Computer Technology Institute & Press “Diophantus” (CTI)

Centre for Research & Technology (CERTH)

Swiss Federal Institute of Technology (ETHZ)

Karlsruhe Institute of Technology (KIT)

TomTom International B.V. (TomTom)

the mind of movement
PTV Planung Transport Verkehr AG (PTV)

About eCOMPASS

Project acronym: eCOMPASS

Project type:
Collaborative Project, Small or medium scale focused research project (STREP)

Programme:
7th EU Framework Programme

Funding:
European Commission, DG CONNECT (Communications Networks, Content and Technology Directorate General), Unit H.5 - Smart Cities & Sustainability

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1 Nov 2011

End date:
31 Oct 2014

Project website:
http://www.ecompass-project.eu/

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eCO-friendly urban Multi-modal route PlAnning Services for mobile uSers

eCOMPASS addresses the high environmental impact of urban mobility by introducing new mobility concepts and establishing a methodological framework for route planning optimization.

eCOMPASS aims at delivering a comprehensive set of tools and services for end-users to enable eco-awareness in urban multi-modal transport.

SEVENTH FRAMEWORK PROGRAMME

European Commission

http://www.ecompass-project.eu/

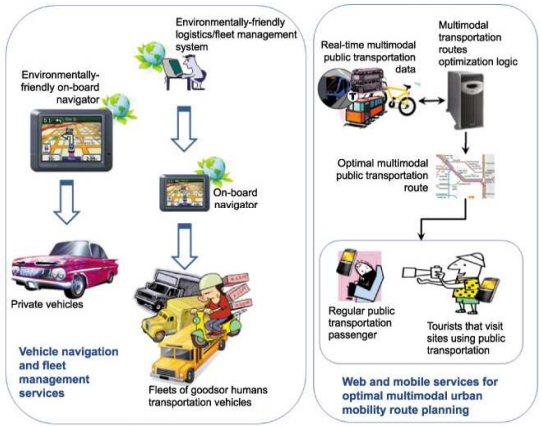
Objectives

eCOMPASS addresses high-demand urban mobility aspects, primarily aiming at reducing the environmental footprint related with the mobility of people and goods in the urban space. The project primarily investigates two mobility scenarios with significant contribution to urban CO_2 emissions and energy consumption:

- mobility of humans using private vehicles;
- mobility of goods through fleets of vehicles carrying light or heavy freights.

The former is addressed through intelligent on-board navigation systems that seamlessly provide 'green' route recommendations, i.e., those with minimal environmental footprint and fuel consumption. The latter is dealt with the development of a logistics and fleet management system used by human administrators in conjunction with on-board systems mounted on vehicles and used by drivers.

In parallel, eCOMPASS aims at developing advanced web and mobile services that will facilitate the use of complex urban public transportation networks, thereby making 'green' human transports more appealing. Those services are aimed at city residents that request origin-destination route planning and tourists that receive personalized recommendations for daily sightseeing itineraries (using public means of transportation) through a subset of city points of interest.



Approach

eCOMPASS identifies four types of stakeholders: private vehicle drivers, freight transportation and logistics companies, passengers of public transportation services, and providers of real-time traffic and public transportation data. eCOMPASS combines eco-aware navigation and fleet management as well as context-aware personalized public transportation route planning services to help people adopt more eco-friendly ways of traveling in urban environments:

- *Eco-awareness*: eCOMPASS car navigators coach drivers providing them with incentives for sustainable driving behavior. Eco-awareness is also promoted through enabling route planning that takes into account predicted traffic conditions and also recommending transfers to public transportation services, whenever feasible. Further, freight vehicle journeys are scheduled so as to evenly distribute the overall traffic load and therefore reduce CO_2 emissions.
- *Context-aware and personalized*: web and mobile services providing multi-modal public transportation route planning, taking into account contextual information (such as location and time) as well as various user constraints and optimization criteria (e.g., time, ticket cost, number of transfers among services, minimum use of particular transport modes like walking, etc).

Description of Work

eCOMPASS runs for 36 months. The planning involves five main activities:

- User requirements and system architecture specification (M1-M12).
- Design, development and assessment of routing optimization algorithms (M1-M36).
- Development of the Content Gateway Module that enables interoperability between the eCOMPASS framework and external data sources (M1-M20).
- Applications development and integration (M21-M28).
- Pilots tests in the City of Berlin (M4-M36).

Use Cases & Pilots

The eCOMPASS services will be evaluated and validated on specific usage scenarios, designed and specified in detail during the "User requirements and system architecture specification" activity. The corresponding pilot tests will be conducted in the City of Berlin using road infrastructure elements, vehicle fleets, as well as car traffic data and public transportation data.

Expected results

The expected outcomes of eCOMPASS are:

- A private vehicle navigation system seamlessly offering visualization and narration of recommended vehicle routes through familiar on-board navigation devices.
- A truly eco-aware fleet/logistics management system towards automating the logistics management and route planning of vehicle fleets.
- A multi-objective, multi-modal public transportation route planning service provided through web and mobile applications.
- Solid algorithmic foundations for the proposed route planning services.
- Evaluation methodologies and impact analysis based on the pilot tests.
- Scientific publications, contributions to standardization bodies, and new transport-related services.