



Creating the future of transport

Door to Door Journeys
Client: The Campaign for
Better Transport

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Transport Research Laboratory



PROJECT REPORT

Door to Door Journeys

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Contents

1	Introduction	7
1.1	What is integrated transport?	7
1.2	Background and transport trends	7
1.3	Successful approaches	9
1.4	Future prospects	10
1.5	Key attributes of D2D transport?	10
1.6	Scope of the report	11
1.7	Outline Methodology	11
2	Barriers to D2D transport	12
2.1	Inadequate information	12
2.2	Poor interchange facilities	13
2.3	Poor connections	16
2.4	Restricted ticketing	17
3	Barriers due to institutional and funding frameworks	22
3.1	Institutional and regulatory structures	22
3.2	Rail franchising	24
3.3	Funding for local authorities including LTPs, RSG etc	25
3.4	Bus quality partnerships and quality contracts	27
3.5	Recent Legislation: Developing Public Transport	28
3.6	Bus operator grants	29
3.7	The land use planning system	30
4	Good practice examples: UK and EU	32
4.1	Information before and during the journey.....	32
4.1.1	Transport network information	32
4.1.2	The use of technology	33
4.2	Journey Planning	36
4.2.1	Ålborg, Denmark	36
4.2.2	MOBITRANS in Nantes, France.....	37
4.2.3	Rotterdam, the Netherlands	37
4.2.4	BART – Bay Area Rapid Transit, San Fransisco, USA	37
4.3	Interchange	37
4.3.1	Station Travel Plans, England	38
4.3.2	Cycle Hire Schemes.....	40
4.4	Connections	42
4.5	Ticketing	43
4.5.1	Integrated Ticketing in the UK	43
4.6	Institutions and regulations.....	46

4.6.1	Madrid Regional Transport Authority.....	46
4.6.2	Network St Albans: a Quality Network Partnership for St Albans	46
4.6.3	Toronto Regional Transport Plan	46
5	Conclusions	48
5.1	Information	49
5.2	Interchange	49
5.3	Connections	49
5.4	Ticketing	50
5.5	Regulatory and institutional barriers	51
6	Recommendations	53
6.1	Institutional and regulatory structures.....	53
6.1.1	Rail franchising.....	53
6.1.2	Funding	53
6.1.3	Competition law.....	53
6.1.4	The land use planning system	53
6.1.5	Information.....	54
6.1.6	Interchange	54
6.1.7	Connections	54
6.1.8	Ticketing.....	55

1 Introduction

1.1 What is integrated transport?

Integrated transport or seamless travel provides for door-to-door (D2D) journeys by public transport. This requires that travellers do not face barriers that might discourage them from using public transport rather than the private car which already provides for seamless door-to-door transport.

Public transport journeys are generally multi-modal. Nevertheless because of this, what are different, and often competing, modes need to be better integrated if they are to provide an effective alternative to just car use: bus/ coach, rail, taxis, cars, walking and cycling all need to be better integrated. Furthermore some journeys to access public transport, for example on foot, can take a long time, further reflecting the need for improved integration between different modes.

To achieve better integration of these modes a framework for action is needed to make seamless door-to-door journeys universal rather than subject to decisions by individual operators. This may be difficult given the number of players in the industry with different objectives. Getting these bodies to act together (although in some cases they are enabled, incentivised or required to do so by the Government) is not easy. However the Transport White Paper (Jan 2011)¹ 'Creating Growth Cutting Carbon, Making Sustainable Local Transport Happen' highlights the need for a single national approach to end-to-end journeys. The government acknowledgement that action should be taken to encourage more of these types of journeys by public transport should allow for more progress to be made.

In the UK public transport faces a particular challenge – the alternative provided by the private car is particularly strong with an extensive infrastructure, relatively low costs and available parking at both the origin and destinations of so many journeys, except in some major conurbations. To provide a realistic, and preferred, alternative to car use public transport must be better integrated and provide seamless journeys.

While there are many excellent examples of efficient D2D provision in the UK, it is inconsistent. Many more improvements could be made.

1.2 Background and transport trends

The demand for transport is growing; the levels and intensity of usage of the existing networks are increasing. As the population grows more resources are used, people travel more and want to move goods and ideas faster and in a more reliable way². Congestion is predicted to rise by around 30% in the period to 2025. Enabling D2D journeys by public transport will help to address this.

However, the average distance walked fell by 20% during the 1990s and the distance travelled by local bus declined by 11%. Both of these declines reflect increased use of cars and the fact that people are travelling further. Bus fares increased by 56% and rail fares also rose by 51% in real terms between 1981 and 2010. In contrast, it is widely accepted that the overall real cost of motoring has only increased by a much smaller percentage and some figures even suggest that it has actually declined³.

¹ Creating growth, cutting carbon, making sustainable local transport happen, DfT 2011

² National Infrastructure Plan 2010, HM Treasury, 2010

³ Commons Debate Hansard Transcript, January 2011 (figures based on the transport components of the retail price index)

The overall number of trips an individual is taking has fallen but more trips are being undertaken by car than by any other mode. Using a car allows people to travel faster and further in the same time. This presents a challenge for public transport to provide the D2D experience which can compete with the private car in terms of speed, comfort and cost.

The increased affordability of motoring has led to car ownership levels increasing significantly. The proportion of households with access to one or more cars increased from 14% in 1950 to 75% in 2009. Since 2002 there have been more households with access to two or more cars/vans than without any access at all⁴. One third of households now have two or more cars⁵.

Although it is true to say that car ownership has continued to rise, the rate has slowed in recent years and there is evidence to suggest that actual usage of private vehicles has levelled out, and even declined, in some major industrialised countries since 2003.⁶ The number of rail journeys recently rose faster than the number of car journeys showing that historic trends of growing private car use are being slowed and could potentially be reversed. Changing investment priorities may play a role in this, with less funding being directed at highway infrastructure designed to make journey times faster and much more in supporting sustainable transport modes.

Trips by public transport usually consist of multiple stages, including walking. Nearly two thirds of rail and underground trips, and just under a third of local bus trips, included a walk of 50 yards or more⁷. Only the taxi can compete completely with the private car in giving a fully D2D experience. Surface rail transport has an average of three stages included in the total journey.

In both 1998/2000 and 2009, 87% of households in Great Britain were within 6 minutes walk of a bus stop while a further 10% lived within 13 minutes. Between 1998/00 and 2009, the proportion of households in rural areas that were within 13 minutes walk of an hourly, or better, bus service increased from 45% to 58%. Over the same period the proportion of households in small urban areas with this access increased from 74% to 88%, and from 86 to 91% in small/medium urban areas⁸. This shows the increasing accessibility of bus transport to the majority of people, despite bus use being in decline generally across the country.

Bicycle use has also decreased significantly in the UK since 1992/1994. This is despite figures showing cycle ownership has actually increased from 37% in 1992/4 to 47% in 2002/3⁹ shown below.

⁴ Transport Statistics Great Britain, Department for Transport 2010

⁵ National Travel Survey, September 2010

⁶ Are we reaching Peak Travel? Trends in passenger transport in eight industrialised countries, A Millard-Ball, L Shipper 2011.

⁷ Focus on personal travel, Department for Transport 2005

⁸ National Transport Survey 2009, Department for Transport

⁹ Focus on personal travel, Department for Transport 2005

	Percentage/number		
	Percentage of households with at least one cycle	Bicycles owned per 100 people	Percentage of active cyclists
1989/1991	36	27	6.3
1992/1994	37	29	5.6
1995/1997	39	32	5.6
1998/2000	41	35	5.6
2002/2003	47	38	5.1

Figure: Trends in bicycle ownership and usage: 1989/91 to 2002/03¹⁰

Furthermore, poorly coordinated public transport is having a damaging effect on city labour markets and on investors' perceptions¹¹.

1.3 Successful approaches

However, whilst some of the national trends show a shift from more sustainable modes towards the car, there are numerous examples of positive schemes which have resulted in rather different outcomes. One major initiative is the Department for Transport's 'sustainable travel demonstration towns' initiative¹². In this project, Darlington, Worcester and Peterborough received a total of £10 million to promote bus use, walking and cycling for journeys within the towns over 5 years.

Initiatives varied between the three towns, but included a range of activities aimed at improving the public transport offer. Information improvements included upgrading interchanges and timetable information at bus stops; public transport guides which were distributed to households via personal travel planning programmes; the development of information centres or hubs; and the introduction of real-time passenger information. Marketing included improvements to the 'legibility' and branding of the bus network, to make it easier to understand. Ticketing integration was achieved through the introduction of multi-operator tickets; and a variety of fares discounts were introduced. Improvements were also made to the bus services themselves, sometimes led by the operators and sometimes as part of initiatives led by the local authorities. In Peterborough and Worcester, there were significant improvements in service quality, including more frequent/regular services on main routes. Low-floor accessible vehicles were progressively introduced. Driver training in Peterborough, and a bus charter in Worcester, aimed to improve the passenger experience.

Consequently, between 2004/5 and 2008/9, bus use increased by approximately 40% in Peterborough, and approximately 25% in Worcester, according to both bus boarding data, and household surveys conducted with residents of the towns. In both towns, whilst the introduction of concessionary fares may have helped, it was clear that the majority of the increases were due to the initiatives that were put in place. (There was a less positive trend in Darlington, in part due to the nature of competition between two operators in that town).

Across the country some urban centres are seeing an increase in public transport usage, outside of the sustainable travel towns' initiative. Cycling accounts for about 25% of all

¹⁰ National Transport Survey 2009, Department for Transport

¹¹ On the Move: Delivering Integrated Transport in Britain's Cities, J Preston, A Marshall & L Tocher mann, Centre for Cities 2008

¹² <http://www.dft.gov.uk/pgr/sustainable/smarterchoices/smarterchoiceprogrammes/>

journeys to work in Cambridge which is one of the highest in Europe¹³. In addition both York and Brighton have seen successes on their bus networks. In Brighton bus patronage has grown by around 5% per year since 1993 contributing to a 3% reduction in city centre traffic in the last 3 years. In York there has been a 56% growth in bus patronage over the past 5 years¹⁴. Bus patronage in England showed an annual increase of 1.6% in 2008/9 with the largest increase seen in London (2.8%)¹⁵.

1.4 Future prospects

The Coalition Government's spending review and spending cuts is likely to limit central government's ability to assign much resource to improving D2D transport. The Department for Transport is cutting direct support for bus services by 20% from 2012 and it appears that the support for local authorities for buses in rural areas is to be revoked completely. In addition the spending review sees rail fares rising at around 3% above inflation which is likely to make it even more difficult to encourage modal shift away from cars which are relatively affordable.

However the White Paper, published in January 2011 outlines support for D2D journeys and as part of this has committed to ensuring most of these journeys can be made using smart ticketing by 2014. It also launched the Local Sustainable Transport Fund (LSTF). This fund is set to receive significant funding over the next 4 years, around £560m and will provide important funding for smarter travel initiatives and encouraging people to walk, cycle and use public transport.¹⁶

The Coalition has made one mention of bus service provision which states that they will encourage joint working between bus operators and local authorities. The Government is awaiting the outcome of the Competition Commission inquiry into the local bus market in Great Britain outside London before deciding on the need for any further regulatory reform of bus provision.¹⁷

1.5 Key attributes of D2D transport?

The Campaign for Better Transport has identified the four key attributes of D2D transport as:

- **Information** before and during the journey;
- **Interchange** between different public transport services and between public transport and other modes;
- **Connections** between different public transport services; and
- **Ticketing** for whole journeys.

These attributes are also upheld in the Local Transport White Paper, Creating Growth, Cutting Carbon, making sustainable local transport happen.¹⁸ Addressing the barriers that currently impede D2D travel will greatly enhance the offer that public transport provides.

¹³ Cambridgeshire County Council, 2011, <http://www.cambridgeshire.gov.uk/transport/around/cycling/Cyclepolicyand+strategy.htm>

¹⁴ Greener Journeys, Arriva Buses, <http://www.greenerjourneys.com/corporate/>

¹⁵ [Public Transport Statistics Bulletin \(2009\) Department for Transport](#)

¹⁶ Campaign for Better Transport, www.bettertransport.org.uk

¹⁷ <http://www.publications.parliament.uk/pa/cm201011/cmhansrd/cm100609/text/100609w0001.htm>

¹⁸ [Creating Growth, Cutting Carbon, making sustainable local transport happen, Department for Transport 2011.](#)

1.6 Scope of the report

This report addresses four issues:

- Section 2 identifies the barriers to D2D travel;
- Institutional and funding frameworks are considered in Section 3 which focuses on how these might be reduced;
- Good practice examples are described in Section 4; and
- Section 5 provides conclusions and Section 6 recommendations.

In preparing this report we have not replicated the work of others in the field but have identified potential barriers to be overcome and good practice case studies that need to become more common.

1.7 Outline Methodology

The following methodology was applied in undertaking this research:

- A literature review was undertaken broadly following the Systematic Review (SR) process, developed by TRL. Information for the review came from the TRL KnowledgeBase, including the ITRD (International Transport Research Documentation) - a multi-lingual database that delivers high quality information on global developments in transport and transport research. To supplement this, academics have been approached to gather further contributions and an Internet search for relevant material also undertaken.
- The literature review generated information that has been stored in a MicroSoft Access 2007 database for easy reference and viewing.
- Stakeholder consultation, involving several key participants in the public transport industry, and elsewhere, has provided additional useful information to supplement that gained from the literature review.
- Information generated by both the literature review and the stakeholder consultations has enabled TRL to analyse the regulatory and fiscal structures within which public transport operates and to identify possible improvements.



2 Barriers to D2D transport

D2D travel encompasses many different issues. Rail journeys are already innately multi-modal, more so than any other mode of land transport. Rail stations should therefore always be considered as transport interchanges, not as places where journeys start or end. Almost half of rail passengers walk to the station (45%)¹⁹. Other access modes are: 17% rail; 15% tube; 12% bus/coach; 9% car parked; and 8% dropped off by car. When the potential for further integration of rail with bus travel is considered, it becomes clear that the two markets are very different in terms of users and types of journey and that only a very small percentage of bus journeys involve a rail stage²⁰.

The four key attributes for ensuring a passenger's journey by multi-stage and modal public transport is seamless are also potential barriers to D2D transport. In this section we define the four barriers and briefly explain why they are central to the growth of passenger journeys by multi-stage public transport. Further explanation and European best practice is given in section 4.

2.1 Inadequate information

Comprehensive information about a passenger's whole journey by public transport is crucial to increasing confidence in the D2D service. Travellers are deeply habitual in their travel behaviour – better information is needed to prompt change. Individuals employ their existing knowledge of the alternative options before them and may choose to enrich, update or extend their knowledge through acquiring information from third parties²¹.

A lack of information can lead to mistrust in public transport being able to provide the door to door service they know they get from using a private car.

Key items of information which should be easily accessible before, and during, travel are:

- fares information;
- route maps;
- timetables; and
- arrival times.

By making this information accessible easily from a variety of sources, including mobile phones, the Internet and telephone inquiry systems, users will be able to make their journey which may include a number of changes confidently and easily.

During the journey passengers need to be able to find the information they need quickly as it has been shown that passengers tend not to search for information if it is not easily available. Branding could be important to counter this so that passengers can easily see where the information can be sourced when they are making connections and are clear where they need to go to continue on their way.

Increasingly access to information has become available almost instantaneously using new technical portals. Travel advice and journey planning needs to be provided through all available technologies so passengers can check their journey at any stage. Smart phones,

¹⁹ Rail and Integrated Transport: Presentation to The Rt. Hon Theresa Villiers MP and Norman Baker MP, David Mapp, Commercial Director, ATOC, 7th September 2010

²⁰ Topic Note on Integrated Transport, RSSB Project Reference Number: T824-02, M Jones, TRL, August 2009

²¹ The role of information in decision-making with regard to travel, Foresight Intelligent Infrastructure Systems Project Glenn Lyons, undated

computers and Real Time Information (RTI) can all supply up to the minute information about fares, bus and train times and problems on road or rail.

Provision of information at homes, at stops and on vehicles is inconsistent, despite the development of real time information displays, such as the London Underground Countdown System, text messaging services and web based information²².

Part of the issue is down to open data. Deregulation of the bus and rail industries has created numerous service operators, each with their own systems to manage and objectives to achieve. Consequently, data collection, analysis and dissemination remain fragmented across the industry, leading to incomplete, inconsistent and unreliable information being communicated to the travelling public.

Public transport operators have found it difficult to free up data for external sources to use, and make money from providing this service, by using it to provide accurate travel information to passengers. This has been down to some quality control issues over the data and the fact that real time information is still not available in every area. In 2010 TfL removed the restrictions on commercial use of its travel information and released several datasets for download. This has meant that information apps can be developed for the London transport system by independent IT companies giving Londoners a far more comprehensive picture of their journey tailored to their own requirements. However this approach is not standard across the country and there is a lack of data sharing throughout the sector²³.

If the current fragmented approach to data collection and dissemination is not addressed, passengers will continue to distrust transport information and make poor travel decisions to the detriment of all concerned. If however data can be joined up properly, with travellers coming to trust its accuracy and completeness, then this will unlock a change in traveller behaviour and attitudes to different transport modes. Travel choices will be more informed and the networks will be balanced. Furthermore the travelling environment will become safer and more resilient.

Provision of fares information, especially for bus services, remains poor. This is especially important as this is one situation where passengers are often asked to provide the exact money to pay for their fare, outside of areas with smart ticketing. If information about how much bus usage will cost does not become more easily accessible, or smart ticketing is not introduced as standard practice, then this will become more of a barrier.

Delivery of information services in most cases will involve more than one organisation. Typically, in whatever form, this will involve partnerships between public and private sector agencies. Currently each organisation will have its own objectives and at times these may be in conflict, to the detriment of passengers²⁴.

2.2 Poor interchange facilities

Studies²⁵ show a reluctance of passengers to interchange, particularly among commuters and business users; interchange for these groups is seen as having no benefits and being a potential cause of delay. Although 96% of bus journeys and 35% of rail journeys are just

²² On the move: delivering integrated transport in Britain's cities, John Preston, Adam Marshall and Lena Tochtermann, 2008

²³ Unblocking the transport network, Detica, 2010

²⁴ The role of information in decision-making with regard to travel, Foresight Intelligent Infrastructure Systems Project, Glenn Lyons, undated

²⁵ Interchange and Seamless Travel, J Hine, M Wardman & S Stradling in Integrated Futures and Transport Choices, Eds J Hine & J Preston, Ashgate 2003, p117

one stage, easily accessible, well signed, safe and comfortable interchange facilities are key to improving the perception of the difficulties faced when changing modes of public transport in order to complete a journey. Smooth interchange between all modes of transport is key to encouraging more D2D journeys. This includes walking, cycling, private car and taxi, as well as other public transport modes. Station travel plans provide a facility to investigate how all modes of transport can be integrated to improve the D2D experience. Stations and interchanges can be difficult to access by sustainable modes and so deter users from doing so. This can be due to inadequate facilities for cycling or poorly designed cycle or pedestrian accesses, making users feel unsafe. This is where station travel plans can be of key benefit. This type of plan looks at the whole use of an interchange and aims to improve facilities to remove barriers to multi modal travel.

The interchange is where people's perceptions of time lost on their journey are most keen. People's value of time is greater for waiting time than it is for in-vehicle time so the interchange experience can have a large impact on what is the preferred mode of travel. The values of time is greater for delays, so interchange and delay increase the 'generalised cost'²⁶ disproportionately, making a large difference to modal choice. If journey time reliability can be improved sufficiently to make the quality of interchange experience more acceptable then multi modal journeys could compete more with the private car. Improved interchange could also be said to be a more cost effective measure to address than trying to increase speed on one or more of the motorised legs of a journey.

Interchange has three components:

- The requirement to interchange has a penalty independent of any time penalty;
- The time spent changing between vehicles; and
- The time spent waiting.

When faced with interchange passengers can²⁷:

- Interchange and take the closest connecting service;
- Interchange and use the previous connecting service in order to reduce the risk involved in interchange;
- Take the previous interchange service in order to increase the chance of arrival at the destination on time;
- Travel at some other time which does not involve interchange or where the cost of interchange is low; or
- Travel by another route which does not involve interchange or where the cost of interchange is low.

Depending on the option chosen by the traveller there will be a different impact on the interchange penalty. It is clear that there is a very significant perceived penalty to interchange, arising from the non-travelling time it adds to journeys and the risks arising from missed connections. This penalty is greater for connections between other modes and rail than for rail to rail connections²⁸. Through trains which are not particularly attractive may lead to rail travellers being prepared to interchange for a faster journey.

If interchange facilities are poor they can add time to passenger's journey that they are not willing to give. Passengers need to be confident that they will be able to move from one mode of transport to another quickly, and efficiently, and be guided between where each mode arrives/leaves from through signage and good sightlines. There is a strong desire

²⁶ The generalised cost is the sum of the monetary and non-monetary costs of a journey.

²⁷ Interchange and Seamless Travel, J Hine, M Wardman & S Stradling in Integrated Futures and Transport Choices, Eds J Hine & J Preston, Ashgate 2003, p118

²⁸ Topic Note on Integrated Transport, RSSB Project Reference Number: T824-02, M Jones, TRL, August 2009

amongst passengers for high quality interchanges²⁹. The most disliked aspect of interchange is luggage handling with waiting times the next. Frequent travellers are more concerned about missed connections than the time spent waiting at an interchange.

Considerable improvements have taken place in signing and layout to improve the ease of interchange for users. Extensive use of tickets as such travelcards and Oyster pay-as-you-go reduces, or eliminates, the financial penalty imposed by interchange, enabling users to select the most appropriate route through the network – for example, taking the first bus to arrive at the stop and interchanging en route rather than waiting for a less frequent through service³⁰.

Furthermore the widespread use of pre-booked fares on the railways, with very severe penalties for travelling on the wrong train, results in greatly increased financial risks from interchange. Rail passengers don't want to risk the bus being late for the start of their journey if they have such a ticket.

The lack of widespread use of integrated tickets or smartcards, especially on surface transport where pre-booked fares for specific services are still very popular, still causes a barrier to multi modal journeys. Financial penalties which arise from travelling on a train other than your booked service are not acceptable to users. This means that users are less likely to put their trust in a mode, such as a bus, which is often perceived as being unreliable, to allow them to meet their scheduled service.

Interchange stations also need to have adequate facilities to ensure the relative comfort of waiting passengers. Shelter from the weather such as rain, wind and the cold is important to ensure passengers are happy to make this journey regularly. Safety is also central to success here. To encourage multi modal journey's passengers must feel happy to either wait for a bus/train or taxi or be happy to leave their cycling equipment without being concerned about damage or theft.

Cycling to and from the station is also a viable trip, usually where the journey is under 3 miles. In order to encourage more people to use this option the interchange again needs to be simple. Well placed cycle storage which is near to the station entrance giving commuters a quick interchange is necessary. Cycle storage needs to be safe and secure with CCTV giving people the confidence to leave their property there. Often there is limited capacity for bikes on trains especially during the morning and afternoon peak hours meaning the importance of safe and secure parking is even more crucial. Shelter from the weather is also useful to encourage people to cycle throughout the year knowing their bike will not be wet before use. Of particular importance is the need to make access routes into stations direct and safe. For example roundabouts are often perceived as unsafe by cyclists, yet many railway stations require their use for access. Such issues can be addressed in Station Travel Plans.

The last Government announced £5m of funding to develop ten cycle hubs and in Spring 2010 Abellio opened the 'Leeds CyclePoint' at Leeds Central station, based on their experience from similar examples in the Netherlands. This hub is fully manned and secure storage facility in addition to retail, hire, and repair and information services. This means that the stress from leaving bicycles is diminished and its proximity to the station provides smooth interchange. The repair facility also means that any damage, such as punctures, should not impact greatly onto interchange times.³¹

²⁹ Interchange and Seamless Travel, J Hine, M Wardman & S Stradling in Integrated Futures and Transport Choices, Eds J Hine & J Preston, Ashgate 2003, p121

³⁰ Factors Affecting the Decline of Bus Use in the Metropolitan Areas, P White, PTEG, April 2008

³¹ http://www.northernrail.org/pdfs/press/Cyclepoint_Brochure.pdf

Transport Scotland³² concluded that in order to influence travel behaviour it is important that the future needs of the community are considered and met through good planning that takes place at an early stage to ensure an integrated approach to transport and land use planning. Trip generation and travel behaviour should be forecast to ensure that sustainable travel choices can be provided within the design of new developments.

Developments should be mixed use, close to public transport nodes³³, and developers should include direct links for cyclists to destinations both within and outwith the development to provide greater convenience than for motorised access. The Campaign for Better Transport developed the Masterplanning Checklist, which sets out a way for new planning developments to be designed to facilitate sustainable transport usage by new residents.³⁴

Developers should work with local transport authorities, local travel plan advisors, residents and transport operators to support a high take-up of sustainable transport options. This should involve personalised travel planning and promotional initiatives as well as infrastructure measures. By considering planning and land use development when considering public transport usage, good connections can be designed in from the start. Better public transport may also enable more intensive development.

Car drivers are particularly deterred by interchange, being unused to the pre-planning and uncertainty associated with journeys involving repeated connections with multiple operators³⁵. Thus parking provision that is safe and convenient must be provided if drivers are to be encouraged to travel by rail. The time taken to find a parking place and walk into the station can be a deterrent to travel by rail.

2.3 Poor connections

Although 74% of passengers think connections are fairly good/ very good³⁶, for those unfamiliar with the public transport network, poor connections are a deterrent to use. If a multi-stage journey by public transport has poor connections then passenger wait times can be longer than is perceived to be acceptable. The punctuality measure used on the railways is based on time of arrival at final destination. This has encouraged some operators to include allowance for delays into their timetables, especially on the final leg of the journey, so that a train can make up significant delay mid-journey and still count as on time (i.e. within 10 minutes for long distance services), even though it may have been sufficiently late at intermediate stations that timetabled connections are missed.

Where RTI is used passengers are generally happier to wait for longer as they have an arrival time to focus on even when delays occur. RTI enables the passenger to do something about the delay, e.g. to re-arrange their travel plans, tell people they are going to be late, delay their departure and spend time productively in the office, or in greater comfort at home or a café, rather than waiting at the bus stop in the rain, etc. This helps reduce the impact of delays, so reduces the overall risk of travel by public transport.

RTI allows passengers to understand immediately if there will be a delay to their journey and then to be able to spend their wait time minimising the effect of this delay. They can

³² Public transport integration, cycling by design 2010, Transport Scotland

³³ Planning for Public Transport in Developments, Chartered Institution of Highways & Transportation, 1999.

³⁴ Sustainable Masterplanning Checklist, I Taylor, L Sloman, Campaign for Better Transport 2008, http://www.bettertransport.org.uk/system/files/Masterplanning_Checklist_2008.pdf and see CfIT's Planning for Sustainable Travel, <http://cfit.independent.gov.uk/pubs/2009/sustainable/index.htm>

³⁵ Topic Note on Integrated Transport, RSSB Project Reference Number: T824-02, M Jones, TRL, August 2009

³⁶ Rail and Integrated Transport: Presentation to The Rt. Hon Theresa Villiers MP and Norman Baker MP, David Mapp, Commercial Director, ATOC, 7th September 2010

for example remain at their starting location longer, and in comfort, notify anyone expecting them of new arrival times or organise alternate travel. Without RTI passengers have no knowledge of how long they may have to wait and can get frustrated by the 'not knowing' aspect, which leaves them unable to do anything but wait.

Passengers need assurances that their connections are guaranteed and that they can arrive at their destination when they expect to, within a margin of a few minutes. This has to be comparable to, and preferably shorter than, the time it would take to drive.

Frequent travellers are more concerned about missing connections than their waiting time³⁷. If a passenger consistently has to run to catch the next stage, whether by bus or train, and the likelihood of missing this connection is high then the perceived stress of the connection is a barrier to usage. However, although frequent travellers are often accepting of a wait between modes, if the wait time is too long then this can also be a barrier.

In cities such as London, connections by bus or tube are frequent enough to minimise the impact of slight variances to scheduled arrival times. However, where passengers rely heavily on a specific connection much more interaction between modes and transport operators is needed to ensure a smooth D2D journey.

One of the traditional key features of Dutch public transport is the integration of services. Over the decades, the public transport system began operating more and more as one system based on a clear hierarchy of regular interval services: with intercity, semi-fast and stopping rail services complemented by express buses (where there is no rail service), and local bus services. Much effort is put in to ensuring good connections on most journeys where no direct connection is possible, there is often a convenient connection with a short transfer between trains or between train and bus. In fact, when setting up a timetable, bus operators often start with building a 'transfer scheme' in which the most convenient ways to connect to the railways can be found.³⁸

Provision of alternate modes of transport at interchanges can give passengers control over their connections. Providing cycle hire facilities or safe, secure cycle storage gives passengers an option for shorter journeys (typically 5km or less). Where cycling is encouraged, and access to interchange stations (typically rail) is simple, the mode share increases. In the Netherlands where the bicycle has a major role in transportation 38.3% of people will choose to cycle to the station whereas only 7.2% choose to drive³⁹. By placing ample cycle parking near to rail stations, or bus stops, bicycles provide a good feeder service. In addition car clubs with availability at stations can provide an alternative to cycling and give passengers control over their connections. These do not tend to be available on integrated ticketing however and would be at extra cost to the passenger.

2.4 Restricted ticketing

Ticketing and fares are important to the success of D2D transport. There are numerous examples of how both integrated ticketing and smartcard technology has already improved D2D journeys for passengers. However in the UK these are mainly restricted to a single area or county or indeed one mode of transport such as rail with only a few cross boundary multi modal options available.

³⁷ Costs of interchange: A review of the literature, Dr M Wardman and Dr J Hine, 2000

³⁸ Public Transport Tendering in the Netherlands, Didier van de Velde, David Eerdmans and Hans Westerink , Pteg 2010

³⁹ The access journey to the railway station and its role in passengers' satisfaction with rail travel, Moshe Givoni, Piet Rietveld, 2007

Comprehensive through-ticketing is provided between passenger train operators on the National Rail network. Train operators are obliged, as a condition of their passenger licences, to participate in through-ticketing arrangements covering most station-to-station journeys in the country this includes the London Underground. Rail companies also offer certain add-ons which cover other modes of transport such as bus services.⁴⁰

In England, London has comprehensive ticketing arrangements whereby tickets can be bought which are valid for use of all public transport modes provided by TfL. London is also set to become the first city in the world where passengers will be able to access the transport system with their contactless bank card for pay as you go travel. Card readers are being upgraded for this to be in use for the end of 2012.⁴¹ Outside of London, there is no requirement for rail or bus operators to provide integrated ticketing. Since bus deregulation and the consequent reduction in powers of the passenger transport executives, this is left entirely to the market and to voluntary arrangements between operators and local transport authorities. In the metropolitan areas, and larger cities, a range of multi-modal and multi-operator tickets are available for local buses, trains, trams and metro systems.⁴²

While this lack of integration dissuades passengers from travelling, progress has been made. Day tickets have been introduced in some areas which allow unlimited all day travel on local bus networks, it must be mentioned though that these types of tickets aren't suitable for everyone. The Public Transport Ticketing Schemes Block Exemption Order 2001 (from the Competition Act 1998) has enabled more local authorities and operators to conclude joint ticketing agreements. However, the competitive structure of the industry outside London, and fears of entanglement with the Office of Fair Trading, mean that, outside the main cities, multi-operator tickets are still an expensive rarity.

An investigation by the Office of Fair Trading in 2009⁴³ showed that incumbent bus operators with a well developed network had little incentive to enter into multi-ticketing arrangements with smaller rivals as the benefits to the rival were generally greater than the benefits to the incumbent.

The powers of the Local Transport Authorities (LTAs) were enhanced under the Transport Act 2000 (TA 2000). The TA 2000 introduced Quality Partnership Schemes (QPSs) and Quality Contract Schemes (QCSs) which are instruments allowing LTAs to require bus operators to meet certain quality standards. The TA 2000 also empowers LTAs to set up ticketing schemes, whereby operators of local bus services are required to make and implement arrangements to accept each other's tickets or provide integrated ticketing in ways specified in the scheme. The Local Transport Act 2008 reinforced this and provided Local Authorities with a wider range of options to help meet public transport needs. However, LTAs only have influence over the supported services which they subsidise. Privately managed routes are not bound to participate in integrated ticketing schemes.

These powers have been used successfully by a number of local authorities including Hertfordshire County Council who developed the Intalink Partnership⁴⁴ between the local authority and bus and train operators. This partnership was set up to achieve:

- Better customer information on bus and rail services in Hertfordshire.
- Better awareness of journey opportunities available by using passenger transport.

⁴⁰ Ticketing and Concessionary Travel on Public Transport, House of Commons Transport Committee, March 2008

⁴¹ Transport Extra, London bank card payment revolution is global pioneer, March 2011

⁴² Ticketing and Concessionary Travel on Public Transport, House of Commons Transport Committee, March 2008

⁴³ Local Bus Services, Office of Fair Trading, August 2009

⁴⁴ Intalink Partnership <http://www.intalink.org.uk/default.asp?contentID=644>

- Co-ordination between service providers.
- An integrated bus and rail network.
- Higher standards of information and service provision.

This partnership also developed the Intalink explorer ticket which allows unlimited travel for one day across all buses in the network. By adding PLUS BUS⁴⁵ train travel is also integrated in to Hertfordshire ticketing.

The reasons why operators are reluctant to become involved in integrated ticketing schemes could partly be through competition and the desire by large bus operators to retain the largest presence in a local area. Bus operators do not want to see their passengers using rival buses or purchasing tickets on rival services and being able to use their buses. Reallocation of revenue between different operators is key but is not as simple within the bus industry as on the train network due to the large number of small bus operators.

Passengers often believe they need separate tickets for different parts of their journey and do not realise that for some journeys there is the option of a multi-stage/modal ticket.

Many bus companies require the exact fare when paying in cash, leading to a reduction in time spent giving change and consequent improvements in reliability. However this requires the user to have a lot of small change with them as it is not always easy to discover bus fares prior to travel. Fares are not always in round numbers, such as £1, either, meaning it is likely many people will be unable to comply with this requirement.

Nevertheless Britain is now the only country in Europe that has a nationwide integrated train to bus ticketing system that has been introduced, is managed and has been funded purely by commercial operators. PLUSBUS is now supported by all leading bus and rail operators.⁴⁶ Ticket sales have been encouraging and increasing year on year showing the appetite for integrated ticketing to simplify multi-modal journeys. In the rail financial year 2006-2007 a total of 77,180 PLUSBUS tickets were sold. This was a 55% increase on the previous years' figure of 48,800 tickets. Some well-established schemes have annual growth rates for ticket issues of well over 150%.⁴⁷

PLUSBUS has greatest success on journeys which start with rail and end with bus. The ticket is only available as part of a train ticket and cannot be purchased on the bus itself. This means that the majority of people will be buying their train ticket and will make the choice to use a bus for the last leg of their journey. In addition and as already mentioned, when buying a train ticket for a specific service most passengers could be wary of relying on the bus. However there appears to be a 'modal asymmetry' in integrated ticketing: PLUSBUS is excellent for journeys that start with rail and end with bus; but doesn't work as effectively the other way round, as rail tickets cannot be purchased on the bus. This is an example of where there are differences between access and egress modes which may impede D2D journeys.

Major cities, such as London, have used integrated ticketing for some time. Travelcards with validity on most public transport modes have been in use in London since 1984 and still exist alongside the Oyster card smartcard launched in 2003. These ticketing options have led to a dramatic reduction in the number of London bus users paying in cash down to approximately 3%, compared to 29% in the six English Passenger Transport Executive (PTE) Areas⁴⁸. This has been driven by differential pricing and the incentivisation of Oyster

⁴⁵ <http://www.plusbus.info/>

⁴⁶ Door-to-door by public transport, Journey Solutions, June 2009. Other countries have schemes which involve public authorities.

⁴⁷ International Road Transport Union, <http://www.iru.org/>

⁴⁸ On the move: delivering integrated transport in Britain's Cities, John Preston, Adam Marshall and Lena Tochtermann 2008

use by providing discounts. In regional cities, a wide range of operator-specific tickets leads to confusion, the perception of getting poor value for money and also less reliable services, as cash payments slow things down⁴⁹. In West Yorkshire, for example, there are 37 operators and 88 operator-specific ticket types.

Smartcards offer a range of new possibilities but it is important to remember that integrated ticketing and smartcards are separate, though related, concepts. Greater integration can be achieved without smartcards but smartcards do not, in themselves, produce integrated ticketing arrangements.

Fares can be confusing and fares' structures do not necessarily reflect the full commercial costs. However, new technologies and particularly smartcards and Integrated Fare Collection Systems (IFCS) can be used to implement more flexible fare structures that could offer the possibility to differentiate fares depending on the situation of the user, the distance travelled and/or the time of the travel peak/off-peak hours⁵⁰.

The identified benefits of integrated fare products were drawn together by PTEG (the Passenger Transport Executive Group) in the following 10 categories⁵¹:

- increased patronage;
- increases in recorded passenger satisfaction;
- evidence of resulting modal shift;
- increases in revenue;
- reductions in transaction and administrative costs;
- social benefits;
- reductions in fraud;
- wider contribution to city life and identity;
- acquisition of accurate data on passenger behaviour enabling better capacity and network planning; and
- faster boarding times enabling buses to run more reliably, faster and frequently.

Greater availability of integrated fares would enhance the public transport offer.



The Coalition government has already confirmed its commitment to smart ticketing. Indeed Norman Baker MP, Parliamentary Under-Secretary of State for Transport, has announced his

⁴⁹ On the move: delivering integrated transport in Britain's Cities, John Preston, Adam Marshall and Lena Tochtermann 2008

⁵⁰ Financing Public Transport: A Political and Economical Challenge, Conference Programme, UITP 2009

⁵¹ The Benefits of Simplified and Integrated Ticketing in Public Transport, Passenger Transport Executive Group, October 2009

aspiration for all public transport in the UK to be covered by smartcard technology: *"Smart ticketing is already part of everyday life for millions of travellers in towns and cities in England. But this is only the beginning - my personal vision is to see seamless travel on one smart card throughout the country by 2020 at the latest. I believe the roll-out of smart ticketing will attract more people onto public transport. The benefits of smart ticketing are obvious - quicker, easier and potentially better value journeys on trains, buses and trams"*⁵².

The 2011 Local Transport White Paper outlines the Governments plans to revolutionise public transport journeys through smart and integrated ticketing. It believes that this approach will have benefits for passengers, authorities and operators and is committed to working with these partners to deliver the infrastructure needed to enable passengers to use smart ticketing on most public transport journeys by December 2014.⁵³

⁵² Local Transport Today

⁵³ [Creating Growth, Cutting Carbon, making sustainable local transport happen, Department for Transport 2011.](#)

3 Barriers due to institutional and funding frameworks

Public transport works within institutional and funding structures that influence the ability to provide D2D travel. The roles of the public and private sector in the UK transportation sector have changed substantially over the last 50 years from central government control to a system almost exclusively run by the private sector within a framework established by central government.⁵⁴

3.1 Institutional and regulatory structures

Many aspects of door-to-door travel may need to be specified by local or national government, as legislators and regulators, because many interventions won't be in the direct interest of individual players. The social benefits of certain measures outweigh the individual costs to stakeholders, such as operators or local authorities.

Two fundamentally different categories of organisation of the supply of public transport services exist and these relate closely to the legal framework within which these services are meant to appear⁵⁵. In public authority regimes, those authorities which have the responsibility for transport ('transport authorities') have a *legal* monopoly. This means that market entry is legally impossible and that all market entry is the result of a public authority initiative to produce, or request, the provision of services. Delivering D2D transport is relatively easy since the regulatory authority is also the operator. An example of such regimes can be found in France outside the Paris Region. In market-oriented regimes however, the supply of transport services is based upon the principle of free market entry with possible regulatory checks. Examples of this system can be found in local public transport in Great Britain, but can also be found in Germany although there is often limited freedom and little or no new market access. Securing integrated public transport in market-oriented regimes faces different challenges.

Transport authorities can play several roles⁵⁶:

- *Licensing authority*: granting access to public transport providers;
- *Authorising authority*: granting access to the market;
- *Concessioning authority*: granting access to the market;
- *Regulatory authority*: setting the 'rules of the game' for operators, together with being the watchdog or referee monitoring and enforcing the rules of the game;
- *Enterprising authority*: when the authority creates and bears the entrepreneurial risks of transport services either by owning a public transport company or by outsourcing the production of services; and
- *Subsidising authority*: to stimulate the general supply of public transport services and redistributing wealth to politically-chosen target groups in society (such as disabled people, school children, older people, unemployed etc).

Success in delivering D2D transport will depend on the role that transport authorities play and the regulatory structures for the industry which may cover various aspects, including⁵⁷:

⁵⁴ Do institutional arrangements make a difference to transport policy and implementation? Lessons for Britain, Greg Marsden, Anthony D. May, 2006

⁵⁵ MARETOPE (Managing and Assessing Regulatory Evolution in Local Public Transport Operations in Europe) Handbook, European Commission, Oct 2003 p23

⁵⁶ MARETOPE (Managing and Assessing Regulatory Evolution in Local Public Transport Operations in Europe) Handbook, European Commission, Oct 2003 p23

⁵⁷ MARETOPE (Managing and Assessing Regulatory Evolution in Local Public Transport Operations in Europe) Handbook, European Commission, Oct 2003 p30

- *Scope*: the regulation shall apply to the national and international operation of public passenger transport by rail and road. It lays down the conditions under which competent authorities may compensate transport operators for the cost of fulfilling public service requirements and under which they may grant exclusive rights for the services operation of public passenger transport;
- *Criteria*: in assessing the adequacy of public passenger transport services, in defining the selection and award criteria and in awarding public service contracts competent authorities are supposed to apply a number of standard criteria;
- *Contract*: a public service contract shall be concluded for financial compensation for providing a public service and a contract is concluded for the award of all exclusive rights (e.g. the entitlement on the part of an operator to operate a particular type of passenger transport services on a particular route or network or in a particular area, to the exclusion of other potential operators);
- *Tender*: contracts shall be put out for competitive tender; competent authorities may decide on a case by case basis, to directly award public service contracts for services;
- *Duration*: contracts may be limited in time;
- *Award procedures*: the procedure adopted for competitive tendering or quality comparison should be fair, open and non-discriminatory; and
- *Maximum compensation*: rules describe the maximum compensation provided in the absence of competitive tendering.

Integrated transport can be secured via various regulations, especially via the contracting and tendering processes.

In the UK rail is subject to the franchise system set up, and operated, by the DfT while buses are, in general, subject to minimal regulation with much freedom for innovation and on-street competition. In London bus provision is subject to specific contracts set by TfL (Transport for London) with limited on-street competition.

The bus industry is subject to two principal regulatory regimes: Public Service Vehicle (PSV) operator licensing, which governs professional competence; and bus registration, which deals with services and routes⁵⁸. These are not currently adapted to require improvements in integration between different bus operator services.

Nevertheless Traffic Commissioners could balance the need for punctuality with the need for ensuring connections. The regulatory framework can penalise operators for holding trains and buses for connections, as this is treated the same as any other delayed departure. The registration and operating licensing regime could be used in other ways as well, for example requiring all operators to have real time information equipment or on-board smartcard readers. Introducing such requirements could make D2D journeys easier.

Regulation is generally introduced where there is a market failure⁵⁹. One of the market failures is that the costs and benefits of integrated ticketing, for example, aren't evenly shared between the different modes. So, as rail fares are usually much higher in value than a bus fare, and most bus journeys are only a single stage, bus operators feel they have rather less to gain from new multi modal passengers than rail operators do. Furthermore bus operators sell tickets from every bus, so have far more ticket machines etc that need modifying if they are to sell multi modal tickets. This imbalance in interest in promoting integrated public transport may have been a barrier to the development of innovation.

⁵⁸ Operator licensing, Department for Transport

⁵⁹ A market failure arises when the allocation of goods and services by a free market is not efficient and can be improved upon from the societal point-of-view.

Nevertheless there is a growing acknowledgement that buses, in particular, could be doing more to make an effective and efficient, contribution than is currently the case but the funding frameworks do not facilitate this. For example, successful international models tend to include a public authority specification role in financial arrangements⁶⁰.

Outside London, bus, and sometimes rail, operations are coordinated by Passenger Transport Executives (PTEs). Although the Local Transport Act 2008 allows partnerships to include fares and frequencies, there are many constraints upon the activities of PTEs in the current regulatory framework⁶¹, including the following:

- Integrated timetables are deemed to be 'anti-competitive';
- Interchange and integration with other modes cannot be forced;
- Services cannot be developed in advance of demand;
- Fare levels cannot be capped;
- Vehicle standards cannot be imposed; and
- There are also partial constraints with regard to integrated marketing and branding, developing off-bus ticketing (and therefore improving journey times), and enforcing good operational performance.

In order to overcome such barriers the key success factors for effective, and integrated, public transport are, according to the Passenger Transport executive Group⁶²:

- A strong Transport Authority with wide-ranging powers;
- Willingness by the Authority, and financial capacity, to invest in infrastructure and services; and
- Powers to enforce integration in service delivery, information and ticketing.

3.2 Rail franchising

Rail franchising in Great Britain was created by the Railways Act 1993. Passenger services are franchised, for a limited period, to Train Operating Companies (TOCs). The award of the franchise is determined by competition.

Traditionally the needs of passengers do not appear to have been built into rail franchising contracts and rail passenger groups have been disappointed by the lack of consideration for the passenger. However, more recent franchising contracts, such as the South Central Franchise to Southern Railways 2009, have been welcomed by these groups. This contract included the provision of 1500 additional secure cycle parking spaces and a commitment for station travel plans. However, this is a very short term contract and runs for less than 6 years.

The short length of franchises is potentially a barrier to Train Operating Companies (TOCs) investing more heavily in the railways. A short franchise is simply not long enough for TOCs to undertake anything other than relatively "soft" and modest investment, such as additional car parking, limited improvements to passenger information and CCTV.

The McNulty report⁶³ suggests that there is substantial scope for change and for improvements in railway costs and delivering value for money. Delivering potential savings

⁶⁰ Bus Planning, Performance and Regulation, PTEG, January 2004

⁶¹ Bus Planning, Performance and Regulation, PTEG, January 2004

⁶² Bus Planning, Performance and Regulation, PTEG, January 2004

⁶³ Rail Value for Money Study, Interim Submission to Secretary of State, Department for Transport, September 2010

will depend on implementing a package of wide-ranging and inter-dependent initiatives aimed at, inter alia:

- greater clarity and better alignment of objectives, particularly in relation to costs;
- greater clarity of roles between Government and industry, with Government involved in less detail, and the rail industry accepting greater responsibility for delivering the broad objectives set by Government;
- industry accepting responsibility for helping to develop, and then implementing, a comprehensive set of industry-level strategies to meet the broad objectives set by Government, particularly those for cost reduction;
- stronger incentives which better focus and align the interests of Network Rail and train operators towards delivering lower costs, in line with objectives set by Government; and
- improved planning and decision-making, on whole-system and whole-life bases, with a stronger focus on costs and value for money.

The lack of alignment of costs and incentives for door to door journey improvements is particularly lacking at present and the McNulty report argues that there is benefit to be gained from changing incentive mechanisms to get a better alignment between the financial objectives of the TOCs and Network Rail. A much closer alignment/partnership between Network Rail and TOCs is needed so that they work together much more closely in partnership. This could range from informal joint working to full vertical integration, with several intermediate options. It could assist in providing integrated transport.

In June 2010 Minister of State for Transport, Theresa Villiers, released a statement concerning the future of rail franchising and announced a consultation exercise on rail franchising policy. This consultation is to provide industry partners with the opportunity to comment on the Government's approach to rail franchising and whether bidders for longer franchises would be able to offer investment in improvements to trains and services. It will also allow the industry to set out its proposals for improving the efficiency and value for money of rail franchises, for both taxpayers and fare payers. At present it is unclear whether the new franchise regime will give priority to D2D transport, especially its attributes that will not be in the direct interest of individual operators⁶⁴. The consultation predicted that a single "correct" solution, applicable to all franchises would not be identified. A significant majority of respondents agreed with this view, advocating a bespoke approach for each franchise. Perhaps securing effective D2D transport should be a common requirement of franchises.

3.3 Funding for local authorities including LTPs, RSG etc⁶⁵

Identifying and obtaining appropriate funding for both capital investment and for operations is a recognised barrier for the effective planning and implementation of transport and land-use schemes by local authorities.⁶⁶ In order to secure overall resource savings of 21% by 2014-15 the government's bus subsidy will be reduced by 20% and local government

⁶⁴ Reforming Rail Franchising: Government response to consultation and policy statement, Department for Transport, January 2011

⁶⁵ LTP = Local Transport Plan, RSG = Local Government Revenue Support Grant from the Department for Communities and Local Government

⁶⁶ Local Transport Funding Toolkit for Local Authorities, Anne Binsted, Charlotte Brannigan, TRL, 2008

resource grants by 28%⁶⁷. The statutory entitlement for concessionary bus travel has been protected however, ensuring that older people can maintain greater freedom and independence. Reducing bus subsidies paid directly to operators by 20% is expected to save over £300 million by 2014-15. The Government is also planning to work with bus operators and local government to examine ways of administering this subsidy to get better results for passengers and taxpayers.

The Coalition Government argues that the central objective of policy on buses is to see more people using buses but ensuring that taxpayers and fare-payers get the best deal and the best value for money⁶⁸. However bus fares increased by 24% above inflation in England, outside London, between 1997 and 2009 while patronage fell by approximately 2% over the same period. This is despite the fact that public funding of buses has been increasing year on year; £1.5 billion of public money is spent on buses each year excluding concessionary fares.

In response to the funding reductions the Campaign for Better Transport has launched the "Save our Buses" campaign⁶⁹ pointing out that funding cuts are a false economy because buses help people to get to work or college, and to be active and self sufficient; bus cuts put a strain on welfare, social services and NHS budgets down the line. Reductions in the integrated transport grant to local transport authorities will also impact on bus service provision.

One option may be to use the new Local Sustainable Transport Fund (LSTF). The LSTF forms part of a more streamlined and simplified funding to local authorities. The Fund also represents a move away from specific grants, enabling local authorities to develop targeted transport packages that address particular transport problems, possibly in partnership with the voluntary, community and social enterprise sector, as well as having the support of local businesses. Innovative solutions to local transport needs in both rural and urban areas are to be covered, including the possibility of bus support.

Many of the laws and regulations for road and public transport are consistent across the UK, partly driven by the need for interoperability of vehicles and systems across a range of administrative boundaries. One key difference between different areas in the UK is the extent to which transport strategy needs to be formalised. In London, the Mayor has to produce a Transport Strategy⁷⁰. Outside of London, within England, authorities have to produce Local Transport Plans (LTPs).

Transport for London receives a revenue grant from central government that is renewed on a three yearly basis. It receives revenue from public transport receipts, the congestion charge and a precept on the Council Tax set by London Boroughs to their residents. However in other parts of the country the funding mechanisms are far more complicated with more layers involved in the process. For example in West Yorkshire, the Passenger Transport Authority receives the capital grant from central government to distribute to the metropolitan districts and the West Yorkshire Passenger Transport Executive (METRO) in line with the LTP (in 2004 this was almost £54 million). Each district receives revenue grant funding direct from central government and levies a Council Tax on its residents⁷¹.

⁶⁷ Spending Review 2010, HM Treasury, October 2010

⁶⁸ Speech to Transport Times 2010 Bus Conference, Norman Baker, 07 October 2010

⁶⁹ <http://www.bettertransport.org.uk/campaigns/save-our-buses>

⁷⁰ Greater London Authority, 2001

⁷¹ Do institutional arrangements make a difference to transport policy and implementation? Lessons for Britain, Greg Marsden, Anthony D. May, 2006

Where bus services are concerned the LTP system typically requires relatively short term planning horizons owing to the uncertainty of the amount allocated to bus schemes. As a result local authorities are increasingly looking to other funding sources to help finance transport projects. One relatively common approach has been to work in partnership with the private sector, whereby the authority may finance, and own, the infrastructure while private operators make service enhancements.

Ensuring proper financing mechanisms is vital not only for the development of public transport networks but also to the sustainable development of cities and urban areas⁷².

3.4 Bus quality partnerships and quality contracts

Options for improving bus services exist through agreements contained within Quality Bus Partnerships (QBPs) and Quality Bus Contracts (QBCs). QBPs bring together local authorities, bus service operators and other partners such as the Highways Agency and the Local Highway Authority to make all the aspects of the bus journey, from the walk to the bus stop, to alighting from the bus a quality travel experience. The ultimate goal is to offer bus passengers the highest level of quality for their journey, by making bus travel on a par with, and ultimately better than the experience of car travel.

QBPs can be an effective partnership which has improved bus travel for users. Nottingham has had success in bringing in QBPs which cover the whole city centre. One issue which must be overcome in order for them to become a success is that the overlap between commercial and public policy objectives is only partial and varies between areas. Priority schemes are a key public sector contribution but their effective operation is the responsibility of the Highway Authority, and the police. In metropolitan areas where the highway authority is the district but the PTA is the transport authority is the ITA problems may arise due to the division of responsibilities. In some cases shortcomings in QBPs have been identified, such as⁷³:

- High policy priorities can get ignored;
- Difficult-to-broker areas (such as integrated ticketing) may be excluded;
- There is a tendency to focus on corridors rather than areas;
- Other areas can suffer adverse effects (such as investment starvation);
- Management emphasis can be shifted from (long-term) service to (short-term) project; and
- Commitments by all parties are unenforceable.

Nevertheless progress on integrated transport can be made through QBPs (voluntary and statutory) although there are limitations as they cannot cover all aspects of operations such as network and timetable co-ordination, and ticketing. Innovations have been introduced since the Local Transport Act 2008. In Nottingham, for example, the QBP covers driver training and vehicle standards. A wider approach, a 'Quality Network Partnership' offers new opportunities for local authorities to work with transport operators. Network St Albans, is the first partnership of its kind and aims to improve the quality of life in St Albans by working together to improve transport around and into the city and to provide a viable alternative to car travel⁷⁴.

⁷² Financing Public Transport: A Political and Economical Challenge, Conference Programme, UITP 2009

⁷³ Bus Planning, Performance and Regulation, PTEG, January 2004

⁷⁴ <http://www.stalbans.gov.uk/council-and-democracy/press-room/items/2009/April-2009/NetworkStAlbanslaunched.aspx#0>

With a devolved budget for bus support to support QBPs, Local Transport Authorities could be able to incentivise smart cards, integrated ticketing and real-time information to improve D2D journeys⁷⁵.

However detailed work is necessary to develop and deliver a QBC, and the process is far from straightforward⁷⁶:

- There are numerous 'feedback loops' in the process creating uncertainty and delay, brought about by multiple consultation/representation phases;
- There is a wide-ranging undefined requirement for the Secretary of State to act 'in the public interest' in determining an application;
- There are opportunities throughout the process for an un-cooperative incumbent operator to slow the process down and undermine it through unsustainable partnership offers;
- Concerns and associated risks remain, related to information provision, legal challenge by operators, and management of the transition between de-regulated and contract regimes; and
- There is no certainty that gains made through a QBC can be retained beyond a 10-year timescale.

3.5 Recent Legislation: Developing Public Transport

The Competition Act 1998 prohibits anti-competitive agreements – such as agreements between transport operators to fix fares or reduce services – but allows agreements to be exempted if they benefit consumers and meet other conditions. The block exemption provides an automatic exemption for certain types of public transport ticketing schemes.

The block exemption covers agreements between local transport operators on multi-operator travelcards, through tickets, multi-operator individual tickets and add-on tickets. It includes:

- Travelcards providing for journeys on a number of different operators' services within a geographical area, including bus zonal tickets and 'PLUSBUS' tickets under the Journey Solutions initiative;
- Through ticketing schemes under which passengers can buy a ticket for one journey on buses or trains of more than one operator; and
- Tickets which allow outward travel for a particular journey on the service of one operator and return travel on the service of another⁷⁷.

This should pave the way for more multi modal and multi operator ticketing schemes to be developed.

The Local Transport Act 2008⁷⁸ included various provisions to enable more effective partnership working between local transport authorities (LTAs) and bus operators. The aim was to improve the opportunities for both local authorities and bus operators to work together and provide bus services which better met the needs to local people.

The Act has:

⁷⁵ The future of bus subsidy, Local Government Group, August 2010

⁷⁶ Bus Planning, Performance and Regulation, PTEG, January 2004

⁷⁷ Office of Fair Trading http://www.of.t.gov.uk/news-and-updates/press/2002/pn_52-02

⁷⁸ Local Transport Act 2008: Improving Local bus services, Dft, February 2009

- Given local authorities a mix of powers to improve the quality of local bus services, as proposed in Putting Passengers First⁷⁹ following an extensive bus policy review;
- Allowed for the creation of an influential new bus passenger champion to represent the interests of bus passengers;
- Given local authorities the power to review, and propose, their own arrangements for local transport governance to support more coherent planning and delivery of local transport.⁸⁰

This Act has enabled quality partnerships to become a more realistic option for Local Authorities and for operators themselves.

Following the Act, in Manchester, for example, the PTE has become Transport for Greater Manchester (TfGM), a new regional transport body that is part of the new Greater Manchester Combined Authority (GMCA). As a result the Integrated Transport Authority has been abolished, replaced by the Transport for Greater Manchester Committee (TfGMC) which reports to the combined authority unifying the ten metropolitan boroughs who will manage TfGM and create transport policy in Greater Manchester.

TfGM is the second most powerful and influential transport organisation in England after Transport for London because it unites previously splintered governance over transport policy in the Boroughs under one body. Although major decisions require approval by the GMCA, the functions which are referred (but not delegated) to the TfGMC would include making recommendations in relation to:

- The budget and transport levy;
- Borrowing limit;
- Major and strategic transport policies;
- The Local Transport plan;
- Operation of Greater Manchester Transport Fund and approval of new schemes; and
- Appointment of Director General/Chief Executive of TfGM

In addition, two functions are delegated solely to the TfGMC without requiring GMCA approval, namely road safety and traffic management.

3.6 Bus operator grants

Bus operators who operate local registered bus services are entitled to a grant, paid by the Department for Transport (DfT), to reimburse the major part of the excise duty paid on the fuel used in operating these services. This is known as the Bus Service Operators Grant (BSOG). The Grant is available to all bus operators whose services are registered with the Traffic Commissioner and which meet the strict criteria and rules of the scheme, and has been extended to include a wider range of Community Transport Services.

An increase in BSOG rates is available if bus operators have operational ITSO⁸¹ smartcard systems and, separately, if they have fitted their buses with GPS equipment. To qualify for the higher BSOG rate the smartcard equipment must accept all English concessionary passes and also accept integrated ticketing products. To receive either the smartcard or GPS incentive, operators have to commit to share specific data with local authorities, central

⁷⁹ Passenger Focus <http://rpc.dev.fortune-cookie.com/>

⁸⁰ <http://www.dft.gov.uk/pgr/regional/localtransportbill/>

⁸¹ International Telecommunications Satellite Organization (ITSO) is an intergovernmental organisation charged with overseeing the public service obligations of Intelsat

government and other relevant bodies. Together these incentives could be worth around £1000 in additional grant per bus each year.

However, the Coalition Government have reconsidered this grant and how it is paid in their review of government spending proposing a 20% cut for 2012/13 which is significant although less than was originally expected. The subsidy pays for about 80% of operators' fuel duty and its complete removal could have increased fares by about 6.5%, with a similar reduction in services. The 20% reduction will have less of an impact but will still mean some increases in fares and service changes.

The increase in fares expected from this cut-back is likely to exacerbate the issue of people choosing car travel over public transport. Private car ownership is relatively affordable whereas public transport has become increasingly more expensive. Any further rise in costs is likely to discourage a shift to bus transport. Additional cuts being made to local authority transport budgets as a result of overall funding reductions will further disadvantage bus services. As a result facilities such as information about bus services could suffer.

3.7 The land use planning system

A well functioning and integrated public transport system is the backbone of successful economic, social and environment urban policies. In order to fully perform and deliver the expected results, public transport policies must be fully integrated.

First of all, the different urban policies should be coordinated with public transport policy. This includes urban planning, land use, energy and environmental planning, social inclusion, and traffic planning.⁸²

It is not an easy task to reach such a balance and the form this coordinated policy takes depends on the administrative and political organisation of every region and country. However, a number of national, regional and local authorities are delivering and/or implementing such ambitious integrated policies.

- Legal and regulatory framework must define clear roles and commitments for each stakeholder of the supply chain and offer transparency, viability and stability.
- Short, medium and long term policies must be integrated.
- The coordination of different transport modes and different transport companies is essential to create an integrated public transport system from the viewpoint of the passenger.
- Ensure that the positive externalities of public transport are considered and that the combined internal and external costs of all modes of transport are properly measured.

In order to maximise the accessibility of non-car modes to developments the approach recommended by the CIHT's Guidelines on Planning for Public Transport in Developments⁸³, should be adopted:

- First, locate new developments where they can be easily served by public transport (existing or slightly extended services), walking and cycling e.g. adjacent to public transport nodes.
- Second, designing the layout of the development so that it can be well served by public transport, and walking/cycling e.g. not requiring buses to undertake diversions to access housing estates.

⁸² Integrated Urban Policies, UITP, Conference Programme 2009

⁸³ Planning for Public Transport in Developments, Chartered Institution of Highways & Transportation, 1999

- Third, make sure the detailed design of the roads, bus stops, footpaths and information sources makes the use of public transport and walking/cycling is as easy as using a car e.g. locating bus stops directly outside supermarket frontages.

The Manual for the Streets, published in March 2007⁸⁴ outlined how streets should not be designed solely to facilitate the movement of vehicles but also meet the needs of both pedestrians and cyclists and users of public transport. Bus routes and bus stops should be an integral part of the design process allowing developments to actively encourage bus use. The Campaign for Better Transport's Masterplanning Checklist⁸⁵ builds on this advice from central government and gives a practical guide for Local Authorities to create new housing developments which support sustainable travel patterns.



⁸⁴ The Manual for the Streets- A Summary, DfT, 2007

<http://www.dft.gov.uk/pgr/sustainable/manforstreets/mfssummary.pdf>

⁸⁵ Sustainable Masterplanning Checklist, I Taylor, L Sloman, Campaign for Better Transport 2008, http://www.bettertransport.org.uk/system/files/Masterplanning_Checklist_2008.pdf and see CfIT's Planning for Sustainable Travel, <http://cfit.independent.gov.uk/pubs/2009/sustainable/index.htm>

4 Good practice examples: UK and EU

Journeys made by multi step/multi modal public transport can be very successful and schemes across Europe highlight its potential. There are many examples of good practice in each of the areas identified as barriers to D2D journeys right across Europe in countries such as the Netherlands which has a good reputation for its public transport systems. Closer to home the UK also has pockets of good practice, for example Central London has healthy public transport usage which is growing year on year in contrast to much of the rest of the country.

In this section we highlight some of the ways in which barriers to D2D transport have been broken down and why this has been successful.

4.1 Information before and during the journey

4.1.1 *Transport network information*

Prior to making the journey passengers need to be sure of their journey, the cost and ticketing options. This information in some cases has been found to be complicated and off-putting to users. Whole journey planning is available through the website and telephone services Traveline and Transport Direct. Both give scheduled arrival and departure times for bus and train and also give estimated times for walking and cycling steps in the journey. Neither is able to give costs or ticketing information or show real time information. This means passengers are forced to seek out alternate sources for this type of information which can be time consuming.

To some, information integration means that the system is perceived as 'one' - through the use of a unified set of concepts, such as a joint logo for all participating public transport companies, and a common language in communications with users⁸⁶.



Train and tube networks have long used stylised maps showing the whole network. The London tube map is one of the most recognisable brands in transport marketing and the London Transport Roundel (left) is instantly recognisable to passengers as where to go for transport information and connections.

TfL have developed Legible London which is a pedestrian way finding system which helps facilitate walking trips around London. It is an easy to use system which was developed through extensive research and is presented in a clear way on maps and signs.

This system is integrated with transport modes mean that when people exit the tube station they can easily find their way. One example of this is the 'Your Onward Journey' leaflets, at the exit of each tube station which give localised map and points of interest and, crucially, local bus services their locations and direction of travel/destinations.

Bus networks outside of London have more recently begun developing similar maps which are available on websites and then replicated at bus stops and on bus stop flags along the routes. This leads to increasing brand recognition and increased confidence for passengers. Examples of these are the 'Network West Midlands' brand or other progressive local operators such as Brighton and Hove, Nottingham City Transport and Trent Barton who provide more enhanced levels of information.

⁸⁶ On the move: delivering integrated transport in Britain's cities, John Preston, Adam Marshall and Lena Tochtermann

4.1.2 *The use of technology*

Smart phone technology is becoming increasingly important in enabling people to source information quickly and at a time which suits them. Applications such as *nextbus* allow users to access information about the next scheduled services and in some cases to purchase a ticket e.g. *Thetrainline.com*. However, real time information is not available everywhere especially for bus journeys. The 'Brighton and Hove bus real time info board' app which can be downloaded for free for the basic version or £1.75 for the premium is one example of where real time information is available in this way. The app UK Train Times (*shown right*) at £4.99 gives live departure boards and has powerful real time information for trains across the UK.

Departures		Live Progress	
Last updated 09:36			
Birmingham International	08:14	>	
Departed on time			
Coventry	08:25	>	
Departed 2 minutes late		08:27	
Leamington Spa	08:38	>	
Departed 4 minutes late		08:42	
Banbury	08:55	>	
Departed 5 minutes late		09:00	
Oxford	09:16	>	
Departed 5 minutes late		09:21	
Reading	09:45	>	
7 minutes late		09:52	
Basingstoke	10:08	>	
On time			
Winchester	10:24	>	
On time			
Southampton Airport Pa...	10:33	>	
On time			
Southampton Central	10:43	>	

Transport Apps have the potential to change the way we travel; however the lack of sharing and disclosure of information to enable apps to be developed is holding this back.

The Open Data initiative is an important pre-requisite for innovative developments in providing improved public transport information: "Transparency is at the heart of this Government. *Data.gov.uk* is home to national and local data for free re-use."⁸⁷ However at present there is very little open transport data; for example for rail information, web applications for displaying timetables now face charges for accessing data from Network Rail who benefits from an income stream. This deters market-driven innovation in the delivery of information using mobile phone apps (applications). Source data could be easily published online while Web 2.0 will generate benefits from the 'crowd sourcing' of ideas⁸⁸. TfL's approach appears to be more open, for example providing data for hire bike availability, which has led to the independent development of apps to help users.

4.1.2.1 *Manchester bus app*

Users can see the bus times at any bus stop around Greater Manchester with one of two apps, and the other allows them to look at a map to see how close the next bus is to their stop. Two teenagers used timetable information which was made public by transport officials at Greater Manchester Passenger Transport Executive as part of a move to grant greater public access to data. Within a week the teenagers had created two apps for bus passengers. GMPTE made the bus timetable information available to developers after lobbying by Open Data Manchester, which campaigns for public bodies to release data.

4.1.2.2 *MyBus*⁸⁹

MyBus is a national bus times app from Kizoom, creators of the app for thetrainline⁹⁰ and MyRailLite. MyBus shows forthcoming buses at a glance from every stop in Great Britain. Browsing the map allows passengers to find their stop or search by location / postcode, which then reveals the departure board. The bus times shown may either be real-time predictions or scheduled times, depending on availability of data. MyBus includes a distinctive graphical favourites page, times for every tram system in the country, and even has a set of local taxi numbers.

⁸⁷ www.data.gov.uk

⁸⁸ Open Platforms Open Data, M Fell, Making use of open platforms for passenger information, Sept 2010

⁸⁹ <http://blog.kizoom.com/2010/03/mybus.html>

⁹⁰ <http://www.thetrainline.com/buytickets/>

But at present most public transport users are not I-Phone owners, and many, especially the elderly, may not possess a mobile phone. Nevertheless some innovation is occurring⁹¹. Meanwhile in the US a naming to shame movement has emerged to encourage public transport bodies into releasing data, for free, for developers⁹².

Open data requires public, and private, agencies to accept that they will have a reduced control on outputs from their data, but that it would generate innovation in the use of emerging technologies. The standardisation of data formats will help innovation but there is no need for information providers to develop the lowest common denominator features of data; more complex apps should be developed for more technically literate users. But if timetables and websites are free to the user, why not phone information? If apps were free to the end user, one potential (albeit possibly small) barrier to D2D travel would be removed.

4.1.2.3 CENTRO Real Time Information - West Midlands⁹³

There are approximately 2.3 million people living within the West Midlands area, of which 1 million live in Birmingham. The West Midlands has a relatively high proportion of trips made by public transport, but bus patronage has been falling. Bus services in the area range from those with very high frequencies (every 4 minutes during the day) to those with much lower frequencies. Similarly, the areas traversed by bus services range from busy to quiet and prosperous to very poor. Many routes suffer from poor bus journey time reliability caused largely by recurrent traffic congestion.

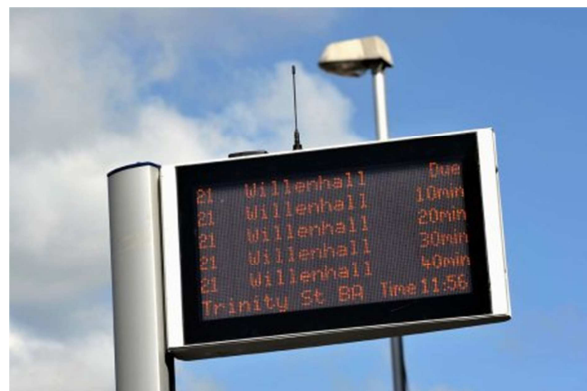
The RTI project seeks to improve the waiting experience for passengers by providing certainty of bus arrivals, and seeks to deliver other objectives as discussed in section 1.1.5.

The 'at stop' infrastructure varies across the West Midlands with high quality bus shelters in some locations and stop poles or bays marked on the road in other locations. Traditionally the 'at stop' printed information provided has been of patchy quality and inconsistent, although the Network West Midlands initiative has sought to improve this substantially.

4.1.2.3.1 Scheme Description

The RTI project consists of:

- 650 buses fitted with automatic vehicle location equipment
- Over 750 at stop displays;
- 23 large 9-line displays at key interchanges, giving details of all buses using bus stops at that location;
- 2000 stops enabled for SMS real time text information
- A map based website interface allowing users to find out the latest real-time predictions for their stop; and
- Bus fleet management systems at key bus garages.



On bus computers continuously calculate their position by connecting with satellites. Every 20 seconds this information is fed back to a central computer using the GPRS data communications network. The central computer then calculates how far each bus is from upcoming stops on route and estimates how long they will take to get there. These

⁹¹ See, for example, <http://traintimes.org.uk:81/map/tube/>

⁹² <http://www.citygoround.org/>

⁹³ DfT, <http://www.dft.gov.uk/itstoolkit/CaseStudies/centro-rti.htm>

estimates are based on a complex algorithm, which takes into account a number of factors, such as the times taken by preceding buses to reach each stop and the current speed of vehicles.

Information on predicted waiting times is disseminated to bus passengers in a variety of ways. Over 750 RTI signs have been installed. Each sign lists up to the next 9 buses due to pass the relevant stop, giving details of route number, destination and expected time until arrival. This information is also provided for the visually impaired through the means of an audio key fob.

Information is also provided via the Network West Midlands website and an SMS service, where passengers can text a stop code to a central number and find out details of the next buses arriving at their stop. At several bus depots, sophisticated fleet management software shows operators where buses are and how well they are performing against timetable. This enables the operators to actively manage the RTI service and provide more reliable services to passengers.

4.1.2.3.2 Scheme Objectives

The scheme objectives, as defined in the original funding bid documents were to:

- **Improve economic regeneration** – with real time information delivered directly to business and office centres via a website assisting employers to support and retain staff;
- **Improve social inclusion and accessibility** – where showcase bus schemes have been shown to encourage people to travel regularly for the first time thus lessening social exclusion;
- **Encourage sustainable travel patterns** – real time information is expected to assist in retention of existing customers;
- **Improve safety and health** – the real time information availability via the web and SMS should help people plan their movements prior to arrival at bus stops;
- **Improve integration** – The RTI system will link to other RTI systems to enable provision of multimodal travel information.

4.1.2.3.3 Improvements

It is anticipated that the system will:

- improve the efficiency (and regularity) of the bus services provided through the use of fleet management software;
- improve the quality of information provided to bus passengers at stops and elsewhere about when their services will arrive; and
- improve user perception of public transport provision.

4.1.2.3.4 Costs

The costs of the scheme were as follows:

- Capital costs incurred are approximately: £10 million
- Revenue costs: approximately £400,000 per annum

4.2 Journey Planning

Transport Direct⁹⁴, Traveline⁹⁵ and Intalink (in Hertfordshire)⁹⁶ all provide an online or telephone whole journey planning facility which predominantly covers bus and train modes although does give time for walking between modes.

Traveline has comprehensive information for local transport and can also be used for longer distance journeys. Each area journey planner includes all the rail services and most of the coach services across Scotland, England and Wales. This service means passengers can plan a D2D journey accurately based on scheduled public transport arrival and departure times.

The Traveline website specifically gives advice that *'Connections are not usually guaranteed and you may need to select another journey option if a missed connection would cause you inconvenience.'*⁹⁷

Although the service gives options for a whole journey using different modes it can lead the user to have to make decisions about whether the options given represent the best journey available and a realistic whole journey time. The system doesn't give alternative earlier train times for example for a second leg of the journey meaning that should the passenger make the connection quicker than it expects the whole journey time could end up being quicker. It may also choose motorised transport over walking even if this represents the quickest whole journey time.

Real time information would make this service much more of an asset to users as it would give an accurate picture of the actual journey time rather than the expected journey time. In addition should there be disruption to the 'usual' route then providing alternative routes would give the service much more utility. When a habitual journey breaks down this is when real time information which is easily accessible is essential to ensure disruption to journeys is kept to a minimum if possible.

4.2.1 Ålborg, Denmark

In Ålborg in Denmark, a Real Time Passenger Information (RTPI) system has been demonstrated along with a bus priority scheme⁹⁸. This integrated scheme consisted of more than 200 buses equipped with computers able to communicate with a mobility centre, 32 signs and information kiosks with RTPI located at the most important bus stops and at the four local railway stations, and 51 intersections with bus priority. The result has been that PT users accepted the system and were well aware of the opportunities offered by the information kiosks (on a monthly basis, 24,000 pages were activated at the terminal, mainly for searching itineraries and schedules). Regarding the bus priority system, it has been calculated that each day each bus passing the 51 intersections with priority saved about 4 minutes.

⁹⁴ <http://www.transportdirect.info/Web2/Home.aspx?repeatingloop=Y>

⁹⁵ <http://www.traveline.info/index.html>

⁹⁶ <http://www.intalink.org.uk/>

⁹⁷ http://www.traveline.info/about_long.html

⁹⁸ Passenger transport, Zuzana Šitavancová & Vladimír Golombek, European Commission DG Energy and Transport, Transport Research Knowledge Centre, Dec 2009

4.2.2 **MOBITRANS in Nantes, France**

In Nantes, a new system for real-time passenger information available on mobile phones called MOBITRANS has been implemented to provide better public transport information⁹⁹. The system provides information on the two next departures of any bus or tram route from any stop on the urban network, warning messages about potential route disruptions, and the location of the nearest bus or tram stops from a given address. Interviews carried out to find out how the MOBITRANS service had been perceived by users showed that the information provided was considered reliable and accurate, and delivered in a user-friendly manner, thus enabling a better planning of journeys. However, users were worried about the potential costs of using the mobile phone to access the data. Nevertheless on average between 250 and 300 connections per day were made.

4.2.3 **Rotterdam, the Netherlands**

In Rotterdam, real time arrival/departure information was introduced at tram-stops of the high quality tramlines and at the metro stops in order to increase the attractiveness of public transport¹⁰⁰. The dynamic information system has been implemented at more than 70 metro and tram stops. The displayed information includes travel and departure times, as well as possible delays or special events. Furthermore on-board communications systems were successfully implemented on 74 trams. A survey showed that the user acceptance was high as the information system led to a perception of shorter waiting times.

4.2.4 **BART – Bay Area Rapid Transit, San Francisco, USA**

BART was one of the first agencies in the USA to open up schedule and real time information to developers starting in 2007¹⁰¹. BART is considered by some to be a National Leader in Real-Time Data Transparency and Development with its BART's open data initiatives. The Real BART API (Application programming interface) provides practically all the data there is in one place: real time, schedules and trip plans, station area information, etc. Using a Simple ETA Feed it provides a simple-to-use raw XML feed of real time arrivals for every station. With Open Format Schedules (official schedules, fares and other data in the open General Transit Feed Specification (GTFS) it provides a platform for app development for iPhone, Android and Facebook. Data is provided on an "as is" and "as available" basis. BART maintains title, ownership, rights and interest in and to Data.

4.3 Interchange

As previously mentioned one of the key features of Dutch public transport is the integration of services. Trains, buses and cycles feed in to one another to help provide the seamless journey experience that can be provided by private car.



⁹⁹ Passenger transport, Zuzana Šitavancová & Vladimír Golombek, European Commission DG Energy and Transport, Transport Research Knowledge Centre, Dec 2009

¹⁰⁰ Passenger transport, Zuzana Šitavancová & Vladimír Golombek, European Commission DG Energy and Transport, Transport Research Knowledge Centre, Dec 2009

¹⁰¹ <http://www.bart.gov/schedules/developers/appcenter.aspx>

The Den Haag Centraal train station (pictured above) has easy interchange options to bus and other rail facilities.

An interesting development is the substantial growth of bicycle hire in recent years, mainly through OV-fiets, a subsidiary of the Dutch Railways. Through this scheme it is now possible to hire a bike or electric scooter at a station and other locations in major cities. The system is relatively cheap costing €2,85 for 20 hours plus a yearly €9,50 subscription fee and very easy to use: subscribers use a personal pass and in less than a minute they are ready to cycle. They are not the only European country to use the cycle hire schemes to provide an alternative interchange mode which passengers are in control of.¹⁰²

4.3.1 **Station Travel Plans, England**

Getting to and from the station is an integral part of travelling by train. Measures to encourage passengers to travel to stations other than by private car – walking, cycling; bus, taxis and motorcycles all have key roles. It is important to acknowledge, however, that for many people using routes covered by the Greater Anglia RUS¹⁰³ for example – in particular in the 'outer' areas – the car will remain the most practical way of getting to the station¹⁰⁴.

Findings from passenger research at Grays, Harlow Town, Royston and Witham show that¹⁰⁵:

- most passengers who live within walking distance of a station will generally walk to it;
- passengers travelling to a station from rural, semi-rural and edge of town locations will generally choose to drive and park at the station; and
- many passengers drive to a station with a better (in terms of train frequency or speed of journey) service than the station nearest to their home (i.e. "railheading"¹⁰⁶).

When asked what they would do if it became difficult to park at the station they currently use, passengers said they would¹⁰⁷:

- get a lift to that station (18% of respondents at Harlow Town) and be collected by car again later;
- drive to another station (38% of respondents at Royston);
- make the complete journey by car instead (17% of respondents at Witham); and
- travel earlier in order to secure a space in the car park at their station (24% of respondents at Witham).

The 2007 Railways White Paper asked the rail industry to work with all relevant stakeholder groups to pilot Station Travel Plans and provide advice on whether the travel plan approach could be beneficial to passengers.

24 pilots have been implemented which correspond to 31 stations right across England and are currently being monitored for their success in improving the public transport experience for passengers.

¹⁰² Public Transport Tendering in the Netherlands, Didier van de Velde, David Eerdmans and Hans Westerink , Pteg 2010

¹⁰³ RUS = Route Utilisation Strategy

¹⁰⁴ Getting to the station: Findings of research conducted in the East of England, Passenger Focus, March 2007

¹⁰⁵ Getting to the station: Findings of research conducted in the East of England, Passenger Focus, March 2007

¹⁰⁶ Park and Ride in London and the South East, R Niblett and D Palmer, Highways and Transportation, 1993

¹⁰⁷ Getting to the station: Findings of research conducted in the East of England, Passenger Focus, March 2007

4.3.1.1 *Hatfield and St Albans*

The station travel plan covers three stations: St Albans City; St Albans Abbey; and Hatfield. Hatfield station is situated just over 1km from the town centre and 2km from the nearest business park. The station is on the East Coast Main Line and serves 1,768,214 passengers, being operated by First Capital Connect. St Albans City is the busiest rail station in Hertfordshire, serving 6.4 million passengers on the Midland Main Line and Thameslink route between London Kings Cross and Luton, for links to the North.

The travel plan has brought together the resources of the train operating companies, local authorities and bus companies to improve travel conditions to/from the stations in order to encourage rail use over non-sustainable transport.

Highlights of the Action Plan include:

- **Hatfield Station Interchange:** The project is ongoing to improve the interchange between bus and other modes of transport and rail at Hatfield station. In the short term, 2 additional bus stops are proposed on the A1000 road to create additional bus stop capacity in the vicinity of the station as the current provision is inadequate for the number of buses serving the station. There are plans to improve the cycle parking provision, provide better cycle and pedestrian links to the station. In the longer term there is an aspiration to provide a high quality bus interchange next to the station.
- **St Albans - Alban Way Cycle link:** This cycle link is the route of an old disused rail line between St Albans and Hatfield. The link between St Albans City station and the old track routing is poorly defined and has a lack of cycle crossing facilities. The scheme, valued at £40,000 will improve the situation by implementing cycle crossing facilities to encourage more cyclists to use this route.

4.3.1.2 *Stoke on Trent*

Stoke-on-Trent station lies on the West Coast Main Line and lies at the heart of the North Staffordshire conurbation. It is only 2km from Stoke-on-Trent City Centre and 5 km from Newcastle-under-Lyme town centre. It is also only 200 metres from heart of Staffordshire University campus, and 500 meters from the main Stoke-on-Trent City Council civic offices with over 2,000 Council staff.

The overall aim of the station travel plan is to encourage more sustainable travel to and from the station and to manage the impact of travel associated with the station. The plan has developed tough targets such as increasing bus share from 26% to 28% (the national average is 14%) increasing the cycling share from 1% to 4%, increase walking share from 15% to 20%, reducing the number of passengers dropped off at the station by private vehicle from 29% to 20% and to increase the share of people accessing the station by train from 8% to 10%.

Achievements as of October 2010:

- A new "London Underground-style" public transport map distributed to all households/ businesses in the City, and new cycle maps and guides have also been produced and distributed widely.
- Staff and students have at the local University and local FE Colleges have been surveyed to assess issues of travel to and from the station.

- A major milestone has been reached with the granting of permission by English Heritage to proceed with the construction of a cycle hub within the old Red Star postal depot on Platform 1.
- The centre will incorporate stacked storage for over 50 bikes and there are also plans to rent folding Brompton bikes in partnership with a local bike shop.
- Finally, there is a trial underway on a change in environment outside front of station, i.e. enhanced bus stop, relocated disabled bays, clearer signs, etc., to accommodate expected increase in usage by new Sixth Form College students. On the negative side, cuts in funding may result in travel planning as an activity not being supported.

4.3.2 **Cycle Hire Schemes**

Cycling to the station provides an easy way to make an interchange to motorised public transport. Since the introduction of cycle hire schemes in cities across Europe it has become easier to choose this mode. The schemes mean no concern for personal property, no outlay to own a bike and a dedicated parking in central locations ideal for stations (either origins or destinations).

4.3.2.1 *Barclays Bike Hire - London*

Since the introduction of London's Barclay's bike hire scheme in July 2010 over 1.6 million journeys have been made and 100,000 people have signed up to the scheme.¹⁰⁸

An interactive map available on the Transport for London website shows all locations of docking stations which gives users confidence before they set off that they will be able to park their bike at either end of their journey.



The scheme has proved so popular at one of London's busiest stations Barclays Cycle Hire operator Serco are providing a 124-space 'super' cycle hire docking station close to the main entrance of Waterloo station. The new station will be the biggest yet for the London cycle hire scheme, which now has more than 100,000 members, and aims to cut problems with cycle availability at peak periods around the station¹⁰⁹.

4.3.2.2 *OY Bike - London*

OYBike was implemented in Hammersmith and Fulham in August 2004 and ran for six years. There were 130 bicycles in operation; 100 on the streets of west London, and 30 were located at the University of East London. In the first three years OYBike had only 11 bicycles stolen (five of which were returned and put back in circulation). The scheme in London was wrapped up with the advent of the Barclays Cycle Hire Scheme which serviced the London wide community. However OY bikes still has schemes in Cardiff, Reading and Farnborough and is launching in Calais.

¹⁰⁸ Transport for London

¹⁰⁹ <http://www.bbc.co.uk/news/uk-england-london-11664578>

4.3.2.3 Velib cycle hire scheme - Paris¹¹⁰

On 15 July 2007, the city of Paris launched the self-service cycle hire scheme known as Vélib'. Aiming to reduce pollution, help users to stay fit and raise the awareness of cycling, the scheme has been deemed very successful by Parisians (reflected in high levels of satisfaction in the latest polls). It has also had high usage and favourable press coverage. The system has been advertised as a quick and easy way to make short journeys.



In its first year Vélib' had 198,913 annual subscribers, 277,193 seven-day subscribers and 3,683,714 one-day subscribers. The bicycles were rented 26 million times with an average journey time of 18 minutes.

The number of cyclists in Paris has increased continuously over the last few years, with a rise of 48 % between April 2001 and December 2006¹¹¹

4.3.2.3.1 Operational characteristics

The scheme began with 10,648 bicycles and 750 docking stations located strategically around the city centre, targeting public transport stations, tourist attractions and commuter routes. There is a docking station located approximately every 300 metres, although in the core of the area this is as low as every 50 metres. There is an average density of eight bike stations per km². There is a ratio of 1.7 docking points for every bicycle to ensure docking space is always available. By the end of 2008 there were 20,600 Vélib' bicycles in circulation and the latest figures estimate there is around 1,640 docking stations across Paris. This makes Vélib' the largest system of its kind in the world.

Users access bicycles directly at the docking point through a smartcard that has previously been sent to their address, or via a user terminal located next to the docking station.

A €150 deposit is held on the user's bank card when borrowing a bicycle and if the bicycle is not returned within 24 hours, the bank card is charged this amount in full.

If a bicycle is hired and re-docked within two minutes, three times in a row, the bicycle is automatically identified as faulty and taken out of service.

Ten electric vans and 400 staff are in charge of maintenance and re-distribution of the bicycles; 80% of maintenance is completed on site as there is an underground storage compartment at each docking station that holds maintenance equipment. A maintenance barge that travels along the river is also in operation.

4.3.2.3.2 Tariffs

A subscription to use the system is required and prices vary as follows:

- Annual subscription €29
- Seven-day subscription €5
- One-day subscription €1

There is a 30-minute free period of use. For the first additional half hour €1 is charged and €2 for the second additional half hour. After this, the cost rises to €4 per additional half hour.

¹¹⁰ Feasibility Study for a Central London Cycle hire scheme, Transport for London 2008

¹¹¹ Marie de Paris, 2008

4.4 Connections

For D2D journeys to be possible, public transport services have to connect with each other and these connections have to be guaranteed. Station travel plans which are currently being piloted at 24 sites across England are looking into improving connectivity between all modes. Across Europe improving connections is seen as key to improving the D2D experience and encouraging more journeys of this type.

Integrated Timed Transfer (ITT) systems are in place in Switzerland, Austria, and in many regions of Germany. They distinguish themselves from regular timed transfer (TT) systems, where vehicles arrive at and depart from a station at approximately the same time to minimize waiting times for passengers, by encompassing not only a single city or urban area, but by integrating the timed transfer systems of individual metropolitan areas into one complete public transportation system for a region.¹¹² The most well known phrase for this is the "Integraler Taktfahrplan," or the integrated fixed interval timetable.

In Switzerland, the Taktfahrplan is an integrated national timetable produced by statutorily-specified consensus building, involving democratic bodies, the national railway, numerous smaller railways and the operators of buses, boats and mountain lines.¹¹³ It coordinates intercity rail and other modes at multiple timed-transfer hubs.

The principal objective is to maximise connectivity across the network. Services are built around interchange at strategic nodes. Together with a logical arrangement for each line and a commitment to maintaining the standard pattern throughout the operating day, this ensures for almost every A to B pair consistently high standards of frequency, speed and convenience. The Taktfahrplan has become embedded in Swiss life, and each successive enhancement has yielded significant increases in the use of the system.¹¹⁴

Since the UK does not have a national integrated train timetable work has been undertaken to ascertain whether Taktfahrplan would work on at least part of our transport network. This has included modelling how Taktfahrplan might change the East Coast Main Line between Newcastle and Edinburgh. The key issue would be the disciplines that the system also imposes. For example, the model sees little future for some of the under-used stations that see the twice-daily Newcastle-Chathill service – including Chathill itself. Those trains interfere with the regular interval services that Taktfahrplan demands. A closure and improvement programme of selected railheading stations, on which connecting bus services would converge and at which better car parking, waiting facilities and real-time information services would be concentrated has been proposed.¹¹⁵

Connections between all modes are recognised as key to the success of D2D transport and there are a number of examples of where Local Authorities have invested in improving this aspect of the journey. Cornwall is one example of where real time information has been introduced to improve understanding of connection times for users. The Council is hoping to roll this out to more bus routes through working with operators. Station travel plans will also look at the whole journey experience and all modes used to access hubs and work to improve connections.

¹¹² Integrated Timed Transfer: A European Perspective, Reinhard Clever, Transportation research record, 1997

¹¹³ Perfect Timing: An East Coast Taktfahrplan, Rail Professional, 2008

¹¹⁴ Timetabling on the East Coast mainline, Passenger Transport networks, 2008

¹¹⁵ Like Clockwork, Rail Professional, 2004

4.5 Ticketing

4.5.1 *Integrated Ticketing in the UK*

4.5.1.1 *Intalink*

Established in 1999 the **Intalink**¹¹⁶ Partnership is a unique collaboration between local authorities and bus and train operators in Hertfordshire. By pooling resources and ideas, it aims to achieve:

- Better customer information on bus and rail services in Hertfordshire.
- Better awareness of journey opportunities available by using passenger transport.
- Co-ordination between service providers.
- An integrated bus and rail network.
- Higher standards of information and service provision.

As a result of the partnership, **Intalink** has been able to provide the county's bus users with additional county-wide products for use on the network. For example the **Intalink explorer** ticket offers users unlimited travel on the county's bus network. First introduced in 2001, it is now established as one of the county's most well known bus tickets.

4.5.1.2 *PLUSBUS*

PLUSBUS is an add-on to a rail ticket which gives you all day bus travel around either the origin or destination of your train ticket. 200 bus companies across Britain accept PLUSBUS on their services. Users get one rail ticket which states that it includes bus removing the need for buying further tickets.

4.5.1.3 *London*

The smartcard ticketing method is used in cities across Europe. London has the widely recognisable Oyster Card (pictured).



However new smartcard ticketing initiatives have been launched elsewhere in England, Scotland and Wales. Stagecoach is the first major UK bus operator to complete the installation of government-standard smartcard ticket machines on its entire UK bus fleet outside London.

All 7,000 vehicles in Stagecoach's regional bus operations are now ready to move forward with the acceptance of smartcard transactions, using the government's preferred ITSO technology, with over half already accepting ITSO smartcards in live schemes. In London, all of the company's 1,400 buses accept Transport for London's Oyster card. Similar initiatives have been introduced in Cardiff, Dundee, Merseyside, Oxford and the South West¹¹⁷.

New Style Debit/credit cards could become an alternative to smartcard ticketing. In London a multifunctional Barclaycard Visa credit card features Visa payWave for payment and a contactless Oyster smartcard application enabling cardholders to use the same card to make low-value purchases and to travel throughout London on the public transport network. Visa

¹¹⁶ http://www.intalink.org.uk/downloads/PDFS/Intalink_Strategy.pdf

¹¹⁷ Local Transport Today

Europe is also actively collaborating with Transport for London to define how Visa payWave cards might be accepted directly at the fare gate in the London transport network¹¹⁸.

4.5.1.4 Brighton & Hove¹¹⁹

Brighton and Hove (population 250,000) public transport includes local bus services and extensive rail services to London mainline stations and beyond. In 1999 the bus operator in Brighton and Hove trialled a flat fare policy on all its services that switched fares from a distance based graduated fare scale, to a widely advertised £1 flat fare for all journeys. The £1 flat fare for all journeys trial continued until May 2003 and the effects of the trial scheme was an estimated increase in patronage by between 3 to 8.5% capturing both price and simplification effects.

4.5.1.5 Dutch integrated ticketing¹²⁰

In 1980 the Netherlands saw the introduction of a national fare and ticket system for urban and regional public transport. With the exception of most train journeys, this covers virtually the entire public transport network, regardless of public transport operator.

By using the *strippenkaart* (zoned multi-ride ticket) or the *sterabonement* (zoned seasonal passes), passengers have the benefit that they can travel throughout the country using the same ticketing and fare system. Fares are based on the number of geographical zones 'crossed' (about 4-5 km in diameter). Ticket revenues are apportioned to authorities and/or operators on the basis of a complex nationwide passenger enquiry. Authorities are allowed to introduce regional tickets (themselves or through their operator) alongside the nationwide *strippenkaart* system. The *strippenkaart* provided advantages for both passenger and operator: passengers can travel anywhere in the country with the same ticket; for operators it meant shorter dwelling times at bus stops and less handling of cash in the buses. However, there were also disadvantages: the system is rather complex from a passenger's point of view (e.g. one has to know how many zones you travel through to stamp the correct number of strips). For the operator the distribution of revenues between operators is slow, complex and imprecise (because it is based on yearly passenger surveys). Some operators have complained that they received less money from the revenue allocation system (WROOV) than they should have.

The growing usage of competitive tendering and the associated contractual revenue risk for the operators have led to a growing call for a more precise revenue allocation method. This is now being realised with the gradual introduction of the national public transport smartcard (*OV-Chipkaart*), which will replace the *strippenkaart* and the corresponding zone system, after the full national implementation of the smartcard. The *OV-Chipkaart* can now be used in most concession areas and should fully replace the *strippenkaart* in 2011.

4.5.1.6 Paris Integrated ticketing

There are two passes available in Paris to negotiate the public transport systems. These allow unlimited travel on the public transport systems except Le Trains de Grande Vitesse (TGV).

¹¹⁸ Visa.com

¹¹⁹ The Benefits of Simplified and Integrated Ticketing in Public Transport, PTEG 2009

¹²⁰ Public transport tendering in the Netherlands, Didier van de Velde, David Eerdmans and Hans Westerink, 2008

Metropolitan Paris (population 11.7 million) has a public transport system comprising bus, metro, tramway and light rail services, which is co-ordinated by the Syndicat des transports d'Ile-de-France.

In mid 1975 the 'Orange Card' was introduced in the Paris region. The card offered integrated ticketing through a non-transferrable, monthly (or yearly) season ticket which can be used on different transport modes including bus, the metro and suburban train, and various operator networks (i.e. RER, SNCF, APTR). The introduction of the 'Orange Card' had a significant effect on patronage although the impacts on bus and Metro services were disproportionate. The implementation of the 'Orange card' increased patronage on buses by 36% (i.e. up from 745,000 to 1,010,000 passengers per day).

This increase in ridership can be attributed to multiple factors including transfer of passengers from the Metro to bus, a switch from walking to bus services, a switch from car use to bus use and an increase in the number of journeys conducted (particularly in off-peak periods). The increase in patronage on Metro and various network operators was less significant with:

- Patronage on Metro increasing by 1%;
- Ridership increasing by 5% on the RER;
- A 5% rise in patronage on suburban buses; and
- A 1% increase in the SNCF ridership¹²¹.

The Pass Navigo (residents) or the Pass Navigo Découverte (non-residents) is a weekly or monthly public transportation "pass" which has taken over from the Orange Card although it does exactly the same thing for Paris and the Ile-de-France region. It has become a contactless smartcard valid for the RER (regional express trains), Metro (subway), buses, trams, cable cars, and commuter trains. There is limit to quantity of voyages on public transportation system while the pass is valid.

The Paris Visite Pass is slightly different but also allows unlimited travel for 1, 2, 3 or 5 days on Bus, Metro, RER, and Ile-de-France trains (not TGV). The key difference between the Paris Visite Carte and the Passe Navigo Découverte is the timing. Pass Navigo's are valid strictly from Monday 00:00 to Sunday 23:59:59.

Although the system appears complicated with two choices for users they do represent a good and comprehensive ticketing option which can be used for the duration of validity on all modes.

4.5.1.7 Raileasy

Raileasy have launched a mobile phone app, m-Ticket that allows passengers to purchase tickets directly from their phones without having to use a website. The app works on 95% of all phones, not just iPhones. Once bought the ticket can be collected from a ticket machine or ticket office at any station, using a pin number and the credit/ debit card they bought the ticket with. The Java-based application has been designed so that there are no network costs for any activities associated with the solution, so users do not need to be signed up to a mobile data package to use it.

¹²¹ The Benefits of Simplified and Integrated Ticketing in Public Transport, PTEG 2009

4.6 Institutions and regulations

4.6.1 *Madrid Regional Transport Authority*

Since the creation of the regional transport authority in 1986, public transport patronage in the Madrid region has risen by 70% while the population has grown by 25%¹²². Significant infrastructure developments have taken place since 1995, with over 200km of metro and light rail line built in Madrid and its suburbs.

4.6.2 *Network St Albans: a Quality Network Partnership for St Albans*



St Albans has a medieval street layout that was never designed for use by motor vehicles. As an affluent area, with one of the highest ratios of car ownership in the country, it has high levels of commuting. As a result congestion is rife with a damaging impact on bus journey reliability.

The Local Transport Act 2008¹²³ permits setting up Quality Network Partnerships (QNP) which is being undertaken in St Albans as the first area wide QNP set up with partners joining on a voluntary basis. In addition to the County and District Councils the partnership includes Hertfordshire University, and all the public transport operators (Arriva, CentreBus, Greenline, Metroline, Tiger, Uno, First Capital Connect and Midland Main Line) under the Network St Albans name.

Network St Albans¹²⁴ is an area based network partnership covering multiple corridors, incorporating and integrating bus & rail services/infrastructure. It aims to develop Metro-style routes and corridors with integration between rail & bus including the incorporation of Station Travel Plans. Mobile telephony and internet technology using Real Time Information is being pursued along with a common/interchangeable ticketing scheme. Route specific marketing and branding will also be features of public transport. Infrastructure upgrades and traffic management changes will be introduced to improve bus reliability.

The aim is: *"to provide ... a real and attractive alternative for many of the journeys currently made by private car. This will ... cut traffic related road congestion, air and noise pollution, help businesses recruit and retain staff, and maintain ... city's position as an attractive destination."*

Network St Albans is pooling funding from different sources to provide, for example: network maps and marketing; real time information and bus stop improvements; a pinch points programme e.g. controlled parking; ticketing schemes for all buses and for bus-rail; mobile e-ticketing; and other public transport improvements.

4.6.3 *Toronto Regional Transport Plan*

The regional transport plan of the Greater Toronto and Hamilton area set out ambitious objectives for public transport with a 25 year timeframe¹²⁵. It plans to build 1,200 km of rapid transit (over three times that currently exists!) so that over 80% of residents in the region live within two km of rapid transit (compared to 40% today). The plan advocates investing CND 2bn a year on public transport projects during the period. An initial CND

¹²² UITP

¹²³ http://www.legislation.gov.uk/ukpga/2008/26/pdfs/ukpga_20080026_en.pdf

¹²⁴ <http://www.stalbans.gov.uk/council-and-democracy/press-room/items/2009/April-2009/NetworkStAlbanslaunched.aspx>

¹²⁵ UITP

11.5bn has already been pledged by the regional government. It is expected that in 25 years, public transport will cover 26% of the trips to work compared to 16% today and ridership should grow by 130%. As a result, emissions from transport should halve within the period. Toronto's new Mayor Rob Ford, elected in 2010, began moves to block the transport plan, which includes bus lanes, going ahead in its original state. The actively pro-car Mayor is working on a compromise plan which would see the ambitions of the original plan curtailed.¹²⁶

¹²⁶ New Urban Network, Toronto's Aggressive New Mayor ignites a transit fight, Phillip Langdon, 2011,

5 Conclusions

Broadly speaking, passengers expect the following¹²⁷:

- accurate and high-quality travel information to be available before and during their journey, in a range of formats;
- flexible multi-modal ticketing to be offered;
- good physical interchange facilities at the station with other public transport;
- rail station staff to know, or be able to find out, about onward journey options;
- timetables to provide reasonable connections between each mode;
- safe and direct walking routes to and from stations;
- suitable car and bicycle parking facilities at the station;
- taxi or minicab services available at the station.

Travel by public transport is innately multi-modal in nature, with very few journeys made by a single mode from door-to-door, because transport networks are inevitably limited in size and penetration. Research has shown that interchange between modes can be a very significant barrier to the use of public transport, with a number of factors affecting what is often described in transport literature as the 'interchange penalty'. Interchange leads to unproductive waiting time; uncertainty about onward connections; a risk of missed connections; having to wait in uncomfortable and potentially insecure locations; and potentially increased costs associated with paying additional fares. Studies into how passengers value time have shown that time spent in interchange has a much higher value than time spent on the move; also passengers perceive interchange to take longer than the actual time that was spent¹²⁸. This leads to an increase in the 'generalised cost' of multi-modal transport journeys, making people less likely to undertake them and more likely to travel by car for the whole journey.

Conversely, studies have also shown that where the interchange penalty can be reduced, then passengers will be more likely to make connecting journeys: improving the access mode to rail and the associated interchange penalty can be more cost-effective in generating new passengers than improvements in journey time on the main mode¹²⁹.

In order to improve the perception, and increase the usage, of D2D journeys by public transport there are key improvements needed in all four of the areas discussed in the report. Without action to these areas which would improve whole journey time and experience then trips by car will always appear to be the most attractive option.

Public transport operators also need to have the legal and financial incentives to provide the type of integrated travel experience that is needed.

Developing technology is driving the capability to provide more effective D2D transport. It can provide a platform to:

- Improve information (especially in real time) including information on connections; and
- Improve access to ticketing including through ticketing using electronic purses.

Although both need to be supplemented by traditional sources e.g. locationally-specific timetables at bus stops and ticket machines/ offices at stations etc.

¹²⁷ Door-to-door by public transport, Journey Solutions, June 2009

¹²⁸ See for example Wardman, M. and Hine, J (2000) Costs of interchange: a review of the literature Institute of Transport Studies, University of Leeds, Working Paper 546

¹²⁹ Brons, M. Givoni, M. and Rietveld, P. (2009) Access to railway stations and its potential in increasing rail use Transportation Research Part A 43 (2009) 136-149

By removing barriers to D2D transport public transport use can be increased and multi modal journeys can become a viable journey choice.

5.1 Information

Information which is easily accessible and gives up to date real time information throughout the journey experience is crucial to increasing D2D travel. Information needs to be accessible at all stages of the journey, from journey panning and fares advice before travel to real time information throughout the journey giving the passenger the opportunity to make alternate plans if delays should occur.

Many rail stations do have real time information as standard and it is increasingly expected by passengers. However bus stations and stops do not all have this type of information and the lack of this type of information adds to the perception of unreliable services and increases the amount of risk to the journey.

The growth in technology and its capabilities means that more and more people have access to information on the move and no longer find not knowing as being acceptable. The public increasingly expect to have control over their journeys and RTI enables this. Smart phone applications which give real time information and allow the ability to recalculate a route will become more and more important to the success of D2D transport. This can only happen if there is open access to information like in London which has allowed independent apps to be developed which benefit all users.

Although transport networks tend to be restricted to a local area and some journeys will take us across boundaries, brand can be very important to build confidence. Networks which have a recognisable brand such as Transport for London or, on a more local scale Brighton and Hove, provide the feeling of integrated travel to which passengers respond positively.

5.2 Interchange

As most public transport journeys involve a mode change, interchange between these is very important. Users do not want to have to go out of their way to access the next mode. It also needs to be clearly signed, passengers often have short connection times so need reassurance they will be able to locate their next waiting time within their time frame.

Larger interchanges, such as train station to bus station, should also have facilities appropriate to usage. If there is shelter from the elements, a safe place to wait and possibly additional facilities such as a coffee shop then wait times can seem shorter than they actually are. It is also very useful to provide RTI at interchanges.

Where users are not taking a motorised form of transport to access or exit their next mode of transport then interchange is still as important. Cycling facilities needs to be safe and secure and in an accessible place for changing modes quickly. This is the same for bike hire facilities. Cycle routes need to be well signed giving distances and potentially times to key destinations. Provision for taxis, good pedestrian access and, where appropriate car parking, also need to be made.

5.3 Connections

Passengers are more concerned about the time lost during waiting to make connections than time in transit. Therefore reliability of services is crucial to improving D2D transport rather than just increasing speed on any of the journey legs. Alternatively high frequency of onward travel, which is available on one ticket, is needed to render the delays incurred by

connections obsolete. During the rush hours where passengers usually have a set time in which they need to arrive at their destinations, connections and their reliability are extremely important.

Where possible it is also useful to give passengers the opportunity to use a mode of transport over which they have control. Bike hire schemes are extremely popular for short trips and provide users with a non motorised way of undertaking a stage and mean there is no need to wait for a specific scheduled service.

5.4 Ticketing

Integrated ticketing provides a number of benefits to transport users, for example greater convenience, time savings, greater certainty of what journeys will cost, and sometimes cost savings, so integrated ticketing can be seen as supportive of the EU's policies on consumer rights. Furthermore, integrated ticketing can help to reduce barriers to the use of public transport, thereby encouraging modal shift to sustainable modes. This also leads to the potential for commercial benefits to transport operators, both directly through increased patronage, and indirectly through cost savings resulting from reduced transaction costs.

However, there can be commercial and regulatory barriers to integrated ticketing which outweigh the potential commercial benefits and so prevent the wider implementation of integrated ticketing, which will need to be addressed in order to see widespread integrated ticketing in use.

While integrated ticketing cannot by itself address all the problems of interchange, it can help by:

- Saving journey time: no additional tickets need be bought, reducing time spent in interchange;
- Reducing uncertainty and hence perceived risk: passengers know they do not need to buy further tickets and know exactly what the total fare for their journey is before they start to travel;
- Provide better information on connecting modes: integrated ticketing often involves better provision of information to passengers on the services available for onward travel;
- Generate cost savings for passengers: integrated ticketing is often associated with discounted fares, with the fare for the connecting services available at a lower price than if paid separately; and
- When implemented using cashless 'smart' ticketing, offers the convenience of cashless travel for the whole journey

Understanding the commercial benefits and barriers is essential to the success of this project. If these can be overcome then the costs of introducing integrated ticketing systems will be borne by the transport industry as there will be a sound business case.

Benefits include:

- Additional patronage for their services;
- Reduced transaction costs if fewer tickets need to be sold;
- Participation in national 'smart card' schemes permits standardisation of ticketing systems and equipment; and
- Participation in much larger marketing and awareness campaigns than an individual operator could deliver.

Barriers include:

- Complexity of revenue sharing between operators, especially where operators compete on price;
- Different rates of return for different modes: e.g. the revenue generated for the bus operator by each new multi-modal journey is much lower than the revenue for the train operator, giving bus operators less incentive to invest in integrated ticketing systems;
- Costs of installing new equipment, which increase greatly where tickets are sold on the vehicle, greatly increasing the number of machines that have to be modified or replaced.

It is particularly important to understand where costs and benefits are incurred and how they differ between different transport modes. For example, the cost to a rail operator of selling a bus 'add-on' might be small in comparison with the value of the ticket sold, whereas for a bus operator, whose share of the revenue will be small, the cost of installing equipment to sell rail tickets on buses is likely to be prohibitive. In addition the cost of reprogramming rail ticket machines to accept a new range of tickets can be disproportionate.

5.5 Regulatory and institutional barriers

If the UK is to develop a public transport network that is the envy of the world it needs to create the regulatory and institutional structures that will enable operators to work together productively for the benefit of passengers. This requires making D2D travel much easier and developing seamless travel. However the current arrangements present barriers to the effective provision of D2D public transport, including:

- Competition regulations can constrain the ability of competing operators from participating in schemes with common pricing;
- Very different regulatory regimes apply to different transport industries and therefore different conditions of carriage apply to different modes, with associated different liabilities for the passenger and any luggage by the provider;
- Contractual and liability issues relating to responsibilities of ticket vendor for travel by another operator;
- Franchising and bus quality partnership/ contracts do not require integration improvements; and
- Data protection, cost and security of customer data discourage innovation in information delivery.

In improving the availability for integrated ticketing it will be necessary to consider differences between different transport modes, in terms of their industry structures, how they are regulated, the nature of the journeys made on them and their main passenger travel markets. Some examples of issues to consider include:

- The majority of trips are relatively short in distance; shorter journeys tend to involve fewer changes of mode. For example, in the UK the vast majority of bus trips involve only a single stage, with walking being the only other mode involved¹³⁰. This is a disincentive for bus operators to participate in integrated ticketing.

¹³⁰ UK DfT National Travel Survey

- Rail travel can involve a wide range of different fares available for the same origin and destination, with tickets tied to specific seat bookings.
- International rail travel is regulated internationally, whereas local transport is subject to very different regulatory structures determined at national level.
- DfT leadership to encourage all the players in the public transport operations to improve their contributions to D2D journeys would benefit passengers. For example the DfT could introduce legislation to provide the same powers to PTEs that TfL possesses.
- Free access to timetable information/ open data initiative would benefit apps development for rail and bus users.
- Lack of inclusion of the need to provide for improvements to interchanges or RTI in rail franchises impedes the development of D2D journeys.
- Likewise the lack of inclusion of interchange in QBPs/ QBCs also is a missed opportunity.
- Funding arrangements also do not help: problems can be caused by revenue streams from data sales being important for operators while discouraging apps development.
- Furthermore there is a lack of targeted funding specifically designed to help overcome the barriers to D2D journeys.

Investing in D2D transport is also good economics. According to the Eddington Report¹³¹ evidence on public transport integration shows that they generate positive benefit:cost ratios (BCRs). Integrated transport schemes in Reading, Scarborough and elsewhere generated benefit:cost ratios of 2.7-7.7 (with a mean BCR of 4.97). Interchange investments in Altrincham, Bradford, Coleshill, Mansfield, Warrington, Wolverhampton also generated high benefit:cost ratios of 1-4.8 (with a mean BCR of 2.57).

The private car is still the most popular mode of transport in the UK and its relative affordability means it is difficult for public transport to compete. However by addressing the issues identified above and reducing the barriers to D2D transport, an increase in public transport journeys and modal shift from the private car is possible.

¹³¹ Cited in On the Move: Delivering Integrated Transport in Britain's Cities, J Preston, A Marshall & L Tocher mann, Centre for Cities 2008

6 Recommendations

6.1 Institutional and regulatory structures

- The current range of regulatory and regulatory powers for transport is confusing and lacks a clear rationale. In particular, there is no clear rationale for why some regulatory powers are a national level and some devolved to local level. **In the light of the Government's move towards localism, the Department for Transport should review the regulation of transport and, in particular, consider whether more regulatory powers should be brought together under Integrated Transport Authorities. In addition the Government should promote and enable transport partnerships such as Transport for South Hampshire to bring together Local Authorities and where appropriate Local Enterprise Partnerships (LEPs) with common transport interests.**

6.1.1 *Rail franchising*

- As the McNulty study on value for money in the rail industry has said, incentives and costs are not closely aligned and this particularly applies to moves to integrate transport. **The Department for Transport should ensure that changes to rail franchising provide clear incentives for train operating companies to promote better integration with other public transport and support pedestrian and cycle access to stations.**

6.1.2 *Funding*

- The Local Sustainable Transport Fund provides an opportunity to encourage local authorities to improve door to door journeys. **The Department for Transport should encourage bids that address overcoming barriers to door to door journeys.**
- The review of local government resource review should look at how public and private sector collaboration can be encouraged, for instance around public sector investment coupled with private operators' service enhancements. **The Department for Communities and Local Government should ensure that the second phase of the local government resource review looks at a full range of options for funding transport enhancements including tax increment finance, property taxes and business rate supplements.**

6.1.3 *Competition law*

- Competition Law can be a barrier to cooperation and coordination of services for the public interest, including in timetabling and ticketing. In its current inquiry, **The Competition Commission should maintain the current block exemption for multi-operator ticketing schemes and should recognise the value placed by users on co-ordinated and integrated networks.**

6.1.4 *The land use planning system*

- The planning system can support door to door journeys by public transport, for instance by intensifying development around public transport interchanges. **The Department for Communities and Local Government should ensure that the new National Planning Policy Framework supports good practice, for**

instance in transit oriented development and in integrating public transport in the design of new developments (following the recommendations in Manual for Streets).

6.1.5 *Information*

- There is much good practice in developing good mapping, both of transport routes and street maps and signage around stations but practice across the country is still mixed. **The Confederation of Passenger Transport, ATOC and the Local Government Association should work together to encourage the highest standards in mapping and signage.**
- **The Government should continue to invest and use regulatory powers to ensure that real time information services and technology is spread across the country and that all buses are fitted with the requisite equipment.**
- **The Government should ensure that data on timetabled and real time public transport operations is freely available for use by third parties, subject controls on accuracy and quality.**
- **The government should provide encouragement for local authorities and operators to work together to create consistent branding for transport networks and ticketing. This will give users more confidence that the networks are joined up and that all operators are signed up to the D2D journey.**

6.1.6 *Interchange*

- Although there has been much investment in new transport infrastructure, many transport interchanges are geared more to the demands of the modes of transport rather than the needs of people. **Network Rail and local transport authorities should do more to design for people in new transport interchanges, particularly for waiting areas and to allow for pedestrian movement between services and with surrounding streets.**
- **In considering new structures for the rail industry, the Government should seek to enhance incentives to invest in stations as transport hubs and as interchanges, and to improve access to surrounding areas.**
- Cycle access and cycle parking should become core parts of franchises and experiment with cycle parking at bus interchanges. Station travel plans enabling this to happen.
- There are significant opportunities to build on the successful bike hire scheme in London but link bike hire more to the rail network. **ATOC should explore how rail companies can be involved in developing cycle hire in the main cities outside London, drawing on the successful Dutch model.**
- **The Government should require station travel plans as part of all franchises.**

6.1.7 *Connections*

- Punctuality is important to give passengers confidence that they can make connecting services, whether by train or bus. **Passenger Focus, the Office of Rail Regulation and the Traffic Commissioners should continue to focus on punctuality and reliability.**
- **The Government should ensure that in restructuring the rail industry incentives are given to provide connections between key services and that the performance regime is modified to incorporate the holding of trains for connections.**

- **The Government should map and guarantee connections between public transport services to all larger settlements (20,000+).**

6.1.8 ***Ticketing***

- The Dutch experience of zonal tickets (and the experience of their introduction in London in the 1980s) shows their potential to simplify ticketing and grow demand. **The Department for Transport should use the smart ticketing programme as an opportunity to work with Integrated Transport Authorities and transport operators to introduce a simple, zoned, integrated fare structure in metropolitan areas outside London.** And ultimately in all areas. It should work with devolved administrations to ensure that a single standard for smartcards is adopted across the UK, or at least in Great Britain.
- Bus-train integrated ticketing should be developed and requirements for standard smartcard and mobile phone readers on buses should be included over time within licensing regimes.