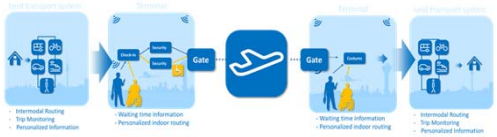
USE-iT WP2 – Intermodality

CONCEPT 1: Coordinated travel process



Door to Door Transport (Dora Project, EU)

Mobility as a Service (MaaS)
Buying mobility services based on consumer needs instead of buying the means of transport. Via MaaS users can buy mobility services that are provided by the same or different operators by using just one platform and a single payment.
- **Benefits**

MasS applications have a chance to provide one platform encompassing interfaces with multi modes and enabling end user information from one location in real time. Opportunity for smartphone platform to support door-to-door mobility in public transport (real time information access and offer optimal trip advice based on personalized data).
- **Barriers**

Complexity of using a variety of transport modes (i.e. different payment methods, subscriptions, different mobile applications for each operator.
Interoperability and cooperation between different service providers across modes is needed.

Synchromodal IT, NL

Synchromodality
Concept which strives to increase the share of rail and inland waterway transport. Switching smoothly between these two modes and road transport takes place in near real-time, which is made possible since shippers book their transport service "mode-free", i.e., without any need of specifying their transport mode in advance.
- **Benefits**

Moving goods in a flexible and resource-efficient way.
Data pipelines combining information from different stakeholders (port data, vessel data, terminal data) available to service providers and users.
Customer preferences, busy routes and available resources of hubs and transport modes are used in planning process to increase user benefits.
- **Barriers**

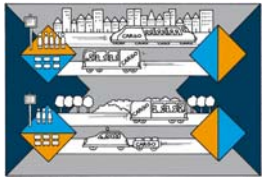
Issues dealing with data security and data protection.
Long-term and automated planning need to take into account the crucial role data and information share.

Oyster, UK

Smart Ticketing
Provide customers with a single ticket for the entire journey as well as travel information capable of delivering robust, relevant, complete and unbiased travel choice before and during a journey.
- **Benefits**

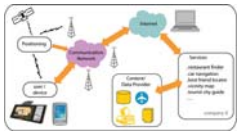
The same which ticket combines mainline trains, regional, local and commuter trains, express buses, regional buses, city and local buses, metro, trams and ferries (multiple modes). Travelers only face short walking distances but moderately long times for transfers between rail, bus and boat.
- **Barriers**

Synchronization of timetables is a vital aspect of multimodal integration in transport systems but is very difficult to achieve.
Lack of cooperation among operators mainly due to different ticketing systems.



cargohitching.wordpress.com

CONCEPT 2: Advanced Traveller Information



Location Based Services

Location Based Services
LBSs are information services accessible with mobile devices through the mobile network and utilizing the ability to make use of the location of the mobile device.
- **Benefits**

Service providers offer calculation of a position, finding a route, searching yellow pages with respect to position or searching specific information on objects of user interest
Multimodal application: rail interaction with Galileo and ERTMS for road interaction with V2X and ATIS systems
- **Barriers**

Different Levels of accuracy required for various services
Privacy issues
Need for interoperability standards

DMS
Intelligent signing and messaging integrated/coordinated traffic signs (DMS, VMS, LCD Panels, display boards, smart personal devices) and technologies associated with it.
- **Benefits**

Contributing to greater safety of transport system (weather and roadway maintenance information especially).
Chance for intermodal and international cooperation resulting in better and more efficient movement of people and goods.
Barriers
Limited text to be displayed on DMS.
Interoperability: lack of uniform data formats and procedures for intermodal customer interface architecture.
Big data management.

Truck specific inter-modal, cross-border information system
Used primarily as a trip planning tool by fleet control centers.
- **Benefits**

Supports the policy of shifting goods from road to rail.
Inter-modal routing tailored to the needs of HGV traffic, indicating alternative for rail travel, suitable average speeds, night driving bans and waiting times at customs.
- **Barriers**

Data sharing, system and service resources with both public and private information services.

Multimodal Route Planners
Real-time trip information in smart devices or navigating systems that will change the suggested route in case of road congestion or delayed public transport.
- **Benefits**

Travel planners address the entire travel route by integrating rail, road and air connections from city to city, finds and ranks the best possible travel routes, allowing users to sort them according to their priorities such as price, travel time, CO2 emissions, energy consumption.
- **Barriers**

Availability of real-time data for travel planning
Big data issues (storage, processing)
Lack of standardization for real-time information, in order to achieve the interoperability of numerous databases

DMS, Ontario, Canada

Advanced Traveller Information Systems (ATIS)
Includes single mode, multi-modal and inter-modal transportation information on both shared transport (public transport , mass transit, car pooling and other sharing and matching services) and on current information on network status, traffic conditions, road and weather information, prevailing traffic regulations and tolls.
- **Benefits**

Informative role, both informing the user about the journey about which they have enquired and about alternative routes.
Increase safety by providing real time road information
- **Barriers**

Insufficient access to multi-modal and traffic information.
Insufficient availability of multi-modal traffic and travel data of good quality.
Liability and interoperability issues

Truckinfo, Switzerland

CONCEPT 3: Active Infrastructure across all modes

Park and Ride
Parking lots, sometimes underground equipped with electronic parking system (automated, provides number of free spots and directions of driving), often have bike racks.
- **Benefits**

Smart management of parking space, encouraging use of public transport such as rail, train, can be applicable to aviation.
Reduced energy consumption through diverting trips from single or low-occupancy vehicles to high-occupancy vehicles or other energy efficient modes.
Increased transit patronage by facilitating cost-effective line-haul transit service to locations of higher trip density.
User friendly parking lots that allow parking bikes add up to customer satisfaction, users can use multiple modes of transport form door-to door.
- **Barriers**

Potential for transferring traffic and pollution problems from one location to another. Traffic and air.
Lack of available space for parking lots, high investment costs for construction of underground parking spots.

Parking at Delft Central Station, NL

Siemens E-Highway, CA, USA

Electromobility, e-highway
Mechanism that converts kinetic energy from braking activities into an energy supply that can be used or stored.
- **Benefits**

Improved local air quality, fuel diversification into renewable sources to reduce dependency on fossil fuels, and increased energy efficiency, which lowers operating costs.
A network operation center will manage real-time communication between the electric vehicles and the charging network. This system will provide additional services such as informing where available charge spots and battery switch stations are located and optimizing resource allocation as well as the charging process itself to fulfill drivers' needs.
Chance to develop a new on-board information and communication platform which constantly monitors the charging level of the battery. This in-car platform will also determine the energy demand for the planned route, taking into account traffic conditions and other parameters.
- **Barriers**

The main obstacle to electrified road freight has been the size and weight required for on-board storage of electrical energy.

Personal Rapid Transit (PRT) - MISTER
Taxi-like service for public and cargo transportation. It is driven by demand and individual travel requirements. It is suspended, therefore more stable, able to climb at high angles but always leveled, externally powered, thus lighter (no batteries required).
- **Benefits**

Sustainable: Major reduction of air pollution (minimal electric power with future solar power option), minimal environmental impact.
Higher throughput (better than buses, light rail/tramways or even metros - for the comparable development cost).
Unlike surface level light rail or bus rapid transit, it will not interfere with the operation of traffic junctions or other road users or pedestrians.
No collisions - maximum safety.
Reduction in remaining road vehicles congestions, accidents, traffic jam.
- **Barriers**

Permits and regulations to built and operate it (civil engineering, mechanical, electrical regulations, railway and environmental regulations).
Lack of real estate in tight, high density old city centers for the rail infrastructure support.

PRT – MISTER, Poland

Domain: Technologies | Infrastructure | Governance | Customer

Mode: Road | Rail | Water | Air

Left hand side – current application
Right hand side – Potential for future application