



# **Strategic Research Agenda on Urban Mobility “URBAMOVE”**

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The ECTRI Working Group on Urban Mobility has been created on November 12<sup>th</sup>, 2004 at the Crowthorne' Assembly of members further to INRETS initiative, with the following aims:

- To define a working programme in this area for actions at short, medium and long terms,
- To prepare by May 2005, as first action, a Strategic Research Agenda on Urban Public Transport Mobility to be presented at first place at the 56<sup>th</sup> UITP World Congress and Mobility and City Transport Exhibition at Rome in June 2005.
- To propose some common reflections about research needs in urban mobility to European, National and Regional Institutions.

**Urban mobility definition for the working group:**

First definition (May 2005)

*It concerns all urban modes of transport in cities and suburbs in a harmonized mobility system for citizens. That is to say that all kinds of modes are concerned as well as public transport, but also "soft modes" and accepting new unusual solutions. The new mobility system must naturally take into account the sustainable cities development (impact or input on the social background, environmental and economics systems)."*

*REPLACED BY*

*New proposal to complete the definition (December 2010):*

*Urban mobility concerns movement of people and goods within urban areas including cities and suburbs.*

*All kinds of transport modes as well as soft measures and policy actions are taken into consideration in a harmonized mobility system for citizens and economic activities.*

*This new mobility system should be part of sustainable urban development considering economic, environmental and social aspects.*

*Priority ambition:*

*New concepts have to be developed in order to optimize transport system to respond to changing and diverse demands of citizens and global needs.*

In accordance to these terms, in May 2005, the first strategic agenda on urban mobility was achieved by the Urbamove group. It was presented for the first time at the 56th IUTP World congress and at the "Mobility and city transport exhibition" in Roma in July 2005.

Urbamove also contribute to the European commission green paper dated September 25, 2007 called: "Towards a new culture for urban mobility".

In April 2009, European parliament adopted an action plan on urban mobility (which was first announced by the commission).

UITP achieved an Urban Buses Strategic Research Agenda.

Two strong recommendations were welcomed by all the actors:

- Urban mobility must be taken in a very large sense of the term including persons and goods, cities and inter-cities management, public transport and new public or private solutions, new urban mobility policies ... ;
- Partnerships between transport research institutions and city authorities have to be most often developing in different fields.

*All this implies a fine tuning of European legal and financial frameworks.*

In May 2009, the Urbamove group meets in Brno at the conference on “urban mobility in the light of Lisbon strategy” for the CZECH presidency and participates to redaction of the Brno declaration.

(The Brno declaration is downloadable from [http://www.ectri.org/Documents/Publications/Strategic-documents/Brno\\_Declaration.pdf](http://www.ectri.org/Documents/Publications/Strategic-documents/Brno_Declaration.pdf) )

In September 2009, the commission has adopted its Action plan on urban mobility. In this document Urban mobility is mentioned as essential for tackling climate change and for promoting cohesion, as well as to reinforce EU competitiveness and sustainability.

**This document is the result of the work of the Working Group on Urban Mobility which is composed of the following experts:**

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In 2010, the Urbamove group has undertaken to evaluate the first document, modify, complete and improve it according to the new context.

*The document is the result of this exercise.*

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## Introduction

I/ **Research in transport** is conducted and addressed in Europe by different type of stakeholders (EU, states, research institutes, transport companies, manufacturers ...). All agree to consider that intermodality, multimodality and integration play a central role to achieve efficient and sustainable transport systems and mobility schemes in urban areas. Trip optimization obviously needs a good combination of various individual and collective transport modes.

⇒ There is often confusion frequently made between *urban mobility and subsidiarity* principle. The link between urbanization and European demography is well known- as is the dependence of urban areas to the economic growth and the societal development.

This being said, and even if some related issues could be solved at a national or local level, urban mobility is a European concern, at least for the following two reasons:

- the necessity to harmonize system components in order to reduce supply costs;
- the necessity to harmonize (or make compatible) information and operating rules to facilitate trips and ensure a fair opening of the public transport markets ;
- the necessity to reduce CO2 emissions and taking into account the increase of energy prices ;
- the necessity to consider the changing lifestyle of people ; one aspect is the growing use of ICT in everyday life.

⇒ Although appearing in different sizes and type of implementation, *European urban areas*, in comparison with the rest of the world, share a characteristic structure in settlement densities and distributions, architecture, cross sections capacity, degree of modal interdependencies etc. Although each and every urban development and mobility scheme is specific, one might be able to talk of a “typical” European City, requiring typical (public) transportation system designs – for example in comparison to Asian or North-American conurbation.

II/ **Having considered this inadequacy**, the need for an adapted research agenda in the field of urban mobility is becoming more stringent taking into consideration the following elements:

⇒ A paradigm change has occurred in transport planning. We will not have only public transport customers or users, car drivers but more and more mobility individual actors who need tools and information to manage their own mobility and develop their own mobility strategy. Thus, people’s behaviour and demand must be the focus of urban transport planning. People’s perception of mobility is changing; the demand for information is increasing and they are more and more concerned about the quality of mobility services.


⇒ Public transport is an important part of the solution. European clients (local authorities and passengers) are more demanding. New transport systems, and especially guided ones, are being developed in shorter time with a large heterogeneity, and still high application-dependent engineering. In usage in some cities today, these new systems will be adopted by many more in the coming years. They integrate new information-technological components and systems, new energy combinations, new energy distribution systems, new guiding mechanism, new electronic ticketing structures and the like.

At this stage there is a strong need for the concerned stakeholders to come together to deal with questions such as safety or security, standardization or systems evaluation. There is room for pre-competitive research in this field, and for win-win relationships - but the research objects first have to be clearly defined (the European project MODURBAN being a good example).

Public transport, has still to be upgraded as regards to various modes (buses, light tram, new automatic systems...) as well as efficient, networks.


The customer should become the central focus and public transport should be more personalised.


This approach requests to think not only in terms of systems and modes but also on tailor-made new products or formulas, supported by a variety of new services. For example marketing (image, design, comfort, price differentiation, 'emotion' aspects...) product-innovation, financing and management are important aspects to study. Car industry is very innovative, and constantly in search of urban customers satisfaction. Meanwhile, public transport vehicles and systems need more innovations and improvements. Light tram projects (on iron and pneumatic tyres) as well as bus with high level of services, new automatic systems and new services should be given high priority.


 Competition is here

From an institutional point of view, public transport organisation is a very important issue. The original proposal (2000) for Regulation 1370/2007 prescribed that PT services as a rule should be tendered out in competition. The final Regulation, however, permits competent authorities to continue in-house provision of services – unless this is prohibited by national law. It may now be expected that the European PT scene will continue to consist of a mix of in-house production, directly awarded and tendered contracts.

There is an urgent need to collect and analyse relevant data on this issue, (tendering or not, award criteria, contract outlines, performance monitoring, incentives etc.) bearing in mind that efficiency, quality and accessibility should govern transport systems. One crucial point will be, for local authorities in charge of transport, to be able to preserve their choice of an integrated transport network- that is to say a network with modal complementarities, as opposed to unorganized modal competition.

 Cars are not like before anymore. The same amount money today buys a car that is much more comfortable, safe and to some extent more environmentally friendly than a generation ago. Cars should be part of an integrated mobility system where all transport modes complement each other instead of competing. A lot of research is being done around cars and their new technological developments. However, there is a need for more research focusing on car and its urban environment. As car is becoming more and more environmentally friendly ; the competitive advantage of public transport may decrease if its quality and value for money is not improved.

 New ways of controlling travel demand have emerged. These “soft measures” (school and work place travel planning, car-sharing, ...) and targeted policy actions (parking charges access restrictions, ...) can significantly reduce the demand for transport services and may provide a viable alternative to construction of new infrastructures and enhance quality of life in cities.

 Urban mobility is closely linked to local economy and vice versa as well as social and environmental aspects.

Transport activities and services have an impact on the land value (and therefore on tax issues), and they also have an impact on companies and home localisation. These impacts need to be analysed, measured and evaluated in a global approach that would be able to integrate the various stakeholders' interests: local authorities, companies, tax payers... The impact of new electronic/IT media must be observed. The distribution of goods in urban areas may pose considerable challenges. Freight delivery within cities using public transport infrastructures may provide part of the solution.

A real social challenge is to provide mobility for all part of society including those with reduced mobility and poor people. Safety and security have become an important social concern both for all travellers (vehicle's passengers and pedestrians) and operators.

One of the main objectives of development of urban transport remains reduction of pollution and noise.

**III/ It is felt by ECTRI** that after many purely technological EU funded projects in the automotive sector a new research agenda needs to be defined at European level to reflect all the aspects of mobility management, considering the urban transport system as a whole.

*Extract of the ECTRI document / ECTRI's position on European commission green paper: "Towards a new urban mobility culture" March 13<sup>th</sup> 2008.*

*"ECTRI has the feeling that, to get concrete answers to improve urban mobility, the 5 above mentioned topics (as well as other topics proposed by ECTRI hereafter) should be addressed.*

*The following ideas also need to be taken into consideration:*

#### **All transport modes should be tackled**

*ECTRI is of the opinion that urban transport should be understood in a very wide way: the question that should be tackled is urban mobility as a whole. The term "urban transport" should therefore include all transport means, among them private cars or taxis and collective transport means of course but also softer transport modes like 2 wheelers (powered or not) and walking. Within urban areas, inter-modality, multimodality and integration play a central role to achieve efficient transport systems and mobility schemes. Trip optimization obviously needs a good combination of various individual and collective transport modes.*

#### **Freight as well as passenger transport should be tackled**

*Passenger as well as freight transport should be considered. Freight within the cities is a real issue in terms of traffic, safety, use of parking space and pollution, for example. Therefore the freight issue and the passenger issue should be treated on an equal footing.*

*Another interesting point deals with private travel that could be substituted by e-activities (internet shopping etc) which could in turn generate other journeys, such as deliveries by light vans.*

#### **Safety and security is a priority**

*ECTRI is of the opinion that safety and security should be at the heart of the document proposed by the European Commission. As acknowledged by the European Commission in its Communication "Saving 20 000 lives on our roads", road safety is a priority for the EU. The Green Paper on urban transport that is under preparation should make the necessary links between the ambitious targets settled down by the Commission in this Communication (e.g. reduce drastically the number of people killed on the roads) with what is foreseen to improve urban mobility.*

*Within this frame, accidentology, urbanism and "city design" should be considered.*

#### **The key role of urban planning**

*Travel demand is to a great extent determined by urban structure. The need for travel, thus the number of trips, is conditioned by land use and spatial separation. In addition the way in which these trips are made (modal choice) is influenced by urban structure. This potential to shape travel demand points at urban planning as a key factor that requires further research in order to better understand how urban structure can promote more sustainable mobility patterns in urban and suburban areas.*

**Energy efficient cities are unavoidable**

*This topic is a stringent one. What should be considered here is the question of urban sprawl. Spreading-out has to be controlled in order to reduce energy dependency.*

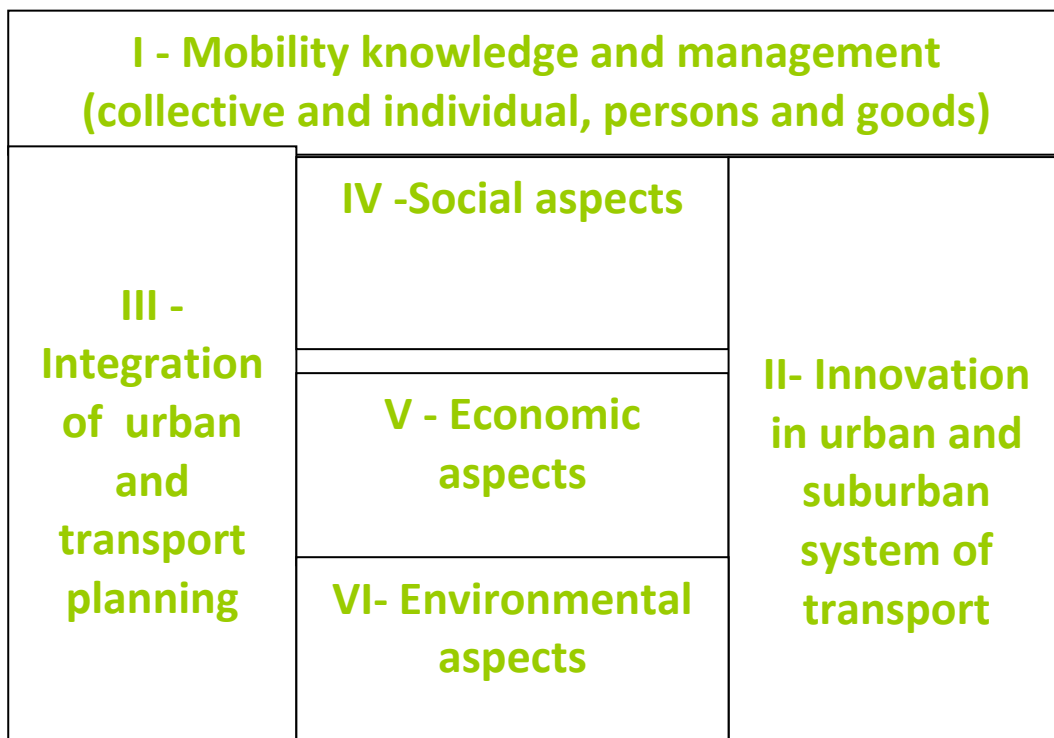
*Based on existing research results on the interactions between housing and transport there is room to explore the link between mobility policy and housing policy and their consequences on energy consumption and social equity. “*

This is why ECTRI has taken the present initiative. The aim is to list a series of research thematic in the field of urban mobility that are deemed essential by European transport researchers in order to ensure the soft running cities of tomorrow.

To deal with the hereafter listed research themes in the general interest, ECTRI would like to underline that:

- a European vision of urban mobility should be made very clear and coherent with other European rules, for example those ensuring the competitiveness of European companies on the international scene.
- there should be some regular evaluation of what has been achieved (every 5 years) and the findings have to be taken in consideration for the follow up.

Urbamove proposes this new scheme to organize the new Urbamove SRA on urban mobility in a broader vision of the mobility system. All these fields are then detailed in research areas.



*In this scheme the mobility knowledge is the key (the roof !) and the two pillars are equally first the urban infrastructures linked with urban planning and second the innovation in transport systems. Social aspects, economic aspects, environmental aspects are central and set up the cement between urban management and innovation in system of transport.*

## URBAMOVE

### Urban mobility essential research areas

The 6 themes developed hereafter provide an input to complement the strategic research agendas. Whereas specific highlight is given to public transport, the research themes listed hereafter apply to all urban modes, motorised or non motorised, with a view to bring global solution to urban mobility problems.

However, even if 6 themes are distinguished, it must be considered that many research ideas mentioned in one theme could also concern another. Because it is the specificity of urban mobility: more and more reflections will concern two or three or more research domains. In each theme, the aim is to point out priorities in research for the next years. Urban mobility will be no longer so much modal approach oriented. The user and the services will become central as well as the urban patterns.

All themes are also including these aspects:

- necessity of collecting datas, make comparisons possible between state members and exchange them at EU level ; the target is to create a real urban mobility observatory;
- necessity of developing the best practices exchange, even a wide range of tested solutions already in place and include this datas in the European observatory on urban mobility ;
- and necessity of reinforcing the interactions and cooperations between the main stakeholders : research actors, state members, local authorities, citizens, industries.

For each propositions, the level of priority is mentioned:

Priority 1: high priority (has to be done or continue)

Priority 2: mid-term priority

Priority 3: long-term priority

# Theme 1

## Mobility knowledge and management (collective and individual, people and goods)

KNOWLEDGE	MANAGEMENT
<b>1-1 Analysis of individual behaviour and mobility demand</b>	
<b>1-2 Network optimization (intermodality, interoperability)</b>	
<b>1-3 Urban mobility institutional strategies</b>	

*In this scheme, all aspects have to be taken with the same attention. Two aspects have to be taken in account: on one hand, the improvement of knowledge for each field and on the other hand the management of the field including the results of the studies.*

### 1.1—Analysis of individual behaviour and mobility demand

All the ideas mentioned have knowledge and management parts.

⇒ **Analysis of the influence of changing context and general conditions in mobility conditions** *including knowledge and management of varying or seasonal mobility demand in urban areas (taking care of big events, visitors, tourists...). It also concerned the impact of lifestyle changes and life stages on travel behaviour. This could help the future traffic predictions based on individual behaviours. Analysis of the influence of new way of life with the ITS influencing sociability and mobility thanks to the development of new modes of communication (mobile phones, internet...). What can be the impact on the mobility demand in the mid and the long term?*  
*Priority 1*

⇒ **More comprehensive mode choice models** *Most of the research in mode choice behaviour focuses on short term or day-to-day decisions when there is a need to frame the transport demand of tomorrow, to give guidance on transport innovations. Discrete choice modelling is based on the concept of rational choices and usually monetary costs and travel time are considered the most*

*relevant influencing variables for mode choice. On the other hand long-term decisions about car ownership and season tickets are not very well understood as well as attitudes in favour or against certain transport modes and the influence of changing preferences (for example the choice of a place of residence) in different stages of life.*

*Priority 1*



**What tools to understand and facilitate modal choice?**

It is needed to investigate on more specific modes demand and other new modes demands; for example:

- Investigation of rail bonus;
- Car sharing organisations. *Development of vehicles and car use/car ownership organisation systems adapted to urban/per urban areas;*
- creating and developing family friendly, workers friendly concepts should be a way to encourage some citizens to become less car-dependent.

It is important to avoid confronting PT and individual transport. New means of cooperation and coordination should be developed. Today Park&Ride is common in major conurbations but carpooling, car sharing, bikes sharing and new means of combining different modes of transport need further development. It should be remembered that in urban transport in some MS cycling has a higher market share than PT. In other MS (despite better climatic conditions) cycling is minimal, why?

*Priority 1*



**Investigation of the impact on citizen behaviour and traffic conditions of a variety of transport improvement measures**, sociologic studies on transport needs and their evolution - *meaning better understanding of why people should use or not use public transport in the future and make their own mobility decisions and strategies.*

*Priority 2*



**Impact of awareness campaigns and alternative marketing ways** in order to promote public transport and “soft measures”. *This should include a study of the impact of different campaigns for different social groups and their effectiveness.*

*Priority 2*



**Analysis and management of Business travel** because of the development of services for the individuals and the firms in cities and the coming of workers for meetings

*Priority 3*

**1.2— Network optimization  
(intermodality, interoperability)**

*A lot of work is being done to optimise modal networks (rail, buses, cars...), but the multimodal optimization of a complete network is quite a complex scientific question, and is not enough addressed. For example while one of the great problems in large urban areas is the high level of congestion in the close suburbs, this is often the result of a lack of optimization between the road network and the public transport system.*



**Impact evaluation of public transport services and public transport improvements on mobility.** *What are the criteria and the indicators in the evaluating process?*

*Traffic policy and decision makers need information about the impacts of the measures and efforts which have been done to improve public transport services. Research is needed to specify right criteria and indicators in the evaluating process and the methods to assess impacts and further indicate the impacts on mobility, environment, the community as a whole and the citizens. Economical and quality impact must be evaluated in favour of the user, not only of the operator.*

*Priority 1*



**Optimisation of the interchanges : Intermodality between public transport networks and non motorized modes as well as** Intermodality between buses and guided systems (tram, metros, tram-trains, rail cars)

*This can include physical facilities and information systems for the whole trip, from door to door including departure and destination points but also interchanges. This should give a special focus to the accessibility of public transport networks for non motorized modes.*

*Interaction with theme 3/ Planning*

*Priority 1*



**Create new concepts to integrate freight and passengers transport in towns?** Freight transport and public transport: how to get the best from the network without impeding mobility. What innovative solutions?

*Implementation will also be the key.*

*Priority 2*



**Optimization of Park-and-Ride systems** (including both cars and bikes) in particular for commuters to and in urban/per urban areas (in relation with “mobile information” in theme 6). Reduction of inter modality barriers. This includes the optimization of location and size of the interchange stations, in order to minimize perverse effects.

*Interaction with theme 2*

*Priority 2*



**Long distance commuting trips.** Fast train connections make the distinction between long distance trips and long distance commuting questionable. Urban mobility can be considered as a component of long-distance transport. On the other hand, it is still seen as an advantage of the car that it can serve as a means of transport in the destination area of a longer trip. It has to be addressed, how PT and intelligent combination of mobility services can invalidate this line of argument. Improved intermodal solutions are a high priority.

*Priority 3*

### **1-3 Urban mobility institutional strategies**



**Contextual background and likely future conditions: demographics, societal development, implications of land-use trends**

*Priority 1*



**Promotion and coordination of “soft measures” (car-sharing, park and ride, car pooling, kiss and ride...)**

*Priority 1*



**New organization and governance concepts in the urban transport sector including freight and passengers trips management**

*Priority 1*



**Analysis of the interaction between road pricing and public transport**

It is worth observing that in the few existing examples of road pricing/congestion charging there are different ideas about how the revenue should be spent – on PT or on road improvements.

*Priority 1*

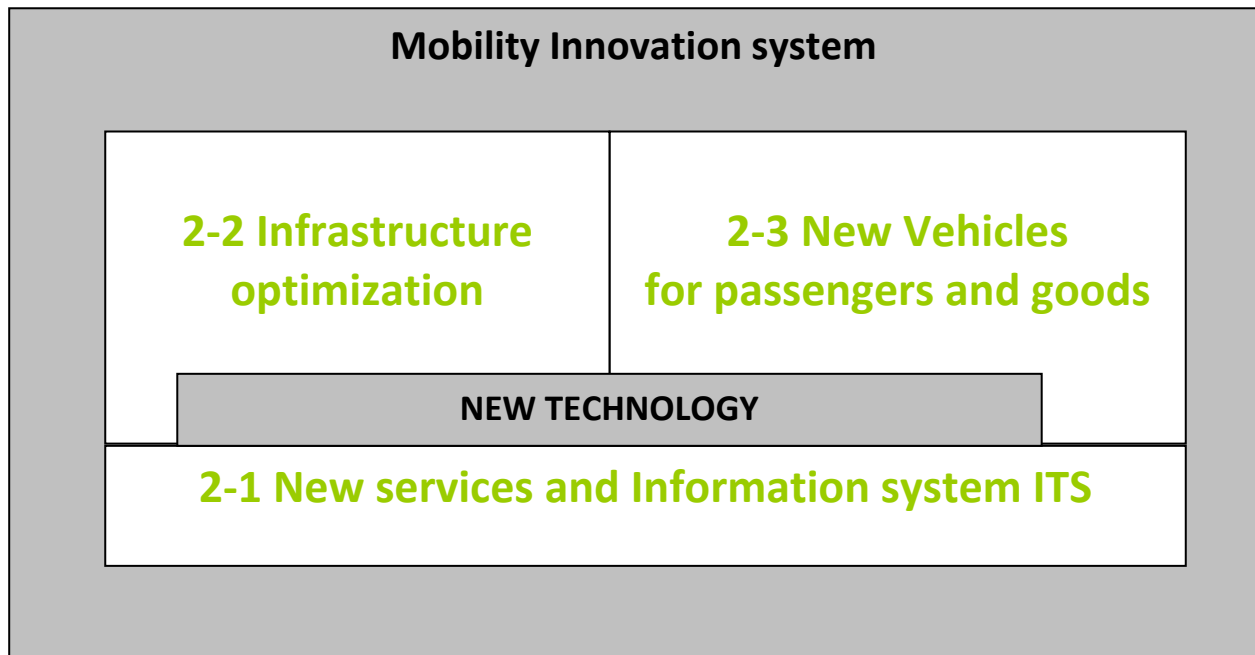


**Innovative solutions for governance of urban transport systems.** For instance, would it be useful to isolate the management and operation of the roadway network in a multimodal perspective (since it accommodates pedestrians, bicycles and buses as well as cars), from the representation of car users' interests.

*Priority 2*

## Theme 2

### Innovation in urban and suburban system of transport (including new technology, new vehicles, ITS)



*In this scheme, it must be understood that new services and information system are becoming more and more important till it will set up the foundation or the key of the new technological development and the new transport system. It will support the new ideas on infrastructure optimization as well as the new vehicles. All this contribute to the new mobility system as a whole.*

In the technology and ITS themes, many ideas are transverse, as well as the definition and optimization of technical and operational interface between infrastructure providers and operators.

New technology systems



#### Guided systems

- Adequacy between urban guided systems design and line characteristics in order to optimize costs
- Safety, evaluation and certification harmonisation in guided public transportation
- From steel rails to optical rails: new developments in guidance technologies
- Smaller guided vehicles and new automatic systems for passengers and freight
- Guided systems sites analysis (safety, traffic management, spatial design, ...)

*Priority 2*



#### Components

- Integration of hi-tech systems in the vehicles in order to reduce accident rates and better coordinate the vehicles schedule in the overall urban transport mobility system.
- Integration of new components (motorization, energy, guidance, automation ...) in order to reduce investment and/or operation costs, and/or improve performances
- Noise pollution and vibration should be addresses while upgrading components

*Priority 2*

## 2.1 New services and Information system ITS



### **Dynamic mobile information**

*Development and implementation of customised dynamic mobile information about urban public transport. Particular attention should be paid to the acceptance of such systems and to the behavioural change initiated by them, discussing also the question who are the users of these systems and which users are excluded when these kinds of systems are implemented. Specific focus should be given to dynamic personalized mobile information.*

*Priority 1*



### **Ticketing ([www.linkforum.eu](http://www.linkforum.eu))**

- Ticketing systems and fare policy; integrated tariff systems, innovative ticketing systems including data collection of travelling and operating, and integrated ticketing and information systems. This includes multimodality issues, parking and road pricing.
- Collection of data from new ticketing systems and its use for benchmarking performance, financing and costs of public transport in different cities and regions. The data collected might also be used to develop planning and information systems.
- New electronic (multipurpose) ticketing for European cities: state of the art, new systems, demonstration, standardization, implementation.

*Priority 1*



### **Integration of urban travel planning applications/ interoperability**

*Priority 1*



### **Implementation of information and communication technologies inside interchange stations ([www.linkforum.eu](http://www.linkforum.eu))**

*This deals with studying the combination of intermodal information by means of new technologies, including real time information and classical information, on various physical supports. This should also includes the integration of specific needs for particular user categories (disabled people, cyclists...) and the management issue. This includes most effective content of information services to travellers.*

*Priority 2*

Opportunities opened by European program Galileo GNSS system

An example is SMART-WAY project (starting in Feb 2010) aimed at using Galileo for such functions

## 2-2 Infrastructure optimization

⇒ **Adapting the roads and streets network on new approaches** for example systems between bus and tram, between automobile and *minibus* etc ... *This includes the ITC adaptation of urban infrastructures.*

*Priority 1*

⇒ **Incident management systems**  
*Development and implementation of incident management systems in public transport services: technical and institutional approaches.*

*Priority 1*

## 2-3 New Vehicles for passengers and goods

⇒ **Bus system improvement**  
*During the last decades, car industry has really improved its products, for the great satisfaction of car users- even in congestion driven cities. Buses did not improve at the same speed, and the lack of quality, in comparison with cars, is now quite obvious.*

*After a successful upgrade of light rail systems, upgrading buses (for example via the "Bus Rapid Transit" concept) should become a priority. There is room for technology transfer from the car and rail industries, and new ways to design buses should be promoted, to increase their attractiveness.*

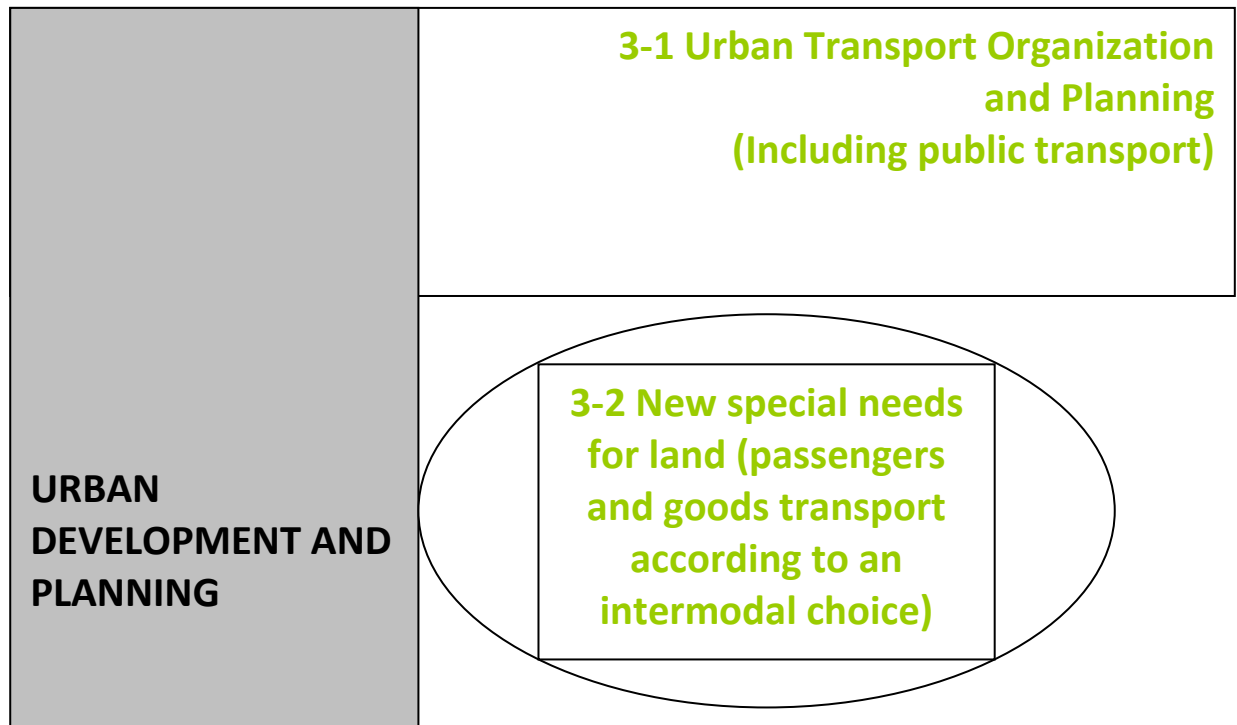
*Priority 1*

⇒ **New vehicles for delivery in urban areas**

*Priority 2*

## Theme 3

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



*In this scheme, it is showed that urban development and planning and organization is, as an evidence, very interdependent and must be linked in researches. Nevertheless, new special needs (unknown till now) can create new needs and new multipurpose land uses. It is a real challenge to have in mind.*

#### 3-1 Urban Transport Organization and Planning (Including public transport)



#### **Interactions between land use, traffic and public transport networks considering all scales of reflections (inter-cities, suburban, local areas...)**

*Concepts for a sustainable land use in different European regions and cities. This should include, for example: increase the share of public transport, walking and cycling, decrease the use of cars, reduce traffic volume, saving green spaces for construction... This should also include transport demand and its interactions with land use and public transport networks. Local planning decisions should be taken within the framework provided by national, regional and state members and EU plans respecting subsidiarity.*

*Priority 1*



#### **Land use and traffic in urban agglomerations and regions – integrated long term planning**

*Land use and urban planning have a key and long lasting influence on the mobility need. This is especially true in areas with economic growth and on transportation of people and goods. There is also an influence on the environment and a strong economic impact. The integrated long term planning*

*Is a necessity for strategic development of transport infrastructures and services but also to make link transport with environment protection, healthy environment, land use planning, housing, social aspects and mobility as well as industrial location. New methods must be developed.*

*This is why there is a need for:*

- ✓ *an analysis of the cost of urban sprawl and of external framework (traffic priority, city centre parking, road pricing...) in relation with public transport*
- ✓ *an analysis of the relationships between land planning, urban development and development of traffic.*
- ✓ *Understanding mechanisms influencing people and firms preferences for places*
- ✓ *Impact of commercial activities inside public transport networks: how to improve economic balance and attractiveness of public transport?*
- ✓ *Impact of ICT on travel behaviour e.g. how is the growth in internet shopping changing travel behaviour and land consumption?*

*Priority 1*

### **3-2 New special needs for land (Passengers and goods transport according to an intermodal choice)**



#### **Land value capture: how to evaluate, capture and invest it in public transport?**

Several examples of such schemes (successful and less successful) exists, experiences should be evaluated and disseminated.

*Priority 2*



#### **What land consumption for new mobility services in urban areas (bicycles sharing, car-sharing, walking, new buses...)?**

*Priority 2*



#### **How could new modes of good delivery in urban areas change the land consumption? New delivery places near to town centres?**

The sharing of the same areas for delivery and passengers can be developed to which extent? Is it possible to optimize this aspect?

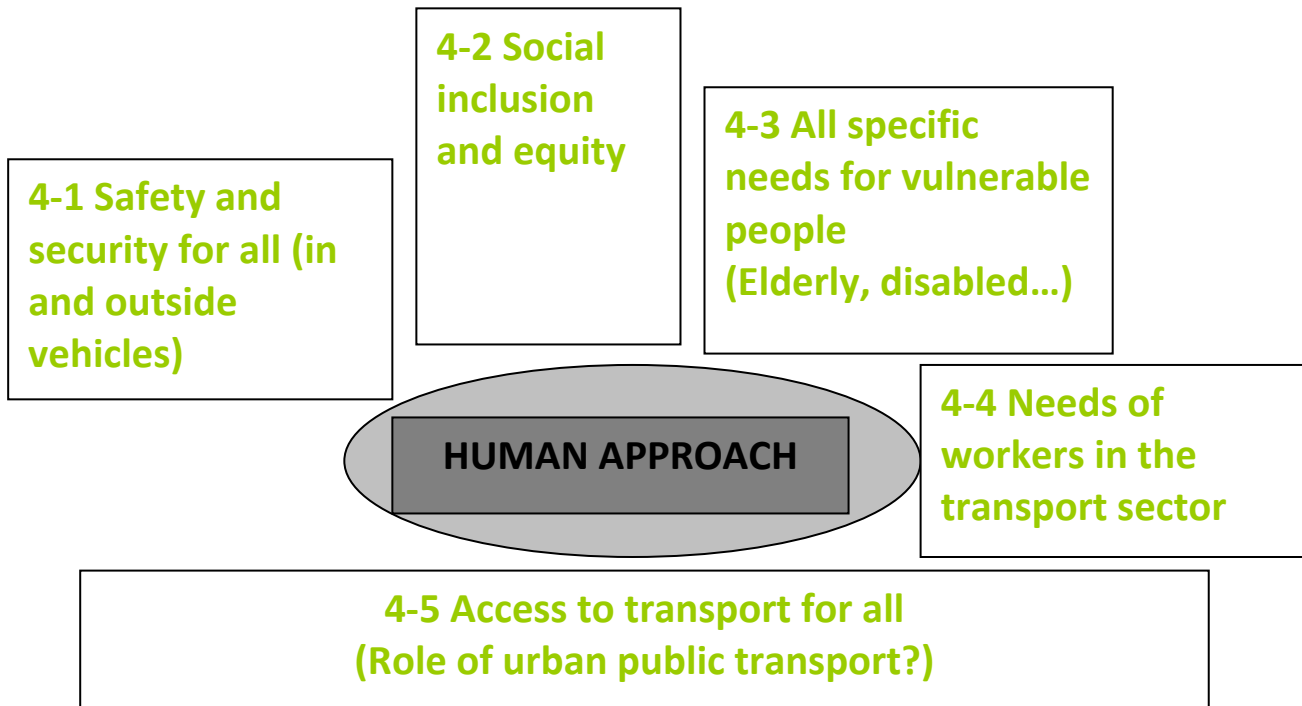
*Priority 3*



#### **Travel modes and space consumption**

*Priority 3*

## Theme 4 Social aspects



*Human approach is in the centre of the scheme and all the domains equally gravitate around it. Safety and security are mentioned as an aspect of human approach. In access to transport for all (4-5), the role of public transport is concerned. Of course, social inclusion and equity are linked with the organization of transport offer in urban areas and with urban planning. The needs of the users and the actors must be taken into account.*

### 4-1 Safety and security for all (in and outside vehicles)



#### **Safety of the non-motorised mobility (walking, cycling)**

New strategy for non-motorised safety in urban area.

Make the possibility for individual to evaluate their own risks in order to promote non-motorised modes.

*Priority 1*



**Analysis the driver behaviour in order to change his own perception** to reduce accidents and their impact. Make the driver able to adapt to new vehicles and new modes of mobility.

*Priority 1*



#### **Security of the mobility system**

*This remains a major issue for public transport. It should also include terrorist events and disaster management. Risk assessment based prevention and response measures need to be developed. The balance between accessibility and security balance must be observed.*

*Priority 2*

## 4-2 Social inclusion and equity



### **Impact of public transport and public transport networks on social equity**

*Public transport is generally considered as bringing a social service to people that needs it, especially low-income groups. Does public transport really play this role everywhere in EU? It is to be checked. Fare systems are often in favour of people living in inner cities - meaning financially able to live there.*

*Compared to revenues, transport cost is often very high for those living in far suburbs. The social impact of urban sprawl and the way to bring more social equity through the organisation of the network and its fare system should therefore be much more studied. In this reflection, the geographic location, the size of the city or their relative wealth should be taken into account.*

*Priority 2*



### **Relationship between individual mobility behaviour and public health (especially overweight and obesity, cancer ...) PT (and cycling) is good for your health!**

*Priority 2*

## 4-3 All specific needs for weaker persons (elderly, disabled,...)



### **What parameters and what definition of an “acceptable walking distance” to reach the public transport system? Including focus on elderly.**

*Priority 1*



### **Door to door solutions for mobility impaired**

*Priority 1*



**Quality indicators should be defined for each vulnerable groups such as elderly, persons with disabilities (physical, intellectual or sensory) or impairment, or as a result of the age. Specific mobility requirements of different social groups: elderly, families...How to bring/keep them all to public transport? What kind of public transport?**

*Priority 2*

## 4-4 Needs of workers in the urban transport sector



### **Improve comfort for bus and truck drivers (ergonomics aspects)**

*Priority 1*



### **Organisation of workers and labour in public transport companies**

*Priority 2*



### **Find methods and tools to enhance passenger’s education, information and awareness raising**

*Priority 2*



Staff shortages and a high staff turnover is a problem in PT and to some extent in other transport sectors such as taxi. **PT must be attractive not only to customers but also as a place of work.** It is not just a matter of pay, for instance bus drivers must be able to feel a pride in their work. Staff development plans are part of the tendering conditions in some

MS. On the other hand PT staff must be ready to accept changes in the PT sector, nothing lasts for ever. Analysis of the acceptance of PT staff must be developed.

*Priority 2*

#### **4-5 Access to transport for all**



**System social optimization: fares, frequency, schedules in public transport ...**

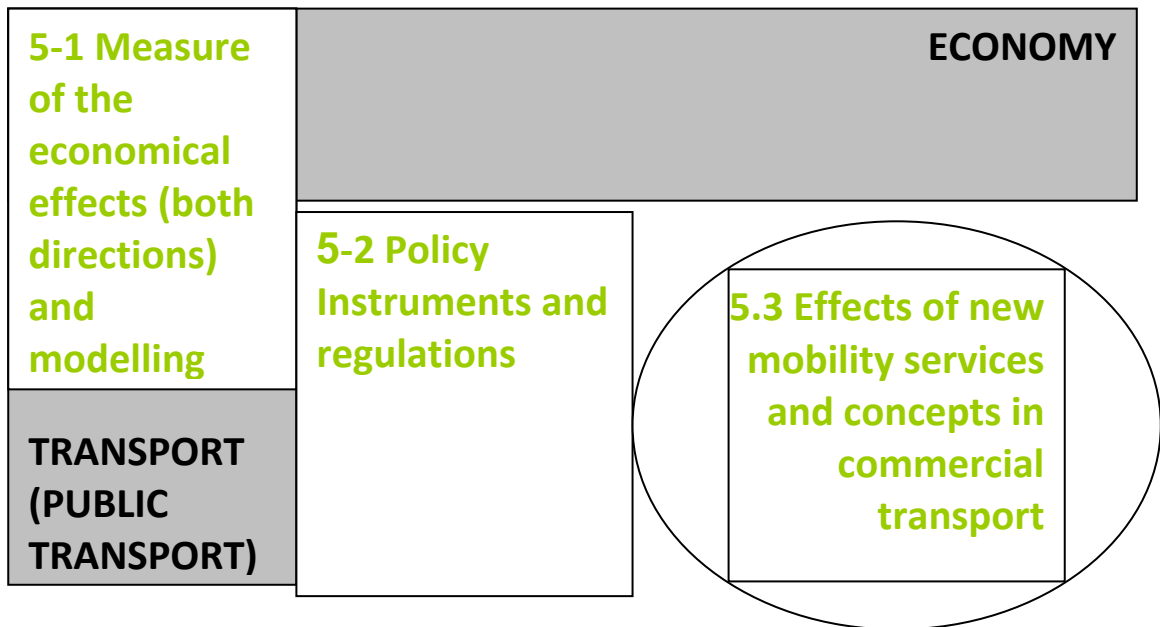
*Priority 1*



**Improve the equality access to leisure, culture and sport centres for all with the urban public transport, especially for the suburban population. Access from urban area to the countryside and leisure zones with collective transport should be raised up.**

*Priority 2*

## Theme 5 Economic aspects



*Public transport is at that time strongly concerned as well as the importance of this offer on economic activities. Research in policy instruments and regulation is the key to find new solutions. Nevertheless, new mobility services will emerge (also thanks to research) and their effects on the global system and its attractiveness need to be measured.*

### 5-1 Measure of the economical effects (both directions) and modelling (passengers and goods)

- ⇒ **Industrial organization of public transport vehicle production**  
*Prospective on the industrial organization of public transport vehicle production in Europe. This should include a study of social impact*  
*Priority 1*
- ⇒ **Cost and benefits of standardization.**

  - Development and validation of standards for public transport  
*Priority 2*
- ⇒ **Life cycle cost optimization of public transportation systems:** particular system: tramways...and also effect of maintaining public transport for over 60% of the usage.  
*Priority 2*
- ⇒ **Interactions between road pricing and public transport.** *Road pricing as a measure to alleviate congestion in city centres and on heavily used roads is intensively discussed.*

However, road pricing policies should include measures on the PT side. Travellers must be aware of alternatives.

Priority 2



**Development of comprehensive economic studies on externalities of urban transport projects**

Priority 2

## 5-2 Policy Instruments and regulation



**Impact of parking policies on mobility systems**

Parking policies and work places: what incentives? What constraints? This should take into account the differences between public and private parking places on work places.

Priority 1



**Incident management systems**

*Development and implementation of incident management systems in public transport services: technical and institutional approaches.*

Priority 1



**Opening up of public transport market**

*Introduction and comparisons of transport systems based on case studies – in house operations, privatisation, subsidy, franchising, quality tendering, regional/local influences and interactions*

Priority 2

### Some other ideas:

- ✓ Pricing/fares structure of public transport: how to differentiate trips *by distance, by social groups, by time-of-day...*
- ✓ New fares or pricing options: what innovative pricing solutions? *Pay as you drive?*
- ✓ Stakeholder's involvement in the mobility service: what cooperation between the different actors to deliver the best service for the traveller?

## 5-3 Effects of new mobility services and concepts in commercial transport



**Financial resources, such as public private partnerships, taxes...**

Priority 2



**Creating incentives for innovative mobility providers to enter the market**

Priority 3

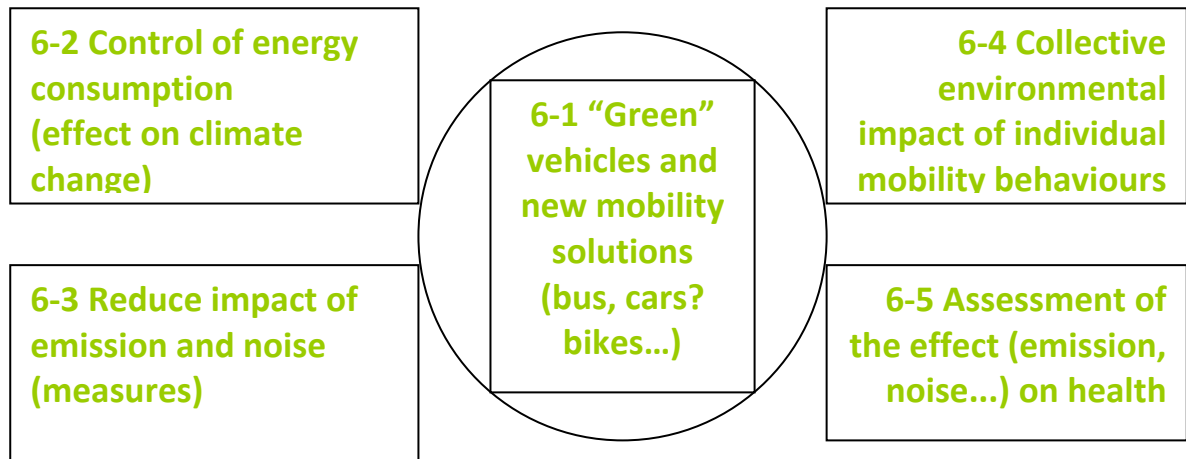


**Managing numerous operators on a market: what cost? What cooperation between competent authorities?**

Priority 3

## Theme 6

### Environmental aspects (Including nuisance aspects)



*This scheme put the new vehicles in central position in order to reduce the carbon emissions of vehicles and for the whole transport system in the urban areas. Around this first objective for research and in the same time, the control of energy consumption (including new energy solutions) is necessary. The knowledge of individual mobility behaviours has a real collective impact needed to be well known to adapt environmental policy.*

*At the same level, figure out the measure and the reducing of emission and noise as well as the assessment of their effect on health.*

#### 6-1 "Green" vehicles and new mobility solutions

⇒ **Continue research and demonstration projects at high level to facilitate the market introduction of lower vehicles using various sources of energy (hybrid, electricity, ...)** (example of CIVITAS initiative).

*Priority 1*

⇒ **Effects of heterogeneous vehicles within a given fleet:** on maintenance, on operation, on usage and user perception

*Priority 2*

#### 6-2 Control of energy consumption (effect on climate change)

⇒ **Control and optimize the energy consumption thanks to technological innovation and driver behaviour combined**

*Priority 1*

- ⇒ **Develop the whole “electro mobility” system concerning vehicles but also recharge structures and infrastructures, also in housing and parking. Estimate the impact of the system. Try to standardize the technologically and sustainably best solutions.**  
*Priority 1*

- ⇒ **Find alternative energy sources**  
*This should especially include some research in the following areas:  
Alternative fuels -Lower energy consumption solutions - Emission control - From wayside energy distribution to autonomous on board energy supply - Hybrid motorization for urban vehicles.*  
*Priority 2*

#### 6-3 Reduce impact of emission and noise (measures)

- ⇒ **Define sustainability indicators making comparisons possible in Europe**  
*Priority 2*

#### 6-4 Collective environmental impact of individual mobility behaviours

- ⇒ **Find a model for the evaluation of the effect or impact of individual behaviours on the environment (air, noise, emissions...) also related to the climate change.**  
*Priority 2*

#### 6-5 Assessment of the effect (emission, noise...) on health

- ⇒ **Analysis of the annoyances and their perception**  
*Priority 1*
- ⇒ **Finding new way to reduce the annoyance**  
*Priority 2*