CITYLOG Report Summary

Project ID: 233756
Funded under: FP7-TRANSPORT
Country: Italy

Executive summary:

The CITYLOG project aims to increase 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:

(1) Logistic-oriented telematics service are expected to give a decisive contribution to improve mission planning processes through an optimised routing and drivers' support systems. Towards the final customers, tracking and communication capabilities should be deployed to reduce the number of unsuccessful deliveries.

(2) 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 amongst the vehicles, especially in terms of load unit handling.

(3) Innovative load units are being carefully designed to operate, like the vehicles, in different missions. Therefore, a reconfigurable 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-synchronisation 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 groundbreaking CITYLOG solutions and technologies are of highest interest due to the increased energy efficiency and quality of services.

Project context and objectives:

The whole project aimed to integrate consolidated technologies to implement new tools and functionalities.

More in detail:

- 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 organising 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 information communication technology (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.
- 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.

- 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:

1. The four telematics services (pre-trip planner, dynamic navigation service, last-mile parcel tracking (LMPT), ad hoc map attributes) have been all demonstrated. Trials in Turin concluded end of September.
2. Loading / unloading functionalities extensively tested and fully validated both in the freight bus and in the distribution vans.
4. Three load units with extensible legs and a pack station with 6 removable trolleys (the BentoBox) experimented in all the three test sites.
5. A very accurate analysis of the results achieved on the field has been developed in work package (WP)6. It provides: (a) a structured analysis of the impacts and interrelationship of vehicle design concepts, structural urban development and urban transport policies for different time horizons; (b) a detailed understanding of suitable transport and logistics systems to reduce negative impacts in different urban operating environments; (c) business perspectives from manufacturers and service providers and impact assessment from local authorities.

Project results:

1. **Dynamic navigation server**
   A server with a route calculation system and a database with real-time traffic information.

2. **On-board telematic unit**
   An on-board navigation system (NAVI) with traditional map database with the following main features:
   (a) route calculation from two generic points;
   (b) route guidance, that is the capability to give manoeuvre instructions to the driver;
   (c) map visualisation with additional info (e.g. points of interest);
   (d) exchange of data with specific remote server: (i) destination address;
   (ii) simplified route (main waypoints that set up a sort of 'skeleton' of the route);
   (iii) estimated time of arrival.

3. **Delivery van**
   Iveco Daily vehicle dedicated to urban distribution able to load and unload an interoperable module (load unit) and equipped with a telematic unit and a pedestrian detection system.

4. **Freight bus**
   Renault Trucks Midlum 16-tonne vehicle dedicated to urban distribution able to load and unload 3 interoperable modules (load units) and equipped with vulnerable road user detection system.

5. **Static and dynamic map attributes**
   New map attributes for urban freight transport:
(a) environmental restricted zones;
(b) access restrictions;
(c) delivery time windows.

Main features:
(i) specification of delivery of new attributes (look-aside tables connected to basic map data);
(ii) definition in terms of the geographic data file (GDF) standard.

(6) Pre-trip planner
New planning functionality algorithm for freight bus and delivery vehicles.

(7) LMPT
The LMPT service is in charge of managing messages coming from the CITYLOG components. A message contained the estimation time of arrival (ETA) message and information on the parcel receiver (address and phone number) is elaborated by the LMPT application. An SMS is sent to the parcel receiver in order to communicate the time of arrival and the address confirmation.

(8) Bentobox
A pack-station which allows great flexibility in the delivery process by separating the courier driver activity and the receiver activity.

This way the courier can place a set of parcels in the BentoBox drawers; the Bentobox software keeps track of the parcel positions within the different drawers; customers can collect their parcels in an autonomous manner by being given username / password and entering the consignment number(s) in the touch screen.

(9) The CITYLOG transhipment concept implementation
The process of:
(a) carrying parcels from the depot to the city-centre via 3 load units over a large truck (called ‘freight bus’) instead of 3 separate delivery vans;
(b) loading such load units over 3 delivery vans available in a logistics platform called ‘transhipment’;
(c) exiting from this area for the standard delivery round (deliveries and new collections of parcels) of the day prior returning to the area;
(d) reloading the load units over the freight bus and returning to the depot in the evening.

Potential impact:

The dissemination activities tackled by the WPs and the single beneficiaries have matched the initial plan envisioned at the very beginning of the project and even extended the programmed activities. In this sense, these activities have satisfactorily followed the distribution of CITYLOG project and have met the target of reaching an extensive audience by reinforcing the traditional channels as well as making big emphasis on the up-trending social and online networks communication.

Regarding the exploitation plans, it is important to highlight that specific exploitation plans have been defined and detailed by each partner of the CITYLOG consortium and some of them are already in progress.

List of websites: http://www.city-log.eu/

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## Subjects

Transport

Last updated on 2013-10-01  
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