Polis answer to the European Commission consultation on the upcoming Strategic Transport Technology paper

March 2011

Answers to the hearings on:
- **ITS across modes**
- **Road transport**
- **Logistics, Urban Mobility and Intermodality**

Polis is a network of European cities and regions supporting innovation in local and urban mobility. Polis answers this questionnaire and took part to the hearings on behalf of its members of local and regional authorities.

Our member cities and regions are convinced that the reduction of dependency on the private car, a **modal shift** towards more sustainable modes of transport, like public transport, cycling and walking, as well as the development of clean and energy efficient urban transport should be the main objectives of policies influencing urban and regional mobility. They stress the impact of land use on mobility and the potential of integrated land use planning to achieve these objectives on the long term.

They also stress that **innovative policies are required to trigger new practices and behaviours and the deployment of new technologies to achieve a new mobility culture.**

It is therefore critical to consider that for local authorities, the deployment of new transport technologies for local transport can only be efficient if it happens in the framework of urban and regional mobility policies.

The potential of transport technologies must be assessed in regard to their ability to support achieving European as well as local transport policy objectives, and in particular:

- reducing congestion;
- implementing sustainable cost-effective measures.
- reducing local transport emissions (air pollutants, noise);
- reducing the transport impact on climate change;
- ensuring a smooth functioning of freight operations in the city;
- good accessibility for all;
- efficient movement of goods and people;
- improving social inclusion;
- improving the safety of all road users;
- Improving competiveness of the local economy.

None of the policy objectives above can be achieved only with the deployment of new technologies. New technologies should be supported and implemented together with complementary measures.

In this framework, innovative transport technologies related to all aspects of the local mobility sector could be of interest, whether in relation to the vehicles, the infrastructure and the management of the network, or the mobility services.

Polis answers to the STTP hearing with a focus on these technologies and on the innovation policies which can support their deployment, not on the policies they could help to enable.

This document contains a written response to the questionnaires sent out by the European Commission. An Annex contains the Polis Position paper on Cooperative Systems (June 2010). Other documents of reference for this input are the Polis response to the ITS Action Plan[1], the Polis response to the Green Paper on Urban Mobility[2] and the European Roadmap for the Electrification of Transport[3] (to which Polis has contributed).

QUESTIONNAIRE

These questions are designed to facilitate the stakeholder hearings. We would appreciate, if you could send us your answers to the questions 1 week before the meeting. Please answer them in the way you consider most appropriate to convey your key messages. It would be helpful, if you could identify to which mode/technology area your answer relates to. To help answering the questions some suggestions are given regarding what could be explained under each question.

1. GENERAL QUESTIONS

1.1. Transport Vision and Activities

1.1.1. Current state of play within transport?

Indicate: market readiness/penetration of the different technologies within the activity area for each mode or cross-modal issues; on-going or planned public, public-private or private initiatives relevant for the STTP; type and scale of initiatives at which level -International/EU/MS/Regions

Several technologies could be of interest to achieve more sustainable urban and regional mobility systems, such as intelligent transport systems, and technologies for cleaner mobility including electromobility. An overview of the current state of play is given below.

I – Intelligent Transport Systems

[1] Available at: http://www.polis-online.org/fileadmin/Policy/answer_POLIS_ITS_Action_Plan.pdf
[2] Available at: http://www.polis-online.org/fileadmin/hot_topic/Green_Paper/Polis_answer_to_Green_Paper.pdf
[3] ERTRAC document, available at: http://www.ertrac.org/pictures/downloadmanager/1/3/Roadmap_Electrification_Nov2010.pdf

The current state of play of ITS covers a number of technologies that we see as relevant to urban and regional authorities. These technologies are key enablers for a series of applications and services. They are obviously not exclusive of each other.

1. Cooperative Systems and cooperative mobility.

Cooperative systems have been and are demonstrated in various projects (CVIS, Coopers, SMARTFREIGHT etc.) and Field Operational Tests. They are currently not market ready.

Polis' assessment of the state of play of cooperative systems, the perspective for market penetration and the potential barriers for the deployment of cooperative mobility are detailed in our position paper on this issue released in 2010 and attached to these answers (see Annex).

Several applications for cooperative systems are currently tested in real-life environments, including intersection management and control and fleet management with real-time loading and delivery space booking, or routing applications (for freight and other) which include parking information.

It must be noted that we expect the update of the public transport fleet with cooperative systems to take longer than private vehicle fleets. This is true for the take up of some other technologies in public transport as well (but not all), given the longer time between stock replacement in public transport compared to private fleets.

The current field operational tests are necessary to further validate but also to further develop applications based on cooperative systems.

In parallel, some forms of cooperative mobility relying on mobile phones are progressively developing, largely independently from the vehicles and the transport infrastructure.

2. Urban/regional transport payment systems

Several and often complementary technologies are enabling advanced transport payment systems and could pave the way towards the integration of payment systems for (transport) services and charges. These include contactless credit card and mobile (phone) payments.

The challenge is to develop interoperable interfaces between payment systems. This could be provided by a single platform (interoperability) and could rely on credit cards, mobile phone payments and integrated transport ticketing solutions.

3. Traffic monitoring and management:

Various technologies are used and trialled in European cities to improve traffic monitoring and management and to implement mobility policies aimed at managing demand (charging, access restrictions, parking etc.).

CCTV-based incident detection are increasingly used, relying on prototype software. Such software are developed in various places (e.g. IRID in London, La Sapienza, etc).

ANPR is used not only to enforce access restriction but is also trialled, for example, for route guidance.

Floating vehicle and traveller data (GPS, GSM) collection is increasingly looked at by cities. This can, for example help in advanced parking guidance systems, where parking is included in strategic traffic management systems (including real-time parking information and data on infringements).

Other strategic traffic management systems which include routing and access restrictions for freight in particular are increasingly being used.

Data is increasingly purchased by local authorities to supplement their own data (from fixed roadside units), although this can be problematic if the nature of the data source is not known. Various pilots are underway in Europe (e.g. in Noord Brabant, London, etc). There is also the Mobility Data Marketplace pilot in Germany.

More advanced used of satellite navigation (EGNOS), to enforce traffic restriction or to manage tourist vehicles or freight vehicles in the regional and urban environment is being considered. The idea is to extend this to all traffic in the future.

Environmental and safety monitoring will increasingly play a role in monitoring and managing traffic. EU projects such as CONDUITS and CITEAIR II play a role in this.

Short term traffic forecasting models are currently starting to be tested and used in a handful of cities across Europe. This is seen as a potentially important network management tool.

4. Information services

Applications which rely on Web 2.0 services and smartphones for real-time travel information are growing, and there is a large diversity of approaches. Web-enabled smartphones offer a huge potential for gathering and disseminating travel information, and they also create opportunities to develop cooperative mobility applications, which would also be used for traffic and network management with the development of crowd computing. Indeed, they represent a key step towards involving individuals as sensors on the network.

It is important to note that today, pre-trip multimodal journey planners are well established but not real-time. Traffic information is available on-line and on various types of information media, including mobile devices, VMS and on web portals.

A move towards greater coordination between information services and network management tools is expected, to allow intelligent operational decision support. Navigation systems are expected to be used for this purpose, through public private cooperation between network managers and service providers. There can be problems due to the competing aims of the public and private bodies (the network managers may have conflicting aims to the mapping companies, for example for route guidance or parking management).

5. Communication networks (WiFi, NFC, microwave, GPS, MESH)

Various types of communications network have been deployed and used in European cities and regions, enabling a whole range of transport applications. They include WiFi, NFC, Microwave, GPS and MESH technologies. These are becoming common place in urban areas.

The cost of these technologies condition the choice made by the local authorities. While unit costs are decreasing, communication needs are increasing. These are of course key enablers for the connected traveller and for network management.

ITS Technologies for specific sectors of application include

1. Technologies for parking

Several technologies which are being used by local and regional authorities are:

- Improved client systems (such as SMS parking, GPS based parking).
- GPS based value added services such as in car parking guidance systems and reservation.
- Improved monitoring and enforcement systems (vehicle-mounted licence plate scanners, sensor networks etc.).
- Systems that enhance the integration of parking management with strategic traffic management (real time parking information, parking data warehousing - including parking offer, data on permits and rights holders, infringements).

2. Technologies for freight

There are specific technologies existing for freight. Of interest to local authorities are:

- Freight technologies for HGV routing (out of sensitive areas, often different from routing of Satnav which is designed without consideration of HGVs). These include online pre-trip planning, as well as more sophisticated in-vehicle routing based on routing strategies from local authorities (rather than other routes which may be based on shortest distance or shortest time guidance for HGVs).
- Enforcement of restrictions (e.g. parking, loading / unloading, entering restricted zones / streets, etc.): for example based on ANPR, but other technologies are being considered (see e.g. FREILOT project).

II - Electromobility

There is a concerted move towards electromobility in European cities and regions. There are several initiatives to deploy electric vehicles in cities, and create incentives for the use of EVs (e.g. through parking charges). Electromobility covers electric cars, but also public transport vehicles and electric two-wheelers.

A large scale deployment of electric vehicles will have an impact on the whole mobility system. In addressing the policy objectives of local and regional authorities, the modal share of public transport and innovative mobility services will have to increase. It is important that research on the impact of the deployment of electric vehicles is made in order to ensure that incentives to increase their use do not increase the absolute number of vehicles on the urban network.

III - Other clean(er) fuels / vehicles

Apart from electromobility, other non fossil fuels are also used by local and regional authorities. In the public transport sector, electricity is used for metros and trams. Electric buses remain expensive, so other fuels are also looked at: biofuels, methane, etc. The European bus system of the future (EBSF) examines various technologies in relation to public transport.

Uncertainty of market penetration of biofuels provides a particular problem: the European Commission should have clear strategies and targets with respect to biofuel use.

IV - Road infrastructure & design & maintenance

Road infrastructure can be designed to best allow for multimodal use: including networks for cyclists and pedestrians as well as other vehicles. Enhanced design will include better consideration of parking policy as a key consideration within any urban area. Technologies to manage parking are widely used.

New technologies for road construction and maintenance look at allowing for adaptable and automated construction and maintenance, while taking into account climate change resilience.

1.1.2. Likely evolution of transport?

Indicate: major trends in the transport sector (technology and actors); evolution of transport needs (volume and quality); likelihood of structural changes as a result of new business models, globalisation, competition, ageing population; influence of the market structure on future market potential; possible effects of legislation etc

Mega trends in the transport sector have been well illustrated in many studies, including some sponsored or performed by the EC.

Reference documents include:

- the ERTRAC scenario 2030 +
- the GHG-TransPoRD project
- Transvisions study developing a set of long-term scenarios (2030-2050) for transport and mobility in Europe
- Communication "A sustainable future for transport: Towards an integrated, technology-led and user friendly system" has been adopted by the Commission on 17 June 2009 [COM(2009) 279]
- …

The critical mega trends expected to affect urban and regional transport include:

- A growing influence of environmental concerns on urban and regional transport policy:

  (1) Strong influence of climate change related policies imposed at the international, European and national level, including targets to increase the share of renewable energies used in transport, targets to reduce CO2 emissions from transport and targets to increase energy efficiency in transport.

  (2) Remaining concern about the impact of the local environment on health, influencing transport policies to reduce the noise impact of transport and local air emissions.

- Growing demand for individualised services in society, enabled by technology, will drive expectations for individual transport and traveller information services.

- Demographic change will significantly influence the future local urban and regional transport policies, and the transport demand:

  (1) Specific and growing demand for mobility of an ageing population;

  (2) Specific and growing demand for mobility of the immigrant population in major European urban centres;

  (3) Strong growth of major European urban centres and of any medium sized cities, and decrease of the population in regions from the eastern part of Europe;

  (4) As a result of the above trends, strong pressure on the network of the major European urban centres, in particular on public transport;

  (5) Greater financial need to maintain and extend existing networks in particular public transport networks.

- Decrease of public funding for urban and regional networks in several Members States for the foreseeable future

Urban and regional transport plans foresee an increase of the use of public transport and soft modes over the next two decades.

The changing nature of mobility, the integration of mobility policy and tools, supported by new technologies, will lead to changes in the supporting organisations and in the relations between the (public and private) actors. Deployment of electromobility and cooperative mobility will be critical in this respect.

1.1.3. Key technology penetration targets (2020, 2030, and 2050)? What are the main assumptions underlying these estimates? What are the main barriers to overcome to achieve them?

Indicate: main constraints and showstoppers, risks, needs for technological breakthroughs, resource/feedstock availability, consequences for the current infrastructure, etc

Polis represents local authorities and as such has little inside knowledge on the speed at which technologies will be available on the market. However, urban and regional transport authorities will play a key role in supporting the penetration of some technologies by equipping their infrastructure and supporting the deployment of services and applications relying on new technologies.

I – Intelligent Transport Systems

In the case of cooperative systems, the market penetration rates differ depending on the applications under question. Some require a very large number of RSUs (roadside units) and equipped vehicles, whereas some do not. It is likely that a step-by-step deployment will be made starting with applications on low penetration rate. Each application should be assessed separately.

Local authorities are key in deploying many new ITS technologies (e.g. cooperative systems). However, the deployment of new technologies needs to follow existing policy frameworks. Cities are looking for tools that can assist them in achieving their transport policy goals which include reducing private car dependency while maintaining an accessible city for all. Next to the aim of efficient movement, other urban transport policy goals include:

- improving the safety of all road users;
- reducing local transport emissions (air pollutants, noise);
- reducing the transport impact on climate change;
- ensuring a smooth functioning of freight operations in the city;
- good accessibility for all;
- implementation of sustainable cost-effective measures.

ITS measures need to contribute to deliver these goals. Barriers for local authorities in introducing ITS systems are:

- high investment costs
- legacy and integration issues
- uncertainty of market penetration rates
- legal and liability issues

- standardisation
- complex stakeholder interaction (particularly for cooperative systems)
- Lack of evidence of possible benefits
- Possible problems with competing communication technologies, and charges for spectrum allocation
- user acceptance
- data management

Governments on national, regional and local level sometimes lack a strategic position on ITS. Few of them have ITS strategies. This is a potential barrier for the deployment and best use of ITS, also because it increases the risk, real and perceived, from the perspective of private parties.

II - Electromobility

It is extremely difficult to predict the market for EVs. Local authorities are gearing up for electromobility, but there are problems, stemming from the "chicken-and-egg" conundrum with respect EV, including uncertainty of supply of electric vehicles from manufacturers.

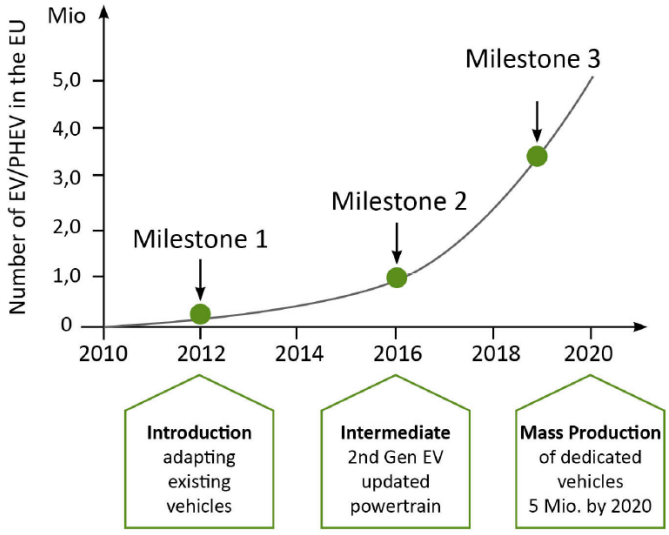
Some examples of rates of deployment of electric vehicles include:

- Autolib in Paris: 3000 vehicles
- 1000 charging points in Rotterdam by 2014
- 375 charging points in Scotland before March 2012

Local authorities tend to have incentives (e.g. reduced rate parking, access to restricted zones, free electricity, etc.) to push the market for electric vehicles. Furthermore, some national governments and regional authorities provide financial incentives to compensate part of the extra cost of battery electric vehicles.

The European Roadmap for the Electrification of Transport[4], to which Polis has contributed, contains some possible values for deployment, with milestones up to 2020 (see graphic below, and view document for further information). These milestones have been developed considering the plans of local authorities, and therefore reflect their contribution to EV market deployment at the time of release of the roadmap.

[4] http://www.ertrac.org/pictures/downloadmanager/1/3/Roadmap_Electrification_Nov2010.pdf



III – Cleaner public transport vehicles

There needs to be an accelerated deployment for cleaner public transport vehicles. Deployment of clean vehicles for public transport on the market is slow. Initiatives to support and accelerate the deployment of clean vehicles are necessary. The Directive on the promotion of clean vehicles, and the Clean Vehicle Portal are tools to support this, but should be complemented by other tools to help stimulate the market.

1.1.4. If these targets are met, what will be the contribution to EU policy goals in the field of transport?

Indicate: Contribution to (1) achieving low-carbon transport (reducing CO2 emissions and dependency on imported oil), (2) achieving seamless mobility in a Single European Transport Area (establishment of a seamless European TEN-T network that is intelligent, efficient, and green, single European 'transport ticket' for passengers and freight), (3) competitiveness and innovation (e.g. future market sizes for a given technology, European share of new market, additional jobs, export revenues), (4) other policy goals (such as reduction of congestions, local/urban pollution, noise reduction, damage to cultural heritage, etc.)

(1) Achieving low-carbon transport

I – Intelligent Transport Systems

It is unlikely that any ITS measure alone will manage to reduce CO2 emissions considerably, but ITS can help to support reduction in emissions. Note that:

- ITS measures may find it very difficult to provide emission reductions on over-saturated networks;

- ITS measures need to be introduced within a coherent policy package including other measures (e.g. promotion of public transport and non-motorised modes, parking policy, etc.).
- Benefits need to be demonstrated through large scale testing. Note also that benefits will differ depending on the size of the area to which they are applied, and benefits will be different for small, medium and large cities.

II – Cleaner Vehicles

CO_2 reduction is increasingly moving up local agendas. Alternative fuels and vehicles such as electric vehicles are key in moving to a low carbon transport system, but it is important to:

- evaluate how much can contribute to reducing emissions;
- Ensure the use of renewable energy in electricity supply;
- Look at the lifecycle analysis and well-to-wheel emissions to ensure that these are taken into account.

To assess these aspects adequately, better tools and models are required, especially at the level of the transport network.

In parallel to the deployment of clean vehicles and the response to the challenge of achieving a low carbon transport system, the modal share of public transport and innovative mobility services will have to increase.

III – Soft Modes, Public Transport

To achieve GHG reductions in transport, there needs to be a modal shift to other more sustainable modes of transport: cycling, walking and public transport use. New technologies should help incite this modal shift (e.g. ITS with journey planning for more sustainable modes).

(2) Achieving seamless mobility in a Single European Transport Area

To achieve seamless mobility at the local level, the key elements are:

- Integration of information on the local network.
- Integration of network management.
- Integration of payment and charging.
- Interfaces between long distance and local (urban) network, for freight and passenger transport

The strategic coordination between traffic and travel information and network management is an important enabler of a seamless mobility chain. Nomadic devices for information and payment are a step forward for ‘seamless mobility’.

The notion of ‘European transport ticket’ presupposes the existence of a ticket for transport, whereas other models which move away from the notion of ‘tickets’ to having payment card system from financial services systems (e.g. credit card) exist. Key is the interoperability of the systems across Europe, and not necessarily the idea of ‘single ticket’.

For vehicles, charging for EV (and other refuelling stations for alternative fuels) is needed over the transport network as well as standardisation of plugs / charging points.

(3) competitiveness and innovation

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(4) Other policy goals

Policy goals for local / regional authorities are given below. **New technologies can play a supporting role in many of these areas** (some examples of how are given):

- reducing congestion;
- implementation of sustainable cost-effective measures.
- reducing local transport emissions (air pollutants, noise);
    - electric vehicles can help reduce noise and local emissions
    - infrastructure design can help to reduce local emissions & noise
- reducing the transport impact on climate change;
    - see response question 2.1.4 (1)
- ensuring a smooth functioning of freight operations in the city;
    - road infrastructure can help
    - light duty EV to play an important role
- good accessibility for all;
    - road infrastructure design can help
- efficient movement of goods and people;
    - increased PT from improved service through, for example, ITS
    - design of roads to accommodate cyclists and pedestrians
    - access restrictions enabled by ITS
- Social inclusion
    - The effective implementation of land-use and transport planning (and thus road infrastructure) can play a role in enhancing social inclusion.
    - The value of the technology to society (e.g. through regeneration) should also be taken into account.
- improving the safety of all road users;
    - Infrastructure design can be made to increase road safety, particularly in helping to reduce speeds of vehicles
- Improving competiveness of local economy.

The integration of environmental data in traveller information and decision support systems for network management should contribute to reduce the negative impact of transport on the environment, if it is part of an integrated policy package and not the only tools implemented for this purpose.

The full benefits of new technologies will only be seen through large scale testing.

1.1.5. Contribution to the overall ('well to wheel') energy efficiency?

Indicate: Effects on energy efficiency in electricity and fuels supply, as well as in use; evolution over time and depending on market penetration, etc

CO_2 reduction is increasingly moving up on local agendas. Alternative fuels and vehicles such as electric vehicles are key in moving to a low carbon transport system, but it is important to:

- Evaluate the contribution to reducing emissions;
- Ensure the use of renewable energy in electricity supply;
- Look at the lifecycle analysis and well-to-wheel emissions to ensure that these are taken into account.

To assess these aspects adequately, better tools and models are required, especially at the level of the transport network.

1.1.6. Are there any interactions with other community policies and initiatives?

Indicate: Potential contribution of the technology to other EU policies; need for measures and initiatives in other policy areas to support the market penetration of the technologies.

Transport technologies can contribute to the achievement and should be considered as part of the following European policies:

- Europe 2020
- Environment
- Regional policy
- Research policy
- Industry
- Information society
- Climate Change
- Health
- Internal market (public procurement)
- TEN-T
- Privacy/liability

The implementation of the ITS Directive will be a key step towards the deployment of ITS and be critical for the efficient contribution of this sector to other European policies.

New technologies can make a significant contribution to some specific policies of the European transport policies. ITS can for instance provide support to achieve some of the objectives of the European policy on urban mobility if it is part of an integrated policy package at the local level. It is a key component of the implementation of the trans-European networks, to manage the networks, enable the required interfaces between the networks and modes to allow for seamless travel on the networks, including the urban nodes.

Within the action plan on urban mobility, further support on the deployment of cleaner vehicles can be useful beyond the clean vehicle portal.

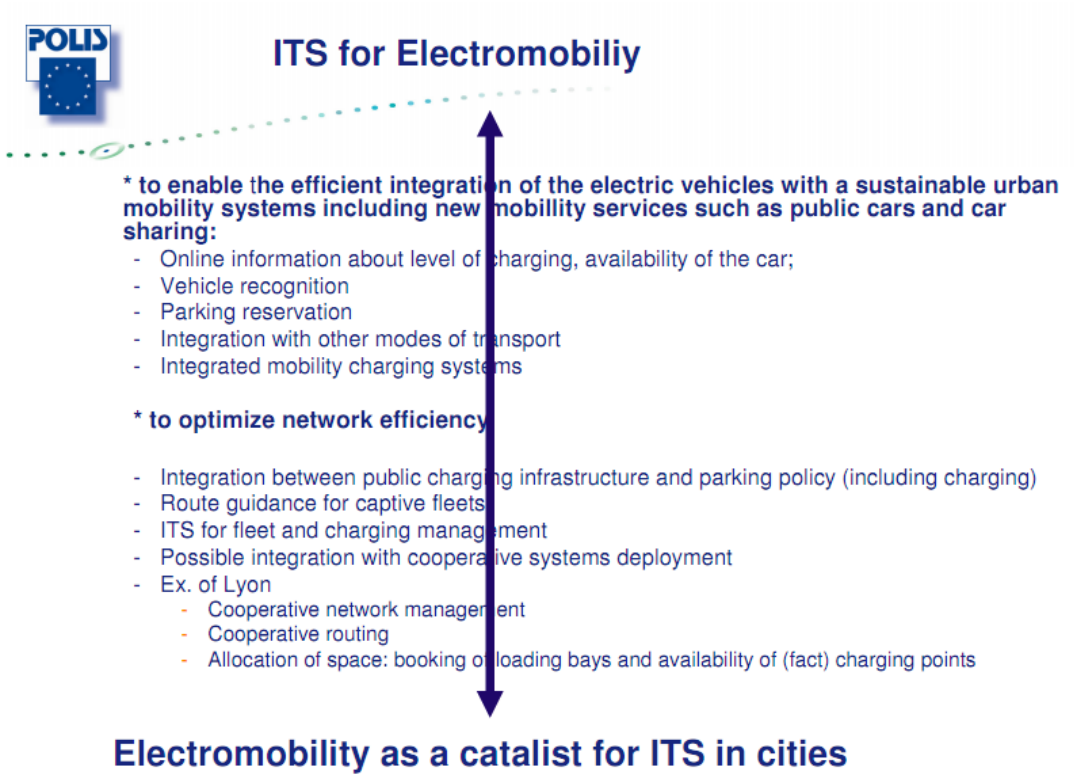
1.1.7. Which are the main competing or synergetic technologies within the activity area? (in relation to the indicated market penetration targets)

There is hardly any technology which will be used in isolation of another to deliver interesting applications for urban and regional transport. Groups of technologies should be applied together. The relative weight of one or the other technology, or the way they will be used, will be the most relevant indicator to measure their impact on transport. It is likely that some technologies will compete. The technologies and sciences to consider are:

- cooperative systems, cooperative roadside units
- satellite positioning, EGNOS, Galileo
- cloud computing
- crowd computing
- automated vehicles
- smartphones and their applications
- Electromobility and ITS (obvious case of synergetic technologies – see below)
- Alternative fuels
- Automated transport systems
- Different forms of communication (wifi, GPS, Bluetooth, etc) (possible case of competition)

Also, communication technologies compete directly with the transport sector, by reducing the need to travel (e.g. through home-working, tele-conferencing, etc.).

ITS has a key role to play to support the deployment of electromobility across Europe. Electromobility will require ITS systems for the monitoring of vehicles (in particular in public fleets), to manage parking and charging points, to provide interfaces for the payment of electromobility related services and with the grid. It is therefore likely that the deployment of ITS and electromobility will steer each other in a complementary way.



1.2. Achieving the Vision

1.2.1. Is your vision achievable under a 'business as usual' scenario?

Indicate: Current support programmes and policy measures and their expected impact

There needs to be a change from the business as usual scenario to reach the sustainable objectives set by cities and regions for their mobility systems.

To achieve these objectives, there is a need to improve significantly the impact of road transport on the environment, and at the same time to have a change in behaviour and a modal shift towards more sustainable modes of transport at the urban and regional level. ITS has an important role to play in fostering these changes.

The use of technology can be used to support change in mobility patterns. EV in particular need to be introduced as part of a coherent & comprehensive sustainable mobility policy.

A large amount of investment, in mobility projects, including in electromobility and services, is needed to achieve the policy goals, and support from EU level to manage this is required.

1.2.2. Are there barriers to innovation? Is there a need for change in the innovation system?

Indicate: For the mode in question any weaknesses in the current system

- The technologies should be application- / user-led to ensure their take-up (rather than 'product-led'). This is not always the case.

- Political will is required to allow innovation. It is not always clear how to demonstrate the benefits of innovative solutions, and how they can deliver policy goals, so the political level can block investment.

- Standardisation can provide a significant barrier. For example, for electromobility: it is currently hard for local authorities to decide which technology to invest in without standardisation. EC level standardisation is moving too slowly for the investments that need to be made today, and this then makes investment more risky for local authorities, so progress will be slower.

- Better cooperation between industry, public bodies and knowledge institutions (triple helix) is needed.

- National rules and organisational rules (e.g. concerning procurement) sometimes block effective innovation. Many (regional) public bodies are not organised in such a way that they can easily and effectively support innovations. The division of roles with industry and knowledge institutions is not clear for all.

- The modelling framework tends to be very car orientated: this provides a barrier to providing innovation to allow for the consideration of cycling, walking and public transport which should be systematically taken into account.

- Technology lock-in can be problematic, as well as the allocation of IPRs.

- Technologically heavy solutions require expertise within local authorities to implement, and this can be a barrier, particularly in smaller cities.

- Bottlenecks in supply can provide a problem, for instance with electric vehicles. The uncertainty in supply provides a problem for local authorities wanting to invest. This is due to the complex stakeholder interactions required in moving electromobility forward.

1.2.3. Does the considered mode/sector already benefit from or plan to set-up initiatives to bridge the gap between the current state of technology and a cost-effective market entry? What would be the critical mass (e.g. investment) needed for such initiatives? What new approaches could be considered to accelerate innovation?

Indicate: i.e. how could the STTP help the sector; which actions of it would be most effective; what impact could be expected with respect to 'business as usual (i.e. No STTP)?

Large scale tests need to be performed to understand the real possible benefits of new technologies (e.g. ITS, electromobility) and to demonstrate them.

1.2.4. What actions need to be carried out at European level? What actions would be better implemented at national and or regional level? Is there a need, or a potential benefit, to integrate or to better coordinate action carried out at different levels?

It is important for the EC to give more attention to a genuine contact with national and regional/local players. Strategies cannot be implemented without attention to the operation and deployment of that strategy.

Regional partners can be useful for financial stimuli and to facilitate pilots, testing and strategic cooperation. National governments are mostly useful for legal measures (framework) and financial stimuli. The European level provides the legal framework, financial stimuli and supports and implements standardisation. European funding is key in inciting innovation.

Government bodies have four roles in innovation.

(1) Legal

The legal framework from EU can help to bring about innovation; for example, through air quality requirements, or CO_2 emissions ceilings.

(2) Financial stimulus

European funding, for example for large scale testing, is key in inciting innovation.

(3) Standardisation

Standardisation (for example in electromobility charging infrastructure, or in providing 'universal data') is required, with more and better information from the EU on what they are doing.

(4) Facilitation

Information sharing on best practice is crucial to properly understand the methodologies to implement and benefits of innovative solutions. Large scale demonstration projects are part of this, and should be organised. Further, the EU could facilitate data gathering on the impacts and uses of new technologies (particularly electromobility).

1.2.5. International Dimension - Is there a potential for international cooperation? What type of cooperation?

Indicate: Major initiatives in other countries; assessment of specific opportunities for international cooperation

International cooperation is key in ensuring that industry has importance on the global market.

This, in turn, is important for local authorities to ensure that the technology used in local authorities across Europe is of high quality (and lower cost), and gives high visibility to innovative solutions in

Europe. It is important to know what is going on at the international level as this can have an impact on the local level.

European local authorities wish to be able to rely on European industry to implement their policies rather than being dependent on products and services developed elsewhere in the world and following requirements which may not be in their interests. Europe can also benefit from developments in other parts of the world.

2. SECTOR/ISSUE SPECIFIC QUESTIONS

ITS Across Modes

1. In order for systems fostering seamless and multi-modal mobility to be implemented, measures to align competition and cooperation between different modes of transport need to be put in place. How do you envisage such processes?

The challenge is not in the competition between modes, but in the integration across modes. The key is in using new technologies to achieve the overarching policy objectives.

Data gathering optimisation should be made between:

- different modes of transport and systems at local/regional level – through open systems such as UTMC and OTIS/OCA which pull data from compliant applications together into a single repository

- urban and interurban authorities/operators, through open systems

There should be coordinated urban-interurban traffic control strategies; integrated network management, through coordinated management strategies (higher-level) and integrated network management centres (traffic, PT, control and information) as well as integrated payment systems.

Environmental and safety concerns need also to be integrated into traffic management systems. Additionally, for seamless multi-modal mobility to be implemented, infrastructure design and land use need to be taken into account.

2. What are the major ITS applications or enabling underlying ICT component, in a given single mode of transport, which could be translated in other modes of transport?

Satellite navigation systems should be used for all modes, including soft modes, and not only mainly for private vehicles (recommended route, alternative route, travel time, incident information).

GSM and GPS data gathered from car users (for management & information purposes) could be applied to other modes (e.g. cycling, walking, and public transport).

3. ***What do you consider to be the main systems or services for multi- and intermodal ITS? Where could a concerted effort of different transport sectors have the most impact for the deployment of innovations? Where do you see a greater role for EU policy in this respect?***

The main systems are:

- Information
- Payment
- Integrated network management
- Applications for freight

There is a possibility of open ITS systems in urban areas (UTMC, OTIS/OCA) also to be used on interurban roads and possibly cross-border journeys. There is an importance to promote the concept of open ITS systems in urban areas and oversee process of pan-European convergence. This would lead to data optimisation (common database) and promote competition between different service provides, ultimately leading to increased innovation.

4. ***What can the role of the European Transport Corridors be in the development and implementation of ITS?***

European transport corridors could be ideal test beds for large scale demonstration of complementary ITS applications on different networks.

Large scale test beds can be organised as "living labs" on the appropriate territorial framework, i.e. urban and interurban environments.

Cities are an integral part of the European transport network: it is necessary to ensure that ITS is not developed only for inter-urban corridors, but also for urban areas.

Road Transport:

1. ***Do you see for road transport the need for additional initiatives at European level beyond the European Green Cars Initiative, the FCH JU, ARTEMIS, ENIAC, the Bioenergy Initiative, and the Electricity Grids Initiative? If yes, then please describe what kind.***

Yes: large scale actions focussing on deployment of innovation which are integrated in mobility policies. These need to involve network managers (public authorities) of various types of networks (urban / regional / cross-border / national / etc.).

2. ***Is there a need for road transport to establish overarching coordination with other modes/ sectors in ITS to overcome barriers and to leverage the full potential of ITS related services and functions?***

A roadmap for R&D activities in ITS should aim at developing tools for the efficient movement of people and goods, not just vehicles. Thus it should allow for the management of cross-modal movements.

ITS can be particularly important in managing large amounts of freight traffic which use a large number of modes.

3. For freight transport, is there a need for coordination or guidance of innovation activities? Which would be the suitable instruments?

Whatever innovation activity undertaken, consideration should be given to the last mile delivery. Incentives should be given to (freight) companies which are driven by profit, to use innovation for sustainable mobility.

4. In your opinion, what have been the most effective initiatives in the past to bring innovation to the market in the road transport sector?

Open systems: The migration to open systems seems to have encouraged local authorities to consider more innovative systems.

EU funding is important in inciting innovation.

Logistics, Urban Mobility & Intermodality

1. Innovation in logistics is to a large extent driven by user demand based on business criteria. Apart from the standard regulatory and monetary measures that may affect these decisions, do you consider that other instruments at EU level can stimulate innovative practices at EU level?

A key element to improve logistics, especially urban freight delivery, is to improve the cooperation between actors. This should involve exchange of data between traffic operators and freight operators, and requires an interface which defines the data (and format of data) requirements. EU level action is required due to the international dimension of freight operations.

EU level action is also required in:

- Supporting demonstration activities which assist urban freight delivery systems.
- Efficient introduction of electric vehicles and hybrid electric vehicle freight delivery in urban environment.
- Facilitation of interchanges and interfaces between long distance and urban freight.
- Ensuring that environmental objectives are considered by freight operators.

2. Given the limitations from the subsidiarity principle, how can the EU support the uptake of innovation at urban level? Can you suggest suitable instruments?

The EU can support uptake in innovation through:

- Large scale demonstrations of new technologies, including local and regional authorities as key actors.
- Transfer of best practices to a large number of cities in Europe which would also encourage take-up of research results in leading cities.
- Removal of technical barriers such as standardisation and interoperability.
- Some regulation: e.g. air quality requirements drive innovation to find solutions to improving air quality.
- Coordination of activities within different policy areas of the EU.

3. R&D and innovation activities differ significantly across modes. How do you think they can be better coordinated in order to improve intermodality?

Integration between modes (and within modes if perhaps operated by different companies within the same area) in urban areas should be a key focus, as it will enable energy-efficient travel solutions. It is important that greater emphasis on R&D at EU level which focuses on integration of the following is given:

- Interfaces on exchange of data;
- Information;
- Network management tools;
- Payment and charging tools.

ANNEX

POLIS POSITION PAPER

June 2010

COOPERATIVE SYSTEMS IN URBAN MOBILITY

Cooperative systems are systems by which a vehicle communicates wirelessly with another vehicle (V2V – vehicle-to-vehicle communication) or with roadside infrastructure (V2I – vehicle-to-infrastructure communication or I2V – infrastructure to vehicle communication) with the ultimate aim of achieving benefits for many areas of traffic management and road safety. In an increasingly mobile-centric society, the potential role of nomadic devices in cooperative systems should also be highlighted. This means travellers – independent of vehicles – can make use of cooperative services, for example with real-time information on public transport.

Cooperative systems may support the management of urban transport systems in many ways. A significant potential benefit of cooperative systems for a local authority is the quality and quantity of real-time traffic data gathered from equipped vehicles. Other promised benefits of the technology include: improved management and control of the road network; increased efficiency of public transport systems; reduced emissions; improved traffic safety for all road users; reduced congestion, and better and more efficient response to hazards and incidents. It is generally agreed amongst local authorities that cooperative systems can bring benefits in key policy areas if deployed following local policy objectives.

Many stakeholders from car manufacturers and ITS solution suppliers to the European Commission, are working towards deployment of cooperative systems: with large European research and development projects such as CVIS and SAFESPOT, pilots such as FREILOT and field operational tests (FOTs), as well as explicit mention in the ITS Action Plan (Action Area 4 – “Integration of the vehicle into the transport infrastructure”). Some Member States are also gearing up for cooperative systems, with the notable frontrunner being the Netherlands which has developed a national roadmap for deployment. Despite this push, deployment may be hindered if urban and regional authorities are not more actively engaged in the process.

Local authorities are important in the deployment of cooperative systems

Local authorities have an important role to play in cooperative systems deployment in equipping streets with roadside units (RSUs) and paying the associated costs of installation, operation and maintenance. Cooperative systems will not be able to fully deliver with just V2V communication, and RSUs are essential to the functioning of cooperative V2I and I2V systems for any type of application, be it an application to ease the journey experience of the car driver (e.g. information about road conditions or parking restrictions) or one to aid the traffic control centre in managing an incident (e.g. dynamic re-routing). It should be noted that the cooperative roadside units are not the same as the units already in existence for systems such as variable message signs, traffic control or parking guidance (although these could possibly be upgraded to be used by cooperative systems).

European research and development efforts on cooperative systems to date have tended to focus on developing and testing applications to make car driving more efficient and safe with insufficient consideration of the urban transport policy dimension. Traffic efficiency and road safety are undoubtedly key transport objectives for any local authority but the policy objectives extend to all transport modes and all road users, including public transport users, cyclists and pedestrians. Applications to support sustainable transport – the overriding goal of any urban transport policy – have not been addressed sufficiently so far.

It must be clarified how cooperative systems contribute to urban transport policy objectives, an important prerequisite for any ITS investment.

Cities looking for tools to achieve efficient movement of people and goods

The efficient movement of people and goods is crucial for economic vitality and quality of life in cities. For many cities, experience has shown that private cars are not the most efficient mode in terms of moving a high number of people smoothly through dense urban areas and therefore measures are being taken to encourage modal shift. In many large European cities, the majority of trips are undertaken by public transport, bicycle or on foot (see figure 1).

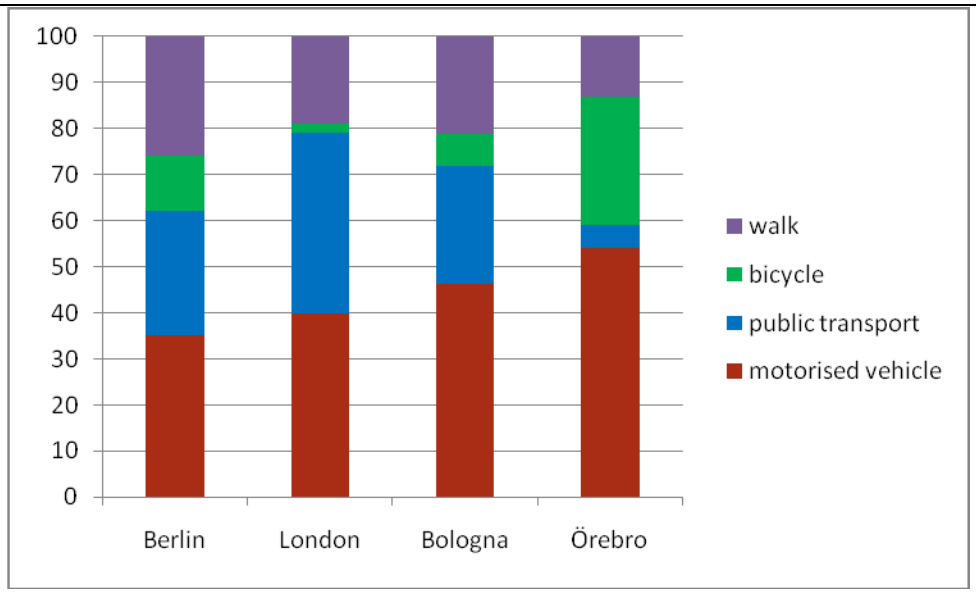


Figure 1
'Motorised vehicle' includes two-wheeled vehicles which is high for example in Bologna (10.6%). Mode share split shows split of total trips. The sources and dates are:
Berlin: Senate Department for Transport and Urban Development, 2006.
London: London Travel Report, TfL, 2007.
Bologna: Urban Mobility Department of Bologna, 2006.

Örebro: Örebro kommun, 2004.

Additionally, modal split statistics for commuting trips in a number of European cities can be found in: Perception Survey on Quality of Life in European Cities. Analytical Report. Conducted by The Gallup Organisation, Hungary upon the request of Directorate General for Regional Policy. 2009.
http://ec.europa.eu/public_opinion/flash/fl_277_en.pdf (p65)

Cities are looking for tools that can assist them in achieving their transport policy goals which include reducing private car dependency while maintaining an accessible city for all.

Next to the aim of efficient movement, other urban transport policy goals include:

- improving the safety of all road users ;
- reducing local transport emissions (air pollutants, noise);
- reducing the transport impact on climate change;
- ensuring a smooth functioning of freight operations in the city;
- good accessibility for all;
- implementation of sustainable cost-effective measures.

Concerns and barriers for local authorities towards deployment

For local authorities to engage in cooperative systems deployment, the business case must be spelled out and must be part of the existing policy framework. Cooperative systems promise benefits, but these are to be proven since the technology is under development, and the results of large-scale field operational tests are some years away. Demonstrations of the benefits of cooperative systems are expected by cities to answer their concerns with regard to deployment decisions.

Furthermore, other means to tackle the same objectives can offer very good results. In some cases, alternative measures could be very successful and more cost-effective, such as route guidance/diversion, parking regulations or other measures to promote modal shift from cars and reduce the environmental impact of transport while also perhaps providing increased health benefits (by promoting cycling and walking). It should be explored how they could be usefully supported by cooperative systems in the future.

One problem many cities perceive with cooperative systems up till now is that most suggested applications concentrate on the private car (and to a lesser extent on freight transport), but without enough consideration for public transport and non-motorised modes. It should also be highlighted that some promised benefits (improved network management, reduced emissions, improved efficiency of public transport systems, etc.) will be very difficult to deliver on oversaturated urban networks.

Next to this, the investment costs could make it difficult for local authorities to make the step towards implementing cooperative systems. At this stage, the financial implications remain unclear and this slows down the discussion process.

Other concerns or barriers for local authorities include:

- **Legacy and integration issues**

  It is unclear how cooperative systems can be integrated with legacy systems and investments already made. How can the transition from legacy systems to cooperative systems be done smoothly? What are the implications from a technical and financial perspective?

- **Uncertainty of market penetration rates**

  Benefits will only be felt provided enough vehicles are equipped and RSUs are installed. A local authority may choose not to invest in RSUs if they cannot reap the benefits of the investment because not enough vehicles are equipped with the requisite technology.

- **Legal and liability issues**

  The legal competences of local authorities in road and network management are part of a well-defined legal framework. It is clear which responsibilities the road authority has over which part of the network, and for which failures in the system they are accountable. Local authorities need a clear picture of how cooperative systems will affect their liability structure. If something does go wrong, who is to blame? The prospect of cooperative systems delegating the responsibility of the driver to the system does not sit comfortably with public authorities.

- **Standardisation**

Local authorities need clear standards for cooperative systems to ensure that any investment taken is future-proof. Standards are being developed, but still have some way to go before industry-wide standards are in place.

- **Complex stakeholder interaction**

  One of the challenges with deploying cooperative systems is that of multi-stakeholder cooperation. Many stakeholders (local authorities, national and regional road authorities, car manufacturers, travellers, road operators, telecommunications companies, fleet operators etc) need to work together in order to get cooperative systems off the ground, and these stakeholders may often have conflicting aims and objectives with regards to deployment. Local authorities need to be assured that other stakeholders contribute their share in deployment if they are expected to invest in cooperative infrastructure.

- **User acceptance**

  Since many stakeholders need to be involved in the deployment of cooperative systems, the issue of user acceptance must be better understood. This also relates to data privacy: cooperative systems require the transfer of location data that can be considered as personal data, and this is both a security issue, as well as a user acceptance issue. Clear rules and procedures to handle these issues need to be in place for local authorities to deploy cooperative systems on a large scale.

- **Data management**

  There are obvious benefits from floating vehicle data, but the added benefits will create additional challenges for the management of extensive real-time data for network management and traffic and travel information.

Conclusions

For an accelerated deployment of cooperative systems, local authorities have an important role to play in particular with regards to installing and maintaining roadside infrastructure integral to the functioning of cooperative systems technology.

More local authorities will be interested in deploying cooperative systems if they offer significant benefits in achieving existing policy goals. Overall, this means the efficient and collective movement of people and goods – independent of the transport mode.

For this reason, their views and policy goals must be better taken into account. In order to accelerate deployment, local policy objectives must be integrated into deployment plans, to provide rationale for local authorities in deploying the technology.

There are many legal and technical issues that still need to be solved. From a local authority perspective, especially the technical and financial implications of moving from current systems to cooperative systems need to be clarified.

Recommendations for an accelerated deployment of cooperative systems

- Develop applications of relevance to local authority policy objectives; particularly with regards to public transport, and non-motorised road users.
- Ensure proper evaluation of benefits, especially at urban level.
- Develop deployment scenarios for local authorities showing (amongst other things) how to move in a cost-effective way from existing systems to cooperative systems.
- Strengthen the role of cities in all development and testing activities, including large scale and complex field operational tests (FOTs) to make sure local policy objectives are taken into account both in the applications developed and in the evaluation. Do not underestimate the relevance of direct involvement of local authorities in testing for dissemination of benefits of cooperative systems to other cities in Europe.
- Develop good business models for local authorities.

Polis is a network of European cities and regions from across Europe, which promotes, supports and advocates innovation in transport.