

FACTSHEET

SUSTAINABLE
URBAN
MOBILITY

Micro distribution of Freight

PART OF SMART SOLUTION 9: SUSTAINABLE DELIVERY



- Last mile delivery of goods is a new approach to reducing congestion, lowering emissions and diminishing delivery times in dense urban areas.
- The use of electric tricycles improves the delivery operations in pedestrian areas where conventional vehicles have limited access, while also reducing time, costs and mileage for conventional carriers.
- Sensors installed on the tricycles will monitor temperature, air pollutants and humidity, in order to quantify the benefits of the solution.

Barcelona

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What is the solution?

The solution consists of the installation of an urban consolidation centre (UCC) for the micro delivery of goods in a centrally located area of Barcelona.

The UCC provides the necessary infrastructure to hand over the delivery of parcels and packages of several carriers to a single last-mile operator, who then delivers the goods to their final destination.

With this solution, carriers avoid entering the limited access and pedestrianised areas of the city centre.

The last-mile operator performs deliveries using sustainable modes of transport such as electric tricycles, equipped with sensors providing environmental information such as CO₂ concentration, temperature, etc. linking it to their position through GPS technology.

How does it work?

Cities are facing increased congestion partly due to the increment in goods delivery through e-commerce. The pedestrianisation of city centres in most European cities makes urban deliveries even more difficult, increasing noise, pollution and competition for space in these areas.

This solution tries to change the model of urban deliveries in pedestrianised and/or highly populated areas where the

consolidation of goods can be a sustainable alternative.

The solution is a collaborative scheme which is designed to benefit all parties. The last-mile operator that performs shipments to their final destination should be a market neutral company.

This is needed to allow all carriers (such as DHL, TNT, SEUR, etc) to use its services without prejudice. Carriers bring their parcels and packages to the consolidation centre and the last-mile operator forwards the goods using tricycles to their final destination.

The fee paid to the last-mile operator for its services should be competitive for carriers since it needs to provide a cheaper alternative than delivering the items themselves. The revenues of the last-mile operator need to be sufficient to cover the costs of operating the microdistribution centre, including the tricycles, employees and the cost of renting the space.

The business model is profitable if the demand for deliveries is high enough to cover costs, so these initiatives need to be placed in densely populated areas and the support of the city council plays also a key role.

This measure will also take advantage of having tricycles moving around dense areas by installing a multi-sensory wireless device. The batteries of the tricycle will not only be used to supply

power, but also to monitor several parameters such as temperature, luminosity, humidity, noise level, air pollution, and the position at which the measurements are taken, so that it will be possible to map these parameters and monitor their variability during the full two years of the pilot project.

This monitoring solution will serve to:

- Explore the feasibility of tracking environmental parameters in a mobile scenario using low-cost sensors to complement the information from the static environmental and pollution stations installed in specific places in the city.
- Evaluate the environmental impact of the microdistribution of freight through the comparison of the pollution within the delivery area and outside it. Provide real-time tracking information on the tricycles' journey, which can help optimise delivery routes and to improve the service and to make it more competitive for the last-mile operator.

The sensor in the tricycles will support mobile (GPRS/UMTS) and WLAN communications to transmit the monitored information to a Smart City platform, where it will be processed and made available for the city services.

Expected Impact

The main positive impacts that this solution will provide are the following:

- Reduction in the public space used by trucks and vans during delivery times in the area of operation. Delivery times are very restricted in the city centre and during this time public pedestrianised space is used by trucks and vans disturbing citizens during their walk to work. The shift of some of these deliveries to sustainable modes of transport will reduce this type of vehicles in public spaces.
- Reduction of noise levels and pollution in the area.

The reduction of van and truck mileage in the city will also lead to a reduction in CO2 emissions and other pollutants.

The use of this service will also increase the time frame to perform deliveries, since tricycles have no limitations to their access to the city centre.

Provide parameters to help operators track and improve their delivery service (routes, stops, delivery durations ...).