HOST

Human Oriented Sustainable Transport means

**Funding:** European (6th RTD Framework Programme)

**Duration:** Jan 2005 - Feb 2009

**Status:** Complete with results

**Total project cost:** £3,137,399

**EU contribution:** €2,000,000

**Call for proposal:** FP6-2003-TRANSPORT-3

**CORDIS RCN:** 74797

**Background & policy context:**

Transport is one of the most, if not the most relevant problem faced by today’s European cities, leading to problems of congestion, energy consumption, pollutant emissions, loss of green belts, occupancy of public spaces and health and safety.

Although passenger transport is usually perceived as the main cause of mobility-related problems, recent studies have proved that freight transport impact is also an issue: 30-40% of energy consumed for transport in cities is due to freight transport. Recent attempts to have a cleaner mobility based on low polluting vehicles, for either research or demonstration purposes, have been successful in demonstrating that cleaner vehicles are technically feasible. Yet they have failed to launch a real market for non-polluting vehicles. Low impact buses have been tested in research projects and proved to be much less polluting than conventional ones, but have not been commonly adopted by city public transport companies because of their higher price.

To lower the impact of mobility on cities, cleaner vehicles are not enough: an integrated passenger and freight strategy must be adopted. Cleaner vehicles must be specifically designed for the purpose and proven to be better than conventional ones in any aspect, including costs.

**Objectives:**

The HOST objectives were:

- to subvert the vehicle design process - instead of designing the vehicle on the basis of the available technology, HOST aims to start it from the real user needs;

- to design a multipurpose vehicle which can be used for several tasks over a period of 24 hours, thus reducing the investment costs for an environmentally friendly vehicle;

- to develop a modular powertrain with interchangeable power generation units so as to minimise the impacts of the vehicle circulation according to the task it is supplying;

- to integrate a drive-by-wire steering system;

- to design a modular chassis capable of changing length according to the capacity (in terms of volume of freight or number of passengers) necessary to its tasks;

- to design different vehicle cabins which can be easily and automatically switched for passenger and freight transport;

- to integrate in the vehicle chassis an advanced horizontal transshipment device capable of transferring pallets of freight as well as facilitating the cabin interchange;

- to manufacture the HOST prototype and to test it in order to prove the concept.
Fulfilling all these objectives would lead to the design and construction of a vehicle which could economically supply freight and passenger services in cities, and allow, if adopted in combination with some accompanying measures, city mobility to become more sustainable.

**Methodology:**

HOST proposed to use one modular vehicle platform with four different cabins to accomplish four different transport tasks. To verify that such a concept was feasible and to dimension the low environmental impact of such a vehicle, an acquisition campaign was set up in three different European cities: Oeiras (PT), Rome (IT) and Stockholm (SE).

The first act of the user needs analysis (UNA) provided the working methodology to be followed in data collection and analyses, aiming to introduce a new method to design vehicles: instead of starting from the technology and looking for a proper application of it, HOST investigated a number of services and defined the needs of each of them. The UNA deals with the needs identification, subdivided by user, market and driving needs. It concerns the definition of the vehicle technical specifications, capable of satisfying simultaneously all the needs and the identification of the potential market for such a vehicle. The three cities were asked to choose at least two (one freight and one passenger, and one night-time and one daytime) from among the four services identified since the proposal:

- night-time collective taxi;
- daytime car sharing services;
- daytime freight collection and distribution;
- night-time garbage collection.

The technical specifications that have been defined constitute the basis for the design and construction phases.

**Parent Programmes:**

FP6-SUSTDEV-2 - Sustainable Surface Transport

**Institute type:** Public institution

**Institute name:** European Commission

**Funding type:** Public (EU)

**Lead Organisation:**

Cirps (Interuniversity Research Centre For Sustainable Development)-University Of Rome 'la Sapienza'

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**EU Contribution:** €0

**Partner Organisations:**

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**EU Contribution:** €0
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Key Results:

The progress made so far was mainly related to the definition of the vehicle's technical specifications, representing the guiding input for the whole design phase (enclosing both chassis and powertrain), which is now completed. The main achievements of the initial study were the definition of the HOST prototype as a whole, in terms of dimension and bulk of the platform (chassis and suspension) as well as the various boxes constituting the powertrain and the human machine interface.

The results obtained confirmed that a common powertrain could accomplish the four tasks selected by adding modules for extra energy storage or an auxiliary power unit. A particular reference was reserved for the transshipment system where the HOST concept had to carry a device that enables the prototype to transship the cabin and/or body vehicle as an intermodal transport unit in a practical way and therefore let the vehicle enter into logistic process flows.

Fulfilling all these objectives would lead to the design and construction of a vehicle which could economically supply freight and passenger services in cities and allow, if adopted in combination with some accompanying measures, city mobility to become more sustainable.

Documents:

- Project Presentation (Project presentation)

STRIA Roadmaps: Smart mobility and services

Transport mode: Road transport

Transport sectors: Passenger transport, Freight transport

Transport policies: Digitalisation, Decarbonisation, Societal/Economic issues

Geo-spatial type: Urban