



ETP 2010 Conference

Urban Mobility

the door-to-door strategy

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URBAN MOBILITY: The aim

- **increase the door-to-door mobility** of people in urban areas, by means of integrated multimodal transport systems based on new vehicle, infrastructure and service concepts.
- provide full scale **information and data communication** capabilities for the operation of the system
- provide (multimodal) **information provision to all trip makers** by means of integrated, travel information systems and modern ICT equipment (handhelds, mobile phones and PDAs).
- guarantee a **safe and effective accessibility and usability** of the urban transport infrastructure for all transport modes/systems.
- Promote the mobility of **Mobility Impaired (MI) users** (mainly through ICT based cooperative systems e.g. electronic guiding/navigation systems for blind people, and appropriate infrastructure e.g. Access for wheel users to buses and steps, etc).

Elements of Door-to-door urban mobility



TRAVEL SYSTEM INFORMATION

Focus on public transport and multimodal trips

TRIP MAKING / PLANNING CAPABILITY

*✓ focus on public transport,
✓ multimodal*



Information

- ✓ Pre-trip
- ✓ On-trip (real time)
- ✓ parking

Network

- Stations and hubs
- Multimodal terminals
- Off street parking
- PT priority, green, traffic control system based on real-time traffic events
- Increased energy and environmental sensitivities

Mobility Impaired users

“ACCESSIBLE” URBAN TRANSPORT

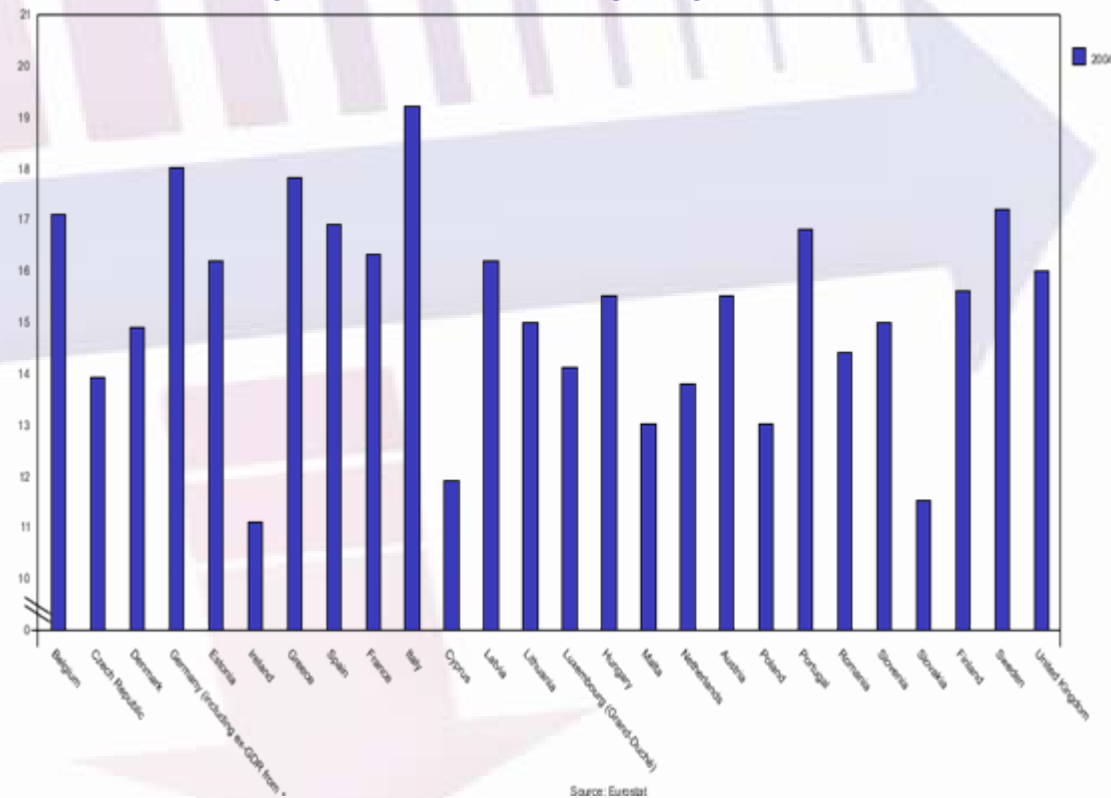
- ✓ “Accessible” infrastructure,
- ✓ “Accessible” Information
- ✓ Elderly-friendly route calculation



The need of MI accessible transport in Europe in numbers ...

- *Travelers with mobility impairments, 13% of the European population, i.e. 63 million people*
- *Elderly: 75 million in Europe by 2020, 88 million in 2030!*
- *People with temporary mobility restrictions incl. pregnant women, people with trolleys, etc.*
- *Total population with mobility problems: 35-40%*

Percentage of population ageing 65+ in Europe



Key urban mobility research initiatives and themes

(based on the:

- ✓ ***priorities of the EU's Action Plan***
- ✓ ***priorities of the research community (as expressed in the Lyon declaration)***
- ✓ ***suggestions of ECTRI's Thematic Working Group on urban mobility)***

A. EU's urban mobility research

- ✓ ***based on priorities of the EU's UM Action Plan;***
- ✓ ***mainly “technology” oriented themes so far;***
- ✓ ***Need for more mobility management aspects,
and door-to-door all modes approach;***

EU's urban mobility Action Plan

Key components:

Energy and environment

Public Information

Data and Statistics

B. National programmes and JPIs

- ✓ ***Many National initiatives***
- ✓ ***JPIs too. Example the Austrian-Dutch JPI proposal “Urban Europe: Global Challenges – Local Solutions”*** based on the proposals ‘Cities of the Future’ (AT) and “Transport systems 2025” (NL).

Coordinated by

- Austrian Ministry of Science and Research
- Austrian Ministry of Transport, Innovation and Technology
- Dutch Ministry of Transport, Public Work and Water Management

C. European Associations and other stakeholders

- ✓ ***Joint declaration of Lyon (Dec 2008)***
- ✓ ***ECTRI's recommendations – based on its
Thematic Working Group on urban mobility***
- ✓ ***Other***

ERTRAC Vision 2020 & URBAN MOBILITY Group 2030 and beyond

Key drivers :

climate change

- o regulation

energy supply and cost

- o managing mobility demand
- o higher transport network efficiency

demographic change

- o aging population
- o increasing immigration

The Lyon Declaration

Signed by the Presidents of :

- ECTRI
- EURNEX
- FEHRL
- FERSI
- HUMANIST
- ISN
- NEARCTIS

on the 11th of December 2008

The (Lyon) Vision

The signed parties:

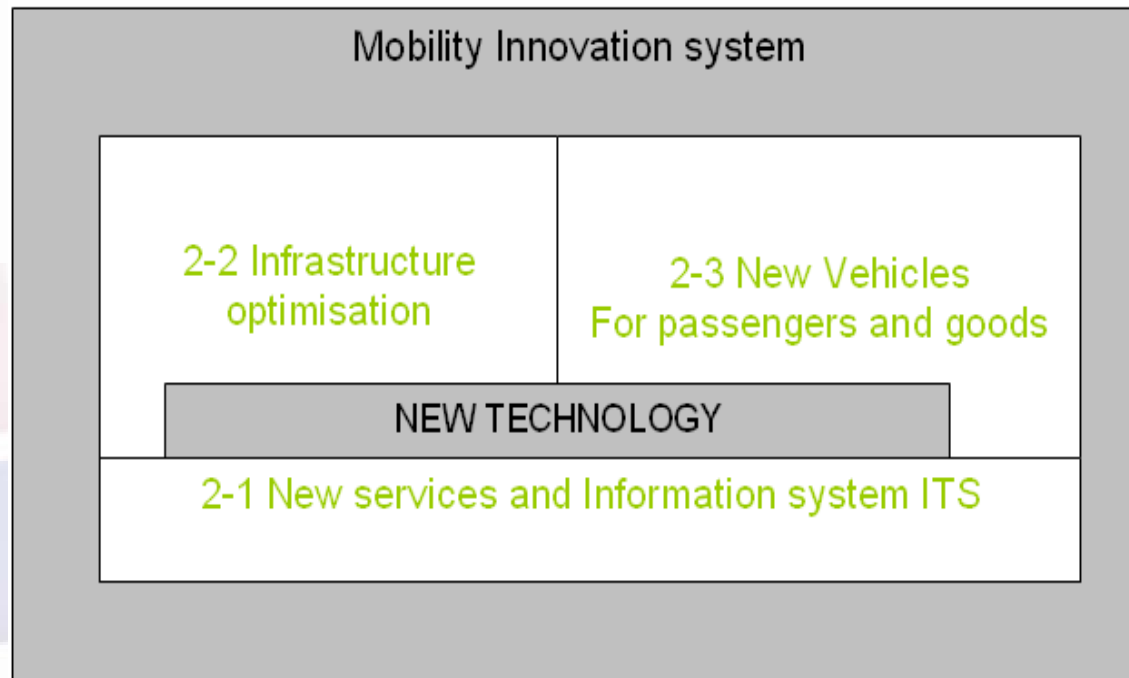
- Welcomed the ERA vision 2020 and committed to contribute to its implementation;
- Will follow the next steps of the Ljubljana process and adapt it to the specific circumstances of their research community;
- Consider surface transport related research and expertise to be of crucial relevance;
- Will address the necessity of further developing the dialogue between research and society, specifically the societal relevance of scientific expertise and ethical and deontological rules;
- Committed to develop world leading scientific excellence in Europe through coordination and cooperative actions at European level.

URBAMOVE- ECTRI's Thematic Group on Urban mobility

Six research themes proposed:

- ***Theme 1: Mobility knowledge and management (individual and collective)***
- ***Theme 2: Reinforcing Innovation in urban system of transport***
- ***Theme 3: Towards more integration of urban and transport planning***
- ***Theme 4: Social aspects***
- ***Theme 5: economic Aspects***
- ***Theme 6: environmental improvement***

Bringing Innovation in urban and suburban transport (infrastructure, vehicles, ITS)



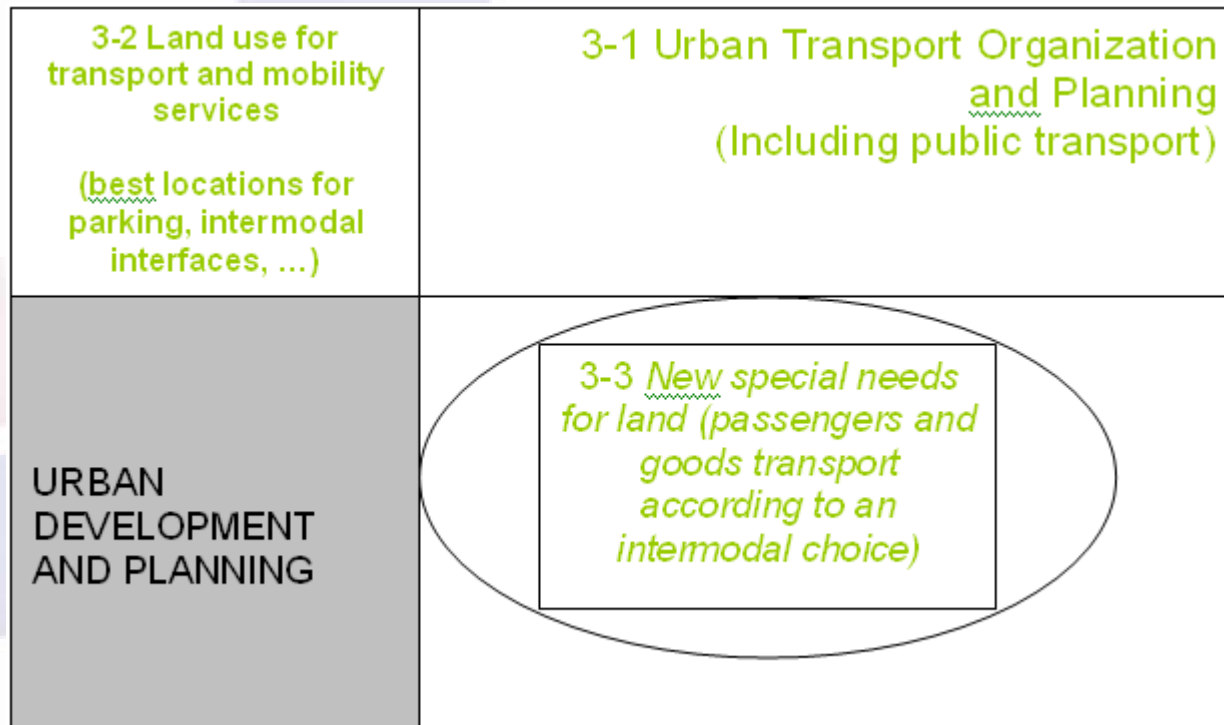
- New services and information systems.
- New ideas on infrastructure optimization as well as new vehicles.
- New mobility system concepts and integration.

Mobility management and user info schemes (persons and goods)

KN OWLEDGE	MANAGEMENT
1-1 Individual behaviour and mobility demand	
1-2 New mobility concepts and solutions	
1-3 Network optimization (intermodality, interoperability)	
1-4 Urban mobility institutional strategies	

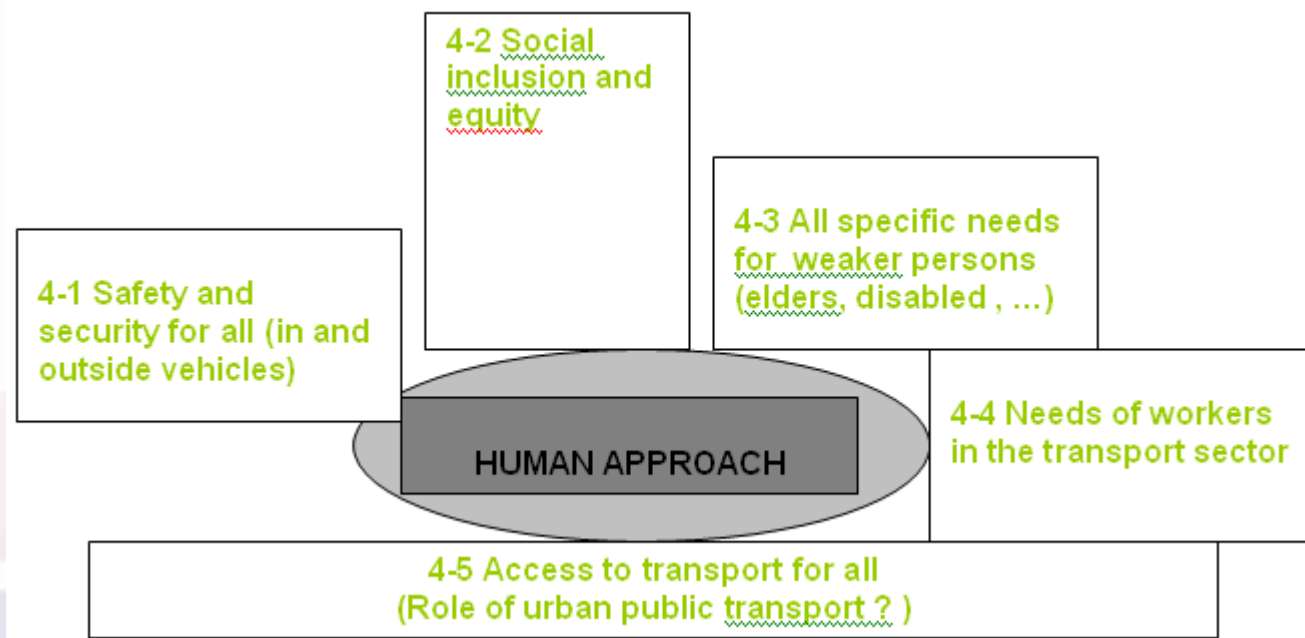
- improvement of knowledge on mobility management
- Optimal methods for mobility info provision
- Mobility concepts and optimisation measures

Integration urban and transport planning (including urban development and land use)



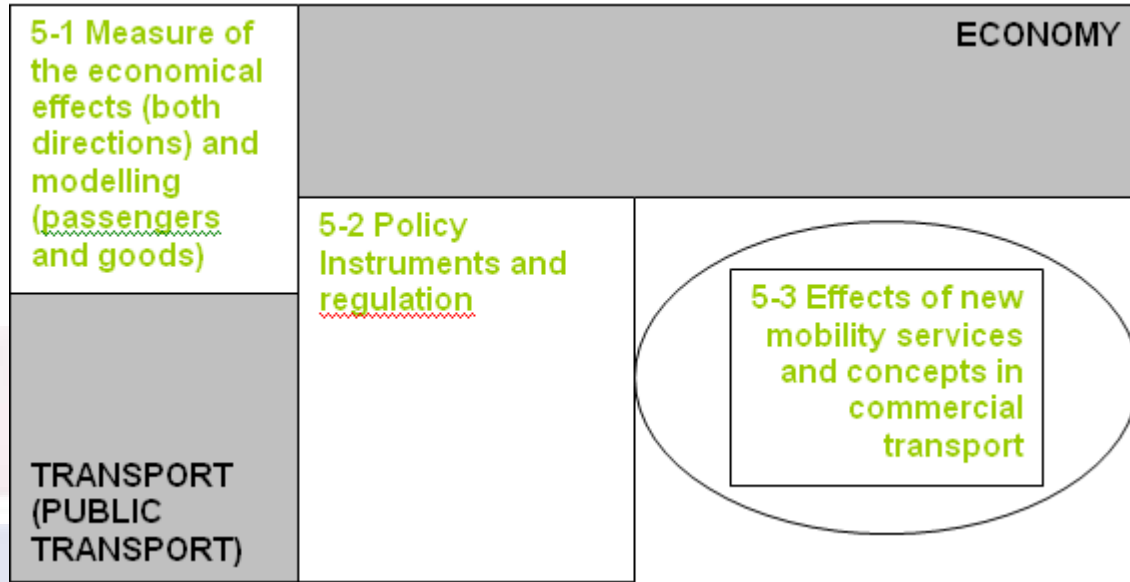
- Urban development, planning and organization concepts and planning tools in relation to urban mobility aims and strategies.
- Urban mobility needs impacts on multipurpose land uses.

Social Aspects



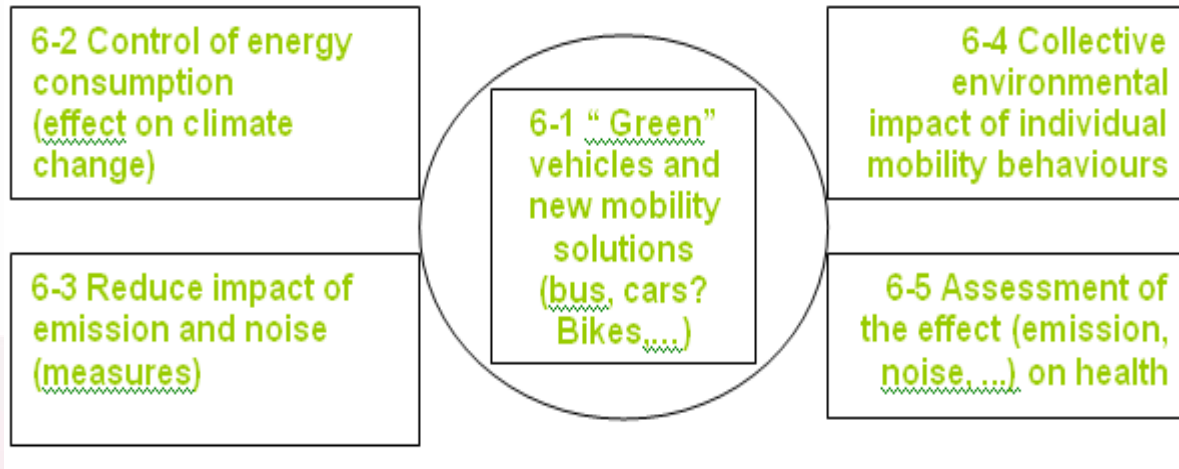
- Safety and security aspects.
- Social inclusion and equity.
- “Accessibility” aspects - accessibility of MI users.
- Taking into account the user needs.
- Social behaviour and acceptance issues

Economic Aspects



- Impact on urban economies.
- Policy instruments and regulation (Cost - benefit - subsidisation of Public transport).
- Economic modelling and forecasting

Environmental - Energy aspects



- Energy efficient vehicles
- New energy sources and electrification issues
- Reduction of carbon emissions.
- Reduction of noise as well as assessment of its effect on health.
- Green mobility concepts and solutions.



Current research examples on Urban Mobility

Intelligent Urban Mobility Management and Traffic Control Systems based on Urban Environment Quality constraints

Intelligent Urban Mobility Management and Traffic Control Systems to:


- ✓ Induce environmental awareness to the citizens
- ✓ Strengthen the role of the Public Transport System
- ✓ Reduce the negative impacts on air pollutants through advanced environmental traffic management
- ✓ Better planning of urban trips based on the concept of environmentally friendly routes
- ✓ Train citizens to adopt urban mobility culture

(Currently in progress of implementation in the Municipality of Thessaloniki Greece.)

Transport Planning and traffic information systems in cities

Design, demonstrate and validate open platforms which will be able to:

- support the transport operations, planning and a wide range of traveller information services;
- deliver dynamic information independent from the language to improve their provision of transport information and traveller services through integrated traffic data collection and management;
- deliver a solution that enables cross-modal journey planning,
- dynamic route guidance, effective payment access and improved personal mobility, etc.;
- provide standardised interfaces to connect a variety of entities needed for the mobility services.

 Currently the VIAJEO project is working in this field. Demos in: Athens, Sao Paulo, Beijing and Shanghai.

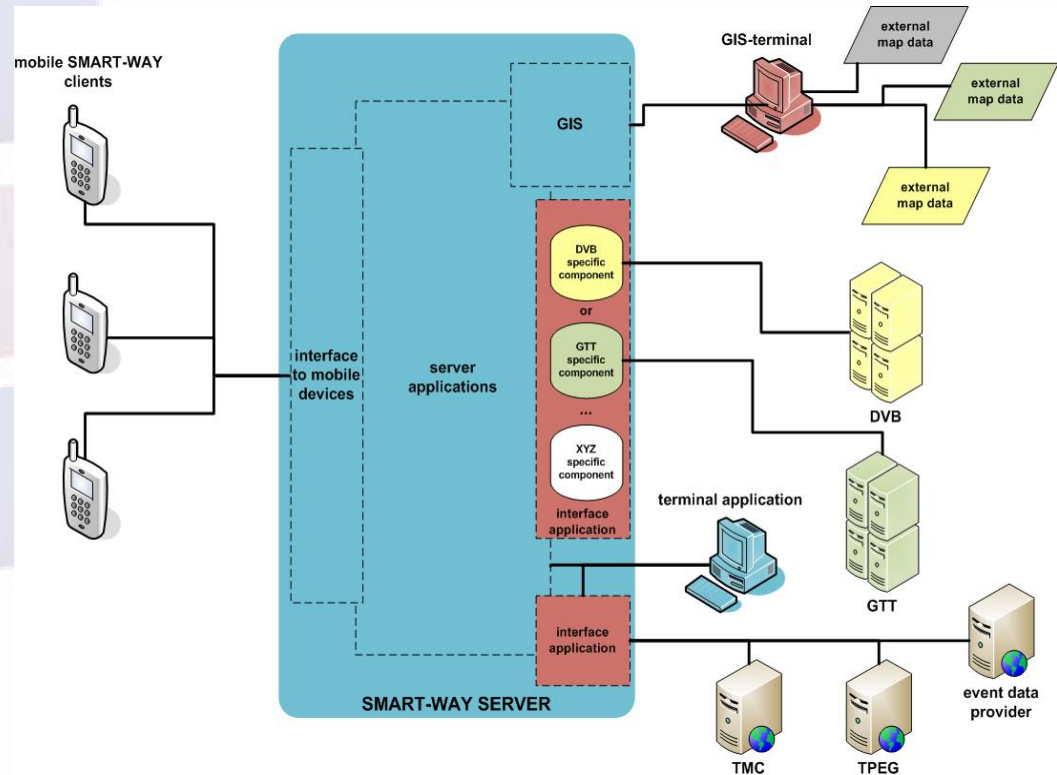
Galileo based navigation in public transport systems with passenger interaction (1/2)

- Create a mobile passenger navigation system that will allow the passenger to just jump into the first tram or bus available and be guided to the desired destination via mobile phone through the public transport network
- (Currently, SMART-WAY project):
 - ✓ Evaluate the proposed system based on demonstrators in Torino and Dresden till the end of 2010.
 - ✓ Define a viable business model for the exploitation of SMART-WAY

Galileo based navigation in public transport systems with passenger interaction (2/2)

Definition of a universal concept:

- ✓ Background system (server applications)
- ✓ Management application
- ✓ GIS
- ✓ Interfaces to services
 - ✓ GIS
 - ✓ Timetable information
 - ✓ Mobile Devices
 - ✓ Terminal application
- ✓ Data structures
- ✓ Modularisation



Infomobility services:

- ❑ Web services for geo-coding, routing and mapping
- ❑ Car and pedestrian routing services
- ❑ Intermodal public transport (PT) routing : domestic flights, railway and maritime transportation
- ❑ Point of interest (POI) search for urban areas throughout Europe
- ❑ Airport information and in-door navigation
- ❑ Dynamic flight information arriving /departing to / from Airports
- ❑ Booking for hotels, flights and car rentals



Personalized infomobility services

1. Personalized route provision (multimodal planning)

Dynamic parameters:

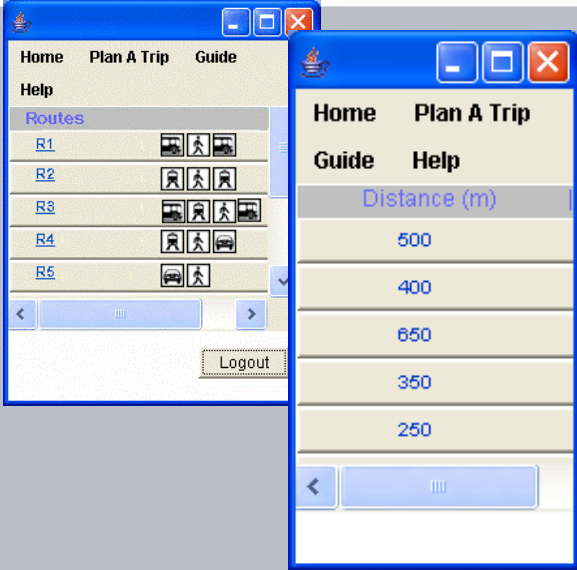
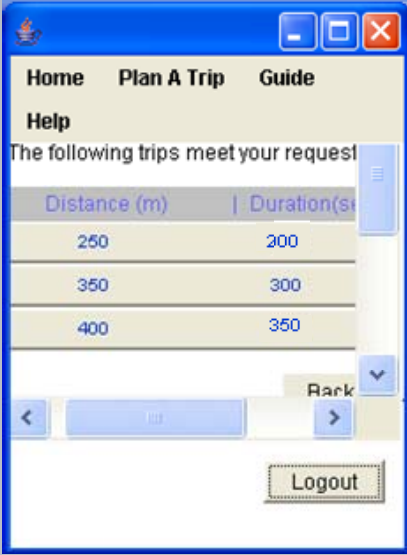

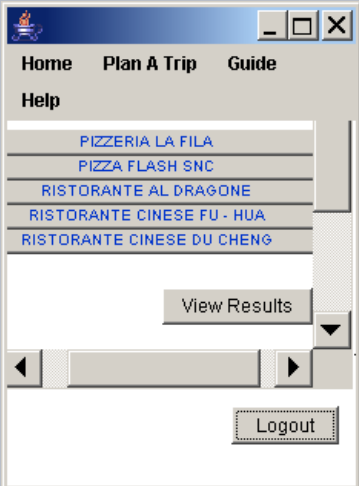
- Acceptable walking distance (between transportation means)
- Acceptable transportation means
- Number of interchanges
- Fastest route
- Shortest route
- Cheapest route
- Accessible route
- Picturesque route

2. Personalized Points of Interest provision

Dynamic parameters:

- POI category (POI type, e.g. hotel, museum, etc.)
- POI sub-category (e.g. hotel class, type of museum, etc.)

Personalized infomobility service

	Before personalisation	After personalisation								
Routes		<p>max. walking distance 400m</p>  <table border="1"> <thead> <tr> <th>Distance (m)</th> <th>Duration (s)</th> </tr> </thead> <tbody> <tr> <td>250</td> <td>200</td> </tr> <tr> <td>350</td> <td>300</td> </tr> <tr> <td>400</td> <td>350</td> </tr> </tbody> </table>	Distance (m)	Duration (s)	250	200	350	300	400	350
Distance (m)	Duration (s)									
250	200									
350	300									
400	350									
POIs (restaurant)										

Accessible transportation

Mobile phone and PDA services with accessible POIs and pedestrian routes information

➤ Examined and assessed accessibility info on POIs

- Athens and International Airport: 234 POIs
- Thessaloniki: 111 POIs

➤ Examined and assessed pedestrian routes info among POIs

- Public transport (metro, bus, train, etc.)
- Stations (bus, taxi, etc.)

➤ Accessible pedestrian routing

INNOVATION: Personalised, accessible and context-related info, base don user profile and multi-services connection by semantic web



Accessible transportation

Mobile phone and PDA transportation service

- Route guidance and navigation: geocoding and GIS map data for drivers and (accessible) navigation for pedestrians (Athens & Thessaloniki)
- Urban public transport journey planner for Greece, incl. metro & buses
- Routes and time schedule for flights, trains, ships
- Departure/arrival times for bus and metro

INNOVATION:
Integrated and
personalised info
presented in any
devices, incl. small
mobile phones



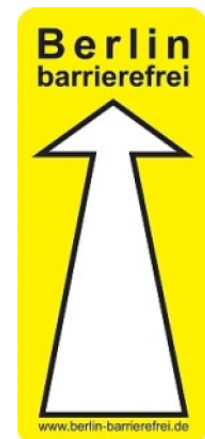
Accessible transportation

- Tram „Flexity Berlin“ - continuous handholds



- Integrated urban application: Berlin on the way to a city without barriers

BERLIN FOR
HANDICAPPED



Accessible transportation

➤ Navigation inside transport hubs without map (by laser scanner and camera)

➤ Braille info on handrails in PT



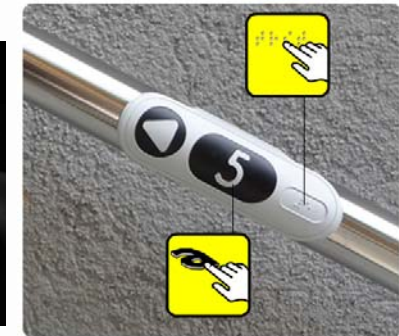
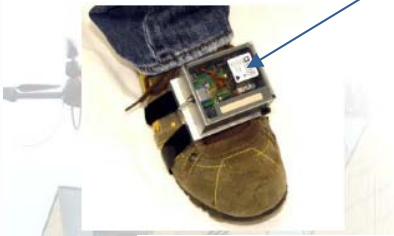
Laser

Camera

NavBoard



Smart Phone





THANK YOU !