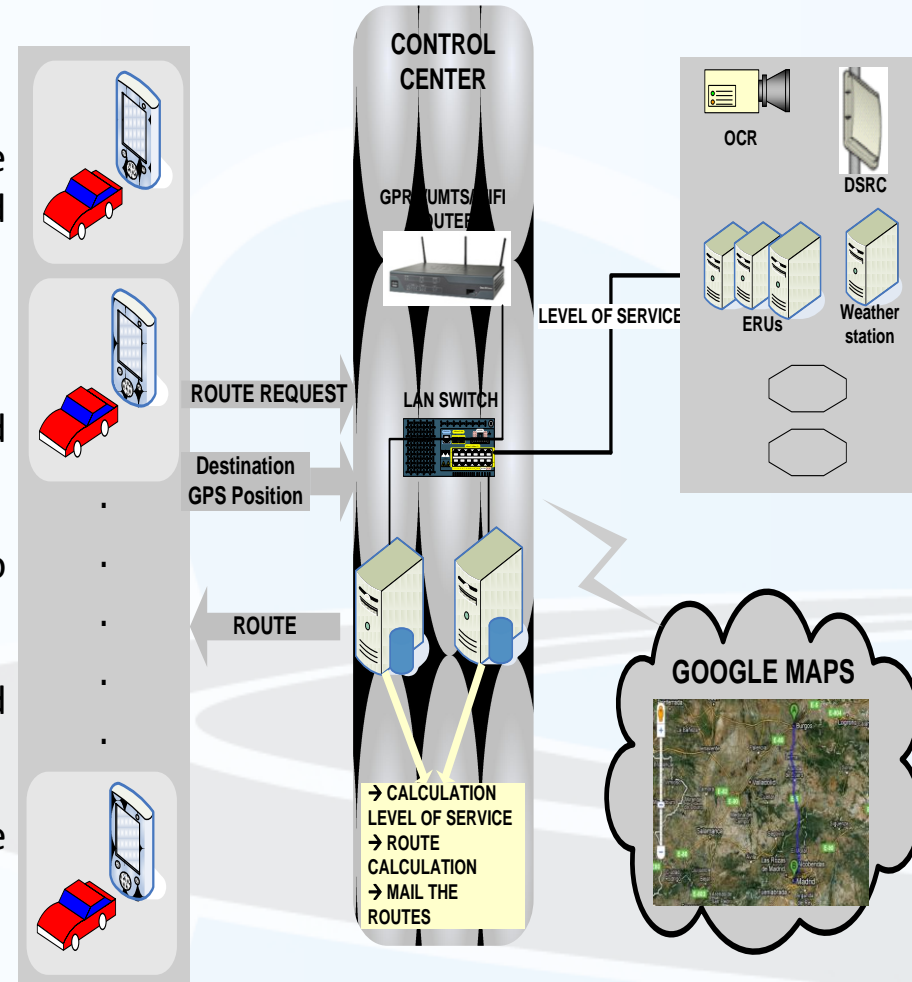


### S3. INTELLIGENT CONGESTION CONTROL

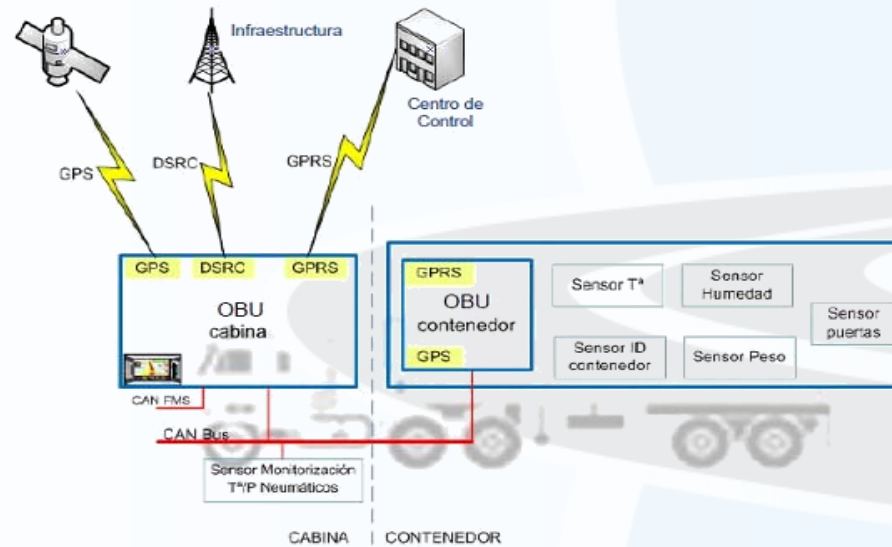
- Traffic management system based on new predictive traffic engineering algorithms
- Estimate traffic conditions based on the correlation between weather forecasts and traffic sensor data
- Improve traffic load balancing in the road networks from the integration of dynamic data from diverse traffic information sources including control strategies → dynamic speed limit
- Information disseminated to drivers/users using I2I & I2V communications



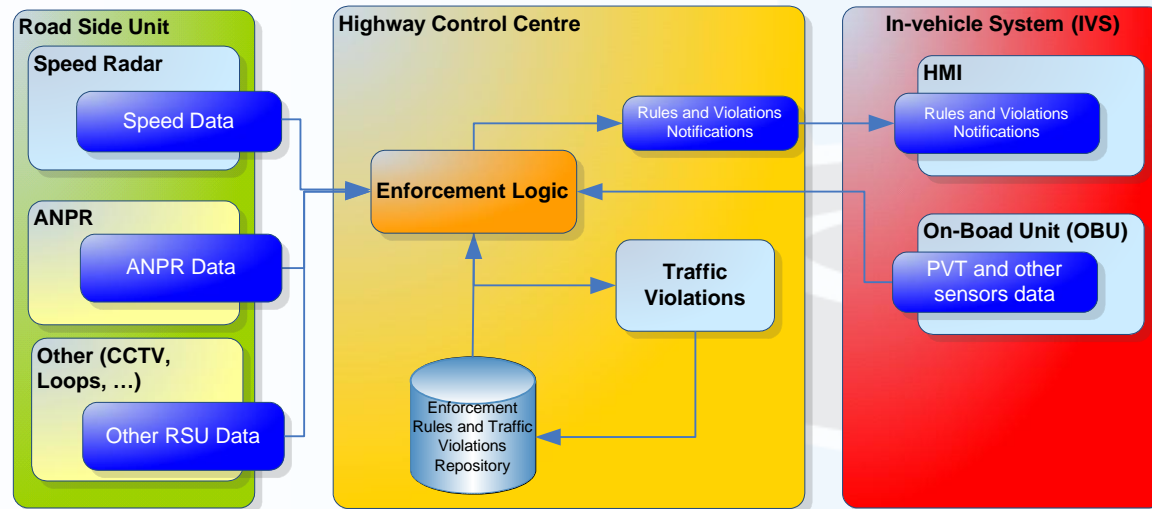
- Personalised route calculation (from the infrastructure) based on Rules System obtained from Service 3
- Alternative route evaluation:
  - ✓ Current travel time delay on the main and alternative route
  - ✓ Forecasted travel time delay from now into the future
  - ✓ Travel time delay between normal and alternative route at normal traffic
  - ✓ Information disseminated to the users/drivers by a nomadic device (I2V)



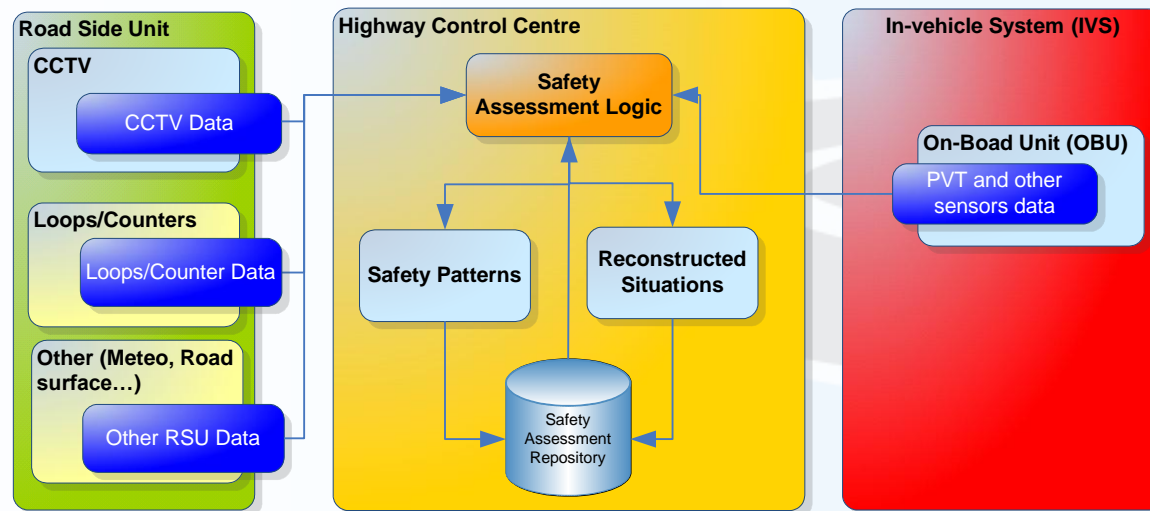
- Special vehicles communicate critical in-vehicle information to the infrastructure
- The infrastructure monitors the special vehicle conditions, and deploys intervention protocols should an emergency occurs



- Integration of infrastructure data with vehicle data to carry out enforcement of traffic (e.g. speed limits) or other rules related to the use of a road infrastructure (e.g. obligation of the use of a DSRC OBU)
- Notification of rules and infractions to the drivers by I2V/V2I communications



- Infrastructure safety assessment analysing information provided by the infrastructure and in-vehicle information (concept of OBU as a black box)
- Reconstruction of specific safety-related situations and driving behaviour (post-processing)
- Evaluation of safety in specific stretches of a highway



## WORK PLAN



**WP1000 COORDINATION**

WP1100 Management  
 WP1200 Internal administration  
 WP1300 Quality & risk management

**WP2000 FOT DESIGN**

WP2100 Coordination  
 WP2200 Methods & tools  
 WP2300 Data specification  
 WP2400 Technology monitoring

**WP3000 FOT EXECUTION**

WP3100 Coordination  
 WP3200 Tools development  
 WP3300 Test communities set-up  
 WP3400 FOT plan  
 WP3500 Large-scale FOT execution  
 WP3600 Detailed FOT execution  
 WP3700 Data & vehicle handling

**WP4000 EVALUATION & ASSESSMENT**

WP4100 Coordination  
 WP4200 Database usability & accessibility  
 WP4300 Safety impact assessment  
 WP4400 Mobility impact assessment  
 WP4500 Sustainability impact assessment  
 WP4600 Business models  
 WP4700 Implications for transport system  
 WP4800 Trials' assessment

**WP5000 DISSEMINATION & EXPLOITATION**

WP5100 Coordination  
 WP5200 Dissemination  
 WP5300 Industry exploitation  
 WP5400 Stakeholder Club  
 WP5500 Liaison with on-going projects

Id.	Work package	2011			2012				2013				2014			
		T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	T4	T1	T2	T3	
1	WP1000: COORDINATION	[Timeline bar for WP1000: COORDINATION]														
2	WP2000: FOT DESIGN	[Timeline bar for WP2000: FOT DESIGN]														
3	WP3000: FOT EXECUTION	[Timeline bar for WP3000: FOT EXECUTION]														
4	WP4000: EVALUATION & ASSESSMENT	[Timeline bar for WP4000: EVALUATION & ASSESSMENT]														
5	WP5000: DISSEMINATION & EXPLOITATION	[Timeline bar for WP5000: DISSEMINATION & EXPLOITATION]														

- Project Begin Date: April 1<sup>st</sup> 2011
- Project End Date: September 30<sup>th</sup> 2014
- Project Duration: 42 months
- Project KOM: April 13<sup>th</sup> – 14<sup>th</sup> 2011

## WP1000: COORDINATION

- **General objectives:**
  - ✓ *To define and manage the overall project organisation ensuring smooth and efficient running of FOTsis towards its goals*
  - ✓ *To guarantee fluent communication channels through discussions and Consortium meetings amongst the partners and with the European Commission*
- **Start - End date:** M1 – M42
- **WP leader:** IRIDIUM

## Project Start:

- Grant Agreement signed during March 2011
- Consortium Agreement signed during April 2011
- Project Kick Off Meeting held days 13<sup>th</sup> and 14<sup>th</sup> of April 2011 in Madrid
- Financial and Administration Training

## Deliverables:

- D1.1 Annual Presentation (M1 & M6)
- D1.5 Consortium Administration Manual (M3)
- D1.6 Quality & Risk Management Manual (M3)

## Meetings:

- 1<sup>st</sup> SC Meeting held on the 14<sup>th</sup> of July 2011 in Madrid
- 2<sup>nd</sup> GA and SC to be held on 13<sup>th</sup> and 14<sup>th</sup> of October 2011 in Munich

## FOTsis tools:

- Online management tool (Project Place) setup in June 2011 and running since then



## WP2000: FOT DESIGN

- **General objective:** *To plan main FOTsis activities (to be undertaken in WP3000 and WP4000) → Produce a detailed FOTsis Manual*

*FOTsis Manual based on FESTA Methodology and adapted to the needs of FOTsis services and Test-Communities. Manual updated on a regular basis in order to take into account the scientific and technical developments in the V2I & I2V domain area.*

- **Start - End date:** *M1 – M30*
- **WP leader:** *GMVIS SKYSOFT*

## WP Start / Meetings:

- WP2000 Kick Off Meeting held 20<sup>th</sup> of May 2011 in Lisbon
- WP2000 2<sup>nd</sup> workshop held 15<sup>th</sup> September in Tres Cantos (Madrid)
- These two meetings gather all involved partners to discuss services and common architecture issues

## Deliverables:

- D2.1 FOTSIS Manual: 1<sup>st</sup> Version – D2.1.1 (M6)
- D2.2 Test Communities Overview: 1<sup>st</sup> Version – D2.2 (M6)
- D2.4 Services Specifications: 1<sup>st</sup> Version – D2.4.1 (M6)
- D2.6 V2I & I2V Cooperative Systems Monitoring: 1<sup>st</sup> Version – D2.6.1 (M6)

## Work up to now focused on:

- Describing in detail the FOTsis services and test-sites
- Aligning and describing the common parts of the FOTsis trials (namely the ones involving the common database that will be the basis for the services evaluations)

## WP3000: FOT EXECUTION

- **General objective:** *To design, develop and validate 9 test-sites (in Spain, Portugal, Germany and Greece) by means of conducting both large-scale and detailed trials for assessing the road infrastructure management systems needed for the operation of the cooperative I2V & V2I & I2I FOTsis services described in WP2000*
- *WP3000 is the largest WP in FOTsis, accounting for more than 50% of the total project costs. It constitutes the first large-scale approach at European level, to set up Field Operational Tests for traffic managements centres*
- **Start - End date:** *M7 – M36*
- **WP leader:** *OHL Concesiones*

## WP Start / Meetings:

- **WP3000 Kick Off Meeting held 16<sup>th</sup> of September 2011 in Tres Cantos (Madrid)**

## Main activities:

- **Links WP2000 – WP3000 analyzed**
- **General Architecture design**
- **General Time Schedule proposed for:**
  - ✓ **Pilot Tests: Architecture's pilot test and Services' pilot test**
  - ✓ **Field Operational Tests (FOT): Large-scale and Detailed**
- **Working Groups:**
  - ✓ **General Architecture WG**
  - ✓ **Test-Sites WG**
  - ✓ **Tools & Developments WG (RQs WG & PIs WG)**
  - ✓ **WP3200-WP3700 WG**



## WP4000: EVALUATION & ASSESSMENT

- **General objectives:**
  - ✓ *To evaluate and assess data collected in the trials undertaken in WP3000*
  - ✓ *Identify the impacts of the operation of the seven FOTsis services in real traffic conditions from a safety, mobility and sustainability point of view*
  - ✓ *Effectiveness and potential for a full-scale deployment*
- **Start - End date:** *M13 – M39*
- **WP leader:** *UPM*

## WP Start / Meetings:

- **WP4000 not started yet (WP start on M13)**

## WP5000: DISSEMINATION & EXPLOITATION

- **General objectives:**
  - ✓ *Create awareness of FOTsis activities and recommendations*
  - ✓ *Elaboration of dissemination material and means for communications*
  - ✓ *Open dialogue with government, industry, users and other relevant stakeholders to create strategies to foster a full deployment of FOTsis services in European Roads*
- **Start - End date:** M1 – M42
- **WP leader:** IRIDIUM

## WP Start / Meetings:

- WP5000 Kick Off Meeting held days 1<sup>st</sup> June 2011 in Brussels

## Deliverables:

- D5.2 Identity Handbook (M3)
- D5.3 Web Site (M3)
- D5.4 Brochures & Posters (M6)
- D5.5 FOTsis e-Newsletter (M6)

## FOTsis tools:

- FOTsis Website [www.fotsis.eu](http://www.fotsis.eu) / [www.fotsis.com](http://www.fotsis.com) setup in June 2011 and running since then

## Dissemination activities:

- Participation in events: FOT-Net, ROAD INFRASTRUCTURE SAFETY FORUM, Drive C2X KOM, Preserve KOM, Concertation Meeting, ASECAP Days, ITS Europe, DIGITAL AGENDA
- Articles & Brochures: FOT-Net Newsletter, FOTsis Brochure for ASECAP Days, FOTsis Fact Sheet for EC publication, Thinking Highways, Autostrada

**Events:**

- |   |  |          |
|---|--|----------|
| • FOT-Net 4 <sup>th</sup> Stakeholders Meeting              | 2 <sup>nd</sup> December 2010                | Brussels |
| • ROAD INFRASTRUCTURE SAFETY FORUM<br>“New Challenge Ahead” | 14 <sup>th</sup> December 2010               | Brussels |
| • Drive C2X Project Kick-Off Meeting                        | 28 <sup>th</sup> January 2011                | Turin    |
| • Preserve Project Kick-Off Meeting                         | 1 <sup>st</sup> February 2011                | Enschede |
| • Concertation Meeting                                      | 4 <sup>th</sup> & 5 <sup>th</sup> April 2011 | Brussels |
| • FOT-Net Seminar:<br>starting a cooperative system FOT     | 15 <sup>th</sup> April 2011                  | Vigo     |
| • 39 <sup>th</sup> ASECAP Days                              | 31 <sup>st</sup> May 2011                    | Brussels |
| • FOTsis WP5000 Kick Off Meeting                            | 1 <sup>st</sup> June 2011                    | Brussels |
| • ITS Europe  | 6 <sup>th</sup> to 9 <sup>th</sup> June 2011 | Lyon     |
| • DIGITAL AGENDA Workshop 12                                | 16 <sup>th</sup> June 2011                   | Brussels |

## Articles & Brochures:

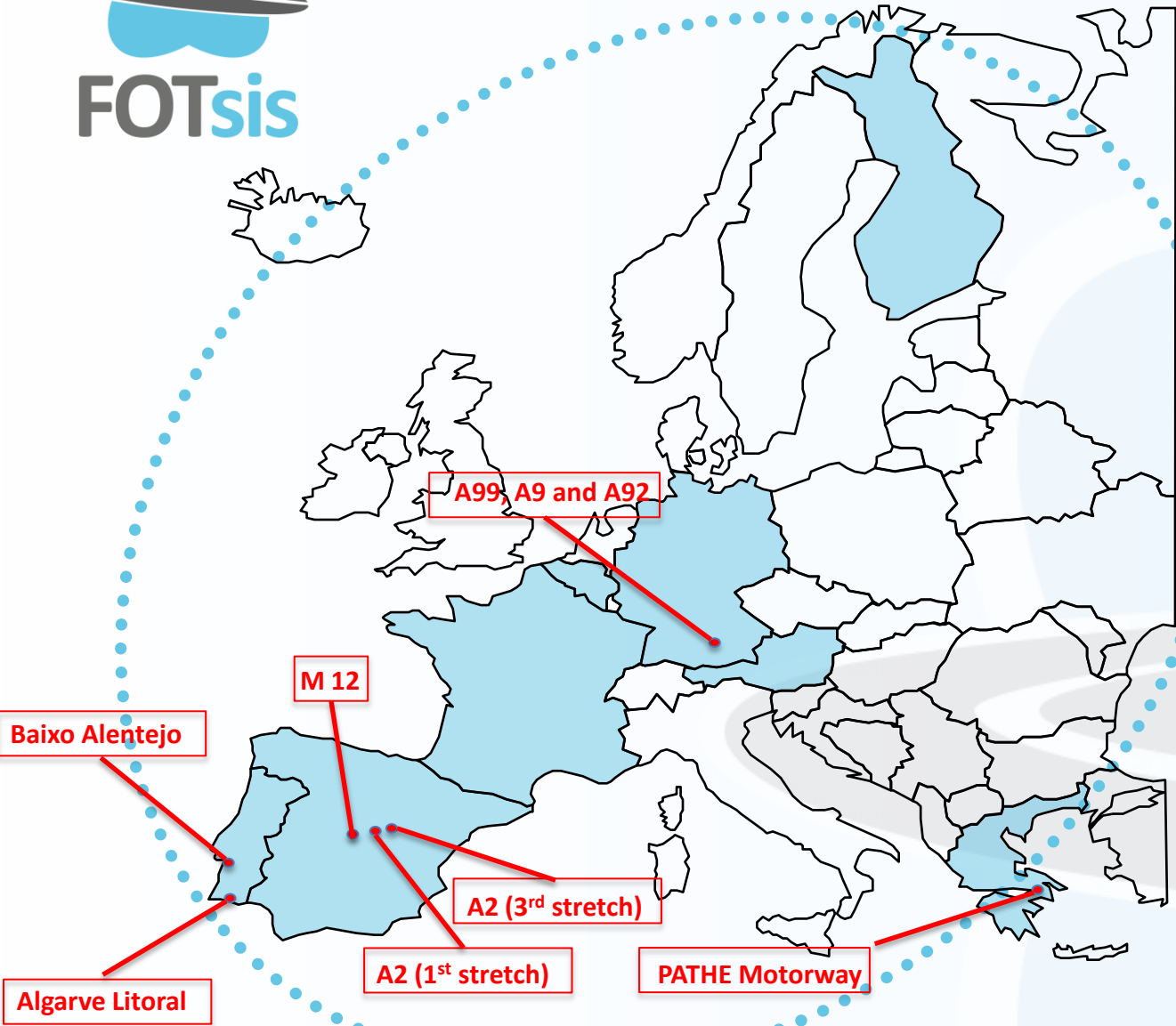
- **FOT-Net Newsletter – March 2011**
- **FOTsis Brochure for 39th ASECAP days – 30<sup>th</sup> May 2011**
- **FOTsis Fact Sheet for EC publication**
- **FOT-Net Newsletter – Next Edition**
- **Thinking Highways – Next Edition**
- **Autostrada – Next Edition**

Deliverables:



## TEST-SITES





TEST-COMMUNITY	TEST-SITE
SPAIN	M-12
	A2 (1 <sup>st</sup> stretch)
	A2 (3 <sup>rd</sup> stretch)
PORTUGAL	Baixo Alentejo
	Algarve Litoral
GERMANY	A99
	A9
	A92
GREECE	Pathe Motorway

		S1. Emergency Management	S2. Safety Incident Management	S3. Intelligent Congestion Control	S4. Dynamic Route Planning	S5. Special Vehicle Tracking	S6. Advanced Enforcement	S7. Infrastructure Safety Assessment
SPAIN	M-12							
	A2 (1 <sup>st</sup> stretch)							
	A2 (3 <sup>rd</sup> stretch)							
PORTUGAL	Baixo Alentejo							
	Algarve Litoral							
GERMANY	A99							
	A9							
	A92							
GREECE	Pathe Motorway							

• Location

Madrid, Spain

• Infrastructure operator



• Total length: 9.4 kms

• Short description

Connection to Madrid's airport. It has a 1.7 kms tunnel, multiple links and intersections, and quite full ITS equipment.

• Services to be tested:

S1 Emergency Management and S2 Safety Incident Management



• Location

Madrid, Spain

• Infrastructure operator



Autovía de Aragón  
Tramo 1  
Grupo OHL

• Total length: 56.1 kms

• Short description

Central and Northeast connection. Urban area with intense traffic. First stretch (exit from Madrid)

• Services to be tested:

S3 Intelligent Congestion Control and S4 Dynamic Route Planning



• **Location**

Medinacelli-Calatayud, Spain

• **Infrastructure operator**



Sociedad Concesionaria del Estado

• **Total length: 88.42 kms**

• **Short description**

Central and Northeast connection.  
Interurban highway. Third stretch A2.

• **Services to be tested:**

S2 Safety Incident Management and  
S5 Special Vehicle Tracking





# FOTsis

- **Location**

Grândola, Portugal

- **Infrastructure operator**

Planestrada, S.A.



- **Total length: 350 kms**

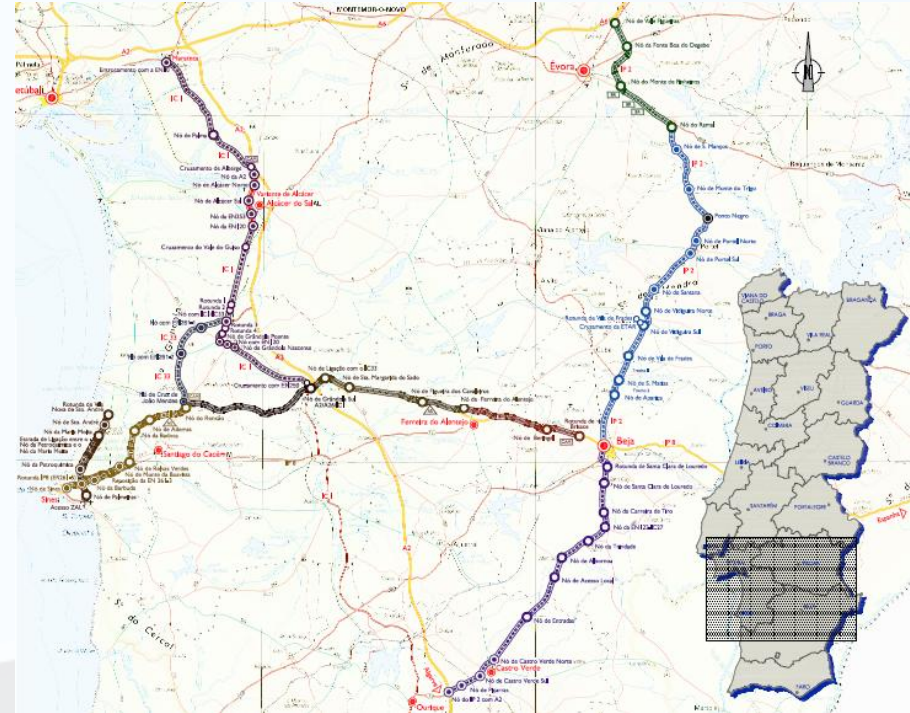
- **Short description**

A26 – Highway Sines / Beja, located in south of Portugal, a new road connection between the Atlantic coast and the center of Alentejo

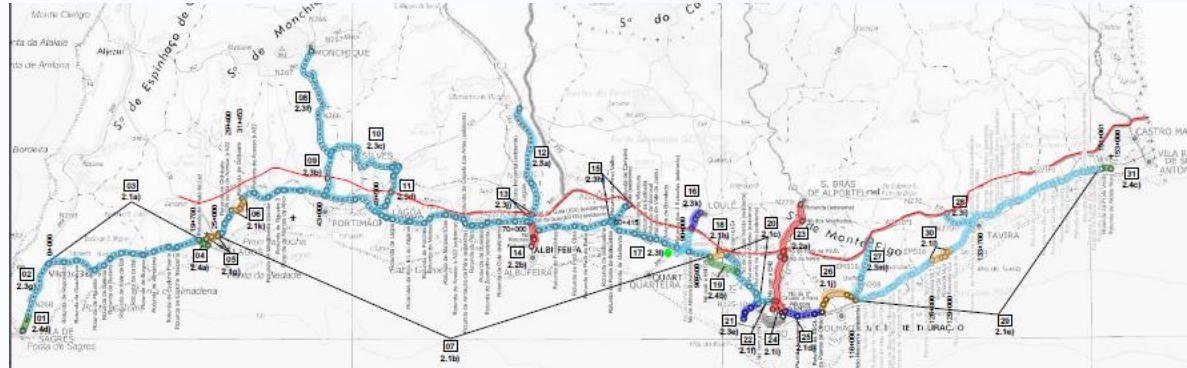
- **Services to be tested:**

S5 Special Vehicle Tracking and S7 Infrastructure Safety Assessment

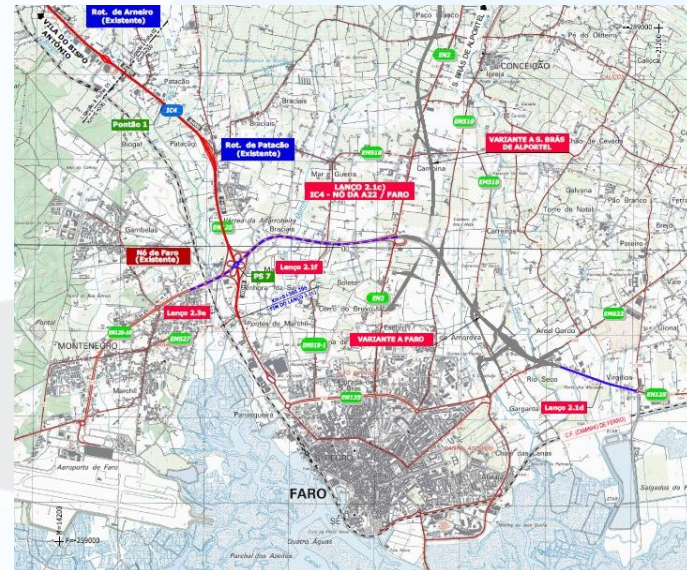
## Test-site Baixo Alentejo



- **Location**  
Faro, Portugal
- **Infrastructure operator**  
Marestrada , S.A.



- **Total length:** 270 kms
- **Short description**  
Roads: EN125, EN125-10, IC4, EN398, EN270, ER270, IC1, EN266, EN268, EN124, EN124-1, EN396
- **Services to be tested:**  
S6 Advanced Enforcement and S7 Infrastructure Safety Assessment



- **Location:** Munich, Germany

- **Infrastructure operator**



ABDS

Motorway Authority of Southern Bavaria

- **Total length:** 125 kms

- **Short description**


All three highways are well equipped with detectors and control facilities:

- ✓ A99 is a ring road distributing the traffic around Munich
- ✓ A9 is part of the North- *South* European route E45
- ✓ A92 connects the airport to the highway network and is used as alternative route from the West to the North of Munich.



- **Services to be tested:** S3 Intelligent Congestion Control and S4 Dynamic Route Planning



- **Location**  
Athens to Maliakos, Greece
- **Infrastructure operator**  
Nea Odos S.A. 
- **Total length:** 183.5 kms
- **Short description**
  - ✓ Tolled Motorway. Urban, rural, open/closed track.
  - ✓ Traffic Figures: 40.000 vehicles per day (20% heavy vehicles).
- **Services to be tested:**  
S1 Emergency Management and S6 Advanced Enforcement



## CONSORTIUM

Highway Operators  
(Coordination)

Technology Integrators

Road Safety & Automotive  
Research Centres

On-Board Equipment  
Manufacturers

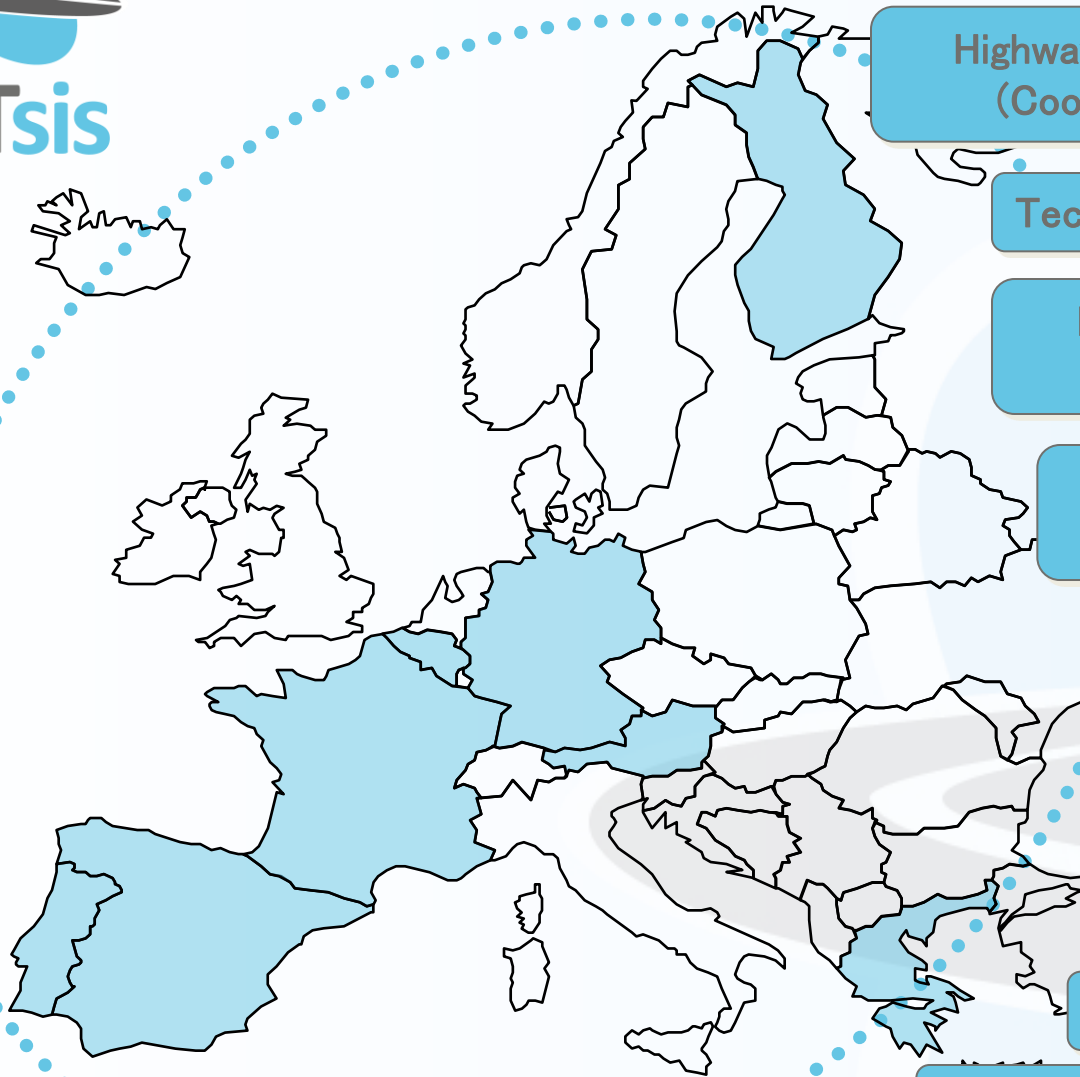
Telecommunications  
Operators

Map & Content Providers

Logistic Operators

Users

Road Authorities



HIGHWAY OPERATOR	
Iridium	Spain
OHL Concesiones	Spain
Planestrada	Portugal
Marestrada	Portugal
Nea Odos	Greece
TECHNOLOGY INTEGRATOR	
Sice	Spain
Indra	Spain
ACB Systems	Germany
GMVIS Skysoft	Portugal
Transver	Germany
Terna Energy	Greece
GMV Sistemas	Spain
TELECOMMUNICATIONS OPERATOR	
France Telecom	France
Optimus	Portugal
UNIVERSITY	
Universidad Politécnica de Madrid	Spain
Aalto University Foundation	Finland

CONSORTIUM: List of beneficiaries

RESEARCH CENTRE	
Ilmatieteen Laitos	Finland
Center for research and technology Hellas	Greece
Centro de innovación de infraestructuras inteligentes	Spain
MAP & CONTENT PROVIDER	
Geoville	Austria
USERS ASSOCIATION	
Federation International de l'automobile	France
INDUSTRY ASSOCIATION	
European Union Road Federation	Belgium
Association Europeenne des concessionnaires d'autoroutes et d'ouvrages a peage	France

## PROJECT MAIN FIGURES

**MAIN PROJECT DATES**

Proposal Submission	April 13 <sup>th</sup> 2010
Project Begin Date	April 1 <sup>st</sup> 2011
Project End Date	September 30 <sup>th</sup> 2014
Project Time Frame	2011 – 2014 (42 months)

**MAIN ECONOMICAL FIGURES**

Budget	EUR 13,8 million
Funding (EC)	EUR 7,85 million
Number of Partners	23
Number of Countries	8



# European Field Operational Test on Safe, Intelligent and Sustainable Highway Operation

# FOTsis

Thank you for your attention!

For more info please contact:  
[management@fotsis.eu](mailto:management@fotsis.eu)