FREILOT

Urban Freight Energy Efficiency Pilot

FREILOT Final Progress Report - Publishable

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Table of Contents

List of figures

List of tables

Abbreviations and Definitions

Abbreviation	Definition
ACC	Adaptive Cruise Control
ADAS	Advanced Driving Assistance System
AL	Acceleration Limiter
CIP	Comptetivness and Innovation Programme
CVIS	Cooperatvive Vehicle Infrastructure Systems Integrated FP6 project
DoW	Description of Work
DSB	Delivery Space Booking
EC	European Commission
EDS	Eco Driving Support
EEIC	Energy Efficient Intersection Control
ETSI	European Telecommunications Standardisation Institute
FOT	Field Operational Test
FP7	Framework Programme 7
FTP	File Transfer Protocol
GPS	Global Positioning System
ICT	Information and Communication Technologies
IP	Integrated Project
ITS	Intelligent Transport Systems
LED	Light Emitting Diode
PC	Portable Computer
R&D	Research and Development
RFID	Radio Frequancy Identification
SAFESPOT	An integrated FP6 project
SL	Speed Limiter
UMDM	Urban Merchandising Distribution Management
WP	Work package

Executive Summary

The FREILOT pilot aims at assessing the benefits of five ITS applications on the energy efficiency in urban areas. The piloted services (Figure 1) are:

- Energy Efficient Intersection Control (EEIC) supporting the traffic manager
- Eco-Driving Support (EDS) supporting the driver
- Acceleration and Speed Limiters (AL & SL) optimising vehicle performance
- Delivery Space Booking (DSB) enabling efficient fleet operation

The goal is to have quantifiable and statistically valid results from one year of operation with real fleet operators. The pilot followed the drivers in their daily operation in four European locations: Bilbao, Helmond, Krakow and Lyon.

Based on a successful pilot and proven benefits, a second, equally important objective is to provide a basis for post-pilot operation of the FREILOT services at the pilot sites. The project aims at sustainable implementations; what is implemented within FREILOT should continue its operation even after the pilot and the end of the EC funding. This places a strong requirement on proving environmental and economic viability of the piloted services.

The third objective is to extend FREILOT operations to more fleet operators, vehicles, cities and other stakeholders.

Figure 1 The FREILOT piloted applications

The first major achievement in the project was the development of the FREILOT architecture and service specifications. Shortly after, the technical adaptation work on updating existing prototypes started. However, the technical adaptation proved to be more time-consuming than originally planned, and a six-month extension of the work was required. This proved to be the right decision as the technical implementations sustained throughout the entire pilot period.

During the first half of the project an extensive evaluation methodology and plan were developed. The methodology used the de-facto standards for trialling ITS services: the FESTA methodology. Following the methodology steps, research questions, hypotheses, indicators and measurements were indicated per service and data loggers were developed.

Data was collected from 177 trucks in their normal operation for at least 12 months. During the pilot the trucks equipped with EDS, AL and/or AL covered more than 2.5 million kilometres. A tremendous amount of collected data during this period was evaluated and produced concrete results. For the energy efficiency the following results have been obtained:

- EEIC Helmond: 13% fuel reduction measured.
- EEIC Lyon: 8 % fuel reduction measured.
- EEIC Krakow: indicative positive effect in fuel reduction
- AL (all sites): fuel consumption reduction measured between -2% and 2%.
- SL (all sites): no significant reduction in fuel consumption measured
- EDS (all sites): maximum fuel reduction measured between 6.6% in the 0-100 km/h and 15.3% in the 0-50 km/h range.
- DSB Lyon/Bilbao: no significant reduction in fuel consumption measured. The service mainly impacted traffic conditions.

The overall amount of fleet operators taking part in the pilot was increased from the 5 originally planned to 78. At the same time the number of pilot vehicles was increased from 27 to 177.

Based on the technical adaptation work, proven benefits from the EEIC service, and the interest from their customers, PEEK Traffic has commercialised the first cooperative road side unit targeting key stakeholders, such as city authorities/road operators and commercial fleet operators. This commercial product is a major step towards providing viable bases for after-project life.

Expansion to other stakeholder categories can be seen as spin-offs from the FREILOT main focus, urban freight energy efficiency. However these spin-offs proved to be very valuable. In Helmond participation of the Fire Brigade was one of the key factors for ensuring the after-project life of the EEIC service. In a similar way, Krakow has extended its functionalities to an atypical FREILOT stakeholder: a bus company.

The hard and focused work of the FREILOT consortium was acknowledged by two awards. As a result of the work on FREILOT Delivery Space Booking the City of Bilbao won the national award *The Best Freight Transport Project of Year 2011*. The same year the City of Helmond received the iMobility award for *Excellence in Policy Making,* based on its strategic work in the field of cooperative services. Being the first European project that the City of Helmond participated in, and having a strategic focus on implementation of environmentally and economically sustainable services, FREILOT has been one of the contributing reasons for this award.

Looking beyond the project timing the consortium plans for a continuation of most of the services. The Cities of Helmond and Bilbao have already announced that the EEIC in Helmond and the DSB in Bilbao will continue. The City of Lyon is currently investigating an expansion of the EEIC service to other roads in Lyon, while in Krakow the pilot site partners are discussing about the after project-life. Volvo and Renaults Trucks are looking into plans to use the FREILOT outcomes in the coming product ranges, while PEEK Traffic already has commercialised outcomes of their project work.

In addition to the FREILOT partnership, a large number of external cities have shown interest in FREILOT and the implementation of similar services. The Cities of Bordeaux, Copenhagen, Eindhoven, Newcastle, Thessaloniki, Verona, and Vigo have expressed interest in implementing an adapted version of FREILOT and also made concrete plans to do so.

Taking the above arguments into consideration the FREILOT consortium has achieved most of its objectives for the period with relatively minor deviations and contributed to proving the real-life benefits and supporting deployment of the piloted ITS services.

1. PROJECT PROGRESS

1.1. Project objectives for the period

The FREILOT pilot has three objectives for the entire project.

- Objective 1. The **main objective** of the FREILOT service is to increase energy efficiency drastically in road goods transport in urban areas through a holistic and integrated treatment of traffic management, fleet management, the delivery vehicle and the driver, and to demonstrate in four linked pilot locations that the FREILOT service can reduce the fuel consumption and the CO_2 emissions in urban areas with up to **25%**
- Objective 2. Based on a successful pilot, provide basis for post-pilot operation of the FREILOT scheme in the four sites.
- Objective 3. Involve more fleet operators, cities and other stakeholders in the scheme.

The above mentioned objectives have been the focus of the project partners for the past four years. They were elaborated bearing in mind the need of the key stakeholders, as well as the consortium understanding of what the CIP (Competitiveness and Innovation Programme) pilot projects should be. As one of two first CIP pilots in the transport part of this Programme, the FREILOT consortium has for the past four years worked hard and navigated uncharted waters, often having to explain to external parties the differences between CIP pilots and FP6/7 Research and Development (R&D) projects and Field Operational Tests (FOTs).

Approaching the end of the project, FREILOT has achieved a vast majority of the project objectives, in some aspects even significantly over achieving the initial expectations.

The focused and hard work has also been acknowledged. The consortium is proud that the work on FREILOT Delivery Space Booking resulted in the City of Bilbao receiving the Spanish *Freight Project of Year 2011* award. In Bilbao the number of fleet operators taking part in the pilot increased from 5 to 78 and the number of vehicles from 27 to 177. One of the main achievements has been establishing excellent cooperation between city authorities, fleet operators and other important local partners..

In 2011, the City of Helmond received the iMobility award for *Excellence in Policy Making*. The award was based on the strategic work of the City of Helmond in the field of cooperative services. Being the first European project that the City of Helmond participated in, and having a strategic focus on implementing environmentally and economically sustainable services, FREILOT has been one of the contributing reasons for this award.

A detailed explanation of the project consortium's achievements towards each of the above mentioned objectives is presented on the next pages.

1.1.1. Objective 1

The **main objective** of the FREILOT service is to increase energy efficiency drastically in road goods transport in urban areas through a holistic and integrated treatment of traffic management, fleet management, the delivery vehicle and the driver, and to demonstrate in four linked pilot locations that the FREILOT service can reduce the fuel consumption and the CO_2 emissions in urban areas with up to **25%.**

Proving real-life benefits of any technical solution is a key to its success. Therefore measuring and proving benefits has been put forward as the main objective of the pilot. Based on earlier work, in-house bench testing, simulations and research papers, the consortium made an early estimation during the project preparation phase that the fuel reduction could be up to as much as 25%. However, more important than this specific figure, is that the evaluation is done in a scientifically correct way and that the results from the real-life service operation during one year of driving are quantifiable.

During the first half of the project a detailed evaluation methodology was developed. The reference base was the FESTA methodology, considered as a de-facto standard in Europe for preparation and execution of Field

Operational Tests. Following the steps indicated by FESTA, research questions, hypotheses, indicators and measurements were indicated per service. Based on this, the data logging system requirements were identified and with the technical implementation constrains taken into account, the data loggers were implemented in the trucks and in the infrastructure. In parallel, the evaluation plan was prepared and as soon as the technical implementation was ready and tested, the pilots started in the four locations. Not all services started at the same time in the different locations but all services were guaranteed to have a data collection period of at least 12 months (3 months of baseline and 9 months with the services activated). In parallel, the data processing and analysis tools were under development.

Once all the data needed was collected, the data analysis process started in order to obtain the results. Below is a summary of the main results in terms of fuel consumption (the reduction in CO_2 emissions due to the direct relation is similar) based on these data analysis:

- EEIC Helmond: 13% fuel reduction measured.
- EEIC Lyon: 8 % fuel reduction measured.
- EEIC Krakow: indicative positive effect in fuel reduction
- AL (all sites): fuel consumption reduction measured between -2% and 2%.
- SL (all sites): no significant reduction in fuel consumption measured
- EDS (all sites): maximum fuel reduction measured between 6.6% in the 0-100 km/h and 15.3% in the 0-50 km/h range.
- DSB Lyon/Bilbao: no significant reduction in fuel consumption measured. The service mainly impacted traffic conditions.

1.1.2.Objective 2

The second important objective is to, based on a successful pilot, provide basis for post-pilot operation of the FREILOT scheme in the four sites.

After three years of hard work the consortium can state that this objective has been achieved with minor deviations; some elements of FREILOT even exceeded the initial expectations. The building blocks for the after-project life are evaluation results, business models, cost benefit analysis, deployment barriers, solutions and guidelines.

Considering the Energy Efficient Intersection Control (EEIC) implemented in Helmond and Krakow, the pilot has strongly contributed to the commercialisation of the first cooperative road side unit on the European market. Based on the proven technical viability, the first promising results, and the indications that their customers are interested in the cooperative services/technologies, PEEK has taken the final step towards commercialisation of their product.

Having commercially available technologies and services is a huge step towards long-term deployment plans but is not in itself a guarantee of a successful after-project life. A confirmation of the after-project life arrived in June 2012 when the City of Helmond, together with its local partners (Fire Brigade, Van den Broek Logistics and PEEK), announced that they will continue the operation of EEIC service on commercial basis. Another “Europe-first” achievement from FREILOT: Helmond is the first city in Europe committing to use cooperative services as a part of the daily traffic management. Discussions on the after-project life in Krakow will take place now that the evaluation results and cost benefit analysis are ready.

As the standardisation work for cooperative services and technologies is not finalised, the local partners in Helmond have agreed that PEEK will update the road side and on-board units of their service in order to comply with the latest standards from ETSI/CEN for the next five years. However, FREILOT partners are not merely waiting for these standards to be finalised but are working actively on the standardisation together with other relevant stakeholders in Europe and world-wide by contributing to the ETSI/CEN standardisation, in cooperation with eCoMove IP, and through participation in the EU-US Task Force on global harmonisation of cooperative services.

When discussing deployment of cooperative services (e.g. EEIC) with cities such as Copenhagen, Bordeaux or Newcastle it was noticed that many European cities are not aware of the benefits cooperative services are bringing. Many cities fear that this is another round of proprietary systems. To overcome this deployment barrier towards wider European implementation and to increase city/public authority confidence in interoperability of cooperative solutions, the FREILOT coordinator and high level representatives from key traffic management infrastructure suppliers have developed a joint statement where the undersigning infrastructure suppliers commit to work towards a common set of cooperative standards.

The confirmed signees of this statement are:

Manfred Swarovski,	President,	SWARCO AG
Hauke Jürgensen,	CEO Intelligent Traffic Systems,	SIEMENS AG
Jan Casteleijn,	Managing Director,	IMTECH Traffic & Infra
Jan Hendrik Sweers,	CEO,	VIALIS B.V.

This is yet another proof of commitment and a concrete action towards pan-European deployment.

In Lyon discussions are on-going on how EEIC could be expanded to other roads in the city. An internal memorandum has been prepared within Grand Lyon on how the “green wave” EEIC, optimised for goods vehicles should be implemented. As this implementation does not require expensive on-board units it is relatively simple to deploy it. Therefore it is a very interesting solution from the cost point of view. The concept is that the central traffic management system will install the FREILOT green waves on selected roads, outside rush hours (10:00-15:00 and 20:00–06:00 for instance). A graphical map and a time table with FREILOT roads and schedules will be provided to fleet operators. Time table information can be used by fleet operators to determine routes and dates/times that are most efficient for deliveries.

The after-project life of the Delivery Space Booking (DSB) service in Lyon, is uncertain as the national legislation prohibits the dedication of road spaces to a certain group of users and to the weakness of control in the French legislation. Indeed, a service only based on the booking system with panels on site cannot give significant results. The DSB service has to be linked to a control system: a technical system permitting to dedicate the delivery spaces to the fleet operators (but which is not legal in France) or policemen dedicated to the control of this kind of application. Today the City of Lyon cannot dedicate enough policemen to this service, and there are often cars parked on the delivery spaces of the pilot, or in double parking. The fine for parking illegally on a delivery space is between 17 and 35 €, and 35€ for double-parking. That is certainly one of the reasons to why the interest from the local fleet operators has not been very strong for taking part in this pilot. With strong support from the City of Lyon and other cities it would be possible to address the national law but even here, as experienced by the City of Bremen, changing legislation would take years.

As a summary, we can say that the booking system could be maintained after the pilot period but it can’t work without a control of the delivery spaces on site. Without these 2 parts of the system, the objectives for the city (reduction of the delivery traffic) can’t be achieved, and it would take a long time to change the national rules.

In Bilbao the city council has decided to maintain the four FREILOT delivery spaces in operation after the project life time during an unlimited period with the clear objectives of providing the existing service to current users and increasing rate of use with new users. Initially, the functionality offered by the DSB service after project life will be the same as in the pilot phases. The zones will be used as live testing zones with the aim of improving the system and testing parallel practices. An agreement between the City of Bilbao, GERTEC and MLC is signed for continuing the service.

It is worth pointing out that FREILOT has had several spin-off effects in the form of other services, such as Night time delivery or Multi-use lane. These services have been a direct result of a collaboration established for the purpose of FREILOT between the city authorities, local fleet operators and other stakeholders. The two new services are currently used in Bilbao by several companies and changes in infrastructure and regulation were done in order to facilitate this use. The collaboration between the stakeholders has been formalised through Urban Distribution Forum, in which the city council and fleet operators work to improve urban distribution with new services and practices.

Concerning the in-vehicle systems the Eco-Driving Support (EDS) functionality is the one closest to market. Both Volvo and Renault will offer an EDS in their Euro VI products. The primary target will be heavy duty/long haulage trucks because it is the segment in which the volumes are important and the fuel efficiency

is the most important driver for purchase. In the medium duty segment, a Smartphone version of the EDS proposed as extended offer is investigated by Renault Trucks.

The Acceleration and Speed Limiter functionalities are being focused to an e-horizon system. Fuel savings can be obtained by anticipating the road profile and traffic conditions, and by controlling the speed and adjusting the truck operating parameters accordingly. Prediction of the topography will use a GPS and an electronic horizon provider (e-horizon) to provide map and navigation data to be further processed by the ADAS. Combined with an enhanced Automated Cruise Control (ACC), this solution will be applicable to the heavy duty segment. Other features like roll-over assistant can take benefit from the use of an e-horizon, so that the deployment of e-horizon is expected to come soon. As a consequence, the FREILOT scheme will be easier to implement since no back-office will be necessary to define zones (cities will only have to feed map providers with map attributes) and any trucks equipped with e-horizon will be able to use these zones. On heavy duty side on-going advanced engineering projects are working to prepare product development and market introduction on product updates. For medium duty on-going advanced engineering projects are investigating low cost solutions but no product plans are defined yet.

The Speed Limiter functionality is very interesting for addressing road safety issues, especially in combination with providing certain level of priority to trucks. Therefore, the PEEK implementation of the EEIC also includes a “virtual speed limiter”. Even if the truck itself does not have Speed Limiter functionality, the EEIC will detect potential over speeding and automatically cancel the priority for the over speeding truck in approaching intersections. This is an optimal solution for providing a service for increasing energy efficiency and maintaining, or even increasing, road safety.

1.1.3.Objective 3

The third objective is to involve more fleet operators, cities and other stakeholders in the scheme.

This objective of increasing the participants in the pilot has been (over)achieved. The major increase in the number of fleet operators and trucks taking part in the pilot is summarised below:

- 5 fleet operators with 27 trucks planned in the original DoW 12 January 2009
- 15 fleet operators with 87 trucks planned in the amended DoW 27 August 2010
- 78 fleet operators with 177 trucks taking part in the pilot in January 2011.

The largest expansion has been achieved in the DSB service in Bilbao, but important expansions have been achieved in other locations as well. The main reasons for the successful expansion in Bilbao are the excellent communication strategy towards fleet operators and the low investment required from fleet operators as the service does not use any on-board unit. As an acknowledgement of the excellent work performed in Bilbao, the FREILOT project partners were awarded the Spanish Best Freight Project of Year 2011.

In addition to the increased number of fleet operators and vehicles, another important achievement has been the integration of other stakeholder groups in the pilot. The need to include other road users is especially important for the EEIC service, where freight transportation is only one part of the overall traffic management strategy.

In Helmond, the scheme extended its functionality to include the Helmond fire brigade and ambulance services. This expansion proved to be important for the further continuation of the service after the end of the project. An additional interesting development has been inclusion of a bus company in Krakow into the pilot. This might as well be an important aspect which directly supports the after-project life of the service.

In Lyon, the number of trucks equipped with AL, SL and/or ESD increased from 8 (as indicated in the first annual review) to 18. It was not possible to further increase the number of equipped trucks on the other sites as these installations are very time/budget costly.

The above mentioned expansions have been very important from the after-project life point of view. However, at the same time they have also posed a threat: if not done properly, they risked to negatively influence the quality of the evaluation. Therefore the expansions were only allowed in situations where the FREILOT team was still able to guarantee high quality of the evaluation results. As an example, after including the above mentioned new stakeholders in the Helmond pilot it was decided not to allow any more fleet operators during the pilot period as it could influence the measurements and results of the evaluation.

Instead, additional fleet operators would be invited to join the after-pilot scheme.

As for the expansion of FREILOT to external cities, discussions with the cities of Bordeaux, Copenhagen, Eindhoven, Newcastle, Thessaloniki, Verona and Vigo have resulted in a large interest in implementing a customised version of FREILOT. These cities see FREILOT as a tool to support them in reaching their policy goals. As an example, the City of Copenhagen aims to use FREILOT-like services as a tool for reaching their vision of becoming the first carbon neutral capital in the world by 2025. Currently these seven cities are refining their plans and negotiating a contract with the EC for a FREILOT like CIP pilot. Even the new pilot aims at proving benefits to key stakeholders and ensuring environmentally and economically sustainable after-project life.

While this objective is fully achieved in the FREILOT project, it is essential for the piloted services that expansion to new fleet operators, cities and other stakeholders continues. The FREILOT partnership has proven its skills, motivation and commitment to continue with further expansion.

2. Work progress and achievements during the period

The progress and achievements will be presented through the different work packages. The project contained five work packages:

- WP2 – Implementation,
- WP3 – Operation,
- WP4 – Evaluation,
- WP5 – Dissemination,
- WP6 – Deployment Enablers.

In order to get a better structure of this chapter, WP2 will be divided in different sub-chapters, following the different FREILOT services.

2.1. WP2 – Implementation of Energy Efficient Intersection Control

2.1.1.Helmond

Before the implementation in Helmond could start a decision had to be taken on the technology to be used. Two technologies were on the short list: RFID and Cooperative Systems. A detailed study proved that Cooperative Systems were the best choice for FREILOT, both cost-wise and business opportunity-wise.

The second reporting period started with selection and purchase of hardware for the roadside and on-board systems in Helmond and Krakow. The roadside systems for Helmond were assembled and installed in the mid of September 2010. When performing tests the communication range turned out to be adequate for FREILOT purposes, sometimes even up to 500 meters and in most cases more than 300 meters, which was deemed to be sufficient for the traffic controllers to provide priority for the approaching trucks. By the end of September all 14 intersections in Helmond had been installed. In figure 2, four of the intersections can be seen. On one of the intersections, the one used for CVIS and SAFESPOT demos, the cooperative equipment was replaced early in October.

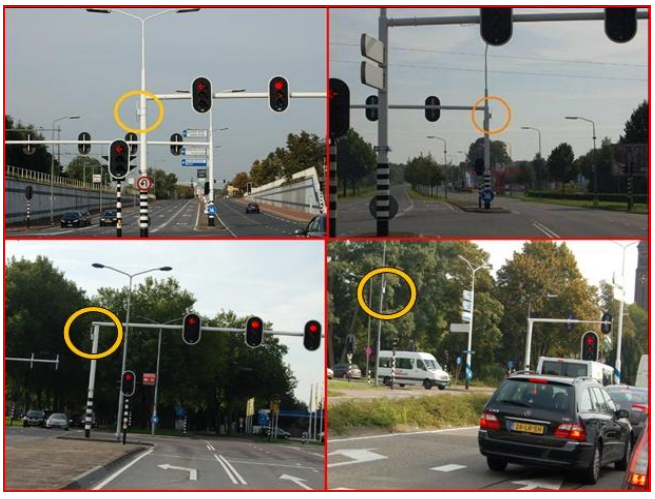


Figure 2 Equipped intersections in Helmond (4/14)

In parallel with the installation work, a traffic simulation study on the impact of the FREILOT priority system in Helmond was executed. One of the major findings was that the priority for fleet operator trucks would be very beneficial during most times of the day, reducing significantly the number of stops. However, during a rush hour, which is usually between 4 and 6 pm in Helmond, this priority might even be totally counter-productive and even increase the waiting times for the trucks. Therefore the priority for trucks in Helmond was not allowed during those times. In addition, it should be mentioned that the prepared simulation was conducted to investigate the situation when there are 11 equipped trucks. Another simulation was done to investigate

how many equipped vehicles could be handled without disturbing the normal traffic flow; depending on the location in the city and the time of day. This will be very important in order to understand wider deployment potential.

The configuration of the traffic controllers in Helmond had to be modified to accommodate FREILOT. The cooperative software was gathered from various sources (CVIS, SPITS, open source community) and updated. A FREILOT graphical interface for the drivers was created. The total software was ready to be tested in early October.

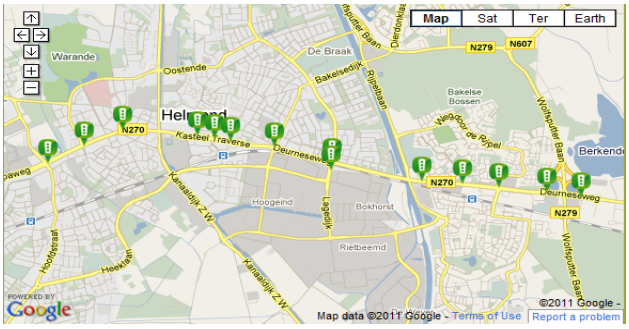


Figure 3 Equipped intersections in Helmond (all)

After the software was installed, verification of the roadside installation for the priority service was successfully conducted. On-board units (Figure 4&5) were installed in the trucks of van den Broek Logistics (4 units, 3 additional ones delivered early in January 2011), the Helmond fire brigade (4 units) and Helmond ambulances (2 units). For more details, see D.FL.2.4 Helmond prototype.

A well-visited launch event of the FREILOT pilot phase was held in Helmond on 28 October, where the priority service was demonstrated on the streets of Helmond with five van den Broek Logistics trucks, two fire brigade trucks and two ambulances. For more details about this event please see the D.FL.5.7 Open workshop nr. 2 report.

Figure 4 Equipped truck in Helmond

After initial tests the installation was switched to baseline collection on 15 January. On 9 March the installation was switched to operational mode. Thereafter all intersections and vehicles were using the FREILOT intersection priority daily. However, as presented under section Problems and Delays it turned out that the original tablet PC disturbs the GPS reception of some commercial navigation systems. An alternative, Android tablets, was investigated as a replacement for the on-board display. After the decision was taken to replace the units with Android based ones, the display software was rewritten and 14 new on-board units were produced.

Figure 5 The Android-based OBU

In Helmond the first operational period ended on 9 August. The time between the end of the first operational period and the start of the second baseline period was used to update the on-board units, and to upgrade the traffic control algorithm at the intersections in the city centre. After testing the new units the second baseline period started on 1 October 2011. The second operational period started on 22 November, and ended on 30 April, the next year.

2.1.2.Krakow

In Krakow a simulation study was also performed. After going through the report on simulation results, the GDDKiA (Polish national road authority) requested an update of the traffic measurements being used in the simulations. PEEK Poland conducted the needed measurements and also measured additional data which could be useful for the FREILOT evaluation, for example the number of trucks passing through the intersections daily, or the number of trucks that need to stop for red light at intersections. After the new traffic measurements were done, the simulations were re-done and the simulation report updated. Based on those findings and active cooperation from the FREILOT management, the GDDKiA finally took the decision to proceed with the road side installations. All roadside designs and equipment for Krakow were produced and finally verified by the authorities.

Figure 6 Road side installations of FREILOT Energy Efficient Intersection Control in Krakow

In January 2011 the installations started (figure 6 and 7) as the final signed approval was granted by the GDDKiA.

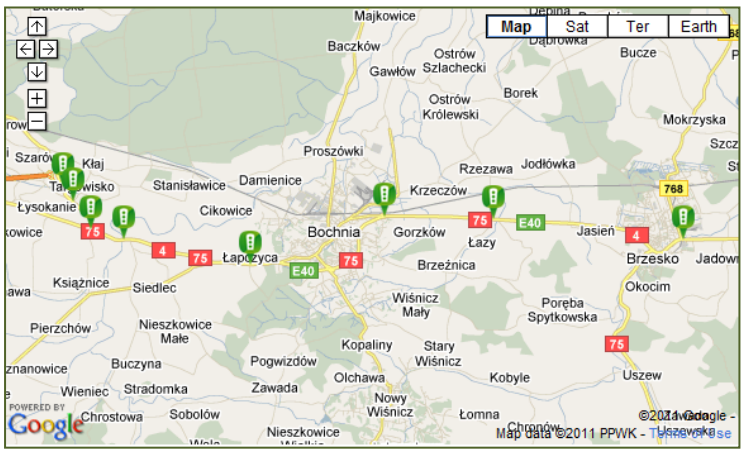


Figure 7 Equipped intersections in Krakow

In Krakow two trucks from Omega were equipped with on-board units. These trucks drive regularly on the road with the FREILOT intersections. On 6 April the installation was switched to baseline mode. Logging data was collected on a server at PEEK Amersfoort. A part of the additional on-board units in Krakow were delivered later and are Android-based.

2.1.3.Lyon

EEIC in Lyon made good progress as well. Grand Lyon elaborated hardware and software specifications for the EEIC in Lyon. Software adaptations were done before the first tests in the laboratory were conducted. Furthermore, Grand Lyon conducted surveys to develop a first set of approach curves for the configuration of the embedded part of the system, before adjusting them during tests which was done on specified roads.

Other topics of work were a study of intersection management and the replacement of the intersection controllers at the pilot area. Grand Lyon also developed first proposal on how EEIC systems should be evaluated and provided the information to the WP4 evaluation partners for their review and feedback.

By the end of 2010 the partners in Lyon finished installing and configuring devices at intersection and performed tests on the Lyon EEIC cooperative service (the service that uses wireless communication for requesting priority at intersections) in real conditions during three sessions. In each session, the intersection priority service has been improved as well as the human machine interface for the driver. Between sessions, the provider fixed bugs and implemented improvements.

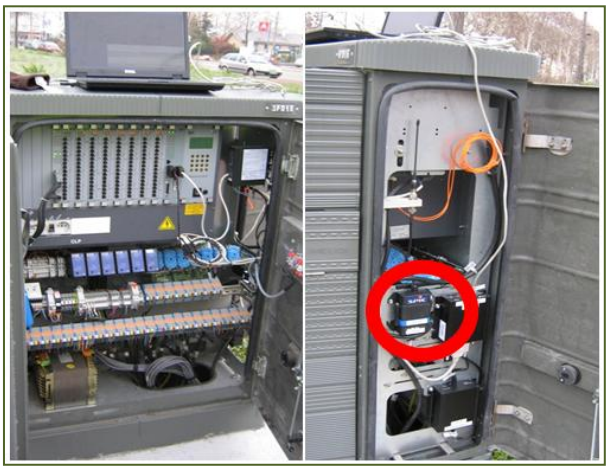


Figure 8 Intersections controllers in Lyon

Once the evaluation methodology and plans were agreed between the Grand Lyon, the local partners in Lyon and CTAG, the system for the provision of data files (by GPRS) was implemented. The data collected from the field trials were provided to the partner in charge of evaluation of this functionality - LET. For piloting the service a garbage truck from the urban community service was chosen, and studies on how to install the embedded part of the system for real experimentation was done.

Figure 8 shows two FREILOT intersection controllers. In the intersection controller at the right, the communication device for enabling EEIC service has been highlighted.

For the “coordination system” (green wave optimise for trucks) Grand Lyon has developed a way to evaluate the intersection control using the coordination of controllers. The partner has launched measurements on truck traffic on the avenue Jean Jaures. These measurements are done by the urban community of Lyon, in order to help the LET with the evaluation. Figure 9 presents the location of the “Lyon cooperative service” (intersections on the left) and “coordination system” (intersection on the right).

In Lyon all installations and verification of the intersection functionalities were completed by the end of 2010. On the vehicle side, a garbage truck operated by Grand Lyon was equipped with the EEIC system in January, and the baseline period was collected for one month before activating the system.

Figure 9 Equipped intersections in Lyon

2.2. WP2 – Implementation of Speed Limiter, Acceleration limiter and Eco-Driving Support

From discussions with transporters it was clear that these kind of "forcing" functions are very welcome. Some drivers are indeed driving eco-consciously, but there will always be situations when that aspect gets a low priority. The AL and SL systems will help keeping an acceptable level.

The SL and AL functions operate in certain zones in a city. The truck continuously checks its position via GPS. When a truck equipped with SL approaches a zone with a defined speed limit the driver is asked if he wants to accept the limitation. If the driver accepts, the speed will be limited until the truck exits the zone. The AL works in a similar way, except that the driver is not asked to accept a new limitation. This is not needed since the function has less impact on safety.

Before the start of the FREILOT project these functions only existed in trial versions and in FREILOT they were adapted to be installed on operative trucks. For the AL, the engine management system was modified to change the behaviour of the engine during acceleration. For the SL the vehicle electronic control unit was modified to limit the speed when applicable. The systems also required additional elements in the instrument cluster in order to send information to and accept input from the driver.

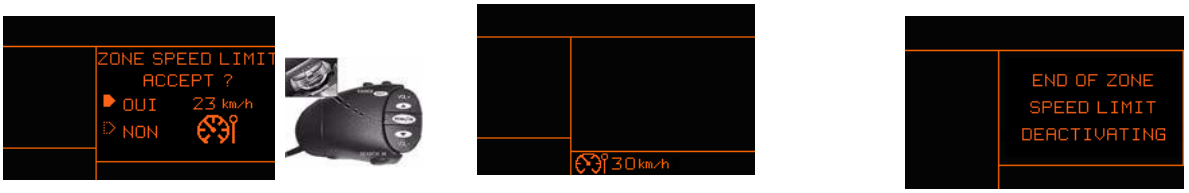


Figure 10 HMI for SL and AL functionalities

Since these functions interfere directly on the truck performance it is crucial that quality processes are followed. The FREILOT systems went through the same quality processes as any new system that is planned to be installed on trucks and sold on the market. Its interference with other systems in the trucks is being checked. This includes both virtual and physical testing.

The biggest constraint concerning these two functions is the fact that each truck model has different software which means that the functions need to be adjusted accordingly. To keep the budget frames the piloted truck models were limited to Renault Premium and Volvo FM.

The EDS is a system that recommends the driver on fuel consumption driving behaviour. The work in FREILOT was to optimise the algorithms that calculate optimal driving behaviour. The system continuously evaluates the driver performance when it comes to acceleration, engine speed, choice of gear and deceleration. When there is a discrepancy between the optimal performance and the actual performance, the driver will receive an advice on how to improve. The advices to the driver are shown on a display positioned on the dashboard, well visible to the driver. At the end of the drive the data is saved and a summary picture will show a score on the different evaluation points, as well as an overall score; the closer

to 100% the better the driver in terms of fuel economy. It also shows how much fuel has been consumed. There is also the possibility to make an ad hoc analysis via the back-office, from where the transporter can then access the data and get a more detailed analysis of the behaviour and performance of the driver.

Figure 11 FREILOT eco-driving functionality

After an intense phase of tests and verification, the first tests were performed in simulated environments in January 2011, after which all three systems where installed on an in-house truck for functional verification; fine-tuning the parameters and validating the performance.

Figure 12 FREILOT prototype/"in-house" truck

In 2010 the process for installing the systems on the individual trucks in the different sites of the pilot was also set up. Since the installations had to be specific for almost every truck and they had to be performed in the vicinity of the transporter, the operation was very complex. Meetings were held with the different stake holders: transporters, RT support, local project partners, to identify the trucks to install and what workshop to use. In the end of 2010 the physical installations on the trucks were validated in as much detail as possible, keeping in mind that minor adjustments might be needed for each truck specification. The AL and the EDS were calibrated and validated on test track and open roads. In December the first client truck was installed in Helmond, and the remaining trucks in the Dutch pilot were installed in January and February 2011.

Installations in Bilbao were successful and one of the trucks was used for demonstration at the interim annual review in February 2011. By mid-2011 a majority of the trucks in Lyon were installed. The installations in Krakow turned out to be the most difficult ones in terms of organisation. The transporter sends

the truck for up to two weeks assignments which made it difficult to plan installations in the workshop. All trucks were finally installed by April 2011.

In short: System installations were performed on all trucks, with two exceptions, and baseline data has been collected on a total of 24 trucks. The back office server is up and running and transporters are able to see the performances of drivers using the EDS system.

Figure 13 FREILOT fleet operator installations – Nanuk Transportes

2.3. WP2 – Implementation of Delivery Space Booking

2.3.1. Bilbao

The Delivery Space Booking in Bilbao was specified during the first year and implemented early in the second year of the project.

During the specification period the DSB system, called *Urban Merchandising Distribution Management* (UMDM), was adapted to specific freight requirements with a close collaboration of freight companies (end users). The UMDM is based on an existing car parking system developed and commercialized by GERTEK, which is already used in Bilbao with more than 500 parking tolls in the streets of Bilbao.

In parallel the following tasks were executed:

- Identification of potentially interesting streets to be considered as test sites. Initially 10 potential areas were identified and eventually fleet operators chose the final 4.
- The design of the delivery space was undertaken. The delivery space was divided in 3 or 2 parking spaces of 6 meters each; this would allow the parking of three small vans at the same time, a medium truck using two parking spaces (max 12 m) and a small van (1 delivery space), or a large truck occupying all three parking spaces (18 m).
- Once the areas were settled, the best emplacement of the FREILOT delivery space on each street was decided, and also that the system would only be operational in the mornings from 8:00 to 13:30.

The road installations were done early in October 2010 (see Figure 14) and the training session for the fleet operators (Figure 14) was organised. After the training session the fleet operators were asked to make bookings in the system. Already in July pre-bookings were registered in an excel sheet. However, in order for the fleet operators to learn the system and start using it, they were requested to fill in those bookings in the web-based system.

Figure 14 Delivery space road side installation and booking training session

Thanks to the media event in October the DSB received a lot of attention. The publicity achieved during the press campaign (Figures 15) on 13 October resulted in around 50 new fleet operators requesting to become a part of the scheme. Details about the media coverage (articles, videos, etc) are presented in the chapter on Dissemination.

Figure 15 FREILOT media event in Bilbao October 13, 2010

After the launch of the functionality the main work focused on a problem with the inductive loops installed in the delivery space road surface. When trucks were using their back-side platform, which is reaching the delivery space behind it, the platform itself was detected as an independent vehicle. Two other areas of work in this work package included fixing problems with LED lights and developing new and reprogramming chip cards. But the most rewarding part of the “Implementation work” for this functionality was without exaggeration the preparation of 65 new FREILOT cards to be used by the new fleet operators and their trucks.

Figure 16 FREILOT Delivery Space Booking functionality in Bilbao – snapshots from TV clips

In January 2011 a small adjustment of the on-site functionality was implemented. It concerned the light indications in the ground. To avoid confusion, the final implementation shows a green light when the space can be used, the green light starts flashing when a correctly identified truck is using the space and flashing red when a non-identified truck is using the space.

2.3.2.Lyon

In Lyon, the first 1.5 year of the project were dedicated to the identification of fleet operators and the definition of the technical specifications of the DSB application. Different technology providers were consulted, offering various choices.

In the summer of 2010, the Lyon site coordinator Interface Transport, the City of Lyon as the public authority, and Thetis, the developer of the web portal finally decided to use large LED (Light Emitting Diode) signs, which are frequently used at bus stops (Figure 17. A supplier was chosen and a quotation obtained. This solution turned out to be better than other proposals both from a cost and performance point of view.

Figure 17 One of the LED screens that was used in the Lyon DSB pilot

After finalising a number of administrative forms for approval of the installations, the implementation work on the DSB functionality started Four LED panels to be used as road side installations were ordered. The Bilbao BlackBerry application for logging data for Evaluation purposes was developed and successfully tested. The on-board unit development was finalised by Volvo and Renault, but there was a very slow movement on ordering poles (on which the LEDs would be placed) and low progress on the agreement of the final installation dates.

The LED panels ordered by City of Lyon and Interface Transport were received in the first quarter of 2011 and the configuration process started in cooperation with Thetis and Renault Trucks (initialisation, GPRS configuration, network connexion to the web portal).

The City of Lyon worked on solving budget and administrative difficulties relative to the poles order and electric plugging of the panels.

The baseline measurement could start in January 2011, with two data collection modes:

- human counting on the pilot sites (four-week survey)
- automatic data collection with the same Blackberry application as in Bilbao. 10 Blackberries were purchased, configured and distributed among the local fleet operators.

Finally during the summer 2011 the poles were ordered and received. The road side installation work started in July and was finalized during October.

Figure 18 Installation in Lyon

Additional technical problems due to GPRS coverage (data transmission between the panels and the server would not work) led the local team to bring further configuration settings to the panel, delaying the activation to January 2012.

The functionality has been active since and bookings have been allowed for all operators and still are. Flyers and vertical signs were made up to communicate about the service.

An experimental line survey was led during March 2012 (a four-week survey similar to the baseline one).

Figure 19 The Croix-Rousse panel implemented

2.4. WP3 - Operation

The start of WP3 was marked by the first operational pilot application: the Delivery Space Booking service in Bilbao. The baseline data was collected during the period of July-October 2010. The FREILOT application started on 14 October 14, 2010. The pilot technical data from that date are the following:

Number of spaces	4
Number of slots available	90
Number of fleet operators involved	15
Number of trucks originally involved	35
Time table	8:00 to 13:30

Table 1 Data from the start of the service operation

The starting day was disseminated through a press briefing and resulted in numerous articles and TV clips, see the chapter on Dissemination for more information. The publicity achieved during the press campaign resulted in 35 new fleet operators requesting to become a part of the scheme.

During this period new fleet operators joined the system scheme. These fleet operators contacted the system themselves after seeing the initiative in the media or working in the streets.

Number of new fleet operators	35
Number of new trucks	89
Total number of fleet operators (old + new)	**47**
Total number of trucks (old + new)	**124**

Table 2 Data from the start of the service operation

During the first three months of operation a technically stable system was achieved, where major technical errors were targeted and solved. The system's usability during these eight months is described in Figure 20. Here it is shown that only an average of 14.18% of the slots were used (real time & booking) per week and only 6.16% of the bookings were correctly booked. Also, due to some correction actions the number of infractions was reduced significantly although they are still high.

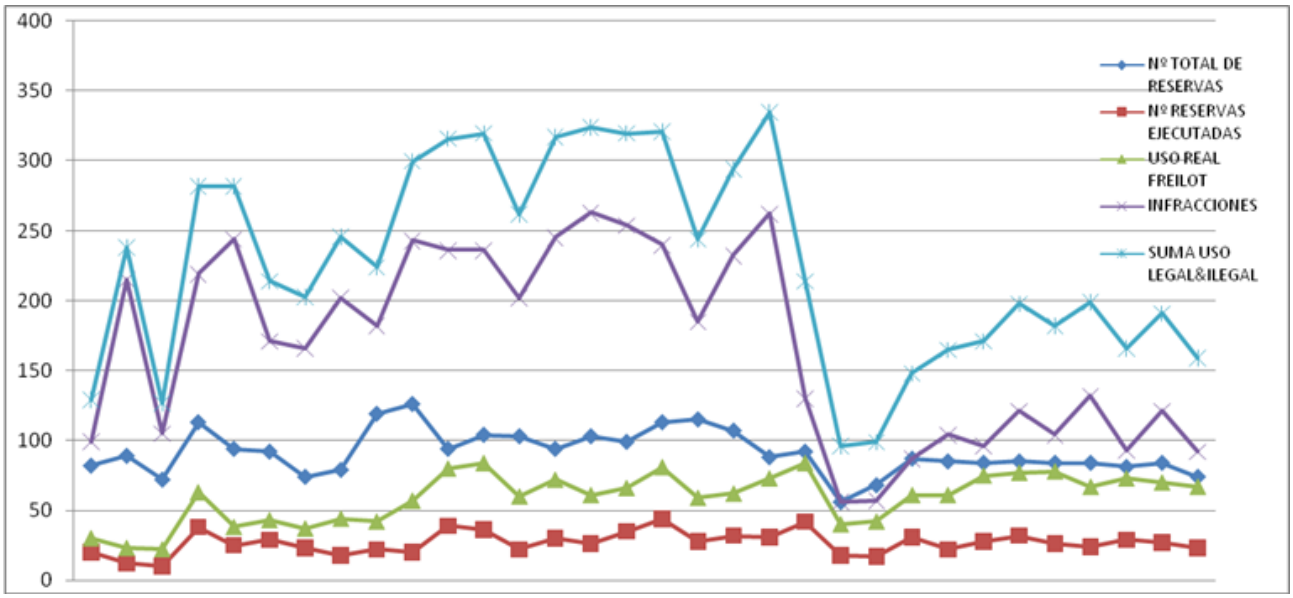


Figure 20 Delivery Space Booking operation statistics

The Pilot's official end in Bilbao was marked by a Plenary Group meeting on the 31 November 2011. After formally ending the pilot the last conclusions were provided and the future of urban distribution system concepts was discussed with the users. The best three Bilbao FREILOT DSB users received public recognition.

The second service that started was the EEIC in Helmond. This service was started at the kick-off event on 28 October 2010. After a test period the baseline period was started at 15 January 2011. At that moment all 13 on-board units had been installed. The operational period began on 9 March 2011.

A green wave system optimised for trucks was implemented in Lyon in March 2010. To accommodate trucks the speed of the green wave was reduced. This lead to slightly increased traffic jams at rush hours. Therefore the special green wave for trucks was not applied between 6:30-9:00 and 16:30-19:00. The idea was to evaluate the system using Smartphone solutions, but no fleet operators were interested in using such devices. The system was finally evaluated manually by LET: people were manually counting trucks and the number of stops. From January 2011 pneumatic counters were installed by Grand Lyon. The data from these counters was provided to LET for evaluation.

At the end of January 2011 the EEIC service in Lyon was installed on a main road from the South , and it was collecting baseline data from 1 February. An on-board system was installed on a garbage truck, which used the road on a very regular basis. Initially, three on-board units were foreseen, but due to the lack of trucks only one was installed. Despite many requests, no trucks fleet managers in the Lyon area were interested in testing the system within the project schedule.

For the the AL, SL and EDS systems, a total of 32 Volvo/Renault trucks were used in four pilot sites. In Bilbao all three in-vehicle systems (AL, SL and EDS) were tested by Nanuk, one of the official partners of the FREILOT projects. The company itself is based near Bilbao, but the selected trucks were operating as regional distributors in Madrid; thus opening the experience to other cities and therefore achieving one of the objectives of the project.

The selected in-vehicle system user in Krakow was Temperi, a transporter operating mostly long hauls. In the first quarter of 2011 the installation of Volvo equipment in trucks from Temperi was supported locally by the PEEK Poland organisation to overcome language problems. Five trucks were selected to test the EDS system. On 23 July 2011 the Volvo on-board systems were installed in the five vehicles. As the server was already working, the baseline data collection could start immediately. In September 2011 the EDS system was activated for the operational part of the pilot. Finally, in June 2012 the EDS systems were disabled and were removed from the trucks.

In Bilbao log data was collected via Blackberries and transferred to an FTP server at LET. The log data from Helmond was collected by the roadside units. Every day the data was gathered onto a server at PEEK Amersfoort. The collected vehicle data was sorted per day, and the resulting files were provided to WP4 via an FTP site. The EEIC log data in Lyon was gathered on an FTP server at Grand Lyon. For the other systems in Lyon Blackberries were used to collect log data, which were stored on an FTP server at LET.

At all test sites phone numbers and contact persons were communicated to resolve operational problems. For problems with the EEIC in Helmond, Lyon and Krakow the developers could be contacted directly. For the Volvo/Renault systems a call chain had been set-up which included the local truck maintenance companies.

Before and during the use of the systems the users were informed in various ways. Users were trained, provided with manuals and handbooks in their native language and were supported with physical meetings throughout the pilot period.

During operation in Helmond some drivers reported problems with other GPS receivers when the on-board unit was operational. Investigations by PEEK uncovered that this was caused by the panel-PC used as the display of the unit. The replacement of this system component took a lot of effort. In the meantime the truck drivers experiencing this problem agreed to switch on the system as long as they were driving in Helmond. When leaving the city they turned the system off until they returned.

In June 2011 an Android widget was developed which replaced the GPS-interfering EEIC display units. After successful tests the new equipment was ordered for 11 replacement systems in Helmond, and 5 new systems in Krakow. Following the production of the new systems the new Android based EEIC units were installed in the Helmond vehicles in September, after which the second baseline period started. Special care was taken to make sure enough data from the trucks was collected before ending the second baseline period and moving to the second operational phase.

In Krakow it was very hard to find vehicles that drive regularly on the FREILOT road. While searching for new fleet operators the opportunity arose to place some units in buses which provide a regular service on the FREILOT road. As an implementation in busses might be good a deployment opportunity, three busses from the TRANSUSŁUGI bus company were provided with an EEIC unit in December and January.

In Lyon a new road intersecting the EEIC road was opened six months ahead of schedule. As the FREILOT project was extended, the decision was taken to install FREILOT equipment at the new intersection. To measure the impact of this new intersection one month of additional baseline was added in March 2012.

To validate the business case of the EEIC system the Helmond simulation was executed with larger penetrations of prioritised vehicles. The aim of these simulations was to find the maximum number of vehicles that could be given priority. As for the initial study different results were found for the morning and evening rush hour. Again the city centre is found to be the most susceptible to disturbances in the traffic control. Outside the evening rush hour the number of prioritised trucks can be increased to about 100 trucks per hour without much impact on the other traffic. From a business case perspective this means that a significant part of the trucks with local binding could be equipped with an EEIC system.

The DSB service in Lyon struggled for a long time to get the system operational. This was mainly caused by the on-site display panels. Ordering and placing the poles for the panels proved to be very difficult, and after installation it took a long time to power the panels and to ensure a working GPRS connection. Finally the service was operational since February 2012.

During the pilot a number of defects were repaired, ranging from software or configuration errors to damage by thunderstorms. Overall, the FREILOT systems demonstrated their robustness by being operational for more than 80% of the pilot period.

Some of the FREILOT services continue their operation after WP3. In Bilbao the city has decided to maintain the DSB system and keep it operational after the project. In Helmond the EEIC equipment at the roadside and in the vehicles remains active after the pilot as a part of the continued, after project operation. In Lyon the EEIC system is kept operational for the time being.

2.5. WP4 - Evaluation

During the first year of FREILOT (May 2009–June 2010) the main activities carried out in WP4 were focused on the evaluation methodology definition and preparation of the pilot.

1. Identification of the general methodology to be applied.

   FREILOT was one of the first pilots carried out in Europe. Consequently there was no specific methodology for pilots and their specific characteristics: test of systems previous to deployment and in the last phase of development, in real conditions with real users (in this case, fleet operators and drivers in the day-to-day operation). Initially, a state of the art analysis was done and different Field Operational Tests were analyses as this kind of test were the most similar ones to the pilot. After this initial analysis, it was decided to use FESTA as the reference methodology for FREILOT.

   Following the steps defined in FESTA, the general framework for FREILOT evaluation was defined:

   - Identification of functions and use cases to be studied.
   - Identification of main Research Questions
   - Identification of Hypothesis
   - Identification of Indicators and General measurements
   - Evaluation Plan

   During the first year of the project the detailed description of the final implementation of the services and plan were under discussion in WP2. This implied that, once the first version of D.FL.4.1 was submitted, the work in the detailed evaluation methodology per test site and service should continue, creating a more detailed specification of functions and use cases, research questions, hypotheses and specially Indicators and measurements.

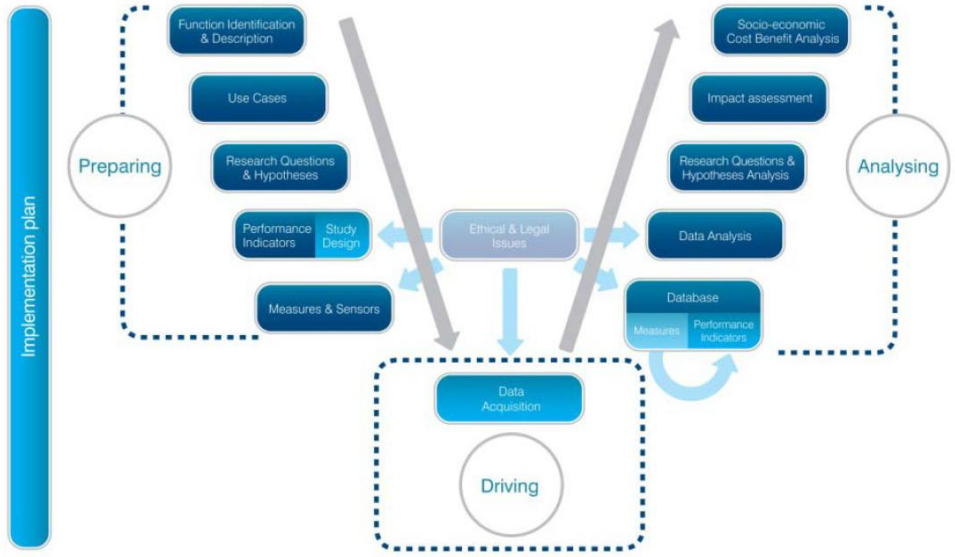


Figure 21 FESTA Methodology 'V'

2. Preparation of the evaluation and tools

   Once the first methodology suitable for FREILOT was defined, the work on the definition of procedures and tools for doing the evaluation started. This activity covered the following topics:

   - Requirements for the measures (to be provided to WP2)
   - Development of first drafts for questionnaires for the subjective evaluation

- Definition of general process for data collection among test sites

During this first year, the interaction between WP2 Implementation and WP4 Evaluation was strengthened: WP2 provided periodically updated information about the implementation of the services and WP4 provided requirements about how to collect data and the data management process in general.

The second reporting year started in July 2010 until March 2011. During the first review of the project (June 2010) some comments were received on the evaluation methodology and, in general, a revision was requested. So, one of the main objectives of this period was to complete and review the evaluation methodology following the recommendations received. In this period, a complete revision of D.FL.4.1 and all its contents was carried out, in some cases changing the procedures and objectives. In accordance with this revision, also the results of the activities during the first year (data logger requirements and questionnaires) were updated. The detailed list of activities carried out is included below:

- Revision of the Research Questions and Hypothesis.
- Revision of the Performance Indicators and measurements.
- Identification of possible problems regarding the available data and a proposal for solutions (data logger equipment specifications).
- Revision of the Evaluation Plan per system and per pilot site. A combination of systems was planned.
- Revision of questionnaires and translations into the different languages of the pilot.

The results of this revision work were included in the second release of D.FL.4.1 v2.0, submitted at the end of January 2011.

It is relevant to mention that, during this second period, the relation with WP2 was maintained as during the first period and, in addition, a close relation between WP4 and WP6 (Deployment Enablers) was established to align the results of the evaluation with the needs for data from WP6 in terms of common indicators (following the recommendations of the project reviewers). The following actions were carried out:

- Indicators/benefits of WP6 were reviewed to link them with the indicators specified in the Evaluation work package (WP4).
- Preliminary methodology development for the business scenarios comparison, together with the coordinator of WP6.
- Review of the Evaluation questionnaires to check if the information needed in WP6 is collected.

In parallel, during this period, after the methodology revision, the evaluation itself was focusing on the development of tools for data acquisition and processing. This activity was carried out mainly during the last months of 2010 (July-December 2010) and the first quarter of 2011.

The definition of the data and the data file formats (data logger specifications) was finalised in the period July-September 2010. At the end of this work, it was found that for different services the data logger system and consequently the data and data file formats would be different. To sum up, the following systems/data formats were identified:

- For the in-vehicle services VOLVO/RENAULT TRUCKS provided an integrated data logger with their specific format. Fuel consumption in this case comes directly from the truck.
- For DSB Bilbao and Lyon, the data came from two different sources: observation in the DSB areas and GPS devices on board of the trucks. Emissions and fuel consumption in this case were calculated with simulation software taking the real data collected as an input. This fact implied that additional work on calibration of the models was planned.

  The same GPS device was used in the data collection for EEIC in Lyon (route Jean Jaurés).

- For EEIC in Helmond and Krakow, the data was collected inside the trucks with a GPS logger (different than the one used in DSB) and in the intersections. Emissions and fuel consumption in this case were calculated with simulation software taking the real data collected as an input and, consequently, calibration of the models was also needed.

The fact that different data loggers and data formats were used implied that different data processing tools were needed. One of the data processing procedures was the one to be implemented to obtain the indicators from the GPS devices and specially, fuel consumption and emissions. As the data collection for the baseline of DBS Bilbao started in July 2010 and the experimental phase (with the service activated) started in October 2010, it was needed to develop the complete process during this period and the data collected during the first year was used for the adaptation of the tools. The figure below describes the data processing of the GPS information in order to obtain the consumptions and emissions.

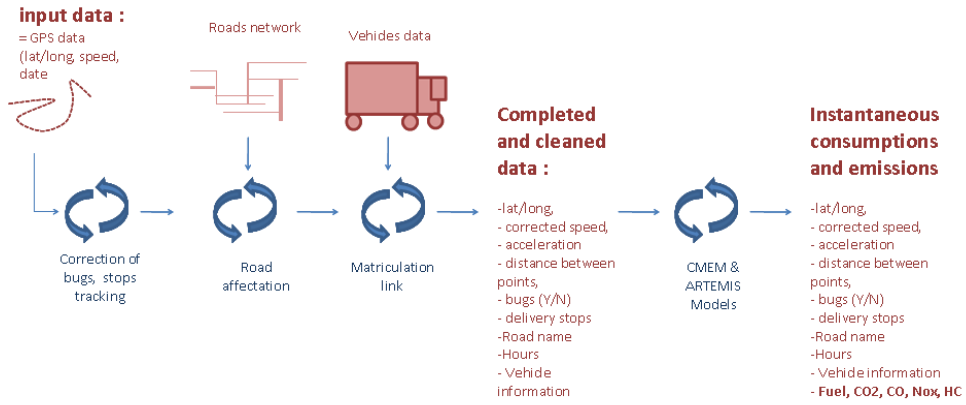


Figure 22 Calculation of fuel consumptions and pollutants emissions for GPS (Blackberries) data

During this phase, the two partners (CNRS and LET) identified some bugs in the input data and defined the procedures to correct them. In this perspective, they have written a program in order to clean the data, to calculate the speed second-by-second, the distance and to track the various delivery stops. This data processing gives a panorama of the various future possibilities of calculation methods for fuel consumptions and pollutant emissions. In addition, the two partners studied several models for emission estimation (COPERT, CMEM...). The choice depended on the available data (vehicle parameters...) and the quality of the results. Moreover, these partners studied different approaches for analyzing the results: by type of road, by time slop, by type of vehicle, or by district. CNRS and LET were going further into analysis of the calculation methods for fuel consumption and pollutant emissions and were collecting a large set of data. **Error! Reference source not found.** shows the output of one of the tools which was used to follow the delivery route and number of stops done by one truck one specific day. Among other information, this tool allows to check the conditions in a specific route and, of course, specific incidents during the delivery that could affect the results.

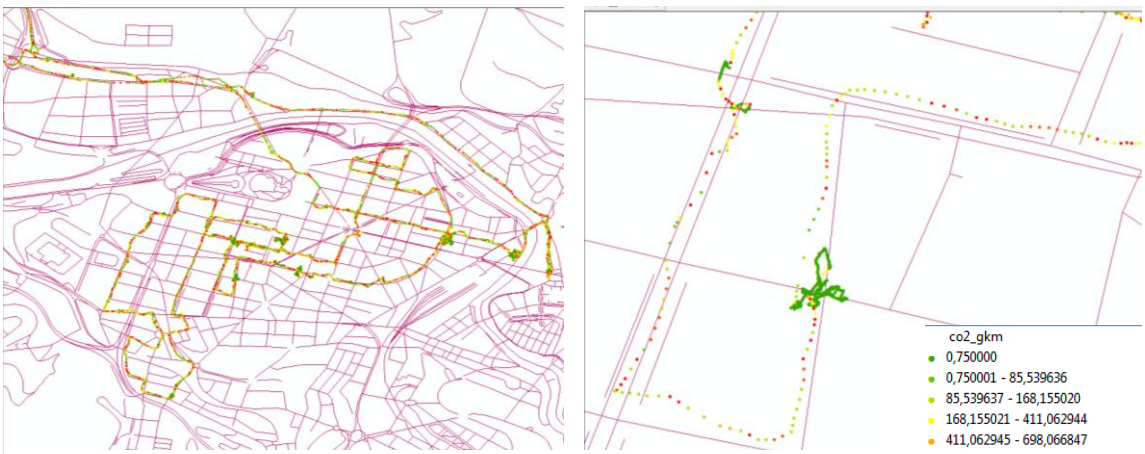


Figure 23 Route done by one truck in Bilbao using DSB

In case of the data logger for the in-vehicle systems, a close collaboration with the implementation partners was done by CERTH and CTAG in order to define the final data to be collected. At the same time CERTH and CTAG worked on the definition of the data processing procedures and the preparation of the scripts for the data processing. In this case, the process is different from the Blackberries because the information is obtained directly from the vehicle.

For EEIC PEEK and Grand Lyon worked on the preparation of the data logger equipment. The pilot on EEIC in Helmond started also during this period: in October 2010 a pre-pilot was started to test all the implementations and in January 2011 the official pilot started. The data collected in November 2010 and December 2010 was discarded for evaluation taking into accounts that during the first month (November) some technical changes were needed. In December the conditions of traffic are completely different due to the Christmas holidays, therefore taking this data as a baseline would lead to interferences in the final results. As soon as the first data was collected in October, some examples from the data files were distributed among the evaluation partners to check that all the data needed was included in the files. In addition tools were developed to calculate the indicators.

In parallel to the preparation of the data acquisition tools, the preparation of scripts for data uploading from the test sites to the central database and implementation of the database were done (July-September 2010). The files collected in Bilbao were used for testing the system off-line in order to have it ready. At the same time, the pilot site leaders were contacted to get the information needed for uploading the files.

As two pilots started during this period, the very first data analyses were done with the data collected in Bilbao. These preliminary results were mostly about the use of the service. In **Error! Reference source not found.**an example of the first statistics for baseline validation in Bilbao is included. This data comes from the Delivery Space area – Santutxu and the graphics show the distribution of the number of trucks passing near the Delivery Space and the distribution of the number of stops.

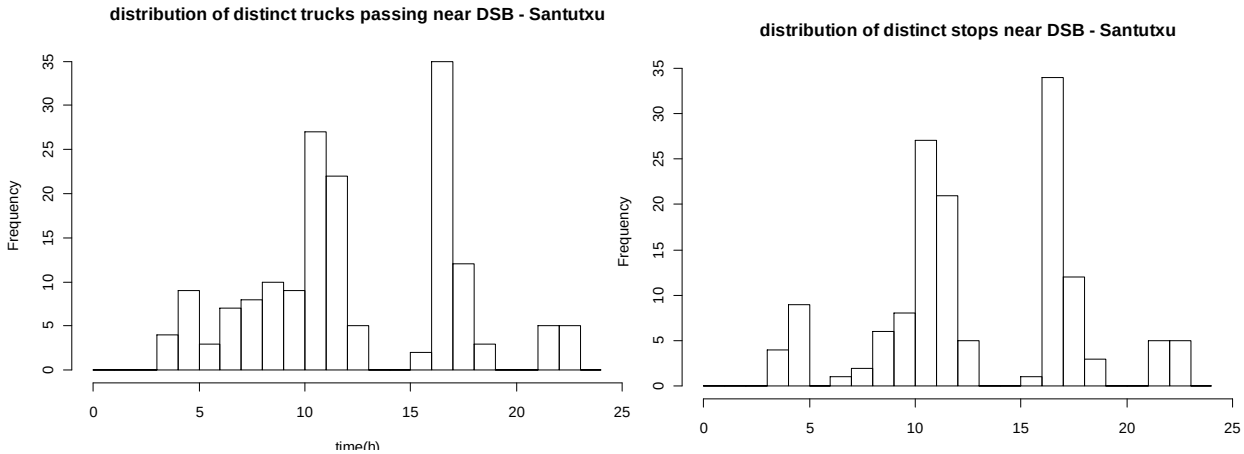


Figure 24 Example of first statistics for baseline validation in Bilbao

Ending with the summary of activities for the second reporting period, it is important to comment that during these months and aiming to coordinate the different activities with the evaluation partners and with WP2 and WP6, two physical meetings focused on WP4 took place:

- One took place in Paris 8 October 2010 where CERTH, CTAG and CNRS-LET, the partners with most resources in WP4 and the core group for evaluation activities met. During this meeting, the discussions focussed on the list of indicators per system and the evaluation process, distributing the work on data processing and data analyses among the partners. This distribution, applied until the end of the project, was the following one:
    - In-Vehicle services: CERTH, CTAG and VOLVO/RENAULT.
    - DSB: CNRS/LET and CTAG.

- EEIC: CNRS/LET, PEEK and CTAG.

- A second WP4 physical meeting took place 13-14 January, in Vigo (CTAG installations). The entities participating in this meeting were: CTAG, CERTH, GERTEK, CLUSTER-TIL, with RENAULT-VOLVO, CNRS-LET, and ERTICO participating by phone.

The final reporting period covered from April 2011 to September 2012. During this period the second review of the project took place in July 2011 in Krakow when all services were activated. Most part of 2011 was focused on data collection for the different services in the different cities: the pilot was in operational phase. During this period the evaluation partners were receiving the data files and checking them. Some preliminary reports with first results were prepared aiming to give some preliminary information how the pilot was running and providing the opportunity to test the different data processing tools and the data analyses procedures. These preliminary analyses allowed the detection needed technical improvements and the adaptation of the tools for the final analyses, when all the data were collected. The preliminary data analyses performed during this period were the following ones:

- DSB Bilbao CVIS questionnaire data analyses
- DSB Bilbao first questionnaire presentation data analyses
- DSB Bilbao infractions for baseline analyses
- DSB Bilbao GPS first data analyses
- EEIC Lyon first data analyses
- EEIC Helmond GPS and intersection data analyses
- Krakow general data analyses
- Preliminary analyses of in-vehicle systems based in one truck

With these preliminary analyses done, two physical meetings of WP4 called 'Indicators workshop I and II' were fixed in order to review the results obtained, to discover the modifications needed in the process, the feedback to be provided to WP3 Operation and to plan the next steps. Below, each of these meetings is described in more detail:

After the second workshop the final work on the data analyses started with the data analyses of DSB Bilbao as the data collection period finished at the end of October. With this service, the data analysed was the following:

- Data collected using the observation protocol in baseline and experimental phase about infractions.

  Activities: codification in an Excel sheet for all the questionnaires and analyses.

- Data collected by the GPS device located inside the trucks.

  Activities: data filtering, error corrections, indicator generation and statistical analyses.

- Use of the models for fuel consumption and emissions calculation

  Activities: calibration of the models for the test site and trucks, preparation of the real data to be provided, generation of indicators and statistical analyses.

- Data from the reservation system.

  Activities: data filtering, generation of indicators and analyses.

- CVIS questionnaires, first round FREILOT questionnaire and second round FREILOT questionnaire.

Activities: codification of answers and statistical analyses.

As soon as the data collection periods for EEIC in Helmond and in Lyon were finished (in the first quarter of 2012), the final data analyses for both sites and services started. The data analysed for this service was the following one:

- Data from the intersections

  Activities: data filtering, indicator generation and statistical analyses.

- Data from the GPS device on the trucks

  Activities: data filtering, error corrections, indicator generation and statistical analyses.

- Use of the models for fuel consumption and emissions calculation

  Activities: calibration of the models for the test site and trucks, preparation of the real data to be provided, generation of indicators and statistical analyses.

- FREILOT questionnaires, including the questionnaires for the fire brigade and ambulances in Helmond.

  Activities: codification of answers and analyses.

In parallel, during the first quarter of 2012, a preliminary report on in-vehicle data analyses was also prepared by the involved partners. As these systems were the last ones starting the pilot and the last ones finishing the data collection period (the last truck ended the data collection period at the end of May 2012), until the first quarter of 2012 it was not possible to prepare a preliminary report with different trucks and different locations. After May 2012 the final data analyses for these services were started, analysing the following data types:

- Data provided by the in-vehicle data logger

Activities: data filtering, indicator generation and analyses.

- Questionnaires presented to the drivers and the fleet operators.

Activities: codification of answers and analyses.

Finally, the Krakow EEIC data analyses were the last ones being started. The kind of data collected was the same as in Helmond and the activities performed were also the same.

Related to the principal objective of the project the fuel consumption saving is significant in systems and pilot sites such as EEIC Helmond where the rate of change between baseline and pilot periods is -13% or EEIC Lyon with a rate of -8%. Krakow obtained local improvements of the efficiency in the driving in the intersections 2EW, with a rate of -62%, or in the 3NE with a -22%. Since the fuel consumption is strongly linked to gas emissions, EEIC Helmond reduces the CO_2 and NOx emissions by -13% and EEIC Lyon produces benefits for the environment in a similar way. Intersection 2EW in Krakow reduces the emissions in -65%. These scores were achieved by the system mainly due to the drastic reduction in the number of stops.

Though the evaluation of DSB does not show a significant result in terms of fuel consumption/emissions reduction, it highlights its considerable impact on overall traffic, especially on illegal parking. In this case the system led to a remarkable increase in the number of deliveries.

In the case of AL system the results found under the experiment conditions, in terms of fuel consumption are not so significant, being between -2% and 2% fuel consumption increase. In the case of SL there is reduction, but not so big. The scope of this limiter is more safety-related than economic related. Added to this, the driver has a fundamental role in the success of this system since he can accept or reject the limitation. The data analysed shows that most of the times the drivers were rejecting the limitation.

The EDS impacts on fuel consumption are also closely dependent on the drivers. In this case, the data analysed shows a maximum fuel reduction of -6.6% in the 0-100 km/h speed range and -15.3% in the 0-50 km/h speed range (in urban/suburban utilization). In long haul utilisation, the maximum fuel reduction achieved was -6.3% in the 0-100 km/h speed range and -11.6% in the 0-50 km/h speed range (but this result may be not significant as previously explained).

Regarding the satisfaction of the participants in the project, for instance the good welcome of DSB in Bilbao is remarkable. Many drivers thought that this service improved the freight image in urban areas, they like the service and they find it is easy to use. Moreover, drivers believe DSB increases the efficacy of their work, it facilitates their delivery operations and it increases the delivery efficiency. Regarding fleet operators, they consider that when their companies unload the goods using DSB, the delivery load is safer. Also, they believe the freight transport image in urban area is improved with the use of DSB. Furthermore, this service facilitates their tasks because they do not need to look for free spaces, therefore the DSB service does not disturb their driving task.

The last task carried out during this period was the preparation of D.FL.4.2 containing the results and conclusions obtained for the pilot.

2.6. WP6 – Deployment Enablers

The Deployment Enablers work package (WP6) aims at minimising risks and ensuring business and deployment viability of the services tested within the FREILOT project. In this way, WP6 should identify all deployment barriers, define solutions for their overcoming and study economic viability of these solutions. Amongst others, Cost-benefit analysis and Deployment roadmaps will be created/further developed.

During the first year the identification of deployment barriers was executed. These barriers were organized in six thematic groups with the aim of facilitating easier and a more organized access to barriers and solutions:

- TECHNOLOGICAL - Related to technological problems that might delay or stop the deployment of the solution.
- REGULATORY - Regulation of the city that might forbid one of the solutions proposed by the FREILOT project. As regulations are different for each city this barriers will be treated in a general way.
- POLITICAL - May be some solutions might provoke critical actions difficult to be considered by some cities or administrations.
- ECONOMICAL - Problems related to the cost or business model of the solutions proposed by the project.
- STAKEHOLDER - Barriers that might affect to some of the key stakeholders (drivers, city…) and cause the failing of the solution on the implementation or execution phase.
- MANAGEMENT - Barriers that might arise in the everyday management of a solution and might be considered of high risk.

Also a first approximation of the cost analysis for the DSB of Bilbao was performed. During this process an excel form was prepared to be used subsequently as a tool for calculating and estimating the business benefits of each service or a combination of services.

An initial idea of actors' role for the DSB, based on the CVIS business analysis methodology, was defined. This methodology is taken for the rest of services being identified potential stakeholders, their roles and responsibilities. The table below illustrates a first order matching between different stakeholders and the different roles.

	STAKEHOLDER	
Service providers (SP)	TECHNOLOGICAL COMPANIES	

	TRUCK MANUFACTURERS	
Service direct users (SDU)	ROAD AUTHORITIES & ADMINISTRATION	
	FLEET OPERATORS	
Service indirect users (SIU)	ROAD AUTHORITIES & ADMINISTRATION	
	FLEET OPERATORS	
	OTHER BUSINESS SERVICES (insurance companies)	
Service Collaborators (SC)	ENFORCEMENT	
	DRIVERS	

Table 3 First order matching between different stakeholders and the different roles

The next step was to determine the role of the stakeholders in more detail for each FREILOT service. The chain value of each service was identified and flows or relationships between the identified roles were established according to the methodology and diagrams used in the CVIS project.

Initially, the working schema planned for the WP6 was divided in three main blocks. During the first year of the project, the “Market demand analysis” and the “Service Product analysis” were executed according to the STAGE I of this working procedure, with the clear objective of finding out the real situation of the market and identify similar products or competitive companies.

In the second year, the global strategy and working process for the WP6 were reconsidered to achieve a better objectives approach. The following figure shows the expected work.

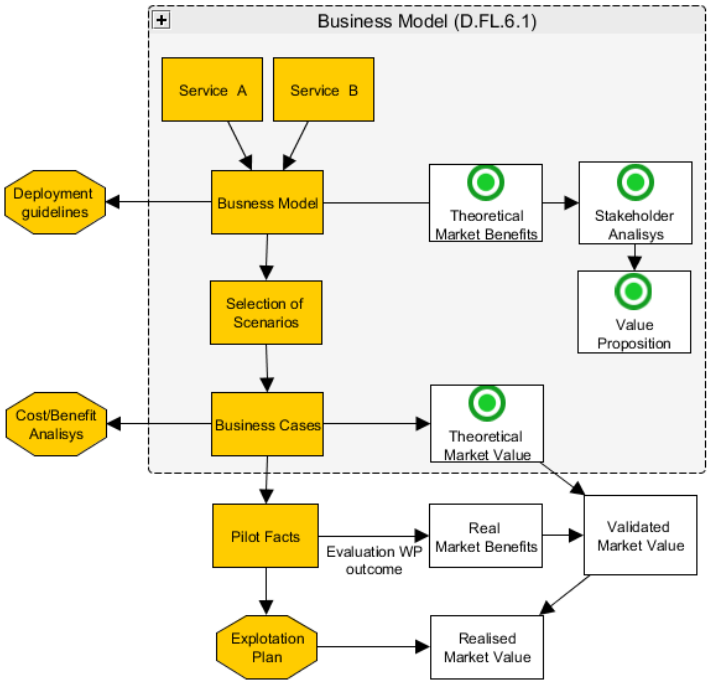


Figure 25 Pilot process and consequent document structure

In the defined working plan, business analysis is based in four deliverables with specific objectives, the Business Model being the main core where Business Cases are defined taking outputs from the rest of deliverables according to the picture below:

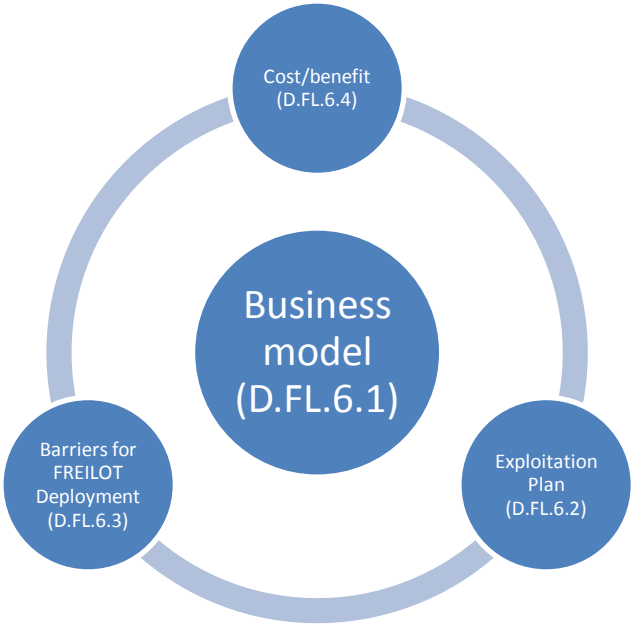


Figure 26 WPs deliverables relationship

WP is focusing on the service opportunities under the scope of ***socio***, ***environmental*** and ***economical*** parameters Initially12 benefits were identified under these three impact groups. They were later minimized to the set of 10 benefits listed below:

1. To increase the **energy efficiency** (lower fuel consumption) and reduction of **CO_2 emissions** of the traffic pollution.
2. Reduction of the **noise** caused by delivery vehicles and operations.
3. Better **traffic flow** leading to a better environment and air quality by reducing double line stops, stops at intersections, minimizing radical breaking or speed changes…
4. Improve **organization & management** of urban **distribution** processes by optimizing planning and routing, delivery efficiency on urban areas, reducing overall delivery time…
5. Improve **safety conditions** in general while delivery operations are performed, by reducing double line stops and illegal parking, limiting speed and radical accelerations…
6. Possibility to **"steer" goods traffic** towards preferred road or preferred times of the day (e. g. early hours in the morning).
7. Improve **work conditions** and contribute to achieve higher **driver comfort** by providing more efficient and controlled delivery practices, like driving assistance, speed and acceleration limiters or allowing a better/ faster operations...also better working conditions will provide less injuries and a reduction of working days lost due to illness.
8. Besides all the benefits in the conduction, the project also contributes to achieve more **efficient use of infrastructure.**
9. Improve the **environmental image of the companies** that participate in the project
10. Improve the **image of the City** in order to achieve a better life quality or attract economical activities such as tourism…

After the value proposition of the services, six business cases later widen to seven (three single scenarios and four combined scenarios), were chosen in order to study the business viability of the services and project results:

1. Eco-driving support. (EDS)
2. Energy efficient intersection Control. (EEIC)
3. Delivery space booking (DSB)
4. Limiter scope (LS) which combines acceleration limiter & speed limiter.
5. Vehicle scope (VS) which combines acceleration limiter & speed limiters & eco driving support.
6. Total scope (TS) which includes energy efficient intersection control & delivery space booking & acceleration limiter & speed limiters & eco driving support. Total scope (TS)
7. Cooperative scope (CS) which includes vehicle scope and energy efficient intersection control

During the last period, indicators related to each benefit have been defined in order to evaluate the potential of each business case. Except for the benefits 8 and 10, where the data will come from Business WP, the others indicators data will be requested to Evaluation WP. Two ways have been followed for getting valid results for these indicators: Pilot Site Evaluation, obtaining quantitative measures of the service, and User Questioners setting qualitative results (user opinions, appreciations…) for the service.

CRITERIA	BM 1	BM 2	BM 3	BM 4	BM 5	BM 6	BM 7

1. Energy efficiency and CO2 emissions							
2. Noise reduction							
3. Improve Traffic Flow							
4. Organization & management of urban distribution							
5. Improve safety conditions							
6. “Steer” goods traffic							
7. Work conditions and drivers comfort get better							
8. Efficient use of infrastructure							
9. Improve environmental image of the company							
10. Improve image of the City							

Table 4 Final benefit results from evaluation WP

Multi-agent multi-criteria methodology has been applied to the results achieved from each benefit by business case to the requirements or interests of key stakeholders. Firstly, the key stakeholders have been identified: fleet operators, public authorities and administrations, citizens and drivers. Then, an opinion poll has been fulfilled to each group following the multi-agent multi-criteria tables designed where all benefits are related to each other. The methodology consists in giving a better or worse punctuation to each benefit with the aim of knowing what the most important benefits are for each stakeholder. The following table shows the interest rate of each benefit by stakeholders:

	FLEET OPERATORS	PUBLIC AUTHORITIES & ADMINISTRATIONS	CITIZENS	DRIVERS
1. Energy efficiency and CO2 emissions	**20%**	**14%**	**13%**	**2%**
2. Noise reduction	**3%**	**10%**	**13%**	**5%**
3. Improve Traffic Flow	**13%**	**13%**	**15%**	**9%**
4. Organization & management of urban distribution	**10%**	**6%**	**5%**	**6%**
5. Improve safety conditions	**8%**	**16%**	**26%**	**29%**
6. “Steer” goods traffic	**4%**	**7%**	**7%**	**8%**
7. Work conditions and drivers comfort get better	**13%**	**6%**	**5%**	**27%**
8. Efficient use of infrastructure	**11%**	**10%**	**6%**	**6%**

9. Improve environmental image of the company	**11%**	**4%**	**2%**	**4%**
10. Improve image of the City	**7%**	**14%**	**8%**	**4%**

Table 5 Benefit Weight per stakeholders

Finally, this weights are applied to the evaluation results with the objective of obtaining the impact for each business case in each stakeholder.

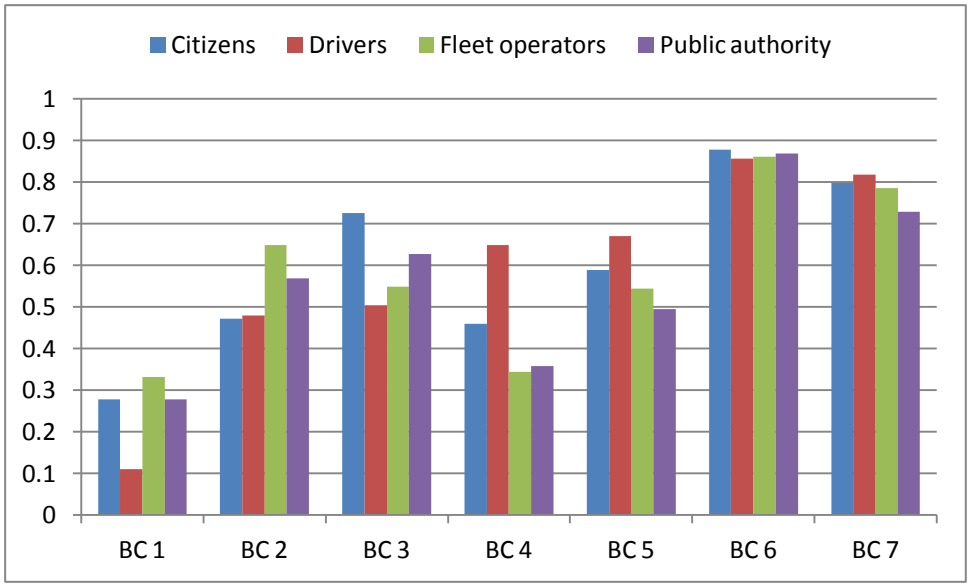


Table 6 Multi-agent & multi-criteria business case perspective

During the last year, parallel work has been performed regarding the rest of deliverables belong to WP Deployment Enablers:

2.6.1.Deployment guidelines

Different deployment barrier that may restrain the large scale adaptation of the business models proposed have been collected during the implementation phase and the operation phase, after months of pilot testing.

The identified barriers were finally classified into the following categories: legal and administrative, technical, organizational, interoperability and business. Their relation to the business models has been presented, identifying the impacts and the severity of each barrier to each business model and providing the solutions adopted or proposed by the consortium.

2.6.2.Cost Benefit Analysis

A cost-benefit analysis is the most reliable method to explore deployment consequences and success factors related to the FREILOT services.This way, a valid hypothesis should be defined selecting the scope and the penetration scenario which ensure the desirability of the services. The economic viability is studied taking into account potential incomes according to the expected penetration of the service, the operational and maintenance costs, and the required investment in infrastructures, back-office and adaptation of the vehicles.

The cost-benefit analysis will determinate how time will be needed for investment return and when will become profitable.

2.6.3.Exploitation Plan

The exploitation plan has specified and described the different alternatives in order to facilitate a deployment of the services across Europe. This roadmap will be based on facts like companies' characteristics and channels or cost benefit analysis.

Key Results of each FREILOT service has been exposed in this deliverable identifying:

- Market Characterisation of key results
- Approach, Timing and Estimated Effort for Use of Results
- Potential barriers to the exploitation of project results

Related to these results, an Exploitation Strategy has been defined to ensure continuation of the services after the end of the project

3. Deliverables and milestones tables

3.1. Deliverables

Del. no.	Deliverable name	WP no.	Lead beneficiary	Nature	Dissemination level	Delivery date from Annex I (proj month)	Delivered Yes/No	Actual / Forecast delivery date
D1.1	Quality plan	1	ERTICO	R	P	2	Yes	M2
D1.2	Risk management plan	1	ERTICO	R	C	2	Yes	M2
D1.3	External liaison plan	1	ERTICO	R	P	4	Yes	M16
D1.4	Final report	1	ERTICO	R	P	42	Yes	M42
D1.5	Quarterly Management report	1	ERTICO	R	C	39	Yes	M3+quart
D2.1	Implementation plan	2	VOLVO	R	P	10	Yes	M12
D2.2	Lyon prototype	2	INTERFACE TRANSPORT	P	P	19	Yes	M19
D2.3	Bilbao prototype	2	ITS EUSKADI	P	P	19	Yes	M19
D2.4	Helmond prototype	2	PEEK	P	P	19	Yes	M19

D2.5	Krakow prototype	2	PEEK	P	P	19	Yes	M19
D3.1	Final operation report	3	PEEK	R	P	42	Yes	M42
D4.1	Evaluation methodology and plan	4	CTAG	R	P	4	Yes	M20
D4.2	Final Evaluation report	4	CTAG	R	P	42	Yes	M42
D5.1	Project presentation	5	ERTICO	O	P	1	Yes	M1
D5.2	Communication plan	5	ERTICO	R	P	2	Yes	M2
D5.3	Implementation guidelines	5	ERTICO	R	P	40	Yes	M19 (M42)
D5.4	Project website and Forum	5	ERTICO	O	P	2	Yes	M2
D5.5	Project brochure	5	ERTICO	O	P	6	Yes	M6
D5.6	Project newsletter	5	ERTICO	O	P	39	Yes	M39
D5.7	Open workshop	5	ERTICO	O	P	3,19,39	Yes	M3, M19, M39
D5.8	User manuals	5	ERTICO	R	P	19	Yes	M19
D5.9	Promotional video	5	ERTICO	O	P	22	Yes	M20
D6.1	Business model	6	MLC EUSKADI	R	P	3 & 34 (42)	Yes	M3, M20, M42

D6.2	Exploitation plan	6	MLC EUSKADI	R	P	39	Yes	M42
D6.3	Deployment barriers and solutions	6	MLC EUSKADI	R	P	39	Yes	M42
D6.4	Cost benefit analysis	6	MLC EUSKADI	R	P	40	Yes	M42

3.2. Milestones

TABLE 2. MILESTONES

Milestone no.	Milestone name	Due achievement date from Annex I	Achieved Yes/No	Actual / Forecast achievement date	Comments
1	Implementation plan release	M10	Yes with a delay	*(M10),* M21	The original version of the Implementation plan deliverable *(M10)* was rejected at the first annual review. It was approved at the Interim Annual review *(M21).*
2	Prototypes ready	M19	Yes with minor delays	M19-M23	The milestone has been achieved with minor delays. Vast majority of the vehicles, intersections and delivery spaces are ready and operational.
3	Successful operational phase	M42	Yes	M42	All pilot operations are successfully finished even though one service operation (Delivery Space Booking in Lyon) has had a shorter pilot duration than all the other ones. The deliverable D3.1 is submitted
4	Release of evaluation results	M42	Yes	M42	All evaluation studies are finished and results analysed. Main outcome, the D4.2 is submitted.
5	Deployment studies	M42	Yes	M42	All deployment studies are finished and deliverables submitted D.FL.6.1, D.FL.6.2, D.FL.6.3, D.FL.6.4

4. Project management

The Project management activities were performed by the FREILOT Management Team under the leadership of the project coordinator and WP1 leader: Zeljko Jeftic (ERTICO) and consisting of pilot site and work package leaders:

- WP2: Maria Tevell/Linda Blancher (VOLVO),
- WP3: Eric Koenders (PEEK),
- WP4: Rosa Blanco (CTAG),
- WP5: Henry Wasung (ERTICO)
- WP6: Fernando Zubillaga (MLC Euskadi) and
- Pilot site Lyon: Jean-Baptiste Thebaud (Interface Transport)

The only change in the team during the entire project duration has been on the position of WP2 leader where Maria Tevell was replaced by Linda Blancher in June 2012. Having an intact Management Team for 39 months of the project has been very beneficial for the project as it was the same people that prepared the project proposal, started the project and followed it up until the end, ensuring that original ideas and plans considering the project were in focus all the way.

4.1. Consortium management

The central coordination work was done mainly through weekly telephone conferences where the points for alignment between the different pilot sites, functionalities and/or work packages have been discussed. This coordination was further strengthened by physical meetings of the FREILOT Management Team. Based on the need, each pilot site and/or work package leader also organised meetings with partners involved in his area of responsibility. This two-level synchronisation of activities has proven to be a good way of managing a project of FREILOT size. The success of the FREILOT Management structure has further been replicated in other CIP pilots, such as smartCEM pilot on ICT services for Electro Mobility.

The coordination of the entire consortium also required on average two consortium meetings per year, where all partners met up to learn from each other, share experiences and plan the joint work.

The main tasks for the management team were monitoring the project progress, identifying potential risk and mitigation plans, identifying synergies between different pilot sites/other areas of work, ensuring that the work performed is following both the time and budget frameworks.

The project coordinator was also responsible for the synchronisation of the project work with the European Commission Project Officer. Liaison with external activities was a task that was shared by several colleagues in the Management Team. The most natural link was always used when liaising with other initiatives. As an example, while the liaison link with eCoMove IP was the FREILOT coordinator, who also is deputy coordinator in eCoMove the liaison link with SPITS was Eric Koenders (PEEK). Detailed information on synchronisation with the EC, liaison with other initiatives, support to pilot sites, contract amendments, etc. is presented on the next coming pages.

Even though the Management Team has performed high amounts of work, the project would not have achieved the same level of results without support and guidance from several colleagues. Most valuable contributions have been received from Gert Blom from City of Helmond, Jesus Gonzales-Feliu from LET and Josep Maria Salanova from CERTH who’s guidance has been invaluable.

4.2. Liaison with external initiatives

FREILOT partnership has during the past three years established a number of useful liaisons with other initiatives which support sustainable deployment of FREILOT services and their wider usage. The main liaisons are highlighter below:

- CVIS (Cooperative Vehicle Infrastructure Systems) was a R&D integrated project which laid ground for large parts of FREILOT technical implementations. Both the cooperative implementation of the

EEIC as well as DSB implementation in Lyon originated in this project. As already mentioned both services required further adaptations in order to manage a full 12 months of operation but in the end the results were very positive. The contribution FREILOT has brought to the CVIS partners is a proof of real-life benefits as well as showing a way how a sustainable implementation of a cooperative service can be done. Last but not least, FREILOT strongly supported the commercialisation of Europe's first cooperative road side unit aimed primarily at key stakeholders (road and fleet operators) and not at the R&D, pilot and field operation test communities.

- Considering the technology development, a strong link with SPITS Dutch national project allowed FREILOT to further advance its cooperative technologies. Both SPITS and FREILOT had CVIS (Cooperative Vehicle Infrastructure Systems) outcomes as their starting base and have jointly taken the CVIS R&D results towards market introduction.
- In the same field (cooperative services), liaison between FREILOT and Audi project TRAVOLUTION was initiated. This project was working on similar technologies/services which are through on-board units presenting signal phase information to the driver. This liaison was deemed as interesting for FREILOT since Audi is a vehicle manufacturer that at that time was promoting environmental benefits of the cooperation between vehicles and traffic lights and is involved in the ETSI standardisation and Car-to-Car Communication Consortium. This could have been an interesting support in standardising FREILOT EEIC. However, after two rounds of meetings (at the ITS Europe Congress in Lyon and Audi/TRAVOLUTION test site in Ingolstadt) and cooperation discussions, where a non-disclosure agreement was signed between Audi and FREILOT partner PEEK, the collaboration lost momentum as the interest for cooperation from Audi suddenly dropped. It is believed that this lack of further interest was caused by change of personnel in the leading positions of the TRAVOLUTION project. From FREILOT side the focus after this turned to the newly established EU-US Task Force.
- EU-US Task Force is a decision maker and expert group aiming at globally harmonising specifications for three cooperative services/applications: Forward Collision Warning, Red Light Violation Warning and Intersection Energy Efficiency type of applications. From the early days when these three applications were chosen for harmonisation work FREILOT, represented by ERTICO and PEEK, were involved in providing first specifications for the Intersection Energy Efficiency service. More recently this cooperation has been further enhanced through cooperation with the eCoMove project and has included several trips from PEEK to the US in order to actively work on further enhancing the original specifications. One observation is that while in Europe energy efficiency is of highest importance politically, this area is not as prominent in the US road transport policies, where road safety is the absolutely the main driver for wider introduction of cooperative technologies and services. In addition to enabling cooperation with the US partners, the EU-US Task Force is the main tool for liaison with DRIVE C2X and FOTsys EC projects.
- Cooperation with eCoMove has been strong since the beginning of that project. It was enabled mainly through the joint partners from both projects ERTICO, PEEK, VOLVO and CTAG. As one example from a technology point of view FREILOT directly benefited from the eCoMove work as the FREILOT road side units in Helmond, through ecoMove, were upgraded to the latest ETSI set of standards, mainly the CAM (Cooperative Awareness Message). On dissemination side FREILOT simulator was extended with eCoMove driving scenario Both scenarios were demonstrated at the ITS Europe congress which took place in Lyon June 6-9, 2011. Since then the simulator has been used at numerous events, please see the main ones in the dissemination chapter. At some occasions only FREILOT is presented but most of the times both projects are presented to the visitors, showing strong link between these two initiatives. The next area of cooperation has been the development of the evaluation methodology where eCoMove was able to benefit from the already established FREILOT evaluation framework. The final concrete result of the liaison is in the field of deployment aspects, such as identifying deployment barriers & opportunities. Here the FREILOT partner City of Helmond has been invited to join the eCoMove consortium in order to evaluate eCoMove services from "deployability" point of view, providing at the same time the best lessons learned in this field from FREILOT experiences.
- As indicated in the External Liaison Plan dissemination of FREILOT vehicle-oriented functionalities needed to be targeted towards the other truck manufacturers. This was done through ACEA (European Automobile Manufacturers Association) and EUCAR (European Council for Automotive

Research). The FREILOT simulator was used for demonstrating piloted services at the 20th anniversary of ACEA, which was a very high level event. This enabled FREILOT partners Volvo and Renault Trucks to present the piloted functionalities to CEO-level participants from all other vehicle manufacturers. Another event where FREILOT was presented to the automotive audience was the 3rd European Automotive Forum (EAF) focusing on 'Individual Mobility in EU cities by 2030'. The event took place on 12 January 2012 at the Brussels Motor Show and attracted nearly 200 representatives from almost every European and global vehicle manufacturer. At this event FREILOT was represented by the project coordinator.

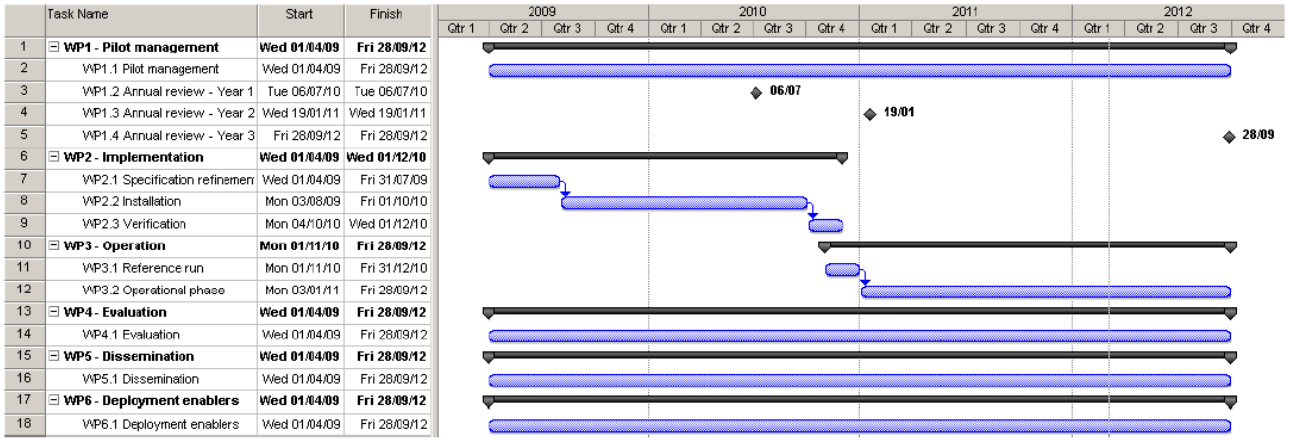
- PARFUM: Mid-way in the FREILOT project, discussions took place with City of Bremen representatives who had been participating in the PARFUM project, piloting Delivery Space Booking application. What was of special interest for FREILOT Lyon partners working on Delivery Space Booking functionality was to see how City of Bremen overcame the national regulations which were basically preventing this type of functionality on public roads. Information about projects was exchanged in advance and a telephone conference took place on 22 October 2010. The main outcome from the telephone conference was that consortium members' earlier view on possibilities to change national regulation in a short term was confirmed -it is impossible. Mr. Michael Glotz-Richter mentioned a case where it had taken 16 years to change national regulations in Germany. One way to bypass national regulations is to apply for exemptions. This was already done in Lyon early in the project but what was interesting is that in Germany an exemption can be unlimited in time.
- SMARTFREIGHT: FREILOT coordinator, as well as several pilot partners (Volvo, MLC Euskadi, City of Bilbao and CTAG) took part in the final event of the SMARTFREIGHT research project on 13-14 October 2010 in Trondheim. FREILOT coordinator was a panellist in the final session of the second day, which was focusing on how to bring results from SMARTFREIGHT forward after the end of the project. Cooperation with SMART-FREIGHT and especially its Trondheim site was investigated as there was mutual interest for cooperation between Norwegian Public Road Authority, SINTEF, Q-Free, NTNU and ERTICO. During FREILOT project there have been discussions to investigate if FREILOT services could not be piloted in Trondheim. Finally this was not pursued as local partners had difficulties to get support needed from the City of Trondheim for a sustainable implementation with FREILOT services and especially the after-project life.
- Compass4D CIP pilot proposal partnership is another grouping of high importance for liaising with. The project proposal, which at the time of preparing this report is in the negotiations with the European Commission, is driven by eight European cities/regions: Bordeaux, Copenhagen, Eindhoven, Helmond, Newcastle, Thessaloniki, Verona and Vigo. The objectives are very similar to the FREILOT ones: evaluate the real life benefits during one year of real-life operation and ensure sustainable after project life of the three piloted services. Services to be piloted are the ones chosen for the EU-US Task Force for global harmonisation. If the project consortium successfully finalises the negotiations, Compass4D pilot could start 1 January 2012. The number of vehicles piloted in this new pilot would be around 350. The liaison with this activity is ensured through participation of the key partners, ERTICO, PEEK, VOLVO and CTAG. From FREILOT point of view this pilot would support faster uptake of FREILOT cooperative services to six additional cities/countries.
- During the FREILOT project duration, the team has performed excellent work on disseminating the work of the project, its services and their benefits. Still, it was noticed that a large amount of European cities were not aware of these. Despite numerous activities amongst different project the cities fear this is yet another proprietary solution that will not be interoperable with equipment from other suppliers. In the field of cooperative services another type of liaison was therefore initiated with ERTICO Traffic and Transport Industry Sector Platform. The platform consist of ERTICO partners such as SIEMENS, SWARCO, VIALIS, PEEK, KAPCH, Q-FREE and XEROX. Based on the FREILOT experiences the project coordinator proposed to the key Sector platform partners to deliver a message to potential deployers of cooperative traffic systems (e.g. cities, road operators), that cooperative services are almost mature, offer substantial benefits and that the major suppliers are working together to define the necessary standards. The four "traffic light system" manufacturer Partners of ERTICO (Siemens, Imtech, Swarco and Vialis) are currently preparing such a joint statement which is to be signed at President/CEO-level by:
    - Manfred Swarovski, President, SWARCO AG

- Hauke Jürgensen, CEO Intelligent Traffic Systems, SIEMENS AG
- Jan Casteleijn, Managing Director, IMTECH Traffic & Infrastructure
- Jan Hendrik Sweers, CEO, VIALIS B.V.

This high-level activity is yet another proof that FREILOT partners (ERTICO and PEEK in this case) are having further strategic plans for further expansion of the services even after the end of the project. The next step will be to expand this statement to all “road equipment” suppliers thus giving cities and other public and private road authorities’ confidence in interoperability and benefits of cooperative technologies and services.

4.3. Project planning and status

The official time plan from the latest Description of Work is presented in the figure 27.



	Task Name	Start	Finish
1	**WP1 - Pilot management**	**Wed 01/04/09**	**Fri 28/09/12**
2	WP1.1 Pilot management	Wed 01/04/09	Fri 28/09/12
3	WP1.2 Annual review - Year 1	Tue 06/07/10	Tue 06/07/10
4	WP1.3 Annual review - Year 2	Wed 19/01/11	Wed 19/01/11
5	WP1.4 Annual review - Year 3	Fri 28/09/12	Fri 28/09/12
6	**WP2 - Implementation**	**Wed 01/04/09**	**Wed 01/12/10**
7	WP2.1 Specification refinemen	Wed 01/04/09	Fri 31/07/09
8	WP2.2 Installation	Mon 03/08/09	Fri 01/10/10
9	WP2.3 Verification	Mon 04/10/10	Wed 01/12/10
10	**WP3 - Operation**	**Mon 01/11/10**	**Fri 28/09/12**
11	WP3.1 Reference run	Mon 01/11/10	Fri 31/12/10
12	WP3.2 Operational phase	Mon 03/01/11	Fri 28/09/12
13	**WP4 - Evaluation**	**Wed 01/04/09**	**Fri 28/09/12**
14	WP4.1 Evaluation	Wed 01/04/09	Fri 28/09/12
15	**WP5 - Dissemination**	**Wed 01/04/09**	**Fri 28/09/12**
16	WP5.1 Dissemination	Wed 01/04/09	Fri 28/09/12
17	**WP6 - Deployment enablers**	**Wed 01/04/09**	**Fri 28/09/12**
18	WP6.1 Deployment enablers	Wed 01/04/09	Fri 28/09/12

Figure 27 FREILOT final time plan

The original project duration was 30 months, which through two project extensions has finally been revised to 42 months. Both project extensions were well justified and have allowed the project to achieve the maximum possible outcomes.

The first extension was needed in order to allow more time for technical implementations. This proved to be the right choice as the technologies and services proved to be very reliable in the operational phase. By the end of the Implementation phase the vehicle functionalities (Acceleration Limiter, Speed Limiter and Eco-Driving Support) succesfully underwent a very strict homologation process and certification by Volvo and Renault Trucks allowing them to be installed on trucks oparating in real life conditions with ordinary drivers. The cooperative service Energy Efficiency Intersection Control was shortly after the implementation in FREILOT also further upgraded and made into a commercial product.

The second extension was made for allowing services to run for a full year and to allow more time for data analysis. At the end the pilot period in many cases was longer than one year and collected vast amounts of data. The FREILOT partners responsible for data analysis also received neccessary time to analyse all the avaialble data and produce the final results and deliverables.

The implementation (WP2) needed 1.5 years to be finalised. The operation (WP3) timings were:

Pilot operation	Helmond EEIC	Krakow EEIC	Lyon EEIC	Bilbao DSB	Lyon DSB
Baseline	Jan – Mar 2011 Oct –Nov 2011	Apr – Jun 2011/27-2-2012	Jan – Mar 2011 Mar – Apr 2012	Jul – Oct 2010	Feb 2011 – Jan 2012
Service operation	Mar – Aug 2011 Dec 2011 – Apr 2012	Jun 2011/27-2-2012 – Jun 2012	5. Mar '11 – Mar '12 6. Apr '12 – Jun '12	Nov 2010 - Nov 2011	Jan 2012 Apr 2012
Combined duration (baseline+service op.)	14 months	14 months	18 months	16 months	

	Bilbao AL, SL, EDS	Helmond AL, SL, EDS	Krakow EDS	Lyon AL, SL, EDS	Total
Baseline	Apr – Nov 2010	Apr – Jun 2010	Jun – Sep 2011	Apr – Jul '11, Jun – Oct '11 Sep 2011 – Jan 2012	**Jul 2010 – Jun 2012**
Service operation	Dec - Jun 2011	Jun 2011 – April 2012	Sep 2011 – Jun 2012	Jul , Oct, Dec '11 & Jan '12 – Jun'12	
Combined duration (baseline+service op.)	15 months	12 months	12 months	14 months	**24 months**

The horisonal work packages WP1 Project Management, WP4 Evaluation, WP5 Dissemaintion and WP6 Deployment Enablers have been active during entire project duration.

6.1. Impact of possible deviations from the planned milestones and deliverables

The milestones and deliverable timings were updated to match the latest project extensions. Deliverable D5.3 Implementation Guidelines was postoponed to the end of the project . During the preprations of the this deliverable at the end of the WP2 Implementation, it was noticed that several aspects that should be included, e.g., guidelines on operational set-up of the services, maintainance and costs, were not possible to answer at such an early point. . During the second year review it was agreed with the reviewers that this deliverable should be updated by the end of the project.

6.2. Impact of possible deviations from the planned resources

Despite the above mentioned delays the consortium has kept strict control of the budget and has therefore not required any additional external funding to finalise the work. The resources available from the begining of the project have been sufficient to fullfill all the objectives of the project.

A couple of project partners have indeed overspent their total budget e.g. Volvo, Renault Trucks and MLC Euskadi. However, as FREILOT has been a project of key importance for these and all other partners a decision was made internally in the project not to make any modifications to the project ambitions due to possible overconsumptions.

The agreement has been that the overconsuming partners would, where possible be compensated by shifting budget from underspending partners, but where that is not possible the overspending partners would in practice receive less than 50% in funding.

6.3. Development and use of the Project website

The FREILOT website (www.freilot.eu) has been operational since mid 2009.

Figure 28 The Services page of the FREILOT website

The website was the first port of call for those wishing to inform themselves about the pilot. As such, it provided the necessary information, documentation and contact details in a clearly structured manner, available in the five languages (English, Dutch, French, Polish and Spanish) of the pilot cities.

The information provided in different languages is the "static" part of the website (pages on the pilot objectives, cities, services,...), while pages with more "dynamic" content (articles in the press, TV coverage, various publications,...) are in English. In this way the main part of the information is available in different languages and at the same time the dynamic part of the website is still allowed to be fast with updates.

6.3.1.Structure of the website

The website has been divided in eight tabs, each of them containing one or more sub-sections:

- **Home**
  The home page provided a brief introduction to the project, outlining the three FREILOT objectives.
- **Project**
  This set of pages included an introduction to the project with facts and figures, and following sections: "About Us", "Objectives", "Benefits and expected impacts", "Partners" and "Contact"
- **Services**
  In this section, the each FREILOT service has been clearly detailed and explained.
- **Pilot cities**
  This pages displayed dynamic maps of the test areas, photos of the test sites, and specific information on the pilots.
- **Join us**
  This section contained information on seminars and workshops, allowing the viewer to participate in the FREILOT pilot or to find contact information for other inquiries.
- **Media Room**
  All aspects of FREILOT's dissemination activities have been covered in this pages: presentations, press releases, press articles, publications, and contact information. In total, FREILOT has appeared in over hundred publications in various languages and in seventeen TV clips and released six presentations, one brochure and one video in six languages. It also contains a recording of a webinar where the project was presented by the Zeljko Jeftic, project coordinator, and Gert Blom, the representative of the City of Helmond. Finally, FREILOT has issued four press releases in different languages.
- **News & events**
  Under this tab, visitors had access to latest news, a list of upcoming events and they had the possibility to suscribe to the newsletters. More than 90 people have subscribed via the website to the FREILOT newsletter, which has been released 4 times:
  - Newsletter #1 July 2010
  - Newsletter #2 October 2010
  - Newsletter #3 December 2010
  - Newsletter #4 June 2011
- **Library**
  The library pages list the FREILOT deliverables as well as useful links to other sites.

The website had been visited 54,067 times since its launch in July 2009 (with 32,525 unique visitors), which means an average of 1461 visits/month.

6.3.2.The Forum

At the same time as the website, the FREILOT forum was established. It contains representatives from cities, fleet operators and other ITS stakeholders interested in the work of the pilot sites. The membership was open to anyone, free of charge and subscription to the forum could be done in several ways. One specific sub-group of the FREILOT forum is the City Reference Group. Cities such as Paris, London, Stockholm, Trondheim, Brussels have been joining FREILOT open workshops and/or reference group meetings in Lyon and Brussels.

6.4. Use and dissemination activities during this period

The dissemination work in FREILOT has been very successful and produced results which have directly supported achieving the FREILOT objectives. The main dissemination activities during the three years of

FREILOT have been:

- Organisation of three open workshops and other press/launch events
- Development of a FREILOT simulator
- Development of the website (www.freilot.eu)
- Development of a FREILOT promotional video
- Participation in external events, such as TRA 2010 and 2012, ITS Europe Congress in Lyon 2011, Eurocities conference in Helmond 2012, just to mention a few
- Development of the fact sheet, newsletters, brochure, posters, flyers and give-aways

During these three years FREILOT work has been disseminated in more than 120 different articles/publications and close to 20 TV and radio broadcasts. To summarise the media coverage two reports have been prepared for 2011 and 2012. These reports are not contractually required and are not official deliverables. Nevertheless, the consortium finds it beneficial to have these records.

The events presented in the next coming pages summarise in an excellent way the communication approach taken by the FREILOT consortium. As an example the 8th European ITS Congress was chosen as the arena in 2011 for FREILOT to disseminate its work to a wider group of European decision makers and experts from Public Authorities and ITS industry. Therefore in 2011 the congress was the place for a wider, European project "external" dissemination. In a similar way the XI Congreso Espanol ITS and LUTB events were used to disseminate FREILOT results to the Spanish and French Public Authorities and ITS stakeholders.

The Eurocities Mobility Forum was the place to disseminate project outcomes to European cities and high-level decision makers. Amongst others the Commissioner Neelie Kroes learned about the benefits of FREILOT services by visiting the FREILOT simulator.

As an essential complement to these "external" dissemination activities, project partners have been focused on "internal" communication as well. In order to ensure that the FREILOT prototypes indeed are brought to the mass market, top managements from the key technical partners need to make firm commercialisation decisions. The most important event from FREILOT project point of view for "internal" dissemination has been the Volvo Tech Show. At this event the most promising projects were presented and demonstrated to the Volvo Group management.

The largest success story in FREILOT concerning "internal" dissemination is the decision by PEEK Traffic to commercialise the outcomes of their work in FREILOT, the cooperative road side unit, on-board unit and Energy Efficient Intersection Control service. This work was crowned at the Verkeer & Mobiliteit 2011 where PEEK Traffic made a public announcement that they would start providing commercial, cooperative solutions for public authorities/road operators and fleet operators. To our knowledge, this is the first commercial, cooperative product in Europe aimed to be used in daily operation by these key stakeholders.

While the above example clearly demonstrates how the project dissemination activities have contributed to achieving FREILOT Objective 2 – *"...provide basis for post-pilot operation..."* the dissemination activities in Bilbao raised the number of fleet operators from 2 to 65 and pilot trucks from 2 to 124, thereby directly supporting project Objective 3 – *"...to involve more fleet operators,..."*. The following pages present the above mentioned activities in more details.

6.4.1.FREILOT simulator

In order to conceptually demonstrate functionalities and benefits of FREILOT applications the consortium decided to develop a simulator. Volvo, who has extensive experience in developing mobile simulators, developed a Renault Truck mock-up which was premiered at the TRA 2010 in Brussels and has since then been used at several events.

The simulator presents the FREILOT functionalities and their benefits by providing visitors the opportunity to test drive a stretch of urban road two times, one without any support and a second time when they are supported by the FREILOT functions. The route takes approximately 2 minutes to drive and allows time for explaining some of the problems truck drivers encounter daily in city driving. The second drive enables enough time to present how drivers benefit from FREILOT functionalities. At the end of the second drivethe driver receives information on how much fuel and time he has saved thanks to FREILOT applications.

Figure 29 FREILOT simulator at TRA 2010

In May 2011, the simulator was further upgraded in order to include also a real traffic light, which helps showcase the “cooperative systems” aspect of FREILOT, namely the cooperation between a vehicle and a traffic light.

Figure 30 Neelie Kroes at FREILOT simulator

During the whole project duration, the simulator has been used at numerous occasions, amongst others:

- Transport Research Arena (TRA2010) // Brussels, Belgium // 4-7 June 2010
- Second open workshop “Midterm workshop” // Helmond, Netherlands // 28 October 2010
- Volvo Tech Show // Gothenburg, Sweden // 24-25 May 2011
- 8th ITS European Congress // Lyon, France // 6-9 June 2011
- ACEA 20 Years Anniversary // Brussels, Belgium // 23 June 2011
- Eurocities Mobility Forum // Helmond // 27-28 March 2012
- Third open workshop “Cooperative Systems: Today, Tomorrow and Forever?” // Helmond, Netherlands // 19 June 2012

6.4.2.Promotional video

The promotional video has been filmed in two times and delivered in two versions.

The first video was shot in October 2010 in Helmond and Bilbao and successfully premiered at the pilot phase launch event in Helmond on 28 October 2010. After the event, it has been distributed to all FREILOT partners, placed on the website and on YouTube. It has also been used afterwards to raise awareness of the project work.

The filming of the second and final version was done in April 2011 in Krakow and Lyon. This latest version of the video premiered at the ERTICO - ITS EUROPE stand during the 8th European ITS Congress in Lyon on 6-9 June 2011 and it was also presented on iPads available at the stand. In addition, the FREILOT consortium has been encouraged to make full use of the video, which has also been disseminated to the media and other multipliers.

Figure 31 Promotional video

In total, it has been released in four new versions with subtitles in the four national languages (Dutch, French, Polish and Spanish, in addition to the English one).

Once officially premièred, the video was also disseminated in the following ways:

- On the FREILOT website where it is prominently displayed;
- On YouTube, allowing partners and other stakeholders to link to it easily. In addition, the success of the FREILOT launch events (Helmond and Bilbao) resulted in 13 television stories on FREILOT placed on You Tube. The FREILOT promotional video is always “suggested” when a video about FREILOT made by a TV station is viewed, thus reinforcing the FREILOT message.
- The FREILOT consortium has full use of the FREIOT promotional video. It can thus be shown at trade fairs, on websites, be referred to in partner interviews of press release, etc.
- The video has also been sent to the media, ITS stakeholders and other multipliers.

Regarding the content, the video primarily targets the two stakeholder groups who need to invest in future deployment of the FREILOT scheme: city authorities and fleet operators. Therefore, the video features a number of interviews with exactly these stakeholders, representatives from city of Helmond and Bilbao as well as general managers and directors from AZKAR Transportes and Van den Broek Logistics. All these stakeholders express in their own words and language the challenges they are facing in their daily operation and the strong commitment to, and belief that FREILOT, will prove to be a solution to some of these.

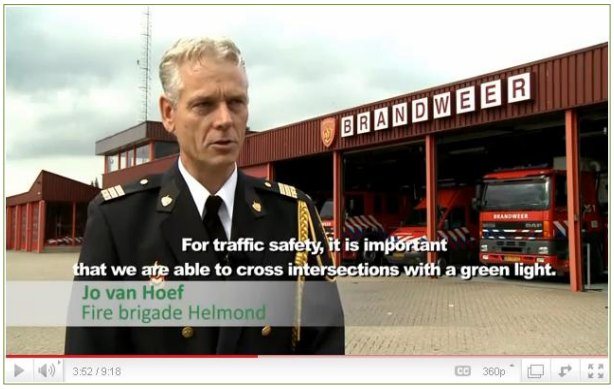
The video arrived on 4th position out of 51 participants in the 2011 ITS video competition with 112 points (total of 3573 votes).


0:03 / 9:18
360p


6575 BNJ
CITROËN
0:58 / 9:18
360p


Traffic management
Energy efficiency optimised intersection control
1:52 / 9:18
360p


About thirty thousand vehicles travel through the city on this road each day.
Gert Blom
City of Helmond
2:06 / 9:18
360p


BRANDWEER
For traffic safety, it is important that we are able to cross intersections with a green light.
Jo van Hoef
Fire brigade Helmond
3:52 / 9:18
360p


BRANDWEER
It also ensures safety for both the fire brigade and the other road users.
4:04 / 9:18
360p


4:42 / 9:18
360p


6:52 / 9:18
360p


6:45 / 9:18
360p


I believe that right now is one of the best inventions that is made for loading and unloading areas.
7:58 / 9:18
360p

4.8.3 Press/launch events and open workshops

In the three years six major press/launch events have taken place. It needs to be pointed out that the events in different sites were not contractually required. Only the open workshops had been specified in the Description of Work.

1st open workshop "Specification validation workshop" // Lyon, France // 17-18 June 2009

This first open workshop was jointly organised by POLIS and ERTICO and took place on the 17-18 June 2009 in Lyon, France. It was held 2.5 months after the start of the project with the preparations starting immediately after the project kick-off meeting in April in Brussels.

Figure 32 Workshop participants

The goals of this workshop was to validate the intended FREILOT service and its specifications. The idea was to present to the FREILOT partners the first ideas and to get feedback from internal partners and external city authorities on the work plan. Unfortunately, due to the constraints on travel budget, only a few city representatives were able to attend the workshop. Nevertheless, the event proved to be very useful and fruitful discussions have led to updates of the work plan.

The attendees represented an interesting knowledge exchange group for FREILOT. SINTEF is responsible for coordinating the SMARTFREIGHT project which focuses on communication with individual freight vehicles through use of CVIS technologies (http://www.smartfreight.info/).The City of Trondheim is acting as a demonstration site in SMARTFREIGHT and was represented through the Norwegian Public Roads Administration. Both projects could benefit by exchanging information on user needs and views in relation to ITS technologies, priority assigning and freight.

The project partners have received valuable feedback on the presented work and established useful contacts. All participants believed the FREILOT functionalities will bring benefits to the fleet operators and cities. However they had outlined several technical and deployment barriers that needed to be addressed for successful and sustainable implementation of FREILOT in the four European locations.

Pilot site media event // Bilbao, Spain // 13 October 2010

Figure 33 Press conference in Bilbao on 13 October 2010

Bilbao hosted the first FREILOT media event gathering around 50 people (Figure 33). Organised primarily on a national level, the event proved very successful with 8 print articles in national media and 10 national, regional and local TV clips – all of which could be found on the website.

Thanks to this event, the Delivery Space Booking received a lot of attention. The publicity achieved during the press campaign resulted in around 40 new fleet operators expressing their interest in taking part in the Delivery Space Booking pilot. This interest, which in early 2011 was turned into actual participation in the pilot of these fleet operators, promised good user ground for the after-pilot life business case sustainability.

2nd open workshop // "*Midterm workshop*" // Helmond, Netherlands // 28 October 2010

The second workshop was hosted and organised by the City of Helmond in collaboration with PEEK Traffic, Van den Broek Logistics, the Helmond fire brigade, GGD Brabant-Zuidoost, Volvo, and ERTICO - ITS Europe. The workshop objectives were threefold:

- Present FREILOT to the press to create awareness about the project and achieve a significant impact on the media;
- Launch the FREILOT pilot phase in Helmond with real-life demonstration of the service;
- Disseminate the results achieved so far and discuss the potential of the project in the context of a more efficient urban freight logistics**.**

Figure 34 FREILOT operational phase launch event

The event was preceded by months of preparations. The organising partners disseminated the event to their personal network and contacts as well as through their own communication channels. As a result, more than 140 people took part in the event.
In order to achieve the above mentioned objectives the partners prepared an extensive programme. The day was divided in three main parts: the Press Briefing took place in the morning to present general information on the project to the media and to provide answers by the consortium high-level representatives. The opportunity was taken to premiere the FREILOT video.
The second part of the day was dedicated to the Showcase where both journalists and visitors could experience the FREILOT systems and services, either in the simulator at the PEEK Traffic stand or in the real-life drives in one of six showcase vehicles. Only the Van den Broek Logistics trucks were not demonstrated due to technical issues the vehicle functionalities.
The Conference *"How ITS can support cleaner and more efficient urban freight logistics"* was the final part of the event, where high-level speakers from the European Commission, the Dutch government, fleet operator organisations and FREILOT companies presented their views on FREILOT and the future deployment opportunities. This was followed by a lively panel discussion with numerous questions and inputs from the audience.

This event was also very successful from publicity side being broadcasted on 5 TV clips and featured in more than 30 internet articles/websites.The media coverage was very good. In total there were more than 30 newspaper/Internet articles, 5 TV reports and two radio broadcasts (only one is still available). On the political side, the most important message of the event has been the offer from Eric Janse de Jonge, Dutch Ambassador for urban freight distribution, to help bring FREILOT to the political agenda.

Finally, this event has contributed to further strengthening the links between the different FREILOT sites. Almost all FREILOT partner organisations were represented at the event, which was an excellent opportunity to share experiences between the different cities. The entire event is seen as a very successful by the entire consortium. All three objectives were fully achieved with exception of the vehicle functionality launch. There has been much interest from the participants to keep them informed about the future developments in the project.

Figure 35 Tom Cranenbroek opens the press briefing (left) in front of panellists and participants (right)

Figure 36 Showcase room

Pilot site media event // Lyon, France // 16 March 2011

From February, The preparations started to organise this event that gathered high-level representatives from local partners started. Renault Trucks and Grand Lyon communication departments did excellent work on preparing everything and inviting local and national press to the event.

The event included a press briefing, a FREILOT introduction and presentations by Lyon Partners with a focus on the continued success of FREILOT post project. In total about 30 journalists took part in the event. Speakers were:

- Bernard Favre, from Renault Trucks/Lyon Urban Truck and Bus competitively cluster
- Michelle Vullien, Vice President of transport in Grand Lyon
- Jean-Baptiste Thébaud, from Interface Transport

As a direct result of this event a large amount of newspaper and internet articles have been published and the involved partners kept receiving requests for more in-depth articles and even TV interviews.

FRANCE BTP

Renault Trucks, partenaire du projet européen Freilot

17.03.11 - France BTP

Renault Trucks, constructeur engagé dans la diminution des nuisances que les véhicules peuvent provoquer, vient d'adhérer au projet européen Freilot, dont l'objectif est de démontrer que l'intégration de technologies dans les camions peut améliorer l'efficacité de la livraison en ville tout en réduisant fortement ses nuisances.

8th European ITS Congress // Lyon // 6-9 June 2011

The European ITS Congress took place in Lyon, one of FREILOT's pilot cities, under the theme "*Intelligent mobility - ITS for sustainable transport of persons and goods in urban regions*" – a perfect showcase for FREILOT!

Accordingly, and with several FREILOT partners having stands in the exhibition area, a large and successful effort to disseminate FREILOT was made. The FREILOT logo was printed on the floor of the exhibition area, allowing people to seamlessly experience FREILOT on all the stands.ERTICO dedicated part of its stand to FREILOT, providing a prominent and visible presence at the Congress. The FREILOT promotional video was shown of the ERTICO stand, and ERTICO personnel were also on hand with the FREILOT presentation on iPads to explain the project. The FREILOT simulator was at the front of the stand, with FREILOT personnel constantly at allowing visitors and delegates to experience the FREILOT services and their benefits themselves. A specially produced poster advertised the FREILOT experience and paid due credit to the FREILOT partners making the experience possible.

The FREILOT simulator featured prominently on TLM's (Télé Lyon Métropole) TV broadcast about the Lyon Congress, with a clear explanation of FREILOT given by ERTICO CFO Didier Gorteman, who was trying out the simulator at that moment. FREILOT is happy to confirm that interest in the simulator was very high, and sparked several opportunities for further contact.

FREILOT was also well supported on the Grand Lyon, PEEK Traffic, SPIE and Renault Trucks stands, where the project could be explained from a variEty of perspectives.

Four special sessions and one technical paper were also made. Special sessions with FREILOT participation:

- Urban Freight Logistics
- Traffic management to reduce fuel use and CO_2 emissions – applications and insights from field,
- Validation and impact of ICT measures for energy efficiency & environment and
- Eco-Driving: a key enabler for future clean and efficient mobility in Europe

Figure 37 An Agence France Presse photographer at the simulator (left) &

FREILOT presentation on ERTICO iPads (right)

Eurocities Mobility Forum // Helmond // 27-28 March 2012

Target audience: Representatives (mobility specialists and policy makers) of several European cities, members of the EUROCITIES Network (www.eurocities.eu).

The Mobility Forum members of EUROCITIES meet two or three times per year to follow up on EU mobility policy and developments and for sharing knowledge and best practices between representatives of European cities. The 2012 meeting was hosted by the City of Helmond, with a special focus on ITS. About 80 participants took part in the event. The theme of the two-days event was: ITS, from technology to deployment. In this context, special attention was paid to the FREILOT project. FREILOT has been highlighted by the City of Helmond during a best practice session. Also the FREILOT/eCoMove simulator was used during the entire event. Even EC-vice president Neelie Kroes went to experience it when visiting Helmond Automotive Campus the day before the event. .

Figure 38 Commissioner Neelie Kroes and the driving simulator (left) & a hybrid bus (right)

3rd open workshop // *"Cooperative Systems: Today, Tomorrow and Forever?"* in Helmond (Netherlands), 19 June 2012

The third and final FREILOT open workshop was held on the 19 June in Helmond. The Cooperative Services: Today, Tomorrow and Forever?" workshop was jointly organised by FREILOT and eCoMove, an EU co-funded research project, based on the same technology, taking eco-mobility services to the next level.It and focused on the cooperative traffic management, the part of FREILOT which without any question, together with the DSB implementation in Bilbao, has been the most successful service in the project. Even though the workshop was focusing on cooperative traffic management all other FREILOT services and their results were presented during the event.

One of the key announcements made at the event was that the City of Helmond, has decided to continue the cooperative mobility services piloted in the project. Based on the positive results of the pilot, the partners involved (the Helmond fire brigade, the municipality, Van den Broek Logistics, and Imtech/PEEK) are in talks to work out the details of a commercial agreement. These talks mark the end phase of FREILOT, and a beginning for the commercial operation of cooperative mobility services in Europe, where cooperative services are used in daily life by key stakeholders, such as city authorities, the fire brigade and fleet operators.

Figure 39 Panel discussion addressing deployment opportunities

The event attracted around 50 participants, representing various ITS stakeholders; ITS industry, consultants, research and public authorities, and featured a plenary part with presentations of FREILOT and eCoMove work and results, a demonstration tour, and a networking session. Furthermore a dedicated press briefing was organised for the present media.

Figure 40 Demonstration tour (left) & FREILOT simulator (right)

The press release issued at the event stated amongst other comments from the key Helmond site partners:

Gert Blom, Strategic Adviser Mobility of City of Helmond, said, "*After seeing the results of the FREILOT pilot, we are convinced of the clear benefits of cooperative mobility services. We are especially pleased that the*

Helmond fire brigade successfully joined the pilot project in 2011, providing another reason for Helmond to continue with the FREILOT solution even after the end of this project".

Karel van Rooij, Van den Broek Logistics, said, "*The time savings and increase in delivery reliability and predictability is a key aspect of the FREILOT services for our company*."

Joost Janssen, Policy Officer fire brigade, City of Helmond, said, "*FREILOT helps us to arrive where we need to be quicker and safer. We are very keen to continue working on FREILOT with other stakeholders to further enhance this service to better serve our community*."

Willem Hartman, Managing Director at Imtech/PEEK Netherlands, stated in December 2011 that the work from FREILOT and eCoMove has contributed strongly to the commercialisation of the cooperative services.

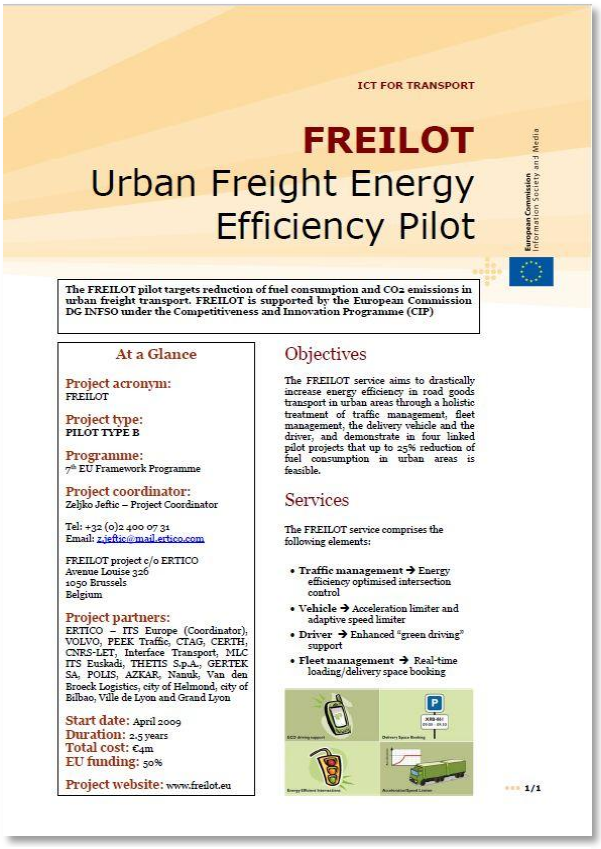
Zeljko Jeftic, FREILOT Project Coordinator of the European Union's first Competiveness and Innovation Programme pilot project in intelligent transport systems said, "*Not only has FREILOT shown the benefits of cooperative mobility services in a real environment, leading to a 13% reduction in fuel consumption and CO_2 emissions but it has also successfully overcome all deployment barriers towards a successful and viable project after-life*."

The workshop was clearly orientated to the practical aspects of deployment, with a demonstration tour through Helmond with FREILOT-equipped vehicles, organised by Imtech/PEEK, a visit to the DITCM Control Room organised by TNO and a virtual tour with the FREILOT simulator.

6.4.4.FREILOT printed material

The printed material from FREILOT consisted of a fact sheet, a brochure (leaflet), a roll-up poster, and two specific flyers for two cities presenting the FREILOT project.

- ✓ The **brochure** and **fact sheet** have been extensively used during events and other dissemination occasions. They reflected the aims and expected results of the project and served as a prestigious calling card for presentation to influential readers.
- ✓ Two **roll-up posters** were developed in May 2010. They were used for the first time during the Michelin Challenge Bibendum in Rio de Janeiro, Brazil.
- ✓ Two **specific flyers**, one for Lyon and one for Helmond have been developed and translated into the national languages (French, Dutch).
- ✓ One **flag** has been developed and printed in 2 copies.



ICT FOR TRANSPORT

FREILOT

Urban Freight Energy Efficiency Pilot

European Commission Information Society and Media

The FREILOT pilot targets reduction of fuel consumption and CO_2 emissions in urban freight transport. FREILOT is supported by the European Commission DG INFSO under the Competitiveness and Innovation Programme (CIP)

At a Glance

Project acronym: FREILOT

Project type: PILOT TYPE B

Programme: 7th EU Framework Programme

Project coordinator: Zeljko Jeftic – Project Coordinator

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Project partners: ERTICO – ITS Europe (Coordinator), VOLVO, PEEK Traffic, CTAG, CERTH, CNRS-LET, Interface Transport, MLC ITS Euskadi, THETIS S.p.A., GERTEK SA, POLIS, AZKAR, Nanuk, Van den Broeck Logistics, city of Helmond, city of Bilbao, Ville de Lyon and Grand Lyon

Start date: April 2009
Duration: 2.5 years
Total cost: €4m
EU funding: 50%

Project website: www.freilot.eu

Objectives

The FREILOT service aims to drastically increase energy efficiency in road goods transport in urban areas through a holistic treatment of traffic management, fleet management, the delivery vehicle and the driver, and demonstrate in four linked pilot projects that up to 25% reduction of fuel consumption in urban areas is feasible.

Services

The FREILOT service comprises the following elements:

- **Traffic management** → Energy efficiency optimised intersection control
- **Vehicle** → Acceleration limiter and adaptive speed limiter
- **Driver** → Enhanced "green driving" support
- **Fleet management** → Real-time loading/delivery space booking

1/1

Figure 41 Fact sheet

FREILOT

Urban Freight Energy Efficiency

The energy consumption of urban freight transport depends on many factors such as vehicle performance, driver behaviour, urban road network, traffic control, weight of the vehicle and its load. A significant increase in energy efficiency can be achieved only when city authorities and fleet operators cooperate, supported by a holistic and integrated scheme combining various measures that can be implemented without excessive cost and with the necessary public acceptance.

The FREILOT services aim to increase energy efficiency of urban goods transport by **25%** through an integrated and holistic approach focussing on *traffic management, fleet management, the delivery vehicle* and *the driver.*

- Traffic management ↔ Energy efficiency optimised intersection control
- Vehicle ↔ Acceleration limiter and adaptive speed limiter
- Driver ↔ Enhanced 'green driving' support
- Fleet management ↔ Real-time loading/delivery space management

The energy savings from FREILOT services will be assessed over one year in real-life conditions, using real drivers and roads, in four European cities: Lyon (France), Helmond (Netherlands), Krakow (Poland) and Bilbao (Spain).

FREILOT - Urban Freight Energy Efficiency Pilot

www.freilot.eu

want to know more?

or contact us at: freilot@mail.ertico.com

ICTPSP

Figure 42 Flag

Figure 44 Brochure (recto verso)

Figure 43 Roll-up poster

Figure 45 Flyer for Lyon

Figure 46 Flyer for Helmond

6.4.5.Additional dissemination actions

In addition to these achievements, work has been done at other levels:

- **Manuals**: User manuals have been developed for different users at different location and in different languages.
- **Webinar**: Taking advantage of ERTICO's recently launched i-Mobility Network, FREILOT gave a webinar on "*Bringing research to deployment: Urban energy efficiency pilots for commercial vehicles*" on 10 December 2010. Capitalising on the launch event in Helmond, the webinar was broadcast to the i-Mobility Network and recorded for future reference – the recording can be found on the FREILOT and on the i-Mobility Network websites.
- **Mugs**: Giveaways such as the FREILOT mug were produced and distributed at the ITS Congress in Lyon.

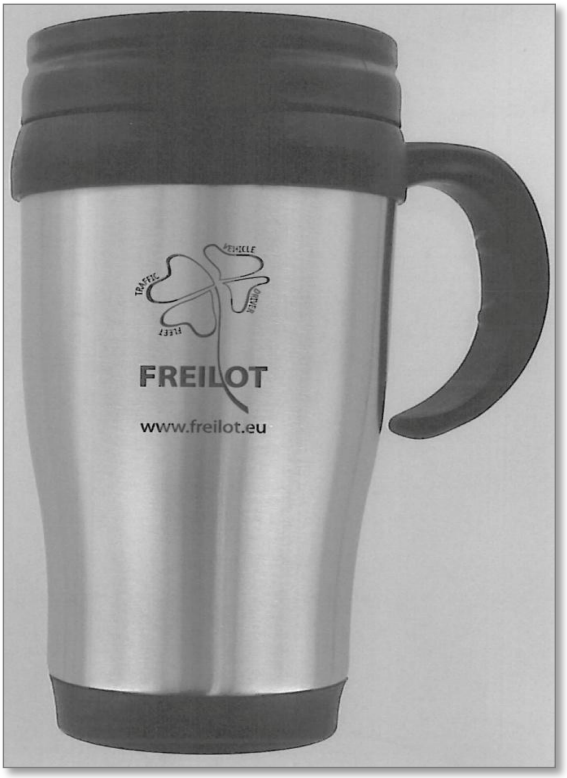

Figure 47 FREILOT mug

7. VISIBILITY IN MEDIA

Hereafter is a list of articles published and TV broadcasts on the project. All the items listed could be found on the FREILOT website under the section Media Room:

7.1. Articles

7.1.1.2010

26 Nov 2010: Voorrang voor vrachtauto's (NL) – Source: De Ingenieur

26 Nov 2010: Vrachtwagens krijgen betere doorstroming in Helmond (NL) - Source: Prof News

26 Nov 2010: Vrachtwagens krijgen betere doorstroming in Helmond (NL) **-** Source: Kranten

18 Nov 2010: Transportsysteem Freilot is schoon en efficient (NL) - Source: Retail Actueel

5 Nov 2010: Volvo Trucks neemt deel aan Freilot-project (NL) **-** Source: BouwMaterieel

4 Nov 2010: Volvo Trucks neemt deel aan Freilot-project (NL) **-** Source: Europa vrachtwagens

4 Nov 2010: Volvo Trucks neemt deel aan Freilot-project (NL) **-** Source: Typisch Transport

3 Nov 2010: Volvo Trucks neemt deel aan Freilot-project (NL) **-** Source: Transport-online.nl

3 Nov 2010: Proef met vrachtwagens voor kwart minder brandstofverbruik (NL) **-** Source: EnergieGids

3 Nov 2010: Doorstroming met Freilot (NL) **-** Source:Van Dijk Groep (Volvo Truck dealer)

3 Nov 2010: Volvo Trucks neemt deel ann Freilot-project (NL) **-** Source: Chauffeursverenigingen

3 Nov 2010: Nebim intoduceers Van den Broek Logistics bij FREILOT-project (BE) **-** Source: Nebim Group (Volvo Truck dealer)

3 Nov 2010: Doorstroming met FREILOT (NL) **-** Source: Nijwa Groep (Volvo Truck dealer)

2 Nov 2010: Projet Freilot: la ville de Helmond (Pays-Bas) presente ses systems de transport intelligent (FR) **-** Source:Truck Blog FR

2 Nov 2010: Proefproject Freilot voor groener stadstransport gelanceerd (BE) **-** Source: De Lloyd

1 Nov 2010: Helmond teststad nieuwe transportsystemen (NL) - Source: Gemeente Helmond

1 Nov 2010: Helmond teststad nieuwe transportsystemen (NL) **-** Source: Peel-Nieuws

29 Oct 2010: FREILOT aims at deploying intelligent transport systems (NL) – Source: Infrasite

29 Oct 2010: Freilot moet op politieke agenda (NL) – Source: Logistiek NL

29 Oct 2010: Helmond test nieuwe transportsystemen (NL)– Source: Transport-Online

29 Oct 2010: Pilot van start voor vermindering energiverbruik vrachtverkeer in steden (NL) – Source: Aives

28 Oct 2010: Groen licht vrachtwagens (NL) – Source: NOS Headlines

28 Oct 2010: European pilot targets increased urban freight energy efficiency (NL) – Source: InterTraffic

28 Oct 2010: PEEK Traffic: Nieuwe generatie traffic technology leidt tot maximaal 20% emissie- en brandstofbesparingen (NL) – Source: ATC Automotive Technology Centre

28 Oct 2010: FREILOT aims at deploying intelligent transport systems (IRL) **–** Source: FleetTransport

28 Oct 2010: Helmond van start met proef FREILOT (NL) **–** Source: TTM

28 Oct 2010: Helmond lanceert proefproject 'Freilot' voor groener stadstransport (NL) **–** Source: Nieuwsblad Transport NT

28 Oct 2010: Officiële start Europees FREILOT-project in Helmond (NL) – Source: Klikbedrijvig

28 Oct 2010: Europese mobiliteitsproef 'Freilot' (NL) – Source: Brandweer.nl

27 Oct 2010: Europese mobiliteitsproef in Helmond (NL) – Source: Verkeersnet

27 Oct 2010: FREILOT: toepassing coöperatieve technologie (NL) – Source: Verkeer in beeld

6 Oct 2010: 28 oktbober officële start Europees FREILOT-project in Helmond (NL) – Source: Regio in Bedrijf

6 Oct 2010: Officële start Europees FREILOT-project in Helmond (NL) – Source: Brabantonderneemt

Nov 2010: Helmond primeur met luchtkwaliteit – Source: Astrin

1 Dec 2010: FREILOT pilot phase launches – Source: The Intelligent Highways

7 Dec 2010: Logística urbana més eficaç i més respectuosa amb el medi: Projecte START i Projecte Freilot – Source: Generalitat de Catalunya

15 Dec 2010: Green light for fuel-efficient trucks – Source: Imtech

16 Dec 2010: ERTICO: i-Mobility Network webinars launched (ENG) – Source: ITS Japan

7.1.2.2011

Jan 2011: Doorstroming met Freilot (NL) – Source: Volvo Trucks

1 Jan 2011: FREILOT project launched in Europe (ENG) – Source: The Intelligent Highways

10 Jan 2011: Brandweer Helmond neemt deel aan pilot intelligente transportsystemen (NL) – Source: Arbeidsmarkt

24 Feb 2011: El Ayuntamiento de Bilbao involucra a todo el transporte de mercancías en la segunda fase del 'proyecto Freilot' (SPA) – Source: 20Minutos

24 Feb 2011: El proyecto de distribución dinámica de mercancías de Bilbao entra en la segunda fase – Source: El Vigia

24 Feb 2011: Transportistas podrán reservar plaza para carga y descarga en una web – Source: Que !

24 Feb 2011: Se amplía a todo Bilbao la reserva por internet de plazas de carga y descarga – Source: ABC

16 Mar 2011 : Projet FREILOT : Lyon, pilote pour l'efficacité énergétique du transport de marchandises en ville – Source: Economie Grand Lyon

16 Mar 2011: Lyon : Le projet de transport Freilot – Source: Lyon webzine

16 Mar 2011: FREILOT facilite la vie aux livreurs – Source: Lyon Info

16 Mar 2011: Improving goods deliveries in urban areas: Renault Trucks in partnership with the FREILOT project – Source: Renault Trucks

16 Mar 2011: Lyon: les livraisons vont faire leur révolution – Source: METRO France

16 Mar 2011: Dossier de presse FREILOT – Source: LUTB

17 Mar 2011: Le projet FREILOT : pour des livraisons durables – Source: Grand Lyon

17 Mar 2011: Lyon va tester un projet écologique pour les camions de livraison – Source: Lyon Mag

17 Mar 2011: Renault partner FREILOT projekta – Source: Tovornjak.net

17 Mar 2011: Renault Trucks, partenaire du projet européen Freilot – Source: France BPT

17 Mar 2011: Renault Trucks, partenaire du projet Freilot – Source: Truck & Business

18 Mar 2011: Lyon, ville test pour des livraisons de marchandises moins polluantes – Source: Le Progrès

28 Mar 2011: ERTICO:ルノートラック社　物流効率化プロジェクトに協力　("ERTICO:cooperation　in logistics efficiency projects Renault Truck") – Source: ITS Japan

29 Mar 2011: Le projet FREILOT est opérationnel à Lyon – Source: France Mobilité Electrique (Avere-France)

30 Mar 2011: Promising opportunities – Source: ITS International

1 Apr 2011: Projet FREILOT : transports raisonnés pour nuisances réduites – Source: Automobiles-challenges.fr

4 Apr 2011: Se presenta en Santander el Proyecto Freilot – Source: Cadena de Suministro

4 Apr 2011: Renault Trucks se involucra con el proyecto Freilots de mercancías – Source: Motor y Racing

8 Apr 2011: Merkantzien Garraioaren Urteko Proiekturik Onenaren Espainiako saria jaso du Bilbok Freilot proiektuari esker – Source: Yahoo! España (Europa Press)

11 Apr 2011: Bilbao recibe el Premio Nacional en Transporte de Mercancías por el 'Proyecto Freilot' – Source: InmoDiario

11 Apr 2011: Renault Trucks se asocia al proyecto europeo Freilot – Source: Interempresas

13 Apr 2011: Bilbao wins ITS Spain award for implementation of the European FREILOT project – Source: Traffic Technology Today

14 Apr 2011: A Freight Achievement – Source: Thinking Highways

15 Apr 2011: Bilbok merkantzia-garraiorako urteko proiektu onenaren sari nazionala jaso du Europako Freilot proiektuarengatik – Source: Euskadi+Innova

19 Apr 2011: Proyecto Freilot, reserva de carga y descarga a través de Internet para Bilbao – Source: Cambio Climatico

19 Apr 2011: Lyon prend de l'avance sur Paris dans son approche du camion en ville… – Source: Evous.fr

20 Apr 2011: Camions pollueurs contre citoyens râleurs – Source: LibéLyon (Libération)

20 Apr 2011: El proyecto Freilot se presenta en Santander – Source: Interempresas

20 Apr 2011: France: Freilot urban delivery project tested in Lyon – Source: SDV Live

28 Apr 2011: Freilot, progetto Renault Trucks per migliorare consegne in città – Source: Trasporto Europa

May 2011: Proef: Vrachtwagens vlotter en zuiniger – Source: Kennisplatform Verkeer en Vervoer

3 May 2011: Renault Trucks aderisce a Freilot – Source: OmniFurgone.it

25 May 2011: Bilbok merkantzia-garraiorako saria jaso du Freilot proiektuarengatik – Source: UNI online.info

25 May 2011: Här är Volvos tre vassaste teknikprojekt – Source: NyTeknik

26 May 2011: Volvo Group Tech Show 2011 – Source: Chalmers

June 2011: FREILOT at the European ITS Congress, Lyon, 6-9 June 2011 – Source: FREILOT Newsletter

1 Jun 2011: Le projet FREILOT – Source: Passion Truck

5 Jun 2011: Renault Trucks se asocia al proyecto europeo Freilot – Source: Transporte Profesional

6 Jun 2011: Bilbao wins National Award for Best Project of the Year (ENG) – Source: POLIS

6 Jun 2011: Intelligente Transportsysteme von Morgen (NL) – Source: PresseBox

6 Jun 2011: L'avenir du transport intelligent et de la mobilité connectée en démo à Lyon – Source: Voiture du Futur (blog)

7 Jun 2011: BILBAO PRESENTA SU EXPERIENCIA EN EL CONGRESO DE TRANSPORTE MÁS

RELEVANTE DE EUROPA – Source: Bilbao International

26 Jun 2011: FREILOT pilot on Urban Freight Energy Efficiency – Source: Stardust Homes

29 Jun 2011: Bilbao presenta Freilot en el congreso de transporte más relevante de Europa – Source: Interempresas

Jun/Jul 2011: FREILOT: A Cooperative mindset – Source: Thinking Highways

13 Jul 2011: Vrachtverkeer in steden kan vlotter en zuiniger – Source: De Laatste Meter

21 Jul 2011: Bilbao tiene edificios impresionantes – Source: Deia

Jul/Aug 2011: Bilbao recibe el premio nacional al mejor proyecto del año en transporte de mercancías – Source: Logística professional

28 Sep 2011: Reemplazo de grupos de refrigeración clásicos por criogenia, uno de los proyectos de Renault Trucks – Source: NexoTrans

Sep 2011: Press Release: Renault Trucks implements new urban logistics solutions – Source: Renault Trucks

13 Oct 2011: En ville, Renault mise sur le camion hybride et électrique – Source: Challenges

22 Nov 2011 PEEK lanceert als eerste een coöperatieve oplossingssuite op de Dag van Verkeer en Mobiliteit – Source: PEEK Traffic

30 Nov 2011: Renault Urban Trucks – Source: EuroTransporte

6 Dec 2011: PEEK LANCEERT EERSTE COÖPERATIEVE ITS PLATFORM IN EUROPA – Source: PEEK Traffic

7 Dec 2011: PEEK komt met voertuig-walkant platform – Source: Verkeersnet.nl

7 Dec 2011: Platform voor coöperatieve intelligente transportsystemen – Source: Verkeerskunde

9 Dec 2011: ImtechPeek claim cooperative ITS first in Europe – Source: Intertraffic.com

9 Dec 2011: Peek: First platform for cooperative intelligent transport systems in Europe – Source: DutchMobility.com

9 Dec 2011: Imtech/PEEK claim cooperative ITS first in Europe (ENG) – Source: ITS International

9 Dec 2011: Imtech/PEEK claim cooperative ITS first in Europe (ENG) – Source: World Highways

12 Dec 2011: Peek And Imtech Release The First Commercially Available Cooperative Its Platform (ENG) – Source: TrafficTechnologyToday

12 Dec 2011: Imtech/PEEK claim cooperative ITS first in Europe (ENG) – Source: ITS Korea

7.1.3.2012

23 Jan 2012: Breakthrough in Denmark, high-tech traffic technology to help Copenhagen become CO2 neutral (ENG) – Source: Imtech NV

15 Feb 2012: CHA pide el proyecto Freilot de reserva de carga y descarga para Zaragoza (SPA) – Source: el Periódico de Aragón

15 Feb 2012: CHA propone implantar en Zaragoza un sistema electrónico de reserva de plaza para carga y descarga (SPA) – Source: el Economista

15 Feb 2012: Cita previa para carga y descarga a través de Internet (SPA) – Source: Aragón Digital

15 Feb 2012: FREILOT: RESERVAR EL CARGA Y DESCARGA EN ZARAGOZA (SPA) – Source: El blog de Cha

16 Feb 2012: CHA propone la reserva de plaza de carga y descarga por internet (SPA) – Source: El

Periódico de Aragón

16 Feb 2012: Proyecto Europeo Freilot. Proyecto sobre optimización de la carga y descarga. (SPA) – Source: Zaragoza… me mata!

17 Feb 2012: Carga y descarga. ¿Proyecto Freilot?. (SPA) – Source: Zaragoza… me mata!

16 Mar 2012: FREILOT (Intelligent Transport Systems) (ENG) – Source: Driven by Helmond

1 Apr 2012: Tester des Solutions Innovantes (FRE) – Source: Acteurs Urbains

3 Apr 2012: Demonstratie van Peek's Freilot project bij werkbezoek van Neelie Kroes (NL) – Source: PEEK Traffic

3 Jun 2012: Le projet FREILOT veut réduire la consommation des camions en ville (FR) – Source: Enviscope

16 Jun 2012: Urban Freight Logistics is getting green, efficient and smart! (ENG) – Source: EFRUD project website

19 Jun 2012: Minder dieselverbruik door Freilot (NL) – Source: ED

19 Jun 2012: Helmond Geeft Groen Licht Voor Slim Verkeerssysteem (NL) – Source: Lokaal Nieuws

19 Jun 2012: VRI Systemen van de toekomst (ENG) – Source: Driven by Helmond

20 Jun 2012: Freilot leidt tot besparing diesel (NL) – Source: EVO Connect

20 Jun 2012: First commercial operation of cooperative service in Helmond (ENG) – Source: eCoMove project

20 Jun 2012: Helmond gaat door met innovatief verkeerssysteem FREILOT (NL) – Source: Peel-Nieuws

20 Jun 2012: Helmond geeft groen licht voor slim verkeerssysteem (NL) – Source: Omroep Brabant

20 Jun 2012: Helmond loopt voorop!! (NL) – Source: Helmond Nieuws

21 Jun 2012: Freilot to go commercial in Helmond (ENG) – Source: ITS International

21 Jun 2012: Helmond reduceert CO2-uitstoot via stoplichten (NL) – Source: Logistiek.nl

21 Jun 2012: Helmond to continue operation of cooperative mobility service on a commercial basis – a first for Europe (ENG) – Source: Traffic Technology Today

22 Jun 2012: Helmond gaat door met innovatief verkeerssysteem FREILOT (NL) – Source: AutomotiveNL

22 Jun 2012: Peek kan door met FREILOT (NL) – Source: Verkeersnet.nl

29 Jun 2012: Positieve resultaten FREILOT (NL) – Source: AutomotiveNL

7.2. TV coverage

7.2.1.2010

2 Nov 2010: Automotivestad Helmond maakt naam in Europa (NL) – Source: Gemeente Helmond TV

28 Oct 2010: Groen licht voor vrachtverkeer Helmond (NL) – Source: ED TV

28 Oct 2010: Helmond test slim verkeerssysteem (NL) – Source: Brabant10

28 Oct 2010: Groen licht vrachtwagens (NL) – Source: NOS Headlines

28 Oct 2010: Groen licht voor vrachtwagens in Helmond (NL) – Source: Omroep Brabant

7.2.2.2011

4 Jun 2011: Proyecto Europeo Freilot de logística urbana (SPA) – Source: La Sexta

7.2.3.2012

17 Feb 2012: CHA propone implantar el proyecto Freilot para gestionar la carga y descarga en Zaragoza (SPA) – Source: Chunta TV

7.3. Radio

7.3.1.2010

28 Oct 2010: Proef met slimme vrachtwagens in Helmond (NL) - Source: NOS Radio