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Travel Information on Urban Public Transport:
A Comparative Analysis of Berlin and Amsterdam

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TRAVEL INFORMATION ON URBAN PUBLIC TRANSPORT: A COMPARATIVE ANALYSIS OF BERLIN AND AMSTERDAM

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Abstract

*This paper emphasises the need for adequate **travel** information as a policy tool to increase the service level of urban public transport. Particular attention is given to the **role** and **competence** of public authorities in offering proper travel information systems. Two elements in particular are highlighted, *viz.* the management perspective and the institutional context. By **means** of a comparative case study approach to Amsterdam and **Berlin**, the actual possibilities of public transport authorities are explored, while **finally** some policy conclusions are formulated.*

1 Setting the Scene: The Need for Travel Information

Since the early beginning of **human** history people have coped with the 'tyranny of distance'. To **overcome** the limits of geographical **space** a big effort was needed. Caravan **trails** and sailing routes are examples of organising a logistic system that would allow for an expansion of the daily **action** radius. In modern **times**, this 'nomadic' behaviour has not **changed**. Only the transport modes have **changed**: the **camel** has been replaced by the **car**, the sailing ship by the airplane, the horse drawn carriage by the train, and so forth. In addition, the **frequency** of travelling and the distance of trips have increased **significantly** in the past centuries. Apparently, the modern man is permanently 'on the move'.

Spatial mobility is partly a **result** of **human needs** (e.g., recreation, tourism, **social** and cultural visits), partly an **economic** necessity **caused** by a worldwide product differentiation and division of labour. The rise in travel mobility has in recent decades **confronted** the western societies with severe problems related to the limited capacity of our logistic systems to absorb an ongoing mobility. These capacity limits are *inter alia* reflected in **traffic** congestion, environmental **decay**, resource depletion and **lack** of safety.

In the past years an intensive **debate** has started on the question **how** to **cope** with the above mentioned negative externalities of transport in a mobile society. The remedies proposed range **from** market-oriented **mechanisms** (**such** as road pricing or eco-taxes) to heavy investments in public transport, notably (light) railway systems and bus systems. A major question is of course that the critical mass of flows of passengers or goods is by far not **sufficient** to warrant a **huge** sum of public expenditures in public transport **infrastructure**. There are only practically two cases **where** public transport might offer an economically feasible solution, *viz.* point-to-point connections between large population (or activity) **centres** (e.g. Madrid-Seville, Paris-Lyon, or Milan-Rome) and

metropolitan **areas** with a **sufficiently** large population **size** and density (e.g. Greater London, Tokyo). The interest of the present paper is predominantly in the **latter** issue, i.e., the potential of public transport in large urban **areas**.

The quality of urban public transport is usually not meeting high service standards. Numerous **causes contribute** to the low performance of **many** urban public transport systems, **such** as **unqualified** management, unmotivated personnel, **lack** of market incentives, poor maintenance of rolling material, and unreliable **time** schedules. In **general**, the quality of information on the operation of public transport (e.g., **frequency**, destinations, **connections**, transit possibilities, delays) leaves **much** to be desired. And it is surprising that in our modern ICT age the level of information provision to travellers is so **poorly** developed. For public transport to become a full-**scale** and **attractive** alternative to private modes of transport, the quality of the service **needs** to be drastically upgraded. One of the necessary vehicles to **reach** this goal is to develop a sophisticated system of reliable travel information.

Transport telematics has in recent years become a popular technological option to improve the operation and added value of public transport (see Nijkamp et al., 1995). Several cities have **indeed introduced** various telematic **infrastructure** options so as to make public transport more **competitive**. But telematics is not mainly a matter of technological sophistication, but of user adoption and institutional support. Against this background, the present **study will centre** around the issue of institutional support **mechanisms** in urban **areas** with a view to an **effective** use of travel information on public transport services by (potential and actual) clients.

This paper **will** in particular **address** three interrelated questions on the task and **competence** of the urban administration in **regard** to information provision on public transport in the city, viz. (i) what is the role and task of the city administration in stimulating public transport operators to offer reliable travel information, (ii) **how can** the city administration use its influence to ensure the design and use of an up-to-date information system to the **benefit** of the traveller, and (iii) what kind of promising future strategies **can** be developed by the city administration in the area of public transport travel information?

After some general and theoretical reflections (in Sections 2-4), we **will address** these questions from a practical perspective by investigating the travel information systems in two European cities, viz. Amsterdam and Berlin, by way of **comparative** analysis. **Section 5** offers some general information about the two case study cities. A description of the actual provision of public transport travel information in these two cities is offered in **Section 6**. This is followed by an analysis of the actual and planned **usage** of advanced information systems on public transport in these cities (see Sections 7). **Section 8** **discusses** the urban institutional views on travel information of public transport. In **Section 9** the views of the relevant institutions on the planned open tendering of public transport and the accessory program of demands with **regard** to travel information are described. Based on a qualitative **comparative scan**, some policy guidelines are presented together with a concluding **retrospective** view (**Section 10**).

2 Elements of a Travel Information System

The **majority** of the world population lives in urban **areas**. In the western world the **average** urbanisation **rate** is approximately 70 percent. Consequently, urban public transport might in **principle** offer great opportunities for **satisfying** the mobility **needs** of **many** people. In **practice**, the role of public transport in **many** cities is **rather** modest, as a **result** of the flexibility offered by private transport modes and the poor quality of urban transport. Since mobility behaviour concerns a great **many** travel motives, routes and destinations, it is not easy to design a **collective** form of urban transport that would be able to cover the wide spectrum of mobility decisions (McDonald, 1997). The fine **tuning** of **space-time** dimensions of travel decisions - in terms of bundling and differentiation - **needs much** insight into possibilities and impediments regarding trip-making behaviour (Jones, 1981). With an expansion of our geographical **action** radius the vulnerability of travel chains increases drastically and **many** travellers do not like to be dependent on an uncertain provision of travel opportunities (see Nijkamp et al., 1995). To **accommodate** the rising mobility in an urban area adequate insight into expected travel **time** during **any** period of the day is **necessary** (Bovy et al., 1993). For public transport this **means** an up-to-date **real-time** travel information provision and public **access** to **such** information in terms of travel scheduling (frequency, departure **time**, arrival **time**, etc.) of public transport. Only in **such** a way **will** public transport become more **competitive** and hence **contribute** to the **fulfilment** of urban sustainability **objectives**. Clearly, there **may** be other supporting **mechanisms** as **well** (e.g., reduction in overall mobility, **cleaner** vehicle technology, etc.), but a modal **shift** to public transport in cities might offer a major contribution.

Since, in **general**, public transport does not offer door-to-door services, but **needs often** even several transfers, a better package of services **needs** to be developed, in which reliability, **frequency**, speed, and quality against reasonable **prices** play a major role (see Kelly, 1996). In this context, high quality information **may** offer an integrating added value to public transport, as this **will** stimulate better decisions (see Samuelson et al., 1977). A necessary **condition** is then that the information supply is timely, comprehensive, accurate and readily **accessible** (Dhingra, 2000). Good information provision **may also** lead to a consideration of **real** alternatives and to an elimination of unwarranted stigma's of public transport. Consequently, information supply is critical in favouring urban public transport (Clowes, 1996; Casey et al., 1998), both as pre-trip and as en-route information. The elements of a proper information system for public transport should at least pertain to time(table) information, route information and **price** information, under both **normal** and special circumstances (Finn et al., 1996).

In the light of the above remarks, it is evident that a user-friendly and proper information supply on urban public transport use and operations requires the **fulfilment** of **many** criteria. The most important **ones** are:

- accessibility and availability (at distance, en-route, static/dynamic, **visual/audible**);
- **real time** (correct, up-to-date, accurate, actual, reliable);
- comprehensibility (**clear**, simple, multi-lingual);
- standardisation (uniformity, easy-to-learn);
- multi-modality (transfer points and **time** etc.);
- flexibility (customer-made, **specific**, **active** and passive information supply).

Clearly, whether an actual information system is able to meet these requirements and hence to offer high quality information, depends on **many factors such** as the organisation of the information chain, the user perspective, the technology and the institutional support.

3 Transport Telematics Services

The advent of information technology enables operators to **provide** quality information at **all** stages of a journey related to their own services, and for passengers to **find out** details of competing services. A key to this information revolution is the provision of **real time** information at home, in the office, at stops or stations and in vehicles, and its integration into a total information system (Clowes, 1996). **Real-time** information is made possible by transport telematics. Transport telematics is a blend of information technology and telecommunication technology that is used in the transport sector. This blend of information technology is seen as a new possibility for improving the performance of transport systems while respecting at the same **time** conditions imposed by environmental and safety goals (Nijkamp *et al.*, 1995). It **also provides** major improvements in **access** to information by potential users, in service provision, operational efficiency, and in the ability to improve the business (Finn *et al.*, 1996).

Telematics applications for transport **can** be categorised into two **main** groups (Finn *et al.*, 1996):

- *Foreground technologies*, which are experienced directly by the customer, **such** as information systems, ticketing, booking or reservation systems
- *Background technologies*, which are experienced by the operator, **such** as location systems, network management tools, scheduling and optimiser systems.

As a **result**, transport telematics is not only an instrument to make a service more **attractive** to the customer, but it **can also** be **helpful** to improve the service directly in terms of efficiency. Through this, it is possible to improve the **whole** information chain of collecting, processing and distributing, as transport telematics **can** be helpful in **every** phase.

The use of telematics in the transport sector has different appearances and concerns different modes (Nijkamp *et al.*, 1995):

- *the provision and use of information* by **means** of telecommunication to trip-makers in order to increase the efficiency and reliability of transport operations (for example; EDI).
- telematics **technologies** which **may** have an *immediate day-by-day consequence for transportation behaviour*. Examples are route-guidance, variable **message** signs (VMS) or radio data information.
- telematics applications which have a *structuring impact on mobility behaviour* (tele-working etc.)

Especially the **first** and the **second** category **can** be **useful** in the public transport sector. It is these uses of telematics that directly influence and help the travellers.

The key **functions** that **can** be supported by transport telematics have been identified by Finn *et al.* (1996) as:

- Network management and **control**
- Provision of passenger information

- Booking and reservation systems
- Payment and **fare** collection systems
- **Demand** responsive transport systems
- Scheduling and planning of networks
- Management information systems (MIS)

Functions **such** as bus **priority** at **traffic** lights, **fuel** monitoring and **control**, and maintenance support systems are also supported by advanced technology systems.

The following telematics media **can** be distinguished according to three **location-specific** information systems:

- *at distance*: personal computers (CD-ROM **or** Internet with route-planners, timetables, etc.), mobile phones (WAP **or** UMTS);
- *at stops or stations*: **interactive** passenger terminals, dynamic displays, **automatic** audible **announcements**, televisions (monitors), mobile phones;
- *in vehicle*: dynamic displays, **automatic** audible announcements, televisions, mobile phones.

An important quality leap could be made, if the system would be able to **indicate** the position of the traveller at **any preferred** moment. In that way, travel information could be more individual. Mobile phones with WAP **or** UMTS-frequencies **can** be appropriate for this purpose, because a mobile positioning system **can** answer the question “**where am I**” via these mobile phones **out** of the telecom-network (Egeter et al., 2000). Especially for the non-familiar travellers (e.g., the **car** driver) it is in this area that these personal information **devices will** have their biggest impact (see Clowes, 1996).

4 The Role of the Government

The public regulation, the **financial** support and, **often**, the ownership of public transport is usually rationalised on the basis of three major sets of reasons: **economic** grounds, **primarily** related to efficiency and equity; political realities, including the power of interest groups; and the **social** role of mass transit (Berechman, 1993). This **indicates** that there are several reasons why governments do interfere in public transport. The **first** reason is the inefficiency and ineffectiveness of public transport. Public transport services need to be subsidised, because they are **often unprofitable**. This has to do with the attractiveness of the **car**, the more or less **fixed** tariffs and sometimes with so-called “**black-riders**” (De Wit et al., 1996). Governments **also** worry that **non-profitable** lines **will** be dismissed if they are not subsidised. This is not only an inefficiency reason, but **also** a kind of paternalistic **or** social equity motive. The **second** reason is to **achieve** a modal **shift** to public transport, because of the external **costs** of other transport **means such** as the (private) **car**. This reason has to do with the **second** function of public transport **and** is a political reason. A **final** reason is that public transport is perceived as a **social** and important service, especially for the so-called **captives**. Its omnipresent availability to **all** inhabitants of an area at uniform (and below full marginal **cost**) **prices**, independent of location **or** **income** level, is regarded as a necessary **condition** for the functioning of an urban society. As a **result**, public transport **can** be seen as a **merit** good, because the government interferes **out** of paternalistic motives (see Berechman, 1993).

The newly **planned** government interference in public transport for the nearby future is a **sort** of deregulation,

i.e. public (competitive) tendering leading to a concession. With this, private **firms will** start to compete for the right to become the sole suppliers of a certain service bundle under conditions that are **specified** in a contract, issued and supervised by a public agency (Berechman, 1993). Competitive tendering is **also** called “public-private competition”, since public agencies **may also** compete for services (Cox, 1997). Reasons for tendering are that the subsidisation of public transport is too expensive; there are, probably, inefficiencies; competition is seen as an alternative, but free competition is rejected by politicians on the ground of the **fact** that it **may** harm the quality of public transport (van de Velde, 1995).

There are two types of competitive tendering: one that leads to a comprehensive contract and another that leads to a franchise. A comprehensive contract defines a service to be supplied by the **selected** operator at **pre-specified** conditions involving **prices**, subsidy and levels of service. The planning responsibility for the **service's** quality, distribution and other attributes (e.g., **frequency** and timetable) is thus retained by the regulatory agency (in our case the urban government). A franchise is the granting of monopoly rights to a **firm** for a given **price** (or subsidy), leaving the bulk of the planning functions within the private **firm's** domain (Berechman, 1993).

In public transport an approach **tends** to be **chosen** that **merges** these two forms of tendering by stipulating a contract that does not **fully specify all** possible **contingencies**, but retains a **considerable** planning role for urban governments. This form is called a tender contract (see Berechman, 1993). Tendering **can also** be called “**controlled** competition”, because urban governments **will** act as **principals** and **directors** (see Groenedijk, 1998). A tender contract is given to the company with the best offer of public transport, both in quality and in **price**. This company (the (new) licensee), subsequently, has the right to perform public transport in a certain area for a certain period. This right is called a concession and the considered area **can** be a **whole** city, a district, a certain transport-mode or even only one line. The period in question has a maximum (e.g., **six** years) (Scheerders, 2000). There is only one moment of competition namely at the moment of the granting of the concession (Mouwen, 2000).

The most important feature of the tender system is a coherent set of selection criteria aimed at the realisation of the pre-specified **objectives** (van de Velde, 1995). Further, a **clear process** architecture is required in a public-private **co-operation** (Moret Ernst & Young, 1998). Urban governments have to take a **considerable** planning role in the public tendering of public transport, as they **grant** the concessions. Therefore, it is prescribed by **law** that they have to formulate a program of demands (**PoD**) (Wet Personenvervoer, 2000). This **PoD** has to describe in general terms what urban governments think is important in public transport (Mouwen, 2000).

After public tendering it seems probable that several suppliers **will operate** public transport in an urban area. In **any** case, travel information is important, but its **importance will** grow by the number of suppliers. Politicians do usually have the opinion that the integration of timetables and route systems (and other travel information) is a determining factor for the quality of transport services. In the case of several suppliers in a public transport region, this integration **may** be threatened (van de Velde, 1995). Consequently, the **existence** of travel information requires **specific** attention in the **PoD** (Mouwen, 2000). To ensure and stimulate an integration of

travel information in a **region**¹, urban governments should formulate standards with **regard** to travel information. Further, the travel information demands in the **PoD** should be provided in a **functional** order, because that will link up better with the preferences of the clients (Mouwen, 2000).

Necessary conditions for travel information in a public tender are the previous described elements of a travel information system (see **Section 2**). In short **necessary** conditions for travel information are accessibility and availability at **every** travel location (at distance and en-route) and in **every** possible way (**static, dynamic**, visual and audible). Travel information has to contain information about routes, timetables, **prices** and general businesses under **any** circumstances of public transport services. Provided information should be actual, comprehensible, complete, but relevant, flexible and standard.

Finally, the following desirable conditions for travel information in a public tender would have to be met:

- A **co-operation** between public transport **companies**, service providers **who process** data to individual travel information and telecommunication **companies** (Mouwen, 2000);
- Plans for providing more specific and individual travel-information that is able to meet the preferences of the clients;
- Plans for more use of telematics media like, for example, Internet and WAP or UMTS **frequencies** of mobile telephones for providing travel information;
- Other research and development plans to innovate, improve or expanse travel information provision.

As mentioned before, the transport **companies** that **provide** the best offers - those that meet the **PoD** in the best way - **will** get the concession. Furthermore, it is recommended to **control** and monitor the execution of the **PoD** **frequently** with, for example, the help of **random** checks and customer satisfaction investigations.

5 General Information about the Two Case Study Cities

For the empirical part of this article, the urban public transport **companies** and the urban authorities of Amsterdam and Berlin have been studied. The relevant public transport **companies** of these cities were analysed from the viewpoint of their actual travel information provision and their **usage** of, and ideas with **regard** to, transport telematics. Furthermore, the urban authorities were studied with **regard** to their actual **policies** in the area of travel information provision and with **regard** to their views for the future concerning the planned open tendering of public transport. The basis for this information comprises qualitative expert interviews with the parties concerned.

Urban Public Transport

In Amsterdam one urban public transport company is operating, called Gemeente Vervoerbedrijf Amsterdam (abbr. **GVB**)². In Berlin, two public transport **companies** are operating, but only the Berliner Verkehrsbetriebe

¹ This region could be at an urban, national or even international **scale**; it would be useful **when all** urban authorities of a country (or maybe of the **whole** EU) would treat the aspect of travel information in the same way (Mouwen, 2000).

² Translation: Amsterdam Urban Transport Authority.

(abbr. BVG)³ has been analysed for this study. The GVB and BVG offer both their services by means of trams, buses and subways⁴.

In Amsterdam and Berlin, urban public transport has two different positions. The GVB plays an important role because of the complex city-structure and the protected monuments in Amsterdam, while the BVG has a more difficult position because of the large and wide infrastructure and the multiple centres of Berlin. Despite the different positions, the amount of passengers per year differs approximately with a factor 3, which is consistent with the different sizes of the companies. This can be seen below in Table 1. Together with this, it should be remembered that Berlin is circa 5,4 times larger in size than Amsterdam and that this city has approximately 5 times more inhabitants.

[Insert Table 1 about here]

Urban Authorities on the Area of Urban Public Transport

The responsible urban government divisions of Amsterdam and Berlin are respectively the Service of Infrastructure, Transport and Traffic (DIVV) and the Senate of Urban Development. Both are the 100% owners of public transport and the complete financier. They use the same type of regulatory system: the urban authority edits yearly a program of demands or a treaty that the public transport company has to meet. Therefore, the GVB and the BVG produce on a yearly basis a production plan that has to reflect the demands of the urban authorities, before permission is granted.

The main difference between the urban authorities of Amsterdam and Berlin is the "Transport Union Berlin-Brandenburg" (VBB) in Berlin. This is a communal union that arranges amongst others pre-travel information-tools in the whole region of Brandenburg (and so Berlin). The purpose of this union is to provide a fine-tuned and large-scale public transport at shorter distances with one uniform tariff and also with the same information possibilities. The VBB is owned by several authorities of the region Berlin-Brandenburg, and also by the Senate of Urban Development of Berlin. The plans of the VBB need to be approved by these governmental bodies.

6 Travel Information in Amsterdam and Berlin

An important issue at the level of travel information provision is the interpretation of this issue by the two public transport companies of Amsterdam and Berlin. The GVB of Amsterdam City has a relatively superficial and narrow definition of travel information compared to the definition of the BVG of Berlin City. Whereas the BVG thinks of travel information as getting the clients to know how to come from A to B under any circumstances and as extensively as possible, the GVB only speaks of providing information to internal and external clients about the timetable, the line-net, current events, calamities, derailments, diversions and etc. This gives the impression that the GVB has a relatively static and passive view on travel information provision, while the view of the BVG can be stipulated as more dynamic and active on this subject.

³Translation: Berlin Transport Companies.

The companies **also attach** different values of **importance** to travel information provision. The GVB **holds** the view that travel information is necessary, because without it, they **can** not perform. According to them, it consists of two essential elements: availability and actuality. The BVG has a more customer **friendly** view: they want to secure the entire travel information chain (see Figure 1) as extensively as possible. The BVG does not see travel information as just necessity, but as a challenge. This is noticeable in the effort to become a large-**scale** information supplier of the city of Berlin.

[Insert Figure 1 about here]

One large **difference** between Amsterdam and Berlin is the **fact** that the GVB of Amsterdam depends, with **regard** to travel information provision, for a large part on the national public transport travel information provider (OVR). The OVR is a national company that has been started in 1992 as initiative of the Ministry of **Traffic** and Communications. The purpose of this initiative was to put an end to **all** the different telephone lines of the different public transport companies in the Netherlands. Today, **all** public transport companies of the Netherlands **finance** the OVR, because they are the stakeholders of the OVR.

The **dependence** of the GVB on the travel information provision of the OVR is in contrast to the BVG of Berlin. The BVG has a **much** larger part of travel information provision under own **control**, next to the regional public transport travel information provider, the VBB. The integrated **products** for the **whole** region of the VBB are an exception to this, although it should be mentioned that the BVG has its own integrated Internet **site** and hotline.

When comparing the travel information provision of the two public transport companies we **find**, as **already** appeared **from** the different **definitions**, that the BVG has **indeed** a more extensive and **dynamic** information system. This has to do with the intensive distribution of traditional information **such** as maps, but **also** with the more frequent and more developed **usage** of **dynamic** and modem media **such** as CD-ROM, Internet and **dynamic** displays. The GVB falls back on the traditional and **static** media and does not yet have a highly developed distribution system. This is noticeable through the comparison with Berlin **where** travel information is extensively spread around. The largest differences between the travel information provision of the GVB and the BVG are therefore the distribution of information and the **usage** of modem media (telematics). In both cases the BVG has an advantage. This is partly because the **usage** of modem media in the Netherlands is largely in hands of the OVR.

In Table 2 and 3 a comparison is made respectively between the traditional and modem media of Amsterdam and Berlin. These **tables** just show the **usage** and not the **frequency** or distribution of the different media. Therefore, one of the mentioned differences cannot be shown here. From Table 3 it does appear that Amsterdam has a backlog in the **usage** of modem media.

[Insert Table 2 and Table 3 about here]

⁴ The GVB does **also provide** public transport by **ferries**, but this mode has been **left** outside of this study.

7 Use of Transport Telematics in the Present and in the Future

As **already** shown, especially in Amsterdam **many** things **can** be improved in telematics. The telematics tools that the GVB offers today are a limited Internet **site** and a few dynamic displays at stops and even more rarely inside the transport modes. The GVB is working on the use of new media. They are aware of the possibilities of transport telematics. For example, they have plans to expand the distribution of electronic displays and monitors and want to improve their Internet **site**. They are **also** interested in new possibilities via the GSM-net. Luckily, the OVR offers a more extended Internet **site** and has **already** started with providing travel information via the Wireless Application Protocol (WAP). The OVR wants to be a proactive information provider; therefore, they are, for example, thinking of introducing a Short **Message** Service (SMS) in case of en-route problems.

The BVG is trying to initiate and implement telematics possibilities as **much** as possible. From Table 4 it appears that the BVG offers an Internet **site** with great **many** possibilities compared to the GVB **site**. The **main** advantage is that the **site** consists of a lot of search-engines that are easy to use and that the **site** offers **many** maps differing in **scale** and mode. Further telematics applications that are used by the BVG are **CD-ROMs** and WAP. Special **importance** is given to the provision of electronic and dynamic displays at stops and stations and in transport modes. Therefore a project named **DAISY**⁵ has been set **out** to **control** the implementation and distribution of these displays.

[Insert Table 4 about here]

With **regard** to the future, the BVG has plans to put televisions in the subways and to **place** self-service **touch** screen terminals equipped with a small printer at stops and stations. This should make it possible for passengers to **find** and print easily the necessary travel information. And of course, they want to continue and finish the DAISY-project. As shows, the BVG is constantly brainstorming about the **usage** and implementation of new media in its information provision.

With **regard** to the telematics future plans of the GVB and the BVG it has turned **out** that both **companies** have plans in this area, but that the BVG is far more **active** in this case.

8 Urban Institutional Views on Travel Information of Urban Public Transport

The Amsterdam View on Travel Information

According to the DIVV of Amsterdam, travel information in public transport is an important factor just as the provision of more reliable dynamic travel information. They believe that the GVB is on the right way by introducing **departure-time** information at the stops (the dynamic displays), but that this is not yet **sufficient** in the city. Especially the stable functioning of these displays is important according to the DIVV.

The DIVV is not yet concerned with more (dynamic) travel information in Amsterdam, but it recognises that this should be done in the nearby future. They are aware that they have to put in high demands in this area too, in **such** a way that travel information has to meet a certain standard at a certain number of **places** in the city. They

see travel information as part of the service of the GVB, which **needs** to be improved. Improvements have been announced in a recent policy-note of the DIVV called "Public Transport" (1999). These improvements are related to the extension of the current **dynamic** travel information at stops and to the next stop announcements in the vehicles. **Also** better and more **accessible** information **material** will replace the current maps and timetables. The DIVV **also** wants to increase the familiarity with public transport by providing new residents of Amsterdam with a standard package of information about the public transport services in Amsterdam (**Buffing**, 1999). At the moment **all** information systems are owned and managed by the GVB.

The Berlin View on Travel Information

In Berlin, as mentioned before, two important communal institutions are important in the area of public transport: the Senate of Urban Development and the VBB. The Senate believes that travel information, and especially telematics systems, **can** play a vital role in reducing unnecessary **car-trips**. They themselves are involved in a European project called CAPITALS and in a German project called DELFI⁶, which are both concerned with travel information.⁷ This shows that the Senate gives priority to the provision of travel information in (public) transport.

The Senate does only set **out** general instructions at the level of travel information provision of the BVG. The BVG just has to be professionally **effective**. Therefore, they have to use the most recent **technologies** to improve their services continually. The business treaty between the Senate and the BVG stipulates that the BVG has to **provide** travel information to passengers and that passengers need to know at stops, stations and in vehicles about relevant interruptions (BVG, 2000c).

The **second** communal institutions at the area of urban public transport, the VBB, considers travel information as one of their **main** tasks. They want to offer the needed information for a trip according to the travel information chain with an exception for en-route information (but they do offer travel information at WAP phones). From the Senate they do get only general instructions. They just have to take **care** of travel information provision to passengers. It is the task of the VBB to **collect** travel information of the different (public transport) **companies** and to offer it in an integrated form to the passengers. This is especially the case of pre- travel information. Therefore, the integrated (pre-) travel information **products** (**such** as atlas and timetable books) of the BVG are to a large extent made by the VBB. The necessary data are delivered by the BVG, but are **produced** by the **VBB**⁸. The VBB formulates criteria like **usefulness**, usability and stability to improve the travel information they acquire and **provide**.

9 Towards an Open Tendering of Public Transport with regard to Travel Information

Views of the Public Transport Companies

⁵ DAISY: Dynamische Auskunft und Information System (**Dynamic** Information System). For a description of this project we refer to Goede (2001).

⁶ Deutschlandweite Elektronische Fahrplan Information (translation: German-wide **electronic** timetable information).

⁷ For an extensive description of these **projects**, the reader is referred to www.bau.berlin.de and at www.vbzberlin.de. A **short** description has been given in Goede (2001).

Both the GVB and the BVG are planning to become a private company. In that case, they **can** really point out their own direction and strategy. The GVB believes that in that situation they **can** - and have - to put the customer in a more central **place**. Because the customer **can** choose between different services, the public transport companies have to increase the quality of the services offered and especially the travel information service, since that is the **device** to attract passengers. The transparency of services offered and therefore of travel information is of vital **importance** in the case of several suppliers of public transport. In that situation it **may** be favourable that one umbrella organisation takes **care** not only of travel information, but **also** of tickets and tariffs.

The BVG has similar ideas on its future role. They foresee problems in the area of **co-ordination** and power and according to them it is important that the transparency is safeguarded. At the **level** of pre-travel information this **will** probably not be a problem in Berlin, because of the **existence** of the VBB. The only problem the BVG is **faced** with is to be **market-competitive** by the year 2007; because the company is **often** criticised for being too expensive.

*Views of the **Responsible** Urban Institutions*

It should be mentioned here, that a only few lines with **regard** to travel information in the future situation of deregulated public transport have been laid down by **law** in Article 14 (Wet Personenvervoer, 2000). In **short**, this **PoD** just describes that in the case of open tendering there has to be at least one national travel information system and that the public transport companies have to deliver data to this system and to **finance** the system together.

According to the DIVV of Amsterdam, the introduction of competition **will** be good for a **cost** reduction in public transport. But it **can also produce** a paradoxical situation: the introduction of market-driven public transport, without interference of the authority at **all can** make a more detailed interference of the authority necessary in, for example, the services offered. Therefore, it **will** be important to fine-tune the different suppliers of public transport in a city. The DIVV believes that in the future situation of competition in public transport, the information **infrastructure** belong to their **competence**. To prevent situations like in Great-Britain **where the time tables** have to be updated **every six** weeks due to the possibility to start a bus-line whenever someone feels like it, the DIVV thinks it is better to tender only **once** a year as a maximum.

The VBB of Berlin **holds** about the same view. They believe that the integration of (travel) information **will** become more important and more complicated with the introduction of competition in public transport. The VBB thinks it **will** be the **managing** company because of grandfather rights.

10 Qualitative Comparative Scan and a Retrospective View

The basis for the empirical part of this study stems from interviews with public transport companies and urban authorities in Amsterdam and Berlin. It **tums out** that, they **all** recognise the **importance** of reliable travel

⁸ It concerns **products** like timetable books, the atlas, the CD-ROM, a telephone-line and an **Internet-site** (although the BVG

information provision in urban public transport to their clients, although the organisations involved handle different definitions of travel information.

When comparing the actual information provision with the important theoretical criteria described above, it appears that the GVB in Amsterdam **indeed** recognises the two important criteria of availability and actuality of **real time** information. Next, **also** criteria like comprehensibility, standardisation, multi-modality and flexibility in the light of a highly developed distribution system appear to be important performance indicators. Travel information offered by the GVB is traditional and **static**. Therefore, it is hardly possible to offer up-to-date information on special circumstances for their passengers. To solve this, telematics tools would have to be used. The recent **existence** of the national travel planner (OVR) is favourable for the GVB, because in **absence** of it, travel information provision in Amsterdam would be too **confined**.

The travel information in Amsterdam is provided at distance and en-route (at stops and stations and in-vehicle) and contains information about routes, timetables and **prices**. At distance, it would be **convenient when** the GVB would **provide** tools like a special telephone line and a more expanded Internet **site**. En-route information **can** be improved by expanding the range of **dynamic** displays and by putting **interactive** passenger terminals at stops and stations. **Also** mobile telephones should be able to **receive** travel information at **any time**. In vehicles, it seems desirable to **provide** travel information by tapes, displays and monitors. With **regard** to the **future** plans of the GVB we **may** conclude that they are aware of the (telematics) possibilities of providing **dynamic** travel information, but are not yet anticipating on it.

Travel information in Berlin is extensive and **dynamic** and **meets almost all** demands described above. They **attach high importance** to **dynamic** travel information and are constantly trying to develop and implement new ideas in this area. The BVG **handles** a broad **definition** of travel information and is **also** aware that it is **very** important to inform clients about their travel information possibilities. Availability and actuality is **also** important to them. They **define** availability as on-the-spot, wherever people **decide** to travel.

Travel information in Berlin is delivered at the requested locations and contains the desired information. In **almost every** situation it is possible for the passenger to deal with **specific** circumstances. What is missing, is audible information at bus stops and **electronic** displays in subways. The planned monitors in subways **will** solve the **latter** problem soon. The modern ICT media could be expanded with more **dynamic** displays at stops and stations of **buses** and trams, with **interactive** passenger terminals and with more possibilities at mobile phones. The BVG is working on this or has plans for **solving all** these issues.

The travel information supply in Amsterdam and Berlin would have to be tested on the pre-defined performance criteria of travel information. From experience it is known that the travel information offered in Amsterdam is not always actual and comprehensible. Therefore, it is necessary that the GVB and the OVR advocate more information **products** by **means** of a wider range of distribution and by **means** of more appropriate marketing campaigns. From the Berlin experiences it appears that the travel information **meets the pre-defined** performance

has **its** own telephone-line and an own Internet-site).

criteria to a large extent, partly because of its marketing activities and because of an intensive distribution of their travel information **products**.

The urban authorities in Amsterdam are not actively involved with the travel information provision of the GVB and therefore no demands are formulated in this area. According to the DIVV, this is because of the relative new **co-operation** with the GVB. The plans of the DIVV in the field of travel information sound like a good start.

With **regard** to the travel information demands formulated before, both the GVB and the DIVV do not meet the standards.

The urban authorities in Berlin do not intervene either in the travel information provision of urban public transport. The Senate has just laid down in a business treaty that the BVG (and the VBB) has to **provide** travel information to passengers, **also** in cases of interruptions. With **regard** to the travel information demands, which have been formulated earlier, the BVG **comes** close in meeting these standards, whereas the Senate lags behind.

With **regard** to the nearby future of public tendering, they **all** share the same ideas. Travel information again **needs specific** attention, because of the threatened transparency of travel information **when** different suppliers will perform public transport in a region. Urban authorities in Amsterdam and Berlin both believe they **will** be the **managing** company with **regard** to the integration of travel information, but they have not been **specific** in **how** they think they **will** deal with travel information.

If we look at the national guidelines of public tendering with **regard** to public transport, we **find that - indeed -** there are no demands with **regard** to the travel information provision of public transport **companies**. The only **demand** with **regard** to this topic requires data delivery **from** the different concessionaires to a national travel information system. **However**, nothing **can** be found about travel information provision to passengers. In our view, these guidelines are too limited to stimulate the developments of sophisticated travel information. At least, there should be demands (divided into necessary and desired conditions) with **regard** to the travel information provision of **the performing public transport companies** towards their passengers in the way described in our study. In the nearby future these demands should be formulated in a program of demands (**PoD**) before tendering. The offers of the competing transport **companies** that meet the **PoD** best, should then get the concession. The observance of these demands should regularly be monitored and **controlled** by, for example, the city administration.

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Appendix

List of Abbreviations

- BVG: Berliner Verkehrsbetriebe (Berlin Transport Companies)
- DAISY: Dynamische **Auskunft** und Information System (**D**ynamic Information System).
- DELFI: Deutschlandweite Elektronische Fahrplan Information (German-wide Electronic Timetable Information)
- DIVV: Dienst Infrastructuur, Verkeer en Vervoer (Service of **I**nfrastructure, Transport and **T**raffic)
- EDI: Electronic Data Interchange
- GVB: Gemeente Vervoer Bedrijf (Public Transport Company of Amsterdam)
- ICT: Information and Communication Technology
- MIS: Management Information Systems
- OVR: Openbaar Vervoer Reisinformatie (Public Transport Travel Information Provider)
- **PoD**: Program of Demands
- SMS: **S**hort **M**essage Service
- UMTS: Univerisal Mobile Telecommunications System
- VBB: Verkehrsverbund Berlin-Brandenburg (Transport **U**nion Berlin-Brandenburg)
- VMS: Variable **M**essage Signs
- WAP: Wireless Application Protocol

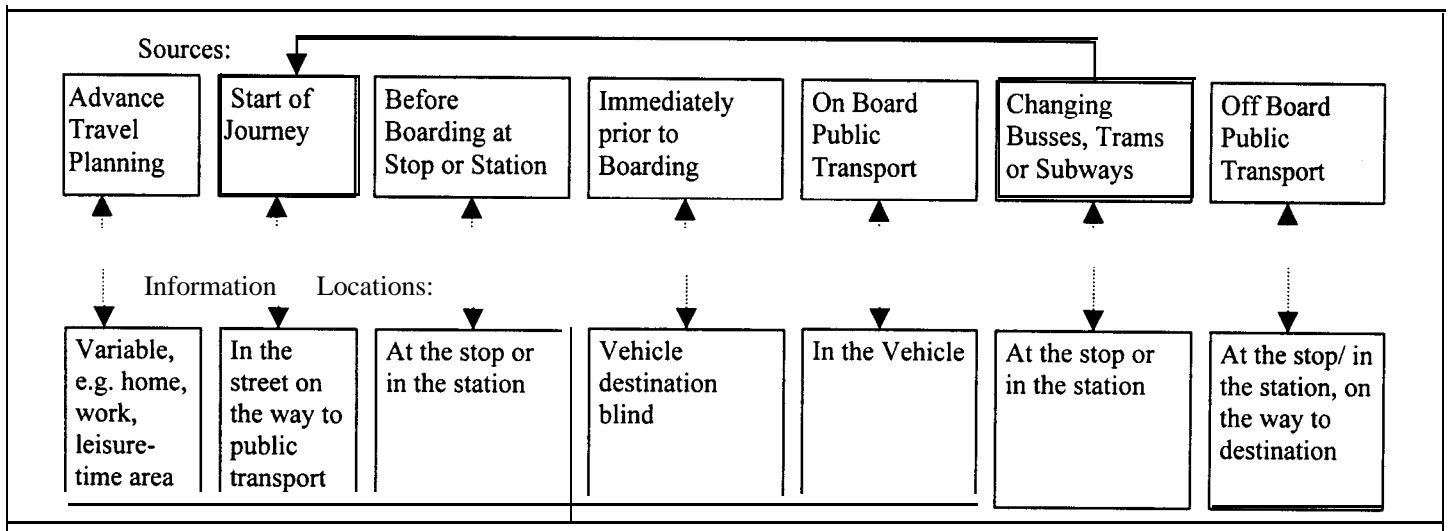


Figure 1: Information Locations in the Travel Chain of Public Transport Users (derived from: BVG, 1998)

Table 1: General figures of the GVB and the BVG

	<i>Employees</i>	<i>Passengers per year (*million)</i>	<i>Amount of stops and stations</i>
<i>GVB</i>	4.746	325	1900
<i>BVG</i>	15.184	896,5	3244

Table 2: Traditional media compared

	Traditional media	Amsterdam	Berlin
<i>At distance</i>			
	timetable books with a map	x	x
	newspapers that are spread in case of changes of events	x	?
	atlas with detailed maps	-	x
	separate maps	-	x
	telephone line	x (OVR)	x
<i>At stops and stations</i>			
	timetables and maps	x	x
	newspapers	x	x
	audible announcements about delays and diversions	x	x
	flyers about delays and diversions	x	x
	safety information and service station	x	x
<i>In-vehicle</i>			
	route signs	x	x
	net-maps	x	x
	audible announcements in case of delays or diversions	x	x
	flyers and posters in case of delays or diversions	x	x
	tape announcements about the next stop/station	x	x
	newspapers	x	x

Table 3: Modern media compared

	Modern media	Amsterdam	Berlin
<i>At distance</i>			
	Internet	x (OVR largely)	x
	CD-ROM		x
<i>Af stops and stations</i>			
	dynamic displays	x	x
	emergency and information pillars		x
	WAP-nhones	x (OVR)	x
<i>In-vehicle</i>			
	electronic displays	x	x
	WAP-phones	x (OVR)	x

Table 4: Internet comparison with **regard** to travel information

Features	GVB website	BVG website
Language	Dutch	German & English
Timetable	No	Yes
Map(s)	One	Many
Tariff & Ticket Information	Yes	Yes
Diversions & Operations Information	Yes	Yes