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SUSTAINABILITY AND EFFICIENCY OF CITY LOGISTICS
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# D0.4 Final Report

## Public version

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# Table of contents





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# List of figures





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# Publishable summary


**Figure 1 – The project logo**

*Project overview*

The CityLog project aims at increasing the sustainability and the efficiency of urban delivery of goods through an adaptive and integrated mission management and innovative vehicle solutions. Three action domains have been identified to improve today's city logistic system:

- logistic-oriented telematics services are expected to give a decisive contribution to improve mission planning processes through an optimized routing and drivers' support systems. Towards the final customers, tracking and communication capabilities should be deployed to reduce the number of unsuccessful deliveries;
- vehicle technologies will represent a key factor to increase the operational flexibility of lorries and vans. It means that the vehicles shall be requested to support different mission profiles, and this will allow to reduce their number. In other words, what should be achieved is the interoperability among the vehicles, especially in terms of load unit handling;
- innovative load units are being carefully designed to operate, like the vehicles, in different missions. Therefore, a re-configurable internal layout will enable different uses either as simple container or mobile pack station (BentoBox concept). In the latter case, the goal is the de-synchronization of the delivery process between operators and final customers in order to reduce the unsuccessful deliveries.

The innovative approach of CityLog will lead to decrease the number and optimise the use of delivery trucks in urban areas, while bringing an increased quality of services. From the logistics operator point of view the ground breaking CityLog solutions and technologies are of highest interest due to the increased energy efficiency and quality of services.

*Activity and results*

The whole project aimed at integrating consolidated technologies to implement new tools and functionalities.
More in details:

- As a first action, the main trends in city logistics have been analysed before starting the collection of the stakeholder needs. This task has been carried out by using web questionnaires and organizing a public workshop in Brussels in cooperation with CityMove (16 June 2010). Finally, the CityLog consortium worked to extract the most significant use cases to be used as a basis for the implementations;
- Focusing on the ICT tools, the four proposed solutions – *pre-trip planner*, *ad hoc maps*, *dynamic assisted navigation* and *last mile parcel tracking* – have been well described and then integrated in a common architecture.



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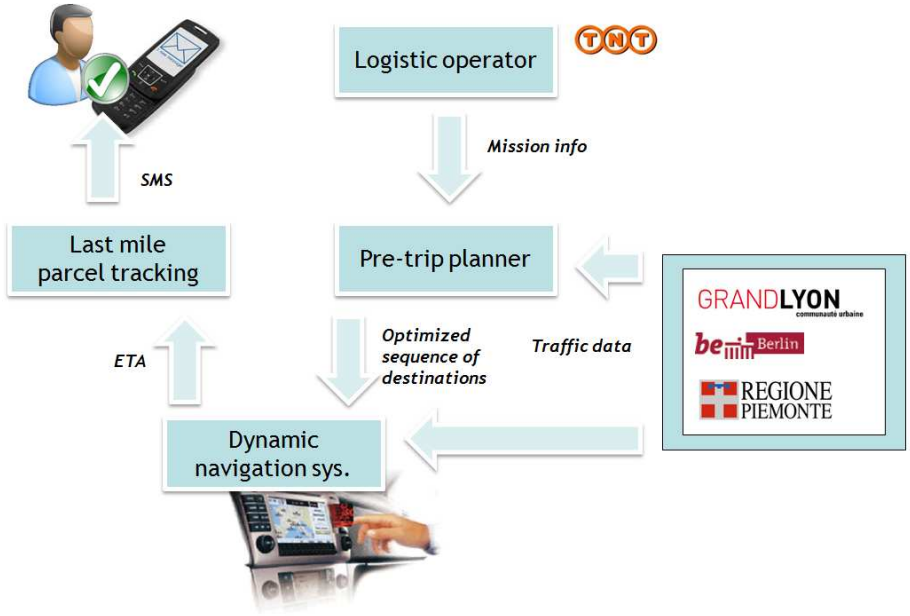


**Figure 2 - CityLog ITS architecture**

- For the vehicle and load unit solutions, the work done in the first 18 months aimed to select the appropriate technical solutions able to ensure a full interoperability between the *freight bus* and *distribution van*, and also to implement an effective and reliable BentoBox concept. Concerning the load unit operations, the CityLog experts proposed to have a vehicle-centred solution and containers with extensible legs, with no needs for specific infrastructures in the city.

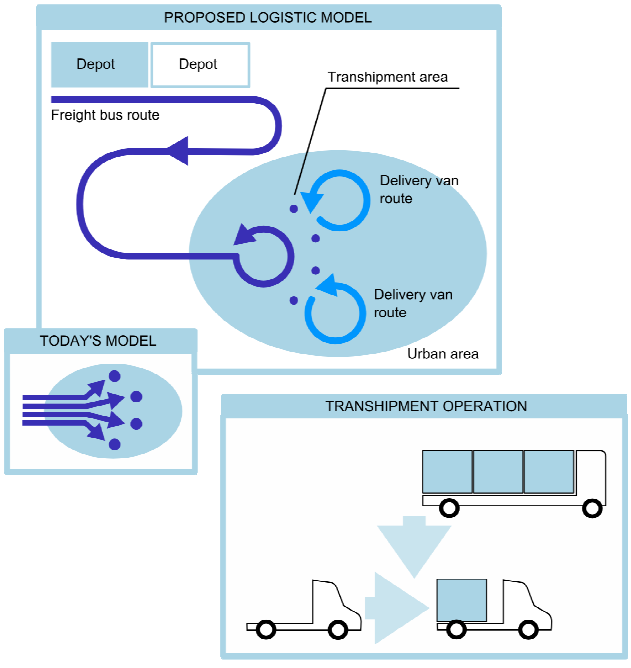


**Figure 3 - CityLog logistics model**

**Figure 4 - BentoBox concept**



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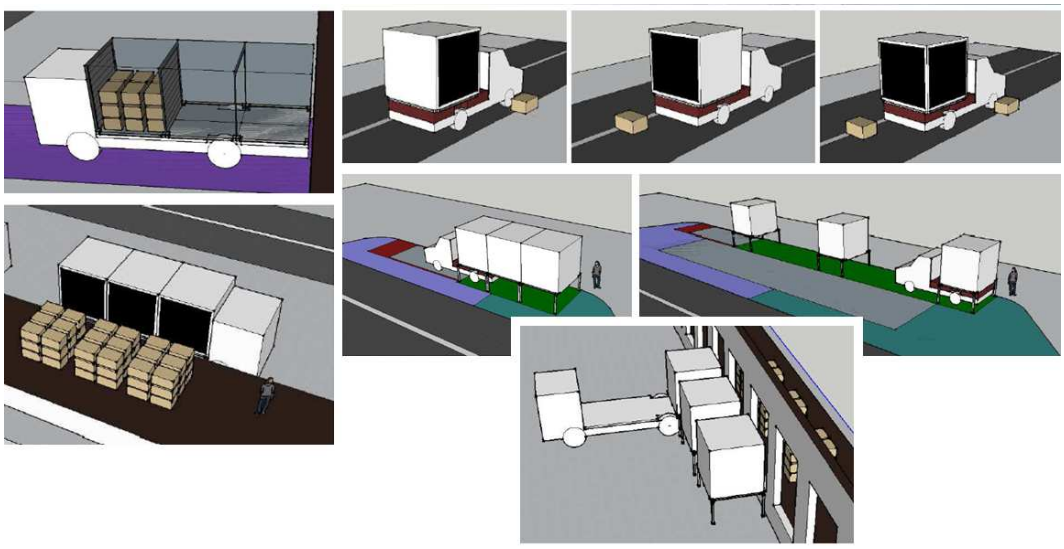

**Figure 5 – Transshipment simulations**

- The second part of the project aimed to complete the deployment and test the Citylog solutions in the three test sites and then analyse results from the field and assess impact and business perspectives.
- The main results achieved in the last period are:
  - The four telematics services (Pre-trip planner, Dynamic navigation service, Last mile parcel tracking, Ad hoc map attributes) have been all demonstrated. Trials in Turin concluded end of September;
  - Loading/unloading functionalities extensively tested and fully validated both in the Freight bus and in the distribution vans;
  - Vehicle-to-vehicle transhipment tested in Lyon and Turin
  - Three load units with extensible legs and a pack station with 6 removable trolleys (the BentoBox) experimented in all the three test sites
  - A very accurate analysis of the results achieved on the field has been developed in WP6. It provides:
    - a structured analysis of the impacts and interrelationship of vehicle design concepts, structural urban development and urban transport policies for different time horizons;
    - a detailed understanding of suitable transport and logistics systems to reduce negative impacts in different urban operating environments;
    - business perspectives from manufacturers and service providers and impact assessment from local authorities.

*Info*

Further information can be found on the CityLog website (http://www.city-log.eu).



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**Figure 6 – The CityLog home page**

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# Project objectives as a whole

During its whole duration, the project had the objective to:

- Complete the preliminary requirement analysis, focusing on the general stakeholders' needs and then on the most significant use cases;
- Complete the design of the telematics solutions that allow an optimized trip planning and mission support, and start their implementation;
- Complete the design of the vehicle and load unit solutions, by achieving a full interoperability between the freight bus and the distribution vans through easy transhipments operations;
- Complete the BentoBox concept development and build a prototype;
- Start the testing campaign planning and define the main guidelines for the final evaluation.
- Implement the specific context of each test site to test the different CITYLOG scenarios
- Prepare the tools and execute simulations to estimate the impact of the CITYLOG solutions on a vast scale
- Demonstrate on the field the feasibility of the CITYLOG approach
- Collect test site relevant data to perform evaluation and validation phases
- provide a comprehensive evaluation of the systems tested in the project, which will support future decisions in commercial vehicle design and manufacturing;
- evaluate the overall project results compared with the targets defined;
- estimates the CITYLOG outcomes related impacts and potential of the different solutions;
- analysis of the economic issues related to the modification of the traditional logistic models



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- Continue disseminating and promoting concepts and results of the project
- Organisation of the second joint stakeholders workshop;
- Exploit project results.

# Work progress and achievements during the period

The project completed the whole 36 months of activities, and all the activities are being performed according to the following GANTT, where the black bars mean "planned work done" and the yellow ones mean "minor deviations" from the planned.

| | Year 1 – 2010 | | | | Year 2 – 2011 | | | | Year 3 – 2012 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| WP0 – Project management | | | | | | | | | | | | |
| WP1 – Stakeholders' needs | | | | | | | | | | | | |
| WP2 – Logistic planner design | | | | | | | | | | | | |
| WP3 – Plann. and real time supp. | | | | | | | | | | | | |
| WP4 – Enhanced vehicle funct. | | | | | | | | | | | | |
| WP5 – Test case implementation | | | | | | | | | | | | |
| WP6 – Validation and impact ass. | | | | | | | | | | | | |
| WP7 – Transversal activities | | | | | | | | | | | | |
| WP8 – Technical coordination | | | | | | | | | | | | |

*WP1 – Stakeholders' needs and use cases (ERTICO)*

*WP1 – Essentials*

- Partners involved: TNT, TNO, PTV, EUPL(IPBO), SEN-STADT, LYO & PIE
- Objectives:
  - Identification of user needs and specification of use cases, taking into account business and operational requirements and current regulations.
  - Involvement of all stakeholder groups, as well as users and customers. This will be enabled through open workshops, web-questionnaires and interviews.
  - Identify the need for any new or modified standards and make recommendations on how such standards or the reform of existing procedures might be addressed.

*WP1.1 – Analysis of trends of urban logistics in Europe 27 (ERTICO)*

The objective of this task was the analysis of the current trends and the collection of the relevant data coming from the main stakeholders (i.e. logistic operators, cities, etc.).
The team carried out an analysis of the issues that usually affect the city logistics and of the measures adopted by the public authorities to manage them. The deliverable D1.1 reports the results of this analysis and also contains a summary of the most relevant European, national and local projects on the urban freight distribution. The deliverable provides:

- An overview of Policy and legal developments affecting city logistics.
- Looking closer at the city best practices results and know how produced in a number of past and present national and EU projects related to CITYLOG project.
- Looking at potential urban freight solutions (technological, policy and logistical) and take the next step towards an optimized urban freight transport.

*WP1.2 - Stakeholders' needs: collection and analysis (EUROPLATFORMS)*

The objective of this task was the collection and the analysis of the stakeholders' needs.
The user needs have been collected through questionnaires and brainstorming specific for the several stakeholders (public authorities, logistics operators, manufacturers).



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The activity started defining the Methodology for the analysis of stakeholder's needs. They have been handled as follows:

- Identification of representative stakeholder groups (also based on past projects)
- Identification of the needs of the relevant community
- Coherent assessment of the stakeholders' needs and the analysis of the provided feedback
- Definition of a subset of requirements to be considered in the project framework.

Information has been collected through:

- Capitalization of past projects (Bestufs, SMARTFREIGHT, CVIS project, Binnenstadservice – BSS, London Freight Plan, Berlin case, New York OFF HOUR DELIVERY PROGRAM)
- On-line Questionnaires
    - 54 full respondents (23 Administrators, 6 Freight Carriers, 14 Residents, 3 Shippers, 8 Truck & Vehicle Manufacturers)
    - Details can be found in the CityLog Web Page @ http://www.city-log.eu/questionnaire
- "User Needs Workshop", Brussels, 16 June 2010
    - Overall objective: to ensure that the proposed solutions meet the real needs of users, operators, suppliers and other stakeholders
    - 74 participants
    - Two stages:
        - parallel break-out sessions aimed to:
            - collect user needs related to the urban delivery vehicle respectively urban logistics
            - to identify conflicts and commonalities between user needs from different stakeholder groups
            - to discuss possible solutions/compromises for the identified conflicts
        - plenary session to discuss among the different stakeholders what can be done together to improve urban freight delivery.
    - Outputs resulting from the survey are:
        - Policy measures for the efficient utilization of the road capacity and its allocation among the various actors
        - Policy harmonization
        - Clean, silent and safe urban freight vehicles
        - Monetary incentives to greener city logistics solutions
        - ITS instruments and application, real-time information updating
        - Sustainability of city logistics solutions for operators (cost effectiveness, standardization, reduction of operational costs)
        - Localization of micro-terminals and HUBs for urban freight distribution close to intermodal platforms
    - Contents discussed during the workshop and related results are fully reported in deliverable D7.1 - Stakeholder workshop report.
    - Details can be found also in the CityLog Web Page @ http://www.city-log.eu/workshop.

On-line questionnaires and the Workshop in Brussels have been organized and managed in a close cooperation with the CityMove project.

All the activities done in this task and the achievements are summarized in Deliverable D1.2.

*WP1.3 – Definition of use cases (TNO)*

This task aims at defining the different use cases for the solutions (products) to be developed in the CityLog project. The CityLog solutions regard 3 action domains:



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- Telematic solutions:
  - pre-trip planner
  - dynamic navigation service,
  - last mile tracking service
  - additional map attributes
- Vehicle solutions
  - delivery van
  - freight bus
- Load unit solutions
  - Bentobox
  - basic container solutions

For each domain, a use case diagram has been drown, showing how actors interact with each use case. Picture depicted here below shows the diagram for the Logistic Planner.

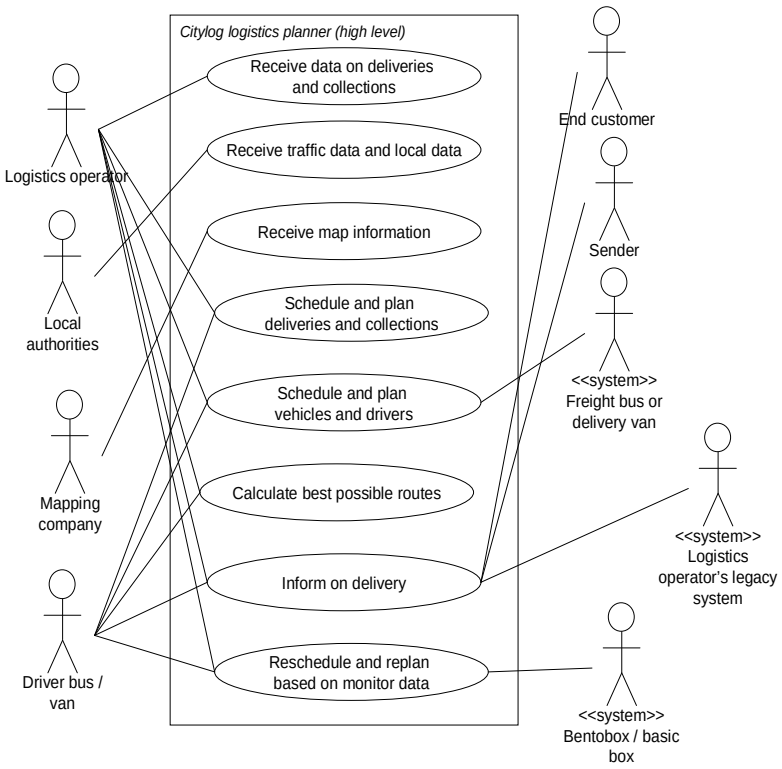


**Figure 7 - Logistic planner diagram**

The overall CityLog planner can be described as the combination of systems supporting the logistics operator in defining and adapting the routing and planning of the delivery and collection missions.
The combined systems schedule and plan deliveries and collections as well as vehicles and drivers in the most efficient way. This results in a reduction of the number of travelled kilometres and time on the road.

The diagram captures the processes carried out in the CITYLOG solutions and defines the CITYLOG solutions' requirements. These solutions are dealt with in separate use cases.
The use cases combine the outputs of the WP1.1 (trends in EU) and WP1.2 (user needs) and the products to be formulated.

The methodology that has been used in this task is based on the following three steps:



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- Defining use cases for CityLog solutions from consortium partners' perspective. For the use cases the inputs from WP1.2 (User needs) are used. Based on user needs from WP1.2, use cases for specific CityLog solutions are formulated.
- Discussing and extending (the number of) use cases with other stakeholders during CityLog-CityMove workshop;
- Analysis and structure of information and use cases, and report the use cases in a way that they form inputs for other WPs.

Each use case has been characterized in terms of actors involved, assumptions that are necessary for the goal of the use case, interactions, results and related issues, as reported in the Table below.
Actors are the entities that perform actions or that form the target of the actions. Actors can both be natural persons and systems.
Assumptions are the conditions that need to be satisfied for the use case in order to perform.
Interactions describe the flow of events, both the basic flow and (in case this is possible) the alternative flow of events that will occur when the use case is executed.

| | |
|---|---|
| Use case | Use case name and number<br>Each use case should have a unique name. |
| Description | Goal to be achieved by use case<br>Each use case should have a description that describes the main goals of the use case as well as a short description of the used CityLog solution. |
| Actors | List of actors involved in the use case |
| Assumptions | Conditions that must be true for the use case to terminate successfully<br>List all the assumptions that are necessary for the goal of the use case to be achieved successfully. Ideally, each assumption should be stated in a way that can be evaluated with true or false. |
| Interactions | Interactions between the system (CityLog solution) and the actors<br>The sequence of interactions (focus on where these interactions differ from current operations / normal city logistics operations) to successfully meet the goal. The interactions can be structured in a enumeration. |
| Results (city) | The results of the use case can estimate for more than the goal only, sees Table 3. |
| Issues | List of issues that remain to be solved |

All the use cases are fully described in D1.3.

*The deliverables D1.2 and D1.3 have been shared with the Swedish University of Skövde, that used these documents as a basis for its research on city logistics.*

*<u>WP2 - CityLog logistic planner design (CRF)</u>*

*WP2 - Essentials*

- Partners involved: CRF, Volvo, TNT, PTV, Navteq, Mizar, Ertico
- Objectives:
  - to evaluate the functional requirements of the telematic platform based on the outputs coming from WP1
  - to define the specifications for the expected mission support systems (planning, re-routing)
  - to design the overall architecture of the logistic planner.

*WP2.1 - Concept of the optimized pre-trip planning and mission support (CRF)*



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This task aimed to define an overall architecture to integrate all the telematics systems and design a logistic planner able to:

- make different optimised logistic models and systems more economically advantageous for all stakeholders
- meet the objective of enhanced urban mobility via drastic reduction of traffic congestion, CO2 emission and increased safety
- be an "intelligent management system" that will support logistic operators in defining optimized routes for their vehicles in specific time windows.
- be a flexible instrument to all different typology of urban freight delivery logistic.

Even if formally not required, the team worked on a "WP2 Working document" to define all the communication interfaces and therefore to feed the two deliverables planned in this WP.
The main results achieved in this task are:

- List of the functional requirements for the CITYLOG telematic framework and the several components for the mission support;
- Overall system design aimed at identifying the interactions between the single components;
- Overall system specifications.

*WP2.2 – Pre-trip planning: application design (PTV)*

The objective was the design and the specification of a trip planner module able to:

- find the optimal routes and time windows for the vehicles, taking into account traffic restriction policies defined by the public authorities and real-time traffic data
- exploit the additional information contained in map attributes specific for heavy and commercial vehicles and that will be integrated in the existing general purpose cartography.

Results of the task were the functional specifications and the overall design of a system able to handle:

- different urban topographies (e.g. presence of narrow streets in the city centre, presence of wide straight roads crossing the city,..);
- different cargo typology (e.g. goods that can deteriorate or medicines have the highest priority);
- different time of the day (e.g. more restrictive during the rush hours, while leaving open time windows to silent vehicles in the night);
- different vehicle typology and equipment (less polluting vehicles, vehicles equipped with telematic support to enable the CITYLOG route guidance, vehicles equipped with preventive safety systems have better mission priority).

The work done in this task and related results are reported in Deliverable D2.1.

*WP2.3 - Mission support: application design (MIZAR)*

The aim of this task was the design of the mission support tools, with particular focus on:

- the design of a customized dynamic navigation service for commercial vehicles, taking into account real time traffic data and the information related to the other logistic vehicles (e.g., to reduce the number of vehicles entering the city center in the same time);
- the provisioning of a last mile parcel tracking, implemented by matching the vehicle position information and the dispatched notes in order to inform the final addressees about the expected delivery time;



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- the improvement of the common maps through the integration of static and dynamic ad hoc map attributes for commercial vehicles.

Deliverable D2.2 reports a detailed description of the overall architecture, defines the interactions between the single modules and provides specifications for the main components listed above.

*WP3 – Planning and real time support (PTV)*

*WP3 – Essentials*

- Partners involved: PTV, CRF, Volvo, TNT, Navteq, Mizar
- Objectives:
  - Implementation of a dynamic pre-trip planning
  - Implementation of dynamic navigation services for urban freight delivery
  - Implementation of a Last mile parcel tracking system
  - Provisioning of static and dynamic map attributes for urban freight transport.

*WP3.1 - Implementation of dynamic pre-trip planning*

The focus of this task was the examination of existing pre-trip planning tools and the extension of their functionalities to meet with the CityLog use case requirements. One of the additional CityLog functionalities is for example the consideration of urban access restrictions in the pre-trip planning. The provided routes are optimised and cost efficient.
A common architecture for a dynamic trip planning environment was developed and implemented. A common interface for dynamic trip planning and message exchange was implemented in order to create a seamless process from planning to final execution. Based on an existing trip planning tools adaptations towards this common architecture and interface has been made. Developments focussed on the implementation of the dynamic components on transfer data base, web service and dynamic data integration.
Additional map attributes were included to make the routing engine more precise and in consequence the results more realistic. This is an on-going process which will be finalised before the test phase begins.
A detailed description of the work performed in this task can be found in Deliverable D2.1 “Functional requirements and specifications of the CITYLOG pre-trip planning”.

*WP3.2 - Implementation of dynamic navigation services for urban freight delivery*

This task concentrates on the navigation support for drivers, using advanced map technologies to guarantee an actual and updated navigation service. In the reporting period a “mailbox server” was implemented to manage the connection between the pre-trip planner and the on-board units (OBUs) in the CityLog test site vehicles. Additionally the “navigation server” was set-up to communicate with the OBUs and check the routing results of the OBUs. Two OBU clients have been developed, one from the partner CRF, and one from the partner Volvo. The two OBUS build up on different technologies and work flows. During the reporting period the partners developed the software and implemented it on clients. An integration with the trip planner in task 3.1 took place. OBU software and interfaces have been successfully tested with support partner PTV.
A detailed description of the work performed in this task can be found in Deliverable D2.2 “Functional Requirements and Specifications of the Mission support”.

*WP3.3 - Last mile transport tracking and ETA adjustment*



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The task of the last mile parcel tracking module is the notification of a parcel receiver that the ordered consignment will be delivered in the common minutes and that the parcel receiver should try to be at home to a certain ETA. During the project this module and communication links have been developed and implemented. Application tests and interfacing functionality checks with the trip planner from task 3.1 have been performed.
A detailed description of the work performed in this task can be found in Deliverable D2.2 "Functional Requirements and Specifications of the Mission support".

*WP3.4 – Static and dynamic map attributes for urban freight transport*

The aim of this task is the provision of new static and dynamic map attributes towards the pre-trip planner and the navigation server. The function here is to have extend maps regarding urban freight transport in general and especially regarding the CityLog applications. Examples of these data are environmental restricted zones, access restrictions and delivery time windows.
A detailed description of the work performed in this task can be found in Deliverable D2.2 "Functional Requirements and Specifications of the Mission support".
During the project especially OBU software and the pre-trip planner took traffic data into account.

*WP4 – Enhanced vehicle functions (VOLVO)*

*WP4 – Essentials*

- Partners involved: Volvo, CRF, Iveco, PTV, TNT, Navteq, ICOOR, Fraunhofer
- Objectives:
    - Design and make prototype of two innovative vehicle concepts, based on a medium truck ("freight bus") and a van for the urban delivery, having a high performance profile in terms of safety and manoeuvring systems, telematic equipment and a focus on a low environmental impact
    - Define common specifications for loading/unloading systems to be installed on both the two types of vehicle
    - Container solutions for the vehicle-to-vehicle transhipment and modular "pack station" system ("BentoBox")

    The WP4 team worked very hardly to identify suitable solutions for easy transhipments, and all the results have been achieved through a joint design.

*WP4.1 – Freight bus (VOLVO)*

The objective of this Task was the design and development of a freight bus integrated with CityLog telematic solution and loading/unloading system.
The Freight bus has a capacity of three load units, and its pneumatic suspensions allow loading the containers when they are on their legs and unloading them to let them on the ground. The vehicle is a 16t truck equipped with telematics (OBU), manoeuvring (one camera at the rear with display on the OBU) and safety systems (proximity sensor installed all around the cab). After being finalized, the truck was homologated (RTI with the DREAL), then registered in France and insured for tests. For both tests in Lyon and Torino, lending contracts have been done to link the Volvo Group with respectively TNT France and TNT Italy.

*WP4.2 – Distribution van (IVECO)*

In order to allow significant test cases, IVECO provided two distribution vans: one fully equipped (telematics and pedestrian detection systems included), and the second one in a basic configuration just to load and unload the containers.



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To help the delivery operations, a tail lift has been installed. Once finalized, vans were registered and insured for tests. For both tests in Lyon and Torino, lending contracts have been done to link Iveco with respectively TNT France and TNT Italy.

*WP4.3 – Container solutions (ICOOR)*

The three load units which have been built are a cubic box (side 2.2m) with removable legs and two doors (rear and lateral). These features have been carefully designed in order to:

- exploit the capacity of both the freight bus and distribution van;
- enable transhipments with no needs for infrastructures (ramps, lifts) and vehicles (cranes);
- allow container filling at the depot while standing on its legs.

The BentoBox consists of a static part able to host 6 trolleys with one HMI to allow operator or customer to handle trolleys and parcels.

*Work methodology*:
When analysing the vehicle transhipment scenarios, two main prerequisites were taken into account:

- vehicle based solution, to avoid infrastructure equipment
- freight bus and delivery vans do not have to meet at a precise point in time

This is to ensure high flexibility and low constraint for the integration of the solution.

The outcome of the design phase is a Load Unit on foldable legs. Loading and unloading the Load Unit require rising and lowering it. This is achieved on the Freight Bus rises using air suspensions and thanks to actuators on the Delivery Van. The precise dimension of the load unit, the position of doors and the loading systems have been define after analysing vehicle dimension constraints, standard driver license for Delivery Van, number of manoeuvres and spaces requirements. Many scenarios were possible at the depot, at the transhipment area and for the urban delivery location (they are described in a document “WP4 Use Case Scenarios). The visits to TNT Lyon and TNT Turin depot and early inputs from WP5 partners have narrowed the possible scenarios.



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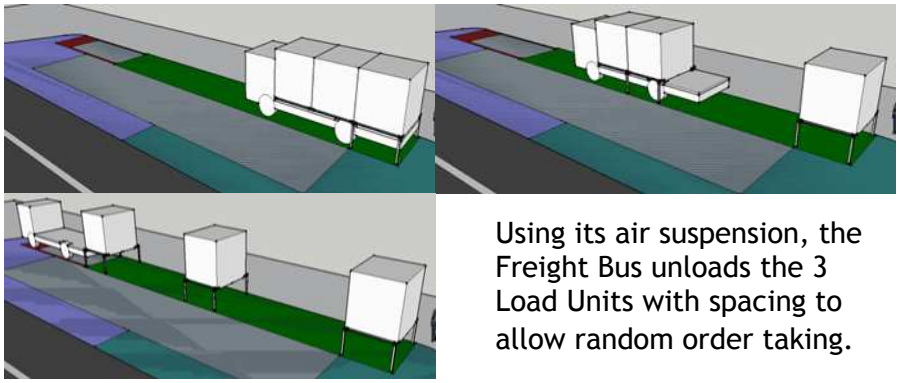
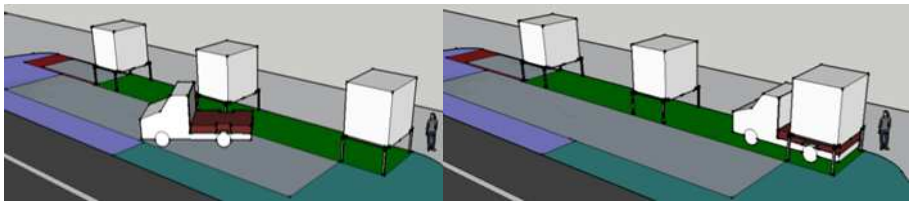


Using its air suspension, the Freight Bus unloads the 3 Load Units with spacing to allow random order taking.



The Delivery Van uses its actuators to load a Load Unit. Then it drives away and performs parcel delivery.

The BentoBox followed also an iterative design process. Starting from a first "monolithic" BentoBox transported by the Freight Bus and considering power connection and security constraints, the concept evolved into a docking station able to receive 6 mobiles trolleys with various-size compartments. The docking station comprises a Human-Machine interface (touchscreen) on which the user types in his code. This opens the appropriate compartment. Trolleys are loaded with parcels at the depot and they are transported to the docking station by the Delivery Van or any vehicle equipped with a tail lift.
Discussions with WP5 led to 4 types of trolleys in terms of compartment organisation, in order to accommodate many test scenarios.



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**Figure 8 - Bentobox concept and design**

*WP5 – Test cases implementation (TNT)*

*WP5 – Essentials*

- Partners involved: TNT, CRF, Iveco, Volvo, Navteq, PTV, Mizar, Fraunhofer, Senstadt Berlin, Grand Lyon, Regione Piemonte, ICOOR, Interface Transports, LNC
- Objectives:
  - Implement in the specific context of each test sites the CITYLOG scenarios
  - Prepare the tools and execute simulations to estimate the impact of the CITYLOG solutions on a vast scale
  - Demonstrate the feasibility of the CITYLOG approach
  - Collect test site relevant data to perform evaluation and validation phases.
- Three test sites:
  - Berlin
  - Lyon
  - Regione Piemonte

The WP5 team asked to anticipate the original scheduling in order to start the discussions very soon. This planning change has been managed in the Contract Amendment.
All the partners have identified the requirements that the cities shall satisfy in terms of safety, security and surface for both transhipment areas and BentoBox deployment places.

*Work methodology:*
The first approach resulted in a series of meetings in the three test sites (Berlin, Lyon and Turin) with all relevant partners, including also TNT Germany and TNT France as 3° parties. Based on these meetings and subsequent conference calls it was decided which concepts could be tested in the different sites and how.

- Berlin:



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  - Because of practical problems TNT Germany is not able to perform tests on Bentobox, therefore an alternative was sought and found in Messenger, bike courier in Berlin for which Bentobox can be applied;
  - For Trip Planner and Dynamic Navigation solution investigations are done to see if an interface with TNT Germany legacy system is possible to perform real life tests. If this is not possible, simulation test will be performed.
- Lyon:
  - For transhipment area contacts were made with *Sytral*, local bus company, that has parking space (*La Poudrette*) that can act as transhipment area, close to delivery area of the delivery vans;
  - For Bentobox solutions contacts were made with *Part Dieu* shopping centre to test Bentobox solution for specific B2B customers in that shopping centre;
  - Because of the impossibility to create interface with TNT France legacy system and legal restrictions regarding their subcontractors, it was decided to only perform simulations of trip planner.
- Regione Piemonte:
  - Meetings resulted in the list of concepts that were aimed to be tested and a shortlist of preferred cities to test them in.
  - Next step was to identify test city in Regione Piemonte that would be interested to support tests. Because of local elections in May 2011, it was not easy to get confirmation of test city before that date.
  - We are currently awaiting an official confirmation that Turin city will act as test site for CityLog.

At this moment the team is focussing on defining a detailed test plan:

- Detailed operational process of tests
- Resource allocation
- Measurements to be performed (in collaboration with WP6)
- Detailed timing

*WP5.1 – Berlin test site (SENSTADT)*

The Berlin test case was the first in a row of test cases, followed by Lyon and Piemonte. The operational test started on 28th of November 2011 and ran until the 27th of January 2012. For the first time, the newly developed prototype of the BentoBox was tested in Berlin with the purpose to identify the technical and operational suitability within city logistics applications under real conditions.

The aim of the CityLog field test was to limit the number of conventional vehicles entering a designated test area due to the implementation of the BentoBox concept.

For several reasons the original logistics service provider for Berlin – TNT – did not perform the field test. The partners under the lead of SenStadt decided to offer the operation of the BentoBox to a local courier service, the “Messenger Transport + Logistik GmbH” (see chapter ‘Field Test Operations in Berlin - Initial Planning and Adjusted Setting’). Messenger integrated the BentoBox into its specific logistics concept and used it mainly as a consolidation point for their shipments in the southwest district of Berlin. This way, the Berlin test is focused on the operation of the BentoBox as a tool to increase efficiency of last mile operations.

Due to the positioning close to the inner city within a very densely populated quarter, the BentoBox could be implemented successfully into the logistic processes of the courier service. The BentoBox in Berlin was used as a consolidation point for bike and car couriers. The basic



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scenario 'consolidation point' was extended after one month by two additional scenarios covering large quantities of shipments and a pick-up-scenario of a commercial end customer.


**Figure 9 - Quick glance of the CityLog BentoBox in Berlin**

The field test was completed with a press conference for representatives of local and national transport and logistics press.

<u>The BentoBox under real life conditions – Progress and Evolution of the Field Test in Berlin (12/2011 to 01/2012)</u>

The Berlin field test of the CityLog BentoBox took place from December 2011 to the end of January 2012. It therefore covered the commercially most relevant time of the year - the Christmas period. The test was therefore not just a "field test", but a high level performance test of the BentoBox idea as well as its possible integration into logistic processes.

For the most transport issues, the BentoBox was used as a consolidation point for the inner-city distribution where shipments were bundled. On the one hand shipments were collected and on the other hand shipments were distributed by cargo bike couriers in the test area. The BentoBox connected conventional light commercial vehicle couriers with cargo bikes couriers.
In total, 15 couriers used the BentoBox for their shipments. The backyard ground was accessible form 8 am to 6 pm but the primary processing time was from 9 am to 3 pm.

*Scenario 1*
*Initial situation*



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In the CityLog test area, Messenger has a volume that allows testing the working stress of the BentoBox. There are a lot of point-to-point-deliveries. In large parts it is carried out by light commercial vehicles. This concept leads to a high traffic volume in the test area and resulting from that, also high emissions.

*BentoBox basic solution*

Usually, two cargo bike couriers and two light commercial vehicle couriers were involved in scenario one. This basic scenario was tested during the whole test run.

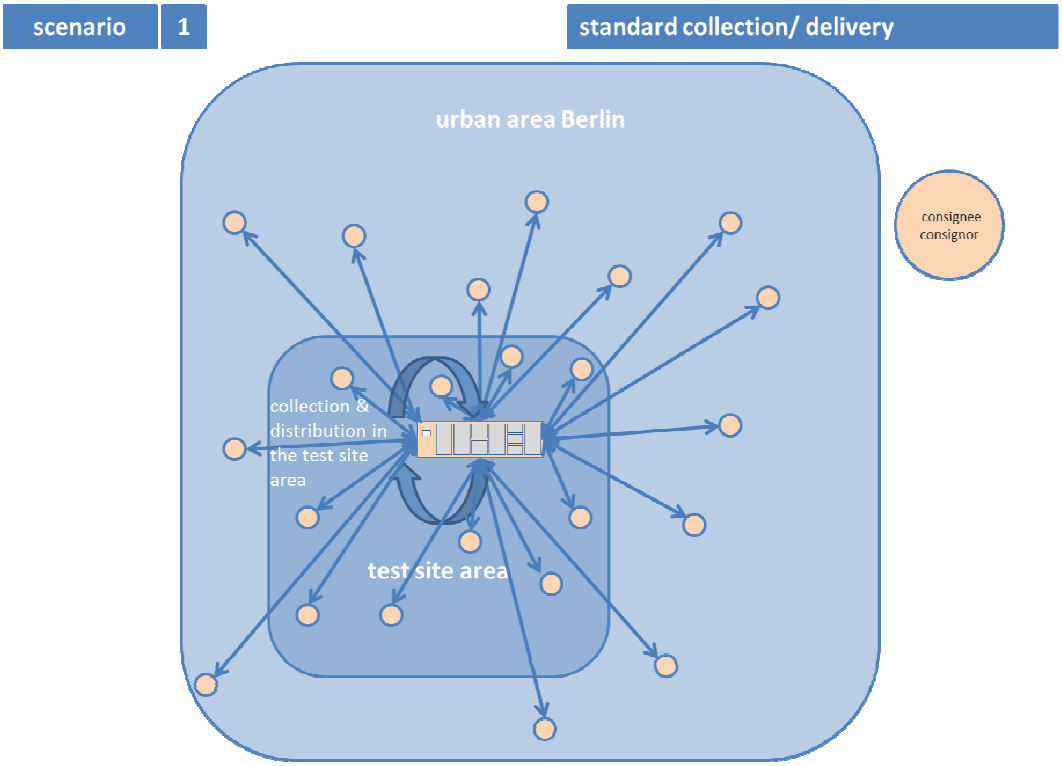


**Figure 10 - Integration of the BentoBox – Scenario 1**

In the first scenario, the disposition included the BentoBox in the logistics process of Messenger, if the test area was affected as a source or target and the max. shipment size (dimensions) was not exceeded. Without the BentoBox, the couriers transported the shipments directly to the aimed destination. The BentoBox was used as a collection and distribution point. The area-based shipments were delivered in the BentoBox and distributed from there by bike. Both processes were temporally separated from each other. As a result of the BentoBox, some shipments could be bundled in order to reduce the number of tours which were formerly needed to be delivered directly. In this way, it was also possible to use more bike couriers in the inner city. With the integration of the BentoBox, bike couriers can transport shipments for a longer distance.



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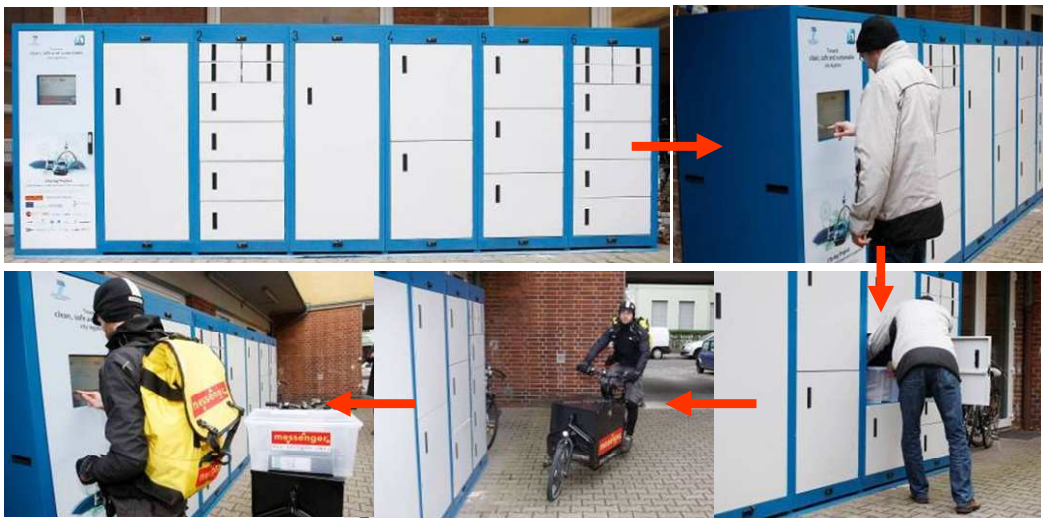

**Figure 11 - Integration of the BentoBox – Scenario 1 in pictures**

*Scenario 2*

*Initial situation*

The "Overnight service" is a service for shipments with national or international destinations which were collected by a car courier during the day. In the evening the couriers transported the collected shipments to the headquarters of Messenger where they were prepared for the transport by an external partner. The shipments were transported to their destinations normally during the night.

*BentoBox "Overnight" solution*

After the first experiences with the BentoBox in December 2011, scenario two was initiated on 9 January 2012. This scenario was tested until the end of the field test in Berlin on 27 January 2012. In scenario two, the 'Overnight service' of Messenger was integrated into the field test. This way, it was possible to increase the number of shipments significantly. Additionally, two additional couriers were involved for this scenario: One courier with a light commercial vehicle and one courier with the electric driven 'Cruiser' (Cargo bike to transport pallet sized goods with up to 250 kg weight).



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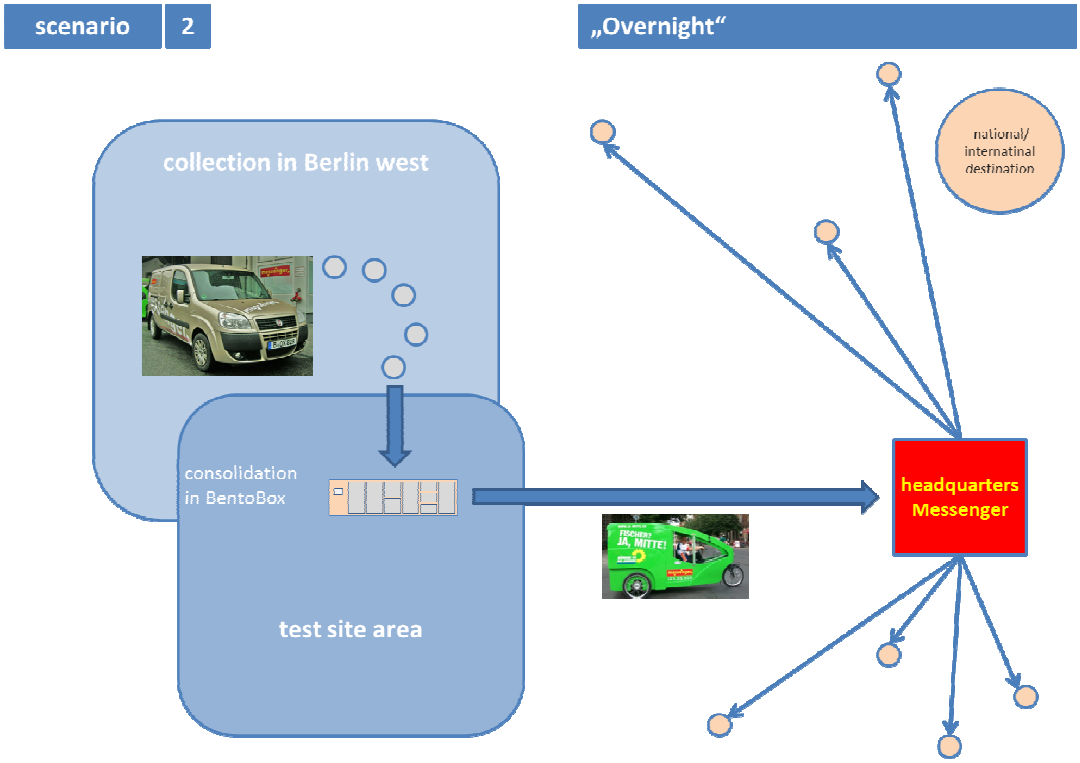


**Figure 12 - Integration of the BentoBox – Scenario 2**

The light commercial vehicle courier collected the shipments in the western urban area of Berlin. After being stored temporarily in the BentoBox, the shipments were picked up by the 'Cruiser' courier. In the afternoon, the courier transported the shipments to the headquarters of Messenger to prepare them for the transfer to their national or international destinations. In this way, the conventional car did not have to enter the inner city of Berlin where the headquarters of Messenger is located.
Moreover, in this scenario it was possible for Messenger to have these shipments earlier in their headquarters for further preparation. It is possible to decouple the arrival of these "BentoBox shipments" from the shipments coming from of the other parts of the city.

*Scenario 3*
The third part of the test took place between 16 January and 27 January 2012. Constin, the company on whose backyard the BentoBox is placed, used the BentoBox to lodge their parcels and a courier of Messenger picked them up every day at 4 pm.
This scenario is a completely new business case for Messenger. It demonstrates the wide range of services which can be offered by employing the BentoBox.
Some compartments of the BentoBox were reserved for the customer. With the user name and a password it was possible to open their associated compartments. For Constin it was possible to ship their parcels without waiting for a courier to pick them up personally. They could place their parcels in the BentoBox at any time. Implementing this scenario, it was possible to demonstrate the usability of the BentoBox for B2B.

*Press Conference*
On 25 January 2012, the press conference with around 20 participants had taken place. The representatives of the involved parties, Christian Gaebler (Berlin's Secretary of State for Transport and Environment), Achim Beier (CEO, Messenger), Werner Schoenewolf (Fraunhofer) and Michael Kuchenbecker (LNC) reported about the project and the test site in Berlin. After the reports, the couriers presented the BentoBox and the logistics process under real life conditions.



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**Figure 13 - Press conference CityLog BentoBox in Berlin**

Several journalists of the national transport and logistics press and of the local media were present, for example a journalist from "Deutsche Verkehrszeitung", the most important German logistics magazine. Furthermore, representatives of logistics initiatives and urban development also attended the event.

The press conference underlined the importance of the project for the city of Berlin. The fact, that through the combination of the BentoBox with the use of innovative cargo bikes, fast, emission-free and almost noiseless delivery processes were possible, was highlighted. This leads to an enormous potential for densely populated quarters in particular.
Another important result of the field test was the conclusion that politics, administration and companies are able to develop solutions in cooperation that enable a more city compliant processing of commercial transports in Berlin.

Achim Beier, CEO of Messenger, assessed the potential of minimizing costs by using the BentoBox at around 20 %. After the speeches from Mr. Gaebler and Mr. Beier, Werner Schoenewolf (Fraunhofer) and Michael Kuchenbecker (LNC), originators of the BentoBox, answered the questions of the journalists and discussed about the innovative concept and the first experiences. A presentation and demonstration of the BentoBox finalized the press conference.

The press conference was a full success, which is particularly reflected by the published articles.

*WP5.2 – Lyon test site (LYON)*

It included as a major focus:

- BentoBox tests in *Part Dieu* shopping center.
- Transhipment operations in Vaulx en Velin/Villeurbanne;

**BentoBox**
The docking station and its trolleys were placed in a commercial center called Part Dieu, to support B2B services. The delivery process within TNT operations was changed to allow the use of the trolleys on the TNT warehouse in Pierre-Bénite. These were loaded in the same van that



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usually performs the delivery tour to Part Dieu. In the shopping mall, the driver could plug the trolleys in the docking station instead of going to the shop (for the involved customer), and could use the remaining trolley capacities as a logistic support for the other deliveries (preventing him from going back to his truck).

2 Processes were tested:

- Preparation + loading of trolleys at TNT depot and transfer to the shopping mall
- Loading of trolleys directly at the BentoBox location in shopping mall

Option (a) was highly disturbed by technical issues and trolley structure issues. As the test included one B2B customer only, it is difficult to conclude positively on financial side as it adds costs. But with many customers, could probably get a positive result.
Option (b) was the second hand solution or backup solution due to trolley malfunctioning. It does not really change from standard process as the BentoBox is a drop off point (or pick up point).

**Figure 14 - The Bentobox at Part Dieu shopping center**

In each option, IT systems need to be adapted to ensure full tracking on every supply chain step. Important to consider the shift of responsibilities between carrier /receiver and sender /carrier.

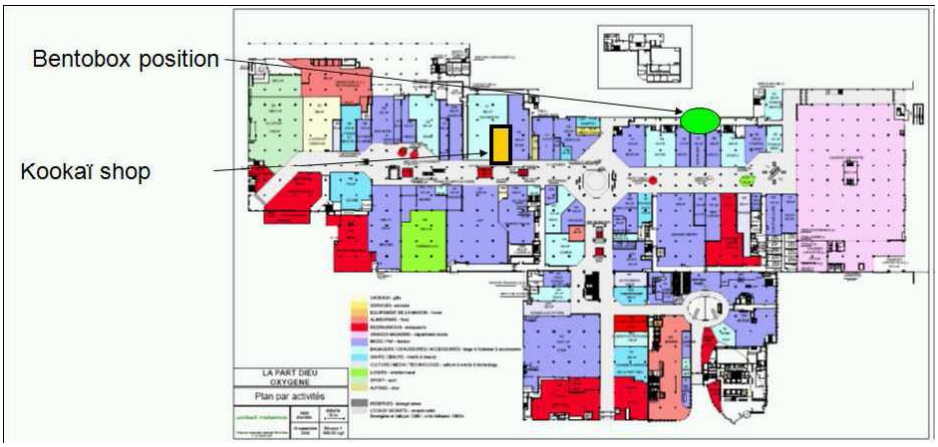


**Figure 15 - Part Dieu shopping center**

In the baseline situation, a TNT driver proceeds with the deliveries to Part Dieu commercial centre using a light duty van. Every day several clients are delivered in the commercial centre. The driver walks inside the centre with handling means (2 wheel trolley, pallet trucks …). There are two tours every day : one in the morning for deliveries, one in the afternoon for pick-ups.
During the pilot, this same driver loaded the same amount of freight in his truck, with the support of the BentoBox trolleys for the goods going to Kookaï shop. In Part Dieu, the trolleys



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were unloaded from the van and plugged into the docking station, and the remaining freight, for other customers, were delivered in a standard way.
In the morning, the Kookaï shop employees received an e-mail informing them about the consignment numbers of their parcels. Once the trolleys plugged, they could collect their parcels themselves.
Every afternoon, the driver collected the empty trolleys during his pick up tour.

The **Transhipment** site was in Vaulx-en-Velin, 18 km away from the TNT warehouse. The transhipment solution was used to perform the deliveries usually made by one vehicle. The freight was loaded in two Load Units on the Freight Bus, and these were transhipped to the Delivery Vans that run the delivery round. Each van could perform two delivery trips per day (one for deliveries in the morning, one for pick-ups in the afternoon). In the test case, the drivers left the depot together in the Freight Bus, each of them driving one delivery van afterwards. The result is that one truck driver was asked to driver a light duty vehicle, which is not his usual job.


**Figure 16 - The Transhipment test site in Vaulx-en-Velin**

In the baseline scenario, one TNT driver delivers goods in the Villeurbanne urban area using one vehicle. This driver goes for one tour every day. During the pilot, this area was delivered through the use of two load units, meaning that two drivers and all 3 vehicles of CityLog were used to support the testing period, instead of one vehicle and one driver in Baseline situation : the main goal here was to verify the technical reliability of the system, and to prove the feasibility of transhipment operations.



**Figure 17 - Transhipment at TNT depot**



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From the very beginning, it was planned to have the BentoBox and transhipment tests separate in time, in order not to manage two experimentations at the same time.
Moreover, in accordance with the other cities involved, the Lyon test site was decided to be the second one among 3 to test the systems, which led to define the test periods as follows :

- a 6-weeks period in February march for the BentoBox
- a 6-weeks period in April- May for the transhipment

Basically the original planning was respected. Nevertheless, a 2-week interruption was observed due to maintenance activity on the BentoBox (docking station and trolleys).
After a few days of test, it appeared that the BentoBox was not reliable enough for a daily use based on Option (a) :

- The wheels and metal parts got damaged (while moving the trolleys from TNT to the shopping mall)
- Connection problems occurred, causing the station not to recognize the trolleys

Despite small maintenance operations and attempts from the local partners to repair the prototype, it turned out to be impossible to use as such. In addition, from the customer point of view (Kookaï), it was sometimes difficult to reach an assistance contact - specific contact people within TNT Lyon were not always reachable and technically skilled people could not support while being distant.
From week 10, based on reports sent by local partners (TNT and Interface Transport), it was decided to change slightly the structure of the prototype to strengthen the trolleys and improve the system. A set of pieces were shipped to Lyon by Icoor, and TNT performed the technical operations.
The BentoBox was finally operational during week 12, and the pilot started again until the date of March 30th.
During all the test period, the SMS service to customer did not work : the customer would have appreciated the service but it did not work. As a consequence, they sometimes did two or three trips to the BentoBox location to check if the parcels were delivered.
The BentoBox was shipped to Turin on April 10th.

*WP5.3 – Piemonte test site (PIE)*

Considering that Regione Piemonte could not operate directly a test site, the original plan was to launch a public tender to involve a municipality. Finally, it was decided to invite directly the City of Turin, that accepted to cooperate within CityLog.
Technical discussions have already been done with the company – owned by Regione Piemonte – that manages infomobility data in Turin.
In any case the current plan foresees to test all three CityLog solutions in Piemonte, i.e. BentoBox, Transhipment and Telematics.

Torino is the only test site where all 3 concepts were proven.
From the very beginning, it was planned to have the BentoBox and Transhipment Area tests separate in time, in order not to manage two tests at the same time. The Telematics were supposed to be tested in parallel with the Transhipment solution but in the end they were run between M31 and M33.

The **BentoBox** was set up in the Otto Gallery and put under CCTV cameras via the support of 5T. It was placed in a highly visible location which is full of shops as well as offices and restaurants.



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**Figure 18 - Bentobox at Lingotto (Turin)**

Four customer were involved in the testing: two banks (Santander and Unionfidi), one travel agency (Alpitour) and one software company (Mizar) which also happens to be partner in CityLog project and developed the LMPT solution.

In the baseline situation, these four customers received their parcels via a driver who walks to their offices once a day. All other customers within the Shopping mall received their parcels in exactly the same way.

During the pilot, this same driver loaded the same amount of freight in his truck, with the support of the BentoBox trolleys for the goods going to the 4 involved customers.

In Lingotto the trolleys were unloaded from the van, taken up to the first floor via a lift (2 trolleys at a time) and plugged into the docking station after a long walk along the corridor linking the lift to the Bentobox area. The remaining freight, for other customers, were delivered in a standard way. The delivery process within TNT operations was changed to allow the use of the trolleys on the TNT warehouse in Settimo Torinese. These were loaded in the same van that usually performs the delivery tour to Torino Lingotto. In the shopping mall, the driver could plug the trolleys in the docking station instead of going to the offices (for the involved customer).

The customer involved could easily reach the Bentobox within a few minutes from their offices. Customers were given username and password one-off and every morning they were mailed by the depot the list of consignment ID's which had to be typed on the touch screen to open their compartments.



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**Figure 19 - Bentobox trials at Lingotto**

TNT was asked by these customers to locate in the Bentobox only envelopes and small / light parcels; so a filter was applied in the depot during the trolley loading phase. This phase was supported by a report which had been specifically created by TNT to help the handling activities in the warehouse.

From 1 p.m. to 6 p.m. parcels were available for collection. Besides the parcel to collect, each drawer contained also the run-sheet for the receiver to sign off (to confirm the successful delivery).
Below the number of parcels loaded in the Bentobox, split by customer, for each day of the testing phase.

| | Testing Timeframe | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 26/4 | 3/5 | 4/5 | 7/5 | 8/5 | 9/5 | 10/5 | 14/5 | 21/5 | 22/5 | 23/5 | 24/5 | 25/5 | 28/5 | 30/5 | 31/5 | 1/6 |
| Customer | | | | | | | | | | | | | | | | | |
| Alpitour | 6 | 7 | 6 | 2 | 4 | 7 | 2 | 0 | 2 | 0 | 2 | 0 | 4 | 2 | 1 | 0 | 0 |
| Santander | 15 | 15 | 10 | 18 | 7 | 10 | 7 | 15 | 12 | 10 | 8 | 6 | 8 | 14 | 3 | 6 | 6 |
| Mizar | 2 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 |
| UnionFidi | 0 | 1 | 2 | 2 | 0 | 1 | 1 | 1 | 0 | 1 | | 0 | 1 | 0 | 0 | 0 | 0 |
| TOTAL | 23 | 23 | 18 | 22 | 11 | 19 | 10 | 16 | 14 | 11 | 11 | 6 | 13 | 16 | 4 | 6 | 6 |
| No. Bbox drawers | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 | 23 |
| Saturation % | 100% | 100% | 78% | 96% | 48% | 83% | 43% | 70% | 61% | 48% | 48% | 26% | 57% | 70% | 17% | 26% | 26% |

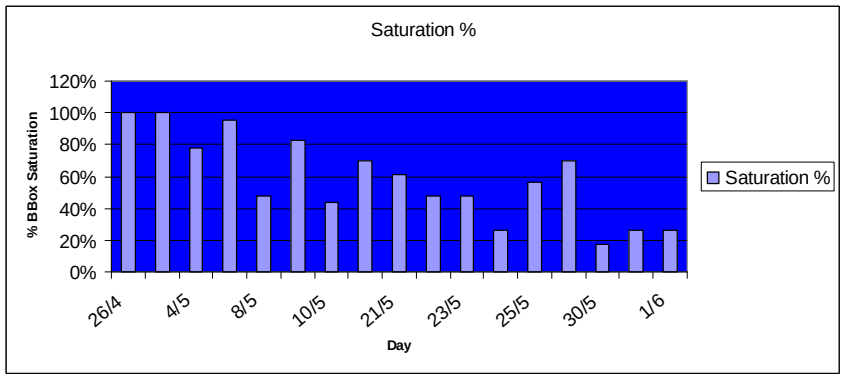


**Figure 20 - Number of parcels loaded in the Bentobox during the trials at Lingotto**

The **transhipment** area was selected in agreement with all partners according to a set of criteria previously defined. These were: (1) logistics operator accessibility; (2) city centre located; (3)



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minimum of 2 delivery vehicles involved; (4) large area size with easy manoeuvrability; (5) secured area.

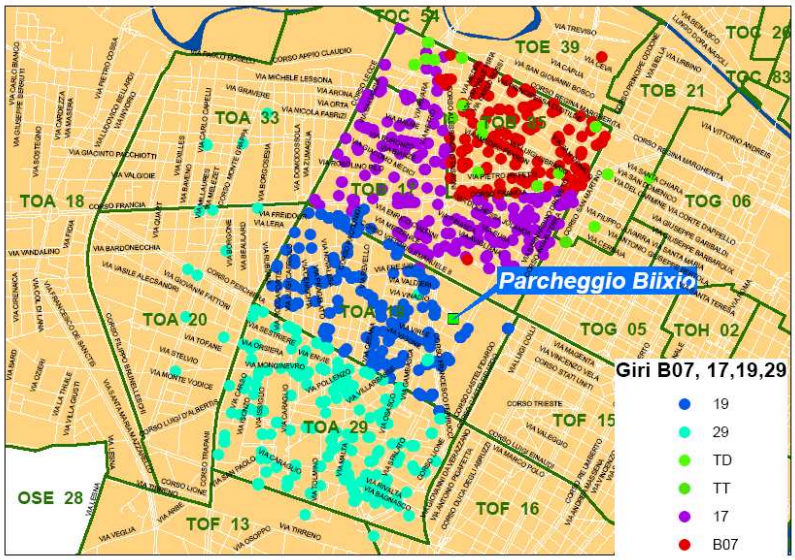


**Figure 21 - Section of Turin City Centre and Delivery vehicles involved**

In the baseline scenario, two TNT drivers deliver goods in the areas highlighted in blue and turquoise in the above map, via two vehicles driven from the depot to the delivery area and back. So the transhipment solution was used to perform the deliveries usually made by 2 vehicles.
During the pilot, this area was delivered through the use of two load units, meaning that two drivers, one Freight Bus and two delivery vans.

The freight was loaded in two Load Units on the Freight Bus, which was driven by 2 drivers to the transhipment area in the morning. At the area, the load units were moved to the Delivery vans which then left for their city centre operational day run. In the evening the 2 delivery vans (emptied but with collected parcels to be shipped by TNT) returned to the transhipment, the drivers carried out the offload operations and returned back to the depot via the Freight Bus (2 drivers on the bus). At the depot, the freight bus was positioned along the loading bay to be ready for the next morning activities.



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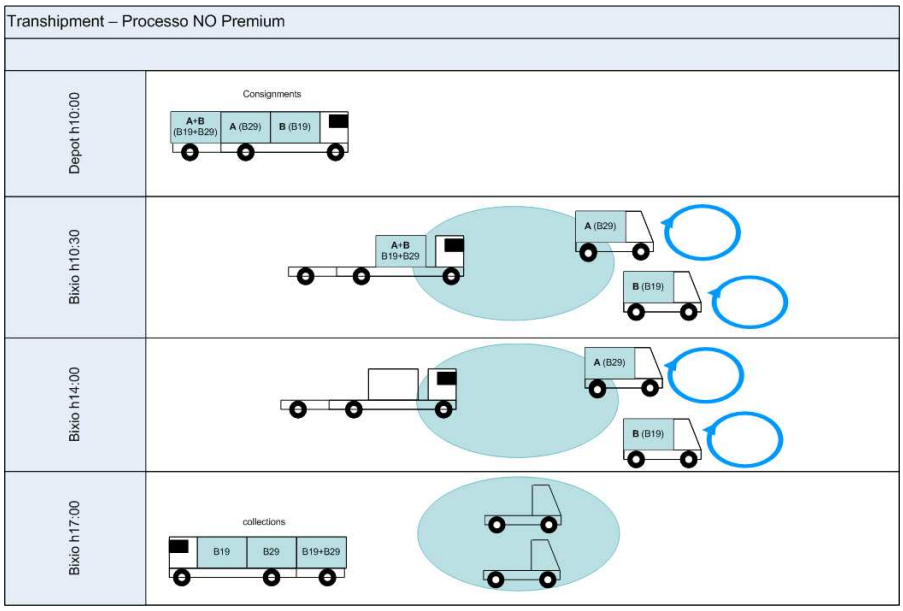


**Figure 22 - Transhipment trials in Turin**

Regarding Telematics Solutions, given that Torino was the only test site to use these solutions and that they had not been tested anywhere else, the approach followed was to perform a phased testing in the TNT "laboratory" environment first; this in order to ensure that the single applications and the interfaces in between them were stable. The second step would have been to make use of the Pre-Trip Planner for the vans involved in the transhipment testing in a "live" mode, as well as of the dynamic navigator and the Last Mile Parcel Tracking alert mechanism.

In the course of the "lab" testing few problems were encountered. The main problems were 2:

- the quality of the maps installed that, coming from an open source, were not effective in pointing out the best route;
- the fact that it was only possible to test delivery data and the dynamic part of the process (i.e. the collection orders coming throughout the day from customers) could not be handled by these solutions. This meant that, if the lab test was moved to field test, the driver could have only received delivery data / routing instructions on deliveries whilst the collection orders could have not been transferred on to the On Board Unit.

These 2 problems made the option of "live" test unacceptable, so the testing was limited to office operations.

*WP6 - Validation and impact assessment (FRAUNHOFER)*

*WP6 - Essentials*

- Partners involved: Fraunhofer, TNT, CRF, Iveco, Volvo, PTV, TNO, EUPL, Senstadt Berlin, Grand Lyon, Regione Piemonte, Ertico, Interface Transports
- Objectives:
  - Achieve a structured evaluation of the impacts and interrelationships (through their measurement during field testing) of
    - vehicle design concepts,
    - structural urban development and urban transport policies
    - logistic operational models



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- Assess the potential impact of CityLog concepts with respect to defined target domains
- Evaluate the targets achieved vs. original objectives being specified, in order to derive a project success level

*WP6.1 – Selection of indicators (FRAUNHOFER)*

Objective of WP 6.1 was to provide a set of indicators that allows for structured evaluation of the use cases' impacts within the domains

- traffic,
- environment,
- safety,
- social economy,
- business economy.

With this, each indicator's analysis must be based upon data which is collectable within the framework of the field tests. Instruments of this data collection before, while and after field tests will be

- vehicle based assessment units, for tracking vehicles' movement,
- individual and personal mobility assessment units, for tracking walking distances and times,
- interviews, questionnaires and logbooks, to ascertain information from participants such as depot-managers, drivers and customers.

Methods for indicator analysis will be "ex ante - ex post calculation" and "target and achievement level". The individual choice is based on the requirements and data acquisition options for evaluation of each single indicator. The main methodology with the development of the work package's output was to firstly set up a generic set of indicators for all use cases as a basis to be adapted in each single test case scenario.

Main output of the work package is the indicator assessment scheme which provides comprehensive information about each indicator, concerning in particular:

- associated domain,
- data to be collected,
- method of collection,
- analysis method,
- estimated result,
- assignment of indicator to use cases / regions,
- responsibilities.

Further output of the work package is the respective forms for interviews and questionnaires. These forms are use case dependent, i.e. each question within the interviews and questionnaires relates to a specific use case and indicator.

*WP6.2 – Impact assessment (FRAUNHOFER)*

The goal of WP 6.2 was the Impact Assessment, which contains in general two outcomes:

- the evaluation of the direct outcomes of the Citylog solutions implemented within five field tests in three European cities
- the updating of the Citylog solutions implemented, extrapolation of these updated scenarios and calculation of the impact potential of the updated, extrapolated solutions.



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Resultant the first result of WP 6.2 is a detailed evaluation of the implemented solutions based on facts measured before, while and after the test operation. Each indicator chosen in WP 6.1 was evaluated in detail based on the respective data which was obtained and processed according the planning as shown in the "indicator assessment scheme" developed in WP 6.1.

Based on this evaluation improvement possibilities were identified. Using this possibilities updated scenarios were developed. These scenarios were extrapolated to a larger scale based on additional data obtained from the involved parties as well as from literature. The second main outcome of WP 6.2 is the calculation of the impact of the updated, large scaled solutions within the defined target domains.

This data provides a comprehensive knowledge base for future research projects aiming to increase the sustainability and efficiency of urban delivery of goods. Using this outcome of the Citylog project will make possible the sophisticated design of future implementations allowing for an extensive impact within the target domains traffic, environment, commercial and social economy as well as safety and security.

*WP6.3 – Business aspects (TNO)*

This Task has as objective to evaluate the business aspects of the CITYLOG solutions. Besides the technical features of the solutions, it is essential to evaluate whether the solutions are in support of a business need.
Both the quantifiable and unquantifiable characteristics of the solutions are taken into account. The analysis provides reasons for rejecting or carrying the innovative CITYLOG solutions forward. This evaluation includes:

1. A qualitative analysis of the business aspects that change when the CITYLOG solution is integrated, in which TNO discussed and developed the business model canvas for the CITYLOG solutions as tested in field tests, together with relevant business partners (i.e. TNT and Messenger).
2. A quantitative analysis of the changes, in terms of costs and revenues, in which TNO calculated the business case (as was tested in the field test) and for a scenario in which the tested CITYLOG solution would be used as business-as-usual (again in cooperation with the relevant business partners, TNT and Messenger and based on available data from the field tests).
3. A value analysis of the CITYLOG solutions, in which TNO elaborated on the best possibilities for application of the CITYLOG solutions (together with several partners, TNT, Ertico, Senstadt Berlin, Interface Transport).

In task 6.3 several questions were answered, the most important question was what are the requirements for change. Further key issues that were addressed in this task:

- Which business aspects change? What are the associated costs?
- What is the value for the customer? Who is willing to pay?
- What are the requirements for change? Who will need to invest?

The results of the business aspects (WP6.3) analysis are combined an integral part of the overall evaluation report (based on WP6.2) to provide an overall evaluation of the CITYLOG solutions. Based on the combined outcome, recommendations for further development and implementation are given in chapter 5 of deliverable 6.2.

*WP7 – Transversal activities (CRF)*

*WP7 – Essentials*

- Partners involved: CRF, Iveco, Volvo, TNT, Navteq, PTV, TNO, Mizar, Fraunhofer, Senstadt Berlin, Grand Lyon, Regione Piemonte, Ertico, RELAB, EUPL



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- Objectives:
  - to perform different activities that are transversal to the whole project, specifically this work package takes care of the CITYLOG networking activities through:
    - Organisation of joint stakeholders workshops;
    - Dissemination of the project results;
    - Exploitation activities.

*WP7.1 – Joint workshop with relevant stakeholders and liaison with related projects (ERTICO)*

The first workshop organized in cooperation between CityLog and CityMove was held in Brussels the 16th of June 2011. After a first introductory session with the Project Officer – Mrs. Patrycja Kulesza – and the two Project Coordinators, the nearly 75 attendants were split in two group to animate a fruitful brainstorming.
TNT and the Senate of Berlin, finally, shared their points of view on the city logistics issues.
The second Stakeholder Workshop organized in cooperation with the CityMove project, was held in Turin on December 18th 2012. After a first introductory session with the Project Officer – Mrs. Natascia Lai – and the two Project Coordinators, concept and results of the Project have been presented to the nearly 75 attendants. During the first session titled "New logistic models and approaches" the "Freight bus" concept and the Bentobox system were presented. In the second session, "Advanced urban freight vehicles and operations" Iveco and Volvo presented technologies and safety systems implemented in their vehicles. In the third session TNT and the Senate of Berlin presented their vision and the perspectives for the use of the proposed solutions. The workshop ended with a round table where speakers and participants discussed about future initiatives towards a clean, safe and sustainable city logistics.

*WP7.2 – Dissemination of project activities (CRF)*

See the "Dissemination events" table with the list of events that involved the CityLog partners.

*WP7.3 – Exploitation activities (CRF)*

The Consortium worked hardly to establish a network of stakeholders involved in the city logistics evolution. Events like the two Joint Stakeholders workshops, as well as the participation of Citylog representatives in public events and workshops organized by other Consortia working in the same domain, have been always opportunities to share the concept envisioned by Citylog and its tangible results towards several channel.
In the meanwhile, partners have internally evaluated potential future deployments: the vehicle manufacturers with the possible partners (the body builder), the service providers with the cities and the logistic operators, and the logistic operators with the local entities (national branch offices).
Results of these analysis are fully described in Deliverable D7.5 "CITYLOG Exploitation Plan".



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# Deliverables

| Del no. | Deliverable name | Nature | Dissemination level |
|---|---|---|---|
| D0.1 | Project management and quality plan | R | RE |
| D0.5 | Project repository | O | CO |
| D1.1 | Trends of urban logistics in Europe 27 | R | PU |
| D1.2 | Stakeholders' needs | R | PU |
| D1.3 | Use cases | R | PU |
| D2.1 | Functional requirements and specifications of the CITYLOG pre-trip planning | R | PP |
| D2.2 | Functional requirements and specifications of the CITYLOG mission support | R | PP |
| D7.2 | Dissemination Plan | R | PU |
| D7.3 | Project web site | O | PU |
| D7.4 | Project leaflets | O | PU |
| D0.3 | Second periodic report | R | RE |
| D0.4 | Final Report | R | RE + a public version |
| D3.1 | Pre-trip planning prototype (Software) | P | CO |
| D3.2 | Dynamic navigation service (Software) | P | CO |
| D3.3 | Last mile parcel tracking (Software) | P | CO |
| D3.4 | Static and dynamic map attributes (specification document) | R | CO |



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| | | | |
|---|---|---|---|
| D4.1 | Freight bus | P | PU |
| D4.2 | Distribution van | P | PU |
| D4.3 | Container solutions | P | PU |
| D5.1 | Test site coordination plan | R | CO |
| D5.2 | Test site final report – Berlin | R | PU |
| D5.3 | Test site implementation plan – Lyon | R | PU |
| D5.4 | Test site final report – Piemonte | R | PU |
| D6.1 | Evaluation plan | R | PU |
| D6.2 | Evaluation report | R | CO |
| D7.1 | Second joint Stakeholders Workshops in cooperation with CITYMOVE | O | PU |
| D7.4 | Project Leaflets | O | PU |
| D7.5 | CITYLOG Exploitation Plan | R | CO + a public version |
| D7.6 | CITYLOG Final project event and demonstration | O | PU |



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# Dissemination, cooperation and networking

*Cooperation with CityMove*

CityLog and CityMove projects have worked together for a better exploitation of the dissemination opportunities. In many cases the CityLog and CityMove coordinators have made presentations on behalf of both the projects (EUCAR annual conferences and Polis Conference in Brussels).
The two Project have organized together two Joint Stakeholders Workshops, one June 2010 and the second in December 2012, including a presentations, round tables and public live demonstrations.
Another area of cooperation are the periodic newsletters, issued by ERTICO as a CityLog task but with a summary that covers both the projects.

*Cooperation with Skövde University*

As suggested by Volvo, the CityLog project established a link with the Swedish university of Skövde, which was interested in working on the CityLog user needs and use cases to develop its research on city logistics.
This cooperation allowed CityLog to be represented at "Logistik & Transportmässan", Largest fair and congress for logistics and transportation in the Nordic countries (25th-27th May 2011).

*Cooperation with other Projects and Initiative*

Citylog participated in many Workshop organized by Projects or Initiatives dealing with the same subjects. Amongst them:

- CLiege (http://www.c-liege.eu)
- Straightsol (www.straightsol.eu)
- Smartfusion (www.smartfusion.eu)

*Newsletter*

Through the websites, CityLog and CityMove issue – through ERTICO – a periodic newsletter to inform about their progresses. During the project the following newsletters have been released.

- 1st newsletter (Spring 2010), to advertise of the first CityLog-CityMove workshop;
- 2nd newsletter (Autumn 2010), to disseminate the result of the stakeholder need analysis;
- 3rd newsletter (Autumn 2011), to give a preview of the technical solutions implemented in CityLog and CityMove
- 4th newsletter (Summer 2012) to report completed and ongoing tests



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*Dissemination*

See the following table with the list of all the dissemination events.

# Dissemination events

| N. | Date | Place | Event | Type of contribution | Title / Description | Owner | Notes |
|---|---|---|---|---|---|---|---|
| 1 | 07/06/2010 | Brussels (BE) | TRA 2010 | Presentation | CityLog – New solutions for urban freight distribution | CRF | - |
| 2 | June 2010 | Naples (IT) | TEMA - Journal of Land Use, Mobility and Environment | Paper | CityLog, Towards New Solutions for Urban Freight Distribution | CRF, ERTICO | Issues on Vol 3, no. 2 - www.tema.unina.it/ |
| 3 | 17/06/2010 | Brussels (BE) | EUCAR Mobility & Transport Board | Presentation | CityLog | CRF | |
| 4 | 25/11/2010 | Dresden (DE) | POLIS Annual Conference | Special mention in presentation | Integrated Urban Freight Transportation Strategy | SenStadt | |
| 5 | 09/11/2010 | Brussels (DE) | EUCAR Annual Conference | Presentation | CityMove-CityLog | CRF | Joint presentation |
| 6 | Oct. 2010 | - | Eurotransport – Magazine of transport technologies | Special mention in paper | ITS and urban mobility | ERTICO | |
| 7 | 17/11/2010 | Strasbourg (FR) | Mobilis 2010 | Presentation | CityLog-CityMove: Logistic-oriented design of vehicle and infomobility solutions | CRF | Joint presentation |
| 8 | 17/11/2010 | Brussels (BE) | Urban Freight Conference | Presentation | CityMove-CityLog | CRF | Joint presentation |
| 9 | 01/03/2011 | Hanover (DE) | CEBIT in Motion | Special mention in presentation | ITS solutions for commercial transport in Berlin | SenStadt | |
| 10 | March 2011 | - | ITS International – Review | Special mention in paper | Promising opportunities | ERTICO | |
| 11 | 25/05/2011 | Gothenburg (SE) | Volvo Group Tech Show 2011 | Presentation | CityLog | Volvo | |
| 12 | 6-9/06/2011 | Lyon (FR) | ITS European Congress | Presentation | Shaping Systems and Services for a clean and efficient city logistics | Volvo | |
| 13 | 07/06/2011 | Mallorca (SP) | 7th International conference on City Logistics | Paper | Improving urban freight transport sustainability by carriers | TNO | |



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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 14 | 30/06/2011 | Vienna (AT) | IEEE Forum on Integrated and Sustainable transportation system | Paper and presentation | Integrated infomobility services for urban freight distribution | CRF | |
| 15 | 30/06/2011 | Vienna (AT) | IEEE Forum on Integrated and Sustainable transportation system | Paper and presentation | CityLog: the Modular BentoBox system | ICOOR | |
| 16 | 22-26 October 2012 | Vienna | ITS World Congress 2012 | Special session | Bringing energy efficiency into goods transport | Ertico<br>CRF<br>PTV | 22-26 October 2012 |
| 17 | 29-30 November 2012 | Perugia | Polis Conference 2012 | Presentation | Innovative solutions for urban freight transport: demonstration and viability results | TNO | 29-30 November 2012 |
| 18 | 23-26 April 2012 | Athens | TRA 2012 | Special session and paper | Innovative logistics model and containers solution for efficient last mile delivery | Ertico,<br>Fraunhofer<br>Volvo<br>CRF<br>ICOOR | 23-26 April 2012 |
| 19 | 8-10 October 2012 | Glasgow | ETC 2012 | Paper and speech | Innovative solutions for city logistics: demonstration and viability results | TNO | 8-10 October 2012 |
| 20 | 29/06/2011 - 1/07/2011 | Vienna | FITS 2011 | Paper and speech | Sustainability and efficiency of city logistics: the M-BBX (Modular BentoBox System) | ICOOR | 29/06/2011 - 01/07/2011 |
| 21 | 25 January 2012 | Berlin | Press event | Press conference | Bentobox trials – organized by SenStadt Berlin with the participation of Messenger, local team and authorities | SenStadt<br>Messenger<br>LNC<br>Fraunhofer | 25 January 2012 |
| 22 | 17 April 2012 | Lyon | Press initiative | Press release | Bentobox trials – PR for specialized press organized by local team | Volvo<br>Interface Transport<br>Grand Lyon | 17 April 2012 |
| 23 | 15 May 2012 | Lyon | Press initiative | Press release | CombiFret – PR for specialized press organized by Lyon team | Volvo<br>Interface Transport<br>Grand Lyon | 15 May 2012 |



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| | | | | | | | |
|---|---|---|---|---|---|---|---|
| 24 | 29 May 2012 | Turin | Press event | Press conference | Smart Logistics for Smart Cities: BentoBox, the "magic box" for deliveries – organized by Regione Piemonte and TNT with the participation of local team and authorities | TNT<br>Regione Piemonte<br>Comune di Torino<br>CRF | 29 May 2012 |
| 25 | 18 July 2012 | Turin | Press event | Press conference | Smart Logistics for Smart Cities: the "transhipment concept" for deliveries with low environmental impact – organized by Regione Piemonte, TNT and Iveco with the participation of local team and authorities | Iveco<br>TNT<br>Regione Piemonte<br>Comune di Torino<br>CRF | 18 July 2012 |
| 26 | 16 May 2012 | Turin | Workshop | Speech by Regione Piemonte | SAGE Safe and Green Road Vehicles | Regione Piemonte | 16 May 2012 |
| 27 | 1 March 2012 | Brussels | Workshop | Speech by Ertico | C-LIEGE project workshop | ERTICO | 1 March 2012 |
| 28 | 16 February 2012 | Turin | Workshop | Speech by CRF | DELIVER project workshop | CRF | 16 February 2012 |
| 29 | 20 February 2012 | Brussels | Workshop | Speeches by Ertico and CRF | CityMove-CityLog workshop | Citylog partners | 20 February 2012 |
| 30 | N.A | N.A | N.A | Video | Live video available from Regione Piemonte/TNT about the Bentobox concept shot during the Press Conference held @ Lingotto on June 2012 | TNT<br>Regione Piemonte | N.A |
| 31 | N.A | N.A | N.A | Video | Live video available from Regione Piemonte/TNT about the transhipment area concepts shot during the Press Conference held @ Bixio on July 2012 | TNT<br>Regione Piemonte | N.A |



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