

ITS in urban transport: the challenges for the UNECE Transport Division

Transport systems play a vital role in supporting socio-economic activities all over the world, and especially, enhancing the activity and attractiveness of urban areas requires a drastic improvement in transport systems in order to provide users with better services, high reliability, high frequency and low emissions.

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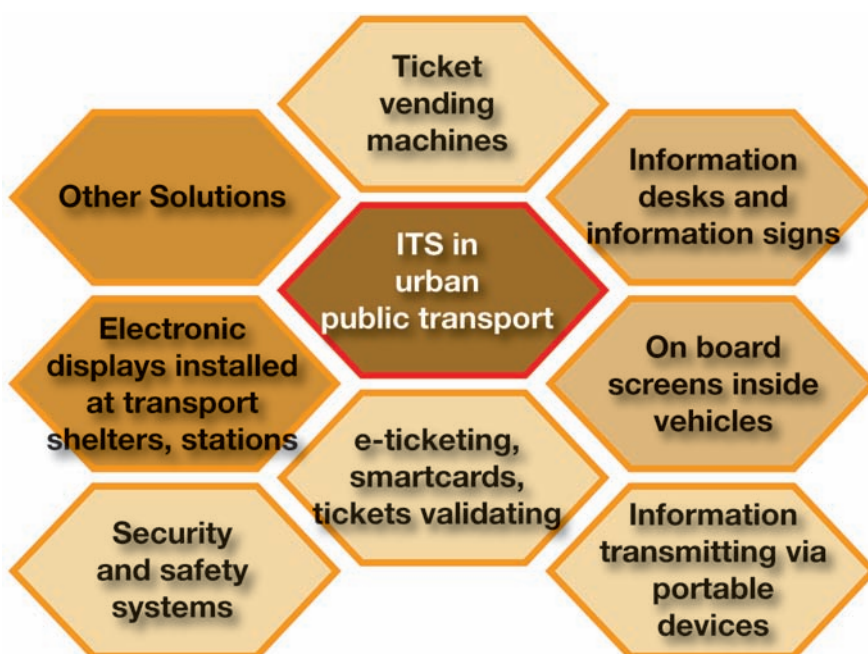
Many eastern European and Central Asian countries have had to face big challenges because of the extraordinarily fast motorisation over the past 18-20 years. Inadequate infrastructure relative to the number of vehicles, coupled with largely obsolete vehicle fleets and outdated technical inspection systems, leave many of these

countries with high accident statistics and poor environmental records.

More generally, high levels of urbanisation are compelling governments to seek innovative solutions in the fight against congestion, pollution and collisions. More and more cities have introduced peak-hour fees to limit downtown traffic and more and more cities in Central and Eastern Europe are considering following these examples. The question, however, is whether public transport is adequately developed technologically, institutionally, financially or commercially to be a viable alternative to private cars. With the advent of ITS, public transport can perhaps be better assimilated with the cityscape as well as private vehicles.

“High levels of urbanisation are compelling governments to seek innovative solutions in the fight against congestion, pollution and collisions”

A new phenomenon, known as trans-national megalopolis, is exacerbating urban transport problems, because developments at sub-national levels lead to urban



ITS in urban public transport

Source: V.Gedimino, Transport and Telecommunication, Vol.7, No 4, 2006

agglomerations that may compete with the state or federal government. We also witness that large metropolitan or megalopolitan entities are emerging across the borders, such as the urban-industrial triangle from Benelux through the Rhine to Luxembourg and Strasbourg; or between Schechne and Berlin, or the triangle of Vienna-Bratislava and Gyor. Their cross-border nature further complicates the feasible solutions and the harmonisation of the transport policies is warranted not just on national and sub-national levels, but also internationally. Obviously there can be different approaches and even competing interests in how transport systems could be developed.

The overarching issues facing transport, health, environment and mobility, are most obvious in urban areas. Managing traffic is becoming an increasingly complex exercise. Constant new technology, research and practices make it difficult to assess what the best practices are. With populations increasingly reluctant to accept poor transport planning as they strive to improve the quality of life, the pressure is on for modern cosmopolitan areas to have measures in place to deal with congestion, safety, pollution, security, etc. New value added services, for example for people with mobility handicaps, will likely become mainstreamed. The question is however, if we already have an appropriate framework and international architecture into which all these initiatives would fit without creating concerns for inter-operability.

The transport issues and trends shown in Box 1 on page 28 are acknowledged problems in many cities. In the past, the answer has been to build more roads. As travel demand increases, it will not be possible to build infrastructure to meet that demand, especially in congested areas. The Intelligent Transport Systems (ITS) offer opportunities to manage travel demand and can help reduce the need for new infrastructure. ITS is the integration of information and communications technology with transport infrastructure, vehicles and users. It enables information to be collected and shared in order to help people make more informed travel choices, make journeys more efficient and help to reduce the impact of transport on the environment.

The ITS applications can play an important role for transport, particularly in big cities. In particular:

■ **Improving traffic flow:**

- Signalised junction controls can improve traffic flow and reduce air pollution
- Urban traffic management and control will enable police and local authorities and public transport operators to share information and help develop a truly integrated and more efficient transport system

■ **Improving road safety:**

- Enforcement cameras deter speeding and discourage running traffic lights
- Intelligent traffic signals can increase the time available for people crossing the road, where and when this is needed

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What are the general trends in the urban transport sector?

- **Rapid growth of urban areas:** cities are major engines of growth in most countries
- **Very rapid increase in motorisation:** urban motor vehicle ownership and usage is growing even faster than the urban population
- **Substantial increases in traffic congestion:** ownership and usage of cars is growing much faster than the ability to provide road space and alternative means of coping with the problem
- **Relative decline of public transport usage and services:** the growing reliance on private vehicles has resulted in a substantial decline in the share of total trips being provided by urban public transport systems in many cities
- **Shift from public to private sector provision of services and facilities:** recognising the inability of the public sector to provide adequate finance for urban transport infrastructure and in many cases, the relative inefficiency of the public sector in providing urban transport services, the public sector is increasingly relying on the private sector to provide these facilities and services
- **Shift from new road construction to intensive management of urban road networks and improved public transit:** there is a growing recognition that cities cannot build enough road capacity, especially in city centers to accommodate the growth in travel demand by means of the private vehicle
- **Rapid introduction of Intelligent Transport Systems:** the relatively recent development of improved intelligent technologies has resulted in many applications being rapidly deployed in many cities as a means of better utilising urban transport facilities
- **Potential for better acceptance and deployment of demand management techniques:** transport planners and economists have been advocating for years the logic of charging road users for the use of scarce road space, primarily as a means of maximising the use of urban roads during congested periods and secondarily as a means of securing additional funds for transport investments
- **Revival of multi-modal urban public transport** in which trams and trolley-buses have distinctive roles to offer the services and keep the historic face of the cities
- **Conversion of public transport terminals into commercial areas, where basic public services are also to be found** is a particular trend in many ancient cities in Europe, but not exclusively
- **Emergence of eco-cities with a strong emphasis on modern public transport** where walking and cycling is not an occasional chance, but where they are properly planned for and supported

Source: World Bank and UNECE

“The overarching issues facing transport, health, environment and mobility, are most obvious in urban areas”

Right information at the right time and at the right place is critical for successful urban public transport, especially in a multimodal transport system. Flexible and qualitative urban public transport is hardly conceivable and possible without deploying intelligent transport systems. These main approaches of intelligent transport systems in urban public transport have been identified:

- Information prior to or during the journey on urban public transport services (WAP, SMS etc.)
- Electronic displays showing the time left before an arrival installed in bus, trolley, tram stops or stations etc.
- Electronic information desks for retrieving information on routes, ticket prices, timetables, announcements on traffic conditions etc.
- On board screens in urban public transport vehicles (vocally announcing stops, showings teletexts and other information etc.)
- Tickets vending machines (TVMs)
- Electronic tickets, e-ticketing etc.
- Security systems (security cameras etc.)
- Electronic information signs such as illuminated arrows, numbers, pictograms etc.

Box 1: Transport issues and trends

- Other passenger information services (displaying vehicles location, walk distances between stops, parking information, etc.)

ITS solutions utilise advanced and emerging technologies in such fields as computer technology, information technology, electronic communication and control, artificial intelligence, and electronics. Innovations in traveler information, traffic management, and vehicle control can make possible changes in the way that highway systems and vehicles interact.

UNECE Transport Division and the ITS challenge

The Transport Division was established under the UNECE in response to an urgent need after the end of the Second World War for an overall coordinator of transport facilitation. The big challenge for the Transport Division of the UNECE is to listen, understand and respond to new transport issues and in parallel to continue its huge task of promoting implementation of the existing conventions and agreements by all member countries.

“The use of Intelligent Transport Systems is expanding at rocket speed”

In the age of globalisation and technological revolution, the use of Intelligent Transport Systems is expanding at rocket speed. International transport, as part of global supply chains, is growing even faster than world trade. Unless we can facilitate the introduction of standards or perhaps the framework for an international ITS architecture, we are likely to face similar compatibility and inter-operability problems to the situation faced by the railways, even though the foundations for their predicament were laid back in the nineteenth century.

There is no doubt that ITS opens up many new possibilities for the world of transport and is in line with the central idea of ITS, that of approaching the field of transport as an overall system dependent on its various components. UNECE attempts to approach transport in an

integrated way. It not only looks toward new ways of doing things, but also at ways of marrying traditional, well-functioning legal instruments with new technology.

The lack of international agreement on ITS standards could prove to be an obstacle to further development. In transport this could be the digital divide between the developed and the transition economies. It could also become a tool for neo-protectionism. Therefore, perhaps the biggest challenge today is to avoid the myriad of non-compatible applications. One can recall that in the early nineties the road transport industry cried out for improving the conditions for border crossing. At that time, long waiting times at the borders and the

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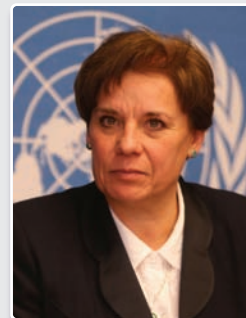
desperate attempt to raise political awareness gave birth to the slogan that the iron-curtain had been replaced by a paper-curtain. UNECE Transport Division, with its conventions concerning border crossing facilitation, contributes to the facilitation of the transport industry by minimising or eliminating physical and non physical obstacles. Well, unless there are standards and/or appropriate ITS architecture, we are soon going to enter the age of the ‘electronic curtain’. The threat posed by a lack of inter-operability and compatibility in ITS may be several times greater than the problems we can see in the railways. Here, there is a role for the Transport Division of UNECE to play. ●

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