



Transport Alliances

Promoting Cooperation and Integration
to offer a more attractive and efficient Public Transport

Sustainable Urban Transport Technical Document # 4

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Public transport alliances: a forward-looking approach for developing countries

Travelling from A to B by public transport in any major city most often involves usage of more than one mode. Whether it is from train to bus or from tram to metro, public transport users often have to switch their means of transport if no direct link is available between their origin and destination. Although this situation is common to cities all over the world, the solutions offered to address this differ considerably.

In many cities, car ownership and usage are growing at a rather fast pace while public transportation usage is being reduced to the 'captive riders' or those who have no other choice but to use public transportation modes. To add to the problem, in most developing countries, public transport services are of very poor quality. Taxis, minibuses, private buses and vans and even tricycles constitute most of the public transport modes in developing countries, and these mostly run without any regulatory oversight thereby raising concerns like safety, environmental pollution, overcharging of passengers, lack of coordination and integration, etc.

However many cities and regions in developing countries are struggling to offer any viable and comfortable alternative to individual motorized transport, the latter being an issue that is increasingly becoming important to the urban middle class. It is increasingly being recognized by authorities in developing countries that an increased share of public transport modes and usage in a city is synonymous to an improved quality of life in that city. However, where the use of public transport is hampered by the coexistence of a number of non-integrated systems and operators, relying on different fare schemes and un-coordinated schedules, makes public transport unattractive and travelling by car or motorcycle may naturally be perceived to be the most comfortable and quick travel option.

Merely providing fancy new public transport systems is not enough. Even the most modern public transport systems may fail to attract the desired number of passengers if they are built as stand-alone solutions without proper integration in the overall mobility network. To date, there

are virtually no fully integrated public transport systems known in any developing city.

While the transfers between different public transport modes are necessary even in the most sophisticated transport networks, there are some principles that could make a journey by different forms of public transport as seamless as possible. Prominent features of such an integrated transport system include, for example, one single ticket for the whole journey, adequate transfer facilities, and coordinated schedules of different transport modes. The administrative integration of different means of public transport is summarized in Germany under the term of public transport alliances. Public transport alliances are legal or organisational associations with the aim of a joint and coordinated implementation of public transport and to facilitate the use of any public transport mode – be it a bus, a rail based service or even ferries – available in a city or region to reach one's destination.

In Germany, citywide and later regional public transport integration dates back as long as 1965 when the first public transport alliance was established in Hamburg. Approximately 20 years since then, public transport is fully integrated in almost all cities and agglomerations in Germany.

This technical paper looks at the public transport alliance idea that has been established in Germany and provides a comprehensive overview of the concept often referred to as the "first and most successful form of integrated transport". It offers information on aspects ranging from organisations and institutions – *e.g.* how an integration of different operators can be achieved and which role authorities may play – to more technical aspects, such as the development of integrated ticketing systems.

VDV and GTZ on behalf of the Germany Ministry for Economic Cooperation and Development are pleased to present this technical paper and are hoping that it will facilitate the improvement of public transport worldwide.

Stefan Belka
November 2010

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Günter Elste

**President of the Association of
German Transport Companies (VDV)**

Today it is impossible to imagine the public transport sector in Germany without public transport alliances known as *Verkehrsverbünde* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural). In recent years they have increased steadily in both number and significance, the concept of incorporating public transport services into a common ‘umbrella’ structure of a *Verkehrsverbund* having evolved – impressively – into a central pillar of high-quality public transport in Germany. The virtually uninterrupted rise in passenger volumes that has long been a clear trend is also down to the fact that *Verkehrsverbünde* have made public transport a more attractive option.

The success of *Verkehrsverbünde* in Germany was one of the key reasons for producing this book. In the wake of publications on freight railways, light-rail systems, regular bus services and regional rail passenger transport, the fifth and most recently established member group within the Association of German Transport Companies (*Verband Deutscher Verkehrsunternehmen, VDV*) hereby makes its first contribution to the so-called Blue Series of publications produced jointly by VDV and the VDV Promotional Group (*VDV-Förderkreis e.V.*).

It is certainly true that not all alliances are the same and the landscape of *Verkehrsverbünde* in Germany is extremely varied and diverse.

In some cases, in fact, the differences in terms of spatial layout, transport features and, in particular, local organisational structures are quite substantial. However, regardless of the differences, one aspect holds true for all alliances, namely their impact – not least on passengers.

The coordinated nature of activity within a *Verkehrsverbund* produces a far more efficient public transport system, which, in turn, benefits all stakeholders. Passengers, for example, enjoy an improved service via the alliance model, a service which is also more reliable thanks to uniform standards applicable across the board. Meanwhile, the alliance framework enables responsible authorities and transport companies to boost passenger volumes, thereby reinforcing both the social-policy goals associated with and the economic viability of public transport.

Despite the broad advantages for all involved, at a more detailed level the perception of *Verkehrsverbünde* in general and the demands placed upon them differ widely, as can be seen from the contributions contained in the second section of this book, all of which are written from the differing perspectives of the various parties concerned. One thing is clear, however, and that is that partnership-based cooperation between transport companies, responsible authorities and alliance companies has proven its worth, for the considerable similarities between their respective interests requires – and indeed fosters – partnership between those partners.

Many in Germany now take the benefits of the alliance concept under the motto “One timetable. One fare. One ticket” for granted. Experienced alliance users often only truly become aware of just how beneficial the *Verkehrsverbund* model is when they are forced to buy different tickets for travel by metro, bus and tram in an alliance-free region (for example, abroad) and find themselves lost without the informative – and now familiar – network maps covering multiple means of transport.

On behalf of the publishers, VDV and the VDV Promotional Group, I should like to thank the authors of the 20 contributions as well as all those who have helped to produce this book and who have worked tirelessly to bring it to publication. I hope it will prove successful and will help to make the alliance idea accessible to an even wider audience, particularly abroad.^[1]

^[1]This publication is based on selected parts of the original VDV Publication “*Transport Alliances – Promoting cooperation and integration to offer a more attractive and efficient Public Transport*”. This book is released in a bilingual German-English version and obtainable from DVV Media Group | Eurailpress (ISBN 978-3-7771-0403-4).

Dr Dieter Klumpp
**Spokesman of the
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This new book in the so-called Blue Series published by the Association of German Transport Companies (*Verband Deutscher Verkehrsunternehmen, VDV*) and the VDV Promotional Group (*VDV – Förderkreis e.V.*) focuses on public transport alliances known as *Verkehrsverbünde* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural). The first *Verkehrsverbund* was created more than 40 years ago and today, virtually the entire public transport network in Germany is structured around this alliance model. Besides the opportunities which opened up following Germany's structural reform of the railways and the so-called 'regionalisation' of public transport, the coordinated interaction of carriers and alliance companies (umbrella legal entities), which are increasingly also performing the tasks of the responsible authorities, has succeeded in making public transport a far more efficient and more attractive option. This holds true when compared with other countries as well, the alliance model having contributed to the highly successful development of public transport in recent years, including boosting the latter's economic viability.

The alliances' success in producing a model via which both passengers and the general public experience public transport as an integrated service incorporating multiple means of transport and carriers did not come about

overnight. The contributions contained in this book, including those concerning the conventional alliance functions, demonstrate both the degree of thought and planning and the sound concepts required as well as the need to overcome conflicts of interests to be able to offer a joint service with a single, coordinated timetable and uniform tickets and fares and to achieve a ‘fair’ system for apportioning fare revenues in individual alliance areas.

Public transport cannot rest on its laurels if it is both to keep pace with new social and transport specific trends and developments and, despite limited public funding, to not only hold its own but also expand its services as far as possible. In addition, given the increasing liberalisation in the public transport sector in the wake of new legal provisions at both European and national level, the continuation of partnership-based cooperation between carriers, alliance companies and responsible authorities within the framework of *Verkehrsverbünde* is unavoidable; this is further confirmed by those contributions discussing public transport alliances from the perspective of their individual partners involved. As a result of the new tasks falling to the alliance companies against this backdrop, working towards an appropriate balance of interests both between old and new public transport companies and between carriers and responsible authorities takes on particular importance. As part of their work to develop new technologies, the *Verkehrsverbünde* are, among other things, working closely together on the use of electronic media to enhance the information available to passengers as regards timetables, current operating conditions, fares, access for those whose mobility is impaired and so forth,

as well as to simplify and speed up ticket-purchase procedures as outlined in the section on *Verkehrsverbünde* in the future. Beyond this drive to improve public transport services, the alliances are also expanding their areas of operation as well as strengthening their efforts to provide appropriate value-added services which factor in their customers’ need for mobility in the broader sense. This includes both information about and integrated provision of services involving more than one transport mode; such services in the context of local public transport include travel by taxi, bicycle and car, and by rail, bus or air plane in the case of long-distance public transport. Services linked to attendance at all manner of events and to leisure-time activities, for example, are also a new development in this regard.

To conclude, the book also takes a look at the alliance situation in Austria and Switzerland. Both the information and experiences detailed herein and the publication’s dual-language format are aimed not only to outline examples of how *Verkehrsverbund* systems in Germany might develop further, but also to raise awareness abroad of the alliance model and to encourage other countries to apply it for the benefit of public transport there too.^[2]

With this in mind, our thanks must go to the authors of the contributions and to all those who have contributed to the publishing of this book. We hope this new edition will prove popular and achieve a broad readership.

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A. DEVELOPMENT OF VERKEHRSVERBÜNDE IN GERMANY

Dr Manfred Knieps, Cologne

1

The development and significance of Verkehrsverbünde in Germany

It is hard to imagine the public transport sector in Germany today without the public transport alliances known as *Verkehrsverbünde* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural). For more than 30 years now, a network of integrated urban transport services provided within a defined transport area via an umbrella alliance and with the maxim ‘One timetable. One fare. One ticket’ has been part of the image of public transport, and, over time, has become the standard model in the eyes of many of its users. The term *Verkehrsverbund* has now become a virtual trademark in Germany for cooperative alliances in the field of public transport and a large proportion of public transport services are now provided across given alliance areas. In recent years the number of *Verkehrsverbünde* has increased dramatically, not least due to so-called regionalisation, and as a result such alliances have grown in importance.

The *Verkehrsverbund* model is virtually unique to German-speaking countries. Besides Germany, similar structures exist primarily in Austria with *Verkehrsverbünde* now in operation nationwide, and in Switzerland. Consequently, following the launch of the *Hamburger Verkehrsverbund* (HVV) in 1965, Germany is viewed as the birthplace of the alliance model.

1.1 Definition of the term Verkehrsverbund

A *Verkehrsverbund* is a form of alliance within the public transport sector. Such alliances may take various forms depending on the type and scope of the activities included. The form ultimately chosen depends on a number of different factors including the geographical structure of the area, the transport features present and the degree of interconnection between the individual sub-systems. In practice, the historical and political environment also plays a significant role.

In its most basic form – a partial co-operation – there is only a coordination in certain sub-areas, for example with regard

Figure 1

Short distances between connecting services of light-rail and bus benefit alliance customers (Karlsruher Verkehrsverbund, KVV).

Photo: Stephan Anemüller, Köln



to transport connections (Figure 1), a combined timetable, or tickets which may be used on any form of transport within the given network. Creating a combined fare system, *i.e.* applying a common fare valid across a traffic area served by multiple carriers based on a special agreement entails a higher level of integration and a more closely meshed alliance. Such an agreement will include arrangements governing common fares, common conditions of carriage, and distribution of revenues generated by common fares.

Moving up the scale, a combined transport system is characterised by an alliance which goes further than applying a combined fare system and, in addition to an agreement on the application of a common fare, transport-level cooperation (coordinated organisation of the network and timetable specifically). However, under this model no responsibilities are transferred to a dedicated organisation and the authority for all business decisions remains fully with the partners involved.

Verkehrsverbünde, then, are the most comprehensive form of public transport alliance: they are governed by the most extensive contractual agreements and entail the highest degree of cooperation and integration. They are a form of alliance in which key responsibilities (in particular establishing and amending the combined fare system and working together to organise the network and compile a timetable for all public road and rail transport within the alliance area) are devolved to an alliance company, an umbrella legal entity formed by the participants involved. As a rule, the alliance company is independent in legal terms and essentially acts as an independent entity.

For simplicity's sake, the generic term *Verbund* (alliance) is now often used when referring to cooperative alliances within the public transport sector regardless of whether such alliances actually reflect the specific definition of a *Verkehrsverbund*. They are sometimes equated to responsible authorities of regional rail passenger transport (SPNV) despite only a few of them performing this function in addition to the conventional activities of an alliance. Terminological difficulties are exacerbated by the fact that there are no clear boundaries between the various forms of alliance described above; there may also be substantial differences between the organisational structures of individual alliances, with virtually no two *Verkehrsverbünde* being identical.

1.2 Why the alliance model?

There are many reasons behind the decision to set up cooperative public transport alliances and such structures will have an impact for passengers, transport companies and local authorities alike. The main priority, though, is generally to make public transport more attractive and more efficient in economic terms.

For passengers, the shift to a *Verkehrsverbünde* model was crucial and was borne primarily out of a landscape characterised by individual transport companies operating in isolation from each other within a single urban area; there was also a growing interest in coordinating urban and regional transport more efficiently in merging metropolitan areas. The idea was for transport companies within a given area to integrate the range of services on offer and to work together to achieve optimal organisation of the entire public transport system. At the time the first alliances began to emerge, the creation of new suburban railway networks which had to be interconnected with the existing urban transport systems also created a growing need to interlink the transport and fare sub-systems in a particular region (Figure 2).

Cooperative transport alliances linking different carriers and local authorities are intended first and foremost to meet the demands of passengers for a more integrated transport network, as well as to provide easier access to public transport. The primary goal of *Verkehrsverbünde* is therefore to make life easier for the passenger: advantages for customers include tickets and passenger information valid for multiple companies, better coordination of transport services and simpler transfers. A combined ticketing system means customers are free to choose both their

mode of transport and their route within the alliance area. They can transfer without having to think about how the different transport systems interlink, thus overcoming the perceived separation between regional rail transportation and public transport in general. Working together in *Verkehrsverbünde* makes particular sense where using the individual public transport subsystems entails frequent transfers (Figure 3).

Carriers working together within a *Verkehrsverbund* are essentially looking to make their own individual public transport systems more attractive to passengers. They also want to strengthen their market position in relation to private motorised transport and to improve the modal split in favour of public transport. Concerted action and joint advertising and public relations campaigns are also designed to enhance their standing and burnish public transport's image. Lastly, a range of services more attractive to passengers should ultimately result in higher demand and additional fare revenue, thereby enhancing profitability; in this regard, eliminating competing transport services and coordinating all available services more efficiently is the key. Gearing feeder bus lines to the services provided by the respective rail carriers should also serve to promote rail transport within the cooperative alliance structure (Figure 4).



Figure 2
Verkehrsverbünde are the ideal model for integrating regional rail passenger transport (SPNV) and public transport in general (ÖPNV) (Mitteldeutscher Verkehrsverbund, MDV).



Figure 3
Some alliance fares also cover travel by ferry or boat (Verkehrsverbund Warnow, VVW).

Figure 4

Buses often operate feeder lines to rail services (Verkehrs- und Tarifverbund Stuttgart, VVS).



From the perspective of the local authorities and the responsible authorities, limiting the expenditure of public funds is a central concern in a cooperative public transport alliance. In addition, the local authorities often link other, politically motivated objectives with integration of transport services. The organisation of public transport, and thereby the creation of alliances, thus simultaneously serves as a tool for spatial planning and urban development and to achieve regulatory, social or environmental goals.

1.3 The creation of the first Verkehrsverbünde

Cooperation between public transport companies was emerging in various forms as far back as the early 20th century. In the early years this usually concerned only individual issues such as the creation of transition fares or cooperation in transport services. These were merely one-off cooperative efforts, still far removed from the comprehensive level of integration found nowadays within a *Verkehrsverbund*.

More extensive forms of cooperation emerged during the 1950s and 1960s due to significant changes in settlement patterns and traffic structure and the growth of urban areas. Following lengthy initial consideration of closer cooperation in the Hamburg area, on 29 November 1965 *Hamburger Hochbahn AG*, *Deutsche Bundesbahn* (the German federal railway company), and *Verkehrsbetriebe Hamburg-Holstein AG* created the *Hamburger Verkehrsverbund*, the first German public transport alliance. A key factor in its creation was the high number of passengers transferring between the three companies' various means of transport. A new common fare, and therefore the start of an actual alliance bringing real benefits for customers, was introduced in three stages between 1 December 1966 and 1 January 1967. A common timetable had also been published for the first time by the end of this year.

The second traffic area in which an extensive cooperative transport alliance was created was Hanover, where in March 1970 *Großraum-Verkehr Hannover (GVH)* was founded and a

common fare introduced. Plans to reorganise public transport in Hanover followed protests by citizens against a planned fare increase: during the protests, car drivers used stickers in the form of red dots to indicate to waiting passengers their willingness to give them a lift free of charge. Shortly thereafter, the *Münchner Verkehrs- und Tarifverbund (MVG)* was also launched, one of the main reasons for this being the 1972 summer Olympic Games. In conjunction with this major event the Munich area received a new suburban railway network and a metro system was developed within the city. The start-up of combined operations in May 1972 helped to link together the fares of these transport operators.

In May 1974 came the *Frankfurter Verkehrs- und Tarifverbund (FVV)*, which was later absorbed by the current *Rhein-Main-Verkehrsverbund (RMV)*. In contrast to Munich, when this alliance was set up, the suburban railway system in the Rhine-Main region was still being developed. The green light for the fast transport network was not given until May 1978 when suburban rail services on the new Frankfurt tunnel section began and construction of new metro lines was completed. By contrast, the *Verkehrs- und Tarifverbund Stuttgart (VVS)* was launched on 1 October 1978 at the same time as the suburban railway system. However, as part of the so-called Alliance Stage 1, the fare area did not initially extend to the entire alliance area; full fare integration across the entire region was achieved in 1993 following various development stages. Lastly, on 1 January 1980, the *Verkehrsverbund Rhein-Ruhr (VRR)* became the first *Verkehrsverbund* to extend across a multicentre urban area; it covered the region between Düsseldorf and Dortmund which had a population of some 7.7 million at the time.

By the end of the 1970s, then, there were six large cooperative alliances and initially, at least, no further alliances followed. At that time, creating new ones was seldom viewed as a priority since the degree of integration of the services and the number of transfers required in the remaining regions was considered too low. Looser and less costly forms of cooperation such as combined fare and transport systems were deemed sufficient for other traffic areas, especially since a large number of these cooperative alliances already existed. Indeed some such arrangements were even classed as *Verbünde* despite their organisational form and structure essentially corresponding to a combined fare or transport system.

Based on proposals put forward by public policy-makers for a reordering of the organisational framework for public transport and a federal *Verkehrsverbund* concept, the *Verkehrsverbund*

Table 1: Verkehrsverbünde formed before 1990

Public Transport Alliance	creation	launch
Hamburger Verkehrsverbund (HVV)	29.11.1965	01.12.1966/01.01.1967
Großraum-Verkehr Hannover (GVH)	04.03.1970	16.03.1970
Münchner Verkehrs- und Tarifverbund (MVG)	05.04.1971	28.05.1972
Frankfurter Verkehrs- und Tarifverbund (FVV)	27.06.1973	26.05.1974
Verkehrs- und Tarifverbund Stuttgart (VVS)	19.12.1977	01.10.1978
Verkehrsverbund Rhein-Ruhr (VRR)	30.10.1978	01.01.1980
Regensburger Verkehrsverbund (RVV)	02.12.1983	01.10.1984
Augsburger Verkehrsverbund (AVV)	27.03.1985	20.09.1985
Verkehrsverbund Rhein-Sieg (VRS)	08.12.1986	01.09.1987
Verkehrsverbund Großraum Nürnberg (VGN)	19.12.1986	27.09.1987
Verkehrsverbund Rhein-Neckar (VRN)	24.08.1989	01.12.1989

Rhein-Sieg (VRS), the *Verkehrsverbund Großraum Nürnberg (VGN)* and the *Verkehrsverbund Rhein-Neckar (VRN)* were created in the late 1980s. The latter was the first *Verkehrsverbund* whose territory extended over three federal states (*Länder*): Baden-Württemberg, Hesse and Rhineland-Palatinate.

The emergence of these *Verkehrsverbünde* appeared to mark the end of the alliance-creation phase. This type of solution was only considered viable for the largest urban areas of what was then West Germany and less intensive forms of cooperation were employed in other transport areas. Table 1 gives an overview of the *Verkehrsverbünde* created by 1990. During the 1990s, though, there were clear changes in the alliance landscape in terms of number and structure in the wake of the structural reform of the railways and the regionalisation of public transport.

1.4 The impact of the regionalisation of public transport

Until the early 1990s, all alliance companies took the form of conventional strategic alliances and were based around the transport companies concerned. Not least, their work served to balance the interests of urban transport companies, usually operating as partners, and *Deutsche Bundesbahn*. But even at this time, the local authorities concerned were also integrated into alliance structures in various ways.

To enable public policy-makers to exert a stronger influence on the decision-making processes within the alliance, on 1 January 1990 the *Verkehrsverbund Rhein-Ruhr* became the first alliance to be restructured into a voluntary association of local authorities or *Kommunalverbund* and the shares in the alliance company transferred from the transport companies to the local authorities. In principle, this reorganisation within the VRR was a precursor to similar developments in other alliance areas which occurred in the wake of regionalisation of public transport.

Said regionalisation in the context of structural reform of the railways prompted numerous changes in the legal framework of public transport as from 1 January 1996. Following decisions at European level, the entire public transport system was given a new legal basis. The Railway Reorganisation Act (*Eisenbahnneuordnungsgesetz, ENeuOG*) also amended both the General Railways Act (*Allgemeines Eisenbahngesetz, AEG*) as the basis for regional passenger transport and the Passenger Transport Act (*Personenbeförderungsgesetz, PBefG*) as the foundation for general public transport. Until the amended provisions entered into force, with the exception of Hamburg, the national arrangements were also supplemented by new public transport laws introduced by the various federal states (*Länder*).

The changes in the legal framework subsequently led to a restructuring process which affected almost all the existing *Verkehrsverbünde*. The public transport responsible authorities took over some or all of the transport companies' functions as owners of the alliance company. Company alliances became so-called responsible authorities alliances, as in Hamburg and Munich, or mixed alliances as in Stuttgart. The transformation of the individual alliance structures took place in very different ways. During this period, other alliance organisations operated from the outset within the new structures as companies run by the public transport authorities; the first ones were the *Karlsruher Verkehrsverbund (KVV)* founded in 1994 and the *Nordhessische Verkehrsverbund (NVV)* launched in May 1995. In addition, the *Rhein-Main-Verkehrsverbund (RMV)*, which emerged from the former FVV in 1995, is considered to be a prime example of the reorganisation of public transport prompted by regionalisation. In the old *Länder* (federal states in the former West Germany), many other small and medium-sized *Verkehrsverbünde* with a wide variety of organisational structures emerged as a result of changes in the public transport management model.

Preparations also began in the early 1990s to create alliances in the area of the new *Länder* (federal states in the former East Germany). The first *Verkehrsverbund* in this area was the *Verkehrsverbund Warnow (VWV)* launched in February 1997 in the Rostock region, followed in May

Table 2: Verkehrsverbünde launched between 1994 and 2002

Public Transport Alliance	launch¹⁾
Karlsruher Verkehrsverbund (KVV)	29.05.1994
Rhein-Main-Verkehrsverbund (RMV) ²⁾	28.05.1995
Nordhessischer Verkehrsverbund (NVV)	28.05.1995
Regio-Verkehrsverbund Lörrach (RVL)	01.07.1995
Aachener Verkehrsverbund (AVV)	01.06.1996
Verkehrsunternehmen Hegau-Bodensee Verbund (VHB)	01.09.1996
Regio-Verkehrsverbund Freiburg (RVF)	01.10.1996
Heilbronner Verkehrsverbund (HNV)	01.01.1997
Verkehrsverbund Bremen/Niedersachsen (VBN)	01.01.1997
Verkehrsverbund Warnow (VWV)	27.02.1997
Verkehrsverbund Pforzheim-Enzkreis (VPE)	01.06.1997
Donau-Iller-Nahverkehrsverbund (DING)	01.01.1998
Tarifverbund Ortenau (TGO)	01.02.1998
Verkehrsverbund Oberelbe (VVO)	24.05.1998
Verkehrsverbund Vogtland (VVV)	31.05.1998
Verbundgesellschaft Region Braunschweig (VRB)	01.11.1998
Heidenheimer Tarifverbund (HTV)	01.12.1998
Verkehrsverbund Berlin-Brandenburg (VBB)	01.04.1999
Verkehrsverbund Süd-Niedersachsen (VSN)	01.04.1999
Verkehrsgemeinschaft Niederrhein (VGN)	01.06.1999
Rhein-Nahe Nahverkehrsverbund (RNN)	01.08.1999
Kreisverkehr Schwäbisch Hall	01.01.2000
Nahverkehrsverbund Paderborn/Höxter (NPH)	28.05.2000
Verkehrsgemeinschaft Münsterland (VGM)	28.05.2000
Verkehrsgemeinschaft Ruhr-Lippe (VRL)	28.05.2000
Verkehrsgemeinschaft Westfalen-Süd (VGWS)	28.05.2000
Verkehrsverbund Ostwestfalen-Lippe (VVOWL)	28.05.2000
Verkehrsgemeinschaft am bayrischen Untermain (VAB)	01.08.2000
Westpfalz Verkehrsverbund (WVV) ³⁾	02.04.2000
Verkehrsverbund Schwarzwald-Baar (VSB)	01.09.2000
Biberacher Nahverkehrsverbund (BNV) ⁴⁾	01.09.2000
Verkehrsverbund Region Trier (VRT)	01.01.2001
Verkehrsgemeinschaft Landkreis Cham (VLC)	10.06.2001
Mitteldeutscher Verkehrsverbund (MDV)	01.08.2001
Verkehrsgemeinschaft Rottal-Inn (VGRI)	01.09.2001
Verkehrs-Gemeinschaft Landkreis Freudenstadt (vgf)	01.11.2001
Verkehrsverbund Mittelsachsen (VMS)	01.01.2002
Verkehrsverbund Neckar-Alb-Donau (naldo)	01.01.2002
Verkehrsverbund Oberlausitz-Niederschlesien (VON)	01.01.2002
Verkehrsverbund Rhein-Mosel (VRM)	01.01.2002

Notes:

- 1) Launch date of a comprehensive alliance fare covering travel by both road and rail;
- 2) The RMV superseded the former *Frankfurter Verkehrs- und Tarifverbund (FVV)*;
- 3) Merged with the *Verkehrsverbund Rhein-Neckar (VRN)* on 1 June 2006;
- 4) Merged with the *Donau-Iller-Nahverkehrsverbund (DING)* on 1 January 2003.

1998 by the *Verkehrsverbund Oberelbe (VVO)* in Dresden and in April 1999 by the *Verkehrsverbund Berlin-Brandenburg (VBB)* which encompassed the two states of Berlin and Brandenburg. Although new public transport alliances would certainly have been set up even without the reorganisation that occurred as part of the structural re-form of the railways and the regionalisation of public transport, this certainly accelerated the process. It thereby not only generated a reorganisation of existing alliances but also triggered a new wave of *Verkehrsverbünde* in smaller and medium-sized urban areas. This is reflected clearly in the number of alliances formed between 1994 and 2002 (see Table 2). In subsequent years, alliances sprang up less rapidly than during the initial stages but further gaps in previously ‘alliance-free’ areas were plugged by new ones, for example those in Saarland in 2005 and in central Thuringia in 2006.

1.5 Different organisational forms of alliances

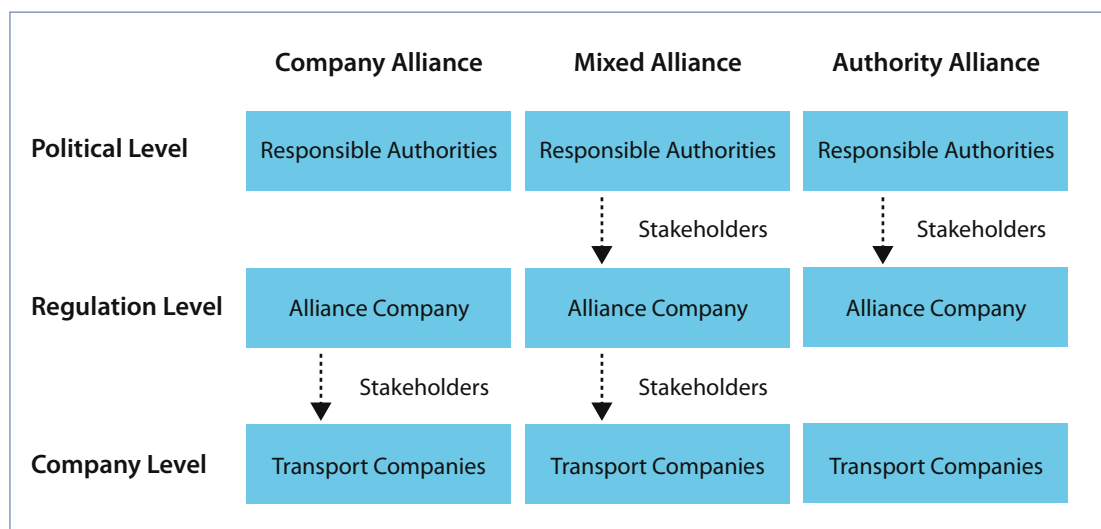
As outlined above, against this altered structural backdrop various models for sponsorship have emerged among alliance companies in recent years. From an organisational standpoint, the basic forms of *Verkehrsverbünde* are:

- Company alliances (*Unternehmensverbünde*) – a grouping of transport companies operating in a region and governed by company law (for example, the *Verkehrsverbund Bremen/Niedersachsen (VBN)* and the *Verkehrsverbund Großraum Nürnberg*);
- Responsible authorities alliances (*Aufgabenträgerverbünde*) – alliances within which the alliance company is created by the various public transport authorities as in the *Rhein-Main-Verkehrsverbund* and the *Verkehrsverbund Berlin-Brandenburg*;
- Mixed alliances (*Mischverbünde*) – alliances within which the alliance company is supported jointly by transport companies and responsible authorities (prime examples here are the *Verkehrs- und Tarifverbund Stuttgart* and the *Mitteldeutsche Verkehrsverbund (MDV)*).

Authorities and mixed alliances governed by company law and in which public policy-makers play a direct role only emerged in the context of regionalisation of public transport. The range of activities performed by the alliance companies was extended in part to new administrative tasks on behalf of the responsible authorities. The resulting altered terms of reference subsequently required the responsible authorities to play an active role in the alliance companies under company law. Many existing alliances were correspondingly restructured.

The different forms of organisational structure for alliance companies are also illustrated in Figure 5. Even within each of the basic types of *Verkehrsverbünde*, there are sometimes substantial differences in the structure of the corresponding alliance companies and in the tasks assigned them. The different circumstances have resulted in varying regional structures and no single

Figure 5
Different forms
of organisational
structure within
Verkehrsverbünde.



alliance model. The reasons for the lack of any standardised form of alliance and the (sometimes considerable) differences in their organisational structure in general and in their areas of responsibility in particular lay primarily in the varied historical background, differing legislation at the level of the individual *Länder*, and the various local, political and traffic circumstances.

1.6 The duties of alliance companies

In the course of their development, based on the 'old alliances' a number of areas of responsibility have emerged that today still constitute a focal point in the work of the alliance companies regardless of whether they are of the company, mixed or authorities type. In individual spheres of such activity the division of tasks amongst the participants within the alliance can differ greatly, but in principle all alliance companies fulfil what are known as 'classic' alliance tasks. These essentially include activities related to the transport market, especially in the areas of network, timetable, and fare organisation. These include:

- Determining, establishing and adjusting the common fare and the common conditions of carriage;
- Distributing the fare revenues generated by application of a common fare;
- Creating framework rules for the marketing system;
- Coordinating the services on offer and aligning and publishing timetables;
- Conducting alliance-related market research, *e.g.* Through traffic surveys;
- Providing passenger information on the services the alliance offers;
- Carrying out alliance marketing and public relations work.

Besides these duties, most of the individual alliance companies perform other tasks depending on the specific type of alliance in question. Today, the alliance companies are essentially responsible for balancing the interests and positions of responsible authorities and carriers and as such they are crucial to coordinating and integrating the alliance structure as a whole. From a passenger's perspective, the organisational structure of the given *Verkehrsverbund* is irrelevant, since all alliances present a uniform external user interface through integrated line and network planning, coordinated timetables and a single fare system.

1.7 The importance of the Verkehrsverbünde

The creation of many new *Verkehrsverbünde* in recent years has meant that only a handful of cities in Germany still lie outside an alliance area. At present there are some 60 *Verkehrsverbünde* or similar cooperative alliance structures in Germany with combined fare systems for public transport on road and rail. Almost all urban areas are now covered by the existing *Verkehrsverbünde* as are numerous small and medium-sized conurbations. Considering these in addition to the similar cooperative alliance structures in place, the *Verkehrsverbünde* cover approximately two-thirds of Germany's surface area and serve almost 85 % of its inhabitants. The number of trips made and the volume of fare revenue generated within alliance areas is higher still at approximately 90 %. As a result, by far the bulk of transport services are now offered within *Verkehrsverbünde*.

There are often considerable differences between the individual alliances in terms of the size and the population of the areas covered, as well as the nature and scope of the transport services offered. For example, some 7.2 million people live in the area covered by the *Verkehrsverbund Rhein-Ruhr* compared with fewer than 190,000 in the *Kreisverkehr Schwäbisch-Hall* catchment area. The area of the *Verkehrsverbund Berlin-Brandenburg* (VBB) covers 30,367 km² as compared with approximately 800 km² by the *Verkehrsverbund Freudenstadt*. Whilst VBB also extends to the city of Berlin and the entire federal state of Brandenburg, in Baden-Württemberg the areas covered by some alliances and other cooperative alliance structures are limited to the territory of a single rural district. Ultimately, this is also reflected in the different 'alliance philosophies' of the respective *Länder*.

Table 3: 2007 passenger volumes and fare revenues for Verkehrsverbünde belonging to VDV

Public Transport Alliance	Passenger volumes in '000	Fare revenues in EUR '000
Aachener Verkehrsverbund (AVV)	103,797.3	79,100.2
Verkehrsverbund Vogtland (VVO)	11,628.5	9,854.7
Augsburger Verkehrsverbund (AVV)	75,757.8	56,948.8
Verkehrsverbund Berlin-Brandenburg (VBB)	1,240,000.0	964,659.8
Verkehrsverbund Bremen/Niedersachsen (VBN)	132,497.5	133,679.5
Verkehrsverbund Mittelsachsen (VMS)	85,653.5	55,615.2
Verkehrsverbund Oberelbe (VVO)	197,630.5	122,315.8
Verbundtarif Mittelthüringen (VMT)	38,642.5	31,786.2
Regio-Verkehrsverbund Freiburg (RVF)	108,757.0	62,969.0
Verkehrsverbund Rhein-Ruhr (VRR)	1,282,036.0	875,874.7
Hamburger Verkehrsverbund (HVV)	598,100.0	529,900.0
Großraum-Verkehr Hannover (GVH)	168,411.3	174,390.3
Verkehrsverbund Neckar-Alb-Donau (naldo)	72,889.9	45,032.4
Heilbronner Hohlenloher Haller Nahverkehr (HNV)	45,000.8	32,503.4
Rhein-Main-Verkehrsverbund (RMV)	649,000.0	639,000.0
Rhein-Nahe-Nahverkehrsverbund (RNN)	36,067.4	40,351.5
Ingolstädter Verkehrsgesellschaft (INVG)	12,518.4	10,267.9
Karlsruher Verkehrsverbund (KVV)	169,591.6	105,422.5
Nordhessischer Verkehrsverbund (NVV)	69,800.0	69,130.0
Verkehrsverbund Rhein-Sieg (VRS)	481,605.5	437,031.1
Verkehrsverbund Mittelschwaben (VMS)	n/a	n/a
Mitteldeutscher Verkehrsverbund (MDV)	199,801.1	150,281.7
Regio-Verkehrsverbund Lössach (RVL)	20,400.0	14,800.0
Verkehrsverbund Rhein-Neckar (VRN)	306,500.0	227,600.0
Münchner Verkehrs- und Tarifverbund (MUV)	601,457.0	579,951.9
Verkehrsverbund Großraum Nürnberg (VGN)	228,366.2	203,601.2
Verkehrsverbund Pforzheim-Enzkreis (VPE)	40,650.0	21,958.0
Verkehrsverbund Hegau-Bodensee (VHB)	15,367.3	12,637.0
Bodensee-Oberschwaben Verkehrsverbund (bodo)	32,284.0	24,201.0
Regensburger Verkehrsverbund (RVV)	34,933.7	23,559.8
Verkehrsverbund Warnow (VVW)	49,446.6	41,445.9
Kreisverkehr Schwäbisch-Hall	18,191.3	13,445.6
Verkehrs- und Tarifverbund Stuttgart (VVS)	321,208.4	338,686.6
Verkehrsverbund Region Trier (VRT)	n/a	35,500.0
Donau-Iller-Nahverkehrsverbund (DING)	60,501.3	42,969.3
Saarländische Nahverkehrs-Service GmbH (SNS)	75,376.1	65,250.0
Verkehrs-Gemeinschaft Landkreis Freudenstadt (vgf)	n/a	n/a
Verkehrsunternehmens-Verbund Mainfranken (VVM)	45,469.3	24,669.8

Correspondingly, the number of journeys made each year within alliance areas ranges from over one billion within the *Verkehrsverbund Rhein-Ruhr* and the *Verkehrsverbund Berlin-Brandenburg* to under 20 million within, for example, the *Verkehrsverbund Vogtland* or the *Verkehrsverbund Hegau-Bodensee*. The same is true of annual fare revenues. Table 3 gives an overview of the reported passenger numbers using and fare revenues generated by *Verkehrsverbünde* belonging to the Association of German Transport Companies (*Verband Deutscher Verkehrsunternehmen, VDV*). Lastly, the number of transport companies within an alliance ranges from as few as four in the area covered by *Großraum-Verkehr Hannover* to more than 150 in that covered by the *Rhein-Main-Verkehrsverbund*.

1.8 Outlook

The upcoming phase of reorganisation of the legal environment especially will alter the existing public transport structures in Germany and will thereby also affect the alliance landscape. At this point in time, it is impossible to predict exactly what changes this process will bring about or its impact on individual alliances. One thing that is certain, however, is that *Verkehrsverbünde* will continue to play an important role within the German public transport system and will remain a crucial element in coordinating the latter.

2

Forty years of an alliance: the emergence and development of the world's first Verkehrsverbund in Hamburg

2.1 The founding of the Hamburger Verkehrsverbund in 1965

'We Hamburgers are not always quick to make a decision, but when we finally do take up a challenge, the result is usually good.' This patriotic comment by a Hamburg mayor on the opening of the city's underground metro (*U-Bahn*) system still rang true 50 years later when, on 29 November 1965, the Hamburger *Verkehrsverbund* (HVV) was created. Negotiations had dragged on for five years while the public impatiently waited for lower fares and faster connections. Few realised that with this pioneering move, Hamburg had created the world's first public transport alliance, or *Verkehrsverbund* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural).

Prior to the advent of the HVV, a well-developed public transport system had already been in place in Hamburg since the early 1900s. It included the U-Bahn and fast suburban or S-Bahn railway systems, tramways, other suburban trains, shipping lines using the Alster and the city's port, and later also a rapidly expanding bus system. But the numerous companies operating these services each faced their own constraints in terms of operations and business management, with the result that each local transport company acted in its own interests and sought not only to encourage as many passengers as possible onto its lines but also to ensure that as large a proportion of those passengers' journeys were effected within their own networks. They openly made it harder for passengers to transfer to other companies' means of transport and blocked more attractive services by offering their own concessions. Each company also calculated its own fare, imposed its own conditions of carriage, and issued its own tickets. Despite the efforts of the licensing authorities (already in existence at the time), during the 1970s the Hamburg public transport system continued to be dominated by company egotism and separatism. As a result, passengers were forced to negotiate their way around unconnected networks and a myriad of complex fare systems. Such uncontrolled growth was not unique to Hamburg, though, and was, at the time, the fate of all larger urban areas in which public transport was structured around a system of multiple local transport companies.

The complex array of fare systems in the city became an increasing annoyance to passengers; in extreme cases, travellers would require anything up to seven tickets to cross the city. As a result, political pressure mounted on the transport companies to join forces and offer a combined fare system. At that time, however, the difficulties presented by having to divide up joint fare revenue fairly under such a system still seemed insurmountable. Little changed, therefore, until *Hamburger Hochbahn AG* (HHA) took the initiative in the late 1950s, its chairman, Max Mross, rightly being seen as the founder of the HVV. At that time his company was still running in the black, but as an experienced and far-sighted businessman he was concerned about the future. Passenger volumes were falling as more and more people began driving their own car. *Hamburg's Senate* and the *Land* (regional) parliament had long retained authority over approving the fares applied by the city's local transport operators, a distinctive Hamburg characteristic which still applies today. Given this deep-seated and institutionalised political attitude, fares rapidly began to lose touch with the spiralling costs of public transport, particularly staffing costs. Despite major rationalisation efforts (the number of conductors and staff at ticket barriers

was cut significantly), the companies quickly slipped into the red and for HHA, which was keen to protect its business independence, this was a nightmare scenario.

Spurred on by this situation, in a memorandum written back in 1960, HHA set out a detailed model for the subsequent HVV, the aim of such an alliance being to make Hamburg's public transport more attractive and encourage more passengers to use it. The memorandum argued that a fare alliance by itself would not be enough to prevent companies from slipping into the red and that the hitherto separatist way in which networks and lines had been organised would have to be replaced by an all-encompassing, cross-company network. The powerful and effective new structure known as a *Verbundgesellschaft* (an alliance company created as an umbrella legal entity) would be responsible for fares and planning. HHA wanted to incorporate its own business divisions (some of which had only recently been set up) covering both product, sales and pricing policy and advertising (along with their respective personnel), into this new structure, thereby enabling HHA itself to focus on operations. What at first glance may have appeared to be a selfless act incongruous with the world of business was instead designed to be a minor sacrifice in the interests of a greater prize: as the 'top dog' in the Hamburg public transport system, HHA initially – and quite justifiably – hoped to dominate the new *Verbundgesellschaft* and thus extend its influence over other transport companies.

However, HHA had not reckoned on its bargaining partner, *Deutsche Bundesbahn (DB)*. Negotiations got under way on including Hamburg's DC S-Bahn and DB's other suburban trains within the HVV. As negotiations progressed, HHA came under increasing pressure from the public and DB assumed a position of strength. It was the first time DB, proud of its tradition, would be sharing power and part of its sphere of control with a municipal local transport company – and for this Hamburg paid a high price. The city had to take partial responsibility for the S-Bahn's operating deficit since DB would subsequently be unable to recoup it within a transport alliance. Hamburg was also forced to replace a planned U-Bahn line with an S-Bahn one and to provide substantial funding for the latter. Although HHA provided approximately 70 % of the transport services offered by the alliance, DB succeeded in ensuring not only that each of the two companies were represented equally both in all bodies within the *Verbundgesellschaft* and in terms of leadership positions, but also that both companies had a right of veto in all decision-making.

2.2 Structure of the company alliance

The most important – and at the same time most complicated – element of any alliance contract is the system for apportioning shared fare revenue. A practicable system was developed for the first time in Hamburg following painstaking negotiations. From the perspective of today's competitive market the model may seem old-fashioned, but despite subsequent alterations, it was applied successfully within the HVV until 1999 and has also been taken over in other *Verkehrsverbünde*. Competition to attract individual passengers had led to mismanagement in terms of both traffic and overall business, so the fare-distribution system was intended to eliminate any practices which encouraged such competition. As a result, operators were not simply remunerated on the basis of the number of passengers carried, but in line with the expenditure required to provide the capacity and services requested by the *Verbundgesellschaft* (Table 4). The *Verbundgesellschaft* alone now focussed on the market and was solely responsible for planning a range of services suited to traffic and customers alike, for fares geared towards the respective target groups, and for marketing and advertising. Particular emphasis was placed on one problem in particular: the common fare and network restructured in line with cross-company considerations meant that passenger flows were re-routed and thereby also that the proportion of fare revenue received by the individual companies shifted considerably as a result. Consequently, for the carriers entering the alliance it would have been somewhat of a lottery if no steps were taken to ensure that they were at least guaranteed to receive the fare revenues they had done prior to

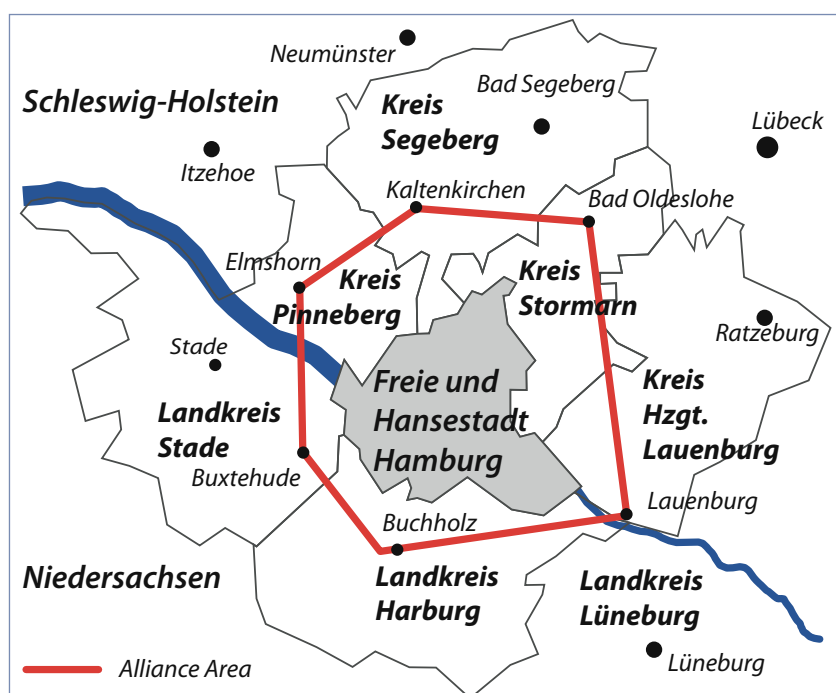
Table 4: Parameters for distribution of fare revenues within the HVV pre- and post-1996

Old system of revenue distribution	NEW system of revenue distribution
Line-kilometres	No. of passengers carried per line
Number of vehicle seats	Passenger-kilometres
Seat-kilometres	Ticket structure
Train-kilometres	Means of transport used
Ship-kilometres	Average distance travelled
Compensation factor	Border-crosses
Adjustment factor	Degression factor

joining the alliance. However, a dynamic mechanism was introduced to safeguard their position whereby their revenue fluctuated depending on the capacity and services ordered or cancelled by the *Verbundgesellschaft*.

In 1965, three transport companies – HHA, DB, and Verkehrsbetriebe Hamburg-Holstein AG – founded the HVV. With a few exceptions, all local transport companies operating line concessions within the alliance area subsequently joined forces (private companies were not included at this stage). When the alliance was reorganised in 1995, it still consisted of a manageable eight companies. The alliance area covered approximately 3,000 km² and had some 2.6 million inhabitants; it extended beyond Hamburg to large areas of neighbouring districts in Schleswig-Holstein as well as to a few districts in Lower Saxony. At that time the alliance area (Figure 6) still included the region's main commuter flows. Until it was restructured in 1995, the *Verbundgesellschaft* employed many staff (over 90 following its expansion). Under the new, oligarchical structure (Figure 7), DB and HHA sat on the two-person Executive Committee responsible for managing the business, each enjoying equal authority. The Executive Committee was supervised and managed by the Board of Directors, which was authorised to issue instructions

Figure 6
The HVV's
alliance area as at
December 2002.



and which comprised only the president of the Hamburg Bundesbahn management and HHA's Chairman of the Board. The other member companies were only represented at the General Meeting. There was also a desire to keep public policy-makers at a distance and with this in mind a special council – a body without formal decision-making powers with the functions of an advisory council and mediation body – was incorporated into the company and chaired by the Hamburg Senator responsible for local public transport services. The council also included representatives of the *Schleswig-Holstein Land* government, the Federal Transport Ministry and the Hamburg authorities. In addition to these public sector members, the president of the *Hamburg Bundesbahn* management and the Chairman of the Board of HHA also sat on the council, each with the power to veto the council's activities.

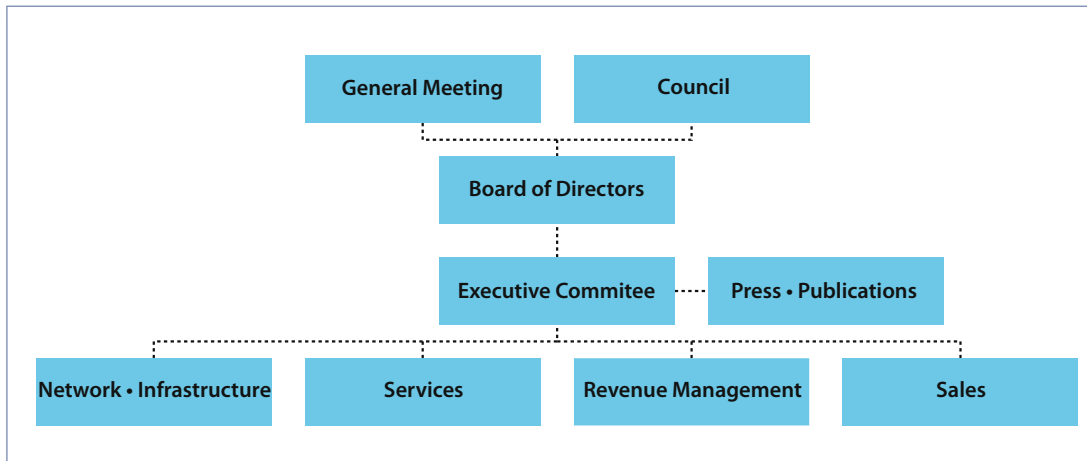


Figure 7
Organisation structure
of the HVV when it
was established in 1965.

2.3 Success and innovation at the outset

Despite substantially different corporate cultures at HHA and DB, the *Verbundgesellschaft* got off the ground rapidly and enjoyed a successful start. The first alliance timetable (Figure 8) for the re-designed network and the first common fare were introduced after just a year.

Hamburg gained a mixed fare system which at first glance appeared complicated but in practice was easily manageable. The zonal fare model already developed by HHA was adopted for season tickets, while for single tickets a network-section fare incorporating two short upstream sections applied. Even at that early stage, though, area tickets covering two concentric districts around the inner city were offered in a bid to simplify the cash fare (single tickets) substantially. A fare structure reform in 1988 significantly reduced the price scale of single tickets and at the same time introduced further differentiation for season tickets. The basic structure of this common fare in place between 1966 and 1967 still applies today.

Alongside introducing the common fare and restructuring the network, the alliance launched an offensive in terms of the services it offered by expanding said services and supplementing them by offering bus transportation services such as express buses, night buses, and seasonal buses (e.g. during the run-up to Christmas) with facilities for passengers to store their shopping. As early as 1955, the Senate decided to gradually dismantle (and in 1978 end) the tramway system to clear the streets for car traffic and in its place approved construction of a vast rapid-transit network. It wanted to concentrate increasing settlement in Hamburg and the region around arterial routes and equip all such main routes with U-Bahn lines, DC S-Bahn lines or other suburban trains, and generate dense development in the areas around rapid-transit stations. The idea was for park-and-ride facilities there to link public transport with private motorised traffic and to support the deliberate decision to restrict parking spaces in the inner city. This progressive concept of an urban and regional structure adapted to rapid transit had already largely been implemented when the HVV was created and the *Verkehrsverbund* accompanied this boom in public transport with deliberate measures drawn from marketing models which, at that time, were still new in the sector. These included, for example, special fare offers during slack off-peak travel times for, among others, senior citizens, housewives, theatre- and cinema-goers, families on weekends, students during holidays and tourists. The HVV was the mastermind behind both the senior citizen's ticket and the annual cash-free subscription. The HVV was also the first to adopt the strategy of aggressively expanding the share of subscription tickets through attractive price relationships. Alongside these activities, the HVV also adopted new advertising methods used

Figure 8
HVV timetable during
the early years.



in the private sector and endeavoured to improve fundamentally the information provided to passengers before setting out on a trip and available in its facilities and vehicles.

As a result, passenger numbers – and with them fare revenue – rose once again. Despite this, the economic situation of the alliance companies worsened steadily since rising personnel costs and additional expenses incurred in expanding services could no longer be offset by fare increases. The public in Hamburg had high expectations of the alliance – and these included low fares. To avoid disappointing them, during the years immediately following the alliance's creation, the Senate blocked the HVV's attempts to impose the necessary fare increases, however, the latter became unavoidable in 1971. The initial 21 % fare hike by HVV was also the highest it had ever imposed and further desperate efforts were made in 1973 and 1974 to protect the alliance companies from going into the red: fares were increased dramatically by 9.3 % and 18.8 % but costs continued to rise even faster.

2.4 Deficits, falling passenger numbers and the start of the move towards the *Aufgabenträgerverbund*

In 1975, the HVV celebrated its 10th birthday in downcast fashion. The companies had created their *Verkehrsverbund* primarily in a bid to boost passenger volumes and, in so doing, to improve their economic situation. The initial success of the alliance had seemed to prove that they were on the right track, but in 1975 passenger numbers began to drop once again. There were several reasons for this setback. The first oil crisis of 1973–1974 had, by 1975, triggered Germany's sharpest economic crisis to date, and in Hamburg prompted a far-reaching structural crisis to boot. In addition, the relentless wave of motorisation in all urban areas meant that increasing numbers of people and companies were moving away from the inner-city to outlying areas. While in inner-city areas public transport was still able to hold its own against cars, in the more sparsely populated areas it lagged well behind. This exodus to the suburbs and the decline in the birth rate also resulted in a steady decline in Hamburg's population and thereby the general potential for public transport. The prevalent economic and demographic trends at the time along with the direction in which land-settlement appeared to be heading seemed to be steadily undermining public transport's market position in Hamburg.

From the mid-1970s on, all but one of the transport companies in the HVV were operating in the red. For the HVV this ushered in a dramatic change that would lead to the end of the company alliance and the development of the *Aufgabenträgerverbund* (alliance of responsible authorities). The gulf between expenses and revenue in public transport widened at an ever-increasing pace until in 1993 the HVV's deficit reached its peak of approximately DEM 600 million. The fare income generated only covered approximately 55 % of the companies' expenses and was not even enough to finance personnel costs. Alarmed at the ever-increasing need for subsidies and plagued by its own budget problems, the Senate and Hamburg's administration assumed guardianship of the alliance. The HVV now faced increasingly strict political control as regards the way in which it organised its services and fares. In the early 1990s the city even presented the HVV with an externally developed marketing concept and arranged a large-scale campaign to promote it. The senators with authority in the respective fields informally assumed increasing strategic control of the HVV even though as council chairpersons they were not formally authorised to do so. In a bid to take a more direct role in managing the *Verbundgesellschaft*, a senior city official and an official from the Federal Transport Ministry were subsequently assigned to the Board of Directors to serve alternately as chairpersons. The *Verbundgesellschaft's* Executive Committee was now increasingly piloted by the Hamburg mayor's office and the federal ministry and as a result, the member companies became alienated from *Verbundgesellschaft* itself. The separation of responsibility within the alliance for tasks and for finances widened this gap even further. The city urged the alliance to offer both politically attractive services and fare adjustments acceptable to the public. At the same time, however, it instructed the member

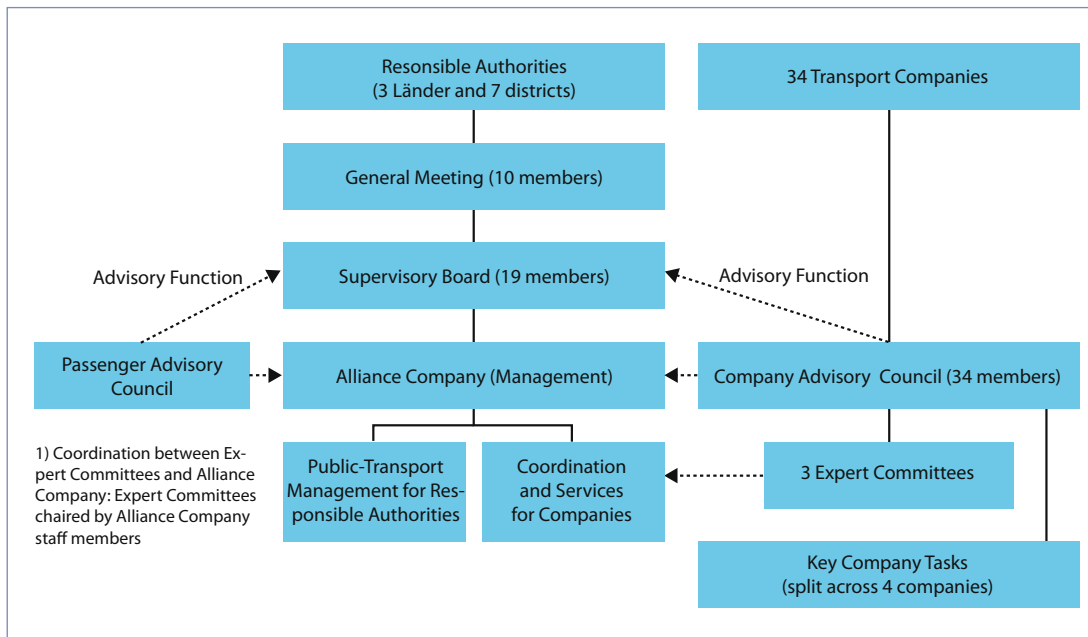


Figure 9
Organisational structure of the HVV from 1996 onwards.

companies to push through austerity programmes but failed to give them the necessary support in wage negotiations with the trade unions.

The fact that the alliance was being subsidised by its companies' owners – namely the city of Hamburg – also impacted significantly on the HVV's development. For financial reasons Hamburg blocked any extension of the alliance area despite the fact that commuter interconnections had steadily expanded into the region. Since initially the neighbouring *Länder* and municipalities did not contribute to alleviating any of the deficits generated by the Hamburg companies in their areas (and when they did subsequently contribute, the funds provided were nowhere near the amount required), until 2002 the HVV continued to operate within the boundaries set out back in 1965. The service area was only expanded in individual cases if the neighbouring municipalities assumed the associated costs in separate contracts and based on the user-pays principle.

2.5 The company alliance develops further and offers key services

Despite this steadily worsening situation, until it was disbanded in late 1996 the company alliance continued to provide a high standard of public transport in Hamburg. It also managed to raise passenger volumes temporarily in the late 1970s, and to raise them permanently following the fall of the Berlin Wall in 1989 (Table 5). Essentially, though, from the mid-1970s until well into the 1990s the HVV continued to offer a limited number of services. Large-scale expansions such as the commissioning of new sections of the S-Bahn and U-Bahn lines took place sporadically and in the early 1990s a so-called Forward Strategy was implemented in respect of public transport in Hamburg but the spiralling deficits plaguing the city's local transport companies placed such a burden on the crisis-ridden Land budget that it was no longer possible to finance the rising costs of building up the rapid-transit system. Consequently, in the early 1990s work on construction of Hamburg's rapid-transit system came to a halt for some considerable time even though many sections included in the designs had not yet been built. Attempts to replace rapid-transit trains with aerial cableways, bus-lane systems and light rail failed and as a result the bus system was forced to assume the functions of the rapid-transit lines not yet built. This freed up the bus system – originally designed only as a feeder and distributor service for rapid-transit trains – to become an independent second pillar within the HVV and to offer a broad range of services.

Table 5: Figures for the Hamburger Verkehrsverbund (HVV)

	1967	1996	2006
Lines	169	230	682
Stops	1,930	2,993	9,677
Line mileage (km)	1,454	2,169	13,122
Rolling stock	2,565	2,975	3,596
Seat kilometres (million)	21,315	22,125	36,024
Alliance passengers (million)	406.1	478.2	609.1
Traffic revenue (EUR million)	121	340	504
Size of alliance area (km ²)	2,906	3,000	8,616
Inhabitants in alliance area (thousands)	2,050	2,591	3,340
Transport companies	5	9	35

Since the 1970s, the HVV had gradually been shifting its focus to enhancing the quality of its services via such measures as making transport stops customer-friendly, providing new, more comfortable and more attractively designed rolling stock, allowing request stops, pursuing joint ventures with taxi firms, making public transportation more accessible for passengers with bicycles, promoting car-sharing and expanding its information service along with a broad range of measures to benefit disabled passengers. However, the success of these measures was jeopardised somewhat in the 1980s as marginal groups in the larger cities began to take over some areas of the rapid-transit network (sections of station concourses, platforms, underground stops and so forth). Neglect, drug dealing and drug use, harassment of passengers, vandalism, and dirtier facilities were the upshot and it was not until well into the 1990s that this threat to the acceptance of the entire rapid-transit system could be mitigated – and not without great effort and at considerable expense.

The HVV also managed to expand its sales system. Instead of selling tickets only at stops as had been the system in the past, it opened customer service centres and authorised distribution points in kiosks, travel agencies and so forth in residential areas. The HVV's innovative focus remained throughout on fares and target groups identified via intensive market research. It managed to shore up its conventional season-ticket strategy by introducing additional season-ticket types and offering a wider and more flexible range of subscription options. It attracted many additional customers with its innovative, off-peak tickets such as the well-known City Centre Cards (CC cards), special subscription systems for major customers and combined tickets, for example for overnight hotel accommodation and cultural and sporting events.

2.6 The end of the company alliance

On 29 November 1995, the HVV celebrated its 30th anniversary as a company alliance – the celebrations, though, also marked the latter's demise. The contract between the Hamburg and Schleswig-Holstein *Länder* and four districts within the latter to create a new *Aufgabenträgerverbund* was ready for signature and the structure of the new alliance had already been outlined. On 1 October 1996 the old alliance passed the baton to the new *Verbundgesellschaft* and the former was dissolved with effect from 31 December 1996. The background to the changeover between these various organisational forms is complex. Official explanations at the time cited the reform of the railway structure and the amended EU Regulation (EEC) No. 1191/69.

However, despite a new market system and the advent of competition many *Verkehrsverbünde* are still organised as company or mixed alliances. A more decisive factor was the fact that the company alliance, which had received substantial subsidies and had long been controlled by the city of Hamburg, was ripe for takeover by the latter. However, Hamburg was forced to share power in the new alliance with the neighbouring *Länder* and municipalities in return for the latter assuming the deficits generated by the Hamburg local transport companies within their territories. Initially, the city sought a mixed alliance to ensure that its own local-transport companies would continue to enjoy membership rights in the new *Verbundgesellschaft*, but it was unable to overcome the opposition of the Schleswig-Holstein partners who felt that the only competitive model would be an *Aufgabenträgerverbund*. They also felt that in a mixed alliance, Hamburg carriers would further consolidate the city's dominant role.

2.7 The creation of the Aufgabenträgerverbund

Negotiations between Hamburg and Schleswig-Holstein on the creation of the new *Aufgabenträgerverbund* lasted less than a year and Lower Saxony's highest responsible authority and the borough of Harburg did not join the alliance until later. Negotiations progressed rapidly since neither the old *Verbundgesellschaft* nor the transport companies were involved and agreement was quickly reached on most issues. It was decided that the services provided by the old alliance would continue but expansion of the alliance area would be postponed. The former *Verbundgesellschaft* would also be dissolved and a new one set up which, by contrast, would be streamlined and cost-effective and would, unlike its predecessors, withdraw fully from the operational side of the business. As a result, it was allowed a maximum of 35 employees – barely more than a third of the previous organisation's personnel and budget.

The new *Verbundgesellschaft* was designed to assist the responsible authorities, support them in preparing their decisions and consult with them in outlining concepts and guidelines for the transport companies' work. The individual responsible authorities took on financial responsibility proportionately in line with their respective share of the partnership (roughly equivalent to their share of traffic within the alliance, *i.e.* Hamburg financed more than 80 %). Correspondingly, Hamburg enjoyed an overwhelming majority at shareholders' meetings but only a simple one on the Supervisory Board. By contrast to the former oligarchical company alliance, all responsible authorities were represented on the new company's Supervisory Board. The partnership agreement also expressly stipulated that on major non-fare-related issues Hamburg would not be permitted to outvote the other responsible authorities. As regards the new structure's management, the city would be allowed to propose the spokesperson while the Schleswig-Holstein partners would be allowed to appoint the other manager. Fierce negotiations continued on other sections of the agreement such as the basic structure of the new fare-distribution system, the timeframe for introducing competition in the surrounding region and the amount of the transition payments due pending a precise assessment of the deficits involved and proved lengthy and laborious.

However, settling the various issues so rapidly came at a price. Initially there were no practicable details outlining either the actual tasks of the various parties or the structure of the fare-distribution system, while as far as the transport companies were concerned, the structure of the *Verbundgesellschaft*, too, was undetermined, with the latter initially having no vested rights to coordinate and manage the companies and for a long time being dependent on their goodwill. Accordingly, until 1999, much of the new *Verbundgesellschaft's* work entailed fleshing out the organisational structure of the alliance itself (Figure 9). At the same time, though, it was also supposed to be helping the responsible authorities and transport companies perform their new roles and tackling the tasks defined by the partners. For instance, in addition to further developing services, fares and marketing, it was also expected to produce a draft alliance plan for local transport, prepare the ground for expanding the alliance, and, primarily, gear the alliance up for

the new competitive system. During these difficult early years, the *Verbundgesellschaft* utilised its high level of technical expertise to unite the individual responsible authorities and companies within the alliance's new organisational structure by taking a diplomatic, flexible and pragmatic approach and in so doing steadily earned itself greater respect within the alliance.

2.8 The design and organisational structure of the Aufgabenträgerverbund

At first the member companies took a back seat and only involved themselves in discussions on the new alliance's structure when it came to making decisions on their own responsibilities and those of the *Verbundgesellschaft*. These discussions, which were naturally always sensitive, were nevertheless conducted in a collegial spirit which ensured that the new alliance was receptive to the companies from an early stage and this cooperative approach was to define relations within the alliance in the future. Within a few months agreement had been reached on a system of responsibilities which, despite one or two modifications, remains the basis for cooperation to this day. However, it quickly became apparent during negotiations that it was not feasible to reassign all the operational tasks assumed by the *Verbundgesellschaft* over the years to the individual member companies. As a result, it was decided that certain tasks would be performed centrally by individual member companies on behalf of their counterparts and at the latter's expense. Such tasks include operation and further expansion of the alliance's centralised information service, sales (including subscriptions and neighbourhood offices), acquisition and management vis-à-vis large-customer subscriptions, advisory service for pupils, students, etc., producing timetable booklets and special timetables, and providing support services in terms of application of the common fare. But given the principle of 'interest neutrality' as regards competition, other duties – such as cross-company alliance advertising, data collection, central complaint management, and revenue distribution – which likewise could only feasibly be performed centrally could not be assigned to individual member companies and as such are performed by the *Verbundgesellschaft* but financed and jointly organised by the various member companies.

The subsequent cooperation agreement between the *Verkehrsverbund* and the alliance companies retained this structure in terms of the division of authority and also set out the framework for cooperation, particularly as regards developing and coordinating the services offered and the fares applied. It also outlined the information rights and penalty procedures the *Verbundgesellschaft* required, while its key annexes also set out how revenue was to be distributed as well as a very detailed catalogue of binding quality standards.

The partnership agreement drawn up by the responsible authorities keeps the transport companies' activities separate from those of the decision-making and supervisory bodies. Accordingly, the member companies' input extends only as far as sitting on an advisory council whose opinion is requested in certain cases and which otherwise may set out an unsolicited advisory opinion (see Figure 9). Despite this attempted exclusion, in practice the HVV comes across more as a mixed alliance, since the member companies have single-mindedly developed the advisory council into a very effective mouthpiece via which to exert their technical influence. The council is staffed by members of the board of directors and management-level personnel and is headed up by HHA's chairman of the board. It also has its own substructure of tightly managed and highly efficient technical committees. Employees of the *Verbundgesellschaft* chair these committees and ensure that their organisation's work ties in with their activities. The council also finances and monitors central company duties assigned to individual companies or the *Verbundgesellschaft* itself. As a result, its operational budget far exceeds the resources made available by the responsible authorities to their *Verbundgesellschaft*. Indeed both the responsible authorities and the *Verbundgesellschaft* are also dependent on the financially more flexible transport companies in many interesting individual projects. During the early years, too, the companies still enjoyed technical superiority since most of the responsible authorities had first to develop

expertise in public transport, however, this gulf has now narrowed and companies and responsible authorities have become equal alliance partners in technical terms.

When the alliance was originally founded, the responsible authorities had agreed only on a number of key points regarding how fare revenue was to be distributed and commissioned outside experts to devise a new system around these key considerations. In so doing, they focussed primarily on their own interests, *i.e.* apportioning revenue on a territorial basis to ensure that each responsible authority was liable for any unsubsidised costs within its area. They therefore needed a system whereby the distribution of fare revenue would reflect the actual situation as closely as possible. The distribution model was to be centred around line sections and the income from the latter used to aggregate the share of the revenue payable to each individual responsible authority and alliance company. This meant that the HVV was one of the first *Verkehrsverbünde* to shift its revenue-distribution model from one which is supply-driven (based on services and capacity provided) to one which is strictly demand-driven standards (based on the number of passengers carried and passenger-kilometres travelled, see Table 4).

However, when it was introduced in 1999, this change of system led to substantial shifts in the revenue earned by individual companies, especially where different load factors and travel distances were involved. The responsible authorities, though, were fortunate in that they could require the alliance companies to assume these – sometimes considerable – shifts in revenue. Hamburg offered its companies assistance by bringing pressure to bear on the responsible authorities and offering compensation, while DB's companies were forced to accept the fact that if they wanted to remain members of the alliance, their revenue would remain unchanged. The new model's realistic assessment of the income generated on individual lines and its territorial line sections make the distribution system very complicated since it must factor in several variables such as the effect on revenue of the fare applied, the various kinds of discounted tickets available, the system of charging a lower fare for longer distances travelled and applying different basic and working prices for the various individual means of transport. At the outset, implementing the new model proved difficult since the various meters and evaluation procedures required were not ready for use until much later than expected, however, since then they have been in use in rapid-transit systems since 2003 and will soon be introduced on buses too.

On the whole, the new structure has become far more complicated than that applied in the former company alliance. The numerous responsible authorities and now more than 30 transport companies must first coordinate their activities with each other and must then continue to work together closely within the alliance at each of the many stages in the decision-making process. Thanks to the competent and ongoing mediation efforts on the part of the *Verbundgesellschaft*, though, despite this complex structure the alliance has been a resounding success right from the start. With some 600 million passengers, it now carries approximately 100 million more than when it was founded in 1995 (see Table 5). As a result – and not least due to the companies' successful restructuring process – it has improved its economic results substantially despite only very moderate fare increases. This means it is also able once again to expand its previously limited range of services significantly and, above all, provide higher-quality services. By taking considerable pressure off public budgets, the alliance has also helped pave the way for extensive expansion of the rapid-transit network for the first time in many years, with an S-Bahn service to the airport, an U-Bahn service to the port city, and an S-Bahn extension to Stade all to be added.

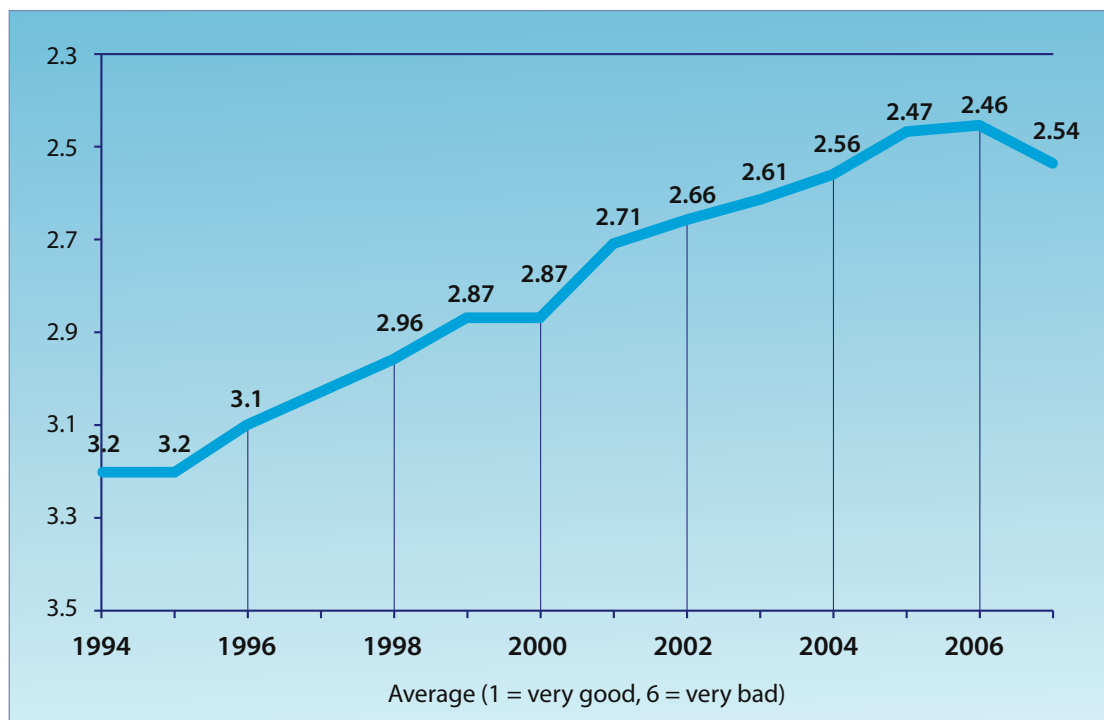
2.9 Performance of the Aufgabenträgerverbund

There are several reasons for the increase in passenger volumes. Hamburg's population has continued to grow, albeit no longer as rapidly as during the years immediately following 1989 (see Table 5). The region's economy has also developed significantly and expanding the alliance has brought in more passengers too. However, both the companies and the *Verbundgesellschaft*

itself have also taken advantage of such generally favourable conditions and have gone to great lengths to enhance the quality of public transport. All the different modes of transport have replaced their vehicle fleets with modern, attractive rolling stock, modernised their operating facilities, and re-designed and brightened up most of their stops to make them more attractive to customers. Substantial sums have also been invested in improving access for disabled people, the elderly, passengers with children, and travellers carrying heavy loads. Considerable efforts have been made to transform the organisational and personnel structure into one which can cope more readily with the demands of a service-driven business and to this end the general complaint-management procedure has also been overhauled. Improving services also entails making more information available to passengers, for example via the Internet and by fundamentally improving the information currently available to passengers on vehicles and at stops via new operational control systems. The alliance companies are always looking for ways in which they can improve their service and inject higher levels of investment to enhance security, prevent harassment of passengers, and guarantee that facilities and vehicles are always clean.

During the former alliance's twilight years, its image had clearly faded so the new *Verbundgesellschaft* systematically promoted dialogue with its customers and by providing greatly improved services was thus able to regain its former reputation while at the same time giving the new alliance a re-worked, attractive image and systematically developing the HVV brand (Figure 10). Drawing on its intensive market research it employed a new, fresh advertising concept, put in place a coordinated complaint-management system and regularly conducted comprehensive customer surveys. It also managed to overcome several reservations and succeeded in setting up a passenger advisory council to assist it in its work. It also had to be assertive in ensuring that the alliance enjoyed a coherent advertising presence and a uniform image for its facilities and rolling stock in order to steadily build a jointly approved, uniform corporate design in the face of tendencies toward autarky and cost arguments. The *Verbundgesellschaft's* activities also focussed on reviewing and modernising the concepts pursued by the former alliance, in particular as regards the bus network, bus transport services, fares and marketing. These yielded new initiatives such as the comprehensive Metrobus network which has since become a very successful new bus service, round-the-clock rapid-transit train services on weekends and a modernised sales system.

Figure 10
*Assessment of the
HVV's overall
range of services
(image analysis)
from 1994–2007.*



The *Verbundgesellschaft* broke new ground, too, when it was assigned to pave the way for competition within the alliance area and to provide technical assistance to the responsible authorities in putting together tender procedures and awarding contracts. The prevailing legal environment was far from clear on many points and the *Verbundgesellschaft* also had to take account of two conflicting sets of interests: on the one hand, Hamburg wanted to give its companies enough time to be able to restructure in readiness for competition in bus transport but on the other, the remaining responsible authorities, whose areas were mainly served by Hamburg-based transport companies, had, during the initial negotiations, secured agreement to start inviting tenders for bus networks as early as 1999. Together with the *Rhein-Main-Verkehrsverbund* and the *Verkehrsverbund Rhein-Ruhr*, the HVV initially set up the affiliated consultancy Kompetenz-Center Wettbewerb (Competition Centre) or KCW, which disseminated the basic knowledge required within the alliance and was very helpful in developing joint ideas for practical ways in which to organise invitations to tender, transport contracts and contractual checks.

The cooperation agreement reached in 1999 set out a comprehensive catalogue of quality standards to be met by all alliance companies and as such constituted an essential building block for future award procedures and transport contracts; the *Verbundgesellschaft* had laid solid foundations for itself as part of its involvement in a research project on 'soft' quality standards. Another key component in terms of competition are the partial networks built up by the *Verbundgesellschaft* for neighbouring districts and which can be put out to tender. However, based on an agreement adopted in 1999, these districts initially continued to shy away from invitations to tender for bus services and instead agreed transport contracts for such services with the companies on the basis of prices geared towards the competitive market. The first invitation to tender for bus services was launched in 2003 and since then, further partial networks and individual lines in the surrounding area have been put out to tender on an ongoing basis. In a bid to gain further expertise, when contracts for the city of Elmshorn's services were awarded, a 'functional' approach was taken to the invitation to tender whereby companies were to compete by submitting tenders containing comprehensive, innovative design concepts. To date, contracts have been awarded to the former operators and bus companies within the region.

2.10 The alliance area expands

When the new *Verkehrsverbund* was created, the responsible authorities had already removed the main barrier to expanding its area by agreeing what proportion of the deficits should be covered by each of them based on territory served. Later, Hamburg and its two neighbouring *Länder* redoubled their efforts to develop the metropolitan region jointly – efforts which laid the political groundwork for the HVV's expansion. By 2000, the new alliance had consolidated its position and was operating so effectively that it was able to undertake the greatest feat in the HVV's history: in late 2002, the alliance was extended northwards into Schleswig-Holstein and two years later, additional areas of Lower Saxony were also included. The alliance area now covers some 8,700 km² and has almost tripled in size. Approximately 3.3 million people live within it and the 34 transport companies – which now also include numerous private operators – carry close to 600 million passengers a year on some 3,600 vehicles via almost 680 lines (see Table 5). This expansion has redefined the HVV's boundaries for the foreseeable future.

As the alliance expanded, the usual problems arose – but on a large scale. Defining the alliance's new borders alone required a great deal of information-gathering and discussion and extending the HVV fare to the new areas proved even more difficult. In order to minimise their subsidies, the responsible authorities had to somehow make up the losses incurred by the companies entering the alliance as a result of harmonisation and the common-fare structure but at the same time offer attractive prices in the new areas. These conflicting demands could only be met by painstakingly adapting the spatial reference elements of the common fare (zones and rings) to reflect the specific local features of the new areas, and ultimately only via financial assistance

from the Land budgets. This made distributing revenue substantially more complicated. To safeguard the regions' existing positions when dividing up fare revenue, the latter was collected and allocated to three separate pools: one for the former alliance area and one each for the northern and the southern expansion areas. The fare revenues collected are then distributed separately from each pool. This method is considered an interim solution and over the next few years the intention is to return to the single-pool system for the entire alliance area. Another task arising from the alliance expansion was to adapt the services offered in the new areas to meet the HVV's benchmarks and gradually raise quality standards to the HVV level. The sales structure in the new areas also had to be reorganised and conversion of fares and timetables accompanied by special advertising campaigns and information drives.

Following the extensive spatial expansion of the alliance, the *Verbundgesellschaft* itself must now develop and take responsibility for an area with an even more diverse range of traffic. To accommodate local transport needs, it therefore shares the various tasks – particularly those associated with planning – with several local transport companies. In addition, expanding the alliance area deep into both the neighbouring *Länder* meant establishing sustained close cooperation with each of the respective *Landesnahverkehrsgesellschaften* (the highest responsible authorities). It was not long before the HVV, in its new guise as an *Aufgabenträgerverbund*, developed into a highly respected model of efficient cross-border cooperation in the region; its expansion, too, has made it a key driver behind the metropolitan region's development. However, no change to the HVV's own organisational structure was necessary in order for the alliance to expand and nor was any fundamental change needed to the majority situation within its bodies. The stability of the *Aufgabenträgerverbund* is due for the most part to the fact that both its own managers and the chairman of the company advisory council have remained at the helm throughout the process. The managing directors, Peter Kellermann and Lutz Aigner, in office since the alliance's refoundation, together with advisory council chair-person Günter Elste have largely contributed to the fact that the two Lower Saxony rural districts of Lüneburg and Stade (see Figure 6) as additional responsible authorities, and the numerous new transport companies, have now been integrated into the expanded *Verkehrsverbund* such that it has lost nothing of its former flexibility and decision-making authority.

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B. VERKEHRSVERBÜNDE FROM THE PARTNERS' PERSPECTIVE

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3

Verkehrsverbünde from a passenger's perspective

3.1 Transport alliances as a precondition for encouraging use of public transport

Travelling by bus and rail is en vogue and in many places, for some years now, increasing numbers of people have been switching from the car to public transport. This is due not only to rising petrol prices, the scarcity of parking spaces and the fact that people want to protect the environment from climate change. Nor can stylish new trains (Figure 11) or modern low-floor buses alone fully explain this shift in transport-usage. One key reason, however, is the fact that public transport services are now a more attractive option and that the use of buses and trains has, in many regions, become easier and more practical than ever before.

Ideally, passengers need only a departure time and a ticket and they can be off. Transfers and connections are guaranteed and tickets purchased on one means of transport or carrier are valid on services operated by others. Passengers benefit from uniform information, uniform and easily understandable fare conditions, and uniform quality standards. The other benefit, of course, is that there is only one responsible authority, one planning office, one coordination centre, one central marketing department and one point of contact, all of which are incorporated into a coherent whole to offer a streamlined service.

Public transport organised and coordinated in this 'one-stop' manner is the hallmark of public transport alliances known as *Verkehrsverbünde* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural) in which multiple responsible authorities and/or transport companies join forces to offer integrated public transport services. In theory, a similar structure could be achieved by a single company operating across multiple means of transport but from the



Figure 11
Modern S-Bahn train operating within the Verkehrs- und Tarifverbund Stuttgart (VVS).

customer's perspective this would seem to be neither desirable nor efficient and certainly not geared towards delivering the best possible benefits for the public.

At its best, a *Verkehrsverbund* up-holds and promotes the interests of all current and future passengers and is a structure which uses limited resources to organise the best possible transport for all. It is not answerable to a town hall, district authority or transport companies; neither does it operate as an administrative branch office.

Unfortunately, there are still areas in which there is no *Verkehrsverbund*. Of course, many transport companies also frequently offer attractive services within the framework of combined transport systems (*Verkehrsgemeinschaften*) and fare alliances, but in practice only genuine *Verkehrsverbünde* provide an integrated and fully coordinated public transport system.

3.2 Minimum criteria applicable across all Verkehrsverbünde

Besides one-stop organisation and coordination of public transportation, from the passenger's perspective *Verkehrsverbünde* frequently offer the distinct advantage that services are organised locally within a given region. That being said, however, care must be taken to ensure that the independent nature of regional transport alliances does not result in transport policy in Germany being dictated by regional boundaries or completely different systems being employed from one region to the next.

Despite the general consensus that creating a *Verkehrsverbund* is a positive step and the structure constitutes an excellent public transport solution, in some areas there remains a vast and complex range of fares which frequently pose an insurmountable obstacle to local residents, transferring passengers, visitors and tourists alike. As such, a number of minimum criteria should be applied across all alliances.

3.2.1 When is a child a child?

The first such cross-alliance criterion is based on the rather fundamental question: when is a child a child? From the passengers' point of view, there is no reason why each *Verkehrsverbund* has to specify different age limits. Further discrepancies arise as to how small a 'small group' should be, when a dog does indeed constitute a dog rather than a bicycle (since similar tickets are often applicable to both), is a 'day' taken to mean a 24-hour period, should it begin at 8:00 or 9:00, and how short is a 'short distance'?

Passengers want to know before setting out whether and when tickets must be validated, when and whether the *Deutsche Bahn (DB) BahnCard* pass is valid, and when and whether *Länder* and *DB Schönes Wochenende* (weekend) tickets are valid. They do not want to have to – and indeed will not – decipher fare conditions beforehand. Since public transport users also travel on bus and rail services outside their own transport alliance, there should be no nasty surprises awaiting them in other alliance areas.

Some years ago, the Association of German Transport Companies (*Verband Deutscher Verkehrsunternehmen, VDV*) issued a number of recommendations for uniform fare conditions and these were welcomed by the German association for sustainable mobility (*Verkehrsclub Deutschland, VCD*). Ideally, the transport alliances would voluntarily implement these and other criteria nationwide so that the federal and Land governments would not have to do so through legislation.

3.2.2 Crossing alliance borders

The vast majority of public transport takes the form of internal traffic within an alliance's borders. It is understandable, therefore, that cross-border transportation is not the primary focus for those responsible for organising public transport. Due to the increasingly long distances covered not just by commuters but by other passengers too, as well as the complex nature of transport



Figure 12
Electric dual-system light-rail coach operating a scheduled service within the Karlsruher Verkehrsverbund (KVV).

services, seamlessly interconnecting journeys are often not possible for those living in the vicinity of an alliance border and as such public transport is an unappealing if not non-existent option. Not infrequently, lines end at the last town before the alliance border, only continuing from the point at which a new line begins in the first town beyond the border. Whilst adjacent *Verkehrsverbünde* may offer very high levels of service, actual cross-border connections are below par. Unfortunately, all too often, it is a similar story where fares are concerned. Since there are sometimes no common provisions as regards fares, up to three tickets may be needed to travel between two alliances (among others, see *VCD-Verbund-Report Baden-Württemberg 2005* [2005 VCD Alliance Report for Baden-Württemberg], in German).

However, while in some places it might seem as if the wall between the two Germanies still exists, there are also some excellent examples of cooperative arrangements in public transport where even national borders are no longer obvious.

From the passenger's perspective, more cooperative ventures are required between alliances to ensure that attractive public transport services are offered across a wider area and not merely into the inner cities, as, for example, in and around the Karlsruher *Verkehrsverbund* (Figure 12) (including via RegioX supplementary tickets). Administrative borders having nothing to do with current traffic flows should no longer constitute a barrier.

3.3 How large should a Verkehrsverbund be?

To coordinate the interests of passengers, municipalities and transport companies alike, regional alliances adopting regional approaches to solutions are a sensible and efficient option. Many local problems and difficulties require specific solutions developed in coordination with both local authorities and passengers. Consequently, a *Verkehrsverbund* must also be of a manageable size.

Where transport alliances are too large, there is the risk that passengers outside the large settlement areas will be ignored and their interests sidelined in comparison to those of passengers in urban centres. From the passenger's perspective, at present all *Verkehrsverbünde* are of a manageable size. However, due to the large area they cover (in geographical rather than population terms) those such as the *Verkehrsverbund Berlin-Brandenburg* (VBB) should not be allowed to expand further.

On the other hand, transport alliances should not be too small either. In Baden-Württemberg, in particular, there is a patchwork of 20 small and even tiny *Verkehrsverbünde* and fare alliances. For example, the Heidenheimer Tarifverbund is about one-fiftieth the size of the VBB. On account of this network of small alliances in Baden-Württemberg, in 11 alliances or regions the average passenger reaches an alliance border after less than 20 km. In five other alliances, the border is reached after an average of 25 km. Only six alliances enable average travel distances of more than 30 km without moving into the territory of a neighbouring alliance.

Statistically, a German citizen travels 39 km a day and a working person up to 54.4 km. It is clear, then, that many trips in Baden-Württemberg entail crossing one or more alliance borders (Source: *VCD-Verbund-Report Baden-Württemberg 2005*). The studies in Baden-Württemberg show that, as a rule, large alliances offer attractive fares and also offer additional services (for example, optimised timetable information detailing footpaths with gradients, attractive tickets for seniors, or inexpensive annual network tickets). Small-scale alliances, by contrast, frequently offer only minimal information and a limited range of fares.

From the passenger's standpoint, alliances should be of such a size that all responsible-authority functions can be performed effectively and to a high standard without the associated management costs causing fares to spiral out of control.

3.4 Passenger requirements for Verkehrsverbünde

Verkehrsverbünde should make provision for the components and services set out below.

3.4.1 Fares

Discussions frequently revolve around issues such as the fairness and profitability of fares rather than the fact that fares must also be simple and easy to understand. What may seem self-evident to transport experts and regular users may quickly exasperate passengers from outside the alliance and occasional travellers. There may be a system of rings and zones (Munich), a range of different tickets and cards covering different areas within the alliance (Hanover), or different A, B, and C zone subdivisions (Berlin/Potsdam). In some cases, the theoretically smallest number of zones travelled through applies when calculating the fare, while in others the latter is based

Figure 13
RegioTram as a dual-system or hybrid vehicle used on both city light-rail and regional rail lines within the Nordhessischer Verkehrsverbund (NVV).

Photo: ALSTOM GmbH



on the zones actually travelled through (the fastest indirect route). Passengers also need to know such things as where to go to pay a first-class upgrade charge for trains with corresponding compartments (Munich) and from what time a day ticket is more advantageous than a strip ticket. Indeed, it is not just first-timers and standard-distance travellers who may feel lost: experts, too, quickly find themselves in the same boat amidst the maze of options and variations. Is a short-distance ticket also valid across a zone border? Is it also valid on RegioTram services operated by vehicles which run on both city light-rail systems and on more extensive regional railway networks (Kassel, Figure 13)?

All too often, the systems developed at great cost by transport planners and consulting firms have not been tried out in practical tests. A useful exercise would be to deposit different groups of users – such as senior citizens, car drivers or children (not monthly card holders) – at stops on a regular basis to test the services available. If more than a quarter of them fail to complete simple tasks, purchase the wrong card or ticket or need more than 10 minutes to purchase either, the fare system should be revised.

The same is true of ticket-machine systems (Figure 14). In many places, passengers are left searching in vain on the machine's display screen for the travel option they require. For example, not everyone knows that *Universitätsstadt Clausthal-Zellerfeld* lies in the Oberharz zone or that entering zone '50' for Frankfurt will not produce a ticket since two zeros are missing. Similarly, people travelling from Wiesbaden are surprised to find that a ticket to nearby Rüdeshheim does not mean they will arrive at the famous Drosselgasse, while until not that long ago there were still four different ticket-machine systems at Hamburg's main railway station. The confusion, then, is clear, with passengers in Hamburg wondering why they need to press button '5' to obtain a ticket for four (!) rings, those travelling within the *Rhein-Main-Verkehrsverbund* unsure as to when they should press the BahnCard button and whether the BahnCard will entitle them to any reductions or special offers on connecting bus services at their destination, and those travelling on the Karlsruhe S-Bahn or services operated by Deutsche Bahn AG uncertain whether a ticket obtained from a machine needs to be validated and, if so, where and at which company?

Generally speaking, having passed their driving test, car drivers can get around in both Germany and Europe without needing to know any additional technical information; road signs and motorway service area facilities take a standard form across the board. By contrast, the plethora of different ticket machines (both computerised and non-electronic) in use within different public transport systems is so complex that outside of their own *Verkehrsverbund* passengers can never be sure they have purchased the correct ticket without studying it closely.

Looking to the future, electronic ticketing systems could help make travel with valid tickets straightforward and inexpensive. However, such systems require that data protection be given top priority (due to the danger of individuals' travel patterns being monitored) and that a single cross-alliance technology system be used nationwide.



Figure 14
A passenger using the ticket machine.

3.4.2 Integrated planning

As far as passengers are concerned, the essential duties of a *Verkehrsverbund* include planning services across multiple carriers to an alliance-wide minimum standard. Optimum services on individual lines are of little use if they are not coordinated with other means of transport or the services of other carriers at interchange points (Figure 15), if parallel routes are in operation, or if different stops are served by different operators. Yet the task of a *Verkehrsverbund* is not simply to adapt and coordinate services that have been provided by companies for decades. A *Verkehrsverbund* is a cross-company structure and as such its job also includes developing new services, implementing new systems (such as regional light-rail and dial-a-bus services) and organising the required infrastructure.

3.4.3 ‘Soft’ standards

Fares, timetables and basic services are essential foundations for public transport planning. Beyond this, though, companies providing transport services for an alliance must also observe minimum quality standards and these must be checked. The cleanliness of vehicles is as much a part of this as customer friendliness. For passengers, smoking bus drivers with little command of German and who are possibly paid ‘dumping’ wages are no more acceptable than smoky exhaust gases spewing from old buses operated by subcontractors, which, in many places, are less the exception than the rule. In addition, within *Verkehrsverbünde* train stations and stops should be tidy and attractive, posters clearly visible and train staff on hand to provide assistance.

As far as passengers are concerned, one of the key roles of *Verkehrsverbünde* is to organise public transport to the highest possible environmental and social standards and at a reasonable and fair price.

3.4.4 Integrating long-distance public transport

Given the developments in public transport services in recent years, differentiating between local and long-distance public transport is outdated. These days, commuters often cover distances of well over 50 km. Various transport connections within an alliance are served by ‘white’ (long-distance) trains operated by Deutsche Bahn AG and travel on such trains often takes less time than by bus and rail within a city (people are often more aware of time than



Figure 15
*Linking rail, tram
and bus transport
with short distances
between connecting
services (in Gera).*

actual distance covered). Nor is there any longer any significant difference between the travel times achieved and stops served by a number of parallel-running local and long-distance trains. Consequently, passengers cannot understand why an artificial distinction is drawn between 'red' (local and regional) and 'white' (long-distance) Deutsche Bahn trains or that it is a company's 'economic viability' arguments that decide whether or not trains can be used. Including at least Intercity trains within the *Verkehrsverbünde* fare structure should be an additional alliance task.

3.4.5 Timetables and passenger information

Considerable progress has been made in this regard in recent years and for many people it is now easier than ever to obtain the timetable details they need. This is especially true of electronic media, but printed timetables and passenger information at stops has also improved a great deal. It ought to go without saying that such details should be up-to-date and understandable, but uniform, cross-company information is often lacking. This is particularly annoying when different companies operate in parallel on lengthy stretches and serve the same stops. Eliminating such duplication should also be an alliance task.

3.4.6 Marketing

For many years now *Verkehrsverbünde* have been investing a great deal of money in improving public transport systems and this investment has largely borne fruit. Frequently, however, such efforts are not noticed either by potential new passengers or the vast majority of politicians. All too often, people only become aware of how public transport has improved when they come (or are forced) to use bus and rail services either due to a change in personal circumstances or by chance.

Even if passengers initially feel it makes the most sense to pour every last penny into a better service, in the long run a great deal more must be invested than at present in customer-oriented marketing. However, this will only be affordable so long as all *Verkehrsverbünde* are of a minimum size.

3.4.7 Listening to passengers

Like car drivers, bus and rail passengers want to be mobile at any time as quickly, easily and affordably as possible. Due to declining public funding and/or lack of political interest, there are limitations on the extent to which such general expectations can be met. However, specific expectations are frequently not easy to implement either and it is therefore understandable that *Verkehrsverbünde* and passengers sometimes differ in their opinions. Detailed and targeted discussions with user associations and passengers are therefore required; through close contact with actual users, for example via passenger advisory councils, specific requests can be implemented and passenger volumes boosted. Dialogue of this kind should take place first and foremost via the *Verkehrsverbünde*.

3.4.8 Good ideas promise success

New ideas regularly spring up and are implemented in many *Verkehrsverbünde* as well as within individual transport companies. These are often measures which are small-scale and inexpensive but which make the service provided much more attractive and boost passenger volumes. Such ideas have come about as a result of input from customers, transport companies and other bodies alike via various media ranging from the so-called *König Kunde* (King Customer) competitions run by the VCD (Figure 16) designed to prompt ideas and thereby promote overall more attractive public transport services, to postings on various Internet forums on the subject. Passengers would like to see such instruments and approaches adopted by the *Verkehrsverbünde* more widely than has been the case to date.

Figure 16

Image representing the King Customer competitions run by the Verkehrsclub Deutschland.

Photo: Marcus Gloger, Bonn



3.5 Conclusion

The formation of *Verkehrsverbünde* is one of public transport's success stories. Where such alliances exist, bus and rail travel has become far more attractive than would have been conceivable 30 or 40 years ago. *Verkehrsverbünde* are the only structure which will enable public transport to develop further and in the way paying customers consider necessary. Although, at first glance, passengers may appear to demand a lot from *Verkehrsverbünde*, the success of many individual alliances is evidence that such expectations can be accommodated and passenger volumes boosted.

4

Transport companies and authority alliances (Aufgabenträgerverbünde): shared and conflicting interests

One fare, one ticket, one integrated transport system: this unique and now commonplace feature of public transport alliances known as *Verkehrsverbünde* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural) was the driving force behind the emergence of the latter more than 40 years ago and responsible authorities, passengers and carriers alike all profit from the many benefits such alliances afford (Box 1).

box 1

The benefits of an alliance structure

- A uniform user interface coupled with minimum quality standards for vehicles and facilities makes it more convenient for passengers to use the services provided within the alliance area by the various transport companies.
- Coordinated timetables and routes make transferring between services offered by different companies very straightforward.
- Parallel routes are cut, thereby creating operational and financial opportunities for developing the alliance area further.
- A streamlined, alliance-wide sales system not only saves money but also attracts more passengers.

Coordinating activities within an alliance makes the overall transport system more efficient and ensures a more positive experience for all concerned. Passengers enjoy a higher-quality and more reliable end-product thanks to uniform standards, while the responsible authorities and carriers benefit from increased passenger volumes, which in turn, help both to achieve the social-policy goals associated with public transport and to boost profitability.

box 2

Objectives and impact of the 1993 Regionalisation Act (RegG)

The Regionalisation Act (RegG) was designed to combine task management (planning and organisation) with cost management (financing). Overall responsibility for all public transport was transferred to the regional authorities in the respective *Bundesländer* and to date, those regional authorities have received regionalisation funds totalling just short of EUR 7 billion. Public transport laws in the various *Bundesländer* further flesh out the ultimate responsibility on the part of these regional authorities for rail passenger and other public transport.

Regionalisation during the period 1994 – 1996 brought about fundamental reform of the conditions previously observed in rail passenger transport. The aim was to create a framework through which to shore up public transport as a whole in order to cope with rising traffic volumes. Rail passenger transport in particular was identified as a problem area since it had previously hit the headlines more on account of line closures and spiralling costs than of its key role in managing large traffic flows in urban areas, developing rural areas, and linking these regions to urban areas.

Although at the outset company alliances featuring an alliance company (umbrella legal entity) acting as a joint venture between local operators was the general model, in the wake of the 1993 Public Transport Regionalisation Act (*Regionalisierungsgesetz RegG*, Box 2) authority alliances (*Aufgabenträgerverbünde*) have become the norm.

In representing the responsible authorities' interests, authority alliances and Landesnahverkehrsgesellschaften (the highest responsible authorities in some *Länder*) are responsible for managing and, as 'clients', usually for the requirement of public transport services. The situation has changed considerably since the first company alliances were formed and the trend has been for the responsible authorities to become more powerful since they have come to be much more actively involved in shaping public transport services than was once the case.

The role of the transport companies is to provide carriage and to do so under the general conditions laid down by the public transport alliance in terms of timetable and performance and within the framework of the applicable fare system. They are responsible not only for ensuring that the services they provide operate as efficiently as possible and adhere to all relevant rules and regulations, but also for reconciling these activities with their own business needs as an individual company. Naturally, customers – passengers and the relevant responsible authority – are always a carrier's top priority but it must also keep in mind its own business needs to ensure its very survival. As a responsible-authority structure, the *Verkehrsverbund* serves as an important 'hinge' both between responsible authority and carriers and between the various carriers within an alliance. With the exception of purely internal processes, any entrepreneurial activity within an alliance requires the approval of the latter.

4.1 Entrepreneurial activity and rules

Within an alliance structure where entrepreneurial activity is, to some degree, restricted care must be taken to ensure that such restrictions are evaluated fairly and objectively since they are ultimately two sides of the same coin. Clearly, though, any transport company wishing to become part of an alliance must follow the applicable rules.

There is no doubt that the alliance premise of 'One fare, one ticket, one integrated transport system' is a key reason for the ongoing success of public transport in Germany in particular. These three advantages have made public transport extremely attractive – so attractive, in fact, that passenger volumes have been rising continuously for some time now. This is a valuable asset in terms of social-policy development and is generally also a key factor in successfully financing high-quality public transport in Germany. Alliance rules – which normally echo the responsible authorities' intentions – must therefore be understood by carriers to be mandatory requirements which they must observe since this is the only way in which to ensure the fair and healthy competition anticipated in the public transport sector as a whole in Germany in the years ahead.

Box 3

Key aspects of the competitive-tendering procedure for transport services

- Time required to compile bids
- Delivery and price deadlines for vehicle procurement
- Negotiations with third parties; e.g. for infrastructure and sales facilities
- Initial solutions for justifiable management of economic risks; e.g. in terms of:
 - basic data (e.g. passenger volumes/flows);
 - residual-value risks vis-à-vis investments;
 - indexing price trends based on the relevant cost factors.

However, having to accept alliance rules in this way can prove detrimental to carriers if the latter's practical operational and business requirements are not appropriately factored in when such rules are being drawn up.

For example, in the early days there was often a tendency among organisations close to the responsible authorities (*i.e.* *Landesnahverkehrsgesellschaften* and alliance companies) for regulations to be complex and contain a wide range of requirements. Naturally, such a situation flies in the face of the carriers' desire to bring both their entrepreneurial creativity and their practical operational experience to bear.

Although some difficulties remain, these initial problems have largely been overcome and such aspects are now being factored in more appropriately than was the case in the past. The clear distinction in roles between responsible authorities as 'clients' and carriers as 'suppliers' is also evidence of the welcome trend towards mutual cooperation.

Naturally, however, there is also a trade-off between the two in terms of their different functions as client and supplier in respect of transport services. This trade-off can be seen most clearly at the point at which contracts for public transport services are awarded, in particular where tendering conditions are concerned.

It is important to underline at this juncture the fact that in the early days – and, at that initial stage, due to lack of experience – the sheer scale of the various aspects of the process to be taken into consideration (publishing invitations to tender, calculating and assessing bids, factoring in commissioning in legislative provisions governing tendering, launching operations on time, etc.) was frequently under-estimated (see Box 3).

In order to provide a customer-orientated, efficient, and at the same time cost-effective range of transport services within an alliance area, when drawing up the rules and regulations to be applied in said area – particularly when determining the applicable services and standards – dialogue between responsible authorities, alliance company and carriers is vital if a balance is to be struck between the various interests of all three parties.

In many alliance areas this process has been negotiated extremely successfully, as is evidenced by both virtually non-stop increases in passenger volumes and rising cost-recovery ratios. Such increases generally tend to be greatest within alliances in which the relationships between the various partners are based on constructive cooperation.

4.2 Challenges facing alliance companies and carriers

Nowadays, there is much greater awareness among political decision-makers and the general public alike of how important public transport is in helping to protect the environment (*i.e.* in reducing harmful emissions and conserving non-renewable resources, see Figure 17); this awareness is certainly growing but there is still some way to go. Political statements on climate protection appear to be out of synch with the reality of the situation, namely that government funding for public transport is being cut, fewer resources are being earmarked due to a weakened allocation structure and, in particular, the Municipal Transport Financing Act (GFVG) is due to expire.

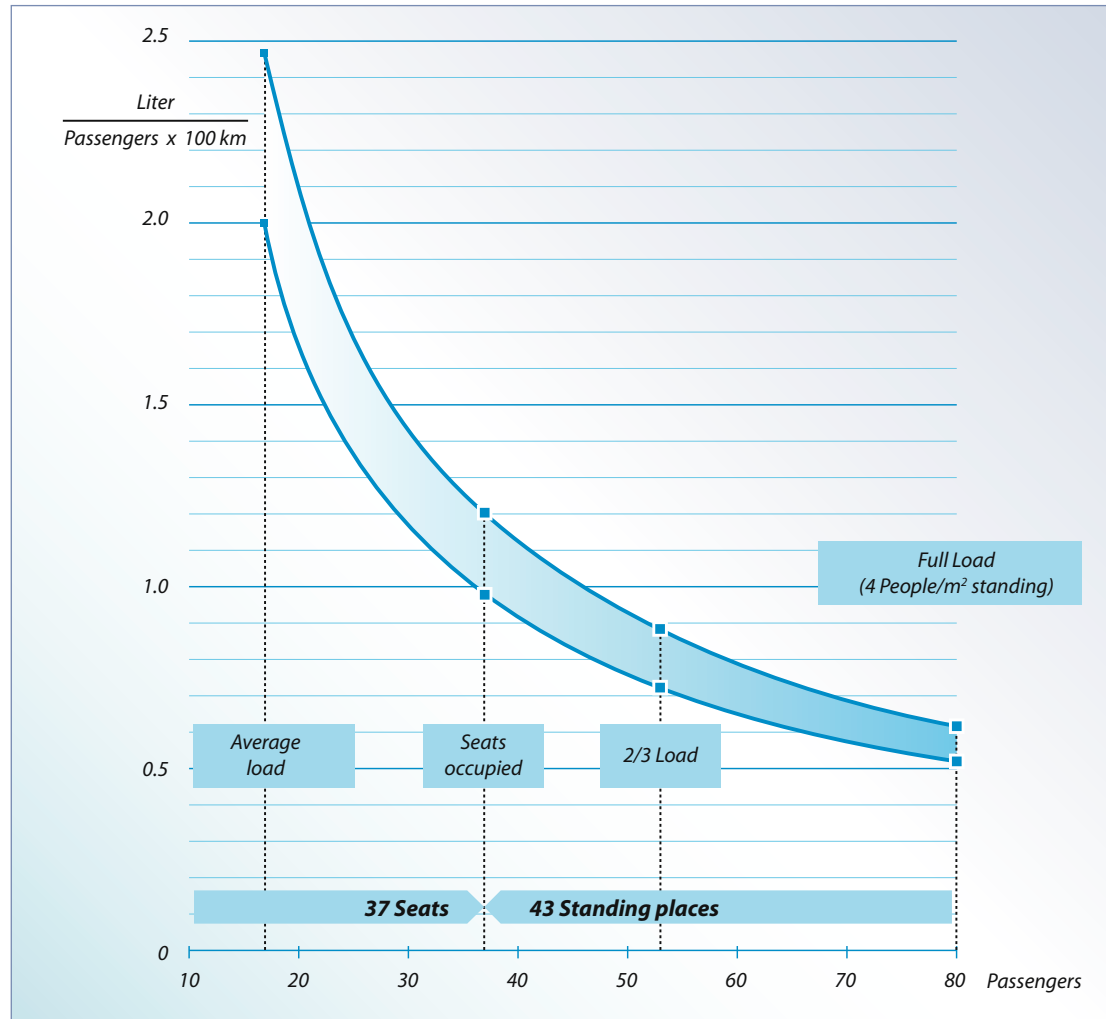
Rising energy prices are boosting passenger volumes but these volumes are no longer distributed in the same way. Public transport tends to be used more widely in urban areas, particularly those experiencing positive economic growth and rising employment since the latter two factors generally result in local population increases. By contrast, in rural areas in which the economic structure is weak and the demographic trend negative, the situation is less rosy. Combined with the decline in state funding for public transport, services in such areas are often cut back.

Alliance companies and carriers therefore face the following challenges:

- Encouraging newly won passengers to continue using public transport – in most cases, such efforts will only be successful if both sufficient and high-quality services are provided;

Figure 17

Reduction in fuel consumption (litres per 100 passenger-km) and harmful emissions through public transport use (standard dual-axle bus at 34 and 42 litres/100 km).



- Guaranteeing appropriate (or at least adequate) transport services in rural areas in which the economic structure is generally weak – given the current financing situation, this will require innovative and flexible services;
- Enhancing efficiency and adjusting fares to offset dwindling government funding, rising energy costs, and the many environmental considerations to be factored in;
- Encouraging political decision-makers to structure public funding in such a way as to guarantee an appropriate and adequate range of transport services.

Given the identity between their respective interests, alliance companies and carriers are natural partners when it comes to addressing these various challenges.

4.2.1 Relaxing approval conditions in the context of fare applications

It is equally clear, however, that overcoming such challenges will require concerted efforts on both sides. Financing plays a key role in this respect. To date, fare-policy measures (*i.e.* the level and structure of fare rates) have often fallen short of the mark and carriers have therefore failed to generate a reasonable profit – a direct consequence of restricting entrepreneurial activity within authority alliances.

In the specific context of urban public transport, which is structured largely around municipal operators, company owners and responsible authorities are often one and the same entity. As a result, public policy-makers have a decisive influence on fare development within these commonplace structures – a trend which is particularly evident within authority alliances.

Accordingly, entrepreneurial action in the context of profit management must focus on the level of earnings (*i.e.* passenger volumes), since transport companies generally have little input when it comes to organising price components. The carriers' focus on boosting passenger volumes is certainly desirable in social and political terms but heavily restricting entrepreneurial activity in the context of fare design can have serious negative consequences. An example of this is the current situation: at a time when energy prices are rising and costly environmental measures are also to be observed, the shortfall in state funding for public transport already evident and clearly intended to continue in the future can no longer be offset solely by an increase in operational productivity on the part of carriers. Given this situation, if public policy-makers, responsible authorities and alliance organisations fail to make provision for appropriate fare increases, the only option will be service alterations to cut costs – alterations which, in turn, will undermine both the quality of service provided and the profitability of operations geared towards the medium to long term.

Consequently, with funding for public transport increasingly on the wane, transport companies must now demand greater entrepreneurial leeway in shaping fare trends and devising fare structures. The stringent political approval conditions on fare applications, the latter already being coordinated within public transport alliances anyway, must now be relaxed (Box 4).

box 4

Relaxation of state approval conditions

Approval conditions need to be relaxed in the following fare-application areas:

1. Offsetting price increases carriers can do nothing about because they are borne out of the production factors involved in providing public transport services;
2. Compensation for the additional costs incurred as a result of having to comply with further environmental requirements and restrictions;
3. Compensation for reduced state reimbursement of required discounts for certain target groups such as apprentices/trainees or the severely disabled.

Public policymakers must be made to realise that such reimbursement is not a subsidy for carriers but for the specified target groups. In the interests of transparency, social-policy measures should also be financed from the public budget belonging to the political agencies responsible for them rather than reflected in lower revenues for transport companies and an accompanying decline in their profits.

In most regions of Germany, there is no practical argument for fare adjustments falling within the remit of municipal policy since the transport companies know full well that any additional revenue generated through price increases can quickly be cancelled out by a decline in passenger volumes and that this, in turn, will impact negatively on income. Consequently, their price policy would be better geared towards demand-related price elasticity.

4.2.2 Competition between carriers and alliance companies

Rivalry may emerge between alliance companies and carriers when it comes to ideas and solutions put forward by each to optimise a range of transport services which are customer-orientated, boost passenger volumes and are more cost-effective for both responsible authorities and transport companies alike; adapting and developing such services can also prompt fierce competition.

Furthermore, conflicting ideas as regards authority and blurred boundaries in terms of areas of responsibility can arise in many fields, for example analytical market observation, customer

satisfaction and expectations (and the consequences thereof), alliance or company-related marketing activities, basic issues such as contract types and incentive systems, (uniform) quality standards, and fare-rate structures and fare adjustment.

In competitive situations such as this, alliance companies close to the responsible authorities formally have the ‘whip hand’ as clients. In an urban public transport sector still dominated by municipal transport companies, competition frequently emerges between alliance companies and carriers, the winner ultimately being decided by public policy-makers in the dual role they tend to play as responsible authorities on the one hand and carrier-owners on the other.

4.2.3 Minimum quality versus enhanced quality

Yet the question of minimum standards demonstrates clearly the consequences of restricting entrepreneurial – *i.e.* company-initiated – activity within a public transport alliance.

Minimum standards detail the basic level of service in various fields to be observed by all participating transport companies. Some carriers, though, are now keen to offer an ‘enhanced’ service since they believe it will foster greater customer loyalty and thereby boost passenger volumes. However, such hopes will only come to fruition from a business-management standpoint if the revenue generated as a result of providing an enhanced service also benefits the relevant transport companies. At present, the standard revenue-distribution model used in public transport alliances does not appropriately factor in the added revenue generally derived from voluntary moves on the part of carriers to enhance quality and as such not only is entrepreneurial activity within *Verkehrsverbünde* sometimes not supported, it is often actively curbed – even to the detriment of passengers.

One specific example of this situation is the issue of equipping public transport vehicles with air-conditioning. The underlying consideration in this respect is that both existing and, not least, future passengers should be able to enjoy a feature which is now standard in even medium-sized and small private cars. Until company-specific remuneration arrangements in conjunction with differentiated standard rules are incorporated into the regulations governing public transport alliances and unless this quality standard is made mandatory for all service providers within the alliance, there will be no incentive for companies to try to make their services more attractive.

4.3 Setting priorities in terms of current requirements for transport companies

Current requirements for municipal carriers in particular often feature conflicting expectations and objectives.

Examples include:

- Exemplary commitments to meeting costly environmental demands and requirements;
- Rising costs in terms of the production factors associated with the services offered;
- The general decline in production costs in a bid to boost competitiveness and curtail deficits;
- Dwindling state funding for public transport services;
- Restrictions on fare adjustments at the hands of policy-makers.

Given these conflicting goals, it is impossible for municipal carriers, in particular, to take advantage of the current opportunities for attracting and retaining more passengers.

In turn, it is therefore no surprise that in this situation most operators have little interest in freeing up what limited entrepreneurial capacity they have to address what they consider to be issues of secondary importance. Such issues include fine-tuning quality-assurance systems, which requires costly data-collection initiatives, and introducing differentiated incentive/penalty systems, which entail considerable administrative costs and which, in the worst-case scenario, only offer an incentive if sufficient ‘poor performers’ are required to pay penalties.

Consequently, partnership-based cooperation between alliance companies and carriers must also centre around a shared understanding that agreement must be reached jointly on setting priorities geared towards the current environment and prevailing demands as well as on medium- and long-term goals.

4.4 Conclusion

The relationship between authority alliances and transport companies is generally viewed as being a positive one and the overall trend is towards partnership-based cooperation in the general interests of providing efficient public transport in Germany (Box 5).

box 5

Partnership between alliance companies and carriers

1. The considerable identity between their respective interests requires – and indeed fosters – partnership between alliance companies and carriers.
2. The distinctive roles of alliances companies as ‘clients’ and carriers as ‘suppliers’ mean that partnership-based cooperation between alliance and transport companies is not only possible but absolutely necessary in ensuring an efficient public transport service. Such rational cooperation is on the right path but there is still room for improvement.
3. Rivalry in providing solutions of greatest benefit to passengers can be positive if goal-orientated and structured around prevailing practicalities. Here, too, partnerships can develop and indeed be extremely successful provided that both sides strive to achieve a rational and objective process of discussion and decision-making and that this process is transparent for all participants.
4. It is helpful here if alliance companies and carriers can:
 - Empathise with each other and respect each other’s tasks, objectives and underlying conditions;
 - Focus on the current challenges facing public transport and take full advantage of existing opportunities together.

As the industry association for public transport in Germany, the Association of German Transport Companies (VDV) will analyse cooperation between alliance companies and carriers at appropriate intervals. It will use its findings to compile a coherent overview of future goals in terms of further development of public transport in Germany and will communicate these findings to all participants.

Regardless of views – both positive and negative – concerning the limitations placed on entrepreneurial action within public transport alliances, the fact remains that when viewed from an

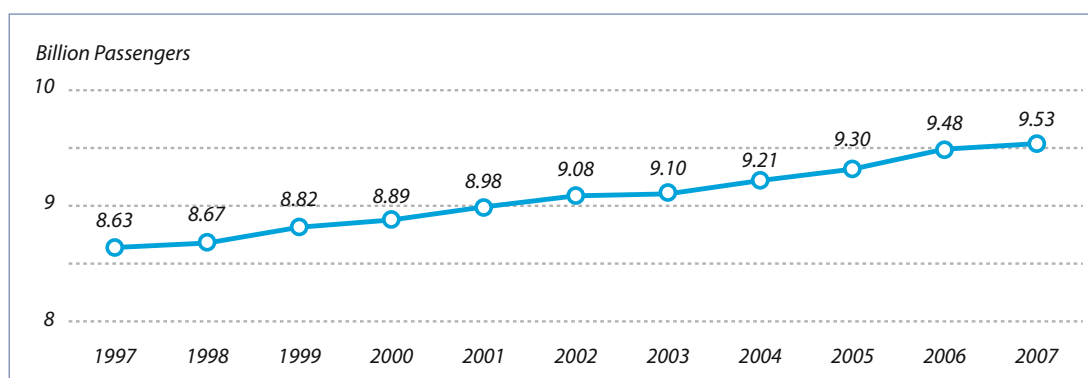
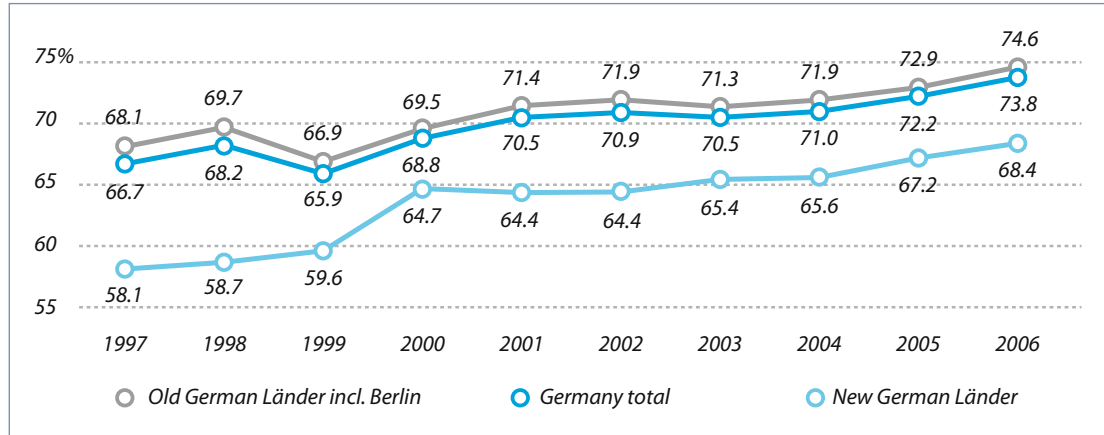


Figure 18
Rise in passenger volumes in VDV member companies.

Figure 19

Trend in cost-recovery ratio (%) in VDV member companies.

Data on regional rail passenger transport provided by Deutsche Bahn AG are incomplete and varying analytical methods have been used.



international perspective German public transport (and its trademark *Verkehrsverbünde*) has developed very positively and passengers, responsible authorities and transport companies alike have all benefitted. This is demonstrated not least by improved transport services, increasing passenger volumes (Figure 18), and a rising cost-recovery ratio (Figure 19) among municipal transport companies in particular.

Given the current key social-policy challenges of climate protection and conserving non-renewable energy resources, political decision-makers must be encouraged to make a financial commitment to promoting more widespread use of public transport since the latter will ultimately help to overcome such challenges. Through its *Verkehrsverbünde* and carriers, the public transport sector is striving hard to play its part in overcoming social challenges – and public policy-makers should seek to support this commitment in the long term.

5

Public transport alliances: the responsible authorities' perspective

The government is responsible for public transport planning as part of its remit of providing essential public services. In urban areas, such planning forms part of the constitutionally guaranteed right of self-administration. From the general public's point of view, public transport shapes their everyday experiences on the way to school, work or the shops and during their leisure time; how efficiently it functions is a clear yardstick by which to measure public policy-makers' capabilities – and is one which can be directly 'experienced' in the truest sense of the word. Under the public transport laws of the various *Bundesländer*, both towns administered as districts in their own right and rural districts are the responsible authorities in charge of planning, organising and designing public transport systems in general. Many choose to structure their local services within public transport alliances known as *Verkehrsverbünde* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural).

Over 80 % of Germany's population, including almost all those in medium-sized and larger cities, today live within the catchment area of a *Verkehrsverbund* or similar transport-cooperation structure. In terms of public transport, the majority of alliances within the European Union are located in Germany and Austria. The German Association of Cities, the *Deutscher Städtetag*, believes that alliance systems have long been a cornerstone of successful urban development and public transport policy. Why is this so?

5.1 From diversity to integration

Compared with the public transport landscape in rest of Europe, that of Germany has traditionally been characterised by a large number of different transport companies – a scenario which remains the case today. These companies differ in terms both of their fields of operation and of their ownership and organisational structure, goals, and, naturally size. They range from state-owned railway groups operating both road and rail services, to numerous municipal operators and a broad spectrum of medium-sized bus companies. As competition emerged in regional rail passenger transport, the number of non-federal railways also rose sharply. The responsible authorities believe that, in principle, this diversity should be warmly welcomed since it ensures a wide range of service providers, which is beneficial both to competitive invitations to tender and (even if only as a benchmark) to direct awarding of transport-service contracts. It also enables responsible authorities to be more independent, a situation which is difficult within oligopolistic structures, and ultimately encourages competition in terms of quality, which is beneficial to responsible authorities and customers alike. It also helps to preserve small and medium-sized structures in the transport business, which is vitally important.

For decades, however, this diversity had caused public transport in general to develop in a somewhat 'individualistic' manner: many public transport companies established (and retained) not only their own lines and networks but also – and most importantly – their own fares. Where catchment areas overlapped, some services (and, in some instances, also infrastructure components) were duplicated unnecessarily while competition for customers was virtually unfettered. The lack of transparency among these transport systems and the associated fare hurdles made switching to public transport an unattractive option. In the long run, such a situation was

certainly not in the cities' interests and during the 1960s the latter increasingly came to recognise the key role of an efficient public transport service in achieving the required – and hoped for – urban development. Experience in large American cities demonstrated that as motorisation increased, German cities, which had evolved over centuries and functioned relatively efficiently, could only be preserved if a substantial proportion of travel within them was effected by means of public transport.

This realisation led to investment in cities' public transport infrastructure skyrocketing thanks, crucially, to the Municipal Transport Financing Act (GFGV). New underground-rail (*U-Bahn*) and light-rail lines were introduced and the networks expanded considerably. However, the vast financing required also quickly highlighted the fact that if taxpayer funding of public transport was to be used efficiently and public transport itself made attractive to passengers, the various carriers within a given urban area had to be involved in any move to integrate transport services. This was the fundamental idea behind the first *Verkehrsverbünde* and remains the underlying concept today.

5.2 The underlying principle of public transport alliances: long-standing but still relevant

The aforementioned fundamental principle underlying the transport-alliance model dates back further than the 1960s though. Notwithstanding the inherent commercial competition between local transport operators, a small number of significant cooperative ventures – entered into as entrepreneurial initiatives – between individual line-licence holders were in existence well before the first *Verkehrsverbünde* were founded. In fact, what was probably the first local transport cooperation arrangement which, from today's perspective, could be described as a type of *Verkehrsverbund* came at the initiative of a committed priest. In the 1920s, *Verband mittelschwäbischer Kraftfahrzeuglinien e. V.* applied a uniform fare to coordinated bus timetables in the extensive catchment area around the small Swabian town of Krumbach; financing, too, was managed in an integrated fashion with the lucrative Krumbach-Augsburg bus line funding weaker feeder lines in the hinterland.

To this extent, then, the principle underlying the first large public transport alliances of one ticket valid for all bus and train services (Figure 20) was actually not so revolutionary. However, it was certainly a necessary precondition which paved the way for coordinated, continuous



Figure 20
One ticket for all
public transport:
a key feature of
Verkehrsverbünde.

systems of rapid-transit trains, feeder lines and extension lines in large urban areas today. The pioneer in this regards was the city of Hamburg in 1965 with the *Hamburger Verkehrsverbund (HVV)*, while Munich followed in 1971 with the *Münchner Verkehrs- und Tarifverbund (MVV)* (undoubtedly a development which was accelerated considerably by the upcoming Olympic Games in 1972). In Munich, the need for and benefit of an alliance system were obvious from the outset. The fundamental infrastructure work required, namely construction of an efficient east-west line through the city linking up all the suburban train connections operated by the German federal railway, *Deutsche Bahn (DB)*, and which had been upgraded to suburban railway (*S-Bahn*) services, and the building of a U-Bahn system

in the Bundesland capital initially – and primarily – running from north to south demanded a transparent fare system for S-Bahn and city transport. This was the only way in which the S-Bahn system could be widely used in the city centre and, in turn, the only way to enable the region's residents to truly benefit from being able to transfer direct at various connection points from the S-Bahn to U-Bahn services and the various other means of transport in the city centre.

Since these initial alliances were created, the alliance principle has become widespread throughout Germany. At the same time, passenger volumes began to rise significantly. Despite a few setbacks, the fundamental trend has been a positive one, with public transport in Germany's cities having increased its market share further still, particularly in recent years. There are several reasons for this growth, namely expansion of infrastructure, new or modernised rail-transport systems, more frequent timetabled services, attractive rolling stock, appealingly designed stations (Figure 21), a supportive overall transport policy in which public transport is given more or less clear priority, the fact that companies are gearing their services far more towards passengers' needs, and, last but not least, the overall benefit passengers derive from the integrated transport services provided by public transport alliances.

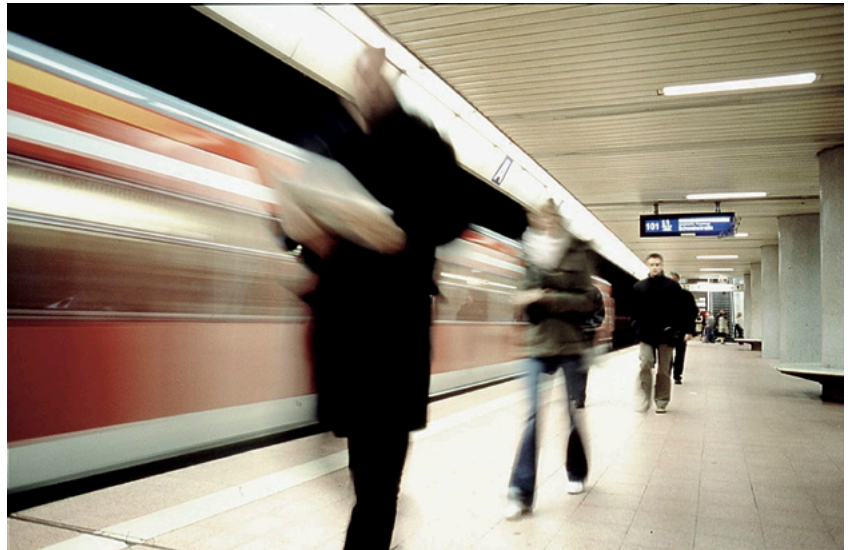


Figure 21

Attractive rolling stock and appealingly designed stations and stops are the hallmarks of modern public transport.

Photo: Verkehrs- und Tarifverbund Stuttgart GmbH

5.3 Attractive public transport is a critical factor

Transport-alliance systems directly serve the mobility of citizens and are therefore an important component in determining the quality of life in a particular region. However, a good public transport system is also a significant location-site factor for business, especially for companies with a large workforce or which have a large number of visiting customers. A study conducted by Prognos AG revealed that for the companies involved, public transport connections are more important than proximity to an airport or mainline railway station. This is logical, since public transport is a reliable means of transport enabling employees to avoid traffic jams on their way to work and offers the companies themselves direct economic benefits through, for example, a reduced need for parking spaces and a smaller fleet of service vehicles. A sound modal split also facilitates the overall transport of goods and services for which cars and/or lorries are still required. Buses and trains are indispensable, though, in urban areas since the latter are the driving forces behind economic growth. For companies, therefore, the quality and availability of public transport services are decisive criteria when deciding where to locate production sites. The Land capital of Munich certainly owes its positive reputation as a city in no small part to its excellent public transport system.

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Sustainable mobility is also likely to become increasingly important given the changes observed in climate and air pollution. At a time when fuel prices are rising and global warming is increasing, a sustainable transport policy demands consistent expansion of public transport services as a favourable and environmentally friendly mobility option. A coordinated and attractive public transport system based on the *Verkehrsverbund* model is the best way in which to implement a transport policy which seeks to provide efficient transportation while at the same time protecting the environment (Figure 22).

5.4 Public transport alliances mean investment can be deployed more efficiently

The vast majority of public transport passengers benefit from transport alliances in the same way as urban-development policy. Provided planning is thorough and labour is divided equally between the operators, any investment can be rendered more efficient via an alliance structure, as can any operating-cost subsidies. Alliances can also enhance the image of public transport as compared with that of private transport since they ensure that the former is widely accessible and in addition promote its image as a comprehensive service offering optimum geographical coverage and short journey times. Moreover, coordinated public transport planning throughout the entire alliance area can counter pointless competition between member communities in terms of structure and settlement. Experience

has shown that responsible authorities working together within a *Verkehrsverbund* structure can lay excellent foundations for coordinated development planning beyond the given alliance area's boundaries. Public transport alliances do not eliminate area centred attitudes but they do make them somewhat more transparent, which is nonetheless an important factor in ultimately overcoming them altogether.

There is no question that public transport has a significant impact on settlement structures. Conversely, however, public transport also requires an appropriate settlement policy if it is to be truly successful. The impact on such structures will be all the more significant if *Verkehrsverbund* systems make public transport more attractive and more efficient throughout the alliance area. This is evidenced clearly, for example, by the development seen both in rural districts within the MVV area and of said rural districts themselves, *i.e.* settlement being centred largely along the respective S-Bahn lines and land prices tending to follow the same route. Over the years, the MVV alliance area has also become established as an increasingly integrated urban area, such areas normally being characterised by close-knit – and usually rising – commuter

Figure 22
Using public transport makes a vital contribution to protecting the environment 'Go shopping with us – and help protect the environment'.

links. The development, too, of the alliance model in urban areas in Germany has already demonstrated clearly that an efficient, networked public transport system from the outlying region into the city not only serves existing commuters but also attracts additional ones since it encourages people – or at least makes it possible for them – to move away from the city.

One thing is certain though: mobility needs within densely populated areas are constantly on the increase and the impact of incompatible mobility processes is becoming ever more pronounced. This, in turn, means that it is vital for public transport to secure an even greater market share if urban areas are to function efficiently and be attractive. The benefits and significance of efficient transport-alliance systems, therefore, are becoming even greater.

5.5 Public transport alliances require compromises

But are all our alliance systems as efficient as they might be? Are any changes needed?

Of course, like anything else *Verkehrsverbünde* have their weaknesses: common fares applied across large alliance areas are necessarily always a compromise – in terms of both structure and price level – between the fare and marketing needs of city services on the one hand and regional ones on the other. A uniform fare system covering a large alliance area is either extremely complicated (and therefore not particularly customer-friendly) or yields low revenues (and therefore requires higher subsidies); it may also have strict fare limits and price jumps which can sometimes be perceived as extremely unfair. A combination of all three problems can occur and cause some politicians not well-versed in fare-related matters to appear to voters to be rather baffled by the whole affair. Correspondingly, tough battles often ensue over the issue of fares.

Naturally, public transport alliances also cost money: the greatest benefit to passengers, namely the interchangeability of fares, usually results in lost revenue – revenue which is not always offset by the additional traffic generated by the alliance structure itself. Financing is therefore needed and this usually comes from the responsible authorities. Harmonised sales structures often require additional investment in the sales technology used by the participating companies. Depending on the level of coordination required and the tasks of a given alliance, administrative expenses are incurred which must be financed regardless of how and by whom these tasks are handled.

The structures of transport alliances also frequently expose areas of conflict which can tie up substantial resources. Revenue distribution – an unavoidable aspect of any common-fare system – is one such example and in a number of alliances, discussions over revenue-distribution have lasted years. Consequently, the responsible authorities must keep in mind the appropriate cost-benefit ratio of an alliance structure and, therefore, the related issues of size, fare structure, division of labour and organisational structure and balance these against the overall benefits afforded by the alliance structure.

5.6 Financing must be secured

As already outlined, though, the *Verkehrsverbund* model has been extremely successful. However, this model can only be carried forward and developed further if sufficient funding is made available in the future. Besides a clear regulatory framework, alliance partners also need to have fixed plans in place for financing; unfortunately, though, the scale and methodology of existing traditional financing instruments are increasingly coming under scrutiny. The so-called ‘combined funding facility’ (*steuerlicher Querverbund*) whereby supplier companies’ profits and transport companies’ losses are dealt with in a tax-efficient manner within the umbrella or parent company has been and remains a crucial instrument. For many cities, without these funds it would be impossible to finance public transport on the scale and to the standard passengers have come to expect, especially since public transport funding at many levels has been cut in recent years.

All this is happening against the backdrop of increasing demand, the steadily worsening problem of climate change and a growing need for investment. A study conducted by the Research Association for Underground Transportation Facilities (*Studiengesellschaft für unterirdische Verkehrsanlagen, STUVA*) a few years ago calculated that public transport would require EUR 16.4 billion of investment between 2008 and 2012 and establishing secure and reliable funding is an urgent priority. It is clear, then, that cities and alliance partners alike will need to mobilise all their powers of persuasion in the near future.

5.7 EU regulation proves a success for cities

Discussions lasted some ten years but Regulation (EC) No. 1370/2007 on public passenger transport services by rail and by road has now been passed. Thanks to concerted efforts by the Association of German Transport Companies (VDV) and the *Deutscher Städtetag*, the German municipalities now have a voting right and decisions on invitations to tenders or direct awards can now be taken locally based on the attendant circumstances and priorities.

Like many other cities, as a responsible authority the Land capital of Munich has endorsed the model of continuing to structure public transport services via its own economically efficient but not profit-oriented carrier. In future, alongside the municipalities' role of providing an essential public service within the context of their right to self-management (as enshrined in constitution), individual cities must also be permitted to provide public transport services themselves also in a *Verkehrsverbund* if they wish. It is a significant achievement that the new regulation now takes this key demand by urban responsible authorities into account.

However, in the absence of invitations to tender, municipal companies face higher costs and come under pressure to rationalise their services. They will constantly be measured against private competitors, which also provide public transport services within other alliances or on behalf of other responsible authorities. With or without invitations to tender, though, care should be taken to ensure that competition does not result in social dumping to the detriment of employees.

5.8 Location-specific alliance solutions rather than a standard model

There is currently no single, one-size-fits-all alliance model in Germany. Strictly speaking, there is not even a uniform and universally recognised definition of the term '*Verkehrsverbund*'. In reality, though, the alliance model today is much more than merely a description of a particular organisational structure but is an established marketing concept. The term '*Verkehrsverbund*' itself is synonymous with cooperation between all public transport players within a given region; in practice, though, it encompasses an extremely diverse range of individual alliance structures across Germany.

For example, there are substantial differences between alliances in terms of their size and catchment area, their geographical structure (city or Land), the number of responsible authorities and carriers involved, how they are financed and, of course, their organisational structure and what roles the respective players assume. Some public transport alliances have large-scale separate administrative structures (some supported by the responsible authorities, some by transport companies, some by both), while for others administration is managed on a much smaller scale. In terms of passenger numbers, though, all alliances appear to have been relatively successful to date.

Two simple but important conclusions can be drawn from this. Firstly, successful transport-alliance structures must, first and foremost, be geared towards the local circumstances and specific features of any given region. Crucially, they must take into account factors such as the number of responsible authorities involved and the number of carriers to be integrated within the alliance area, the size, structure and financing basis of the alliance in question, the interchange

points available and the number of passengers using them, how fares are determined, the alliance's funding mechanism and the decisions by the local responsible authorities as to how public transport services are to be designed in the future, *i.e.* via invitations to tender or through direct awards. Naturally, a lesser degree of coordination is required between, for instance, two large companies with similar structures than between dozens of smaller companies being incorporated into an overall network. Alliance-related duties are assigned differently within individual alliances and the actual nature and scope of the duties themselves can also vary. Accordingly, there is no single fail-safe *Verkehrsverbund* structure but instead individual models based on local considerations. Fortunately, despite an over-emphasis on detail in some quarters, the new European regulatory framework also makes provision for such freedom to adopt the most appropriate organisational structure. However, such freedom also requires all players involved to make every effort to identify the best possible alliance form together at local level rather than following a prescribed set of rules.

Secondly, the organisational structure of an alliance is irrelevant to passengers, who simply want a *Verkehrsverbund* which encourages them to use public transport. This essentially means an alliance whose services represent value for money, however, said value will depend, above all, on the money available to finance the service and we are all only too aware that in the near future funding for public transport is likely to become much thinner on the ground.

Therefore it is now more important than ever for public transport to operate as efficiently as possible and it is for this very reason that many cities have, in recent years, required municipal transport companies to undertake massive restructuring projects – projects which, it must be said, have been extremely successful. Such restructuring remains a key task to ensure that passengers have access to the best possible public transport services in terms of both quantity and quality. However, of equal benefit to passengers is our ability to organise public transport alliances as efficiently as we can to ensure that as much available funding as possible is spent on public transport projects specifically rather than being channelled elsewhere to cover alliance-specific administrative tasks. Such organisational efficiency within transport alliances is just as important as efficiency drives within the transport companies themselves.

5.9 Efficient public transport alliances are sustainable alliances

Although a certain amount of required further expansion is to be expected, the 'construction phase', as it were, of establishing public transport alliances and alliance organisations in Germany is essentially complete. The next phase must now be one of consolidation and streamlining. Successful cooperation depends on *Verkehrsverbünde* being understood as a shared task and not being viewed solely as the alliance company (umbrella legal entity), which is just one aspect of the overall alliance structure. In other words, the transport alliance itself must not come to be seen as a 'rival' by the various players within it.

The question of what is an appropriate size for any given *Verkehrsverbund* is also an important one to consider when seeking to streamline it. Trends evolve and the commuter catchment areas in particular in major cities will shift and change over time. However, the size of a public transport alliance or alliance area, especially compared with others, must not become a goal in itself: 'bigger' does not always mean 'better' and some of the disadvantages mentioned above will become more acute as an alliance or alliance area expands. Neither do broader decision-making arenas necessarily make alliance systems any more flexible or market-oriented. As such, larger integration areas often require new forms of transport cooperation, especially as regards fares. Creativity is required here rather than simply expanding existing structures.

How to streamline alliances is a subject for all alliance partners and as previously mentioned to be successful and efficient a public transport alliance requires the cooperation of both responsible authorities and transport companies. Both parties must therefore undertake such streamlining together.

5.10 Conclusion:

streamlining a public transport alliance is a joint task

In conclusion, therefore, integrated public transport networks which preserve entrepreneurial diversity are becoming more important than ever and *Verkehrsverbünde* are certainly the future. Our task now is to ensure that they remain sustainable. Such efforts are required by all partners – responsible authorities, transport companies and alliance organisations – alike and our aim must be to deliver maximum benefit for passengers at minimum administrative cost. The potential herein to streamline services will help us to achieve the increasingly elusive but vitally important goal of providing efficient and affordable public transport in the future.

C. NATURE AND IMPLEMENTATION OF THE TRADITIONAL ALLIANCE FUNCTIONS

Hans-Georg Glaser, Stuttgart

6

Devising and consolidating an alliance fare: striking a balance between clarity, fairness and profitability

6.1 Alliance fares: a godsend for passengers

Fare alliances and public transport alliances known as *Verkehrsverbünde* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural) first emerged in Germany during the 1960s and 1970s. They superseded the prior system of separate fares applied by individual operators and instead offered common fares enabling passengers to use just one ticket to transfer freely between the services of multiple transport companies. This concept alone encouraged passengers to use public transport and the newly established alliances saw demand rise steadily year on year (Figure 23). This increased popularity was subsequently consolidated further through a range of different fare structures and fare alliances have thus become a vital component across virtually the entire public transport network.

One key purpose of fare or public transport alliances is to expand the range of fares available and at the same time ensure clarity and fairness for customers and profitability for transport companies. This is certainly no mean feat for the simple reason that these three principles conflict with each other at a fundamental level.

For example, setting prices in the fairest possible way implies offering a wide range of different fare types; such variation, however, can result in a complex fare system. In turn, a profit-orientated fare structure would mean applying a higher fare on a particularly heavily-travelled route, however such an approach creates distortions in terms of fairness since travel on sections



Figure 23
Light-rail transport on a separate track – an attractive option.

of the network of comparable length would be priced differently. The fare structure itself would also appear more complex. Essentially, then, improvements for one principle frequently result in problems for another. The key consideration in this respect is to strike an appropriate balance between each goal when devising and subsequently consolidating alliance fares.

6.2 Establishing an alliance fare

Numerous underlying conditions must be taken into consideration when initially establishing an alliance fare, for example:

- Existing fare levels;
- Existing sales systems and the cost of any associated changes to such systems;
- The impact of new alliance fares on customer benefit and profitability.

A key aspect of establishing any new alliance fare is determining its fundamental structure. Since precise kilometre-based or purely route-based pricing within an alliance area is generally not possible, when setting prices the alliance area as a whole is broken down into individual sub-areas. In principle, creating a flat-rate zone is also conceivable, with a single fare level applicable to the entire alliance area. However, this is only possible within *Verkehrsverbünde* covering a very limited area since in larger regions it makes little sense in terms of profitability. Instead, the alliance area is generally divided up into individual fare zones within which so-called ‘zonal fares’ (*Flächenzonentarife*) are often applied.

In practice, an alliance area is usually divided into the aforementioned zones in the form of ‘rings’ or ‘honeycombs’. This type of ring-shaped fare structure whereby the alliance area is divided into several concentric circles or zones is best suited to highly monocentric alliance areas. The individual ‘rings’ are frequently subdivided further still resulting in sector-orientated fare ‘rings’. By contrast, more multicentric alliance areas are generally structured into individual sections, which tend to produce a honeycomb-like fare structure. Another zoning option is to structure said zones around the municipal authorities. This certainly makes for a clearer fare structure but can compromise fairness where authorities differ in size.

The process of introducing a new common fare is made much smoother if transport companies can gear fares and sales channels towards any future alliance fare before a transport alliance is formed. This can be done by gradually harmonising conditions of carriage and the range of tickets on offer, as well as through joint procurement of sales equipment.

Lastly, caution must be exercised when devising new fares and thorough market research should always be conducted ahead of time. Once a particular range of fares has been introduced, it is extremely difficult for a transport company or alliance to withdraw it (for example if the fares turn out to be unprofitable) without seriously undermining its image.

6.3 Testing times: demographic change and cutbacks in government support

The anticipated decline in passenger numbers in the under-18 age group (and consequently in the number of student passengers, traditionally core users of public transport), together with different patterns of travel behaviour among the future generation of pensioners, more of whom hold driving licences and have access to cars than in the past, are two major challenges currently facing public transport.

As if these challenges were not enough, the paradigm shift in transport policy has also engendered much tougher times. Funding – supposed subsidies, investment grants and compensation for services – from state and federal coffers alike has declined in recent years and public transport alliances and carriers are feeling the effects of further municipal cutbacks at local level too. It is therefore important to boost user-financed revenue as much as possible and in so doing,

price elasticities (*i.e.* passengers' sensitivity to price increases) must be considered carefully in each individual case.

In practice, however, such elasticities often differ substantially in terms of area (city versus countryside), time (rush hour versus secondary traffic), target group (trainees and apprentices as opposed to working people), means of transport (rail versus bus), and sales channels (subscription as opposed to a single ticket bought at a vending machine). As a result, market research should always be conducted rather than simply applying blanket elasticities across the board.

6.4 Regular annual fare adjustments

Skyrocketing energy prices are one reason why public transport companies' costs are continuing to rise. At the same time, *Verkehrsverbünde* and carriers are having their funding cut at all levels. As a result, assuming a cost-recovery ratio of 50 % and a cost increase of 1 %, in purely arithmetic terms alliances would have to raise fares by 2 % to maintain that ratio. Given this situation, it is vital to adjust fares annually to keep pace with rising costs, especially since experience has shown that the number of trips made remains broadly the same despite price increases of between 2 and 4 %.

6.5 What steps can be taken to make fares more profitable?

Within existing fare structures, there still seem to be numerous areas in which passengers are willing to pay more.

- Multi-journey (*Mehrfahrkarten*) and strip (*Streifenkarten*) tickets as well as the new smart cards (*Chipkarten*) are extremely convenient for customers, enabling them to store travel 'credit'; transport companies currently offer discounts of up to 25 % on such fare options. Discount adjustments within large transport alliances such as the *Verkehrsverbund Rhein-Ruhr* (VRR) and the *Verkehrs- und Tarifverbund Stuttgart* (VVS) have demonstrated clearly that the market will certainly tolerate moderate reductions in such benefits to a discount level of 5 %.
- The average usage threshold for monthly cards among carriers belonging to the *Verband Deutscher Verkehrsunternehmen* (VDV) is currently 26 trips (*i.e.* two trips a day over 13 days). These excessively low thresholds mean not only that the average price of an individual trip is lower but also that willingness on the part of passengers to pay higher fares and, in turn, greater overall revenue is being sacrificed. The price point of season tickets should therefore be reviewed since it would seem appropriate to differentiate between short and longer distances (Figure 24).
- The willingness of specific target groups to pay should also be consistently exploited. Companies previously offering low-price services combining added benefits should consider whether they might be able to diversify somewhat and offer both a no-frills basic service as well as a premium one featuring extra benefits at additional cost. For example, a market study within a large *Verkehrsverbund* in southern Germany revealed that for the option of being allowed to



Figure 24
Fast S-Bahn service for regional public transport.

Figure 25
Public transport services on designated bus lanes.



accompany season-ticket holders, passengers would accept a higher price of EUR 10 a month! However, since offering optional premium services always runs the risk of lower revenues, thorough market research should always be conducted ahead of time.

- Off-peak services (e.g. 9-hour tickets) should be evaluated specifically from the standpoint of so-called ‘cannibalisation’ effects. For example, experience has shown that such services actually shift very few trips away from the cost-intensive rush hour period and consequently only relatively minor, low-digit discount percentages are justified. At the same time, such off-peak services are also suitable for inclusion in the range of services offered to senior citizens.
- The level of discount for certain sales channels – including subscriptions and *Firmentickets* (company tickets bought for employees) – must always be considered relative to a) their level of use and b) their potential effects of lowering sales costs. An optimum annual-subscription price of 10.5 times that generated by a monthly card would seem to be consistent with the market, particularly in view of the current purchase rate among season-ticket holders.
- Given the decline in funding for public transport, protecting revenue is becoming an increasingly important consideration. VDV estimates that some EUR 250 million of revenue is lost nationwide each year due to fare evaders. Regular ticket checks are conducted all over Germany across so-called ‘free-access transportation’ or *zugangsfreie Verkehrsmittel* (networks with no inbuilt ticket-validation system), with an average of three passengers in 100 found to be travelling without a valid ticket. In random priority checks, such as checks during evening hours, very high rates of fare evasion are also common and there are still insufficient additional ticket checks across access-controlled transportation such as bus networks. As many years of ticket checks within a major *Verkehrsverbund* in southern Germany have demonstrated, the proportion of fare evaders across access-controlled bus networks (Figure 25) is similar to that of, for example, free-access S-Bahn (suburban railway) networks. In areas covered by a bus network, priority checks at school centres, in the evening and on night services have proved particularly profitable. In addition, electronic ticket checks also mean that it is possible to analyse in which locations fare evaders are more prevalent and conduct the entire process more effectively. Naturally, each detected instance of fare evasion boosts profitability.
- Offering both individuals (see Figure 26) and groups flat-rate daily tickets valid on all means of public transport within a given *Bundesland* (*Ländertickets*) has proven very popular. The all-inclusive service (for example enabling five people to travel anywhere in Baden-Württemberg by public transport (any services offered by any alliance) for EUR 27 (in 2008) and valid Monday to Friday after 9:00 and all day Saturday and Sunday) sends a clear signal to car drivers that public transport offers excellent value for money – a ploy which attracts new customers and in so doing boosts revenue.

DB BADEN-WÜRTTEMBERG-TICKET SINGLE
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Figure 26
Example of a Länderticket in Baden-Wuerttemberg for one person (2007).

■ Combined tickets in partnership with long-distance air and rail carriers also offer the prospect of new passengers and greater revenue. This is demonstrated not least by the “City-Ticket” introduced by *Deutsche Bahn AG (DB AG)* back in 2003 and which enables *DB BahnCard* passengers to switch to local transportation at no extra cost on long-distance trips of over 100 km and to more than 100 destinations. In three years, the “City-Ticket” has helped to increase public transport’s share of the modal split (in Stuttgart, for example, this share has risen from 29 % to more than 40 %) whilst at the same time boosting revenue. Similar effects have been observed in the context of cooperative fare ventures between public transport alliances and air-travel agents. Over the past 10 years, such combined tickets have resulted in an increase in the number of private travellers arriving at airports by public transport. During this time, for example, the proportion of private travellers arriving at Stuttgart Airport by public transport has increased from approximately 15 % to over 30 %. However, given the substantial investment required to put in place a combined-ticket agreement (calculations, concluding a contract, processing costs, communicating sales data), smaller-scale combined-ticket ventures are to be avoided.

6.6 The fare must be fair

In the majority of German *Verkehrsverbünde*, the ‘honeycomb’ or ring-shaped system of fare zones has become the norm and has proven extremely successful. In the past, fare zones were smaller, however although fairer these systems were not at all conducive to sales. In an age of increasingly modern sales systems, smaller-unit – and therefore also more profitable – fare-zone structures no longer represent sales challenges and as such there are now opportunities to make fares more profitable. At the same time, however, in the interests of ensuring that fares remain fair the question of whether fares for travel on particularly long routes have been reduced too much should also be examined. Such a review seems entirely appropriate and extremely important given that public transport works out to be particularly cost-effective in comparison to a private car journey over long distances.

6.7 A clear fare is more likely to attract new customers

A fare is only ever as good as the number of potential new passengers to whom it appeals. The simpler – and more eye-catching – the fare, the more likely it is to appeal. However, since no carrier can remain in business through promotional fares alone, the goal must be to devise the clearest and most profitable fare possible. And herein lies the crux of the matter: when introducing any new, additional fare market research must be conducted to ensure the greatest possible likelihood of the new fare generating added revenue. One key consideration which must be borne in mind throughout is that, in principle, as a means of mass transportation (Figure 27)

Figure 27
Modern light-rail transport in urban areas.



public transport offers 'generic' rather than individual services. As a rule, every fare representing a real opportunity to generate added revenue must be one which offers new and more attractive customer benefits.

6.8 Advertising fares: bus and rail costs compared with those of running a car

Public transport has a reputation for being slower and more expensive than is actually the case. Conversely, the speed of the car is overestimated and its running costs underestimated. Public transport is without doubt more cost-effective than the car, however, there is not enough awareness of this either among passengers and non-users or the media and this situation needs to change.

Table 6: Price-comparison public transport versus car: commuter travel (2008)

Alliance	Route from ... to		Fare stage	Annual ticket price EUR	KM	Cost by car EUR	saving per year EUR
HVV	Blankenese	Sternschanze	3 zones	721.20	12	823.68	102.48
GVH	Hanover, centre	Hanover, Airport	3 zones	693.60	16	998.40	304.80
MDV	Leipzig, centre	Halle, centre	5 zones	1,436.00	38	2,608.32	1,172.32
VRR	Bottrop, centre	Essen, centre	B	819.12	13	892.32	73.20
RMV	Wiesbaden, centre	Mainz South, Station	13	637.00	12	823.68	186.68
MVV	Munich, centre	Munich, Harras	2 zones	378.00	6	411.84	33.84
VVS	Stuttgart, Airport	Stuttgart, Rohr	1 zone	502.00	8	549.12	47.12
	Stuttgart, centre	Marbach, centre	4 zones	1,077.00	25	1,716.00	639.00
DB	Ulm, centre (Station)	Günzburg, centre (Station)	25 km	955.90	25	1,716.00	760.10
	Stuttgart, centre (Central Station)	Göppingen, centre (Station)	42 km	1,412.80	42	2,882.88	1,470.08

Calculation basis:

The cost of travel (EUR 0.156/km) is based on the ongoing costs (e.g. running and proportional repair costs) for a medium-class vehicle (VW Golf Variant, 1.6 l, 75 kW, annual mileage 15,000 km/yr) detailed in the online table compiled by the ADAC (German Automobile Association) in January 2008. Not included are fixed costs (e.g. vehicle tax, insurance, garage costs), parking fees at place of work and annual depreciation. Calculation basis: 2 trips (i.e. a return journey) each day, 220 working days a year.

Table 7: Price comparison public transport versus car: individual trips (2008)

Route	km	Cost by car EUR	zones	single ticket (return) EUR	saving EUR
Stuttgart centre – Ludwigsburg	15	8.68	3	6.20	2.48
Munich centre – Munich Harras	6	5.87	2	4.40	1.47

Cost by car:

The cost of car travel (EUR 0.156/km) is based on the ongoing costs (e.g. running costs and proportional repair costs) for a medium-class vehicle (VW Golf Sportline, 1.6l, 75 kW, annual mileage 15,000 km/yr) detailed in the online table compiled by the German Automobile Association (ADAC) in January 2008. The cost includes parking fees of EUR 4.00 for 2–3 hours.

The fact that public transport is traditionally rated as expensive is demonstrated by the findings of the annual survey conducted by the market-research institute TNS Infratest. In the 'Value for money' category, *Verkehrsverbünde* were consistently given a rating of between 3.5 and 3.8 on a scale of one to five, one representing the best value for money.

For individuals making a daily trip to work of just 6–7 km, the cost of running a car makes private transportation more expensive than purchasing a public transport season ticket. As Table 6 shows, the financial benefits of using public transport increase with distance not yet considered the flat rate nature of a season ticket.

However, even for occasional travel public transport is still more cost-effective than travel by private car when one considers the fact that car drivers will also need to pay parking fees in most urban and inner-city areas (see Table 7).

Neither do the above calculations factor in other costs associated with maintaining a car, for example spare parts, accessories and maintenance products, repairs, inspection, garage rental, insurance and tax. If such expenses were included in the calculation, public transport would work out to be even more cost-effective than running a car.

6.9 Advertising fares: promotional fares

Communicating prices and fares is closely linked to pricing itself, so any fare structure must always be advertised to customers in an appropriate way.

The purpose of advertising fares is to convey to people just how affordable and competitive they are. To make life simple for customers, the various purchase and access options should be promoted as well, as should any additional services (*i.e.* those designed to boost revenue). When fare adjustments are made in particular, high prices must be put into perspective.

Tickets
Ein Ticket für Busse und Bahnen in Stuttgart und in der Region
One ticket for busses and trains in Stuttgart and the region

Kinder unter 6 Jahren benötigen kein Ticket. Ermäßigte Fahrpreise gelten für Kinder zwischen 6 und 14 Jahren. Es gelten die Beförderungs- und Tarifbestimmungen des VVS. Weitere Informationen unter www.vvs.de

Wenn Sie selten mit uns fahren...

Kurzstreckenticket **1,00 €/Fahrt**
Gültig bis zur 3. Haltestelle nach dem Einstieg in Bussen, Stadt- und Straßenbahnen. Nicht gültig in S-Bahnen, Nahverkehrszügen (DB, WEG) sowie Nachtbussen. Kein Umstieg, keine Fahrtunterbrechung.

Einzelticket **ab 1,90 €/Fahrt**
1 Fahrt, Umstieg und Fahrtunterbrechung möglich.
1 Zone 1,90 € 4 Zonen 4,15 €
2 Zonen 2,35 € 5 Zonen 5,30 €
3 Zonen 3,10 € 6 und mehr Zonen 6,30 €

4er-Ticket (Mehrfahrtenkarte) **ab 1,68 €/Fahrt**
4 Fahrten, Umstieg und Fahrtunterbrechung möglich.
1 Zone 6,70 € 4 Zonen 15,80 €
2 Zonen 8,90 € 5 Zonen 19,70 €
3 Zonen 11,70 € 6 und mehr Zonen 23,70 €

Ticket-Entwertung
4er-Tickets sind vor Fahrtantritt zu entwerten (pro Fahrt und Person je ein Abschnitt). Aus Ticket-Automaten oder im Bus gekaufte Kurzstrecken-, Einzel- und Tagestickets sind bereits entwertet. Im Vorverkauf (Verkaufsstelle) erworbene Tickets müssen vor Fahrtantritt entwertet werden. Ticket-Entwerter befinden sich in den Zugängen zur S-Bahn, auf DB- und WEG-Stationen; bei Stadtbahnen und Bussen im Fahrzeug.

Wenn Sie einen Tag unterwegs sein wollen...

EinzeltagesTicket **ab 5,60 €**
Gilt für 1 Person bis Betriebsschluss für beliebig viele Fahrten.
1 - 2 Zonen 5,60 €
gesamtes Netz 11,50 €

GruppentagesTicket **ab 1,86 €/Person**
Gilt für bis zu 5 Personen bis Betriebsschluss für beliebig viele Fahrten.
1 - 2 Zonen 9,30 €
gesamtes Netz 15,00 €

Wenn Sie oft oder fast täglich mit uns fahren...

JahresTicket **ab 1,38 €/Tag**
Gilt für beliebig viele Fahrten, 12 aufeinander folgende Monate lang.

MonatsTicket **ab 1,62 €/Tag**
Gilt für beliebig viele Fahrten einen Monat lang.

9-Uhr-UmweltTicket **ab 1,03 €/Tag**
Als Jahres- oder MonatsTicket erhältlich. Gilt für beliebig viele Fahrten von Mo-Fr ab 9 Uhr, sowie samstags, sonn- und feiertags ganztägig.

SeniorenTicket **ab 1,05 €/Tag**
Als Jahres- oder MonatsTicket erhältlich. Gilt für beliebig viele Fahrten von Mo-Fr ab 14 Uhr, sowie samstags, sonn- und feiertags ganztägig.

14-Uhr-JuniorTicket **ab 0,46 €/Tag**
Als Jahres- oder MonatsTicket erhältlich. Gilt für beliebig viele Fahrten von Mo-Fr ab 14 Uhr, sowie samstags, sonn- und feiertags ganztägig.

Tourists & Visitors
Purchase tickets at ticket machines, ticket booths or ask the busdriver.

Single day ticket **from 5,60 €**
Valid for 1 person to the end of operating hours for an unlimited number of rides.
1 - 2 zones 5,60 €
entire network 11,50 €

Group day ticket **from 1,86 €/person**
Valid for up to 5 persons to the end of operating hours for an unlimited number of rides.
1 - 2 zones 9,30 €
entire network 15,00 €

Informationen
Verkehrs- und Tarifverbund, Stuttgart GmbH (VVS)
Rotebühlstraße 121, 70178 Stuttgart, Tel. 0711 19449
Stuttgarter Straßenbahnen AG, Kundenservice
Schockenriedstraße 50, 70565 Stuttgart, Tel. 0711 7885-3333
DB Regio AG, Region Baden-Württemberg
Presselstraße 17, 70191 Stuttgart, Tel. 0180 5 194195 (14 Ct./Min. a. d. Festnetz der T-Com)

Nächste VVS-Verkaufsstelle

- Minich, Tabakwaren-Reich
Gutenbergstraße 71, (ca. 80 m)
- Bruggert, Bürobedarf/Zeitschriften
Hassenbergstraße 43, (ca. 340 m)
- Klenk, Tabakwaren
Rotebühlstraße 95, (ca. 390 m)
- Antoni, Tabakwaren/Zeitschriften
Johannestraße 9 A, (ca. 750 m)

Figure 28

Fare information displayed on a notice board at stops of Verkehrsverbund Stuttgart.

Promotional fares are particularly useful when trying to convince people that prices are generally low. For example, a special short-distance fare billed as ‘Travel for EUR 1’ will appeal to occasional travellers while where season tickets are concerned, the pennies-a-day approach (e.g. ‘Travel from EUR 1.09 a day’) can prompt customers to purchase an expensive service. Figure 28 shows the fare information displayed on notice boards at VVS bus stops.

6.10 Future prospects

The general environment for public transport looks set to remain challenging. However, as is often the case in life nothing is so negative that it cannot have a positive side as well.

For example, despite fewer students using public transport in the future those who do use it will do so more intensively. We are already seeing an increase in the number of students attending secondary schools and this, together with the higher profile of individual schools and the rising numbers of students attending private schools is also resulting in non-motorised trips being replaced by those via public transport. On the whole, however, the economic disadvantages emanating from the predicted decline in student numbers – although the extent of such a decline will vary from region to region – will predominate and cannot fail to have an impact on price measures.

The number of people aged over 60 rose by 20 % between 1995 and 2005. This age group also became more mobile and the average number of journeys made by individuals aged over 60 was up 10 %. Despite the number of pensioners using public transport on all routes falling as a result of more wide-spread access to cars, the higher mobility rate and the absolute rise in the number of passengers over 60 may well have contributed – and may continue to contribute – to an increase in occasional trips using public transport.

At the same time – and not least to save money on mobility costs – more and more people are beginning to discover the benefits of leisure-time services (Figure 29) in their immediate vicinity and of which they were not previously aware. Cooperative ventures with tourism and leisure associations are offering new opportunities, particularly for families and senior citizens.

The overall trend in the economy (lower net wages and rising government benefits) and the cost of running a car are also encouraging more people to use public transport. Buying, maintaining and running a car is becoming increasingly expensive, particularly in the context of rising energy prices. Leading financial experts currently predict that oil prices will at least double by 2030 and in the longer term this trend will make living in urban centres and using public transport there a more attractive option.

From a passenger’s point of view, stop accessibility, transfer-free connections and speed are the key factors even ahead of price when opting for public transport. Therefore, if it can offer clear fares, adopt a user-friendly information and communication strategy, develop profitable fares further by taking price elasticity into account, and showcase its strengths and benefits relative to private motorised transport more effectively, the future looks bright for public transport.



Figure 29
Excursions by S-Bahn.

7

Arrangements and problems in apportioning fare revenues when balancing competing interests

7.1 Historical background: the need to apportion revenues

In recent decades, the integration of fares and sales has become a key benchmark for measuring the quality of public transport in Germany. This was true for the first public transport alliance or *Verkehrsverbund* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural) in Hamburg, and applies to all urban areas and almost all forms of cooperation: public transport alliances (*Verkehrsverbünde*), fare alliances (*Tarifverbünde*), combined fare systems (*Tarifgemeinschaften*) and so forth. In short, where passengers can buy a ticket from one transport company and use it to travel with another, a procedure for dividing up revenues is required. Ultimately the questions of whether the revenues are pooled and what sort of distribution procedure is used are of secondary importance.

During the initial phase, lasting from 1967 until changes were made to the legal framework governing public transport in 1996, the process of dividing up revenue centred on formal supply-driven procedures. However, the key consideration was always to ensure that previous levels of revenue were maintained, *i.e.* that transport companies were able to generate the same level of revenue within the particular alliance as they had prior to joining the latter. From the late 1980s onwards, it became increasingly apparent that this procedure had shortcomings and that demand-driven methods were required. It was only when public transport changed in recent years and elements of competition were introduced that the demands for future-oriented revenue-distribution arrangements became specified. In future, the key components of revenue distribution will be:

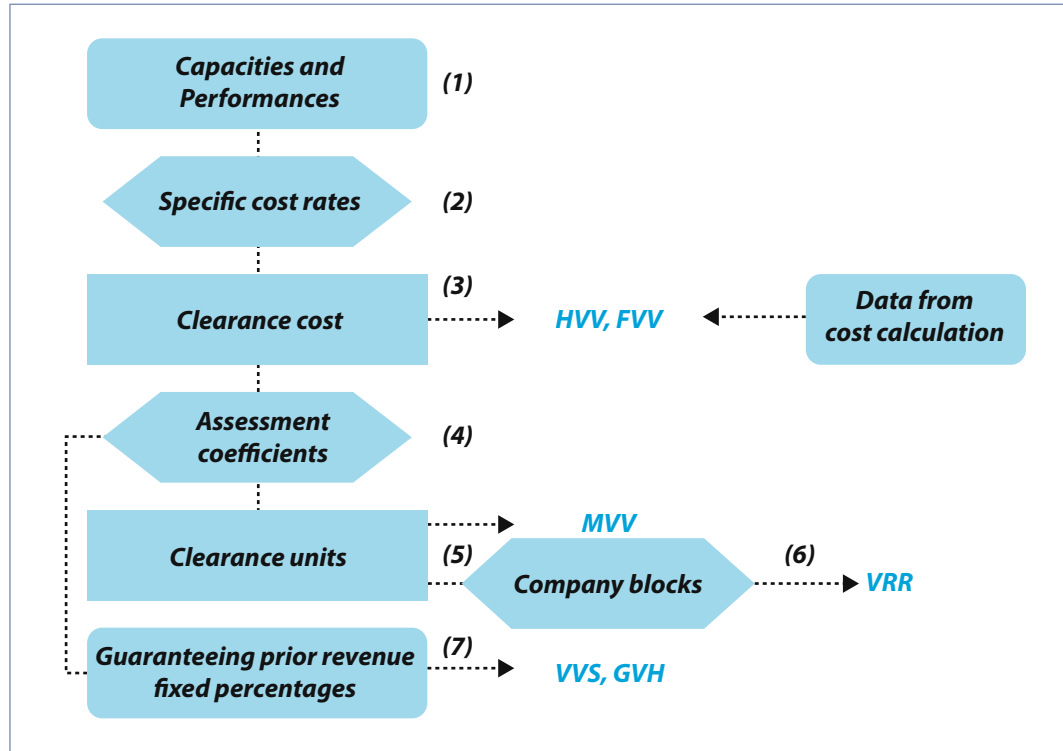
- A demand-driven procedure;
- Transparency in all phases of the procedure; and
- Non-discriminatory treatment of all partners within the revenue-distribution system.

7.1.1 Revenue-distribution procedures in Verkehrsverbünde from 1967 to around 2000

During this phase of revenue distribution seven key criteria, principles or formats were used in the *Verkehrsverbünde in Hamburg (HVV)*, *Hannover (GVH)*, *Rhein-Ruhr (VRR)*, *Frankfurt (FVV)*, *Stuttgart (VVS)* and *München (MVV)* (see Figure 30).

With the exception of systems that directly guaranteed prior revenue based on fixed percentages, all distribution procedures were calculated in line with the **capacities and services** (1) provided by the individual partners. These capacities and services were coupled with **specific cost rates** (2) to determine **clearance costs** (3): at HVV and FVV, clearance costs and data from the cost accounting of the member companies were used as the direct basis for determining revenue distribution. This method largely works because of the similarity and comparability of the costs and cost structures of the two key alliance partners. At MVV, temporally created between HVV and FVV, this method already proved ineffective and not acceptable to all parties. There, the procedure also went as far as the clearance costs stage but then **assessment coefficients** (4) were introduced, which, in principle, took account of both the prior and current revenue situations. The clearance costs and assessment coefficients were used to arrive at **clearance units** (5), which formed the basis for dividing up revenues at both MVV and VRR. In Munich this step

Figure 30
*Criteria, principles
and formats for
revenue distribution.*



occurred directly, while in VRR there was also a subsequent **division into company blocks** (6) between *Deutsche Bundesbahn* and the respective municipal transport companies.

In Stuttgart and Hannover, revenues were distributed directly without going a long way round capacities and services provided, cost rates, clearance costs, assessment coefficients and clearance units with fixed percentages that took account of the situation prior to the establishment of an alliance or following a significant change in the services on offer. The principle applied here was that of **guaranteeing prior revenue and fixed percentages** (7).

Whereas the procedures described thus far were employed in dividing up revenues between large urban municipal transport companies and *Deutsche Bundesbahn*, as early as the mid-1970s demand-driven approaches were being used to distribute revenue generated by regional bus services. One example of this is Munich where revenues were determined using the ‘real earning capacity’ method. Even today, the same key elements of such demand-driven revenue distribution – having a route with stops where passengers board, alight and transfer, the type of ticket and the frequency of use of season tickets – continue to apply.

The surveys and projections were determined using mathematical sampling principles. The data gathered represented (and still represent) the survey period to a degree of accuracy achievable in a confidence calculation. The data for the survey period are updated in respect of a specific accounting period and calculated in relation to sales revenue in the ratio sales revenue per survey period to sales revenue per accounting period.

In principle, the need for this method reflects the current requirements for demand-driven revenue distribution described in the next chapter.

7.2 Requirements for forward-looking revenue-distribution formats

An analysis (see Chapter 7.4 *Literature*) of the revenue-distribution formats used in Germany revealed that roughly 60 % are demand-driven but that some 40 % are still geared towards prior

revenues. Supply and cost play practically no role at all any more, accounting for just a few percentage points. In view of the lack of economic incentive to boost demand, deregulation of the public transport market and the introduction of competition, critical questions should be asked about such prior-revenue systems.

Since many *Verkehrsverbünde* in Germany have not yet switched to a demand-driven system, over the next few years they will face the problem of having to adapt their present procedure for calculating revenues to current requirements.

In doing so, the definition of what amounts to apportion above and beyond fare revenues may be quite different. Compensation for providing school transportation services or free carriage for people with severe disabilities, or grants related to alliance rates might be dealt with differently depending on whether they represent the interests of companies or of the responsible authorities.

In distributing funds, EU law directs that the revenue-distribution procedure chosen must not hinder market entry or restrict competition in any way. In addition, if the revenue distributed is not generated via a demand-driven format, there would no longer be fairness in relation to the services provided. Yet such fairness is an important economic incentive that should not be hindered or restricted and a demand-driven procedure is the only one that can meet all these demands.

Legislation on public procurement stipulates that where a contract is awarded to provide transportation services, the company bearing the fare risk must, for the term of the contract, be able to calculate any changes in income brought about by fare changes. Distributing revenue according to demand enables companies to do this but guaranteeing prior revenue or distributing revenue on the basis of operating performance does not.

Deviations from purely demand-driven revenue distribution are only possible for limited periods of time – for example, when a procedure is changed – and only so long as all contractual parties concerned agree.

In terms of competition law, the precise demand parameters used in a procedure are not a key factor. In principle, the number of passengers carried, the passenger-kilometres travelled and the fare-zone use are all appropriate parameters but they must reflect the structure of the contractual partners. In doing so, differences in the average travel distance, the distribution of passengers by ticket type, and the geographical fare structure must be taken into account.

In practice, numerous – and sometimes contradictory – demands are placed on distribution procedures, in particular:

- Transparency;
- Flexibility;
- Low management cost;
- Company-neutral effect;
- Measures to prevent manipulation;
- Differentiation by line and line grouping;
- Rewards for higher quality;
- Incentive to boost demand;
- Encouraging rationalisation measures;
- Non-discriminatory entry of new contractual partners.

From the standpoint of competition requirements, two conditions in particular are crucial:

- Transparency; and
- A non-discriminatory revenue-distribution procedure.

Transparency requires that both existing partners understand fully the distribution method itself and how it is to be implemented and that it be comprehensible to any future partners. Existing and future partners must also be aware of the costs of and income generated by the

chosen distribution procedure and all relevant information to help said parties understand the method used must be fully accessible.

One key benefit of a non-discriminatory revenue-distribution procedure is that it will prevent any of the companies involved from abusing a dominant market position.

Antitrust rules apply to *Verkehrsverbünde* insofar as the latter are to be considered cartels and all partners not previously represented must have non-discriminatory access to any given cartel. In terms of revenue distribution, this means that the historical data and details of the method used to calculate apportionment required to estimate future revenues must be fully accessible to all partners. In practice, non-discriminatory entry of new contractual partners means that all partners must be treated equally.

In summary, then, from an economic standpoint and in view of the existing regulatory framework it is clear that the following three criteria must be met when devising a forward-looking revenue-distribution procedure:

- Demand-driven procedure;
- Transparent method and rules;
- Non-discriminatory entry of new contractual partners.

7.3 Possible solutions for introducing demand-driven revenue distribution within *Verkehrsverbünde*

A revenue-distribution procedure within an alliance requires a multitude of decisions to be made that depend not just on the underlying conditions but also on the parties involved in the decision-making process. This clearly demonstrates that there cannot be a single ‘correct’ procedure in the sense of an objective, mathematically justified methodology. Instead, existing potential choices must be utilised to negotiate a model on which the parties can agree. If the revenue of the various transport companies alters during the transition from the previous distribution procedure to a new one, then the system must also factor in the affordability of revenue shortfalls.

In principle, there are three main ways in which *Verkehrsverbünde* are structured: alliances between responsible authorities (*Aufgabenträgerverbünde*), company alliances (*Unternehmensverbünde*) and mixed alliances (*Mischverbünde*). Revenue distribution differs according to the type of alliance and number of partners involved, however, in all cases, the more partners there are and the more heterogeneous the company structures (e.g. large/small, urban/rural), the greater the range of structural differences to be factored in and the more difficult it becomes to devise a procedure that all partners consider fair. Consequently, in a number of alliances simplified procedures are preferred that may be less ‘fair’ but are uncomplicated and comprehensible.

Another important factor is whether the transport companies themselves also sit at the negotiating table or whether decisions are made by the responsible authorities. The companies primarily have in mind their operational interests and operating result, whereas the municipalities think mainly in terms of the constraints of their budgets and the (fare) impact on the public.

The revenue-distribution procedure may apply either to all passengers or only to so-called ‘outside users’, meaning those who have not bought their ticket from the company providing the carriage. In this situation, each company retains the revenue generated through its own sales. The revenues are then adjusted according to the way in which passengers with tickets from other companies have used the services of the different carriers. Counts or surveys are normally used to gather the data required to apply this adjustment. Employing an outside-user format requires that outside users account for no more than 30 % of all users and that the selling company is clearly indicated on the tickets issued.

As explained above, only demand-driven revenue-distribution procedures meet the requirements for future-oriented revenue distribution. ‘Demand-driven’ means that the overarching

distribution criterion is current passenger demand and the associated structure in terms of fare, time and area. Because of the different objectives and underlying conditions within the various alliances, there can and will be deviations from this principle. For example, specific amounts are often taken from the revenue pool before it is actually divided up, for example to cover:

- Income for carriers which are not revenue-distribution partners;
- Direct allocations for certain tickets;
- Revenues based on special agreements with third parties.

But such an approach is always problematic when there is no correlation between the revenues allocated and the actual demand, *i.e.* where the principle of fairness in services provided is violated, or where a company cannot oppose such arrangements which have a direct influence on its actual revenue allocation (distortion due to uncertain calculations).

Ultimately, a revenue-distribution model will always be a compromise and must consider the different interests of the partners involved. In practice, these interests are taken into account via various parameters, only four of which will be dealt with in this chapter:

- Determining revenue generated by a individual trip;
- Determining revenue in the context of transfers;
- Determining frequency of use;
- Factoring in under-use.

7.3.1 Determining revenue generated by an individual trip

Since, as a rule, the demand-driven revenue-distribution procedure is based on passenger surveys or at least passenger counts, determining revenue for individual trips is a key component. The greater the differentiation, the more accurately structural differences between the different partners can be addressed.

The revenue generated by an individual trip is generally calculated using the formula:

$$\text{revenue generated by an individual trip} = \frac{\text{Ticket price}}{\text{Frequency of use}}$$

Frequency of use indicates how often a ticket is used on average while it is valid. In many alliances it is also customary for the revenue generated by an individual trip to be broken down into basic and working revenue.

Basic revenue does not take account of distance (*e.g.* the number of people boarding or the cost of providing services), whilst working revenue does (*e.g.* number of passenger-kilometres or total run-dependent costs). The chart (Figure 31) illustrates that the shorter the trip, the higher the share of the basic revenue within the total revenue. Since, as a rule, basic revenue generated by individual trips entailing a transfer is distributed amongst the participating transport companies on a pro rata basis when revenues are apportioned, compared with dividing

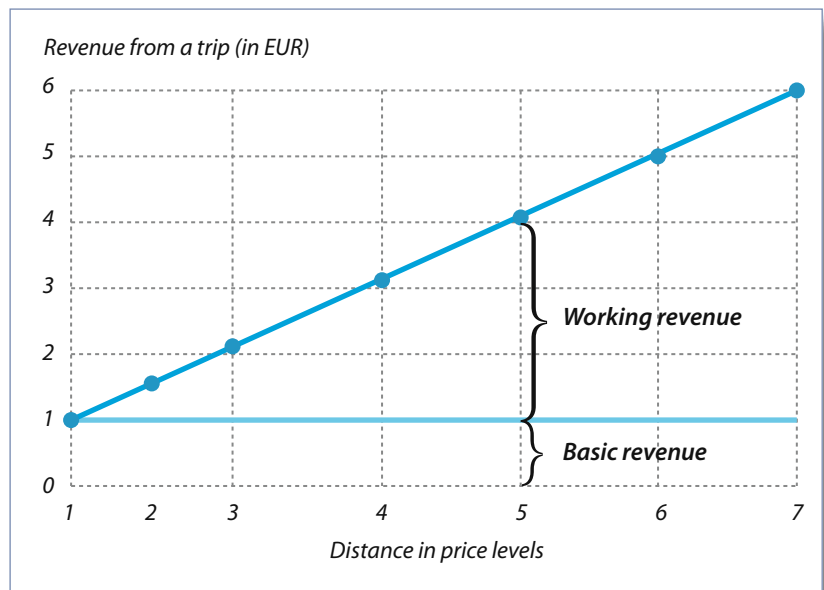


Figure 31
Revenue from an individual trip in EUR calculated using basic and working revenue.

up the total revenue generated by an individual trip according to the above equation, there are financial advantages to short feeder services.

Which procedure should be used can also be determined by taking into account how the fare was structured when the alliance was created. If revenue distribution can be coupled as closely as possible to the generally accepted fare system and this consensus can be used to divide up revenue, then at the same time it is clear that unprofitable fares cannot be ‘remedied’ when revenues are distributed.

7.3.2 Determining revenue in the context of transfers

An individual trip can be divided into separate sections, *e.g.* where a passenger makes a transfer or there is a change in the financial responsibility for the line. A trip section is the smallest unit to which fare income can be allocated when distributing revenues and means that the proceeds from a trip can be distributed to different lines and, therefore, amongst the individual transport companies.

The differences between urban and regional transport companies inherent in the system means that revenue generated by individual trips within an alliance is always distributed according to two factors:

- Number of passengers; and
- Transport performance (number of passenger-kilometres travelled).

If the distribution procedure is essentially based on allocating income per passenger carried, then the urban transport companies’ revenue is high since many people there mostly travel short distances. By contrast, if revenues are distributed primarily on the basis of the number of passenger-kilometres travelled (transport performance), then the regional carriers have a systematic advantage: there may not be as many passengers as on urban services but the passengers there generally travel much longer distances so the performance per passenger carried is higher.

To balance out these opposing scenarios, the distribution procedure chosen should enable revenue to be divided up between the carriers depending on how the passenger contributes the income, in other words, demand-related revenue should be determined by the rate in effect. This way the revenue from ticket types with different profitability levels are allocated to the respective companies according to their source and equal treatment is guaranteed across the board. This is particularly important with respect to competition to ensure that competing carriers do not gain a one-sided advantage as a result of different fare conditions. In addition, it is also possible to refine the alliance fare as a tool for managing revenue distribution. Three examples of possible approaches are:



Figure 32
Distribution of an
individual trip based
on pro rata fare
zone-use method.

- Method based on pro rata zone use;
- Zone used jointly according to transport performance; and
- Method based on pro rata revenues.

7.3.3 Pro rata zone use

A passenger travels by *Regionalexpress (RE)* from Hersbruck to Nuremberg. He transfers at the Nuremberg main train station and travels by U-Bahn (metro) to the trade fair. The entire journey covers 12 fare zones (see Figure 32).

Under the pro rata zone use method, the revenue per fare zone travelled is allocated to the transport company that carried the passenger. If two (or more) carriers are used within one fare zone (*i.e.* the passenger transfers), then this zone's revenue is divided up equally between those transport companies (see Example 1):

EXAMPLE 1

Total section = 12 fare zones

$$\blacksquare \text{ RE} = \frac{1}{2} \cdot 100 + \frac{1}{2} \cdot 101 + \frac{1}{2} \cdot 200 + \frac{1}{2} \cdot 201 + 501 + 502 + \dots + 531 + 532 = 10 \text{ fare zones}$$

$$\blacksquare \text{ U-Bahn} = \frac{1}{2} \cdot 100 + \frac{1}{2} \cdot 101 + \frac{1}{2} \cdot 200 + \frac{1}{2} \cdot 201 = 2 \text{ fare zones}$$

Revenue per trip: one-way ticket, 12 fare zones = € 4.80, of which

$$\blacksquare \text{ RE} = € 4.80 \cdot \frac{10}{20} = € 4.00$$

$$\blacksquare \text{ U-Bahn} = € 4.80 \cdot \frac{2}{12} = € 0.80$$

7.3.4 Distribution by zone used jointly according to transport performance

When the zones used jointly are divided up by performance (number of passenger-kilometres travelled), the revenue per fare zone travelled is also allocated to the transport company that carried the passenger. If two (or more) carriers are used within one fare zone (*i.e.* the passenger transfers) then this fare zone's revenue is no longer divided up equally between the participating companies, but instead according to the share of the transport performance each of them provided (number of passenger-kilometres, see Figure 33).

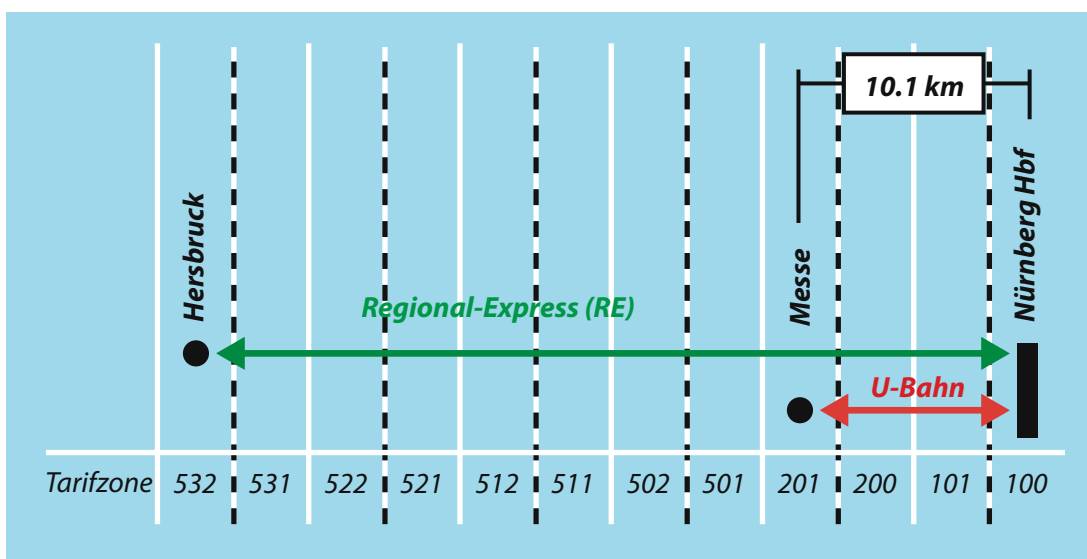


Figure 33
Distribution of a fare zone used jointly according to transport performance.

The result is that the pro rata division of the jointly used zones based on transport performance provided offers a financial advantage for the regional transport companies over one based on jointly used zones in equal portions (see Example 2):

EXAMPLE 2

Zones used jointly [100; 101; 200; 201] = 10.1 km, a total of 12 fare zones

- RE = 8 fare zones + 5.3 km in zones [100; 101; 200; 201]
- U-Bahn = 0 fare zones + 4.8 km in zones [100; 101; 200; 201]

Revenue per trip: one-way ticket, 12 fare zones = € 4.80, of which:

- $RE = € 4.80 \cdot \frac{8}{12} + € 4.80 \cdot \frac{4}{12} \cdot \frac{5,3 \text{ km}}{10,1 \text{ km}} = € 4.04$
- $U\text{-Bahn} = € 4.80 \cdot \frac{0}{12} + € 4.80 \cdot \frac{4}{12} \cdot \frac{4,8 \text{ km}}{10,1 \text{ km}} = € 0.76$

7.3.5 Method of pro rata revenues

When distributing the revenue generated by an individual trip consisting of two or more sections using the pro rata revenue method, the total revenue generated is divided up relative to the individual fares for the travel sections in question. The revenue for a section corresponds to the revenue share based on the individual fare (see Figure 34). In general, then, based on these calculations, compared with distribution via the pro rata zone use method, dividing up the revenue generated by journeys involving transfers using the pro rata revenue method results in greater revenue for urban services (see Example 3):

EXAMPLE 3

Total section = 12 fare zones,
RE section = 12 fare zones,
U-Bahn = 4 fare zones

- $RE = 12 \text{ fare zones} = \frac{€ 4.80}{€ 4.80 + € 1.80} = 72.7 \%$
- $U\text{-Bahn} = 4 \text{ fare zones} = \frac{€ 1.80}{€ 4.80 + € 1.80} = 27.3 \%$

Revenue per trip: one-way ticket, 12 fare zones = € 4.80, of which:

- $RE = 72.7 \% \text{ of } € 4.80 = € 3.49$
- $U\text{-Bahn} = 27.3 \% \text{ of } € 4.80 = € 1.31$

7.3.6 Determining frequency of use

The frequency with which a particular type of ticket is used (the average number of individual trips made) depends not only on the relevant fare features (length of validity, transfer-ability, rules regarding carrying items such as bicycles on board, etc.), but also on the services available, leisure time options, duration of travel and other general conditions. The fare features are uniform throughout the alliance area, whereas the other underlying conditions may differ from one area to another. As a result, it is usual for regional transport passengers to use their ticket less frequently per month than those using urban services. If this trend is to be taken into account when distributing revenue, greater value must be placed on one trip made using regional transport than on one using urban transport based on the same ticket and fare level. This is achieved by applying a system of company-specific usage rates where the rule is that the greater the level of such use, the less fare revenue will be distributed to this company per individual trip.

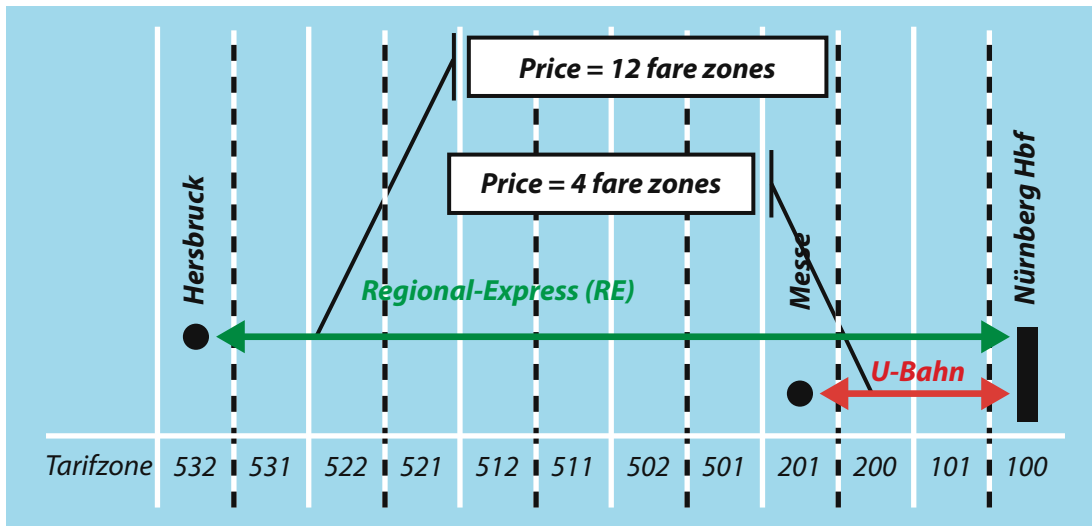


Figure 34
Revenue distribution
for an individual
trip based on pro rata
revenue method.

Company-specific usage rates are determined on the basis of passenger surveys. There are different approaches to this such as, for example, recording travel profiles through household surveys, telephone interviews, and invehicle surveys. With the first two of these, however, there is the risk that the sample of people questioned will not be representative since frequent users are generally more willing to provide answers. Such distortion is a frequent occurrence in market research in many sectors. When interviewing passengers in the vehicles, research may focus on any of three key pieces of information:

- The number of trips they made the previous day;
- The number of trips completed thus far on the survey day;
- The number of trips completed thus far on the survey day and the number of future ones planned on the same day.

All three data types have their specific pros and cons, and which one is to be used should be considered and determined on a case-by-case basis.

Given the cost constraints, the tickets generating the greatest turnover are usually the only ones surveyed. However, company-specific usage rates can also be calculated for those tickets on which such data are not collected using the relationship between the company-specific usage rate and average values alliance-wide (dividing the number of each ticket type sold by the number of individual trips determined in a survey).

Another problem is reporting the 'non-use' of a ticket. Whilst integrated recording of use and non-use is straight-forward when using travel profiles generated via household surveys, when questioning passengers in vehicles secondary data must be used for the calibration: sales statistics are regularly used in this context.

7.3.7 Factoring in under-use

Tickets with higher fare levels can also be used for short trips within lower fare levels, a trend described as underused trips or, more generally, 'under-use', and often ignored in many revenue-distribution agreements. In a few cases, however, the partners sharing the revenue have agreed that less value should be placed on such underused trips than on comparable ones in which the fare level is used fully. Under the revenue-distribution model this can be achieved via the following measures (more than one measure may be applied concurrently):

- The revenue from an individual trip is calculated on the basis of the fare level actually used rather than the one sold;
- Underused trips are assigned a factor which ensures that they are not entered into the revenue-distribution system as an entire trip, but only with a value of between zero and one.

Figure 35
Consideration of under-used trips in the context of trip frequency.

Fare Level	Number of Trips	Price	Weight	Number of Trips x Weight
5	Number of trips with full use of fare level: 40	109.40 EUR	1	40.0
2	Number of under-used trips: 10	48.90 EUR	$48.90 / 109.40$	4.47
Trip frequency before price weighting: 50				Trip frequency after price weighting: 44.47

The latter approach is based on the idea that the value per trip falls the more frequently a passenger travels with his ticket, and that a passenger often makes underused trips with a different transport company to the one on which he travels regularly making full use of the fare level of his ticket. If this were not the case, the under-use could continue to be ignored because this company's revenue claim is for the total revenue generated by all trips made on it. The lower value per trip is offset by the higher number of trips made with that particular company. On the other hand, if fully used and underused trips are made with two different carriers, the one for which the passenger has fully used the fare level has a lower revenue demand the higher the value assigned to the underused trip made with the other company.

Example of price weighting for underused trips (see Figure 35):

- Ticket:
Monthly ticket
- Number of trips:
40 in fare level 5
10 in fare level 2
- Price of tickets:
EUR 109.40 in fare level 5
EUR 48.90 in fare level 2

The price-weighted trip frequency is applied as the average sum of all trips using a certain ticket, with each individual trip weighted by the ratio of used-to-purchased fare level. As a result, if the ticket surveyed is regularly underused, the frequency of travel declines – in the above example, for instance, from 50 trips per monthly ticket to 44.47 trips.

For example, instead of the price weighting described here a kilometre weighting can also be used whereby the weighting is based on the average travel distances within the specific fare level. It is also possible to draw a further distinction between the company's own underusers and those of other companies and to attribute different amounts of revenue per trip to these underused trips made by one's own and other customers; this system is used, for instance, by the *Verkehrsverbund Großraum Nürnberg*.

7.4 Summary

Even this brief outline of the options available shows clearly that selecting a procedure by which to divide up revenues requires many decisions by the various partners involved. Different underlying conditions and company interests mean that good reasons can be cited for each alternative. This complicates negotiations and demonstrates that there is no 'one (fair) procedure' in the sense of an objective and mathematically justifiable methodology. The authors' experience has been that in such a discussion process it is helpful if the partners can agree on some sort of apportionment philosophy, namely a set of comprehensive guidelines or a framework to help keep discussions of broader – often theoretical – principles to a minimum and to devise a logical and appropriate distribution procedure. An example of one such guideline might be: 'Fare

revenues should be distributed between transport companies on the basis of the manner in which passengers actually pay said fares!’

Literature

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Revenue-distribution in Public Transport Alliances, Stuttgart 2005

8

Integrated alliance-wide passenger information and guaranteed connections

8.1 Alliance-wide passenger information

Reliable passenger information is crucial to making the public transport system as a whole an attractive option. In both complex urban networks and rural areas where services are often geared towards school pupils, it can be difficult for those not familiar with public transport to pinpoint the precise service and fare information they require. However, even if passengers have managed to locate the information they need prior to their trip, all public transport users – newcomers and seasoned travellers alike – will become disorientated if services deviate from the scheduled route or timetable. In addition to specific details concerning carriage and fares, being able to find information about the administrative aspects of public transport (*e.g.* customer service centres and sales outlets) is also very important.

Consequently, in close partnership with carriers and responsible authorities, both small and larger scale public transport alliances known as *Verkehrsverbünde* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural) have devised appropriate alliance-wide systems offering passenger information on services run by all operators; such systems provide passengers with the information they need via various media and services, and also ensure that the respective partners have the details required to produce printed publications and/or supply information electronically.

Verkehrsverbünde primarily use the following channels to keep customers informed:

- Printed information on services, such as timetable booklets, network maps and leaflets containing details of individual line routes;
- Printed fare information such as fare pamphlets, along with printed information on specific products (*e.g.* Flyers and such like);
- Customer newspapers and magazines;
- Electronic media (company websites, timetable information online and via mobile phones, PDAs and so forth, display systems at public transport facilities and / or on third-party sites);
- Service centres and / or telephone inquiry services;
- General or targeted advertising.

These various channels provide information on operators and transport alliance-wide and as such *Verkehrsverbünde* offer a distinct advantage over – and, indeed, generate added value as compared with – individual carriers operating independently.

While basic information (timetables and fares, for example) is available in advance, the challenge for *Verkehrsverbünde* and transport companies now is to provide additional up-to-the-minute information on delays or other changes to scheduled services. Such information from regional rail passenger transport (SPNV) and general public transport companies is crucial to providing passengers with accurate information and guaranteeing connections across multiple operators.

8.2 Basis of data: timetables, fares and other key information

8.2.1 Timetables and alliance fares

Passengers' choice of means of transport is heavily influenced by the information available to them and how effective any timetable information is, be it printed or electronic, depends on the

accuracy of the data used to produce it. Hence one of the key tasks of *Verkehrsverbünde* entails compiling and maintaining full and accurate details of the current timetables operated by the alliance's various carriers.

However, in addition to timetables specifically, other information such as line numbers, fares and details of walking routes at transfer stops are also useful for passengers. Since connections in rural areas especially may mean that passengers need to travel using transportation other than regularly scheduled services (e.g. *Rufbusse* or 'dial-a-bus' services), it is important that available timetable information includes details of how to access alternative transportation.

Such information is also required for traffic surveys, fare planning, marketing and so forth. It is therefore extremely important and integrated databases must be held containing clear details of operators, lines, stops and journeys. Where such data are to be used to assess performance or ascertain revenue distribution arrangements, details of all timetable periods must be supplied to ensure that past periods can also be processed.

Timetable data are produced (and supplied) by the transport companies using journey and rotation planning data. The data produced continue to vary considerably and are dependent on numerous factors such as the scale of operations, the amount of rolling stock, the number of lines and the capabilities of the electronic data-processing (EDP) systems used to plan timetables and services. Such systems range from simple ones for operators running just a few lines to highly complex ones used by large transport companies. However, not all companies use special systems to plan their operations and many smaller companies often use standard table calculation software in their operational and passenger information planning.

Besides the underlying format of the system used, local operating conditions also play a role. Multiple companies frequently use the same stops but have different names for them within their respective systems. While this might cause little difficulty for knowledgeable passengers, for those unfamiliar with the area it represents a certain challenge. When naming stops, small companies in particular tend to use local references and frequently include no information as to the stop's actual location. Although such an approach may suffice for getting around in small towns, it is wholly impractical within larger alliance areas.

Linename formats are often inconsistent as well and all manner of potential alphanumeric combinations are often found within local line networks. In some cases, too, line numbers may unwittingly be duplicated by individual transport companies. Accordingly, the primary task of the *Verkehrsverbünde* entails working with the transport companies on a number of levels:

■ **Data management**

Verkehrsverbünde and transport companies must devise a substantive organisational framework, ascertain how passenger information via various media is to be produced and managed (e.g. put together a handbook containing mandatory guidelines for all alliance players), and clarify and put in place the information and communication processes required to facilitate ongoing work (data input and processing together with provision of the information needed to produce publications and for electronic media). This means that public transport alliances and the responsible authorities as their 'clients' need a data-management system into which data from all types of existing planning systems can be incorporated and within which such data can be supplied in line with current and future demands. Ongoing work can then be either performed in-house or contracted out to appropriate firms. Figure 36 shows a screenshot of sample data-management tool.

■ **Interfaces**

Verkehrsverbünde and transport companies must create appropriate organisational and technical interfaces via which to incorporate details on current traffic status into the cross-modal and cross-carrier timetable information system as well as the individual transport companies' websites. This way, both shortly before and during their planned journey passengers can access information on potential delays/difficulties and alternative travel options.

Figure 36
*Screenshot (excerpt) of
 a data-management
 tool (Verkehrsverbund
 Berlin-Brandenburg).*

Name	424001	424003	424005	424007	424009	424011	424013	424015	424017	424021	424023	424025
Erkner, Am Rundl											13:55	
S Erkner, ZOB3											13:58	
S Erkner, ZOB3	Ab 04:00	04:50	05:14	06:00	07:04	07:25	08:00	11:00	11:40	13:35	14:00	14:30
Erkner, Kino1	Ab 04:03	04:53	05:17	06:03	07:07	07:28	08:03	11:03	11:43	13:38	14:03	14:33
Erkner, Kirche1	Ab 04:04	04:54	05:18	06:04	07:08	07:29	08:04	11:04	11:44	13:39	14:04	14:34
Erkner, Buchhorster Str.1	Ab 04:06	04:56	05:20	06:06	07:10	07:31	08:06	11:06	11:46	13:41	14:06	14:36
Erkner, Bergstr.1	Ab 04:07	04:57	05:21	06:07	07:11	07:32	08:07	11:07	11:47	13:42	14:07	14:37
Erkner, Schützenwäldche	Ab 04:08	04:58	05:22	06:08	07:12	07:33	08:08	11:08	11:48	13:43	14:08	14:38
Erkner, Schönschornstein	Ab 04:09	04:59	05:23	06:09	07:13	07:34	08:09	11:09	11:49	13:44	14:09	14:39
Neu Zittau, Sreedordf	Ab 04:11	05:01	05:25	06:11	07:15	07:36	08:11	11:11	11:51	13:46	14:11	14:41
Neu Zittau, Berliner Str.6									11:53			
Neu Zittau, Kirche6					07:16		08:12	11:12	11:55		14:12	
Neu Zittau, Stäbchen Wf					07:17		08:13	11:13	11:56		14:13	
Neu Zittau, OT Berlin Wäld					07:19		08:15	11:15	11:58		14:15	

■ Information for passengers with restricted mobility

Verkehrsverbünde and transport companies must also ensure that passengers whose mobility is restricted have access to adequate information on their various travel options. Such passengers include not only the disabled but also those whose mobility is temporarily restricted, such as passengers travelling with prams or temporary walking aids. Mobility-restricted passengers are becoming an increasingly important consideration in public transport, since the number of older people in many parts of Germany is rising substantially and a large proportion of this particular demographic currently use public transport.

In addition to providing appropriate passenger information, another of the *Verkehrsverbünde*'s core tasks entails devising, implementing and maintaining a multiple-operator, integrated alliance fare system. Train- and bus-users need to know not only what services are travelling where and when, but also require information about fares available. Depending on the size of the alliance area in question and its fare structure, this can be a major challenge for *Verkehrsverbünde*.

Before devising and selecting the appropriate information channel, the nature of and details concerning the specific fares on offer need to be clarified. Such information is usually disseminated in both printed and electronic form in the same way as service information. Whereas printed fare information is usually presented in straightforward diagrammatic form only, a more sophisticated system is required where it is to be made available via electronic media as well. Accordingly, the public transport alliances generate fare details in the form of fare databases which serve not only as a basis for the carriers' marketing systems but also as a data source for systems displaying information on fares or best available prices.

8.2.2 Real-time data via COCS and alliance-wide information systems

Although computerised operational control systems or COCS (referred to today as Intermodal Transport Control Systems or ITCS) are by and large the norm nowadays for public transport companies and were in use in urban areas in Germany as early as the 1980s and 1990s, it was not until the early 2000s that they were fully rolled out in rural areas with a COCS being designed and commissioned in the region east of Berlin as part of the Urban Transport Research Programme (FOPS). A host of other companies, including some regional ones, have since introduced ITCS systems, which has not only meant that services operate more efficiently but are also increasingly serving carriers' and *Verkehrsverbünde*'s passenger information needs. Within some alliances, 75 % of the alliance area is now covered by ICTS systems and cooperation between transport companies in developing and operating them has meant that the desired level of efficiency in the region has been achieved. The plethora of suppliers and wide range of technical solutions available guarantees that there is an appropriate application for every scenario.

In order for different companies to be able to use the information from multiple operational control systems to keep passengers informed and guarantee connections, the German

government supported the Association of German Transport Companies (VDV) in developing two ‘universal’ interface families known as VDV-453 and VDV-454 via projects within the framework of the Urban Transport Research Programme. As a result, standardised, tried-and-tested interfaces are now used to transmit data from different suppliers’ ITCS systems to the information systems used by other service providers. The data transferred can be used for a range of comprehensive and alliance-wide services, thereby guaranteeing connections and providing passengers with up-to-the-minute information on services operated by multiple carriers.

In addition to public transport operators alone, however, SPNV carriers are also a valuable source of information for passengers and crucial in guaranteeing connections. Information on Deutsche *Bahn AG* (DB AG) trains is held in the company’s Traveller Information System (RIS) and can be made available via the aforementioned universal VDV interfaces. In addition, the inclusion in the universal system of SPNV companies from which information is not available via DB AG’s individual passenger transport systems is especially important in providing up-to-date regional information. In this context, data is either channelled through *DB Netz AG* or entered into regional ITCS systems in cooperation with public transport companies. In such scenarios in particular, specially adapted yet simple systems frequently yield impressive and cost-effective results.

Where information for cross-operator use is required, the real-time data from the transport companies are channelled through the interfaces to a data-input system hosted by the *Verkehrsverbund*; this system and data hub communicates with the various outlying ITCS systems and matches the real-time data supplied to existing scheduled data. In some cases, the ITCS systems contain data which, for organisational reasons, differ from those published in the timetable guides and as such the incoming real-time data must be compared and entered in the appropriate location. In some ITCS systems, journey numbers which are identical in both the ITCS system and the timetable guides can be used; in others, the most suitable of those journeys with the same line number must be ascertained based on scheduled times.

As well as concrete information from the operational control systems on, for example, delays or cancellations to train or bus services, other, less specific information is also useful for customers, *i.e.* general announcements such as ‘Service-disruption expected due to bad weather’ and notices on anticipated disruptions to or restrictions on services, for example ‘No rail service tomorrow between 8:00 and 10:00 due to strike action’. Such details are also crucial to providing passengers with accurate information on alliance-wide services and *Verkehrsverbünde*, therefore, need not only to determine and implement the most appropriate channel via which to disseminate the information but also to ensure that sufficient data-storage personnel are available along with the systems required to record such information by means of transport, line or individual journey. Once the information has been edited where required, it can be released into the public domain and made available to passengers in an appropriate format depending on their specific query. These systems can be supplied either via direct data input (*e.g.* over the Internet) or via the appropriate channel within the VDV-453 interface. The information is thus available not only for the purposes of alliance-wide passenger information but also for use by the transport companies in compiling their operational plans.

8.3 Reaching customers

8.3.1 Printed resources:

timetable guides, network maps, area maps and fare information

Timetable booklets and leaflets have long been used as the standard format for disseminating information on the scheduled public transport services available in a particular city or region. They used to be produced and marketed by individual transport companies but nowadays cross-company and alliance-wide booklets are the norm. They are issued either individually as one-off

Figure 37

Sample timetable booklets (*Verkehrsverbund Oberelbe*).



publications or as part of a series, and, with a uniform format and language, are the traditional source of information on alliance-wide services (Figure 37). However, since customers are now tending to use the booklet format less and less as a source of timetable information, print runs are falling steadily and as a result, timetable booklets are increasingly being either supplemented or replaced completely by leaflets and/or flyers, which are frequently produced and marketed in large numbers either for individual lines or else as a series or set. Naturally, it is important that printed timetable information – in either booklet or leaflet/flyer form – based on data

contained in an alliance's timetable data pool be up-to-date and produced as cost-effectively as possible.

The second key format for disseminating passenger information, particularly details of rail services such as regional rail, S-Bahn (suburban railway) and U-Bahn (underground rail) services, is the conventional and highly practical network map, which is produced in large quantities within alliance areas and is passengers' primary source of printed information.

Besides network maps, many alliances also produce area maps based on both their own maps and those of third-party suppliers; such area maps indicate the topography of a particular region as well as providing information on public transport and, in many cases, local tourist attractions (Figure 38). Details and information on *Verkehrsverbünde* services (in particular lines, stops and the areas around stops) are vital in producing accurate area maps.

Finally, another extremely important component of printed information on alliance-wide services is a general overview of the alliance fare, supplemented by product specific leaflets or flyers frequently combined with summary service information (e.g. network maps). Data contained in an alliance's fare database are also used to produce detailed overviews of destinations or fare conditions (for use by the various carriers' employees) as well as posters outlining the fare structure within the alliance area.

8.3.2 Electronic information

Most public transport users today have come to rely on electronic sources of transport information, be they direct sources such as the Internet or a PC version of timetable information software, or indirect sources such as service telephones and information offices, or, increasingly, mobile passenger information services. All public transport alliances have seen a substantial annual increase in the number of customers using their online information systems (Figure 39).

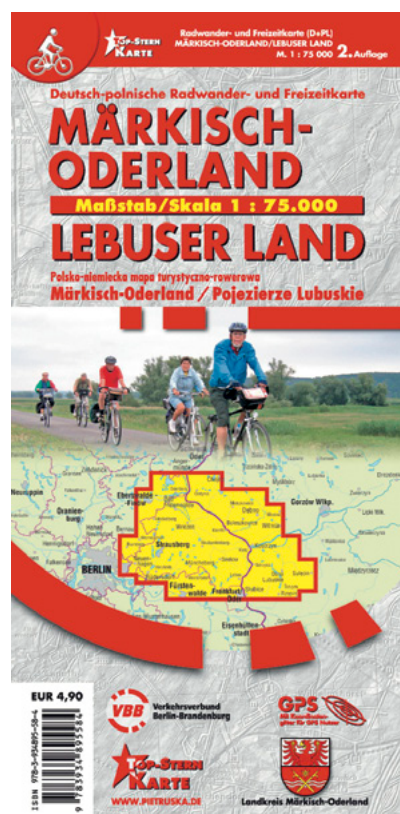


Figure 38

Area map showing cycle routes and leisure activities in the vicinity of the German-Polish border, issued by Verkehrsverbund Berlin-Brandenburg (VBB).

8.3.3 Timetable information systems containing scheduled timetable data

Developing and fine-tuning both alliance-wide and, frequently, Land-wide electronic timetable information systems is a core task for all large-scale *Verkehrsverbünde*. Such systems normally hold details on the services operated by all alliance carriers and can therefore be used to look up routes from and to any given stop, address or key destination, and to consult maps. The systems also often contain details on the particular alliance's fares and other important information. Having entered the relevant search criteria, the results pages outline the key details on the various connections found (Figure 40); more in-depth information (e.g. lines used, transfer points and information on delays, disruptions, barrier-free connections, maps, fares, etc.) is usually available on specific pages.

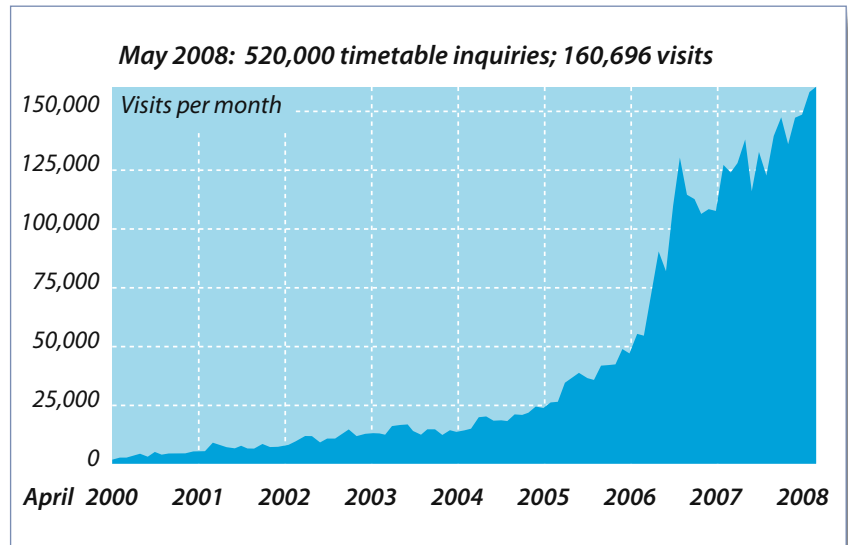


Figure 39
Number of visits to the Verkehrsverbund-Managementgesellschaft Saar website, April 2000 – May 2008.



Figure 40
Online timetable information for the Hamburger Verkehrsverbund (HVV).

Although initially designed as offline re-sources and therefore accessible offline only, timetable information systems are now available in both conventional offline and modern online form, not only via the Internet but also in the form of mobile applications for mobile phones and personal digital assistants (PDAs).

Figure 41

Online timetable information for a barrier-free connection for the VBB.

8.3.4 Online details of barrier-free connections

For the growing number of passengers with restricted mobility, being able to obtain a customised route recommendation via timetable information systems is frequently a key factor in whether they are able to use public transport at all.

Thanks to a research project supported by the Federal Ministry of Economics and Technology (BMWi), a search engine has been developed enabling passengers to plan barrier-free itineraries. Using the new system, users select their particular travel requirements themselves, for example specifying travel via low-floor buses, ramps and lifts and excluding from their route obstacles such as stairways. To ensure that the new search system is efficient and able to provide passengers with accurate itineraries, detailed information has had to be collated on the various facilities and infrastructure at individual stops and stations, a time-consuming and costly process.

The project's success has meant that a 'barrier-free' timetable information system has been developed and implemented in the Berlin-Brandenburg (Figure 41) and Rhine-Main regions.

8.3.5 Real-time timetable information

Being able to include real-time information from multiple operators within alliance-wide timetable information systems has been a key advance in recent years and is therefore a crucial aspect of expanding existing systems.

Despite the fact that the amount of real-time information available will vary, the primary considerations must be a) which

information (both details of a specific delay and general information on disruptions) is most important for customers and where, and b) how to communicate complex information to passengers as simply and transparently as possible. One of the public transport alliances' key tasks in this respect is to devise solutions which provide passengers with the information they need in a clear and comprehensive manner but can also be introduced and maintained at reasonable cost.

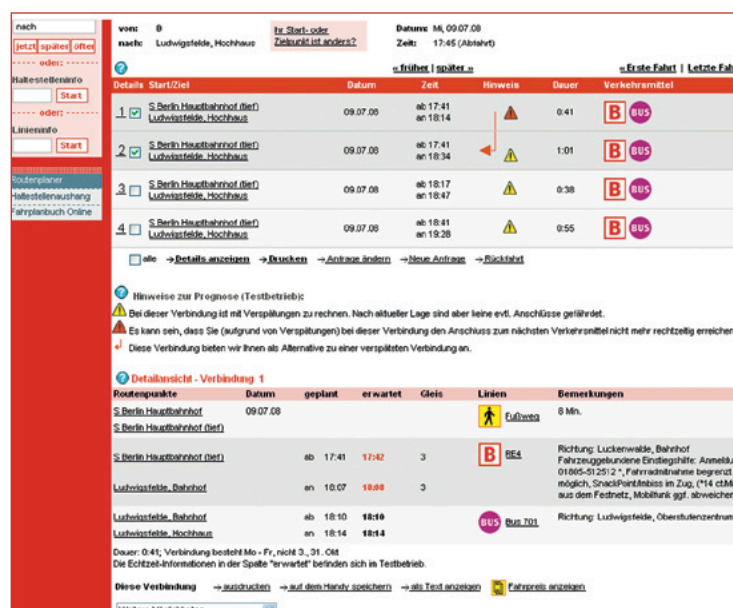


Figure 42

Online timetable information (excerpt) including real-time data, Verkehrsverbund Berlin-Brandenburg.

While such solutions may be relatively straightforward in the context of producing a simple list of departure times, presenting information in the form of a more complex route guide can be more problematic. This is true not only in the case of result pages generated following an online inquiry but also – and especially so – where revised travel recommendations are provided following deviations from the scheduled timetable and with which customers may be unfamiliar. Combining direct information on the recommended journey with explanations and coloured symbols at the foot of the page can be a useful way of organising a large volume of information into a clear structure (Figure 42).

8.3.6 Stationary information via display systems

Besides timetable information systems, dynamic display systems and Web-based ‘departure boards’ are also key sources of information for customers. Whereas dynamic passenger information (DPI) technology used to be installed and maintained exclusively by individual transport companies, today’s simple communication interfaces now mean that data from *Verkehrsverbünde* timetable information systems can be fed into most DPI systems (Figure 43). The main advantage of DPI systems is that they can be used to provide passengers at a single location with information on services operated by multiple transport companies and managing such information via a central alliance-wide system obviates the need for complex bilateral interconnections between multiple companies.



Figure 43
Dynamic passenger display system in use within the Rhein-Main-Verkehrsverbund (RMV).

Since the costs associated with purchasing and operating conventional DPI systems in outlying areas are relatively high, Web-based ‘departure boards’ are a sensible additional means of providing passengers with the information they require. Such boards can be created and operated by both public transport alliances and third-party partners such as airports and can be installed easily and affordably using off-the-shelf standard technology. Data is fed in from the alliance timetable information system and the boards can be configured easily by content, presentation form and transmission technology.

8.3.7 Stop notice boards, personal timetables and online timetable booklets

Since demand for traditional timetable booklets is declining but passengers still want printed information on the public transport services they require, a number of new forms of such printed information have emerged and are produced using data contained in the

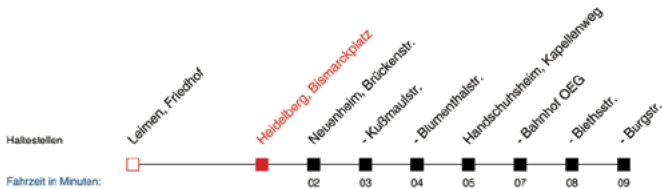
FAHRPLAN

Gültig ab 15.06.2008 - alle Angaben ohne Gewähr

1146 / Heidelberg, Bismarckplatz

125

23 Richtung: **Handschuhsheim, Burgstr.**



Uhr	Montag - Freitag	Uhr	Samstag	Uhr	Sonn- und Feiertag
4	56	4		4	
5	16 36 56	5		5	
6	06 16 26 36 46 56	6		6	
7	06 16 26 36 46 56	7		7	
8	06 16 26 36 46 56	8	46 56	8	
9	06 16 26 36 46 56	9	10 16 26 36 46 56	9	
10	06 16 26 36 46 56	10	06 16 26 36 46 56	10	
11	06 16 26 36 46 56	11	06 16 26 36 46 56	11	
12	06 16 26 36 46 56	12	06 16 26 36 46 56	12	55
13	06 16 26 36 46 56	13	06 16 26 36 46 56	13	25 55
14	06 16 26 36 46 56	14	06 16 26 36 46 56	14	25 55
15	06 16 26 36 46 56	15	06 16 26 36 46 56	15	25 55
16	06 16 26 36 46 56	16	06 16 26 36 46 56	16	25 55
17	06 16 26 36 46 56	17	06 16 26 36 46 56	17	25 55
18	06 16 26 36 46 56	18	06 16 26 36 46 56	18	25 55
19	06 16 26 36 46 56	19	06 16 26 36 46 56	19	25 55
20	06 16 26 40	20	06 16 26 40	20	10 40
21	10 40	21	10 40	21	10 40
22	10 40	22	10 40	22	10 40
23	10 40	23	10 40	23	10 40
0	10	0	10	0	10

Im Spätsverkehr und im Wochenendfrühverkehr verkehren zwischen Bismarckplatz und Handschuhsheim die Linien 5 bzw. 23 zusammen im 30-Min-Takt. Bitte beachten Sie daher auch die Fahrpläne der Linie 5.

Rhein-Neckar-Verkehr GmbH, Möhlstr. 27, 68165 Mannheim, www.rnv-online.de, 01805-555465 (14 Ct./Min.)

Figure 44
*Stop notice board
(also available online)
in use within the
Verkehrsverbund
Rhein-Neckar (VRN).*

future. Accordingly, such services are likely to evolve significantly in the future, especially since the telecommunications market itself will continue to undergo dynamic development. Tariffs and the pricing policy adopted by telecommunication providers will ultimately determine how mobile services evolve in the future.

Real-time data is crucial in the context of mobile information systems since the purpose of the latter is to keep passengers informed of ongoing timetable or service alterations en route.

Real-time 'departure boards' displaying information on services run by multiple operators or a real-time-check facility for connections stored on a mobile terminal device mean that passengers' bus and train journeys are more time-efficient and reliable and such systems can thereby make public transport a more attractive option.

Verkehrsverbünde's timetable information systems; as such, they can be produced simply and based on up-to-the-minute data as well as tailored to passengers' individual requirements. In addition to conventional stop notice boards (Figure 44), these services include personalised (route-specific) timetables and passenger generated online timetable pages (the Online Timetable model).

8.3.8 Mobile timetable information available online and offline

Offline systems were also the initial platforms for mobile timetable information but these, too, are operated by only a few alliances nowadays. The same is true of feeding personal timetables into PDAs, some produced using information contained in printed versions of timetable guides. Conventional timetable information systems are now supplemented by network-specific information making it much easier for passengers to navigate rapid-transit systems (*Schnellbahnen*) in urban areas (Figure 45).

Alliances have also been making their Internet timetables available via mobile phones and PDAs for some years and solutions have now been developed to enable customers to store details of important connections on their terminal device (mobile phone, PDA, etc.) without incurring online charges. Although the number of passengers using mobile services was initially lower than anticipated, based on current trends mobile information technology is certain to be a key component of passenger information systems in the



Figure 45
*Schnellbahn navigator
operated by the
Verkehrsverbund
Berlin-Brandenburg
on mobile phone screen.*

8.3.9 Passenger information by phone and other systems

Verkehrsverbünde information offices, customer-service centres and telephone information lines provide passengers with personalised details on transport services run by multiple operators; such centres and information lines also require both printed timetable data and electronic information systems. Up-to-date timetable and fare information must therefore be available at all times.

Since customer-service centres usually have set opening times, telephone information systems are ideal for providing passengers with details of alliance timetables and fares outside of office hours. Thanks to modern technology, highly accurate yet financially feasible services can also be accessed by passengers en route via their mobile phone.

8.3.10 Fare information

Alliance fare systems are generally comprehensive and fair but can also sometimes be confusing for occasional travellers. A number of different fares are often available in the case of tourist and group travel, for example, and the various options need to be clear for customers. *Verkehrsverbünde* therefore offer brief yet comprehensive fare information tools, primarily via the Internet (Figure 46).

However, information systems are of most use to customers when they comprise the full range of a particular alliance's timetable information. Such comprehensive systems ensure not only that passengers have all the details they need at their fingertips, but also that they have access to clear information where different fares are available for different routes between the same origin and destination points (for example, due to the way the fare system is structured). While this is certainly the best way to ensure that occasional travellers do not inadvertently buy the wrong ticket, regular passengers using season tickets can also benefit since a range of different season tickets are available, too, depending on the particular travel route chosen.

The screenshot shows the MVV Ticket-Navigator website. The main content area displays the 'Ticket-Navigator Profi' section, which provides a detailed breakdown of fares for a journey from Munich to Thalkirchen. The breakdown is organized into columns for different fare types (A, B, C, D, E) and a total sum. The total sum is 7,70 €. The breakdown shows that the fare consists of 2 adult tickets (2,20 € each) and 1 youth ticket (1,10 €). The fare is calculated based on the distance and the type of ticket used.

	A	B	C	D	E	
Erwachsener (21-59 J.)	2 Streifen - Streifenkarte *	2 Streifen - Streifenkarte *	2 Streifen - Streifenkarte *	1 Streifen - Streifenkarte *		7,70 €
Erwachsener (ab 60 J.)	2 Streifen - Streifenkarte *	2 Streifen - Streifenkarte *	2 Streifen - Streifenkarte *	1 Streifen - Streifenkarte *		
Jugendlicher (15-20 J.)	1 Streifen - Streifenkarte *	1 Streifen - Streifenkarte *	1 Streifen - Streifenkarte *	1 Streifen - Streifenkarte *		
Gesamtsumme						7,70 €
davon Zeitkartenarif						0,00 €
davon Bartarif						7,70 €

* wird ausschließlich zu Einheiten von 10 Streifen verkauft

Legende

- Zeitkarten: vorhandene Zeitkarte, Kartennutzung
- Bartarif: vorhandene Bartarifkarte, Park und Ride

Alternative Ergebnisansicht:

Ihre Verbindung

mehrere Fahrten: 10.07.08

	A1:	B1:	C1:	D1:
Erwachsener (21-59 J.)	2 Streifen - Streifenkarte Nutzung durch Erwachsene 1 Zone *	2,20 €		
Erwachsener (21-59 J.)	2 Streifen - Streifenkarte Nutzung durch Erwachsene 1 Zone *	2,20 €		
Erwachsener (ab 60 J.)	2 Streifen - Streifenkarte Nutzung durch Erwachsene 1 Zone *	2,20 €		
Jugendlicher (15-20 J.)	1 Streifen - Streifenkarte Nutzung durch Jugendliche 1 Zone / Kurzstrecke *	1,10 €		
Gesamtsumme				7,70 €

Figure 46
Example of online fare information, Münchner Verkehrs- und Tarifverbund (MVV).

8.4 Incorporating regional information systems into more widely distributed systems

As we have seen, the uniform nature and up-to-the-minute accuracy of alliance-wide timetable information systems ensures that customers have access to the information they require within a particular alliance area. However, incorporating such technology into more widely distributed systems also enables customers from other regions or indeed countries to access accurate,

real-time information about regional transport services and fares and as such, alliance information systems need to be linked up with these more widely distributed systems.

DELFI (*Durchgängige elektronische Fahrplan-Information*) is Germany's nationwide timetable information system, created with the support of the Federal Transport Ministry (BMVBS) and providing information on through connections between the various federal states (*Länder*) including long-distance services operated by DB AG. Customers can access this service via their familiar regional-information system but can also locate details on all public transport services in Germany. Under DELFI, regional-information systems submit customers' requests for supra-regional details both to the appropriate systems in other *Länder* and to DB AG via standardised interfaces and then use the data received from the latter to generate personalised door-to-door itineraries. This means that current information stored in the respective alliances' systems is also accessible to other regions and no costly data-retrieval is required. Many *Länder* are represented in DELFI working groups and bodies via the *Verkehrsverbünde*.

EU-Spirit is a cooperative venture between information-system operators providing open access to timetable information between various cities, regions and countries in Europe; many *Verkehrsverbünde* are also involved. Data held by the participating individual information systems on short- and long-distance transport services are communicated via EU-Spirit interfaces and selected central services, and can be accessed by customers not only within their own familiar system but also in their own language. EU-Spirit provides both information on regional bus and train services and comparisons between train and air services operated within the participating partner regions.

8.5 Cooperative ventures: an important contact point with customers

Comprehensive customer service is made possible thanks to the range of information media and services used by public transport alliances and carriers alike. However, cooperation with leading local, regional and national partners is also an important tool in plugging any remaining gaps in the customer communication network, not only for facilities or institutions operating transport services (*e.g.* long-distance and air travel suppliers and airports) but also for providers of cultural and tourist services. Besides cooperation as regards printed information such as supplying key transport and fare details in printed form, for example in printed event literature and journey information, Internet services, too, are becoming an increasingly important additional communication tool, enabling general public transport tips to be posted online and providing links to the public transport alliances' and their partners' websites (*e.g.* including timetable information in sites' journey-information sections or event calendars).

In addition to local and regional partnerships, national and international information-service providers, too, are becoming increasingly keen to cooperate with the public transport sector. While such joint ventures open up access for public transport companies to leading marketing and communication platforms, the *Verkehrsverbünde* must nevertheless ensure that the general information provided remains accurate and that access to key data remains free of charge (as in most cases). Broadly speaking, however, such channels present a number of additional areas of application for alliance-wide information platforms.

8.6 Future prospects for integrated passenger information and guaranteed connections

The range of alliance-wide passenger information systems developed over the years ensures that public transport customers have access to accurate, up-to-the-minute information. The increasing availability not only of operational control systems in cities and regions alike and of real-time data within the body of alliance-wide timetable information, but also of the increasing

availability and more widespread use of mobile information services has opened up new avenues for cooperative ventures between multiple transport systems and operators. Such cooperation between the various partners portrays the public transport system as a whole as a much more attractive – and reliable – option since formerly separate decision-making and information channels are now interlinked, thereby creating fresh opportunities, for example via combining passenger information with guaranteed connections.

Since having to transfer from one service to another is one of the greatest inherent drawbacks of public transport systems in general, it is also an area on which the various participating partners must focus. Whereas conceptual transfer planning and guaranteed connections were initially the responsibility of individual transport companies, connections can now be guaranteed across operators via the VDV-453 interface. Operational control systems are linked to one another and waiting times at specified connection points structured such that connecting services can be tailored to ensure that transferring passengers are not left behind if a feeder service is delayed. Such linkage capabilities have been in use successfully for some time now (Figure 47). In addition, the VDV interfaces can also be used to keep passengers travelling on said feeder services informed via audio announcements.

Following the original philosophy of the VDV interfaces, enhancing the quality of public transport services and thereby making them more appealing requires not only comprehensive agreements between the respective partners but also a high degree of bilateral connection via standard interfaces, a process which can be extremely labour-intensive and very costly to purchase and maintain. In this respect, the integrated information platforms used by *Verkehrsverbünde* are an ideal tool with which to interlink such systems efficiently and thereby offer added benefits. Such integration requires information platforms to be expanded so that data can also be exchanged between the transport companies themselves, thereby enabling all relevant information to be transferred via a single connection between company and *Verkehrsverbund* and a lone alliance data ‘hub’.

This same concept can also be used to pool data on the status of connections and thereby provide up-to-date passenger information alliance-wide. In particular regions or in certain circumstances where travel distances are longer, it also communicates to customers that both the transport companies and *Verkehrsverbünde* are keen to make the use of public transport as easy and reliable as possible for them, not only via competent planning but also by guaranteeing connections as far as possible.

For further reading

on electronic fare-management and electronic timetable information see [page 112](#).



Figure 47
Details of a delayed regional express service (ANS(chluss)DB RE) displayed on the on-board computer of a public transport vehicle.

D. VERKEHRSVERBÜNDE IN THE FUTURE

Alexander Freitag, Munich

9

The role and significance of Verkehrsverbünde within a market undergoing progressive liberalisation

9.1 Background

Ever since the structural reform of the railways in 1994, the regionalisation of regional rail passenger transport, and the amendment of the Passenger Transport Act (PBefG) in 1996, competition has increased steadily and is reshaping the public transport landscape. Both the dynamic case law of the European Court of Justice (ECJ) and the new Council Regulation (EC) No. 1370/2007 on public passenger transport services by rail and road will further influence changes in the sector. The Chinese have a saying: 'When the wind rises, some people build walls; others build windmills.' For the public transport alliances known as *Verkehrsverbünde* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural), which depend on synergies and good cooperation to function, erecting walls is a dangerous practice. To be an attractive option in the future, public transport must provide comprehensive services and must overcome physical obstacles as well as promote forward-looking thought and action. Passengers want 'one-stop' solutions to their mobility needs, and have little interest in the complex interaction between the different players behind the scenes. Accordingly, the key factors determining the alliances' future success will also lie in synergy effects and thereby in optimising services in a consensus-based manner across the board. However, market liberalisation encourages decentralisation so if the transport alliance model is viewed as a positive one given its clear successes to date, then conditions must be created within which to promote the aforementioned building of windmills rather than walls. In other words, in a rapidly changing environment presenting both opportunities and risks, the challenge lies in limiting the latter as far as possible while at the same time making the most of the former. However, such a context will bring about changes at different levels and under the new conditions, what was previously the most successful model may now be less appropriate and vice versa.

Figure 48

Key features of a Verkehrsverbund.

Key features of an alliance

Legally independent alliance company

Own personnel and own funding

Key powers/areas of responsibility

Powers not restricted to fares alone

Inclusion of regional rail passenger transport and general public transport

By Manfred Knieps, Dissertation: *Aufgabenträger oder Verkehrsunternehmen als Gesellschafter von Verkehrsverbünden* [Responsible authorities or transport companies as alliance partners], Bonn, 1 June 2004, page 37

This contribution outlines the changes to key areas of responsibility within alliances. It also identifies factors which determine the dynamics of change within the regulatory framework and cites a practical example of how opportunities can be seized and risks limited against the backdrop of liberalisation.

9.2 Liberalisation engenders change

The vast majority of public transport services currently offered are coordinated by *Verkehrsverbünde* and the latter have certainly become the 'branded goods' of cooperation alliances between the public sector and transport

companies in the field of public and regional rail passenger transport. Figure 48 shows the key features of public transport alliances. Within such alliances, many tasks could just as easily be performed by the responsible authorities and management companies as by the transport companies. There is no set format as regards division of labour: for example, alliance companies (umbrella legal entities) appointed by the responsible authorities to manage competition have now been assigned fresh duties and given additional powers. Such duties and powers include, for instance, managing regional rail passenger transport as well as improving and planning the rail infrastructure or organising the best use of public funding as regards consumption and investment. In assigning duties, at local level each alliance may adopt any structure it pleases subject to the existing legal framework, the underlying principle being that duties must be assigned to the responsible authorities, carriers and management levels in such a way as to ensure optimum incentives subject to compliance with existing legal restrictions. Of the areas of responsibility listed in Figure 49, competition management, financing (from tax revenue), and conceptual transport planning are based on the tasks originally performed by the responsible authorities themselves, while fares, sales and distribution of revenue, and marketing and customer communications have developed from the business activities originally managed by the transport companies. So how is liberalisation affecting these areas of responsibility?

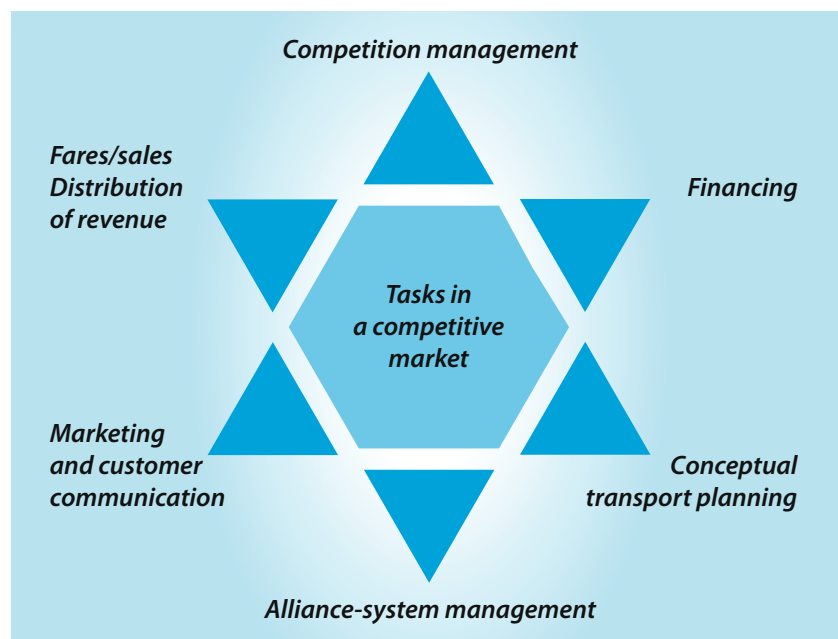


Figure 49
Key areas of responsibility in public transport.

9.2.1 Competition management

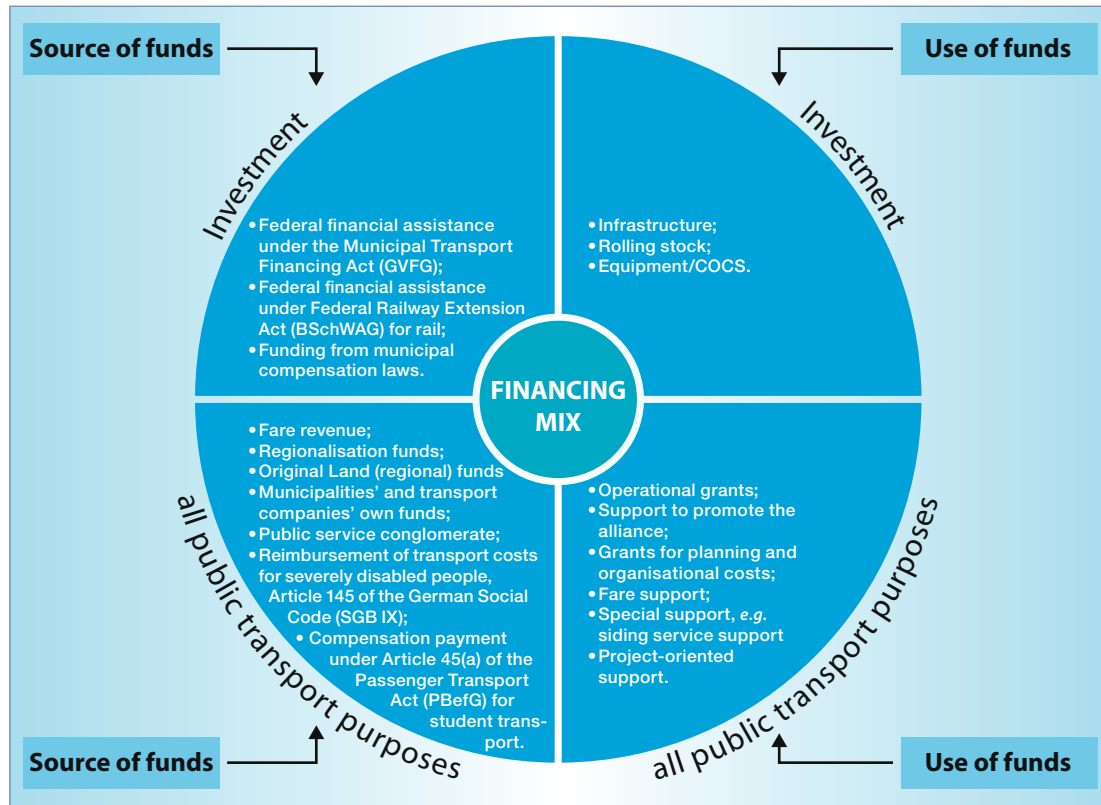
For the purposes of this contribution competition management refers to all tasks performed by the relevant responsible authorities or alliance companies and associated with implementing competition rules.

Since liberalisation began, a great deal has been learned and this has fostered a process of sharing experiences and, thereby, continually improving the way in which competition is managed. The Association of German Transport Companies (VDV) is an excellent platform in this respect.

Competition management entails determining the service to be provided, contract controlling, establishing the scope and format of award lots and the term and nature (*e.g.* gross, net or incentive) of contracts, and deciding whether tendering procedures are to be organised on a more structural or more functional basis. It has been accepted that competition should be based not merely on price but also on quality. In a bid to prevent what is known as 'quality dumping', quality standards have been drawn up and are currently applied and monitored. Good services must yield economic benefits for companies while inadequate ones should bring about disadvantages.

Competing companies can only be treated fairly and in a non-discriminatory fashion where the organisational responsibilities of the responsible authorities and those of the transport companies are clearly delineated. This contribution cites a practical example in this respect to demonstrate both what characterises successful competition management and the impact of the latter in real terms.

Figure 50
Financing within the Verkehrsverbund.



9.2.2 Financing

In future, high-quality public transport will continue to depend largely on public funding. The purpose and scale of many financing instruments are now being scrutinised in connection with liberalisation. Figure 50 briefly outlines the various forms of financing, broken down by source and use of funds as well as by purpose of use (investment or consumption).

In contrast to other sectors of the economy, public transport has traditionally been – and remains – one based largely on government initiatives, not least because of the public co-financing needed. In a future competitive market the demand for legally secure financing will grow further still. The European Commission is increasingly assuming the role of watchdog as regards transparent and non-discriminatory payments – a role evidenced by the rising number of investigations into payments in respect of both regional rail passenger transport and general public transport.

9.2.3 Conceptual transport planning

As experience in Great Britain has shown, it is dangerous to assume that in a competitive market, successful, integrated services will automatically result from combining the individual interests of both private and public companies. For the responsible authorities a key tool in organising and monitoring their activities is the public transport plan: the specifications outlined in the plan are followed in providing essential public services to ensure that adequate public transport services are available to the general public. The responsible authorities draw up the plan in consultation with existing carriers and the relevant licensing authorities must then take the guidelines contained therein into account when granting concessions. The plan is thus a key link between the responsible authorities, carriers and the licensing authority.

Opinions and legal standpoints differ as to how detailed such public transport plans should be. One approach might be to structure guidelines into tiers, *i.e.* to have a set of minimum

requirements along with optional standards with varying degrees of detail and which may or may not be mandatory.

9.2.4 Alliance-system management

In this contribution, the concept of alliance-system management pertains to all duties connected with coordinating the activities of the various alliance partners. Alliance-system management has been made harder still by increasing competition within the sector. In purely abstract terms, alliance-system management entails supporting, as far as possible, both horizontal internal integration between the responsible authorities and between the transport companies themselves, and vertical, external integration between the two. The individual companies differ in terms of their structural and operational backgrounds, size, market power and ownership structure and form various types of alliances, cooperation ventures and mergers to boost their financial return and enhance technical efficiency and competitiveness. The responsible authorities in urban areas and within the region as a whole also differ as regards their size, financial clout and policies. As result, alliance-system management regularly entails balancing varying political and economic management interests as well as taking equal account of both the market and provision of essential public services. As a result, the alliance companies are facing fresh challenges in this regard as well.

9.2.5 Marketing and customer communication

One crucial factor for successful *Verkehrsverbünde* is a uniform marketing and customer-communication strategy since coordinated communication is the key to developing public transport within alliances into a recognised ‘brand’ representing a one-stop service for passengers. Accordingly, fundamental agreements must be concluded on developing and shoring up a horizontally and vertically coordinated marketing system suited to the marketing strategies of the individual companies (and vice versa) since integrated services are far more attractive than individual, less transcending ones. A coordinated marketing strategy and a uniform customer-communication system impact favourably on transport companies’ market share, size and overall success and help the responsible authorities achieve their transport policy goals. Carriers are keen to remain recognisable within alliances as companies offering their own specific services and to maintain a company-specific profile. A uniform communication model should not conceal or distort the various roles assumed but should instead represent them accurately; company-related communication, while serving to distinguish an individual company, should not be detrimental to the alliance system as a whole. Competition inevitably entails existing carriers declining and new ones coming to the fore; this also means that in the future, alliance marketing and cross-company customer communication will be more important than ever since customers must be reassured that services in particular and alliances in general will continue to operate as they always have done despite changes in the sector.

9.2.6 Fares and sales

Liberalisation has thrust the impact of fares on transport policy into the limelight. Responsible authorities and alliances have partially shifted towards concluding gross-yield contracts (*Bruttoverträge*) whereby the income generated is channelled directly to them. However, incentive systems should be incorporated into such contracts to ensure that the carriers do not simply become ‘drivers for hire’.

In the past, the issue of who determines fares has generally been viewed – incorrectly – as a risk rather than an opportunity. Fare arrangements (pricing) and ticket sales (marketing) are essentially the preserve of the transport companies themselves, since such activities are based on the principle that companies operating according to commercial law criteria generate income in line with a specific business-management model. However, this situation has now evolved through tender procedures for gross-yield contracts and established requirements on providing

an essential public service. Regardless of whether the issue is viewed positively or negatively, however, in a competitive market one core principle continues to apply: alliance fares must be a) structured to meet customers' needs (demand-driven), b) in line with the prevailing economic climate (cost-based), and c) competition-oriented (advent of intermodal competition). In so doing, care must also be taken to ensure that they continue to be structured in as straightforward a manner as possible.

9.3 A dynamic regulatory framework

Competition is the cornerstone of Europe's economy and encourages innovative thinking, a flexible approach, cost-effective production, enhanced quality and a market-based price-efficiency ratio. Without it, a degree of complacency sets in; players see themselves as enjoying a certain 'entitlement' and tend to cling to the status quo. Competition is neither a demon nor a magic solution – nor is it an end in itself. Hence it must be implemented thoughtfully and with moderation, taking full account of local circumstances. For example, in their difficult dual role as responsible authority and transport-company owner, municipalities have the freedom (within the prescribed legal framework) to choose between internal operators, direct awards, or invitations to tender.

The combined body of national and European case law and legislation is complex and no longer comprehensible to a layperson. The EU's new Council Regulation (EC) No. 1370/2007 sets out the need to adapt various national laws. This regulation will drive forward change, as will case law, on account of the problems encountered in interpreting undefined legal terms and of legal action by competitors.

The various legal provisions in place and existing case law demonstrate that contracts are awarded in all manner of ways ranging from competitive tendering procedures to the assigning of tasks to internal operators (see Figure 51).

It is generally advisable to collate the required expertise in a single, centralised location since such an approach will enable businesses to exploit synergy effects, steer clear of unnecessary red



Figure 51
Awarding of transport services.

tape, and avoid creating parallel organisations; the alliance-company model has certainly proven to be particularly suited to this strategy.

9.4 A coherent system of goals

The individual players within alliances each apply different systems in terms of their goals and this means that they do not necessarily follow the same tack on all issues. Some such systems complement each other, some are at odds, and others follow completely different formats altogether (see Figure 52).

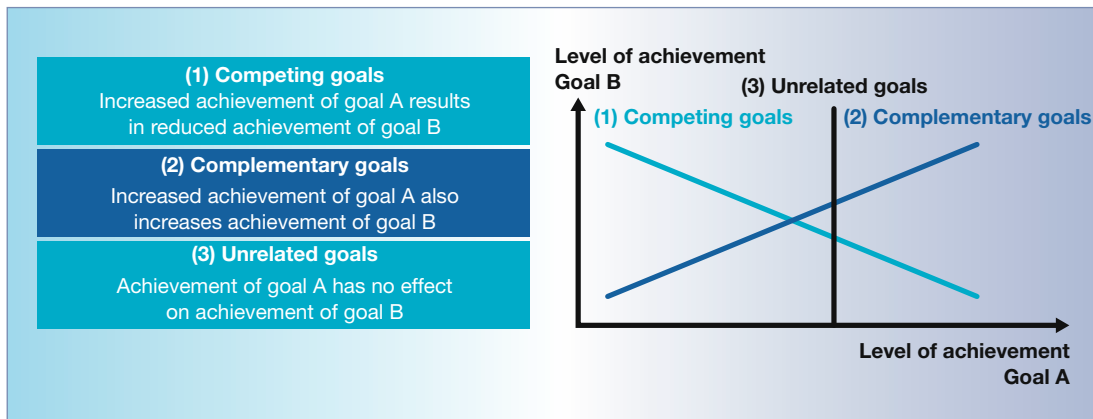


Figure 52
Fundamental links between goal systems within Verkehrsverbünde.

Whilst in practice, completely different and complementary systems create few problems, alliances in particular – which function on the basis of consensus and synergy – must tackle systems which are at odds as a matter of urgency. To resolve such problems, goals must be weighted via a hierarchy: a set of binding upper goals must be formulated to which those at tactical and operational level must then be adapted. The starting point in this regard is the legal mandate. Public transport legislation in all federal states (*Länder*) stipulates that it is the responsible authorities which must oversee the planning, organisation and design of public transport as a whole. In so doing, these authorities must bear in mind not only transport goals but also goals pertaining to urban development, spatial planning, and social, regulatory and environmental policy. The binding upper goals are de-rived directly from these policy areas and are regularly outlined by the responsible authorities in public transport plans. An alliance will function more efficiently where the various players' goals receive mutual recognition and are harmonised; willingness to compromise and the ability to integrate are key factors in this respect.

9.5 The impact of liberalisation: a practical example

In 1996, the *Münchner Verkehrs- und Tarifverbund (MVG)* was restructured as an authority alliance (*Aufgabenträgerverbund*). The shareholders in MVG GmbH are the Land capital of Munich, the eight surrounding rural districts, and Bavaria. Each of the MVG shareholders has a different attitude towards competition, but these are recognised and accepted by all parties. Whilst Munich decided to continue providing U-Bahn (underground rail), tramway and city bus services as part of the future urban public transport via its own municipal company, competition arrived as early as 1997 in the form of a regional bus service operated by the rural districts. The rural districts within the alliance took a moderate approach to liberalisation, though, and a two-track solution was adopted comprising both direct contract awards and Europe-wide invitations to tender. The alliance company manages all aspects of competition on behalf of the rural districts, including negotiations concerning market-driven direct contracts, preparing and implementing Europe-wide invitations to tender, examining bids, defining and monitoring quality standards, and contract controlling.

The MVV regional bus service today has a total revenue mileage of some 24 million km. Between 1997 and 2007, 66 tendering procedures were issued in accordance with public procurement legislation. The lines put out to tender thus far together make up a total revenue mileage of 11.609 million km – 9.338 million km in phase one and the remaining 2.271 million km in phase two. As a result, just under 40 % of all the MVV's current regional bus services were awarded via invitations to tender. The remaining 60 % were awarded following intensive negotiations between the alliance company and the carriers via market-driven direct contracts in compliance with Price Ordinance No. 30/53 (*Verordnung PR Nr. 30/53*) and in accordance with the four criteria outlined in the ruling by the European Court of Justice in the case of Altmarm Trans GmbH of 24 July 2003. In a bid to clarify the situation from the outset, the rural districts within the alliance set out their attitude in a position paper:

- Where public money is to be spent, rural districts must have a direct and immediate right to determine the scope and quality of the public transport services provided.
- Liberalisation must be restricted to prevent a small number of service providers establishing monopolies. The MVV regional bus service is operated primarily by medium-sized companies and this structure should remain in place.
- The increased efficiency achieved through issuing invitations to tender should be used to boost quality and enhance the services on offer, and in so doing should shore up the position of public transport on the transport market as a whole. This serves the interests of customers and transport companies alike and helps the responsible authorities achieve their transport-policy objectives.

What practical impact has this attitude on the part of the rural districts within the alliance had? How have the services offered, market structure, quality, bureaucracy costs, passenger volumes and financing requirements changed?

9.5.1 A supply-driven policy

The rural districts ploughed either some or all of the increased efficiency brought about by competition into expanding the services on offer and a supply-driven policy has made it easier for citizens to switch from private cars to public transport.

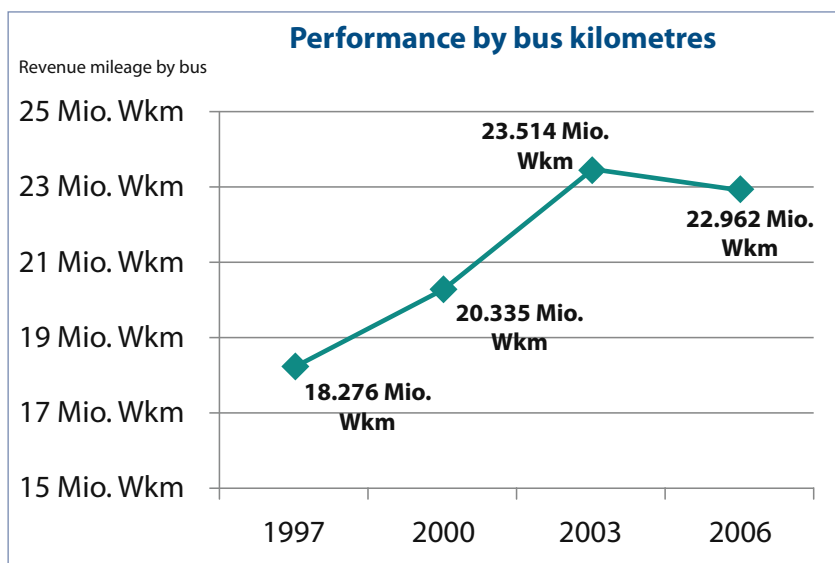
Since 1997, in terms of bus kilometres (bus-km), the services on offer have increased by 26 % (Figure 53)!

This increase in the number of bus kilometres on offer has naturally benefited passengers while for transport companies affected by competition, too, the economic basis of their business activity has clearly expanded. Nonetheless, the overall process was criticised by the established companies.

9.5.2 Shoring up medium-sized companies

In a competitive tendering procedure a company can lose out to a competitor, so liberalisation was naturally viewed with scepticism and concern by the carriers affected and made sensitive management by the responsible authorities that much more important. The rural districts within the MVV wanted to preserve the medium-sized enterprise structure as far as possible and achieved this through, among other things, awarding smaller lots more manageable for

Figure 53
Expansion of services (revenue mileage by bus/Wkm) based on a supply-driven policy introduced in 1997 within the Münchner Verkehrs- und Tarifverbund (MVV).



medium-sized companies. This explains why proven medium-sized business structures have remained in place during the 10 years since competitive tendering procedures began and is evidenced clearly by the number of bus companies in operation (Figure 54).

The MVV's tendering documents are consistent with the latest expertise and are updated on an ongoing basis. They factor in recommendations by various public policy-making bodies, transport companies and the collective bargaining parties. The MVV's own expertise and that of other responsible authorities both at home and abroad is evaluated regularly, the aim being to make improvements wherever possible. Current trends in public procurement law are also reflected in the award documents as are suggestions by service providers. Price is not the only consideration when evaluating bids; other criteria governing decisions include security of supply, capability of reacting to service changes, and quality guarantees over and above the levels stipulated. Competition management in the public transport sector routinely requires extreme care since all decisions made are subject to a review procedure. Accordingly, it is pleasing to note that the MVV's competitive tendering procedure has not been disputed once to date.

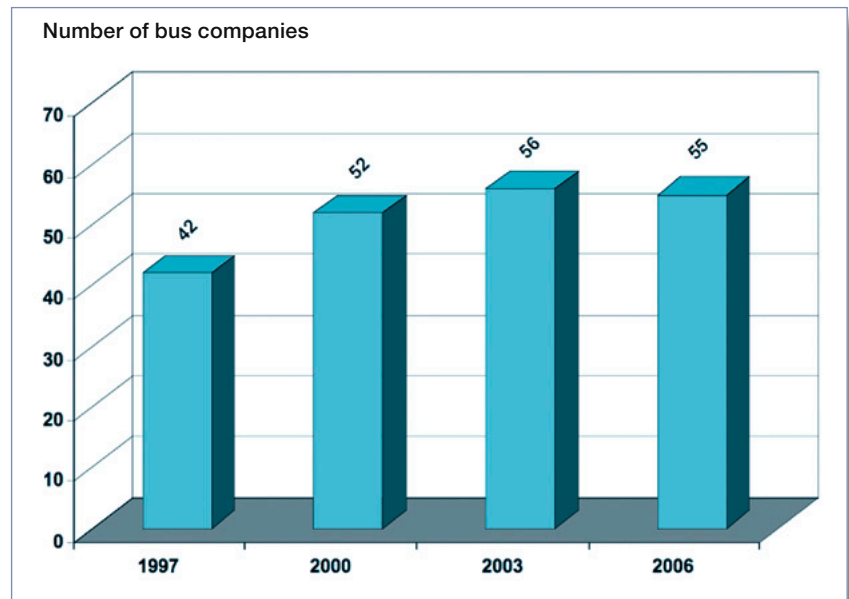


Figure 54
Number of bus companies with their own licences within the MVV.

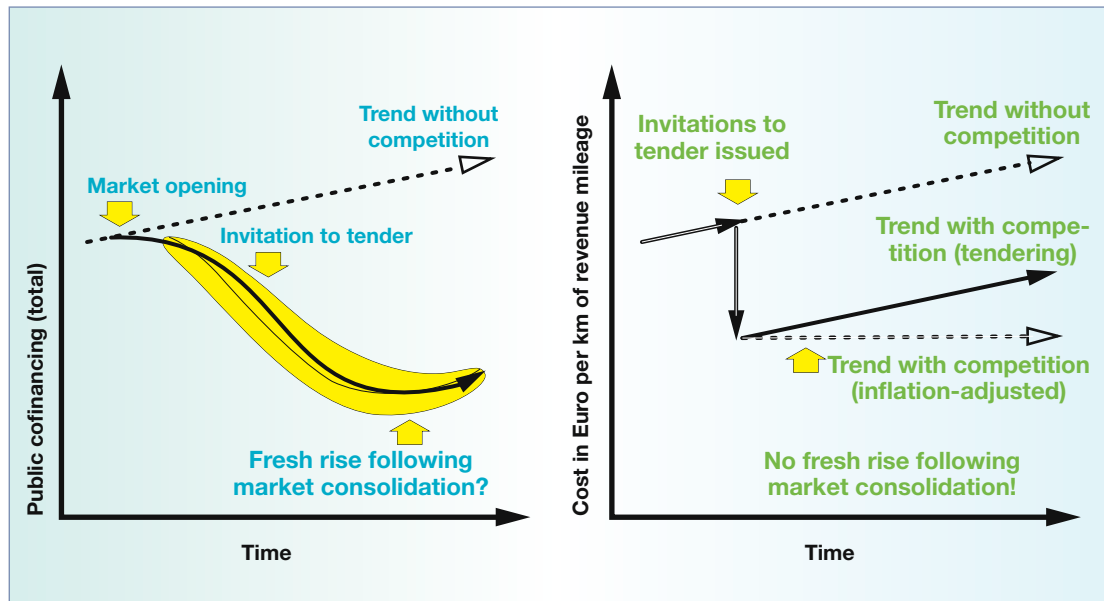
9.5.3 Quality dumping can be effectively prevented

Following on from the idea of a common user interface, it makes sense to offer customers a comparable level of quality throughout the alliance area with identical fares, a uniform network, and coordinated customer information as well. Naturally, creating such uniform quality standards via initiatives by competing companies proved difficult. In this respect, appropriate guidelines from the responsible authorities were helpful. Moreover, to prevent cut-rate providers entering the market and offering lower-quality services, quality standards were set out and specified as binding in the tender and direct-award procedure. The standards apply to vehicles, stops and personnel, as well as to environmental and social provisions. The most clearly visible impact is the uniform design of rolling stock and stops in the MVV's white, blue and green colour scheme. What at first glance may appear to be an approach of 'spoon-feeding' transport companies, upon closer inspection represents a significant benefit for passengers and helps the alliance both retain existing customers and attract new ones.

9.5.4 The 'banana effect'

Competition commentators regularly allude to the danger that in the long term, the cost-trend graph will eventually resemble a banana (so-called 'banana effect'). Although invitations to tender initially achieve clear cost reductions, once the market consolidates, costs will ultimately rise to a much higher level. However, there has been no banana effect with regard to regional bus services within the MVV to date; instead, it appears that following cost reductions through invitations to tender, the responsible authorities have managed to achieve a comparable result in all subsequent competitive tendering procedures. In some cases, there has been a nominal rise in prices over time due to increases in the price of diesel and personnel (input factors). In addition, the withdrawal of subsidies within the MVV for procuring buses has tended to rise capital costs and depreciation. Taking into consideration factors such as inflation and special effects, it is

Figure 55
Change in financing requirements and costs per kilometre of revenue mileage: no 'banana effect'.



clear that costs can be lowered permanently. Efficient competition management, therefore, can counter the banana effect (Figure 55).

9.5.5 Cutting administrative costs

Transport companies frequently cite imminent administrative costs as additional risks associated with competition and believe that increased efficiency and the benefits afforded by the competition are disproportionate to the added expense of red tape. These concerns are to some degree justified and the alliance companies are best-placed to counter them since the alliance structure is well suited to bundling together the required know-how, exploiting synergy effects and thereby performing both new and traditional tasks efficiently and cost-effectively. Since liberalisation began, it has even been possible to cut staff numbers within the alliance company by approximately 19 %.

Alliance companies operate with various carriers and across different areas, and through their cooperation with operators and responsible authorities are fully attuned to their partners' specific needs. Accordingly, they are well placed to help balance the interests of the various alliance partners and to guarantee the transparent and non-discriminatory equal treatment of all alliance members which is so important. When the established alliance companies are assigned new duties, there is no need for the responsible authorities to introduce fresh bureaucracy, or for the carriers to set up their own parallel organisations. This has the critical advantage that the required local transport services can continue to operate via a uniform network, image, fare system and timetable. The rights of the responsible authorities to set standards and the alliance-management system itself also continue unaltered despite changing conditions and, in some cases, changing operators.

9.5.6 More passengers, greater revenue ... less need for grants

In rural districts within the *Verkehrsverbund*, the overall concept has resulted in more passengers, greater revenue, less need for grants and higher quality. In the 10 years since liberalisation began back in 1997, passenger volumes have risen by 38 % and revenue, too, has increased. Since the majority of passengers on regional bus services are school pupils and trainees, revenue rose by 93 % in this particular segment due to additional, disproportionate fare increases. At the same time, costs per passenger were reduced by 9 % and the operating cost subsidy for rural districts per bus kilometre by 29 % (Figure 56).

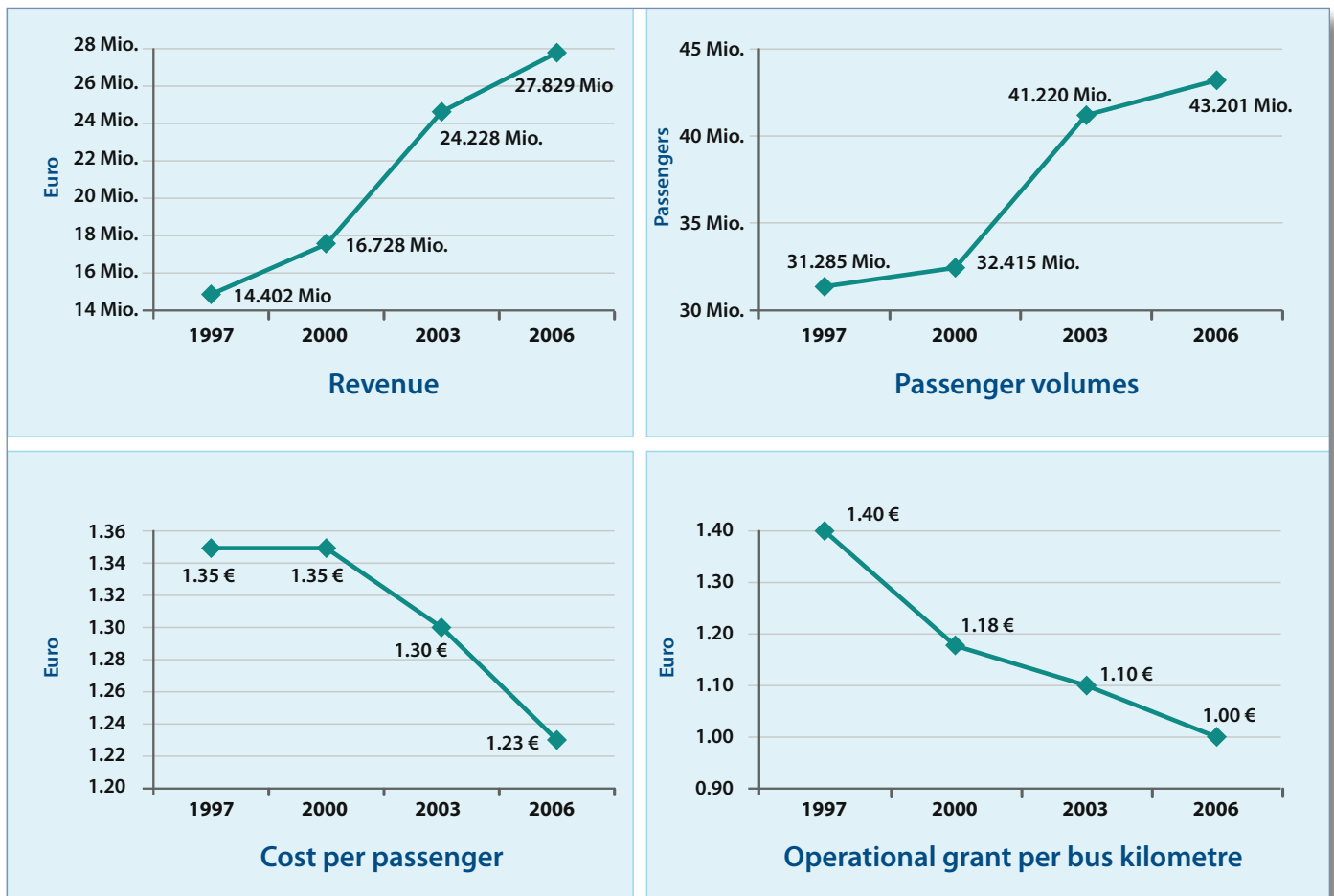


Figure 56

Figures demonstrating the success of regional bus transport within the MVV.

This practical example shows that in actual fact the organisational responsibility of public policy-makers and the management level has tended to broaden as liberalisation has become established; competition cannot be handled effectively by abandoning management duties. The example also demonstrates that opportunities can be exploited and risks limited in a liberalising market if there is a clear attitude on the part of the responsible authorities, competent competition management by the alliance company, and efficient transport companies.

9.6 Guiding principles for future development

The responsible authorities and the public organisations in charge of competition-related tasks use competition tools to guarantee more efficient public transport at a lower cost. The transport companies boost their business efficiency and productivity to ensure that they are better able to hold their own in the changed environment. The goal is to organise the associated processes in such a way that the proven advantages of the alliance structure are not only preserved but can be improved further. What form this should take is open to discussion and as mentioned above, there is no one-size-fits-all solution. However, experience to date has shown that clear progress has been made and this progress can be summed up in the form of a set of specific guiding principles:

- Under the umbrella of the *Verkehrsverbünde* there will be new adjustments between the demands of providing an essential public service and the transport-policy objectives of the responsible authorities on the one hand, and the business activity of the carriers on the other. The right of the responsible authorities to manage the situation is based on the relevant legal requirements, political objectives, and the use of public funding.

- Within *Verkehrsverbünde*, the various players' goals must be linked together as coherently as possible. In view of strategic rules governing both spatial planning and social, regulatory, environmental and transport policy, incentives must be put in place to ensure that transport companies within alliances do not simply become 'drivers for hire'. The focus must be on customers, which means quality must take precedence over quantity, *i.e.* specific demands must be met at an economically feasible price.
- The individual regions have varying strategies and roles and perceive intervention and monitoring differently. There will be no uniform solutions in the future. However, insofar as the alliance companies are fully or partly assigned competition-management duties, an organisational model must be identified which guarantees transparency, equal treatment and freedom from discrimination for all existing and future transport companies within the alliance.
- Liberalisation will test the proven cooperation of all members within *Verkehrsverbünde*. Clear rules on integration and corresponding management powers are therefore needed if changing companies are to cooperate successfully with each other for the benefit of passengers and adopt a coordinated position upon entering the market. Care must be taken to ensure a continued high-quality and fully integrated service for customers.
- With a few exceptions, opening up the market usually gives rise to better quality of public transport at a reduced cost. Even where no formal invitations to tender have been issued or where the responsible authorities opt to assign duties to internal operators in the future, in many cases the transport companies have still managed to boost efficiency and improve the quality of their services significantly thanks to imminent competition.
- Concentrations may be formed between transport companies through voluntary mergers, buyouts, or the emergence of new players; this could result in market structures which jeopardise the general tendency of competition to bring about reduced costs. The responsible authorities can counter this through targeted competition management.

9.7 Conclusion

The gradual liberalisation of the market has put an end to the predictability and continuity of past years in public transport. Since the responsible authorities assigned the legal task of providing an essential public service use public funds, they must also be granted the corresponding scope for action. For operators, incentives must be put in place to avoid them becoming simply 'drivers for hire'. Within *Verkehrsverbünde*, striking the right balance is an ongoing task. The challenges facing responsible authority organisations and alliance companies entrusted with competition management will increase and as such, the alliances' role as 'middlemen' is becoming increasingly crucial.

In the same way that public transport needs strong and effective companies, it also requires solid and competent management companies that can rise to the challenges presented. Market liberalisation has already begun and is prompting upheaval, which brings with it both opportunities and risks for the various players involved. However, through a clear attitude on the part of the responsible authorities, a forward-looking and competent alliance organisation at management level, transparent and coherent allocation of duties based on clear benchmarks, and a moderate approach, passengers, responsible authorities and transport companies alike can all benefit from the changes engendered and more efficient, better-quality public transport at a reduced cost can be achieved in this new environment. The aim, therefore, is to achieve as great a degree of cooperation as possible transcending the borders separating the various responsible authorities, companies and transport modes within the altered general framework.

10

Innovative sales models within Verkehrsverbünde

10.1 The role of the alliances

Ticket sales are traditionally handled by the transport companies themselves: they are responsible for revenues and are keen to foster direct contact with customers – and these two factors have been and remain the primary motivation for them to handle sales independently and in a proactive manner. Given the emergence of alliance fares, the ongoing integration of local and regional transport services across multiple service providers, and the increasing prevalence of modern sales technologies (*e.g.* the Internet, mobile telephony) which no longer recognise local borders, the public transport alliances known as *Verkehrsverbünde* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural) are increasingly taking on a coordinating role. Customers, too, are increasingly coming to expect a certain degree of harmonisation as well as specific quality standards. This therefore means that transport companies and alliances essentially share the load: a uniform user interface for customers is agreed by the alliance as a whole while actual implementation and direct contact with customers is the responsibility of the carriers. Fortunately, such an arrangement also means cost savings since coordinated action can also give rise to synergies.

10.2 Established sales channels

In the public transport sector, information must be available at the point of sale not only on the carrier's real service (actual provision of transport) but also on the numerous ticketing options available, ranging from single fares to subscriptions. For this reason, in many respects the best sales system ever employed by the public transport sector came in the form of the conductor, who was able to provide information and support as well as sell and inspect tickets. However, cost-cutting measures have meant that this personal approach to sales duties has been transferred to other areas or even automated (*e.g.* though ticket machines, online ticket sales and so-called Handytickets purchased via a mobile phone).

At the same time, the emergence of the *Verkehrsverbünde* and combined transport systems (*Verkehrsgemeinschaften*) ushered in mobility networks which were no longer served by just one or two carriers. As a result, specific sales parameters were needed to provide passengers with uniform access to ticket sales regardless of location or the operator used.

Figure 57
*A public transport
company's
Customer Centre.*



Accordingly, points of sale were extended to include customer centres, operators' own or external sales offices, ticket machines and drivers themselves. Contractual customers (*i.e.* customers who have signed up for long-term or ongoing ticket options as opposed to those purchasing one off tickets as and when they travel) are growing in number and are becoming a steady clientele taken care of from the back office.

For example, there are 62 customer centres in operation within the *Verkehrsverbund Rhein-Ruhr* (VRR) (see Figure 57) offering customers detailed information and advice. The staff working at these centres are highly qualified and many transport companies inspire further motivation in the form of incentive systems. Within the VRR, standard walk-up tickets bought at ticket machines or directly from sales offices for single or multiple journeys (cash fares) account for a little under 18 % of sales, compared to more than 60 % in regional rail passenger transport.

External sales offices provide basic information only; it is not usually possible to purchase or amend subscriptions directly and any applications for such tickets are forwarded on to the relevant central department. The VRR has more than 1,030 such outlets operated by private concession holders. Private sales offices, on the other hand, sell tickets on behalf of specific transport companies; cash fares account for some 28 % of such offices' sales.

Over 1,500 ticket machines are located at all major stops and transfer points within the VRR enabling passengers to purchase tickets quickly and easily. No information or advice is available, however, and passengers therefore rely on other sources of information prior to travel. The machines have been upgraded regularly over the years, though, and currently also offer

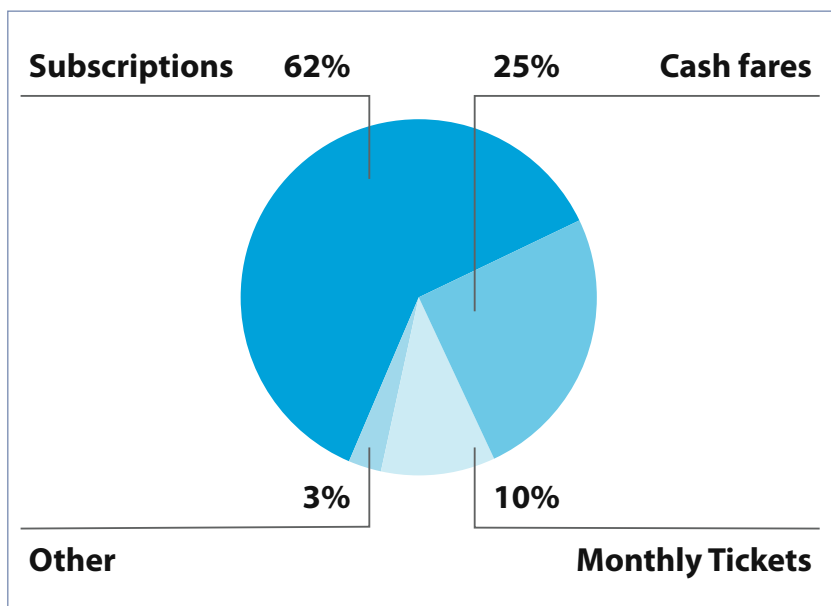
timetable information, most of which is available online. Cash fares bought from such machines account for some 24 % of the VRR's sales.

The majority of the VRR's turnover (30 %) is generated through tickets sold by drivers and tickets can be bought on 4,640 buses within the VRR. In regions bordering urban areas, bus drivers also sometimes take on various duties usually handled by sales offices. However, the lion's share of the VRR's turnover (70 %) is generated from contractual customers (see Figure 58). The latter include 1.1 million holders of subscriptions, company tickets bought for employees (*Firmentickets*), and special tickets for students (*Semestertickets*) as well as combined-ticket customers (Figure 59). In addition to ticket sales, timetable information has become a key tool in generating travel on public transport and Internet

applications providing timetable information have become a common feature across the board. Since January 2000, the number of inquiries has risen from just 1 million a month to over 15 million. January 2006 also saw the launch of WAP technology enabling passengers to access information via a mobile phone – a move which now generates between 30,000 and 55,000 additional inquiries each month.

It is clear from the trends outlined above that the Internet is becoming increasingly important to public transport users and this would suggest that an Internet-based solution holds promise for sales activities as well.

Figure 58
Share of turnover from conventional ticket sales within the Verkehrsverbund Rhein-Ruhr (VRR).



10.3 eTicket

The electronic ticket, or eTicket, is a 'virtual' ticket. Unlike conventional tickets, eTickets do not display printed information. Instead, they are stored on a chip and an electronic reader containing the appropriate software is required to read them.

eTickets offer customers a number of advantages, the two most frequently cited being the fact that no new validation stamp is required each month and that the ticket can be reimbursed if the chip card is lost. In fact, one major benefit of the eTicket is that it can be used until the chip card expires. Within the VRR, the *Verkehrsverbund Rhein-Sieg (VRS)* and the *Verkehrsgemeinschaft Niederrhein (VGN)*, for instance, customers receive a ticket valid for five years when they purchase a subscription. In much the same way as credit cards, the validity period is monitored centrally and as the expiry date approaches, customers receive a new eTicket on a chip card. Besides the technology required to operate the system, a blocking function is also required so that if an eTicket or chip card is lost a replacement can be issued with no loss of value.

The eTicket also offers benefits for non-subscription passengers. For example, a direct connection to cashless payment can be created by storing the ticket on a chip card: customers are encouraged not only to store their tickets electronically but to pay for them electronically too, thereby eliminating the need for small change.

Lastly, chip cards are indicative of modern technology and cast the transport company itself in a modern and forward-looking light. Enhancing the company's image in this way can go a long way towards compensating for the inevitable minor disruptions common with technical systems such as defective, unreadable chip cards.

eTickets also offer advantages for transport companies insofar as it is virtually impossible to forge or tamper with them and they are as secure as *GeldKarte* (smart cards issued by German banks to enable electronic payments). Transport companies need no longer send out validation stamps for subscriptions at renewal time and customers need no longer worry about having to write to the appropriate transport company if their stamps do not arrive. Tickets belonging to customers failing to pay their subscription are blocked and placed on a special list and are therefore unusable. eTickets also offer cost savings in terms of cash fares, since more such tickets are paid for electronically.

By far the greatest benefit for transport companies is the fact that eTickets can be inspected electronically, *i.e.* they can be read using a mobile data acquisition (MDA) device and inspected simultaneously (Figure 60).

As a ticket is read by the machine, any attempts to tamper with it will be flagged up and the eTicket checked against the list of blocked tickets. Tickets reported as lost or the holders



Figure 59
The various chip cards available for eTickets within the VRR.



Figure 60
Checking an eTicket using a mobile reader.

of which have failed to pay their subscription and have been cancelled are placed on the list of blocked tickets held by the carrier. If such a ticket is encountered during inspection, the reader marks it as invalid on the chip card and has the entry removed from the blocking list. Unmarked eTickets are checked to ensure that they are valid for the appropriate geographical region and relevant time period; tickets whose chip cards are marked will be recognised as invalid.

eTickets can be inspected in far greater detail than the simple visual check performed on conventional tickets. The inspection procedure itself – reading the ticket electronically, comparing it against the list of blocked tickets, and the automatic validity check – takes less than a second. The same detailed inspection can also be performed by drivers checking tickets as passengers board: the appropriate readers can be integrated into electronic ticket machines and validation devices or NFC (near-field communication) mobile phones installed next to them.

The use of ECards in the credit industry has shown that a standardised procedure can guarantee a high level of security regardless of the number of participants involved. The situation is similar in the public transport sector where the multitude of independent transport companies, plethora of fares, and mass market (at least in commuter and student transport) all mean that tickets must be secure as well as quick and easy to inspect. The nationwide standard known as the VDV-Kernapplikation (VDV core application) delivers on both counts and its development and use has meant that both carriers and industry partners can be sure of planning requirements and can therefore invest effectively. The standard has been developed by the Association of German Transport Companies (VDV) alongside transport alliances and industry partners. The rights to the system are held by VDV, thereby guaranteeing a market-driven cost structure both now and in future.

Just how far this system can be developed will depend upon modern sales channels merging since in the eyes of customers, there will be no reason why other media containing a chip cannot be recognised as a chip card. Customers will also ultimately want to have the option of ordering tickets on the Internet and storing them as an eTicket on a suitable chip.

10.4 The Internet ticket

There are already various Internet ticketing options available on the market. These range from simple systems enabling customers to select, order and pay for a ticket online and have the paper ticket sent to them by mail or courier, to more advanced Internet services (of which there are several) whereby tickets selected and purchased online are delivered directly to customers via the Internet. Customers must then print out the ticket at home in order to travel (Figure 61).

Figure 61
Example of an Internet ticket.



Customers can purchase tickets online at any time and from any location where they have access to the Internet and a printer. The entire range of tickets is available, from single-purchase tickets to subscriptions.

Since Internet tickets can be printed out from any printer on normal white paper, they must have appropriate security features to prevent tampering or forgery. Firstly, graphic elements must be incorporated to prevent any alteration to the ticket's geographical or time-based validity. Secondly, since the ticket can be printed out or copied multiple times, it must be 'personalised' to ensure that it is only used for the individual journey for which it was purchased. Accordingly, the ticket must bear the user's name and is only valid in conjunction with a photo ID card – two requirements which normally ensure that the ticket can only be used by its registered owner. Alternatively, instead of the passenger's name, the ticket may be linked to a secure item registered to the individual passenger in question such as a bank, EC or credit card which cannot be duplicated and which is of value to the passenger. Under this system, the number of the relevant secure item is displayed instead of the passenger's name and in addition to the graphic security elements incorporated into the ticket. The latter is then only valid in conjunction with the registered secure item.

Taking this system a step further, some tickets bear 2-D, machine-readable security barcodes. These barcodes contain encoded ticket information which can only be read and decoded by a barcode scanner (Figure 62). The relevant information – or even the result of a check performed by the barcode scanner – is then displayed on the ticket inspector's screen. Such tickets are also valid only in conjunction with a photo ID card or secure item.

For customers, today's modern communication media mean that the various services on offer can be interlinked in a logical manner: for example, electronic timetable information can be linked to the payment system to enable customers to buy the ticket corresponding to their chosen trip directly. The excellent graphics available on modern computer monitors combined with a convenient input technique mean that connections can be established with other information modules. For example, the ticket shop can be linked to fare information pages enabling visitors to obtain information online about which ticket type best suits their needs. Once selected, customers can then order their chosen ticket directly through the online shop.

Another logical link is that between timetable and price information. In recent years, electronic timetable information has become far more widely used (Figure 63) and it is now standard for the corresponding ticket and price information to be displayed when trip information is entered.

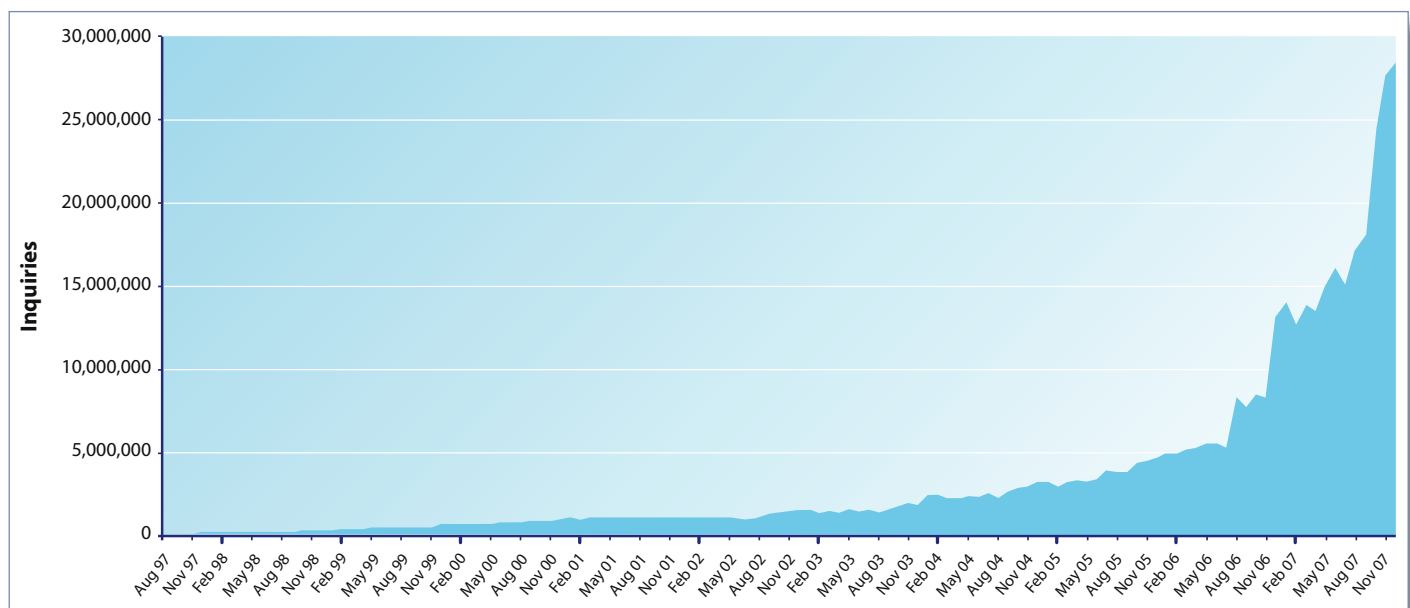
Customers therefore need no further information to undertake their trip. Some sites go further still and offer customers the option of purchasing the corresponding ticket there and then. The relevant trip data are transmitted to the online shop and customers simply need to enter the additional payment information required to receive their ticket through that particular online shop's normal channels.



Figure 62
Checking a ticket protected by a 2-D barcode.

Photo: Max Lautenschläger, Deutsche Bahn AG

Figure 63
Trend in inquiries via the electronic timetable information system (within the VRR).



To ensure that the transport companies receive payment for tickets purchased via their sites, online shops require customers to register. Two such registration systems are currently used. The first enables customers to pay via an authorised Internet portal either by standard credit card or via systems such as Firstgate or PayPal. When using such portals, customers need not register with a transport company since they are required to enter their payment data afresh for each transaction.

Under the second, customers must register with the transport company in the first instance and will receive a unique customer number. Once assigned a customer number, they need enter payment information only once to receive all future tickets. This is certainly the more convenient method for regular purchasers since payment data need only be entered once.

10.5 Handyticket

Whereas the Internet ticket requires a printer and can therefore be somewhat restricted in terms of usage, mobile phones essentially give passengers their own personal ticket machine in their pocket. One of the first systems in Germany for purchasing tickets via a mobile phone (the so-called Handyticket) was that introduced in Osnabrück. There are now several such systems up and running, all operating in parallel. Several VDV members have been conducting a pilot project since April 2007 with a view to creating a nationwide uniform standard for registration, ticket security and billing and enabling customers of one participating carrier to purchase tickets for travel via all of them without having to register afresh each time.

The Handyticket differs from the Internet ticket in various respects. Firstly, a mobile phone is naturally far easier to carry than a laptop computer and will slip easily into a pocket. Sec-

ondly, a mobile phone can be operated easily using just one hand whereas a laptop normally requires a supporting surface. By contrast, though, a laptop is more user-friendly on account of its keyboard and larger screen. The two systems operate in much the same way, though, and many transport companies and alliances already offer a similar timetable information system for mobile phone users, too, meaning that customers can purchase the exact ticket required (Figure 64).

The original purpose of a pilot project was also to make public transport more accessible and thus attract new passengers. Instead

of having to seek out a ticket machine or keep the appropriate cash to hand, passengers could instead use a familiar device – their mobile phone. The mobile phone ticket system would therefore require providers to develop corresponding applications which customers could load onto their mobile phones and then use to access the Internet and download the required ticket. Since, like mobile phone interfaces, such applications have not (yet) been standardised, more extensive advice is often needed so some pilot partners also offer customers an SMS ticket, which can be ordered and obtained via any mobile phone. Customers wishing to use the more comfortable version of an SMS ticket will require a mobile phone that supports the more convenient Java technology. Menu-driven ticket selection using Java technology offers distinct advantages to transport companies when they are integrating into a *Verkehrsverbund*.

As with the Internet ticket, the Handyticket also links timetable information and sales services. Customers first select their trip and can then buy the appropriate ticket by linking through to the ticket-sales service. The main advantage is that the data are captured at the time of first use so that customers need not enter them again.

Figure 64
Mobile phone displaying ticket data.



In principle, Handytickets look the same in both their Java and SMS variants. The initial inspection is a visual one whereby the ticket inspector also checks for a code word which changes on a regular basis. Inspectors can also go a step further and opt to enter an alphanumeric string into their reader enabling them to ascertain in seconds whether the ticket is genuine and to whom it was issued. Like Internet tickets, Handytickets are linked to the name of the holder or to a unique secure item.

10.6 Security

Conventional paper tickets have traditionally been made secure through the use of copy protection dye, holograms, and sometimes imprints invisible to the naked eye. However, the modern sales channels used today mean that transport companies no longer have any control over how and on what kind of paper tickets are issued. Customers are now responsible for this end of the process and this therefore means that certain security features must be incorporated into tickets to ensure that they cannot be tampered with or used improperly.

Extensive security criteria have been created for eTickets and in cooperation with transport companies and alliance organisations in Berlin, Bonn, Bremen, Dresden, Hanover, Hamburg, Cologne, Munich, Nuremberg, Rhein-Main and Rhein-Ruhr, as well as various industry partners, VDV has created the VDV Kernapplikation.

In a bid to keep all manner of development options open but at the same time enable customers to access buses and trains in a hassle-free and user-friendly manner, the VDV Kernapplikation is designed to standardise customer interfaces at all stages of the electronic fare management (EFM) process and ensure that they are inter-operable.

The VDV Kernapplikation integrates all stages of the EFM process. Fares are not restricted and the sales decisions continue to be made locally since the application operates independently of the fare system. The system can also be operated at various developmental stages concurrently on a fairly long-term basis while the technology is introduced in phases. Customers need fare systems to be fully harmonised and interoperable – and this is precisely the aim of the so-called eTicket Deutschland (Figure 65). The VDV Kernapplikation is also designed to prevent the system developing in different directions and thereby ensure that old-style access barriers are not prevented from being replaced by new, more modern ones due to a lack of harmonisation with new technology. VDV and its members see the VDV Kernapplikation as an opportunity to standardise customer interfaces within the EFM process.

The VDV Kernapplikation can be applied to various media such as *GeldKarte*, the transport companies' own cards, mobile phone SIM cards, or other smart devices, in particular those used to record a passenger's presence. These require an efficient microprocessor chip and standardised interfaces which use either contact (ISO 7816) or contactless (ISO IEC 14443) technology. From a technical point of view, when fitted with the VDV Kernapplikation, these chip cards can be used in all EFM systems, including check-in and check-out. In the initial implementation stages the contactless chip card only is being used as the basic medium, since in North Rhine-Westphalia only subscription and season ticket holders are currently issued with the company's own customer cards. A check-in and check-out system for occasional passengers is already in operation within the *Kreisverkehr Schwäbisch Hall (KSH)*.



Figure 65
*Logo for the eTicket
Deutschland
based on the
VDV-Kernapplikation.*

Thanks to the VDV Kernapplikation, it is effectively impossible to tamper with or forge eTickets. Creating a new eTicket or modifying an existing one requires security access modules (SAM) – such as those successfully used for several decades in the credit industry – which detect any unauthorised ticket creation and thereby render any forged ticket void. At the same time, the fact that eTickets cannot be inspected manually but must instead be passed through an electronic reader means that all aspects of the ticket can be checked. In some alliance areas, the machine-reading process not only checks that the eTicket is genuine, but also that it is valid for the geographical region in and time period during which it is being used. Information as to whether and, in the case of personal tickets, for whom the ticket is valid is displayed directly on-screen for the ticket inspector to see – and all this takes less than a second.

In the *Rhein-Ruhr*, *Rhein-Sieg* and *Niederrhein Verkehrsverbünde*, before the ticket is inspected to ascertain whether it is valid for the geographical region in and time period during which it is being used, it is also checked to make sure that it is not on the list of blocked tickets. Issuing subscription chip cards valid for up to five years means that the system must be capable of invalidating tickets reported as lost with the chip card or those whose holders are no longer paying their subscriptions; such tickets are invalidated by means of a blocked-ticket list. All transport companies authorised to issue eTickets may place a ticket on the list if required and a report is submitted each working day to the *Verkehrsverbund*, which then compiles a central list of blocked tickets based on all the reports submitted. This list is then retrieved each working day by the individual transport companies and fed into the ticket readers. If the reader identifies a blocked ticket, the eTicket is marked on the chip card as being invalid and is removed from the list of blocked tickets at the next update. The entire process right from the alliance report to tickets being removed from the blocked list is fully automated.

The volume of data must be kept to a minimum to ensure that the ticket readers can verify it quickly, hence why the blocked-ticket list is cleared of marked ticket entries each working day. However, the list is monitored in other ways, too. For example, some transport companies in the *Rhein-Ruhr*, *Rhein-Sieg* and *Niederrhein* urban areas also sell special tickets known as *Übergangstarife* (transition fares) and *Anerkennungstarife* (mutual fares) allowing passengers to travel by bus or train also within neighbouring transport alliance areas. The lists of blocked tickets must therefore also include entries from each of the other alliances, however, only those carriers within whose area the tickets are valid receive such data. The data is sorted via an additional, state-wide blocked-ticket list which supplies the alliance-wide lists with the necessary data. This system is also fully automated.

By contrast, Internet tickets and Handytickets have an entirely different security problem in that they are vulnerable to abuse on account of being easy to duplicate. Accordingly, they are always linked to a passenger's name or secure item, which are indicated on the ticket. Any type of secure item may be used but the item must be sufficiently valuable to the holder that he or she will be unlikely to hand them over to another party. Such items may include personal ID cards, credit or bank cards, or, in the case of the Handyticket, the passenger's mobile phone number.

A further security measure entails securing the data contained on the ticket via an encrypted code. This may be either an alphanumeric string or a graphic 2-D barcode. Barcodes offer the advantage of being machine-readable making it easier to automatically validate tickets. As with eTickets, the most accurate way to validate Internet and Handytickets is using technology.

10.7 Future prospects

At present, these three modern sales – eTickets, Internet tickets and Handytickets – channels are still developing independently. Customers who have purchased a subscription and have thereby registered with a transport company must re-register if they want to buy another, or

more comprehensive, ticket online or via their mobile phone. Neither is there any link as yet between the Internet and mobile phone channels enabling customers of one to also use the other. The challenge for the industry, therefore, is to enable customers who have registered once to use all three of their chosen transport company's sales channels without having to reregister multiple times.

Another challenge is that posed by the increasing interconnection of online offers incorporating use of local transport services (Figure 66). The partners offering such combined tickets are also coming to rely increasingly heavily on Internet sales and to avoid losing these partners, it is vital for transport companies to ensure that their tickets remain valid. This requires a nationwide security standard similar to the VDV Kernapplikation used to validate eTickets.

The screenshot shows the VRR website interface. The top navigation bar includes links like 'Über Uns', 'Presse', 'Kontakt', 'Hilfe / FAQ', 'Sitemap', and 'Impressum'. The main header displays the VRR logo and the text 'Verkehrsverbund Rhein-Ruhr'. Below this, a breadcrumb trail shows 'Startseite > Fahrplanauskunft'. The left sidebar contains a menu with categories like 'Startseite', 'Fahrplanauskunft', 'Tickets und Tarife', 'Aktuelles', 'Freizeit', 'Service', 'Downloads', and 'Suche'. The main content area features a large clock image and the heading 'Fahrplanauskunft'. It displays journey details: 'von: Gelsenkirchen / Hauptbahnhof', 'nach: Moers / Bahnhof', 'Abfahrt: 16:58', and 'Datum: 06.11.2007'. Below this is a table titled 'Ihre Verbindungen' showing three train options with columns for 'Datum', 'Ab', 'An', 'Dauer', 'Umst.', and 'Preisstufe'. The right sidebar contains promotional content, including 'Freizeit' with a 'Camera Obscura' article and 'TicketShop' with a printer icon and text about online ticket purchases. A message at the bottom right states 'Kein Ticketkauf möglich'.

Figure 66

Information available within the electronic timetable information system, including shopping cart.

10.8 Marketing rules

Modern sales channels are increasingly enabling customers to purchase tickets without having any direct interaction with the relevant regional or municipal companies. However, this also presents transport companies with unlimited options so it is important that they agree on the 'rules of engagement' within their alliance when it comes to marketing to ensure a peaceful coexistence. For example, one such rule might be that in direct marketing campaigns requiring address data to be purchased, said data are compared in advance to ensure that no existing customers are contacted. Another might be that promotional gifts offered by individual campaigns should not result in existing customers being lured away. Such rules should be drawn up by the *Verkehrsverbund* and agreed with the carriers; the alliance should then monitor compliance.

The measures outlined above demonstrate that alliance-wide arrangements for all transport companies are vital and enable the *Verkehrsverbünde* to play an active role in supporting carriers' sales activities for the benefit of customers and transport companies alike.

For further reading

on electronic fare-management and electronic timetable information see [page 112](#).

E. SYSTEMS IN NEIGHBOURING COUNTRIES

Dr Peter Vollmer and Hans Kaspar Schiesser, Bern

11

The emergence and significance of fare alliances in Switzerland

11.1 Debate surrounding environmental issues prompts a rethink in public transport

The period between the late 1970s and early 1980s was not a positive era for public transport in Switzerland. By the early 1980s, its modal split had fallen to an all-time low of well under 20 %, whilst motorised private transport was mushrooming by between 4 and 5 % a year. Lausanne-based Professor Rodolphe Nieth had already developed the idea of the so-called Swissmetro system, an underground railway operating under semi-vacuum conditions and designed to replace the existing, outdated rail system and whisk passengers from Geneva to Zürich at speeds of 400 km/h. Trams, too, were facing the axe, with Zürich, Basel, Bern and Geneva the only cities to have tramways still operating on one-meter gauge tracks through the city centres; politicians felt that such areas should be made as ‘car-friendly’ as possible and that disruptive tram systems should be abolished. The future for public transport certainly looked bleak. By contrast, in 1975 the Swiss National Railways or *Schweizer Bundesbahnen* (SBB) opened the *Heitersberg Tunnel* between Aarau and Zürich, its first major construction investment in decades, and in 1982, following many years of testing and some 46 years after the Dutch had introduced one, Switzerland’s rail system was finally given a timetable of services at regular intervals, leaving a minority of die-hards clinging to the belief that public transport was not yet completely obsolete.

During this gloomy period and just as innovative public transport appeared to be on its last legs, the environmental debate erupted onto the scene and was to bring about significant change in public transport services in Switzerland. Germany was not the only country facing the prospect of its symbolic national tree, the oak, dying out: in Switzerland, too, forests – the country’s ‘green lungs’ – were suffering too. Suddenly it once again became fashionable to consider alternatives to private motorised transport – alternatives including, for example, public transport.

11.2 A pioneering feat on the ‘Rhine knee’

In the early 1980s, the city state of Basel enjoyed a unique ‘niche’ in Switzerland in the context of environmental issues. Located on the so-called ‘Rhine knee’ (*Rheinknie*) bend of the River Rhine, it had the country’s lowest concentration of car traffic, only half as high as, for instance, the city state of Geneva. It retained a highly developed public transport system still used frequently by bankers and chemical industry managers, while in the more working-class districts of the city people continued to cycle to the pharmaceutical companies and offices like their German counterparts in the bicycle Mecca of Münster in the federal state (*Land*) of Northrhine Westphalia. As a result, Basel’s politicians and public transport officials were somewhat ahead of the rest of Switzerland in considering how public transport services could be shored up. Two ministers or *Regierungsräte* – Paul Nyffeler and Edmund Wyss – from the cantons of *Basel-Landschaft* and *Basel-Stadt* respectively provided the impetus on the political front. They identified an innovative and proactive thinker in the form of Paul Messmer, the representative of the

board of directors of *Baselland Transport AG (BLT)*, a light-rail company located just outside the city. Since 1978, the Basel public transport company *Basler Verkehrsbetriebe (BVB)* and BLT had been allowing subscription-ticket holders to buy a single subscription covering both networks, but Messmer was under no illusions that to ensure long-term success the subscription itself would have to be made not only more extensive but also cheaper. Ultimately, too, passengers would have to be able to travel on the networks of a wide range of transport companies throughout the greater Basel area using a single ticket.

11.3 The *Direkte Verkehr* model: a digression

The idea of a single ticket valid across an entire network was not a recent development in Switzerland. As early as 1857 at first two, then soon afterwards a dozen rail companies joined forces to introduce uniform fares for both freight and passenger transport.

The idea was that a passenger-kilometre should cost just the same in the canton of Nidwalden as in Fribourg. For 130 years this so-called *Direkte Verkehr* or DV (Direct Transport) model was refined and updated on an ongoing basis; with each new adaptation, however, it also became more complicated. As far back as around 1900 half-price passes and *Generalabonnemente* (Generalabo or general subscriptions offering virtually nationwide travel on a wide range of services) were already in existence, offering passengers free travel on Switzerland's entire public transport network. This system offered two main advantages, namely the opportunity for passengers to travel on lines plied by a wide variety of carriers including rail companies, the Postauto (bus service operated by the Swiss post office) and interurban bus operators all on a single ticket, and a distance-related discount of up to around 25 %. The concept underlying the modern-day Miles and More frequent-flyer programme therefore has its origins not in airline offices but in rail services! Strictly speaking, however, the phrase 'Switzerland's entire public transport network' is somewhat flawed since for more than a hundred years urban transport operators received no subsidies from the central government and were excluded from the system. Consequently, the cities themselves were not part of the *Direkte Verkehr* model. This meant that whilst it was possible to buy a through ticket to travel from the small farming village of Guarda in Graubünden to Bern-Bümpliz, passengers wishing to travel from Bern's main railway station to the *Universal Postal Union (UPU)* had to buy an additional tram ticket.

It was not until 1990 that urban carriers became semi-integrated into the *Direkte Verkehr* model via the *Generalabonnement*. To this day, the zone-based fare systems operated by fare-alliance partners and the line-based *Direkte Verkehr* model have still not been fully integrated.

11.4 Super-federalism outwitted

When Paul Messmer set about creating the first true subscription alliance in 1983–84 with the political backing of his fellow ministers, neither SBB's DV fares nor those of, for example, the scenic narrow-gauge railway known as the *Rhätische Bahn* were an issue (at least not directly). Even so, the innovator faced plenty of other problems. The planned alliance area of the greater-Basel region included the cantons of Aargau, Solothurn, Basel-Stadt and Basel-Landschaft, and, consequently, four individual governments and four separate parliaments were involved. In super-federalist Switzerland, the occasional unwillingness of politicians in one canton to do something precisely because colleagues in the neighbouring canton are working hard to promote it can cause untold head-aches and should not be underestimated.

Yet despite this potential minefield, Messmer managed to pull off his plans and convinced politicians that they should subsidise approximately one third of the alliance subscription cost, arguing that the much more attractive monthly or annual environment subscription known as the *Umwelt-Abonnement* or U-Abo would generate more traffic on rail, bus and tram services overall. This, he promised, would, in turn, lower the subsidy previously required and at the same

time reduce automobile congestion in the inner city. The bottom line, then, was that the public authorities would pay no more but would nevertheless benefit from a more efficient and more widely used public transport system as well as cleaner air, the latter being a central feature of political discussion at the time. ‘Politicians are unwilling and indeed unable to grapple with the details; they simply want to set out visions and create solutions,’ says Messmer looking back.

Creating a public transport alliance known as a *Verkehrsverbund* (*Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural) along the lines of the one set up in Zürich in 1990, was not Messmer’s goal. He knew this was beyond the realms of possibility with four completely different cantons of varying financial stature. He therefore drew up a fare-alliance agreement under which the transport companies were guaranteed to receive the same level of revenue as they had in the past for operating the same services. Initially, following tough negotiations with the two Basel governments, he secured promises that the cantons would subsidise each personal subscription to the tune of approximately EUR 10 a month. Under the pressure of a media touting the benefits of this innovative new model, the four canton parliaments subsequently capitulated and gave Messmer’s straightforward approach their blessing, agreeing to subsidise each U-Abo sold by approximately EUR 10 (via a so-called ‘personal subsidy’).

11.5 Counting passengers proves problematic

Subsidising the new fare-alliance structure proved a relatively simple exercise, with passengers living in Mumpf/Aargau being credited the EUR 10 subsidy from the Aargau treasury, and those with an address in Liestal receiving it from the *Basel-Landschaft* canton. The fare alliance supplied the cantons and municipalities with details of all public transport subscribers, details which were updated and revised on an ongoing basis. After a few years the number of U-Abo users had grown so much that it came to represent a factor of political power which to this day no one involved in transport policy in the Basel area can afford to ignore.

However, as with all alliance structures also within the fare alliance Nordwestschweiz (TNW), the main problem lay in distributing the revenue in such a way that no company felt disadvantaged. Everyone was well aware that the carriers’ previous passenger and passenger-kilometre figures were more the product of creative mathematics than hard data, yet such hard data was the only way in which to guarantee fair revenue distribution. The people of Basel, who had already emerged as world pioneers in the context of subscription alliances, had now once again to lead the way in developing a passenger counting system as well. In due course, the DILAX company based in Ermatingen in the canton of Thurgau devised an electronic passenger counting system fitted in vehicle door frames – a system which yielded far more accurate data than earlier methods (some companies, for example, had previously measured passenger volumes by the degree of body-spring compression).

However the DILAX system, too, was not without its teething problems. ‘If a passenger boarded a tram with a wet open umbrella or a black plastic bag, for example, it would count them twice and we found ourselves scratching our heads over why a half dozen or a dozen more people boarded trams than exited them on rainy days,’ recalls Messmer. By the time it came to an end, the project was producing figures to an accuracy of plus or minus 5 %, a vast improvement on the data previously yielded. The canton and federal government statisticians were pleased, too, since for the greater-Basel region at least they now had precise figures on passenger-kilometre performance.

11.6 The system snowballs from the mid-1980s

Following on from its launch in 1984, the U-Abo scheme or ‘Basel model’ ultimately evolved in 1987 into the *Tarifverbund Nordwestschweiz* (TNW), Switzerland’s first broader fare alliance (*integraler Verbund*), with single tickets valid across multiple carriers. In the early days of

the Basel model, those behind it had been pleased to see that the subscription price payable by customers fell by half whilst demand doubled. During its first full year – 1985 – monthly subscription sales reached 800,000; by 2003 this figure had risen to 1.9 million. One of the keys to this overwhelming success was the TNW's ingenious but extremely simple system of subscription distribution whereby postal paying in slips were recognised as valid 'tickets', the alliance thereby saving substantially on costs associated with collection and sales outlets as well as the expense of producing travel passes. Just a few months after Basel's pioneering feat, the same system was adopted 60 km north in the German city of Freiburg im Breisgau and proved equally successful. Lucerne, too, followed suit immediately, establishing Switzerland's second subscription alliance in 1986.

Table 8: Swiss alliances in figures (as at 2007)

Subscription name, region	launched	Number of companies	Network length km	Annual subscriptions	Number in the map
U-Abo, Greater Basle	1984 ⁺	6	1,919	169,800	3
Passepartout, Greater Luzern	1986	11	900	49,100	10
Flextax, Schaffhausen	1988	7	330	11,900	1
Zuger Pass, Zug	1988	5	220	15,400	11
ZVV-Netz-Pass, Greater Zurich	1990	44	3,513	303,500	5
A-Welle, Aargau	1991	12	+++	31,900	4
Davoser Pass, Davos-Klosters	1991	4	93	2,800	18
OndeVerte, Neuchâtel	1991	7	600	14,900	7
Abozigzag; Greater Biel	1992	11	+++	19,300	8
Arcobaleno; Tessin/Misox	1997	11	1,479	31,800	17
Engadin-Abo; Engadin	1999	4	141	700	19
Schwyzer Pass; Schwyz	1999	5	281	2,000	12
Vagabond; Jura	2001	4	342	4,400	2
Unireso. Greater Geneva/France	2001	7	450	116,500	14
Ostwind; Greater St.Gallen	2002	27	2,631	55,900	6
Mobilis; Greater Lausanne	2004	5	866	76,600	15
Libero; Greater Bern	2004	13	1,620	81,200	9
Z-Pass; Greater Zurich plus	2004	54	+++	24,700	
Beoabo; Berner Oberland	2006 ⁺⁺	17	740	3,700	16
Frimobil; Greater Fribourg	2006 ⁺⁺	7	+++	24,700	13

⁺ There has been a basic subscription alliance in Basel since 1978;

⁺⁺ Forerunners to Beoabo and Frimobil previously operated in some sub-areas;

⁺⁺⁺ Three alliances supplied no data on network size; the structure of the Z-Pass scheme means that the figure is not meaningful.

Source: Verband öffentlicher Verkehr

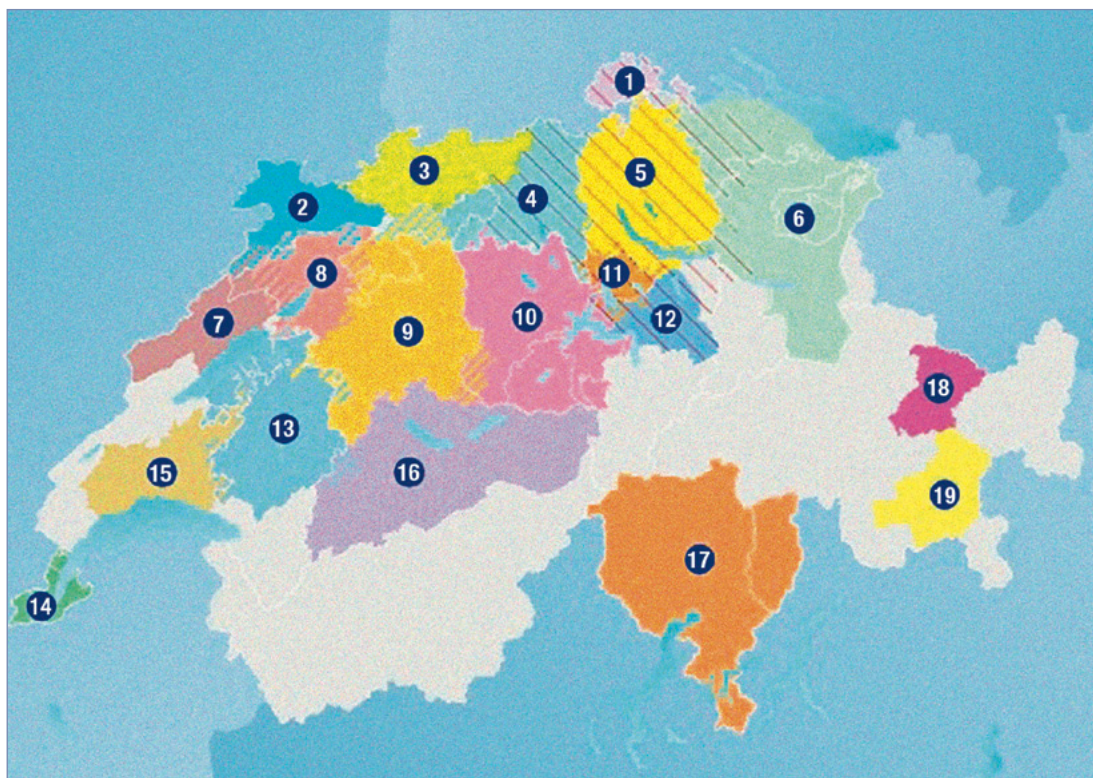


Figure 67
*Overview of alliances
 in Switzerland
 (Explanation of
 numbers see Table 8).*

By 1990 the *Tarifverbund Schaffhausen* (1988) and the *Tarifverbund Zug* (1988) have emerged, along with what is still Switzerland's only *Verkehrsverbund*, the *Zürcher Verkehrsverbund* (ZVV). The specific choice to adopt a transport- rather than fare-alliance model in Zürich was no coincidence. The affluent canton of Zürich covers almost the same area as the city of Zürich itself and as such only one political authority (that of the canton of Zürich) was involved in putting together the comprehensive *Verkehrsverbund* structure. The fact that in the same year, 1990, the federal government, the canton of Zürich and the SBB joined forces to create the country's first S-Bahn (suburban railway) system which prompted a massive increase in services (including through new rail lines) also made the *Verkehrsverbund* concept an appealing one.

Today, public transport services in Switzerland comprise 19 fare alliances and the cross-alliance Z-Pass system covering Zürich and its surrounding areas (see Table 8 and map Figure 67). The conventional alliance model remains the subscription-only one, however, during the next two years some alliances such as those in Lucerne and St.Gallen will be expanded into broader fare alliances and from 2010 onwards, such broader alliances look set to outnumber their subscription-only forerunners.

All alliance models have generally proved successful, growing at rates of between 1.5 % and 20 % a year. The specific growth rate of a particular alliance normally depends on how long the latter has been in operation: long-established ones generally grow more slowly, while more recent ones, such as Mobilis launched in the Lausanne area in 2004, tend to grow primarily when they evolve from the subscription-only model to a broader fare alliance. With catchy names like *OndeVerte* (Green Wave – Neuchâtel), *Arcobaleno* (Rainbow – Ticino/Grisons) and *Ostwind* (East Wind – St.Gallen, Thurgau, Appenzell Innerrhoden, Appenzell Ausserrhoden and Liechtenstein), between 2006 and 2007 both subscription-only and broader fare alliances continued to record a total growth of 6.1 %, a figure similar to that of SBB's mainline services but considerably higher than that of regional transport. Only the *Generalabonnement*, Switzerland's most comprehensive public transport product, topped this growth in 2007, having sold 344,000 subscriptions by the end of the year and having grown 8.8 % on its 2006 figures.

11.7 Season tickets for virtually half the population in Switzerland

In 2007, Switzerland's various alliances served 6.8 million of the country's 7.5 million inhabitants, with some minor overlaps. The only cantons without any form of alliance are Valais, Glarus and Uri, all of them Alpine valleys with undulating topography and in isolated locations (no large urban centres nearby). These figures do not include the Z-Pass (covering the core area of Zürich and extending to St.Gallen and Aargau) or the EUREGIO Bodensee daily ticket, which also encompasses parts of Austria and Germany.

By the end of 2007, some 345,000 Swiss citizens held a *Generalabonnement*, 1.03 million an alliance subscription including the Z-Pass (converted to an annual basis), and 2.1 million a Halbtax subscription entitling holders to half-price travel. Exactly how far alliance and Halbtax subscriptions overlap is unknown but whatever the figure, almost 3.5 million people in Switzerland – more than one in two adults – hold some form of public transport season ticket.

11.8 Looking to the future: integrating alliance system and *Direkte Verkehr*

The fact that the modal split of public transport in Switzerland is now over 22 % – and indeed is continuing to grow relative to private transport – is due in no small part to the country's alliances. However, from the perspective of both passengers and the transport companies two major problems have emerged.

The first is that of so-called 'product cannibalism' within the public transport sector. Do those living in a large conurbation opt to buy an alliance subscription for the area in which they generally travel and to purchase an additional Halbtax subscription (still excellent value at EUR90) for individual tickets for long-distance trips under the *Direkte Verkehr* system? Or do they instead simply buy a *Generalabonnement* covering travel on all 25,000 km of Switzerland's public transport network, including all urban transport connections? As a rule, the decision ultimately comes down to price. For example, at present a conventional second-class Ostwind annual subscription covering all zones costs CHF 2,403 (approximately EUR 1,500), while for CHF 3,100 (approximately EUR 1,940) passengers can purchase a second-class *Generalabonnement* which is valid across an area almost 10 times larger than that covered by the *Ostwind* pass.

On the outskirts of Zürich, the debate is rather more protracted than elsewhere since the local Z-Pass now covers an area almost half the size of Switzerland but remains, in practice, simply an amalgamation of the ZVV and every of its neighbouring fare alliances. The second problem is that although the *Generalabonnement* may be valid on every tram in Geneva and every trolleybus in Bern, the all-inclusive so-called City-Ticket is still the only option for those wanting to travel from, say, Zürich's Paradeplatz to Spisertor in St.Gallen. Revenue distribution is therefore proving somewhat of a conundrum since the alliances have zone-based fares and the *Direkte Verkehr* model line-based. At the same time, the alliances have grown so large that many main-line connections – such as the Zürich–Winterthur – already lie inside their boundaries. In this context, Swiss public transport customers (who enjoy a rather higher level of service by international standards) naturally expect to have the choice of travelling either by Intercity train or S-Bahn at the same fare, a choice already offered to passengers in the greater Zürich area.

The Swiss Public transport Association (*Verband öffentlicher Verkehr*) is currently working hard to put together an integrated solution, however, as experience in establishing the TNW in Basel has proven, such a solution will only be possible if neither the alliances nor the *Direkte Verkehr* system lose money in the process. Over the coming years, Switzerland with its 135 transport companies and 19 alliances hopes to achieve an integrated nationwide public transport system along the lines of that currently under development in the Netherlands. The Dutch, however, have only 36 companies and no alliances to contend with.

12

The special status of the Zürcher Verkehrsverbund (ZVV) within the alliance landscape in Switzerland

In Switzerland, choice is the name of the game when it comes to travel and the country offers a vast array of tickets and passes – Pasetpartout, Flextax, ABO zigzag, Vagabond, Libero, Mobilis, NetzPass – to match its multifaceted alliance landscape. The *Zürcher Verkehrsverbund* (ZVV) stands out as the only public transport alliance (alliances referred to in German as *Verkehrsverbund* in the singular and *Verkehrsverbünde* in the plural) amid numerous fare alliances (*Tarifverbünde*, see Chapter 11) and thanks to the Z-Pass fare system passengers can transfer quickly and easily between services run by either model. Many customers also hold Halbtax tickets entitling them to half-price travel or general subscriptions valid nationwide.

During the first half of the 20th century public transport in the greater Zurich area was in its heyday but from 1950 onwards it faced stiff competition from cars. In many places unprofitable tramways were taken out of service and replaced by buses. Major public transport projects fell on hard times: in 1962 Zurich's citizens rejected plans to shift the city-centre tram network underground and in 1973 canton residents blocked construction of underground rail (*U-Bahn*) and *S-Bahn* (suburban railway) networks. It was not until the 1980s that mind-sets began to change: traffic jams in and around cities highlighted the shortcomings of private automobile transport while broad segments of the population also became aware of the growing environmental damage caused by such transport. This had a significant impact on public transport and in 1981 the local authorities in the canton of Zurich once again put construction of an S-Bahn system to the vote. This time around, the project was approved by an overwhelming two-thirds majority and the subsequent creation in 1988 of a legal framework for the *Zürcher Verkehrsverbund* (ZVV) also met with little opposition. On 27 May 1990, public transport in the canton of Zurich officially entered a new era: the ZVV was launched and Zurich's first S-Bahn service left the newly built Stadelhofen station. Developing the S-Bahn system required additional construction work, too, such as building the underground Museumstrasse S-Bahn station in Zurich and the Hirschengraben and Zürichberg tunnels, expanding numerous railway stations and building various new stops.

12.1 Fare alliance versus Verkehrsverbund

The public transport alliance concept is a simple one but to date only one such alliance – the *Zürcher Verkehrsverbund* (ZVV) – has been established in Switzerland. Individual carriers in the canton of Zurich no longer operate as separate companies covering clearly delineated areas and applying their own fares but as part of an overall alliance. Any loss of business independence is clearly offset by increased customer satisfaction. In contrast to the fare alliance, whereby the various participating companies determine a uniform fare across the entire alliance area, the *Verkehrsverbund* goes much further: besides offering a uniform fare, the transport services on offer are far more comprehensive and financing is managed centrally. The ZVV is the umbrella organisation for public transport in the canton of Zurich and comprises eight responsible transport companies jointly serving regions within the alliance area along with a further 36 connected transport companies and carriers. The ZVV is responsible for strategic management

Table 9: Key figures for the Zürcher Verkehrsverbund

Key Data	Canton of Zurich	Fare area outside canton	Alliance total 2007
Alliance area (in km ²)	1,728.00	111.30	1,839.30
Population (in millions)	1.27	0.07	1.34
Political communities	171	15	186
Work places			67,500
Employees			728,000

and management of all alliance-wide services, setting fares, marketing and financing. Table 9 outlines the ZVV's structure.

12.2 Planning public transport

The ZVV is responsible for ensuring that today's public transport services in both the residential and business districts of Zurich operate as efficiently as possible; it is also in charge of planning future public transport services. It outlines the principles to be followed in designing services and operates a Transport Fund through which all infrastructure expansion projects in the ZVV area are financed. The local transport companies compile specific timetables, and close cooperation between these transport companies and the alliance structure as a whole ensures that rail, bus, light-rail and boat services coordinate with each other to make connections at transfer points as swift and straightforward as possible.

12.3 Promoting public transport

Another of the ZVV's roles is to foster good relations with customers. It conducts market research to ascertain how its services are rated and what passengers' needs and expectations are;

**Figure 68**

*The 'one-ticket' concept:
within the Zürcher
Verkehrsverbund
(ZVV) your tram could
also be a boat, a bus, a
train ... or all four!*

regular customer surveys yield important information about how to optimise services. It is vital for the ZVV to remain abreast of market trends at all times, assess the suitability of fares and satisfaction with the latter among passengers, and devise new types of tickets and subscriptions and tailor these to emerging requirements. The ZVV is also responsible for promoting public transport and raising public awareness of its services.

12.4 The 'one-ticket' concept

In Zurich's residential and business districts one-size-fits-all when it comes to transportation, with a single ticket valid for all rail, light-rail, bus, ship and cable-car services (Figure 68). ZVV tickets can also be used on EuroCity and InterCity trains and in return national and international tickets are also valid on Zurich's S-Bahn trains. Such an arrangement for rail transport in the greater Zurich area is extremely practical for passengers but complicates the job of the ZVV and the Swiss federal railway company *Schweizerische Bundesbahnen (SBB)*: details of trips made are extrapolated through costly passenger surveys and the revenue distributed equally between the ZVV and SBB.

12.5 Financing public transport

The ZVV is responsible both for financing the transport companies and off-setting revenue shortfalls. Each year, the ZVV orders some CHF 1 billion worth of services from its carriers. They hand over their revenue to the ZVV, which in return reimburses their operating expenditure. This form of financing is known as the gross-yield system (*Bruttoverträge*) and sets the ZVV apart from most other fare and transport alliances in both Switzerland and Germany. The income from ticket sales and other sources covers just over half the costs incurred and after deduction of federal government grants, the canton of Zurich and its 171 communities each cover half the outstanding costs. The communities' contributions are calculated using a procedure which factors in not only the number of departures listed in the timetable but also the communities' taxable capacity. The amount they must pay is therefore based on actual transport services provided and takes account of their overall financial health too.

12.6 Interaction with the responsible transport companies

Strategy and operations management are two separate concepts within the ZVV. Accordingly, strategic management is the preserve of the ZVV while the eight responsible transport companies are responsible for managing operations across an entire market region as well as for the various carriers in it. Following guidelines drawn up by the ZVV, the responsible transport companies compile detailed timetables, operate buses,



Figure 69
Eight responsible transport companies have joined forces within the ZVV.

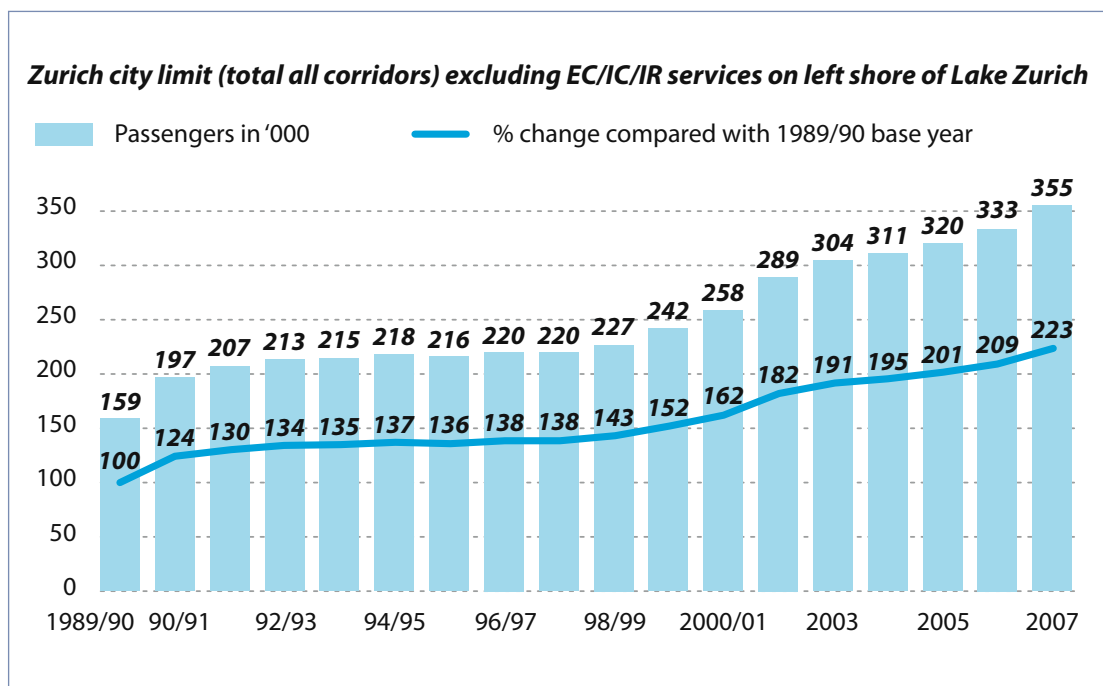
light-rail systems, S-Bahn networks and boat services, and, where appropriate, farm out transport services to smaller operators in sub-areas or on individual lines (see Figure 69). They promote public transport in their area and make a key contribution to maintaining a high-quality public transport system in the canton of Zurich. This separation between strategy-related tasks and operational responsibility requires that the ZVV and the responsible transport companies work together closely.

12.7 Interaction with neighbouring fare alliances

In recent years, the Zurich economic area has expanded rapidly: today it stretches beyond the borders of the canton of Zurich itself, from Aarau in the Mittelland region to Frauenfeld in eastern Switzerland and from Schwyz in the centre of the country to Schaffhausen on the border with Germany. Traffic between the centre of Zurich and the surrounding cantons has also risen in line with this growth and the ZVV has embraced this trend by constantly expanding the services on offer. Yet without a uniform fare system covering the S-Bahn and its various feeder lines, the benefit of these expanded services would remain limited. Although the ZVV is virtually surrounded by fare alliances, the latter are mainly geared towards political boundaries and canton-internal transport needs. Until late 2004, commuters working within the canton but living outside it were, in some cases, forced to buy three tickets for their journey. This arrangement was both impractical and costly for passengers and prompted the idea of a combined fare system linking the ZVV with the surrounding fare alliances, whereby customers travelling beyond the alliance's borders would require just one ticket. Taking this idea as its basis, the ZVV established a joint fare system – the Z-Pass – in partnership with both the neighbouring fare alliances and SBB. This new fare system links the existing fare alliances into a broader alliance structure enabling passengers to travel freely beyond the ZVV's borders on a single ticket.

The Z-Pass is valid only for travel between the ZVV area and that of a neighbouring alliance since these are the most widely used routes. Monthly and annual subscriptions were introduced in December 2004 and to date only passengers commuting regularly between the ZVV and its neighbouring alliances have been eligible for such cross-alliance subscriptions. However, single tickets are due to be introduced in late 2009.

Figure 70
*Rising trend in
weekday passenger
numbers on the Zurich
S-Bahn between
1989/90 and 2007.*



12.8 The popularity of subscriptions in Switzerland

The vast majority of passengers in Switzerland buy either line tickets (*Streckenfahrkarten*) or some form of subscription (*e.g.* an alliance subscription, a Halbtax subscription entitling the holder to travel half price, or a general subscription valid throughout Switzerland) and thereby enjoy a discount. The 2000 microcensus revealed that based on individual subscription types, almost 48 % of all people aged over 16 held a subscription: 35 % a Halbtax one, 6 % a general one and 13 % an alliance one (although since the alliance and Halbtax subscriptions can overlap, the overall proportion of subscription-holders is actually 48 %). Accordingly, alongside the city-states of Hong Kong and Singapore, Switzerland has one of the highest market penetration rates for public transport subscriptions anywhere in the world. In July 2006, there were more than 2 million Halbtax, 300,000 general and 800,000 alliance subscriptions in circulation. In the Zurich canton alone, over 300,000 people hold a ZVV alliance subscription and this figure is rising all the time (see Figure 70 showing the rise in workday passenger numbers on Zurich's S-Bahn). However, the subscription model was not an overnight success. General subscriptions were introduced in 1898 as a service for a relatively small proportion of business travellers. The Halbtax subscription dates back even further to 1891 and for a long time enjoyed only moderate success. It was not until the Swiss Parliament slashed the price of a subscription from CHF 360 to 100 that the breakthrough came. This temporary subsidy paid off for everyone and within a short time the number of subscriptions had rose from 666,000 to 2 million. The federal government was quickly able to reduce its subsidies and ultimately withdraw them completely, while the transport companies themselves saw the losses brought about by lower subscription prices offset by the additional sales achieved.

Further reading

on electronic fare-management and electronic timetable information:

Electronic fare-management

- **Future fare and sales strategy using new technologies**
VDV-Mitteilung No. 9710, February 2002
- **Mobile phones as sales terminals – Requirements and concepts**
VDV-Mitteilung No. 9714, May 2004
- **The simplest ticket in the world (pamphlets on the eTicket Deutschland)**
VDV-Kernapplikations GmbH & Co. KG, Cologne 2007
- **Main glossary of specifications for the VDV-Kernapplikation for electronic fare-management**
Last updated: May 2008

Further information

on electronic fare-management can be found online at:

www.vdv-ka.org and

www.eticket-deutschland.de

Electronic timetable information

- **Integration Interface (Ist-Daten-Schnittstelle) – Guaranteed connections, dynamic passenger information systems, visualisation and general information services**
VDV-Schrift No. 453, Version 2.3, March 2008
- **Integration Interface (Ist-Daten-Schnittstelle) – Based on VDV-Schrift No. 453 Version 2.3 Timetable information**
VDV-Schrift No. 454, Version A.2, March 2008
- **Integration Interface (Ist-Daten-Schnittstelle) – Demand-responsive transport**
VDV-Schrift No. 459, March 2008

Further information

on electronic timetable information can be found online at:

www.vdv.de/wir_ueber_uns/vdv_projekte/istdaten_schnittstellen.html and

www.siri.org.uk

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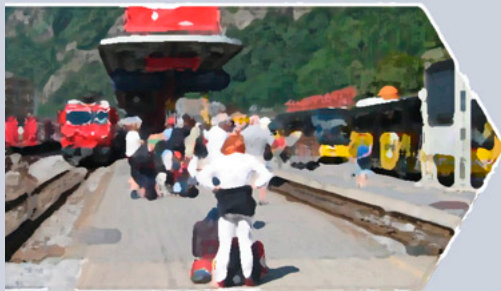
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