



A Vision for Public Transport in Europe



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WACHTZAAL

VOYAGER is an initiative of the European Commission's Directorate General for Transport & Energy, Clean Transport Unit. The project is led by an international team of public transport organisations, local authorities, research centres and transport consultants. The objective of VOYAGER is to create a vision and make recommendations for the implementation of attractive, clean, safe, accessible, effective, efficient and financeable European local and regional public transport systems for the year 2020.



Content

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VOYAGER was led by an international team of public transport organizations, local authorities, research centres and transport consultants including UITP, Polis, Socialdata, CERTU, TIS.PT, Rupprecht Consult, AMT Genoa, Babtie and UWE.



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A vision for public

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Introduction



Public transport (PT) plays a crucial role in society since it significantly contributes to more sustainable mobility systems in our cities and regions. A modal shift towards public transport can provide considerable societal benefits, including less traffic congestion, fewer emissions, reduced traffic risk and increased energy savings.

Public transport can also bring great benefits to citizens, mainly by improving transportation options, saving on costs and providing basic mobility needs, in particular for non-drivers. In addition to direct benefits, public transport has a variety of indirect effects, such as boosting economic development and increasing property values or leading to more efficient land use patterns.

As it stands, the long-term trend towards an ever-smaller modal share of public transport in Europe seems set to continue. However, in many, mostly larger European cities, the market share of PT has stabilised or even increased considerably in recent years. Thus, the trend of decreased PT usage cannot be said to be generalised since the development of patronage depends on many factors, such as quality of services, local policies, local economic development and lifestyles.

In most Central and Eastern European (CEE) countries, a modal split that was clearly in favour of public transport fell significantly in the early 1990s, when the change to market economies fuelled huge rises in car ownership. This drop has slowed to a steady decline in the last few years in line with steady economic growth and the persisting poor social image of public transport.

Given the complex mobility patterns, new opportunities in technology, changing institutional frameworks and severe financial constraints, how can public transport take up the challenge?

With this context in mind, the VOYAGER project aimed to consolidate current experience and ***to create a vision and make recommenda-***

tions for the implementation of attractive, clean, safe, accessible, effective, efficient and financeable European local and regional public transport systems for the year 2020'.

The VOYAGER project was an initiative funded by the European Union under the Research Framework Programme of the European



Commission. It began in September 2001 and continued until the end of 2004. The project consortium was led by UITP, the International Association of Public Transport, and involved eight more European partners: POLIS (Belgium), SOCIALDATA (Germany), CERTU (France), TIS (Portugal), Rupprecht Consult (Germany), AMT Genoa (Italy), Bactie (Czech Republic) and the University of the West of England.

The project was a thematic network activity, designed to gather practitioners' input to assess whether results of current research and development are known by the stakeholders and whether these meet the needs of the sector.

The project provided a platform for all relevant actors to discuss future challenges for the public transport sector and to provide a clear set of recommendations and expectations from the public transport sector's perspective for inclusion in future research and policy agendas.





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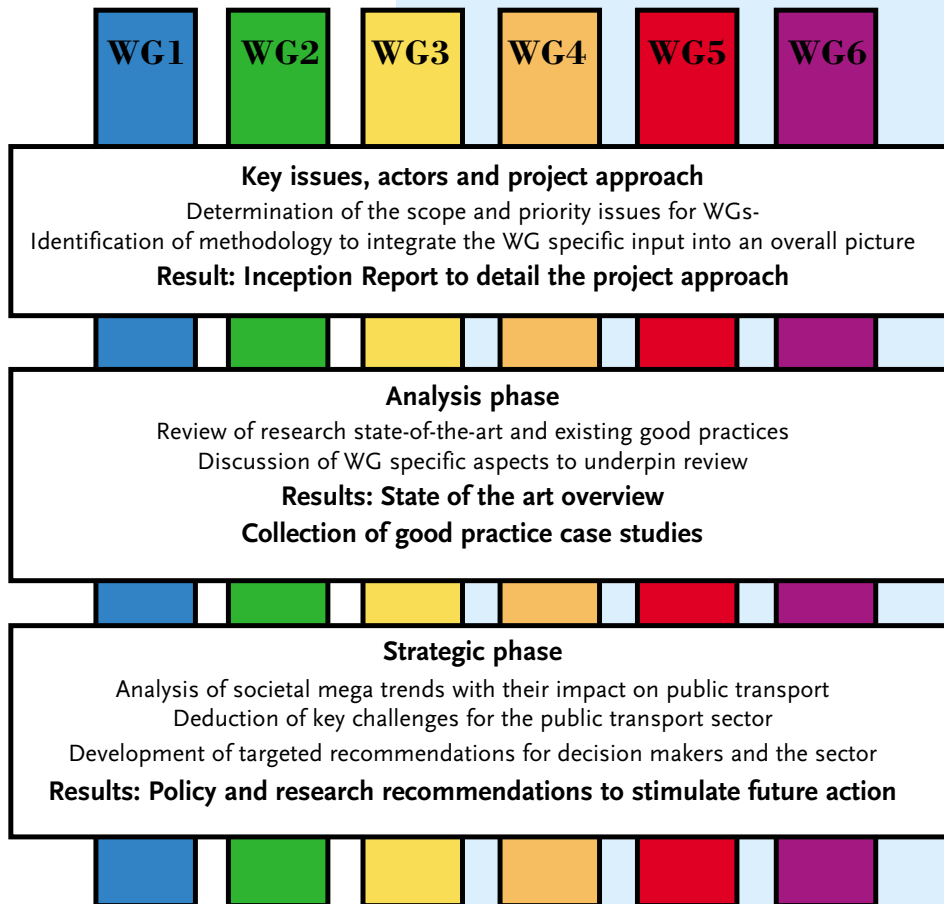
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The Project Approach

The VOYAGER project was organised in two phases, one dedicated to analysing the current situation of the public transport sector, while the second phase focused on strategic discussions in order to develop future research and policy recommendations.



■ The analysis phase

Within the analysis phase, available research results were reviewed, and current scientific knowledge and existing good practices were collected, in order to draw up a state-of-the-art overview. The work focused on distinguishing problems from barriers, which in that context were defined as follows:

- **Current problems** hinder public transport from improving performance at a local level. These could be anything: a lack of technology, unfavourable institutional background, management shortfalls, etc. A Europe-wide approach to these problems, however, revealed that there are solutions existing in other places that might just not be well known.
- **Barriers** do also hinder public transport and they may have the same appearance as problems. However, within the given current background no solution is available. Barriers exist when the public transport sector today is prevented from action due to external factors, missing technology or legal provisions.

The key recommendation to tackle the problems identified is exchange and dissemination of knowledge in order to benefit from existing experiences. Available solutions might not be one to one transferable to other situations, but they might inspire and stimulate new thinking.

The barriers identified have been transferred into the second phase of the VOYAGER project. With no solution available from the current perspective, the barriers were re-assessed against a future horizon of 2020.

This perspective, 16 years from now, was deliberately chosen as it allows for some progress in technology, but avoids the assumption that progress is the ultimate problem-solver. Sixteen years is also beyond the normal business and contract horizon within the public transport sector, thus it forces practitioners to brainstorm beyond their usual approaches.

■ The strategic phase

In order to prepare for more strategic discussions, external mega trends were analysed that describe major societal developments expected for the near future. The developments may not have a direct link to public transport, but they are likely to have an impact on the sector.

These trends provided a basis for re-assessing the current barriers identified, which are now approached as potentially solvable problems in a future situation. The objective of the assessment was to find out whether external trends have the potential to reinforce or ease certain strategic problems, whether they will raise new aspects or whether new problems will arise along with societal developments.

Discussing these general trends allowed key challenges to be identified for the public transport sector up until 2020. Based on these key challenges, recommendations were formulated for future action by decision-makers on several levels, including public transport actors themselves. The recommendations target research and technology development as well as legislation and decision making at European, national and local level.



European Local Transport Information Service

A very useful tool for this exchange already exists. Within the VOYAGER project, the ELTIS portal (www.eltis.org) has developed and maintained a web platform dedicated to dissemination and exchange of information, knowledge and good practices related to urban transport. There is a total of about 600 good practice case studies available, addressing a wide range of urban transport related issues.

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■ The involvement of practitioners

Thematic networks funded by the European Union are special actions for networking, exchange and dissemination of knowledge. They bring together the industry, universities and research centres, users and other relevant stakeholders around a common research and development objective relating to the priorities of the European Unions' Framework Research Programme. Thematic networks do not facilitate actual research and development, but support activities such as establishing the state-of-the-art, comparing best practices or benchmarking.



Public transport market and customer relations

To inject new thinking into public transport to influence the approach of transport actors towards their current and future customers was the raison d'être for this working group. The discussion focused on customer expectations, future partnerships in the field of marketing and the development of strategic marketing approaches.



Roles and structures of public transport actors

This group had been set up to discuss roles, structures and relationships between different actors in the public transport sector. The discussion aimed to highlight potential ways of fund raising for public transport systems. New forms of collaboration, financing and management were examined within the discussion of the future of regional and urban public transport.



Public transport infrastructure and rolling stock

Infrastructure and rolling stock are key components of the public transport systems that must offer a high quality of service to a quite varied clientele. Current systems are in need of enhancements to improve PT attractiveness, i.e. decrease journey times and offer better comfort and accessibility for all. This working group has been assessed how best to tackle the complex transport environment, to improve infrastructure and rolling stock design and to develop user-facing networks.

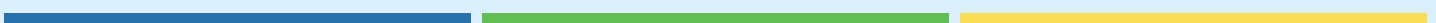


Seamless intermodal networks and services

The work of this group focused on integrated intermodal transport services as a response to the increasing gap between public transport demand and supply. The discussion addressed both sides, how to adapt and customise the supply side in order to meet customer mobility demands, but also how to influence the demand side (e.g. by means of land use policy) to achieve a modal shift towards public transport.

The working group profiles described were designed to cover a wide range of public transport related issues, yet kept a practical background enabling the experts to join scientific discussions starting on familiar territory by contributing their day to day expertise.

A total of about 100 experts were involved in Working Group discussions, representing all relevant public transport stakeholders. When selecting the working group members, emphasis was put on their individual expertise, sufficient coverage of all relevant stakeholders and a geographic balance across European countries.



In line with these requirements, the VOYAGER project provided a platform for public transport stakeholders. It gathered together representatives of the manufacturing industry, operators and authorities, research specialists and user groups, who brought their specific day to day experience into the discussion at several stages of the project. In order to address a wide range of issues, the experts were organized into six project working groups (WGs), each dedicated to a specific domain:



Public transport and ITS

The potential impact of intelligent technology solutions on public transport was under discussion in this working group. Focus was not placed on the technology development itself, but on technology implications and their potential to make public transport systems more efficient and attractive, also taking into account the opinion of users towards new technology developments.

CEEC panel

In addition to the above-mentioned groups, a special expert panel was set up to discuss specific problems related to Central and Eastern European Countries (CEEC) and EU enlargement. It covered the whole range of issues addressed in the working groups, however focused on specific problems resulting from the transition process from planned economy to market economy. Organisational and institutional aspects needed to be discussed in the light of incorporating European Community law into national legal systems.



Training and human resources development

This working group was set up to discuss the potential of strategic management programmes in striking the right performance balance, becoming competitive while remaining responsive to customer requirements. It looked into developing an effective service approach among staff as well as developing skills such as security competence and stress management.

The working groups met four times during the VOYAGER project, and the meetings were always linked to crucial steps of the project workplan. For each meeting the working groups were composed of six to eight experts in order to facilitate real discussions, yet to provide for sufficient involvement of all relevant stakeholders.

Throughout the whole project the key task of the project consortium was to compile and assess all relevant material - from public transport related research as well as available trade press - in order to form an overall picture.





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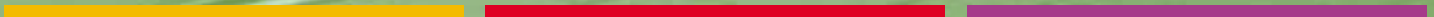
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Current Situation of the Public Transport Sector

In order to provide a sound basis for discussing future developments within the public transport sector, a broad review of the current situation was carried out. The material compiled was analysed and structured in line with a set of horizontal issues based on sustainability categories as defined by the World Bank.

According to this definition, a sustainable transport policy has to respond equally to the efficiency demands of the economy (economic and financial sustainability), to the social demands of individuals and society (social sustainability) and to environmental protection demands (environmental sustainability).

The material collected and analysed contained numerous good practices reflecting innovation and progress made in various cities and organisations, yet would be too great to be presented here. Thus, this section summarises the key problems identified for public transport. It is not intended to create a grey sector image, but to highlight handholds, where there is a general need to re-consider current policies and redefine approaches.

■ Public transport and economic / financial sustainability

Public transport systems should be efficient and effective; providing cost and production efficiency, while attempting to strike an effective balance between service supply and demand.

In a competitive environment, it is essential for public transport organisations to ensure economic efficiency. Funding and pricing of public transport services should be financially sustainable with subsidisation only for social and economic reasons. In order to achieve a better capacity utilisation of public transport networks, a number of aspects are of great relevance:

It is important to base the public transport supply on a sound knowledge of existing and potential demand. Existing infrastructure and rolling stock need to be utilised more efficiently. Improved co-operation between stakeholders and enhanced operation management can facilitate this optimisation.

Within the public transport organisations there is a need to increase the involvement and responsibility of staff members in service provision. The advantages and benefits public transport can bring have to be communicated more actively and need to lead to permanent dialogue with customers.

Analysis of the transport market and customer's perspective

For successful service provision it is crucial to position public transport within the overall transport market, to analyse the role it could play and the user needs it should respond to. Surveys and studies on the transport market and mobility patterns are an essential basis for planning of public transport services and need to be updated regularly to ensure that they reflect an up-to-date situation.

The analysis of mobility-related surveys is often characterised by weaknesses in terms of using and comparing the results. Those departments responsible for carrying out surveys are often not aware of the potential benefits of their data and therefore communicate the results to other interested actors slowly or not at all. As a consequence, the comparability of data regarding the performance of different PT operators or modes is often limited.

Only some PT companies directly count their users to gather data on the distribution of passengers within their network. This means that public transport often does not respond adequately to the changing activity patterns of customers.



KONTIV, A continuous mobility survey

KONTIV is an instrument designed for regular city-wide public transport market analysis. The survey helps to identify the present situation and trends concerning mobility behaviour and attitudes towards mobility, allowing the development of corresponding measures.

Carried out on a regular basis, the information gathered by the survey is an important and reliable source of information. Customer preferences and satisfaction can be established on time, thus ensuring that the public transport services are meeting users' needs.

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ROPID, public transport integration in Prague

ROPID has developed the first major and groundbreaking CEE example of an integrated suburban/urban transport organiser. The principle of integrated transport organisers is well established in the EU, yet the uncertainty of budgeting for municipal participants and compensation for externally imposed discount fares represent CEEC specific challenges.

ROPID has been successful in creating a feasible and workable integrated suburban public transport system, which is attractive for the purchaser of services. This is also demonstrated by the current growth of numbers of villages that participate in the integrated system (about 20 % per year and a 5-fold increase since 1996).

Furthermore, many PT companies do not pay sufficient attention to the analysis of customer's reasons for using or not using public transport. The importance of subjective reasons compared to the more visible objective reasons often remains underestimated.

Organisation of the public transport sector

It is necessary to review the structure of the public transport sector in order to facilitate increased efficiency. Many problems have been identified relating to the introduction of competition, contractual arrangements, emergence of new actors and the organisational integration of public transport.

With the introduction of a form of competition there is a general fear, that cost saving pressures would draw attention away from social and wider community needs. A second problem related to the introduction of competition is the preferential position of the former operator in the market, mostly publicly owned, who tries to block competitive tenders. This means also that present operators hinder the access of potential competitors to important market information.

Introducing competition to the public transport sector also involves the danger of creating an unfavourable market environment if not enough potential operators decide to bid. In this case, the benefits of introducing competition can be lower than expected. Another danger of unfavourable public transport market conditions is the trend of a few large international companies dominating the opened up markets, which can often lead to unbalanced market forces between manufacturers, operators and authorities.

For contractual arrangements, the main problem lies in combining the binding nature of a contract with the flexibility required for the operator to develop better services. Another problem is linked to defining the right duration for contracts. While longer contract periods allow for more stability on the operator side, shorter contract duration ensures more flexibility for the authority.

The organisation of public transport is characterised by an increasing number of actors due to a diversification of services. With an increasing number of different actors, who can sometimes have conflicting interests, the development of integrated customer-oriented services is getting more difficult and calls for the integration of public transport in an overall integrating authority.

Many authorities are reticent to transfer certain legally allocated competencies to an integrated regional authority. Moreover, the co-ordination of PT policies and other urban policies, such as land use, is not well established. Although widely discussed, examples of true integration are scarce.

Use of infrastructure and rolling stock

More efficient use of PT infrastructure and rolling stock creates high potential for better use of the PT network capacity. Large scale upgrading and enlargement of public transport infrastructure, relating to networks, interchanges, dedicated lanes, etc. are often difficult to implement due to lack of



investments. In many cases, only limited financial resources are available for improving and maintaining PT infrastructure.

PT stakeholders often hesitate to invest in the improvement of interchange design due to high costs. The positive effects that new or redesigned interchanges can have on the efficiency of a PT network, due to savings in time, are often underestimated. The importance of small or “informal” interchanges for promoting intermodal trips, are often not fully appreciated.

The introduction of new rolling stock systems is considered very important to diversify the products offered and to make use of available technology and design progress. However, the high investment costs are once again a major problem for public transport operators.

Many innovative rolling stock systems, such as guided systems on tyres, are still in an experimental phase and are therefore not yet widely available. Initial projects have turned out to be more expensive than expected. Further assessments in terms of cost and reliability are necessary before wider market introduction is possible.

Management of public transport operations

Improved planning in terms of vehicle fleet operations, traffic signal control and bus priority is important to achieve a more efficient public transport network. However, the low level of integration of operations management systems into overall company management systems, including operational planning (timetables, driver and vehicle rostering and so on), staff management and financial management is seen as an important problem.

It has been demonstrated that public transport priority at traffic lights can provide economic and operational benefits, yet might create some disadvantages for general traffic. This shift in balance sometimes results in a lack of political support and adequate funding. Close co-operation between authorities and operators can back up careful planning and implementation, ensuring greater PT efficiency and thus contributing to more sustainable urban transport.

Training and human resources management development

Staff management and development in public transport companies can play a crucial role in improving the quality of services delivered. The key problem related to this area is again the lack of financial resources. Privatisation, reorganisation and cost reduction programmes are the factors underpinning a tendency to dedicate less money to human resources development, although much effort would be required to achieve a more customer-friendly approach by staff.

In terms of management development, many public transport companies have difficulties in hiring high level managers, since they compete with other industry sectors that offer better salaries or working conditions. Another

Public transport interchanges, Lund, Sweden

The city of Lund has transformed its Central railway station into a multi-modal interchange, in order to re-structure transport services and to improve urban mobility. A general objective was to favour non-motorised trips and the use of public transport.

The distances between different modes have been optimised and facilities improved, such as establishing P&R and B&R stations, and better access to the city centre. Better comfort and safety for travellers at the re-designed interchange has resulted in a high user acceptance and satisfaction.



TMB Staff participation system, Spain

Human resource management at TMB, the operator in Barcelona, involves a participation strategy intended to improve the internal communication and involvement of staff in decision-taking. Working groups have been set up to encourage staff to suggest improvements to the jobs they do.

Active involvement of staff in company internal decision-making is considered beneficial to both sides. Staff members enjoy recognition of their experience, while the company benefits from staff commitment to improving working procedures.



Public Transport financing in the Czech Republic

In order to minimise social exclusion and to support sustainable mobility for trips originating in rural areas of the Czech Republic, a stable and co-ordinated minimal adequate coverage of regional public transport service has to be provided by law, at a socially acceptable tariff.

Public transport service has been broken down into basic public transport service, which receive state subsidies and other public transport service not considered basic public transport service, but still of public interest to the local community, financed and contracted as a public service by the municipalities themselves.

Metro Porto, co-operation for infrastructure development, Portugal

The company "Metro of Porto S.A." has been established in order to create a metropolitan metro system, which operates in several administrative areas without a competent authority in place. In order to co-ordinate the planning, construction and operation of the metro within the various existing responsibilities, Metro Porto involves representatives of municipalities concerned.

The construction of the system was included in the national investment plan in order to receive the necessary additional funds from the national administration and the European Investment Bank (EIB), which approved a loan for 50% of the costs.

problem in this respect is the low profile of the job of driver. Drivers cannot obtain an official (national) diploma, only internal certificates are available.

A widespread problem, in particular amongst small public transport companies and companies in the CEE countries, is the lack of career and training able to offer attractive prospects and motivation for staff members. With high share of staff due to reach retirement age in the coming years, appropriate retirement agreements are not always in place and show big differences between European countries.

PT marketing

After streamlining the existing public transport network and organisational structure, it is important to better "sell" the service in order to increase its market share. Marketing is increasingly recognised as an effective tool for the future development of public transport. Recent major changes in the market environment require a customer-oriented approach that gives marketing a key function in the management of public transport systems.

Although nearly all public transport organisations implement marketing measures, the potential benefits that a comprehensive marketing strategy can have on the development of public transport use are not fully appreciated. In the public transport sector, marketing is still often seen as a cost factor rather than a measure that can potentially increase the income of the company.

In general, there is often a lack of integrated marketing strategies, especially in smaller public transport companies with limited human resources. Co-operation between the marketing department and other departments, especially human resources and sales, is often very limited.

Financing of public transport operation

Within complex, multi-operator public transport systems, the difficulty of distribution of revenues in integrated tariff and ticketing systems is an important problem. Ticketing systems, which can include services of several public transport operators, need to find a way of allocating the resulting revenue to the individual operators according to the amount of service they have delivered.

With respect to the introduction of competition, an important problem is the unclear and unequal allocation of subsidies and other financial incentives amongst the PT operators. Often, the allocation of subsidies amongst PT operators is not based on the types of services offered by the operators, but consists of gross covered of the operator's debts at the end of the accounting year.

In CEE countries especially, the lack of reliable and sustainable operational financing models is a problem. Many operators face high revenue risks due to unreliable loss coverage by public authorities.

Financing of public transport infrastructure and equipment

Financing public transport infrastructure and equipment is considered a major problem for local authorities and operating companies. Especially in the CEE countries, there is a great need to upgrade the ageing rolling stock and existing infrastructure to modern standards.

At the same time, local authorities or public transport operators in CEE have a chronic lack of public investment funds and viable alternative resources for maintaining or renewing neglected public transport infrastructure and rolling stock or creating new services.

Private funding options, such as public-private partnerships (PPPs), can only be used for specific stand-alone projects that are operationally profitable; they are not a general alternative. The major concern when using PPPs for transport investments is the risk allocation between the partners.

Public transport and social sustainability

PT systems should be designed to provide citizens with better travel opportunities and better access to their day-to-day activities, such as employment, education, and health services, without being dependent on the car. Accessibility is particularly important for people with reduced mobility or those living in remote areas, in order to avoid social exclusion. PT systems can also have a considerable impact on safety and security of passengers and staff (e.g. fewer accidents, and less journey stress through better information.)

Public transport is a business sector where economic interests and societal requirements widely overlap. The development of public transport services cannot depend on market forces alone, since it has an important role in promoting local economic development and improving the quality of life of citizens. Public transport can be considered as a collective mode of transport, which must respond to a wide range of different needs and expectations. Therefore it is often deemed necessary for public authorities to intervene in public transport in order to balance interests and to ensure a minimum level of services for particular areas and social groups.

In a society where car ownership is the norm in most households, individuals without access to a car can be considered as transportation disadvantaged, since their travel alternatives are limited. The limited travel options make them “socially excluded” to some extent, since they do not have the opportunity to fully participate in all day-to-day activities like the vast majority of society with access to a car.

Age, income, disabilities, gender, ethnicity and education are all factors affecting mobility. Minors, the elderly, the poor or people with disabilities feature high on the list of the mobility disadvantaged. Especially in peripheral areas, the “social exclusion” of non-car owners and non-drivers is obvious, since access to most facilities is almost impossible in some areas without a car.



Sociological Marketing, Barcelona, Spain

Sociological marketing is an initiative of TMB, the public transport operator of Barcelona, and has a special focus on captive users. Its objective is to satisfy customers so that they transform themselves into defenders of public transport services.

As key activities a new corporate identity has been created for TMB along with a new logo that transmits values, such as dynamism, modernity and friendliness. A publicity campaign was started, which communicated the quality of public transport without comparing it to other modes, thus trying to eliminate the idea that bus or underground are only taken due to a lack of alternative.



Mobility Car Sharing, Switzerland

"Mobility Car Sharing Switzerland" is the world's largest car sharing organisation. In co-operation with local public transport providers and Swiss Federal Railways the organisation offers a nationwide intermodal mobility service.

The organisation rents cars for shopping trips, business trips or excursions at locations throughout Switzerland at a lower cost than conventional car rental. The available fleet currently consists of 1770 cars at 990 locations in 400 communities all over the country. It was used by more than 50,000 customers in 2002.



Clearly, general policies to promote the quality of public transport services will have benefits for all citizens, in particular for the socially excluded, and can therefore largely contribute to social sustainability. Public transport can be very supportive in providing better travel opportunities and better access to day-to-day activities of all people, such as employment, education, and health services without being dependent on the car. In order to provide high quality services, PT must be improved in terms of its availability, accessibility and attractiveness.

Availability of public transport

The availability of public transport is highly dependent on the operating environment. It is often curbed by insufficient frequency and capacity of the services, which affects peak hours in high capacity systems as well as general service provision in low density areas.

While intermodality is a key for developing efficient public transport systems, it often requires changing, and insufficiently co-ordinated PT services often lead to long waiting times at interchange points. The development of truly integrated multimodal transport systems requires close co-operation between involved organisations, which is becoming more difficult within a liberalised market environment.

Another key problem related to the availability of public transport is that the supply of services is only adapting very slowly to the changing demand of customers. Very often, the provision of public transport services is not flexible enough and is inadequate to meet the requirements of customers or of specific customer groups. As a consequence, many potential customers do not consider public transport to be sufficiently available.

Innovative mobility services, which try to better meet the individual mobility needs of customers, such as car sharing or demand responsive transport services, are often still a niche development only and might not facilitate spontaneous travel. Users need to become familiar with system functions, book trips in advance and define return times, which reduces the service flexibility. Many potential customers are not even aware of all the benefits of these innovative services.

In addition, public transport operators have a certain scepticism regarding the potential of these services for improving the overall attractiveness of public transport. Many operators consider such demand responsive services as being outside their field of competencies, causing extra expense without reasonable, direct benefit.

Accessibility of public transport

A key accessibility-related problem is the often limited vehicle or interchange access for people with reduced mobility. Although there are solutions to the majority of access difficulties in existing vehicles, buildings and the pedestrian environment, these solutions are only partly implemented for cost reasons and lack of political awareness.

Another obstacle towards more accessible public transport systems may be the inadequate provision of traveller information. Information is often provided without sufficient consideration of the actual information needs of the customers in general, and of special target groups. An example of inadequate provision of information services is the neglect of basic static information such as schedules and network maps. Driven by technological innovation, there is currently a tendency to provide the maximum information on multiple distribution platforms leading to information overload and confusion.

From an operator perspective, there are many reasons that might make the decision of investing in high quality information services very difficult, such as high costs, limited data availability and missing standards for data quality and data exchange. Since there is also only limited up-to-date knowledge about the effects of information services on traveller behaviour (and therefore about expected increases in revenue), operators or agencies are often reluctant to invest in high-quality information services. As long as the cost to benefits ratio is unclear, private financing also continues to be difficult.

Attractiveness of public transport

Many examples for attractive and user-friendly design of rolling stock and infrastructure do exist, but these examples are very often linked to new public transport systems and extensions, such as new lines or new stations. General design improvements of existing systems in use are rare and linked to high investment costs.

The attractiveness of public transport is also heavily affected by a general feeling of insecurity among customers, possibly caused by inhospitable conditions, such as vandalism, dirt or darkness in stations, lately compounded by the fear of hijacking or terrorist attacks in the public transport environment. While many efforts are already being made to improve day to day security, as for anti-terrorism, public transport operators alone have a limited scope of action and a lot of inter-agency co-ordination with other public departments is required.

DRINBUS, a demand responsive transport service

DRINBUS in Genoa (Italy) is a demand-responsive minibus service in highly populated hilly areas, inaccessible to conventional public transport modes. The service management is supported by software for booking and vehicle location as well as route and timetable optimisation.

The service is highly appreciated by the public, especially by captive users. The high number of stops and short distances between them ensure good accessibility of the service. Optimised routing and clean vehicles considerably contribute to reducing emissions.



Photo: RATP - G. Allignon

Clickmobility, information portal, Italy

Clickmobility is the Italian internet portal, providing mobility-related information to public transport stakeholders. Designed as a "business-to-business" service, the portal has been established on a commercial basis and is targeting mobility providers, not travellers.

The objectives of the portal are to create a new virtual meeting point for mobility and PT operators and to create qualified partnerships to set up joint information services or, on the long term, even co-branding and co-marketing strategies.

The Octopus system in Hong Kong

The Octopus system is a contactless smart card system used for fare payment across all public transport modes in Hong Kong. It has expanded from a pure transport payment system to a general e-payment system for small value transactions.

Octopus has shown a high degree of acceptance amongst the public. For the operators significant benefits can be achieved regarding cost savings, enhanced equipment performance and operational efficiency, flexibility of fare schemes, increased security and marketing opportunities.

From the customer's perspective, an integrated fare structure and smartcard ticketing are important elements in improving the attractiveness of public transport. However, despite the obvious advantages of using electronic ticketing, not every passenger can benefit from an electronic ticketing system due to "electronic barriers".

Users may be confused or unsure about the technology and difficulties in user comprehension may occur. Furthermore, users might be afraid of a lack of data protection and invasion of privacy when using electronic ticketing.

On the operators' side, an important problem is insufficient use of user satisfaction survey results, which are useful for providing information about the reasons for and against the use of public transport. When identifying the customer's perspective, most efforts concentrate on actual PT users, while the group of non-users is often neglected.

A final problem related to electronic ticketing is the relatively high cost of such a system and the uncertainty surrounding its effects on the increase in ridership and willingness to pay. Furthermore, there is a lack of standardisation for interoperable smart card tickets.

■ Environmental sustainability

The development of PT systems can have significant effects on environmental and ecological sustainability. It is important to make better use of readily available and cost-effective technology to reduce energy consumption and air / noise pollution, but this is not in itself sufficient. Strategic action in the form of network design, land-use planning and stricter traffic management can have an indirect, but strong impact on the environment.

Public transport modes usually have less negative environmental effect per unit of transportation output than private motorised vehicles. Even if the environmental disadvantages of public transport are relatively low compared with the entire transport market, the concentration of public transport services in urban areas can cause high levels of air and noise emissions.

Today, a number of technical, regulatory, planning and other options are available to reduce these negative environmental impacts of urban transport. Technological innovations in the automobile industry have considerably reduced air and noise emissions and the energy consumption of motorised vehicles. Consequently, the great advantage of public transport has had over cars with regard to environmental impact, has become smaller. This trend is set to continue with the latest technologies, such as fuel cell cars, entering the market.

There is now a great need to maintain the advantages of public transport in terms of emissions and energy consumption, as these are key factors in further promoting its use. Public transport still has an important role to play in improving the quality of urban life and the environment.

The positive environmental effects of public transport can either be direct or indirect. Direct effects can be achieved, for example, through the wider use of innovative energy-efficient vehicle technologies or telematics-based PT



"Call a bike" – German Railways

"Call a Bike", operated by German Railways (Deutsche Bahn AG) is an innovative bike hiring service, offering a cost-effective and convenient alternative to the car in inner city areas. The system currently offers a fleet of high-tech bikes in the cities of Munich, Berlin and Frankfurt.

The service is very attractive to railway customers and city visitors as bicycles do not have to be returned to departure stations but can be deposited at central locations within the inner urban area. Registered clients can rent a bike simply by calling a number indicated on the bike itself. The system has proven successful with more than 1100 rides per day.

management systems, such as traffic signal timing, fleet management or bus priority. These effects can be important at specific locations in the city, but the overall effect on pollution levels is relatively small.

Positive indirect environmental benefits can be achieved through the wider consequences of policies, which strongly promote public transport, by leading to lower fuel consumption of private vehicles, reduced greenhouse gas emissions, a stop to initiatives to take over wetlands and parklands for building more roads and highways, and so on.

These effects, however, can be significant, provided that the promotion of public transport modes goes hand in hand with other travel demand management strategies, such as parking policies, access control, value pricing, etc., which reduce car traffic in cities.

Only a balanced “carrot & stick” approach, which leads to an increase in public transport ridership, while causing a decrease in the modal share of car traffic, can achieve noticeable positive environmental effects. This means that all measures aiming to promote the use of public transport will not necessarily have a positive effect on environmental sustainability, if they are not integrated into an overall urban transport strategy.

With increasing privatisation in the public transport sector and looser control of the public sector in public transport operations, it is important to incorporate environment-related quality standards in contracts between governments and operators. An example is the Quality Partnerships in the UK that involve use of environment-friendly operating practices and obligatory reporting by operators to ensure adherence to environmental standards.

Air and noise pollution

The introduction of clean vehicles in order to reduce the environmental impacts of PT is still difficult due to the strong competition between clean technologies and low-emission diesel technologies. Many PT stakeholders are forced to reduce the costs of buying and running vehicles. Therefore fleet operators may be reluctant to invest in alternatively fuelled vehicles which are often more expensive to purchase and for which maintenance and service needs may be difficult to estimate.

Traffic noise can be considered as an important disruptive factor for inhabitants of large urban areas. Noise pollution is an increasingly important issue for rail transport and in particular for light rail. Various technical difficulties to reduce public transport noise levels still have to be overcome.

As a consequence of the technological innovations in the automobile industry, the pollution levels and energy-efficiency of motorised vehicles is being considerably improved, resulting in a drop in the environment-related advantages of public transport over the last few years. This means that environment-friendliness as a major argument for using public transport is less weighty now than in the past and environment-related marketing campaigns have become less effective.



ULEV-TAP, Flywheel technology

ULEV-TAP, the Ultra Low Emission Vehicle- Transport using Advanced Propulsion is a rail vehicle, which uses a flywheel to store kinetic brake energy that can be retrieved while accelerating. This power generation system would partially replace the external supply of a mass-transit electric vehicle, light rail or trolleybus.

Flywheel technology could contribute to reducing and leveling energy consumption and thus emissions in public transport. Efforts to develop this technology and to increase its performance are still ongoing. At this stage, the system seems more promising for railway systems than for road transport.



Bus route revitalisation, Grenoble, France

In Grenoble a bus line was revitalised by improving the accessibility of stops, establishing a high share of dedicated lanes, implementing public transport priority at crucial traffic lights and re-positioning of bus stops closer to places of public interest.

The upgrading of the bus line enabled to increase the service frequency by 13%. A growth of patronage by about 18% proves the success of the experiment. Both customers and drivers have expressed their satisfaction about the measures taken to upgrade this bus line.

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Natural resource consumption

Several vehicle and fuel technology options are being explored to reduce the energy consumption and especially the strong dependence of transport on fossil energy sources.

Effective traffic management and driver training can further contribute to this reduction. Intelligent Transportation Systems (ITS) offer a wide range of tools to ease traffic flow and transport operation. Often, the implementation of such tools is only justified against an economic background, and environmental benefits are hardly evoked.

Another problem relates to congestion in urban areas; high time and monetary costs are caused by traffic congestion, stemming from a rise in the number of private cars in urban areas. Building of more infrastructure and added capacity do not provide the answer, and only lead to further increases in travel demand.

Existing road capacity must therefore be used more efficiently by introducing demand management measures such as urban road pricing. The idea is to make motorists aware of the true cost of using their cars, including the additional marginal cost they inflict on other road users.

It is important to understand the land use-transportation linkage in an urban area in order to achieve environmental sustainability of the public transport system. Urban development must aim to reduce the need to travel. Otherwise, the result will be urban sprawl, need for larger investments in road infrastructure and the transport network, greater usage of land and financial resources, increased trip lengths and trip costs, which in turn will lead to greater use of cars unless the public transport network is sufficiently expanded. Urban sprawl makes the PT network less economic and therefore, unsustainable. Hence, land use policies that curb urban sprawl and promote higher densities must be implemented.

A general problem is however the fragmentation of efforts and the lack of integrated mobility planning. As long as the measures for designing a region-wide PT network are not accompanied by demand management strategies for car traffic and land use planning, the chances of achieving considerable improvements in PT - and therefore of getting closer to more environmentally, socially and economically sustainable transport - are fairly limited.

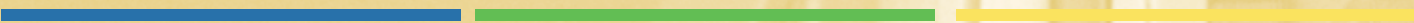
Road safety

Road safety is an important issue when considering environmental sustainability of public transport vehicles. It is a problem that arises once again due to different modes that use the same road space travelling at different speeds. Particular groups of the population such as children, pedestrians and users of non-motorised transport are more likely to suffer from road accidents.

Various measures such as traffic calming in pedestrian and residential areas, road safety campaigns targeting children, youth and adults, ITS technologies that provide in-vehicle collision warnings and emergency call and real-time information regarding traffic conditions are some ways of achieving road safety.

Demand management strategies to restrict car use in dense urban areas also form an indirect means of achieving road safety since the maximum number of deaths and injuries caused due to road accidents are caused by private vehicles.







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VVG Görlitz, Privatisation of public transport, Germany

The city of Görlitz privatised and tendered its public transport system with the intention of keeping all public services within one single entity. In order to safeguard employee's rights and citizens interests, the municipality remained strongly involved in strategic decision taking.

A large package of new and upgraded infrastructure and services was included in the agreement. With the agreed split between monitoring and control on the side of the authority and the large degree of freedom for the operator, well-balanced co-operation between authority and private operator was achieved.

Mega Trends

If our public transport policies and strategies are subject to review, it is not sufficient to update current practice with the latest research results, legal provisions or land use developments. In order to assess future needs and develop action plans, we need to review our picture of society itself. It is essential to monitor and anticipate societal mega trends and underlying factors, which will provide the backdrop for any future developments in the public transport sector.

Within the VOYAGER project a number of development aspects have been taken into consideration. Socio-economic trends have been analysed to depict the future business environment. Demographic and social / behavioural changes provided the basis to discuss future user needs. Technology developments are highlighting new opportunities that may arise. The following mega trends were considered as crucial and discussed with the working group members:

■ Economic trends

Globalisation / European integration

The phenomenon of globalisation refers to the way that people, goods, services, money and ideas are moved around the world faster and cheaper today than ever before and the overall increase of global interconnections. In Europe this trend is closely connected with the process of European integration, with the two added elements of barrier reduction and harmonisation of frame conditions between Member States to the processes that can already be observed within globalisation.

As regards urban public transport, emphasis is often put on its local and regional character, yet globalisation has an impact here too. It emerged first in the manufacturing sector, but is now increasingly evident in the operation of public transport services. Manufacturers seek cost advantages in economies of scale by concentrating production, tending to shift their production towards countries with lower wage levels.

In Europe there is a shift starting towards CEE Countries, e.g. Volvo now manufactures in Poland. Direct service provision has to be realised locally, yet management expertise could be applied anywhere. Thus, there are an increasing number of operators seeking growth in other countries, taking advantage of the opening up of public transport markets.

European legislation plays an important role in this respect. Directives have been established to ensure a harmonisation of technical and operational standards and to open the market up to fair competition. The role of governments in the operation of public transport services is declining, but their

importance as organising authorities - as enablers of competition and custodians of environmental and social interests - will increase.

Public transport will also be affected by the global and European integration of the financial markets, since this will widen the financial options for public transport investments (e.g. international loans), especially for public transport infrastructure.

The implementation of directives directly influencing public transport will have a wide-sweeping impact on the organisational and financing structure of public transport in all accession countries. A positive aspect for them will be that they can expect access to new know-how and also some (limited) direct funding of public transport projects.

Economic growth

Sustained economic growth is expected for European Union countries. Since 1945, continuous GDP growth has been observed for western industrial countries. Although this process has slowed down, there was still an average growth of 2 % per annum in the 15 European Union countries in the 10-year period from 1993 until 2002. The highest growth rates are expected for the accession countries, both due to their own efforts and the efforts of the European Union to close the gap with the new Member States.

Increasing individual wealth has underpinned steady growth in car ownership a trend that is set to continue. Highest growth rates are expected in the CEE countries, where the degree of motorisation is still lagging far behind the EU average. The car still is perceived as an expression of individuality that allows a level of freedom, which public transport could not provide.

Along with the growing car ownership rate, land use patterns will continue to change. Individual motoring allows people to live in a green environment, yet to benefit from the cities' facilities. Urban sprawl will continue with decentralised employment, shopping and leisure facilities. While car availability is a trigger for such development, it will soon result in a car dependency, as making traditional public transport services available in dispersed suburban structures would be very costly.

While part of the society will directly benefit from economic growth, another part will not. The shift from an industrial / manufacturing economy to a service oriented economy that requires both highly paid knowledge labour and low paid support labour, will result in a rising income gap and social exclusion of a remarkable share of the population. On average 15% of the European Union population live at risk of poverty, a share that would be considerably higher (40%) if social transfers were not taken into account.

The public transport sector largely depends on non-renewable fossil fuels. Consumer prices will continue to grow due to increased taxation and the unpredictability of global political developments. This is forcing the public transport sector to put more effort into research into the potential of renewable fuels (biofuels for instance) or other resources such as hydrogen.



GoTIC, Traffic Information Centre, Sweden

The objective of the Gothenburg Traffic Information Centre GoTIC is to provide user access to real-time information on travel-routes and travel-times to enable sound trip planning and ensure optimised using of available transport infrastructure. The underlying system has the capacity to offer real-time forecasts of PT arrival times.

GoTIC has contributed to improving travel quality and reducing travel time in Gothenburg. It has proven that intermodal traveller information services can contribute to increasing the number of customers for public transport. The investment in GoTIC has been recouped within 1.5 years.





IDOS Database, Czech Republic

IDOS is the Czech National Public Transport Schedule Database, which offers intermodal traveller information via several means of communication. The operation is based on a public-private partnership, which provides information to the user free of charge, whilst creating income via selling advertisements and high quality data for other service providers, such as mobile phone operators. The system very clearly demonstrates that some travel and traffic information policy aims can be achieved to high quality and with minimal public investment with the use of and reliance on the private sector in a lightly regulated relationship.

NAVIGO, Ile de France

NAVIGO is the first large-scale and flexible e-ticketing system in Europe based on a contactless smartcard. Its objective is to improve the service quality with a more simple and fluid ticketing system and to encourage the combined use of various types of public transport and associated services.

The NAVIGO smartcard pass has been widely accepted amongst its users and the economic effects of the NAVIGO smart card system are expected to be positive given the lower maintenance costs and the reduction in lost revenue due to fraud.

The European Commission has recently introduced a regulation, which will progressively require the use of biofuels by 2010; still, these solutions appear much more expensive than fossil fuel. Despite this, public transport will remain a sound alternative to individual car transport for cutting overall energy consumption for urban mobility.

Financial resources

Public funds available in Europe are limited and strongly disputed. Although the economic growth discussed above implies a potential growth in public funds, it could not be concluded that potentially higher funds would be available for public transport. The fight against poverty and social exclusion will require heavy investment in employment, health and education. The shortage of public funds forces both justifying public expenditures for public transport and looking for alternative financial resources.

Private involvement in infrastructure investment is being explored as an option. The number of examples where attractive infrastructure has been developed based for instance on private loans or public private partnerships, is growing. This trend will continue, but it seems to be an option for selected projects only.

For operational activities the scarcity of public funds is problematic due to the limited cost coverage of urban public transport services. In line with other sectors, European legislation is opening up the public transport market. The resulting competition is expected to streamline existing operators and increase the economic efficiency of public transport.

Technological opportunities

Information / communication technologies

The further development and diffusion of “new” information and communication technologies (ICT) will have a significant influence on the daily life of all citizens. The use of ICT means, such as wireless communication, smart-cards, Internet, etc. in the field of public transport will further increase. These innovations will help to make travelling more comfortable.

Interactive services will increasingly offer tailor-made information services. E-ticketing systems could reduce access barriers to intermodal systems. However, it should be noted that some devices (e.g. Internet, wireless devices) will only be used by certain parts of the population.

The optimisation of public transport is essential for reducing traffic congestion, pollution and other negative features. ICT innovations will also contribute to improving public transport system management and operation. Upcoming technologies will enhance system efficiency and safety. A milestone in Europe will be the implementation of the GALILEO system, which although not specifically designed for public transport, could well assist the co-ordination of systems and fleet management.

Along with the potential outcome described above, information and communication technologies will have an increasing impact on people's private lives. Depending on a wider spread of new technologies, the concepts of e-commerce and tele-working will gain importance.

Although the trend towards e-commerce is evident, its impact on daily life and travel behaviour is strongly disputed. Doubts remain that e-commerce has the potential to change mobility for shopping, social and leisure activities. In a service-oriented economy tele-working has the potential to grow and contribute to reducing commuter travel. However, the extent to which this impact might become a reality will strongly depend on human behaviour.

Environmental technologies

New environmental technologies have been developed, or are under development, that can reduce or even solve existing environmental problems. Driven by increasing public awareness, major efforts have been put into the development of cleaner power systems for public transport vehicles. Further progress in engine technology should contribute to improving the environmental performance of public transport systems, but it will raise the issue of investment and running costs.

Technological innovations in the automobile industry mean that air and noise emissions, and energy consumption of motorised vehicles, can be reduced considerably. Consequently, the previous great advantage public transport had in terms of environmental impact, compared to cars, is reduced. This trend will continue when the latest technologies, such as fuel cell cars, enter the market. Public transport operators will therefore be forced to invest in clean technologies in order to maintain the advantages relating to emissions and energy consumption.

In the future, the main environmental argument for promoting public transport in urban areas will be the consumption of urban space. Studies have shown that the car requires a lot more space per person travelling than other passenger modes. This is further increased by the amount of parking spaces required at origins and destinations. In urban areas, which provide for a high degree of access and mobility by car, the use of alternative modes of transport is largely hampered and the overall quality of life limited.

■ Demographic developments

The demographic developments that are considered to have the highest impact on public transport are the continuous *decline in birth rate* and the *ever-increasing life expectancy* of the European population. Both trends lead to a significant shift in the age structure towards higher ages.

According to Eurostat, the share of the population above the age 65 will grow from around 16% in 2000 to about 21% in 2020. A figure as high as 28% is expected in 2050. Today the share of elderly PT users is higher than the population average. However the elderly are expected to be more active in future, and to keep driving their cars for longer, and cannot thus be considered as captive users.

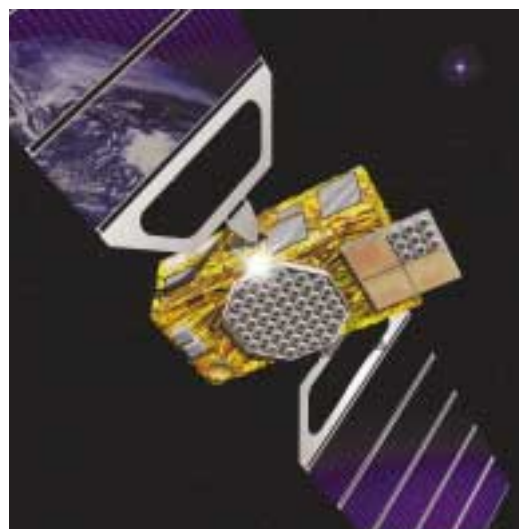


Photo: ESA



A diversity strategy, Arriva, UK

Arriva recognises that demographics are changing rapidly across the whole of Europe. Currently, most of the company staff are male, white and full-time working, in 2010 however, most of the employees will be female, from different origins and part-time working.

The company's strategy to promote diversity can help to achieve both, to increase the company performance and public transport ridership by integrating the multi-cultural background of passengers and staff.



Social dialogue for security, Valenciennes, France

Passengers' feeling of safety and security on public transport depends to a large extent on the feeling of security of the staff itself, which is higher when the social dialogue on this subject works properly within the company.

In Valenciennes, a social dialogue platform has been established, involving all relevant stakeholders to establish a policy for preventing and handling security-related incidents. A help-desk has been set up for staff who feel threatened and young mediators have been employed to accompany buses in risk areas and establish a contact with potentially aggressive passengers in order to discourage anti-social behaviour.



Most European countries have seen the average household size drop by 10-15%. By 1995, the average European household contained 2.5 people. This number is expected to decrease further as the number of one-person households increases from 30% in 2000 to 36% by 2015.

Along with a generally increased consumption of resources by smaller households, there is a close relation to car ownership. People in smaller households take more trips to manage their daily activities and are less likely to see traditional public transport services as viable option than people living in bigger households.

Immigration into the European Union was a major source of population growth during the 1990s. Of the overall annual increase in population of 0.25% per year, immigration has accounted for 0.2%. Given the stagnation of the working age population resident in the EU, immigration will continue and strengthen its impact on the labour market as well as society as a whole.

Shortly after immigration, immigrants are expected to use public transport more often than the average population. A major consequence for public transport is translated into an increasing demand for multilingual information services.

■ Social aspects

Major lifestyle changes will continue in the future with an increase in new forms of work, different consumption behaviour and diversified leisure activities. An accompanying development will be the greater expectations of most customers for individualised products and services. Collective schedules will become less important.

Travel patterns will become more individual and complex. Traditional public transport services that focus on regular schedules between home and work place will not be adequate and will have to be adapted accordingly. Otherwise this could lead to a gradual decline in public transport patronage and with it, subsequent erosion of its cost coverage potential.

Furthermore, it is likely that the share of new "family patterns", such as residential communities or "double households" will increase. For an increasing number of people, a "double household" or commuting will be the only way to combine family life with their own career aspirations. The larger number of commuters will lead to a greater demand for fast and spontaneous travelling, which is most likely to be made by car.

Public and political expectations in terms of reducing environmental damage will further grow. The general public's increasing awareness about environmental issues along with major efforts of car manufacturers to produce cleaner cars has led to a changing approach towards public transport and might diminish the psychological environmental advantage public transport enjoys.

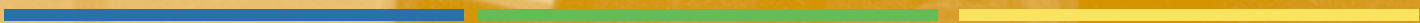
A growing security concern exists regarding the use of public transport, especially during off-peak hours. A tendency towards automatisisation and reduced staff presence is likely to further erode the feeling of security. Recent incidents, such as September 11, have focused attention to the vulnerability of public spaces. The metro attacks in Tokyo or South Korea have also demonstrated the sensitiveness of public transport systems with their high concentration of people.



Photo: RATP - J.F. Mauboussin

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Quality partnership, Manchester, UK

In order to improve the coordination of public transport services, which has become more difficult due to open access deregulation, the Quality Partnership concept has been created in the UK. In Manchester, the authority and the operators adopted the "Greater Manchester Quality Partnership" in order to establish a high quality public transport network.

The integrated services with enhanced passenger information and integrated ticketing, along with quality improvements through upgraded waiting environments, etc. have led to a higher attractiveness for customers and a more efficient public transport system.

Challenges

Discussing the above-mentioned external mega trends allowed a number of key challenges to be established, which the public transport sector will have to address in all business areas. Along with sector transition into a more or less open market, operators will be forced to reconsider their management structure.

A genuine customer-oriented approach needs to be adopted by all staff members. The scarcity of public funds will also prompt the need for a search for innovative investment and financing solutions. Changing overall travel behaviour leads to new customer expectations that need to be tackled. Public transport has to be considered as an element within the overall mobility chain.

The key challenges as identified in the VOYAGER project touch upon several business areas of public transport. They were organised into the areas of administration, communication, planning and operation.

■ Administration

The development of sound funding and financing principles for public transport infrastructure and operation is a key challenge for the future. Streamlining of the organisation and strategic management within public transport companies can considerably improve the efficiency of service provision. Human resource development and management are key tools to better utilise staff capacity and to increase the job satisfaction of employees.

Development of flexible business structures

Public transport operators and authorities need to develop new qualification profiles and flexible workforces that enable them to react to tendering and competition. Public transport has to get away from the image of being a commodity at basic level. It has to become a service provided on commercial principals that is sold and promoted by experts who love their product. The internal company structure must no longer be a compact block. Business areas should become more independent in order to react to losses or gains in tendering procedures. Infrastructure management in particular and service operation should be separated due to different funding and investment options.

Quality management

A quality approach needs to be developed based on a service definition, which places the customer as the focus. Quality objectives need to be expressed in terms of customer impact and assessed by detailed criteria, e.g. timeliness should not be measured by the number of trains delayed, but by the number of customers affected.

Implementation of social dialogue

In the public sector, arrangements laid down in collective agreements are characterised by a distinctive rigidity. As the sector opens up to competition, this system should be changed and replaced by agreements made on a local or even company level (workers councils).

Social dialogue and pacts of trust will have to be developed at regional and or local level, without too much involvement of government agencies or centralised union officials, in order to obtain more flexibility of action. Given the impact of globalisation and the overall ageing society, there is a need to set up new retirement policies and pension plans that provide a certain standard, yet are more flexible and affordable.

Development of skills and competencies

New recruitment strategies will have to be developed which attract the right staff for the variety of assignments to be completed. With new technologies emerging in the public transport sector, there is a need for permanent staff training in order to ensure the technology benefits are fully exploited.

Innovative and flexible learning methods, such as e-learning, should be utilized to allow permanent training and updating of knowledge. Public transport academies or knowledge centres need to be established at a national or even European level in cooperation with existing academies, universities and training institutions in order to attract and develop young executives.

Changing staff attitude

Within a competitive environment, there is a clear need for staff members to realise that public transport users are customers. Staff have to adopt a proactive and service-oriented approach. A higher degree of personal responsibility needs to be developed, staff should be encouraged to assess the effectiveness of their own working area and propose measures for improvement accordingly.

Innovative funding and financing

New sources of innovative funding need to be identified and legally facilitated to provide additional financial means for public transport infrastructure and services. Innovative funding could for instance come from cross-subsidisation of public transport and other economic sectors, provided that this system is not set up to cover the debts of inefficient public transport. A democratically controlled body such as a local authority should be in control of this.

There are some more interesting options for developing alternative financial resources, which should be explored. Inter-section integration, such as manufacturers who take care of maintenance, or infrastructure sharing of public transport and telecommunication or integrated shopping malls and interchanges, which have the potential to increase economic sustainability.

The potential of public private partnerships should be examined in more detail, also for technology systems such as electronic ticketing and information services, where besides the public transport sector, private bodies such as banks and technology providers should also have an interest. It is crucial, however, to achieve a critical mass of users interested in a particular system.



UITP Training Programme

UITP has developed a training programme for public transport managers, which offers the opportunity for managers within UITP member companies to improve their understanding of global mobility issues and to enhance their knowledge of the "hot issues" in public transport.

The programme supports a more economically sustainable development of public transport companies as it can help to maintain or increase the level of innovation, service, quality and efficiency within the companies, and therefore promote the development of modern, service providing public transport organisations.



'Imagine R' card, Paris, France

The card Imagine 'R' is a special tariff offer for young people in the Paris region, intended to attract customers and make them loyal to public transport. Besides traveling at an attractive price, this annual card offers added values like invitations to special events, a magazine, a website and access to an SMS community.

Thus the card offers a variety of services targeting young customers and helps to create a new image of public transport. For the public transport providers it allows to diversify the contacts with target clients and enhance customer contact.

**■ Communication**

Market research needs to become a regular part of service development. Communication and marketing are important tools to improve the relationship between public transport companies, their customers, politicians and other important stakeholders. A new mobility approach needs to be developed that embeds public transport in the overall policy.

Improving public transport image

The image of public transport services certainly needs to be improved in order to keep and gain customers. Efforts need to focus on improving the status of public transport in the eyes of leading social groups such as middle aged men and future customers like young people since other groups are likely to follow their example. Yet the social value of public transport should not be neglected, the collective character of public transport should be approached as an asset rather than a disadvantage.

Along with the liberalisation of the public transport market, there is a need to re-assess the responsibility for marketing and especially branding. Consistency needs to be ensured in order to help customers identify with "their" public transport system.

Development of strategic partnerships

In order to find the right message for promoting public transport, partnerships should be developed that give rise to new communication strategies. There are a lot of possibilities to create strategic alliances within the transport sector with other modes or outside with environment and energy agencies, private companies or the health sector. Joint actions may facilitate innovative approaches to better reflect lifestyle changes and public opinions than promoting public transport alone only.

Stronger political lobbying

Much political debate is taking place on the benefits of supporting public transport and its value in solving transport problems. This might make it difficult to justify investment in public transport systems. Public transport providers have to intensify their efforts in articulating the wide range of social, environmental and economic benefits of their services. Lobbying efforts should not only focus on decision-makers, but also address other stakeholders such as local interest groups or shopkeepers.

Development of a mobility approach

Customers are mainly interested in a high quality door-to-door mobility service; they don't mind who provides it. Public transport operators have to become integrated mobility providers, offering a wide range of services, which goes beyond the integration of different public transport modes. New partnerships with taxi services and minibuses in low-density areas, close cooperation with car rental, car sharing or bike rental companies need to be explored.

User-friendly information services

Anticipated lifestyle changes will raise customer expectation in terms of public transport flexibility and availability. Providing citizens with necessary information to enable efficient use of public transport is the first step. In this context new operational marketing techniques, mobility management and new information technologies offer a big chance for public transport.

Information provision with individualised services by means of advanced mobile terminals will need to be based on reliable and timely data collection, processing and distribution, if it is to be successful. In order to meet the needs of a wide range of customers, all information needs to be easy to comprehend and should be provided on a multilingual basis.

■ Planning

The key objective of public transport planning needs to be the development of customer oriented public transport services, accessible to all customers. Network and service planning should be carefully integrated with the underlying urban and land use planning of a city and surrounding region.

More customer-oriented services

In order to deliver more tailor-made yet efficient public transport services, travel patterns need to be analyzed in as much detail as possible. New technologies such as smartcards and GSM phones offer a wide range of options for monitoring movements within a public transport system, but require privacy and data protection to be guaranteed.

Public transport providers have to respond to the varying mobility needs of different customer groups. Thus, they need to develop specific products for target groups with different travel requirements and expectations.

off peak-demand times and zones, and flexible demand responsive transport services with minibuses or taxis should complement traditional mass transport to bridge the gap between public and private transport. These services are likely to be particularly useful in addressing the needs of specific groups, such as the elderly, children and disabled persons. Within a competitive environment, quality incentives in contracts should ensure the desired service standard.

Ensuring accessibility

Increasingly complex travel patterns require public transport systems to be easy to use. Easily understandable information, which is available anywhere, at any time, as well as comfortable service connections are crucial. Ticketing systems will need to respond to the desired door-to-door service approach and be as simple as possible.

For public transport infrastructure and rolling stock a higher level of accessibility is needed to respond to all travellers' demands, particularly people with reduced mobility and the elderly. Solutions do already exist with low-floor vehicles and corresponding infrastructure design, which provide a good level of efficiency. The implementation costs for new investment are not much higher than for ordinary systems, but renewal and refurbishment of existing systems might be costly.

CitéFutée, web-based information service, France

CitéFutée is a traveller information service provided by RATP in Paris, which offers real-time public transport and road traffic information as well as leisure time information. Being internet-based, the service allows specific user groups to be targeted, and even personalised.

The service design seeks to foster a modern and trustworthy image of public transport, closely interwoven with the activities and interests of the urban traveller. Achieving this is expected to generally contribute to modal shift and a more efficient use of transport infrastructures.



Haller Willem, Revitalising regional railways, Germany

The "Haller Willem" project in the region of Northrhine-Westfalia (Germany) is based on the revitalisation of a regional railway line. It was carried out in response to a citizen's initiative after the closure of the old line.

The new railway line is equipped with modern low-floor trains, improved stations, P&R and B&R facilities as well as corresponding train and bus connections with integrated timetables and ticketing systems. The "Haller Willem" project has led to a general increase of public transport quality in a low density area.

Deltametropool, the Netherlands

The objective of Deltametropool is to fully integrate public transport planning into overall mobility planning, future urban development and necessary water management. The approach involves all relevant stakeholders including all levels of authorities and covers several different administrative areas.

The planning of new land development is focusing on the vicinity of existing or envisaged mobility networks, including public transport, in order to create a competitive settling environment with a high quality of accessibility.

VAL, A driverless public transport system

The city of Lille in France was the first city in the world to adopt a driverless guidance system for its urban metro system VAL. The system consists of rubber-tyred vehicles using an automated guideway. For safety reasons they are segregated from other road users.

The system provides undeniable advantages in terms of flexibility, as the offer can easily be tailored to the demand: the marginal costs per kilometre are very competitive. Moreover, as fewer drivers are needed, more staff can be redeployed for security and customer care.

**Interaction between transport and other urban policies**

In urban areas, where planning emphasis is given to car accessibility, the use of alternative modes of transport is largely hampered and the overall quality of life limited. Policy makers have to understand that public transport can contribute in a big way to reducing the urban space used for transport purposes.

Since travelling is not blocked by urban administrative boundaries, the organisation of public transport should not be blocked either. An authority should be set up as system integrator, responsible for a wider area, that corresponds with the actual travel patterns in a region.

It should ensure a comprehensive network, service and ticket integration on behalf of the service providers in order to develop attractive services. The authority should also be involved in integrating local and long distance transport as well as in coordinating regional mobility planning with land use policies and transport demand management strategies.

■ Operation

Public transport operators need to provide services that meet the needs of potential customers. Public transport systems have to be delivered within the existing societal and financial framework and need to respond to the safety and security requirements of users.

System efficiency

Due to growing traffic density, the average speed of urban transport is continuously slowing down. There is a need to implement shared or dedicated public transport lanes to offer regular and faster on-ground services. Existing technologies have to be exploited to improve public transport systems. Satellite-based systems, such as GALILEO, are expected to have a high potential to improve fleet management and system surveillance.

The affordability of public transport networks is highly dependent on the operating and maintenance costs of rolling stock, infrastructure and fleet management systems. The need to reduce life-cycle costs of the systems is emphasized by the investment costs for new environmentally friendly technologies. Complex travel demands call for more diversified vehicle types in order to meet all user needs. For cost reasons, however, a balance has to be established between rational fleet composition and varied service requirements.

Improving safety and security

Security concerns call for concerted action, not only to respond to vandalism or a generally low level of perceived security, but also to assess the public transport systems in terms of preventing and reacting to major incidents. Existing technical standards for infrastructure need to be assessed against this background. Options to upgrade existing systems need to be explored in order identify weaknesses regarding visibility, cleanliness, evacuation plans, etc.

Implementation of closed-circuit television (CCTV) systems is growing rapidly, and research aiming to provide automatic detection of suspicious situations is underway. Developing faster detection systems, vehicle locating

systems and multimode communications will assist decision-makers in efficient crisis management.

Staff presence implies high costs for transport operators, who would prefer to develop and implement new surveillance technologies. But staff presence has a very strong impact on passengers' feeling of security and consequently on public patronage. A successful synergy between major players such as public and private bodies, police forces, fire brigades, operators, etc. is essential to cover the wide range of critical aspects in the field of security.

Improving environmental performance

Public transport could essentially contribute to reducing overall greenhouse gas emissions by shifting mobility towards soft travel modes, facilitated by sound integration of public transport with walking and cycling. The sector should adopt a global approach towards rolling stock energy consumption and resulting air pollution, taking into account the pollution of energy production, and optimise cleaner power engine technologies to produce fewer pollutants.

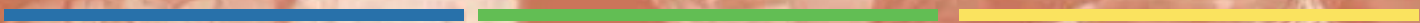
Power engines that utilise alternative fuels need to be developed and optimised, in order to become less dependent on fossil fuel. Future development of public transport systems needs to address a reduction in noise levels. For the production of vehicle bodies and interior compartment components new, preferably recyclable materials should be developed and used.

TITOS Information service, Turin, Italy

The city of Turin (Italy) largely relies on ITS application for its mobility management. Integrated systems have been developed to co-ordinate management tasks, such as traffic control, parking management, etc. The available data is also feeding TITOS, the traveller information system in the city.

TITOS provides broadcast services, on-demand information services (answering to single requests) and event-related services utilising real-time data on private and public transport through the Internet and mobile phone.







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Recommendations



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LOYALTY programme, Vienna, Austria

In order to considerably increase its modal share, Wiener Linien (public transport operator in Vienna) has developed a loyalty programme targeting regular public transport customers.

The programme is built around the annual public transport ticket and includes a variety of additional services and offers, such as exclusive discounts for hired cars, theatres, retail outlets, etc., allocating a kind of 'VIP status' to the annual card holders.

Recommendations

If the public transport sector wants to play an important role in future society, the actors involved need to accept and tackle the key challenges identified above. Action is required by all relevant stakeholders. Together, they need to bridge the gap between meeting growing customer expectations and a growing need to improve the efficiency and effectiveness of public transport services.

Various areas have been identified where research is needed to improve the knowledge base of the sector or the applicability of technology, but the main effort must come from public transport stakeholders themselves. Operators and authorities consequently need to improve the attractiveness of their services and decision-makers need to understand the value of public transport and support its improvement with the design of a fair political framework.

The recommendations drawn up within the VOYAGER project can be grouped into eight policy fields of overriding importance:

■ Responding better to customers' needs and expectations

Knowledge about demand

For PT services to be successful it is crucial that they correspond in the best possible way with the needs and expectations of customers. Changing travel patterns require the sector to improve its customer knowledge through methodical monitoring of customer behaviour. In the future, Information and Communication Technology (ICT) applications could offer a wide range of support to monitor demand patterns and preferences.

Further research efforts should be spent on the harmonisation of transport statistics. Relevant indicators and data collection methods should be standardised to ensure the comparability of available information. Information and communication technologies should be further exploited to understand public transport travel patterns. Mobile technology applications should be developed, which allow origin/destination matrices to be derived whilst taking privacy and data protection concern into account.

Traveller information

Strategies to provide customers with the information they want and need to use public transport have to be improved accordingly and need to be based on streamlined company-internal communication principles. Integrated information systems have to comprise the complete travel chain and provide customers with selected and useful data rather than a flood of information.

Care should be taken that the increased application of advanced technologies for information systems does not lead to social exclusion. Research should be carried out to monitor the availability and diffusion of technology devices in order to ensure that information services are accessible via the most popular devices and do not require specialised equipment to be bought.

Travel comfort

With the increasing comfort expectations of customers, and the car as a background reference, it will be important to improve the level of comfort in public transport vehicles as well as at stops and stations.

Particular attention needs to be given to physical accessibility and especially the needs of people with reduced mobility and the elderly. Measures to improve accessibility should not be limited to solitary locations, but need to be implemented system-wide.

Planning approach

Planning strategies should promote the development of intermodal services, where all modes of transport are integrated according to their strengths and advantages. Interchanges and major stations should be understood as gateways between public transport and the urban surroundings.

Integrated fare systems need to be developed, which facilitate the use of intermodal public transport systems without financial penalties for interchanging. The harmonisation of payment system standards should be envisaged to facilitate the development of a Europe-wide standard and consequently compatible payment systems.

■ Improving stakeholder interaction

Institutional reconfiguration

The legal and regulatory framework of the European Union for the public transport sector is changing and will result in major changes to the organisational structure of public transport organisations, their interactions with each other and with external stakeholders. A coordinated approach including all relevant stakeholders should be envisaged to create effective public transport systems.

Given the fact that the catchment area of cities has expanded dramatically, competent authorities need to be established whose area of competence is consistent with existing mobility patterns. The authorities should be responsible for the vertical integration of decision-making levels concerned and the horizontal integration of all policies relevant for public transport. Operators should be in a position not only to provide quality services on a daily basis, but also their knowledge and expertise, their ability to innovate and their marketing skills.

Setting the rules

Clear strategic objectives have to be defined for the sector, if public transport is expected to contribute to wider policy objectives such as sustainability. Its development has to be put in a clear policy framework with realistic and measurable objectives and a regular evaluation for all stakeholders involved.

Politicians should be involved in strategic decision making, yet there is a strong need to achieve a de-politicisation of decision taking on the tactical



ATM Barcelona, co-operation of authorities and operators, Spain

Public transport in the area of Barcelona is provided by numerous operators. In order to integrate the different systems and modes, a single metropolitan transport authority has been created. It is responsible for planning of infrastructure, establishing funding agreements, collecting fares and public relations.

The creation of ATM has been a key factor for increasing public transport patronage, because it provides a greater visibility in the public. A more sustainable financial framework has been established, the administration is no longer automatically covering the deficits. Subsidies are calculated ex-ante, allowing for a more efficient cost control.



Mobility Mixx, the Netherlands

Mobility Mixx is an innovative business mobility service, established by Connexxion, a Dutch public transport provider. The service provides companies and their employees a full range of transport options to business travellers, enables access to different transport modes as well as the company car pool.

Customised new technology tools enable easy and quick booking, payment and administration of business trips. The system successfully contributes to a reduction of business travel effort and overall mobility costs. In 2003, Mobility Mixx had already 50 company customers.



and operational level. Quality and performance standards in contracts along with incentives to meet those standards should stimulate operators to invest their knowledge and expertise for the improvement of the system.

Further research needs to be carried out to establish a common set of realistic quality indicators and to encourage innovation from both authorities and operators. Different types of contracts should be surveyed in order to identify their potential impact on performance and market share.

Strategic alliances

Strategic alliances and partnerships with external stakeholders should be set up in order to reinforce the advantages of public transport. Alliances with non-motorised modes can improve the profile of public transport as a real provider of door-to-door services without the necessity to create expensive door-to-door services themselves. Co-operation with energy and public health agencies can underline the sustainable image of public transport in contributing to reduced resource consumption and promotion of physical activity.

An in-depth consultation with citizens is advisable to embed the public transport sector within society. Citizens are more and more involved in decision making and planning for urban projects. Public transport should actively participate in such processes to get a better insight into their customers' concerns. This involvement can also facilitate processes such as the implementation of traffic restriction in favour of public transport.

Developments in the labour market make flexibility and good cooperation and dialogue between social partners necessary. It will be essential for social partners to make further contributions to extending the freedom, which public transport companies need to act on subjects like more affordable pension schemes, introduction of performance-oriented remuneration and development of pacts of trust between employers and employee representatives.

A broad field for research and development activities is the utilisation of e-consultation tools to involve the general public in decision making processes. The potential of such tools for market research should be explored in parallel.

Strengthening the public transport sector image**Customer focus**

In today's society the image aspect has become an important incentive for selling products and services. This development is accompanied and reinforced by the more pronounced wish of customers to be treated as such. There is a strong need for the public transport sector to communicate its strengths and benefits more actively to the general public. Qualities, such as the chance to use the time travelled for other activities, should be promoted more intensively.

Branding London Underground, UK

London Underground developed a new brand strategy in order to overcome the functional and defensive approach of the past, which often lacked a sense of emotional communication. The main objective of the new brand strategy is to ensure greater consistency in the delivery of services to customers.

A comprehensive action plan has been developed, aiming to develop a brand, which effectively enhances the relations with all stakeholders and increases their loyalty towards London Underground. Although actions have already been launched, building of a brand is a long-term activity and will take many years.

A pro-active approach towards communication, handling of complaints and customer retention should help to improve the customer focus of public transport organisations and their relation with the customer. This promotion has to begin within the public transport organisations; the entire front-line staff should be aware of its public relation role and act as ambassadors for public transport.

Related research efforts should focus how to monitor the perception of public transport and to establish the impact of image on travel behaviour. Consequently, how to measure the success of image campaigns needs to be explored. Special attention should be paid to understanding the behaviour and behavioural changes of children as they are only at the beginning of their “mobility biography”.

Institutional focus

At an institutional level, advocacy is crucial to convince decision-makers to support public transport and to correct wrong perceptions that might exist. Decision-makers need to be convinced of the role of public transport and its potential contribution towards urban and transport policy objectives.

Professional and personal contacts with decision-makers have to be cultivated; a continuous dialogue should be established, which would support the strategic thinking of politicians to enable long-term planning of public transport systems.

Since public transport should be seen as an important social player and integral part of society, it is important to communicate the qualities of public transport in targeting social groups, such as schools, retail trade associations, media, etc.

■ Improving public transport system efficiency

Infrastructure and rolling stock design

Improving PT system efficiency requires focusing on two aspects: public transport providers wishing to improve the efficiency of their services and users, who have expectations with regard to public transport. Design efforts concern rolling stock as well as infrastructure. The standardisation of vehicle core platforms and components would contribute to achieving affordable life-cycle costs while allowing flexibility for customisation of vehicle body and interior layout.

Given the markets in all the European countries, it would be worth achieving some standardisation of bus and tram vehicles at a European level. The current Draft Urban Rail Directive as proposed by UITP and UNIFE sets out the public transport sector requirements for European legislation. A similar initiative should be taken for buses addressing items such as body frame, power line, driver cockpit, passenger comfort amenities, accessibility equipment, security and ITS equipment, etc.

Courtesy service, RATP, France

The objective of RATP’s staff development programme is to provide high quality public transport services to customers and increase the overall attractiveness of public transport in the Paris region. The programme has shown that the involvement of all staff members in service provision is essential to improve customer satisfaction.

Using new customer courtesy services, it has laid down the conditions for the successful increase in numbers of new customers and retention of existing customers. It is therefore likely to have positive social impacts as well as economic benefits by contributing to further revenue growth.



Photo: Marc Waters



Photo: RATP - J.F. Mauboussin



“LEO 2000” An innovative public transport system

The authority of Clermont-Ferrand (France) has developed an experimental public transport line with six optically guided buses and, in a second phase, six CIVIS buses integrating wheel motors and optical guidance. The objective was to test technological progress and study user advantages of an highly innovative public transport system under real-life conditions.

Evaluation shows that this system can offer a good and safe solution for high quality PT system, between a bus and tramway, with intermediate cost and capacity. In order to protect its commercial speed and its cost-effectiveness, the guided sections should be implemented on dedicated lanes.

Providing convenient interchanges and access points can support ease of travelling for customers and smooth service operation at the same time. Special attention should be paid to the integration of other modes with Park & Ride or Bike & Ride facilities as they can essentially widen the catchment area of public transport systems

Service operation

The operational efficiency of on-ground public transport systems can be further increased by the implementation of dedicated lanes to guarantee the right of way or shared lanes to avoid too greater interference with other modes. Where dedicated lanes can be used or implemented for bus routes, these should be used for high quality or express services in order to utilise the efficiency they provide.

Generally, such bus services should be planned with a system approach, with corresponding infrastructure and rolling stock layout to improve boarding and alighting as well as innovative control systems, which facilitate dynamic fleet management and flexible prioritisation to avoid unnecessary impairing of car traffic flow.

There is a need for further research efforts focused on high quality bus routes. Some project are already underway, but there is still scope to improve the rolling stock / infrastructure interface and the efficiency of boarding and alighting procedures. The potential of driverless transport systems needs to be further explored, especially with regard to “platooning” technologies for coupling of vehicles and anti-collision safety systems.

Another interesting aspect is the dual use of infrastructure and rolling stock for passenger and freight transport. Research efforts should address the compatibility of vehicles as well as the harmonisation of traffic signalling.

Technology applications

Technology applications and intelligent transport systems can significantly contribute to increasing public transport system efficiency; the potential of the GALILEO system for the public transport sector will need to be explored in more detail. Technology development should be coordinated across Europe in order to rationalise development costs and to avoid duplications of efforts.

Special consideration needs to be given to problems of data security. Smart real-time technologies have enormously increased the options for tracking and in-depth data collection. While these options can be extremely beneficial for public transport operation and management, the related legal and ethical concerns have to be discussed.



■ Improving funding and financing balances

Financial balance of the public transport sector

Improving the funding and financial balances for public transport concerns the sector as whole as well as individual actors. Public transport operators and infrastructure managers should be enabled to explore new business models to enhance their financial situation.

There is a need to harmonise the financial structure and fiscal regulations of the transport sector. It is of utmost importance to realise an internalisation of external costs in order to establish fair conditions for all transport modes and especially improve the situation for rail bound transport modes.

A coherent framework needs to be developed, which allows and encourages public transport service providers to enlarge their service portfolio. Value capturing, taxing and charging of all beneficiaries should be explored to obtain additional funding for infrastructure development.

There is a need for research efforts dedicated to cross-financing or subsidisation as a financing alternative. Cross-financing is a common tool for business strategies in other industrial and service sectors. It should not be regarded as negative tool per se, unless it is used to cover losses that result from a lack of efficiency. Research should establish methods for assessment and comparison with public transport systems, which are not part of a cross-financing scheme.

Existing pension and retirement schemes within the public transport sector need to be reviewed as a major wave of retirement and thus costs has to be expected. In order to improve the flexibility of the EU-internal job market, the portability of pensions and pension rights as well as new ways of financing pensions and early retirement have to be developed.

Financial balance of public transport actors

The financing structure of public transport services should be transformed towards a customer-focused system that makes the beneficiaries pay, yet includes a certain level of social compensation. The main strategies to achieve a better balance of the funding structure of public transport services include the decentralisation of the (mobility) tax collection system, the introduction of alternative funding schemes and the change from input to output/outcome financing.

While there is still a general need to improve and streamline the funding structure of public transport operation, the operators themselves are also requested to re-consider their internal structure. Restructuring of public transport organisations and outsourcing should be considered more widely as ways of reducing costs and increasing the efficiency of service provision.

Tax Increment Financing in Chicago, USA

The City of Chicago uses Tax Increment Financing (TIF) as a tool to finance re-development of transport infrastructure, etc. in disadvantaged areas. Within the areas concerned, the initial amount of generated tax and public expenditure is set as a baseline and maintained throughout the project phase.

Existing vacant properties are developed and returned to productive use; as a consequence the value of those properties increases. The increment of new tax revenues compared to the baseline is used for improvements within the TIF area.



Photo: The Land Transport Authority of Singapore

Best price with smartcards, Sweden

The smartcard based ticketing system, in the Västernorrlands region in Sweden includes a discount system, which rewards frequent users as the price per trip reduces with the number of trips made. Unlike monthly/weekly tickets, users only have to pay for trips they really make.

In addition, the smartcard and statistics system allows the public transport providers to collect information about general travel patterns and patronage of services. The related communication activities establish a personal dialogue with the customers.



Self-managing teams, Connexion, NL

The self-managing teams in Connexion assume full responsibility for all aspects of assigned transport services. Such complex involvement helps considerably to improve the services and streamline internal work-procedures.

The created multi-availability of staff broadens the variety of tasks the individual team members are concerned with. This approach increases the flexibility of the team, yet also individual satisfaction with the own job, which provides an essential contribution towards a socially sustainable company climate.

Special attention needs to be given to reducing the operational subsidy in new Member States and accession countries to free up resources for investment in infrastructure and rolling stock. There is a particular need to optimise fare income through fare and discount restructuring.

The cost of service production should be reduced mainly through preparation for competition and organisational restructuring within contractually defined service standard levels while enabling and motivating operator innovation at the tactical level. Public transport patronage should be maintained and increased through contractual incentives and marketing including improved customer focus and marketing by all stakeholders.

■ Improving the attractiveness of public transport as an employer

Staff qualification

Public transport in Europe has in general a well-qualified workforce. In the future a number of external mega trends like ageing of the population, lifestyle changes and individualisation, more competition in the service industry and the emerging of new technologies will set new and higher requirements for skills. In order to remain attractive as an employer, the public transport sector will have to react.

New qualification strategies will have to be put in place. It will be necessary to adapt existing recruitment policies and methods to ensure finding the right staff in a market with a limited availability of new employees. The increasing diversity of employment profiles and the cultural diversity of customers and employees alike will demand greater attention.

Staff training

New job qualifications and common qualification structures ought to be developed for drivers in order to improve the image and profile of these jobs. The increasing importance of new technologies and their applications makes it indispensable to learn more about these technologies and integrate them into the training process. E-learning, understood as online learning or web-based learning, raises expectations as to what technologies may contribute to meet learning and training needs, on and off the job.

In this context it is important to recognise that the success of new training concepts depends on both suitable didactic and methodological models for training and the pedagogical and computer skills of the trainers. Human resource and training managers of PT operators ought to be involved in the development and implementation of e-learning programmes.

Career management

Furthermore, new strategies should be developed for career management to make staff members masters of their own work and to create high quality proactive management. Staff members should work more independently in self-directed teams with more responsibility and less bureaucratic organisational structures.

There is a need to analyse new competency models for management to investigate which competencies and specific skills are necessary for different levels of management. In order to recruit and train managers with new competencies, it is necessary to improve the training of young executives and students.

New models for workers councils should be analysed for their potential to offer more flexibility in strategic decision making and negotiating with workers about working conditions, remuneration etc. Research needs to be done on existing best practices on "decentralised" social dialogue, and it is necessary to create new social dialogue approaches more focused on the situation in single public transport organisations and less on a national or branch level.

■ Improving safety and security

Design

Over recent years, in addition to assault and vandalism, public transport has been the target of terrorist attacks exploiting the high vulnerability of the public transport mode. The impact of terrorist attacks is often very serious, affecting a large part of the PT network and the activities of different stakeholders.

Improving the design of rolling stock and infrastructure to take into account safety and security concerns could help in preventing both assault or vandalism as well as major incidents, and certainly contribute to lessening their impact. Modern information and communication technologies, such as surveillance and detection systems and intelligent transport systems should be explored to improve road safety and increase security within public transport.

Management and collaboration

There is a strong need to establish clear management procedures to prevent and handle dangerous situations. Incident response procedures have to be established in advance and communicated to all relevant agencies and staff members.

Every staff member and every organisation involved has to be fully aware of their role and place within emergency procedures. Involvement and cooperation with third parties, such as the fire brigade or medical help, has to be agreed and detailed in advance.

Passengers should be involved in preventive measures. Public awareness campaigns should be launched asking for vigilance and preventive support from passengers. Such campaigns have to be carefully planned and designed to encourage cooperation, without feeding feelings of insecurity.





Bus priority in Genoa, Italy

The main objective of the PRISCILLA project was to take up existing bus-priority measures, such as traffic light priority and dedicated lanes, and to improve them for network-wide application and combination.

The outcome of the project proves bus priority is a very valuable tool to improve public transport service quality, yet the results are very sensitive to the local environment, there is a need for accurate study of each junction before the implementation of the system.



Human presence

A crucial contribution to improving security can be made by increasing human presence in public transport systems. This applies for service staff, specialised security staff as well as fellow passengers and providers of additional services in the vicinity.

Human presence plays a major role in improving both perceived and real security. In order to increase the number of people present beyond actual passengers, additional services should be provided in or near PT stops and interchanges, as these attract customers.

Overall transport safety

Safety in transport does not concern single modes only, but the transport sector as a whole. Based on current policy efforts regarding road safety, the EC should pay more attention to the potential safety increase that could be achieved by a modal shift towards public transport.

Public transport offers various safety-related advantages, which need to be exploited and communicated. Besides the availability of professional drivers, who know their routes and high maintenance standard of rolling stock, it should be pointed out that the capacity of PT vehicles significantly contributes to reducing the number of cars on the road.

■ Improving environmental performance

Pollutant emission and resource consumption of rolling stock

Awareness of the general public about environmental issues like pollution and global warming is on the increase. Compared to other means of transport, public transport remains an environmentally friendly mode, however a number of efforts are necessary if it is to maintain this advantage.

Further reducing PT pollutant emissions and energy consumption could be enhanced by cooperation with and knowledge transfer from the car industry to ensure latest developments are incorporated.

Various experiments on prototypes of hybrid power systems, super-capacitors and flywheel technology have been and are being made by the bus and rail industry. Current results show that their costs are not yet affordable, and reliability should also be improved. Research should establish the technology that is best suited to and promising for the public transport sector.

Further research efforts should address efficiency improvements for alternative fuel systems in public transport. Hydrogen is one of the alternative fuels which could provide a good answer for environmental reasons as well as resource availability. Other alternative fuels such as dimethylester are also under investigation. Existing solutions for alternative fuel systems are still too expensive to be used on a wider scale in public transport. Further research to improve efficiency and cost effectiveness should be envisaged in close cooperation with research by the car industry.

Noise pollution

In order to increase citizens' quality of life, noise pollution caused by public transport vehicles has to be reduced by implementing new noise reduction systems. Based on the existing European directive 2002/49/CE which specifies measurement processes for evaluating noise emissions from transport systems in urban areas, for all modes, there is a need for further specification on how to regulate these processes and to specify noise emission limits.

National and local authorities should promote the use of public transport rather than private cars in order to reduce the road traffic and consequently the noise level. Public transport operators should step up their efforts regarding vehicle maintenance (e.g. brakes) to reduce noise pollution and promote smooth driving from their drivers.

Recycling of rolling stock

Making new PT vehicles more recyclable and improving the recycling procedures for old and new vehicles will be an important task for the future. The public transport industry should take advantage of the huge advancements made by the car industry. As many of the components of new public transport vehicles as possible should be made recyclable.

Operators, in cooperation with the industry, should develop recycling procedures both for old and new vehicles that are not too costly. This recycling of vehicle parts will have consequences not only on design but also on maintenance, which has to be adapted accordingly.







Listening to practitioners' views in strategic research and policy debates forces them to think beyond the usual commercial horizon.

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Conclusion

The public transport sector needs to reinvent itself as a customer-oriented and flexible service industry that contributes to overall policy goals, yet also satisfies the needs of the individual citizen.

Preparing the sector for the future is the key responsibility of public transport providers themselves without waiting for more favourable business conditions.

The VOYAGER project was set up to facilitate some general reflection about the current situation of the public transport sector and its future challenges, to stimulate strategic brainstorming amongst professionals that goes beyond company or everyday business concerns. Together with the project consortium, the working group members worked for more than three years to develop recommendations that shall guide the public transport sector as a whole.

The state-of-the-art review identified a large number of problems for the public transport sector that can already be considered as solvable today. However, what is seen as a minor problem in one place, and for which a solution has been developed, is simultaneously considered unsolvable somewhere else. In many cases, the existing solutions and good practices are not sufficiently promoted and thus not known to other actors, or the potential transferability of successful policies has not yet been analysed.

Clearly there is a need for promotion of good practices and training for capacity building in order to make the whole sector benefit more effectively from existing experiences. This need is further emphasised by the enlargement of the European Union, as many public transport actors in the new Member States and candidate countries still have to manage the transition from planned economy background to market economy conditions, with all the related opportunities and threats this poses for public transport.

The societal mega trends discussion provided a most interesting background to think about upcoming business challenges and action plans for the future. Besides competition at a company level, there is an overall challenge for the public transport sector to contribute to sustainable urban development and provide a real alternative to car dependency and social segregation.

Societal developments need to be monitored and their potential impact on public transport analysed, allowing strategic business decision making to anticipate emerging trends well in advance. It is of utmost importance to embed network design and investment planning in a sound assessment of future requirements to make sure that public transport services are developed in line with customer expectations.

Policy and research recommendations as drawn up during the VOYAGER project target all relevant stakeholders and call for concerted effort to stabilise and improve the position of public transport within the transport market. ***The public transport sector needs to re-invent itself as a customer-oriented and flexible service industry that contributes to overall policy goals, yet also satisfies the needs of the individual citizen.***

Decision-makers need to understand the value of public transport and are called on to provide a political framework that enables clear market and business organisation. Yet, ***preparing the sector for the***

future is the key responsibility of public transport providers themselves without waiting for more favourable business conditions. A huge potential for innovation and improvement exists within the sector, which needs to be activated and exploited to ensure a future for public transport.

There has been and continues to be extensive research activity on issues that directly and indirectly impact on public transport. However, if research and development are not meeting the needs of the public transport sector, enormous efforts might be lost. On the other hand, public transport actors need to be aware of existing experiences and research state-of-the-art beyond their local horizon, in order to benefit from all relevant existing knowledge.

The VOYAGER project has clearly demonstrated that a global, sector-wide debate on strategic issues helps to streamline research efforts, which are often too problem-focused and not well embedded into the overall business sector. This perhaps narrow focus of research efforts seems to prevent the public transport sector from fully exploiting existing knowledge.

Direct involvement of practitioners in strategic research and policy discussions helps to identify the immediate and long-term needs of the sector. It allows to bridge gaps in dissemination of research findings and good practices. ***Listening to practitioners' views in strategic research and policy debates forces them to think beyond the usual commercial horizon.***

The requirements of the public transport sector in terms of research and development will be articulated, in order to provide the researchers with a clear view of the public transport sector's needs and potential. The objective of these efforts will be to achieve more tailor-made research activities, responding to immediate needs as well as taking up strategic challenges to strengthen the future position of public transport.

For more details and results of the VOYAGER project, please consult the project website at www.voyager-network.org, where all products developed are documented. A more detailed insight into existing European legislation, research initiatives and urban public transport related good practices can be found at www.eltis.org.

The complete results of the VOYAGER project will soon be available in a public section of Mobi+, the electronic library of UITP. It can be accessed at www.uitp.com

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