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0. Introduction

Public transport lacks money. It is overstaffed and inefficient. It suffers from old management methods. It is perceived by its customers as uncomfortable, unreliable and unfriendly. Outdated rolling stock and infrastructure in poor condition are the rule.

At least one of these aspects is a reality for many PT systems in Europe. Against the background of mounting mobility demand, environmental and energy supply concerns, public transport should take its place of a natural solution for our cities, effectively tackling the challenges it currently faces.

Are PT companies able to preserve their place and expand in a fast-changing environment? Are authorities ready to create conditions favourable for the renewal and development of public transport?

Organisations of the market vary broadly across Europe, involving different legal framework conditions, different relationships between operators, authorities and other actors, different level of competition and cooperation. PT actors shall concentrate on developing their capacity to respond adequately to external circumstances, to be prepared to function differently, more efficiently and flexibly, to be proactive and innovative.

Traditional and new actors in the PT market must work towards establishing some form of rational cooperation among themselves for the common good of PT. Public transport can be viable and attractive to customers only by coordinated actions such as integrating PT services and schedules.

Authorities have an important role to play in supporting PT development, role that is not only confined to financing. A strong political will is required to ensure an environment of fair and clear rules where political instability will not jeopardise the efforts of the sector to stabilise and consolidate.

In the environment of increasing competition and still unclear or frequently changing rules, scarce financing remains the problem of the day. Two traditional sources of financing are increasingly insecure: the compensation from authorities and revenues from customers. Therefore, ways to diversity sources of revenue, new ideas and their transferability, are high on the agenda of challenges to be tackled.

Are PT companies ready to become business-oriented, efficient and competitive by streamlining their organisation and investing in innovative management approaches?

PT systems, compelled to transform in order to avoid collapse, often need a radical rethinking of their very foundations. Faced with the requirement to cut costs while at the same time increase quality of service, PT companies need to move towards a new understanding of their internal organisation and functioning, including new management of their human resources. PT organisations now face a constant demand to considerably increase their overall performance by streamlining organisation and improving management methods.
Do customers matter? Or how to create a culture of genuine service providing, building knowledge of and adapting services to customer needs to strengthen PT’s position?

Many PT systems have functioned for a long time with little or inaccurate knowledge of the real and dynamically changing customer needs. In a situation where companies can no longer rely on secured public financing, understanding and adequately responding to customer expectations turns into one of the survival tools. Analysis of mobility behaviour, PT image improvement and customer dialogue are thus all ongoing challenges in PT actors’ efforts to position public transport in a new light.

And how to keep up both with advancements in technology and demands of customers for better, cleaner, more secure, comfortable and reliable PT environment?

Renewal of PT infrastructure and fleets has been perceived as one of the most pressing transport problems of local authorities and PT companies. Rolling stock and infrastructure renewal has of course the most immediate visibility to customers and therefore is often regarded as the most rewarding investment effort. It has an impact on many aspects – better quality of technical performance increases customers’ satisfaction, staff motivation, brings environmental benefits, etc. Retrofitting old rolling stock extends its life, while at the same time provides employment in overstaffed PT companies and it is a reasonably priced option. Infrastructure renewal and modernisation is a complex area where many actors are involved with their own objectives and interests, where investments are costly and long-term.

The present report constitutes Deliverable 2 of the SPUTNIC project and provides an overview of the general challenges facing the public transport sector that should be taken into account when providing input for future PT-related policy and research agendas.
1. Market Organisation

After many years of discussion and disagreements the EU Regulation on public passenger transport by rail and by road has now been adopted. The implementation of this Regulation will be a key challenge for the market organisation of PT in Europe.

The establishment of this new regulation underlines the fact that the PT market is undergoing necessary and essential changes. This applies to all European countries, but the organisational changes are expected to be more fundamental in cities and regions undergoing rapid economic development in new EU member states. Within these new market models PT operators have to reconsider not only their internal structures but also their relations to other actors in the PT market, whether it is authorities or other operators.

In many countries this process of change is complicated by diminishing public resources, lack of funds for investment and operation and low integration of PT in an overall mobility and transport planning. The efforts of the sector to stabilise and consolidate are often offset by changing regulatory conditions and frequent political interference. Although local politicians often use PT as a vote-wining tool, decision-makers in many places give low priority to public transport as a natural solution to increasing mobility problems. An often unsatisfactory quality level of PT is a result of low implementation of quality and performance monitoring and few incentives for PT actors to cut costs, increase revenues and the level of quality.

1.1. Legal framework and institutional set-up

Public transport is subject to local policies and responsibility of local decision-makers. Until the beginning of the 1990s, public transport in new EU member states was part of centrally planned economies and was directly managed (and financed) by the central government. After the political changes these countries saw a process of decentralisation and priority was given to restoring the municipal self-government. The state withdrew from its tasks which were left to the local authorities but without an adequate shift of budget.

The withdrawal of the state thus left a vacuum, not only a financial one, but also an organisational one. Regional entities, crucial for the integration and good functioning of public transport services, were nonexistent and had to be built up first. The effect of this is illustrated by the integrated PT systems of Prague and Brno which have a completely different organisational set-up. The Prague system was established in the 1990s by the city (the current administrative organisation did not exist at that time - regions were abolished in 1990, as one of the first reforms after the collapse of the communist regime). The Brno system was established jointly by the city of Brno and the southern Moravian Region 10 years later (2002) when the current regions were in place as a second level of local self-government. This example shows that challenges and solutions are always preconditioned and guided by the legal and institutional setting – and thus differ.
As a consequence of this political vacuum a main challenge for most PT operators still are the unstable, often changing legal and organisational framework conditions. This lack of long-term stability also hinders the setting-up and implementation of long term planning strategies, for PT as a whole as well as on the company level.

Furthermore PT often ranks high on the political agenda of authorities and decision-makers but in fact the rhetoric often results in a variety of competitive disadvantages compared to individual transport (fewer funds, network discrimination, absence of fair pricing etc.). It is a main task of the future to change this attitude by lobbying authorities on the importance of PT. This is especially true in new EU member states where PT runs the risk of becoming a service to marginalised groups of society.

Division of responsibilities among PT actors is often unclear resulting in a paralysing lack of initiative. In many cases authority and operator are not sufficiently separated which might result in a lack of control regarding efficiency and effectiveness of the service provision. Contractual arrangements between the actors (so called Public Service Contracts, PSC) in which responsibilities are defined and the terms of fulfilment are set, are not the rule. PSC is a relatively new concept in these countries which does require reliable and sound legal framework conditions – which are often missing.

Even if there is a negotiated PSC between operators and authority, the authority often does not act according to the rules of the contract. The impression is that the contract partners are not reliable and that there is a latent distrust caused by the unclear regulatory conditions mentioned above. For example many operators in CEEC complain about the reducing of the negotiated subsidies in a manorial manner. Due to this the long term as well as even the short term planning of a high quality PT is not possible.

As formal contracts stating rights and obligations of the partners are scarce, so are quality and performance monitoring systems which are usually used to control the fulfilment of the contract. The challenge for both authorities and operators consists in formalising their relationship and establishing contracts and according control mechanisms that set the right incentives to improve efficiency and quality of the service.

Presently many operators (in new member states and elsewhere) have no incentives to do so as they receive a gross-cost subsidisation for running their services – independent of their performance. It is a challenge for PT to organise the market in a way that subsidies are entirely used to guarantee and safeguard the well defined socio-economic, environmental and quality-related objectives of PT. Incentive schemes have to be set up that bring in line the different and sometimes conflicting interests of profit maximising operators and welfare maximising authorities.

Main challenges regarding institutional set-up and legal framework conditions are thus:

- to set-up of sound and stable legal framework conditions
- to create an understanding among the political decision-makers of the importance of PT for the citizens’ quality of life and a sustainable development in general
- to implement Public Service Contracts that clearly define the actors’ responsibilities
- to implement incentive contracts which support entrepreneurial behaviour to increase the quality and the efficiency of PT
- to allocate the responsibilities and risks for operators and authorities in a fair way
1.2. Cooperation and PT integration

Public transport actors – operators, authorities, suppliers and others – must realize that they are facing one common strong competitor: the private car – and cars are rapidly getting better and cheaper. It is therefore crucial that PT actors cooperate in order to withstand this competition. One of the main advantages of individualised transport against PT is its quality to cover the whole trip from door-to-door whereas a trip by PT usually consists of several part-trips using different modes, often operated by different companies. It is therefore obvious that one of the keys to attract more customers and advance the modal split for the benefit of PT lies in the integration of the PT transport chain – seamless travel.

The integration of PT is not only an advantage for the customers and a “playground” for authorities. Operators should recognize and accept that PT integration leads to a higher number of passengers and to a more efficient PT service.

Integration of PT combines several global aspects such as network integration, timetable and information integration, tariff and fare integration and service integration. Especially in the long term, integration of PT in a whole range of areas like mobility services, transport planning and land use planning is of great importance.

Such cooperation is preconditioned and guided by the institutional and legal setting. Particularly in a low trust environment with unclear division of responsibilities PT actors prefer to wait for others to take the initiative. As a result little is done although every actor would have profited. Thus, one main task ahead – particularly in new member states – is to set-up institutional frameworks that help to overcome this challenge.

In some cities undergoing rapid economic development a high level of integration has been reached with respect to timetable and network integration whereas in other areas actions have to be taken, especially relating to interchanges and timetables. In particular the integration of municipal bus and tram services with the – usually state owned – railway services prove particularly challenging due to their different ownership and legislation (e.g. in Warsaw). Often an intermediate entity, e.g. a regional body that could accommodate between the two parties is missing. However, the integration of the railway services is a main success factor of integration as it enables a network design using all transport modes according to their individual strengths and weaknesses (i.e. railway/subway as backbone and bus/tram as feeder lines). Possible benefits include more reliability, less travel time, more efficiency (cost reduction avoiding parallel services and network optimisation), demand and revenue increase. Network and timetable integration requires a central and coordinated PT planning on national and/or regional level.

Where timetables and networks have been - at least to some extent – integrated, the next step consists in the integration of tariffs which is usually more challenging for several reasons. Tariffs are a highly political matter – especially in new member states. Tariff integration usually creates initial costs that are only offset (by higher demand) at a later stage, thus it requires investment. Finally, all participants have to trust the organising entity that revenues are distributed in fair and correct way.

For one or several of these reasons examples of integrated tariff systems are scarce in CEEC or are at a very infant stage, even though practices from East and Western Europe show that the consequent introduction of one ticket for all modes, operators and
lines within an area can substantially increase PT demand and revenues. Customers should be able to use all transport modes with one ticket in a very easy and transparent way. Therefore common information and ticketing systems are needed. Still, in many cases the necessary know-how to set up tariff or traffic associations is missing.

Main challenges with respect to cooperation and integration include:

- the harmonisation between local and regional PT
- the integration of national rail and air transport services with regional/local PT
- a possible (initial) increase of costs by tariff integration (although solutions without cost increase exist)
- creation of a trustful environment for non-discriminating revenue distribution schemes that secure incentives
- initiative (who takes the lead for integration?)
- national/regional legislation that facilitates integration
- setting up of a suitable organisation/institutional framework

### 1.3. Financing models

PT funding is an issue of highest priority in cities, regions and countries undergoing rapid economic development. The lack of financial means and severe need to upgrade the ageing rolling stock leads to a vicious circle where reduced service levels deteriorate the already bad image of PT and lead to declined patronage resulting in rising fares which cannot be justified as the service levels are ever declining.

But also financing of operations is a challenge as the general social circumstances might require low rates or fares as a result of political decisions. Some regions and cities now experience a remarkable increase in the standards of living. This leads to increased car use and if public transport is not to become a means of transport for marginalised groups of society, then the financing of improved PT must be secured. In addition, a problem might exist of concessional fares set for political reasons often not being compensated which creates serious problem for the cost coverage rate.

As a consequence, the ticket share of PT fares related to the overall costs is usually fairly low and a relatively high share has to be borne by the public authorities. As a consequence of the withdrawal of the state from local and regional transport in the 1990s, reliable and sustainable operation financing models are missing. Considering the instable regulatory framework and the unreliable loss-coverage operators are reluctant to long-term and even mid-term investments.

As a consequence of low cost coverage, (politically imposed) fare concessions and inefficient operation, the already small public PT budget is often entirely used for financing operation. Usually there is little money left from public sources for direct investment. Finding ways and means to finance the urgent renewal of neglected infrastructure, rolling stock and creation of new services is thus one of the biggest challenges. A number of authorities try to make use of loans with international finance institutions (IFIs). This not always succeeds as loan guarantees and conditions are challenging (e.g. for smaller cities that most often have no credit rating). Furthermore, many cities of the EU new member states often lack know-how for accessing EU funding.
In addition to intensifying their lobbying effort towards government for more resources, operators should focus their efforts on devising internal strategies for generating additional revenues by offering additional services creating new market potential. Therefore a stable market environment is needed that encourages public service providers to enlarge their service portfolio.

The main challenges related to financing PT include:

- to accept that PT in most cases cannot be a self-supporting system with respect to the financing
- to identify alternative ways to finance infrastructure and operation
- to identify measures and options to increase fare revenues or to generate additional revenues
- to simplify funding structures (too many different PT funds hinder an efficient and integrating PT financing)
2. Internal Management

2.1. Business performance management

A problem faced by almost all PT organisations and by those who work in them, is meeting the constant demand for high performance. The demand for high performance affects everything, from assuring sustainable financial growth of the organization to satisfying the passenger standing at the next stop. But without the proper models of performance and the theoretical elements that drive them, PT managers and professionals are left with the task of interpreting each situation they face. Or even worse, they simply charge ahead in a trial-and-error mode. Performance improvement theory and practice result in more powerful and practical principles and models to help practitioners identify and solve performance problems.

The challenges in the field of Business Performance Improvement can be determined by using, amongst others, the following model:

![Business Performance Improvement Model](image)

The measurement of business performance and measurements are the key, because……

- If you can’t measure it, you can’t control it…
- If you can’t control it, you can’t manage it…
- If you can’t manage it, you can’t improve it.
A) Cost efficiency measures

The amount of public transportation services produced for the community in relation to the resources expended. This measure addresses the question “How many resources were expended per unit of PT service”. Units of service are measured in terms of service outputs such as vehicle hours or vehicle kilometres. Resources expended include labour, capital, materials and services.

Primary cost efficiency measures include total operating cost per vehicle service hour and total operating cost per vehicle service kilometre.

B) Cost effectiveness

Cost effectiveness is the consumption of PT services in relation to the resources expended. This concept addresses the question “how many resources were expended per unit of consumption or how much consumption was received per unit of resource expended? Consumption is measured by passenger trip or passenger kilometres.

Primary cost effectiveness measures include total operating cost per passenger.

C) Service Quality

Service quality is the relationship of service delivery and customer expectations. This concept addresses the question “does the delivery of PT service meet or exceed customer expectations?”

Service quality is defined as passengers, clients and the public receive it. Service quality has many dimensions and the importance of any single attribute differs among people. However, the attributes of quality include at least accessibility, availability, reliability, safety and comfort.

A key issue in this regard is the use of performance indicators and new methods/tools of performance management like:

- Benchmarking
- Total Quality Control or Total Quality Management
- EFQM (European Federation of Quality Management)
- Balanced Score Card
- MBO (Management By Objectives)

Thus, the main challenges with respect to the field of Business Performance management are:

- to increase overall performance at company and business unit levels in order to better cope with existing competition or new competition in the (near) future
- to improve existing management methods (controlling for example) and/or introduce new more up-to-date methods like Balanced Score Card, Total Quality management, EFQM, Management by Objectives
- to improve financial performance by further cost reduction, increase of revenues and coping with scarcity of public funds
- to update and make better use of performance indicators on production, finance, quality and HR
2.2. Restructuring of PT companies

In public transport organisations many things can cause organisational change: changes in strategy; government legislation/initiatives; challenges of growth (positive or negative); shifting markets; competitive pressures; technological changes; necessity to learn new organisation behaviour and skills.

Research indicates that PT organisations are undergoing major change approximately every three to five years, whilst smaller changes are occurring almost continually. There are no signs that this pace of change will slow down.

In this context it is quite a challenge for PT managers to be able to introduce and manage change to ensure organisational objectives of change are met, and they have to ensure that they gain the commitment of their employees, both during and after implementation.

For these reasons it is important that PT organisations and other stakeholders consider carefully the way change and restructuring is managed. Public transport organisations use different models for restructuring and change management, but sometimes there is a lack of effective project management and programme management disciplines. This can lead to slippages in timing and in achievement of the desired outcomes. If there is also insufficient training (e.g. in project management, change management skills or leadership skills) these can all impact negatively on the effectiveness of any restructuring or change initiative.

Poor internal communication, for instance, can lead to greater employee resistance. Two broad types of resistance can be distinguished:

- Resistance to the content of change – for example to a specific change in technology or a change in the structure of the organisation.
- Resistance to the process of change – this relates to the way a change is introduced rather than the object of change per se – for example restructuring jobs without prior consultation of affected departments or employees.

Thus, the major challenges in the field of restructuring and change management are:

- to obtain more alignment between Mission, Vision, Corporate Strategy and the consequences for the structure of the organization (structure follows strategy)
- to streamline or even downsize the organisation in order to improve efficiency of management and performance of the entire organisation
- to improve change management methods when involved in major downsizing projects
- to find better ways of outsourcing non-core business or new business, for example by partnering with other organisations
- to improve change management communication methods to obtain more commitment from all managers and employees when implementing a new organisational structure or a cultural change.
2.3. Human resources management

Historically human resources is an administrative and support function in PT organisations. Nowadays however human resources management is increasingly focussed on processes which contribute to the effective management of individuals and teams in order to achieve high(er) levels of organisational performance.

This performance management should incorporate:

- Performance improvement – throughout the organisation, for individual, team and organisational effectiveness
- Development – a continuous development of individuals and teams, performance will most certainly improve
- Managing behaviour - ensuring that individuals are encouraged to behave in a way that allows and fosters better working relationships and contributions to the PT organization.

Therefore human resources management and performance management is about establishing a service culture in PT organisations in which individuals and groups take responsibility for the continuous improvement of business processes and of their own skills, behaviours and contributions.

Performance management is a process, not an event; it operates as a continuous cycle. Organisation's strategic goals provide the starting point for business and departmental goals, followed by agreement on performance and development, leading to the drawing up of plans between managers and individuals, with continuous monitoring and feedback supported by formal reviews.

A number of challenges are linked to the human resources policies and performance management:

- to elaborate methods to determine current and future skill gaps and competency profiles for middle and top management
- to define new (behavioural) competencies and competency frameworks
- to improve training and development of middle and top management, with special focus on entrepreneurship
- to become a more attractive employer for young talent and to develop new recruitment strategies in a changing EU labour market
- to invest in motivation of staff
- to create a culture of a learning organisation or a learning network of PT professionals by introducing innovative and flexible learning methods
- to introduce measurement of performance, using more sophisticated techniques such as balanced scorecards.
3. Marketing and Customer Relations

Public transport companies operate in an increasingly competitive and challenging environment where they have to tailor their products to increasingly discerning customers whose lifestyles require flexible transport options. Public transport can only retain and strengthen its position in the transport market through a combination of hard and soft measures including integrated marketing campaigns and an ongoing dialogue with its customers. PT operators should start to perceive their passengers as customers with individual needs and expectations. Thus, understanding customers’ perceptions and needs is critical to the success not only of individual companies but also public transport in general.

However, particularly in the new EU member states, there seems to be a general lack of appreciation for the significance of marketing and customer-orientation in public transport companies for the future success of PT. As transport markets in these countries are becoming increasingly competitive, giving thus choices to the customers, PT companies will have to adapt to the challenging new environment by utilising cutting-edge marketing tools to make sure they retain existing customers and acquire new ones.

3.1. Marketing

Marketing is the process of increasing customer awareness of products and services, attracting new customers, sustaining the attention and interest of existing customers, and building, maintaining and expanding the customer base for a product or service.

In the context of PT, successful marketing measures can significantly increase PT patronage and/or lead to a better capacity utilisation of the existing PT network. Thus marketing can be interpreted as a tool which is used to improve the image of PT companies, to increase future PT patronage and ultimately to increase revenue, ideally leading to further investment in infrastructure and services. Marketing is thus essential to the sustainability and development of the PT market.

Nevertheless many PT companies still limit its use to the application of a number of single measures, such as advertising, direct marketing, passenger information. General integrated marketing strategies tend to be employed solely by the larger PT companies with independent marketing departments. While majority of Western European PT operators recognise marketing in PT as a valuable tool, in many PT companies in new member states it is still to prove its value and to justify its existence. Marketing expenditure remains in most of these companies at or below 1% - a mere third of expenditure that marketing experts suggest should be spent. PT marketing is still often seen as a cost factor rather than a means of generating revenue.

Within countries undergoing rapid economic development, often marketing in PT is still in its infancy, with very few PT companies establishing a formal marketing strategy or gaining access to marketing expertise, particularly in smaller cities. With very few independent marketing departments in existence, PT companies are not collecting sufficient information on their customers and are thus unable to utilise other marketing measures to their full effect. This is due to the fact that a lot of PT operators believe that
most of their patrons are – and will remain – captive users who have no viable alternative to the use of PT.

In larger cities, such as Bucharest and Prague, economic necessity has driven a more positive approach to marketing where possible within financial constraints. However, since the PT market share in new EU member states is in general steadily falling – with some interesting exceptions – increased awareness of and investment in marketing is essential to reverse this trend.

3.2. Customer relations

In order to stop or even reverse the trend of shrinking PT patronage operators ought to establish a continuous dialogue with their customers. Customers should be treated as individuals with certain expectations and perceptions. One of the key challenges for PT operators consists in identifying any mismatch between customer perceptions and expectations. Managing the expectations and perceptions of patrons has therefore become significantly more important over the last years and this development will continue with PT companies changing from simple providers of transport offers to real service providers.

When dealing with customer perceptions and expectations PT practitioners not only want to find out what their customers think; they also want to identify deficits in their services, so that they can plan and implement measures for better service quality and higher customer satisfaction.

Some PT operators use the instruments of customer-relationship management and customer-satisfaction management. Customer-satisfaction management entails a systematic approach to reduce any differences between perceived and expected service quality.

Customer complaints are a rich source of up-to-date information about the state of the service. Some operators no longer call them complaints (negative meaning); they are rather referred to as ‘comments’ which are categorised according to their nature. In addition to collecting and analysing ‘comments’ a mechanism must be in place for exploiting them and for implementing service improvements that can lead to greater customer satisfaction, greater knowledge of customer needs and higher economic savings for the operating company.

The importance of the personal contact with customers is essential; thus the appropriate training of “front” personnel, such as drivers, sales personnel and information personnel plays an important role. An essential requirement for all forms of customer relation management is that all contact points (e.g. internet, ticket counters, bus drivers, etc.) deliver the same information with the same quality. Thus, customer orientation ought to become an essential part of PT companies’ corporate philosophy.
3.3. Improvement of PT image

Improving PT image in many cases is unquestionably difficult, particularly changing the negative perceptions of customers caused by the age and conditions of rolling stock and infrastructure. In addition, the natural comparison to other means of transport, like the private car, focus on PT physical restraints, especially its comparative inflexibility and general lack of comfort.

In some cities, due to financial constraints and other obstacles, it is currently not possible to tackle this problem through investment in infrastructure and rolling stock. However, some progress has been made in other cities towards increasing the market share of PT, simply by connecting PT modes to positive associations and emotions, thus improving the image of PT without requiring further substantial investment in infrastructure and rolling stock.

In many of the new EU member states the car is frequently associated with freedom and individualism whereas the image of public transport is still haunted by the spectres of a communist past and as a mode for the poor. PT image-improvement campaigns thus have to tackle a bundle of negative associations clustering around state control and collectivism. Car ownership will increase further as economies continue to grow, for people will be drawn towards increasingly individualistic lifestyles that require a high degree of mobility. Since public transport is by its very nature a form of mass transport it can only come to be seen as suited to individualism through sustained image campaigns and through the provision of products and services that are tailored to the requirements and expectations of the individual user.

Integrated and sustained marketing campaigns and the establishment of an on-going dialogue with customers should play a crucial role in this respect.

3.4. Market knowledge

A thorough understanding of the market in general and of one’s position in it in particular constitutes the main requirement for successful marketing interventions. Before conceiving and implementing a viable marketing strategy adequate means for understanding and describing the transport market and the position of PT therein have to found and adopted.

The availability of good/sufficient knowledge about the transport market ("market research") provides the basis for analysing the chances and risks of public transport in the transport market and makes it possible to plan and carry out successful marketing measures.

The present situation within countries of transition shows a lack of understanding of the importance of market research. The approaches to data collection are rarely systematic and target-oriented. This deficit is more distinctive in smaller towns. The monitoring of the transport market is often limited to public transport alone and does not take into account the value of and the interrelations with other modes.

Public transport operators in capital cities use a number of survey instruments – also used by western European public transport operators – to monitor the public transport
market as well as the perceptions and satisfaction of their customers. In smaller-sized public transport companies instruments for evaluating the market situation are often either limited to one or two surveys or rely on external sources and ticket counts. This results in a general lack of market knowledge that severely hampers any efforts to improve customer-orientation and to adopt an integrated approach towards marketing.
4. Equipment and operation

The challenges and key problems in the field of equipment and operations can be split up into two general fields. On the one hand is the “hardware” to which both the rolling stock and the infrastructure belong. On the other hand are the operational aspects of the PT business where challenges like the introduction of computerised processes and systems like ticketing and passenger information systems belong to.

4.1. Rolling stock and infrastructure renewal

Challenges on Infrastructure

In general challenges related to the infrastructure seem to precede in priority the ones related to equipment and rolling stock since infrastructure is the backbone of any public transport system.

The increase of urban space dedicated to public transport, judged crucial for the promotion of PT as a champion solution to mobility problems in cities, needs both investments in infrastructure and the corresponding political support in the background. Dedicated space to PT (dedicated lanes) combined with the implementation of a priority system for PT and an effective enforcement of these measures would result in substantial increase of travelling speed. This is closely related to travelling comfort — another factor, crucial to keeping customers.

The increase of quality is one of the major challenges in both the field of infrastructure and equipment and in the field of rolling stock. The increase of riding comfort is closely connected to the quality of roads, tracks and track bed, stops, stations and interchanges or accessibility (including for people with reduced mobility (PRM). The improvement of the conditions and location of the stops and platforms has to be done with respect to their compatibility with the low floor rolling stock whenever low floor is considered to be used in the future.

Public transport operators see the increase of attractiveness of their systems by developing interchanging and interoperability as another major challenge of the near future. The improvement of interoperability between metro, tram, light rail and bus systems represents a substantial benefit for the passenger. While adjusting the PT infrastructure for better interoperability, economic interests have to be considered to respect the following principles:

- Maximum efficiency in the personnel expenditure and vehicle expenditure
- Simplest dispatching method on common stops \(^1\);
- Minimum operating costs.

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\(^1\) On mixed systems (for example tram and bus), where carriages with differing designs of the entrances are operated over the long term along a single stretch of line, stations have to be designed to meet conflicting requirements, with sections of platform built at varying heights.
Challenges on Rolling Stock

The improvement of technical safety and reliability of vehicle fleets (bus, tram and light rail) represents the most important challenge in the field of rolling stock. The reliability does once more stand for an increase of quality as well as a reduction of costs. When addressing the reduction of costs the harmonisation of the (in many cases) inhomogeneous bus and tram fleets is also an important contribution.

Public transport operators often find it difficult to select the best economical way of improving current state of fleet, choosing from three available options: refurbishment of existing rolling stock, purchase of second-hand rolling stock or buying new vehicles. A careful economic study should be performed prior to any such choice, integrating factors such as maintenance, energy consumption, considering local particularities (e.g. availability of local manufacturers) and particular situation (e.g. providing employment in overstaffed companies), consequences on workshop design.

The choice of renewing rolling stock should also take into account the expectations and needs of the customers by considering customers’ willingness to travel on low floor vehicles. Thus, the introduction of low floor vehicles or compartments is currently a priority task for many PT actors, whether implementation is done by upgrading existing vehicles or by buying new ones.

An important aspect in renewing the existing fleet is that the choice of fuel remains economically affordable and easy to operate (considering local conditions relating to independent supply, filling time, etc.) While the challenges mentioned above are mainly driven by the wish to increase comfort and/or reduce costs, the use of alternative fuel for busses and the introduction of modern propulsion systems on IGBT basis (insulated-gate bipolar transistor) for trams and light rail systems can both provide a reduction of energy (and therefore costs) and contribute to environment protection. The latter can also increase the reliability and maintainability of trolleybuses, trams and light rail vehicles.

Within PT companies, daily vehicle care, proper vehicle preparation for service and maintenance are important prerequisites for smooth operation. They ensure operating efficiency through increased vehicle running performance and reduced down time of rolling stock. Thus, it is essential to make suitable arrangements for maintenance and storage facilities as well as to have appropriate designed vehicle workshops.

4.2. Operational aspects

Operational aspects in public transport have generally a lower financial impact compared to infrastructure and rolling stock. However, punctual and reliable operations in conjunction with attractive commercial speed are decisive characteristics of a high level quality in public transport. It is of crucial importance for PT operators to choose technological solutions in connection with decisions made for the hardware to ensure compatibility when investment is not made simultaneously.

PT actors face a number of challenges in enhancing safety and improving operating quality for passengers through:

- accelerating the passage of buses and tramways
§ guaranteeing connections
§ dynamic passenger information based on the actual current situation
§ forward-looking preventive measures or limiting external disruptive influences (obstructions, congestion, temporary construction sites and so forth)
§ minimizing the impact of unavoidable deviations from the scheduled timetable.

Computerised operational control systems (COCS) and automatic vehicle monitoring (AVM) (and respectively the implementation and optimisation of a fleet traffic control systems as a bridge between infrastructure and rolling stock) can provide a major contribution towards achieving the challenges mentioned above.

Beside the computer based control and monitoring systems the implementation of dynamic passenger information systems, onboard and at stops, is considered as an important tool to reach the quality and comfort challenges. Therefore its implementation seems to be the main goals for many PT operators. The compatibility of different systems in one urban area (e.g. of different PT operators) and the integration of internal IT systems and passenger information or ticketing systems is equally an important challenge.
5. Conclusions

The objective of this report is to describe the most pressing challenges that currently face the public transport sector and that will have a considerable impact on its future development. These challenges are grouped into four categories:

**Challenges concerning the interaction between the different public transport actors**

Increased awareness and conviction of decision-makers of the importance of PT for the harmonious development of European cities and regions and for citizens’ quality of life shall stimulate the set-up of suitable organisation/institutional framework. Public service contracts that clearly define PT actors’ roles and provide incentive for quality and efficiency in PT shall support entrepreneurial behaviour and innovation in the sector. Coordinated action to integrate PT will help strengthen the sector while identifying new sources of revenue shall ensure its viability.

**Challenges related to the internal organisation of (traditional) operators**

The need to increase the overall performance at a company level is translated in the need to streamline the organisation, to improve efficiency of existing management and to introduce new up-to-date methods; to make better use of performance indicators on production, finance, quality and HR; to invest in motivation of staff and improve training and development, in particular for the middle management.

**Challenges stemming from the relations with the customers**

There is a clear need in many cases to convince PT managers of the potential of marketing tools to improve PT image, to increase PT patronage and revenue; integrated marketing strategies shall be complimented by a genuine dialogue with customers where their concerns and expectations are incorporated in the designing of transport offer.

**Challenges related to technical aspects of public transport**

Increased quality of infrastructure and rolling stock has major impact on the attractiveness of PT systems. It is often difficult for operators to choose the most economical way to improve the state of their fleet while reconciling the expectations/needs of customers with important financial constraints.

Many systems, even those considerably advanced in their process of adjustment to new realities, face some, many or indeed all of the described challenges. In these circumstances where there is a need for simultaneous action in multiple fields it is of crucial importance that PT actors are able to analyse and prioritise their efforts to tackle these challenges. The improvement and renewal of PT systems can only be done following a sound strategy that takes into account the variety of needs.
There is a growing mobilisation in the PT sector, together with the understanding that, although much depends on external factors, the PT sector itself has a primary role in tackling the challenges described in this report. The presented findings will serve as a basis to provide PT actors with a collection of good practices in overcoming current constraints to the consolidation and renewal of public transport.
Co-authors of the present report on Challenges in the public transport sector

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