

Chapter 5

Integrated Traveller Information – Transport Direct

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Introduction

In the 1998 Transport White Paper (DETR, 1998) the UK government set out its integrated transport policy. Integration referred to a number of policy aspects including ‘integration within and between different types of transport – so that each contributes its full potential and people can move easily between them’. To support this the White Paper included a target to produce a national public transport telephone information system by 2000. This has been delivered, continues to be developed and is now called ‘traveline’. It provides impartial journey planning information about all surface public transport services throughout England, Wales and Scotland – with buses, coaches, trains, trams, metro and underground available now and ferries being added progressively. Delivery of the service via the web is now also going forward (<http://www.traveline.org.uk/>).

As a statement of action following the White Paper, the government published a 10-year £180bn spending plan for transport in July 2000 (DETR, 2000). This included the announcement of Transport Direct. Transport Direct is an ambitious programme to provide the UK with a travel information service that can present the public with the opportunity to compare travel options across public and private transport modes including air. Using the Internet as its principal delivery medium, it seeks to offer a one-stop-shop journey planning, booking and payment service, complemented by real-time update information. Specifically the government has pledged that Transport Direct will (<http://www.dft.gov.uk/itwp/transdirect/>):

- tell the traveller what choices they have when they are *planning* their journey;
- allow the traveller to *book and pay* for their journey at the time of making their enquiry, and receive their travel authority/ticket(s); and

- advise the traveller about how their chosen travel option is performing in *real-time* before they set off.

The government's aim with Transport Direct in fact builds on a long history of providing effective passenger information as a key element in promoting the use of public transport. Until about 30 years ago the responsibility rested entirely with the providers of public transport services, who printed timetable books, leaflets and posters for distribution and display, ran their own enquiry offices, and latterly telephone contact numbers. They also trained staff to advise passengers en route of any out-of-course running. Over the last three decades public authorities (especially the Passenger Transport Authorities and others designated as local highway and transport authorities) have taken an increasing responsibility for pre-travel information, as part of their responsibilities for local passenger transport provision (under various statutes). The development of traveline reflected the partnerships built up in that process – something that Transport Direct will also need to address. The particular focus of Transport Direct is on maximising the opportunities now available from the continuing evolution of technologies. Both Transport Direct and traveline complement the use of more traditional forms of passenger information, especially printed material and effective communication by transport providers' staff.

Full delivery of the Transport Direct programme may take 7–10 years. The government intends to act mainly as a catalyst – accelerating and stimulating the development of travel information services and encouraging existing services to cover more than one mode – for example, coach and air or train and taxi. To fulfil its part, government intends to invest substantial capital funds, to complement close liaison with key stakeholders in the transport industry and the conduct of market research involving the general public.

Eventual success of Transport Direct will be marked not only by the extent of its use by the general public but by the extent to which it informs and influences travel decisions and in particular the choice of mode of travel. The expectation is that for some people on some occasions Transport Direct will play its part in a choice not to use the car but to use an alternative mode or combination of modes. Whilst this remains the political motivation of the programme (and one driven by social, economic and environmental considerations), its delivery requires the support and involvement of many public and private sector organisations that comprise the passenger transport industry. Crucially for private sector players, and particularly where no legislative obligations may exist, cooperation will be founded on the existence or not of a commercial justification. In this context stakeholders will be seeking answers to two key questions:

- what specific characteristics and features should the Transport Direct service possess in order to satisfy the requirements of its prospective users; and
- what demand will there be for such a service and what will it be used for?

This chapter is based on an extensive review by its authors of literature and developments within the field of traveller information involving coverage of academic publications and consultation with local authorities, transport operators, consultants, suppliers and others in the UK and elsewhere. The work, conducted for the Transport Direct programme, is fully reported elsewhere (<http://www.dft.gov.uk/itwp/transdirect/travinf/index.htm>). Its purpose has been specifically to explore existing and ongoing research of relevance to the integrated multimodal traveller information vision that is Transport Direct. This chapter sets out and discusses a broad range of issues associated with the realisation of this vision and highlights research-related considerations that arise in seeking answers to the two overarching questions above.

Terminology

During the course of the review a general issue became very apparent, namely the use, misuse and ambiguity of terminology in the field of traveller information provision. While at one level this might be deemed a purely academic matter, at another level it becomes crucial in seeking to clearly understand activities within the field and to correctly interpret findings from research.

The term *traveller* is a notable case in point. Searching a major international transport bibliographic database with the phrase *traveller information* yields some 250 related articles. A repeat search with the phrase *traveller information* results in well over 1,000 articles. Most notably in the USA (though in other countries as well) the term *traveller* is treated synonymously with the term *driver*. Upon closer scrutiny it thus transpires that much of the research in the USA regarding Advanced Travel(l)er Information Systems (ATIS) is concerned solely or predominantly with driver information. *Transit information* more appropriately is used to separate out the other research which does not concern drivers.

Another difficulty is the use of the term *public transport* to represent one or more modes of public transport and particularly to represent bus

and/or train. This difficulty can be minimised if the subtext within research documentation makes clear to which specific mode(s) *public transport* refers. Without this clarification, findings across different research studies are prone to be contradictory and misinterpreted. Indeed, research which itself fails to specify when consulting travellers on their views concerning modes of transport risks becoming invalidated. European research is generally much better than North American in focusing on modes in terms of the distinction between car users and public transport users but it often fails in this need to disaggregate public transport into its constituent sub-modes. Bus and train are often very different modes in terms of their operating environments, pricing structures and payment mechanisms and clientele. They also typically serve different spatial markets. Distinction should ideally extend to cover different types and levels of service within particular modes – for example the contrast between high-quality branded bus or coach services aimed at the car-driver and ordinary bus services, or the difference between premium rail services such as airport express trains and normal passenger rail services.

With regard to information systems the term *integration* can be prone to misinterpretation – this is discussed in the following section.

Interpreting Integration and Distinguishing it from Coordination

The terms *integration* and *multimodal* tend to be used within existing research literature in a rather loose and ill-defined manner where they concern information provision. With information systems, integration is often used in a misleading way to refer to systems which encompass information on more than one mode or from more than one region but which do so in such a way that there is little or no interaction between these information *subsystems* (for example, Hasberg and Serwill, 2000; Marchetto, 2000; Meekums et al., 1999). It can be the case that a service described as an integrated multimodal traveller information system is in fact an assembly of discrete mode specific components within an umbrella system – i.e. components are *coordinated* rather than integrated.

The (ab)use of the term integration in this way is unhelpful given that other developments exhibit approaches that are more in keeping with true integration – i.e. where there is interaction between elements of the so-called integrated system. Key examples are journey planning software initiatives which enable a user to submit a journey request and the facility then automatically interrogates a number of distributed databases/journey planners spanning

different geographical regions or modes to assemble (alternative) journey itineraries for the user as a response to their request. The JourneyWeb/RAPID project is taking this forward in the UK (Fingerle et al., 1998; Fingerle and Lock, 1998, 2000) and at a European level EU-SPIRIT is seeking in a similar way to provide door-to-door public transport and travel information across Europe by integrating long-distance railway, local transport systems and travel-related, non-transport information (EU-SPIRIT, 1999–2001). The European INTERCEPT project also looked at the interconnectivity of trip planners (Hayes et al., 2000).

Recent research in the UK has led to a three-way categorisation of information provision, namely *unimodal* information (UMI), *multimodal* information (MMI – meaning coordinated rather than integrated information across modes) and *integrated multimodal* information (IMMI) which refers to the Transport Direct vision (Kenyon and Lyons, n.d.). This work contends that, while provision of IMMI is more technically demanding than MMI, the former is likely to be much more appealing to users and in turn holds much greater prospect of influencing travel choices and notably mode choice.

The quest of Transport Direct in seeking to be a truly integrated national system is shared by few other countries worldwide with the notable exceptions of Singapore (Austin, 2001) and the Netherlands (Tooreburg and Leusen, 1997). Therefore, in some respects precedents for Transport Direct developments are in short supply.

Consumer Demand for Information

In the course of developing an information service there is a need to understand how people make use of the service and how, in turn, its design can be enhanced, both in terms of information content and interface. However, such consideration relies to a great extent on individuals electing to use an information service in the first place. The level of demand for such a service is a fundamental consideration. It is important in terms of persuading those parties who can, in partnership, provide the service that to do so will be worthwhile and ultimately that a business case exists (this is returned to later). It is also important in terms of the scale of effect on travel choices and behaviour at an aggregate level that the service might achieve.

In order to assess level of demand properly, there is first a need to identify *for what* demand is being assessed. Demand will vary where the information relates to different modes of (public) transport and in turn is likely to be different

again where an information service represents more than one mode. There is also a need to determine what level of demand would be considered acceptable to service providers. A study of bus passenger needs and priorities (Balcombe and Vance, 1996) found that most passengers do not use information in making bus journeys and that passenger information was a major priority for only 7–11 per cent (Vance and Balcombe, 1997). This figure might be deemed discouraging and yet an equivalent per cent drop in patronage through lack of information provision might render some bus services no longer commercially viable. Equally a similar increase in patronage could maintain or enhance a service.

Alongside the issue of identifying what constitutes an acceptable level of demand is the need to be mindful of a maximum level of demand. The latter is unlikely to equate to the total travelling population. Work by London Buses Limited (cited in Cartledge, 1996) led to a three-way classification of information users as *phobics*, *lovers* or *pragmatists*. The proportions of users in each of these is not made clear. However, the suggestion is made that pragmatists are a key target market for information providers, i.e. those individuals who can be persuaded to use an information service when their need is sufficient. Recent qualitative research highlighted the habitual behaviour of people with regard to their travel choices, in particular mode choice (Kenyon and Lyons, n.d.). The (active) demand for information to assist in the mode choice decision would therefore appear to be limited. Strong modal allegiance across journey purposes has been found in other work (Cassidy et al., 1997; Balcombe et al., 2001).

Demand for an information service concerning journey planning for a pre-determined mode should not be confused with demand for a service that offers mode choice information/guidance. It would appear from research to date and the usage statistics of information services that the demand for information on a specific mode is substantial and may be growing. The demand for mode choice information is less well understood – principally because, as yet, the availability of multimodal information services has been more limited.

It is important in efforts to assess demand for a service such as Transport Direct to distinguish between two measures of demand. The first is the demand for the service *in the absence of* any other similar or alternative services. The second, and more relevant, is *in the explicitly recognised presence of* other similar or alternative services. This in turn points to the importance of ensuring that the added value Transport Direct can bring to the information marketplace is well recognised by the public and that in turn the demand for such added value is properly assessed. In marketing terms, added value is used to define the unique selling point (USP) of a service. For example, the portrayal of mode

comparison might be packaged as being an ethical journey planner – playing to the future if not present mood of the public as environmental concerns continue to grab high profile headlines. Alternatively, the USP could be a service that can address a strap line of ‘Is Car the Best? Why not Check the Rest?’

Measuring the types and levels of demand for existing services (TNS Harris, 2000) can provide a useful yardstick when contemplating demand for future services. However, this offers a poor second to measuring demand for a service directly. Transport Direct faces the problem that it is difficult to even draw inference from existing services because of the pioneering and potentially unique nature of the service that is envisaged.

The Importance of Awareness and Marketing

Demand for an information service can only arise from those individuals who are aware of the availability of the service. Conscious awareness is also linked to the extent to which an individual needs to use an information service and whether the individual concerned is an information *phobic* or *lover*. Recent qualitative research (Kenyon and Lyons, n.d.) included a focus group comprised of people aged over 60. None of those present were aware of the existence of the UK’s National Rail Enquiry Service (NRES). This is in stark contrast to the usage statistics for NRES published in regular bulletins which show huge demand for (and by implication awareness of) the service. A study of bus passengers needs (Balcombe and Vance, 1996) found that most passengers do not know about available information – much of the information currently provided is very little used by the public because they are unaware of it, cannot easily obtain it, or cannot understand it. However, the issue raised here is that the lack of inclination to become aware of how to obtain such information can in itself be a barrier to awareness and hence to its use.

Information service providers, particularly in first establishing a service, must be proactive in raising awareness – there is a need for marketing and advertising. Formal advertising campaigns, particularly at a national level, are expensive. Market research is required to determine how such campaigns if taken forward can be targeted to be effective. It is also important to ascertain whether those individuals who are aware of an information service are the ones of interest, i.e. those likely to change their travel decision as a consequence of information provision.

A substantial marketing campaign was undertaken and its effect studied in association with the SmarTraveler telephone information services in the

USA (Englisner et al., 1996). The study found that the majority of non-users did not recall being exposed to any marketing mention or advertisement and concluded that most travellers are simply not information seekers. It was also considered that only 31 per cent of the target market could be characterised as truly aware of the service since more than one third of those surveyed who said they were aware of SmarTraveler were not sure what it is. This latter point is significant – awareness or lack of it should be gauged according to whether or not an individual is familiar enough with an advertised information service to know how and when it might serve a useful purpose to that individual.

There is evidence to suggest that the public have a distinct preference for a one-stop-shop approach to information access (Kenyon and Lyons, n.d.). It therefore seems tenable that the economies of scale that could be achieved if information providers were to pool their advertising resources could lead to a centralised national advertising campaign which in turn could produce mutual benefit for those parties involved. This is already a reality within the privatised UK passenger rail industry. In spite of being comprised of 24 separate train operating companies, the industry puts forward a unified front via its National Rail website (<http://www.nationalrail.co.uk/>).

Information Needed by End Users

As recognition of an information service grows, ultimately demand for its use will be governed by the extent to which it meets the needs of its users. Many research projects seemingly report on information requirements of the end user although it is often the case that such work concerns a survey of user reactions to an implemented or prototype system. Two points should be made here. Firstly, it is implicit that by addressing the reaction of *users*, the issue of whether *potential* users will be minded to become *actual* users is ignored. Reactions of potential users or former users may be very different and potentially more adverse than those of existing users. The latter, by implication, must achieve some degree of satisfaction from use of the system. Equally, *actual* users can become *former* users if they do not achieve an adequate degree of satisfaction. The second point leads on from this: user reactions to an actual system cannot be equated to user requirements from a preferred system design.

There is likely to be an incompatibility between the needs of the travelling public as a whole and the needs of individual travellers. If the former is addressed in system design then this can in principle lead to greater benefits

to the system provider and greater effects on aggregate travel behaviour and patterns of travel. However, to do so overlooks the information needs of sub-sets of the travelling public. Nevertheless, in some cases a *design for all* philosophy that can accommodate the needs of individuals as well as the masses will not be practical. This is particularly the case in the short term where such information requirements introduce a resource burden that cannot be offset by the benefit of provision to the provider. The maxim *less is more* can be applied to traveller information provision. Design for all can also suggest the provision of growing volumes of information to cater for differing needs. What individuals actually want is quick and convenient access to information of relevance to their personal needs. This dilemma is resolved if care and attention are given to information structure and hierarchy within a service (Kenyon et al., 2001).

In terms of specific information needs, reliability is highlighted in one recent UK study (Transport Research Group, 2000) as the most important travel factor for many individuals. Other recent research has also found that punctuality/reliability is the top priority for the public above a number of other conditions and services – frequency, level of fares, overcrowding and journey time – for trains and local buses (MORI, 2001). Yet the suggestion that travellers should be provided with past performance indicators for a specific journey by a given mode is often met with disapproval by service providers. The assumption is made that such a proposition would mean openly publicising that a particular service is unreliable or failing in some regard. The retort to this is twofold. Firstly, the provision of such information will also serve in other instances to highlight how reliable a service is. Ideally if such information were available across modes including the car it might also highlight the relative reliability of travel options in an equitable way. Secondly, in refraining from alerting travellers to an unreliable travel option for a particular journey, the provider is merely forestalling the point at which the traveller will experience first hand the failing of that option. In turn the individual may then elect to refrain from considering that option in future.

The desire of the traveller for a wholly reliable transport service should be distinguished from the desire for information concerning the *degree of* reliability in practice of a transport service. In the UK the greater level of capital investment in infrastructure improvements from the 10-year plan could well bring added disruption to transport networks in the coming years. Reliability (including the knowledge of reliably unreliable journeys) is likely to be of increasing interest to information service customers.

Embracing Walk, Cycle and Car Information

In deliberating the vision for Transport Direct, the need to make and address the distinction between *point to point* and *origin to destination* becomes apparent. Information provision will not only be concerned with offering alternative modes for the journey but, more specifically, it will concern offering alternative modes for the different legs of a journey. The interchanging between journey legs, and principally between trunk and local end-legs, then needs to be adequately addressed in information terms to support the traveller. This raises the importance of walking as a mode which can frequently act as the ‘glue’ between, for example, an end-leg bus journey and a trunk-leg rail journey.

The point is rightly made that in isolation there would appear little of substance to create a business case for a cycling and walking information service. However, indirectly the business case may exist for such a service where cycling and walking act as feeders of patronage to public transport modes. Some journey planning services within traveline now have the capacity to include walk links. However, what is lacking are the data necessary to provide such information to the public.

It might appear that car or driver information has received considerable attention within ATIS and associated research. This is certainly true where the car is the mode used for the entire journey, where information can assist navigation and route choice. However, little work appears to have been done with regard to how information can be used to positively support the use of the car to access alternative modes for the trunk-leg of a journey. The taxi is another end-leg mode for which information may have a part to play in encouraging trunk-legs to be undertaken by public transport (see <http://www.traintaxi.co.uk>).

Effects of Information on Behaviour

For the UK government, and indeed private sector stakeholders, the degree of success of Transport Direct will depend not only on the level of service use but on the effects of information on travel behaviour.

Information can only bring about behavioural change if viable alternatives to the primary travel choices exist. Further, the viability of alternatives must not be considered only in absolute terms but in terms of *perceived* viability on the part of the travellers (Bonsall, 2000).

A particular issue which emerges from examples in the literature of travel behaviour studies associated with information system concerns survey methods. Many results concerning behaviour stem from stated preference surveys. Whilst the findings cannot be invalidated simply because of this, such results should be treated with some caution especially if generalisations are to be drawn from them. Particularly where behaviour is concerned, the origin of the research is likely to have some significance in terms of cultural differences between countries, the degree of engagement with the information society, the nature and extent of car dependence and the extent and quality of public transport provision. This is particularly an issue concerning the USA with its lower land use densities and more extensive urban sprawl (Transportation Research Group, 2001). The specific nature of the different information services, both in terms of their usability, information content and promotion, will also impinge upon the transferability of findings between studies.

Some studies raise the issue of per-trip choices versus longer term choices. A US study of traveller stated preference for bus and car modes (Reed and Levice, 1997) made the distinction between strategic (monthly) choice and tactical (daily choice) scenarios. The European TABASCO project (Anderson et al., 1997), although embracing the longer-term goal of achieving a mode split change, recognised that most people only shift mode as a result of some change in their life – a new job, for example. This highlights the supporting role of information services in securing behaviour changes either in response to changes in personal circumstance or to the introduction of substantial change in an aspect of the transport system that has a relevance to an individual's pattern of travel. In this context, evaluating an information system in isolation of external contributory factors might not indicate the degree of effect on behaviour that could occur in practice as external factors change.

Research for the UK (English) Highways Agency found a limited inclination amongst the general public to seek mode choice information. However, this research also highlighted the potential for attitudes towards different modes and choice of modes to be influenced by the presentation to travellers of comparative information for alternative mode options for a given journey (Kenyon and Lyons, n.d.). Nevertheless, there remains little evidence to date of the potential affect of an integrated multimodal information service on mode choice.

Willingness to Pay for Information

Willingness to pay for information can be an issue at the heart of formulation of a business case to run an information service on a commercial footing. The issue is touched upon in a number of research sources (for example, Harris and Konheim, 1995; Papaioannou et al., 1996; Fischer et al., 1995; Ojala, n.d.). Yet it seems it is seldom given detailed and thorough consideration and in such sources the messages are mixed.

Nor are the available means of payment (well) addressed. Straightforward hypothetical questions regarding willingness to pay unsurprisingly draw a rather guarded response. Yet payment in practice may not appear as an up-front cost. For example, information services provided by a mobile phone network can generate an income through call charges with the possibility that users will either assume that the information service itself is free of charge or will not be fully aware of the call charges associated with their use of the information service. Another issue is the prospect of two-tier information services where the lower tier provides a free service associated more with *broadcast* information while an upper tier provides a charge-based service associated more with *narrowcast* information personalised to the needs of the user.

The Importance of Partnership and Buy-in

The information chain from collection of raw data through its conversion into meaningful information to its delivery to end users will usually involve a number of organisations spanning the public and private sectors. As such, the delivery of an information service, particularly one which involves multiple modes or a wide geographical area of coverage, will necessitate a form of partnership between organisations for the service to be developed, to function and to achieve success. Public authorities typically have a requirement to collect traffic data for traffic management purposes. As the field of transport telematics has developed many have continued to invest in information gathering infrastructure and have recognised the added value of using the collected data for traveller information purposes. For this reason, a common division of responsibilities seen in partnerships is as follows. The public authority has the role of data provision and maintenance of data quality. Meanwhile the private organisations have the role of using that data to deliver (commercial) information services to the public (Sommerville and White, 1997; Sayeg, 2001; Barton and Lanza, 1996; Toorenburg and Leusen, 1997). Of course, that is

not always the case, and in Transport Direct many of the data providers and possibly the data quality maintainers will be from the private sector.

A partnership organisation created to integrate and centralise information can potentially have endemic problems (Hall, 1999): partnerships are slow to take decisions; centralisation divorces the information provider from the end user; and publicly funded projects are ineffective at anticipating consumer needs. Proposals for tackling these problems entail looking at contracts and responsibilities. The problems also raise the matter of whether informal partnership with only commercial motivation can succeed or whether legislation has a role in making things happen.

While partnerships can face difficult problems to resolve, they also present advantages. For example, they can help to avoid conflict (without necessarily leading those involved into collaborative and expensive activities). They can also provide neutral territory for organisations and individuals to come together, enabling institutional and jurisdictional barriers to be crossed on a noncommittal basis. A notable partnership achievement in the UK is that of traveline, involving local authorities and the privatised (and deregulated) public transport industry. Under the Transport Act 2000 there is an obligation concerning the provision of bus information. However, this obligation does not extend to information providers having to co-operate in the traveline initiative. Indeed, the initial traveline developments preceded the legislation. (Nevertheless, clear guidance to local authorities came from government to consider the importance of information provision in their bids for capital funds (Lyons and Harman, 2002).)

Making the Business Case

At the heart of the development of information services which involve private organisations, who are under limited or no legal obligation to commit, is the need to have a clear business case. Public transport operators, particularly in the UK bus industry, are operating to short financial time horizons. Investment in information services as envisaged in Transport Direct is a long term commitment involving not insignificant risks. This is particularly the case where there is a limited availability of robust and relevant empirical evidence that such information services as are envisaged will generate sufficient demand and in turn a revenue stream to offset the costs.

Recent research in the UK has considered the potential for information services to generate extra revenue through increased ticket sales (TNS Harris,

2000). An earlier article (Cartledge, 1996) highlighted that experiments to test the hypothesis concerning increased revenue are found to be few and those which exist are now dated. However, the few that are cited point in the same direction – that a greater investment in information provision can show a positive return. This is considered further in the next section.

Recent work considering developments outside the UK and their relevance to the UK (Austin, 2001) offers a helpful viewpoint on the context in which a successful or at least viable business case is likely to be drawn up. The mere presence of technology will not make (public transport) information provision a success. Success in introducing it requires: political commitment; a healthy commercial environment for operators (including supportive trends in land-use planning, traffic management and economic growth); appropriate technological infrastructure, and regimes that stimulate take-up by consumers (with technological regulation being important); and market and regulatory stimuli so that it is in operators' commercial interests to introduce technological solutions for public transport information wholeheartedly.

The business case for information provision needs to be drawn up in conjunction with consideration of the transport system itself. A study of bus users (Vance and Balcombe, 1997) rightly made the observation that investment in information systems is not a substitute for investment in other public transport improvements – 'good information will not sell bad services'. A survey of public attitudes to transport in England revealed that for buses, local rail and long distance rail, access to timetable/route info is a lower priority than frequency, punctuality/reliability, cost of tickets, journey time and personal security in terms of what would have to improve to bring about more use (MORI, 2001).

Information should be considered as complementary to investment in public transport itself. In other words if investment is occurring in other parts of the transport system then the business case should not be based (solely) on the current transport system. It should instead be based on projections of changing demand for information as changes to transport systems occur over (perhaps) the period of the 10-year plan in the case of the UK. However, the uncertainty of such long-term projection, coupled with the much shorter time horizons of many of the players involved, makes this a less than straightforward proposition.

A number of studies point towards the need for public authorities to provide the substantial capital investment (or a part of it) required to establish (pump prime) the systems and the associated infrastructure. This comes with an expectation that private sector players will be in a position to operate the

service on a commercial (and commercially successful) footing (Peyronnet, 1997; Miles et al., 1998; Fischer et al., 1995).

The public investment case is more complicated than the business case in the sense that it must deal not only with identifying the (scale of) financial benefits of providing an information service but also the economic, environmental and social benefits (Lyons, 2002). Economic and environmental benefits at a local and national level might be derived from reductions in traffic congestion brought about by better informed travel choices. Social benefits might include the support information provides in upholding an individual's right to freedom of choice. They might also enable would be travellers to become travellers and enhance social participation, reducing social exclusion. The public investment case is able to and more likely to assess the longer term consequences of investment. The government's 10-year spending plan for transport proposes investment that will bring a number of substantial changes to the UK's transport system. These will in turn bring about changes in the relative merits for different travel choices, reinforcing the importance of information provision if these choices are to be made on a rational basis.

Feasibility of Including Booking and Payment for Tickets with Information

There is some research concerning telesales retailing for public transport tickets. Research as part of the development of the national public transport information telephone service (traveline) found that 'over three-quarters of likely users of the new service said they wanted to be able to book and buy their ticket in advance by telephone, as well as using the service for information' (TNS Harris, 2000). However, such research does not address the Internet as a retail medium for ticket sales.

Any retailing service requires a supporting information service and few journey planners are currently mature enough to provide such support. Greatest progress with this issue is being made by the airline industry (though challenges remain in terms of providing comprehensive fares information) and more recently by the coach and passenger rail industry but public domain documentation is extremely limited. Early progress has effectively been made where either the retailing operation and the supporting information services are within the control of a single organisation (for example, National Express – <http://www.gobycoach.com>) or where there are established institutional relationships between organisations.

The Association of Train Operating Companies (ATOC) in the UK recently commissioned some research to investigate third party retailing for rail tickets (Mapp et al., 2000). The study noted that while there is a range of evidence available regarding the generative effect of telesales, there is currently no research data available on the generative effect of the Internet. It defines generation as ‘the proportion of customers who, in the absence of telesales or the Internet, would have travelled by another mode or not at all’. The recent Harris Research study for NRES (addressed in this ATOC report) suggested a generation value of 10 per cent (i.e. 10 per cent of those who travelled by train after calling NRES would have travelled on another mode (8 per cent) or not at all (2 per cent), if they had not called). The ATOC report suggests that generation in the range of 10–15 per cent seems plausible and most probably towards the lower end of this range. It suggests that generation is very significantly skewed towards long distance journeys.

In terms of Transport Direct it would be helpful to have an understanding of the extent to which the associated retailing is necessary to secure a choice made by a user based solely on the information provision. In particular, will the associated retailing *secure the deal* for a user who is minded to make a journey partly or fully by public transport in place of the car based on the traveller information element of the service?

Technical Standards and Technological Solutions

At the heart of the technological dimension to Transport Direct’s delivery is likely to be the issue of data exchange between distributed heterogeneous systems. This concerns a need for separate databases and systems to be able to communicate with one another, if necessary through a technical *interpreter*.

In this area of research more so perhaps than in any other there is a sequential process of development with successive projects building on the findings and progress of their predecessors. There is a recognition that reinventing the wheel is wasteful and that existing wheels can be improved (Kasswaller and Hubner, 2000). The most recent European project of relevance which subscribes to the philosophy is TRIDENT (White, 2000; Van Hemelrijck and Tegenbos, 2000; Bolelli et al., 2000). The project goal is to support multimodal travel information services by establishing the common and reusable mechanisms that are required for sharing and exchanging data between transport operators of different modes (bus/tram/metro, rail and road).

Key UK projects regarding data exchange that are of significance to Transport Direct are JourneyWeb and TransXChange. The JourneyWeb project (Fingerle et al., 1998) has been seeking the development of a communications protocol between journey planners for different modes and areas. The protocol is a collection of standard methods for exchanging electronic data between heterogeneous systems. TransXChange is a project to develop a standard to facilitate electronic bus registration. Other technical projects of relevance are the Rail Journey Information Service (which integrates a number of databases necessary to support passenger rail information services and ticketing) and the Highways Agency's Travel Information Highway (which offers a marketplace for the exchange of, and payment for, information across modes via the Internet) (Lyons and Harman, 2002).

The research literature contains a growing number of references to the provision of and effects of real-time information. However, with respect to Transport Direct the more specific consideration is the add-on of (personalised) real-time updates to a journey planning service. Little research yet exists in this regard. However, to support the growth of real-time information associated with public transport modes and thereby increase its availability for use as part of Transport Direct, the UK government has recently spent £20m funding 19 real-time bus schemes across England.

Designing Usable Information Services

For an information service to be used, it must be *useful* and *usable*. Useful refers to the information content of the service and whether it meets the needs of the enquirer. Usable refers to the enquirer being able to gain timely and straightforward access to the information sought.

Travellers want to be able to understand the information that is made available and they want it to be accurate, relevant and accessible. A perception can be drawn from some of the research literature that information technology is seen to be a panacea for previous failings to provide information adequately. Whilst technology-based solutions to information delivery have great potential to enhance information availability and access, usability remains paramount (Kenyon et al., 2000). A comprehensive article on usability testing concerning traveller information systems (Crosby et al., 1993) stresses that transportation engineers must recognise the differences between their views of system functionality and capability and the user's view of system usability.

One of the problems with ensuring good interface design for an information service is the considerable change that technology continues to bring about both in terms of the types of information services that are provided and the increasing range and flexibility of interface designs that is possible. In some cases the pace of developments is at risk of precluding adequate user testing. Best practice in this context can struggle to even come into existence before the relevant formats of delivery are superseded. Nevertheless, there remain a number of fundamental principles of information presentation design. Overarching these is the importance of involving the end user in the design process – *participative design*. Prospective end users of the service should be engaged in the design of the service through an iterative process of consultation and usability testing.

Concluding Remarks

This chapter has illustrated how technology is playing its part in the delivery of the UK's integrated transport policy. Although information and communications technology (ICT) features increasingly in a number of areas of vehicle performance, transport system management and travel demand management, traveller information systems are a poignant example of how the connectivity of, particularly, the Internet is being exploited to gather, manage, process, exchange and interrogate data and information across a number of parties in multiple locations.

Technological challenges in the delivery of the UK's Transport Direct integrated multimodal traveller information service are not trivial but are being addressed in a systematic fashion. Perhaps of greater significance are the institutional and organisational challenges. Post-privatisation and deregulation, the UK's public transport industry is now in the hands of a large number of private sector organisations. This raises concerns over fragmentation and inconsistency in terms of the availability of data to support a national information service alongside the necessity for business success regarding any investment by such organisations. Therefore, at the heart of delivering Transport Direct is the need to establish successful partnerships and a credible and persuasive business case. The latter is very much dependent on research evidence concerning the extent to which the public are likely to use Transport Direct and in turn the consequences of such use, particularly in terms of (changes in) mode choice decisions. This chapter has explored a number of considerations that relate to the assembly of such evidence, something which,

at the time of writing, is only partially complete and which is being pursued by ongoing market research within the Transport Direct programme.

There is widespread agreement that Transport Direct is ambitious. Further, if the service itself can be delivered successfully there are no guarantees that it will produce significant changes in travel behaviour. However, its delivery will provide greater empowerment for the travelling public to be presented with travel choices and to make more fully informed decisions. Whether such decisions favour reduced use of and reliance on the car will very much depend on the comparable quality of the travel service offered by competing modes – something that other elements of the integrated transport policy and 10-year spending plan must address.

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