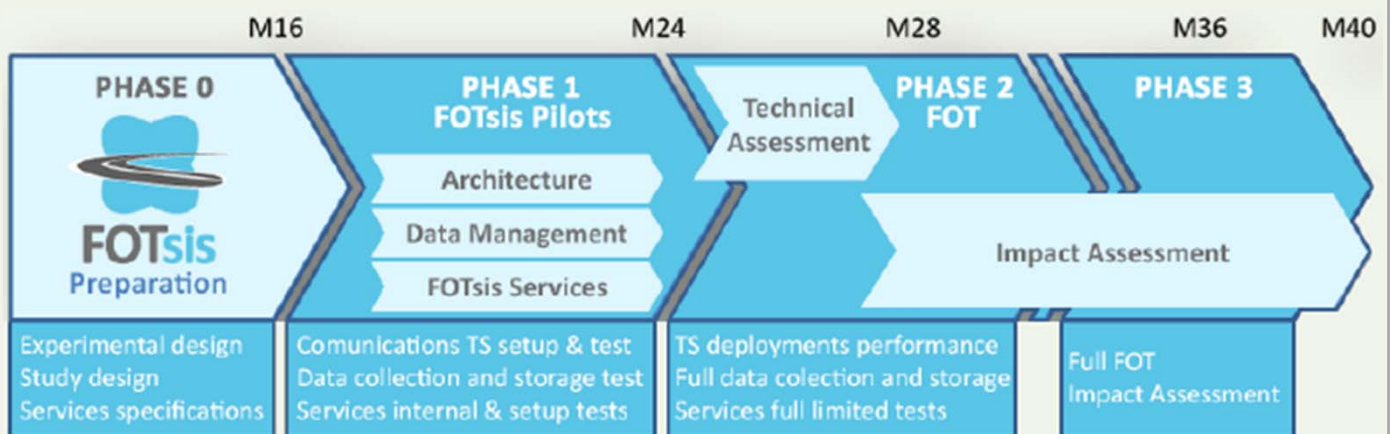# FOTsis service deployment gathers pace

The FOTsis project has begun testing its services across the different test communities and test sites. In total, the FOTsis will test 7 services across 4 test communities in four different European countries.

The successful services' pilot tests paved the way for FOT Launch. The technical assessment started in month M24 (Mach 2013). The services are being deployed in a controlled way, step-by-step.

FOTsis FOT execution has two stages:
- Technical assessment. Final implementations tested on-site.
- Full FOT execution. Aimed at final gathering of data for evaluation.

Most of the FOTsis test-sites are at the FOT "Technical Assessment" stage and the remaining test-sites which are behind schedule are expected to achieve this stage overcome before the end of November. Thus, the full FOT execution for all the services and test-sites should start by the beginning of 2014.

It should be noted that some Test-Sites are more advanced at meeting the requirements for full FOT stage than others. These are services S1 & S2 in PATHE motorway, Portugal and M12 & A2 (3rd stretch), Spain, where the software installation and configuration has been completed and internal users are already involved in regular tests. Also service S3 & S4 in Germany recently reached the requirements needed to start collecting data in large quantities. Finally, service S5 is being run in Portugal by one conventional vehicle and one truck.

Further Validation of FOTsis Architecture

On 15 - 18 July 2013, the FOTsis project lead a test session on a pilot network deployed in the Planestrada Baixo Alentejo test site near Sines Beja, Portugal

These tests were performed in a pilot network using cellular and vehicular radio access technologies (3G and ITS G5) to support V2I and I2V communications, with the 3G links operated with Optimus cellular network. This test session was also an opportunity to start assessing the FOTsis services to be deployed in the Portuguese test sites.

The network architecture setup by the Planestrada highway operator is composed of a Control Centre in Grândola and a backbone network which was upgraded with the addition of 2 RSU (road side unit) using Wi-Fi 802.11p technology managed by University of Murcia (UMU) including ITSSv6 code, and 2 RSU using Wi-Fi 802.11n.

Orange Labs brought an innovative input in FOTsis by configuring the operator network in end-to-end IPv6 protocol from the mobile router on-board the OBU (on board unit) to the HA (home agent), and a new dual stack mobile IPv6 code was used to manage the mobility across the communications links, NEMO over ITS G5 and NEMO over 3G.

This new code enabled to transparently manage communications across any kind of network (irrespective of whether it is in IPv4 or IPv6 protocol), and demonstrated a formidable efficiency in support of agile communications and handover management between the different access networks. This code enables seamless mobility through all encountered networks, by avoiding the mounting of tunnels and providing real capacity of the used links, in terms of bit rate and delay.

Very good performances were measured in terms of throughput and delay and access network switching was very well achieved by the efficient management of NEMO tunnels over the physical links. The architecture setup in Grândola made good use of connecting the RSU to the backbone by wired technology and enabled the demonstration of proper characteristics of the access networks, in particular around 15-20ms for the end-to-end delay and up to 4Mbps of throughput when using the ITS G5 link and a delay around 200ms and about 1Mbps throughput when using the 3G access.

Many technical tests at access and network layers were performed on the pilot site (test site of about 8 km length with 2 802.11p RSU) to optimise the configuration of the mobility signalling and the dynamic management of the NEMO tunnels and improve seamless handover.

Finally, service S7 of project FOTsis was tested. An OBU provided by GMV was connected to OLN mobile router in charge of the communication management and this OBU uploaded PVT (position, velocity and time) messages to a central server located in Lisbon to monitor the route taken by the vehicle. This tracking service was assessed successfully and a very accurate fleet management service was demonstrated during this session.

Next steps of FOTsis services deployment in Portugal will be the test of services S5, S6 and S7 in both Baixo Alentejo and Algarve Litoral test sites.

FOTsis services impact analysis

The FOTsis project aims to evaluate the impact on the areas of road safety, traffic efficiency and environmental sustainability of 7 close to market applications.

Nowadays, road transport oriented applications and services have reached significant maturity. As the focus on these solutions shifts from the purely technological challenge to the actual deployment, there is an increasing need to evaluate the impact of the proposed services in terms of different objectives.
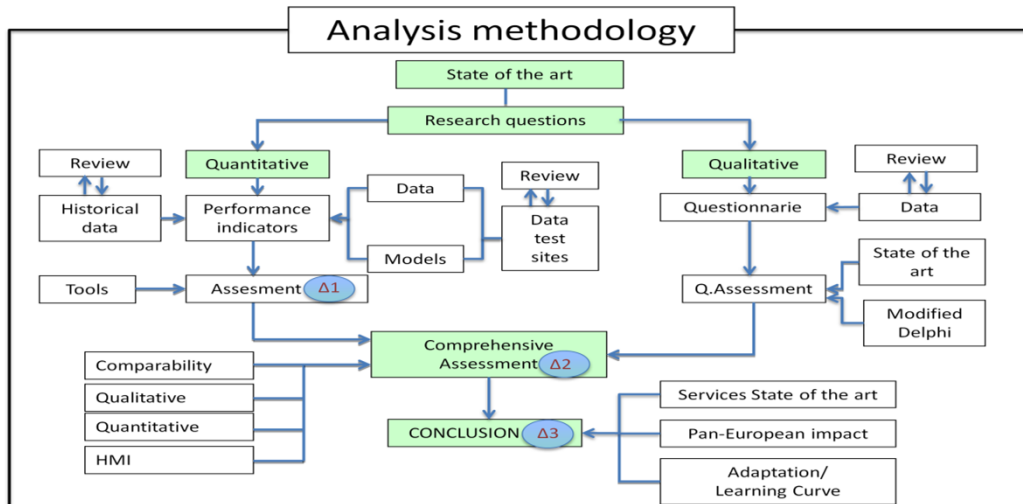
The starting point of the FOTsis project was the realisation that a major source of information that may in fact have a significant impact on the drivers' behaviour was not fully utilised in Cooperative ITS developments: the infrastructure-based data. It can be seen how most of C-ITS (Cooperative ITS) initiatives rely on a vehicle-centred paradigm.

The FESTA methodology proposes two basic evaluation strategies: one based on impact areas and another based on the systems under test themselves. Both strategies have their own limitations and that is the reason why several projects, including FOTsis, have opted instead for a combination of both, specifying a test design that results from considering both relevant impact areas (typically road safety, traffic efficiency and environmental sustainability) and the actual implementations of the applications to be tested. Another relevant aspect is the fact that even though the FESTA methodology considers both objective and subjective data collection, the FOTsis evaluation methodology relies more heavily on objective data statistical analysis, which may not be sufficient for certain low-occurrence events such as road accidents, which are critical for road safety assessment.

The FOTsis project's particularities have required a special adapted methodology: the preliminary impact assessment considers separately a quantitative assessment and a qualitative assessment. The quantitative assessment is based on the calculation of performance indicators from two different data sources: historical data as a reference and the test execution data; and a qualitative assessment which is based on the calculation of performance indicators obtained from the evaluation of the questionnaires answered by the service users, which must also be filtered and process before they can be used in evaluation.

Afterwards, in the FOTsis comprehensive assessment, results from the preliminary assessment are further analysed. Three main aspects are considered in this stage: establishment of a broader reference line in terms of similar European efforts, the integration of qualitative and quantitative analysis results, and the evaluation of the services' HMI.

The final result of the comprehensive assessment is expected to be an overall image on what the impact of the FOTsis services is on the road environment from different points of view and taking into account different reference baselines.

Pending final validation (which will only be possible once data from all the services is available), the proposed methodology represents several novel aspects that could be applied to other initiatives addressing similar problems.

Inclusion of a new partner: AMS Poland

The FOTsis partner welcomes a new partner in the consortium!

As of 1 October 2013, the FOTsis Project counts amongst its ranks an additional partner. AMS Poland joins FOTsis to enhance the Consortium's expertise in the elaboration of the business models, which are a critical output for the project and a key element for the market deployment of the services.

Established in 1994 and with headquarters in Katowice and Warsaw, AMS Poland has extensive experience in the field cost-benefit evaluation of competitive services and has elaborated in the past business case scenarios for numerous industry partners.

Its inclusion in the FOTsis team will be a huge added value for the projects and its socio-economic objectives. http://www.amspolska.pl/en/

Second Annual Review: FOTsis Keeps the Good Progress

On 23 and 24 September 2013, the European Commission services carried out their second annual review of the FOTsis project.

Reflecting the good progress achieved by the Consortium, the European Commission services and the appointed external evaluators gave another positive evaluation of the project.

The main challenge now for the project is to launch the Field Operational Test in order to subsequently carry out an impact analysis of the FOTsis services

Implementation of recruitment strategy across FOTsis test communities

After months of studying the appropriate incentive mechanism structure for recruiting drivers, the FOTsis project has begun implementation of its recruitment strategy.

FOTsis Consortium includes among its partners the road operator concessionaires in charge of actually managing the motorways of the FOTsis test sites. This specific situation benefits the drivers' recruitment, as employees from the concessionaires will become FOTsis users.

However, given the different nature of the services, a wider group of drivers is to be recruited, including more "normal" drivers and also "professional" drivers (e.g. ambulance drivers, HGV drivers, etc.), and so specific actions are being carried out. The FOTsis project has been in close contact with different stakeholders to understand the right mix of incentives in order to maximise the number of volunteers for its FOTs.

For services S2 (Safety Incident Management) and S3 (Intelligent Congestion Control) in Spain the coordination team has been closely cooperating with the Spanish Royal Automobile Club (RACE) and is now recruiting drivers in Spain. In addition to direct email communication with potential drivers, the project will also make us of toll booths and related facilities. For Service S5 (Special Vehicle Tracking), the project has been in contact with several freight operators and also has sought the assistance of the International Road Transport Union, which represent freight operators at a global level.

For Service S1 (Emergency Management), the project has worked closely with emergency authorities in the countries concerned, i.e. Spain (SAMUR) and Greece.

Specific actions are also being carried out to recruit users within both Portuguese and German test community.

Where to meet FOTsis in the following months

January 2014: Joint French Projects event (ITSSv6 final event, Co-Drive final event, COMPASS4D), Versailles (final date and location TBC)

February 2014: Session FOTsis Club Workshop, Madrid (final date and location TBC)

FOTsis in the Press

Read more about FOTsis in the following publications:

Le Strade : June 2013

Thinking Highways: June 2013

Securitas Vialis – August 2013

Springer Link –August 2013

ITS International – December 2013

Where have you seen FOTsis project

4 June 2013: I-Mobility Support ITS Standardisation towards deployment of C-ITS services: technical issues and business models

6-9 June 2013: 9th ITS European Congress
- Presentation of FOTsis Communications Architecture
- Special Session on Infrastructure Operators
- Speakers corner at EC stand

12-14 June 2013: DRICE C2X Plenary and Exhibition

20 June 2013: XVIII ITS Spanish Congress (paper presentation)

24-28 June 2013: ISO TC204 WG18 – CEN TC 278 WG16

15-18 July 2013: 13th World Conference on Transportation Research (paper presentation)

26-28 August 2013: Baltic Road Congress (paper presentation)

9 September 2013: FOT-NET Consortium and Associated Partners meeting

11 September: I-mobility Challenge Demonstration (FOTsis stand)

23 September: FOT-NET Seminar 6 on best practices

24 September 2013: SCORE@F Final Event

25-26 September 2013: Amsterdam Group workshop+ plenary meeting

4-5 November 2013: FOT-NET Seminar 7 Workship on FESTA Handbook revision

10-14 November 2013: 17th IRF World Meeting and Exhibition, Riyadh, Saudi Arabia (paper and poster presentation)

19-20 November 2013: CAR2CAR Forum, Munich

27 November 2013: Amsterdam Group plenary meeting, Amsterdam

FOTsis is a research project co-funded by the European Union within the 7th Framework Programme