

INTERMODAL TRAVELLER INFORMATION SYSTEMS¹

OBJECTIVES

European cities and regions share broad transport objectives: to provide sustainable mobility for their citizens, to improve safety and to improve environmental conditions. Building new roads in urban areas is often no longer seen as an acceptable option. Instead many cities and regions are concentrating on improving public transport as a key component of the overall transport strategy.

Passenger information systems are among the most important telematics systems likely to have a direct influence on the modal choice of travellers. Indeed, investing in good information systems can sometimes lead to sizeable increases in patronage or at least the continued loyalty of passengers. In addition telematics applied to traveller information systems is becoming more practical as more data become available from the operators' systems and as communication costs fall.

Making public transport more attractive



Transport information systems make public transport more attractive for travellers and more efficient for the operating authority. One of the things that deters people from using public transport is lack of information about services, fares,

timetables and interconnections. Intermodal traveller information systems can help to address the user requirements. By giving instant access to up-to-date transport and road traffic information, they can offer integrated journey planning across all modes.

Door-to-door journeys

User needs vary considerably, and one of the attractions of intermodal information systems is the ability to personalise information as well as provide specific help on intermodal aspects. Telematics can offer the convenience of “door-to-door” information which implies providing a high level of detail at each end of the trip and providing information on transport and localities outside of the home city or region.



¹ This note was prepared by the CARISMA project team on behalf of POLIS. The CARISMA project is funded by the European Commission Information Society Directorate.

POTENTIAL BENEFITS

A major objective of implementing traveller information systems is to make better use of the transport system as a whole, by encouraging greater use of public transport and making it easier to switch between modes.

Research has shown that potentially 10 per cent of time spent travelling could be saved through improved information systems. Any overall reduction in vehicle mileage will reduce the number of accidents and lessen the environmental impacts of traffic. As individuals, travellers can optimise their travel arrangements taking into account such factors as cost and convenience, and customised information will become available.

Europe is beginning to see specialist value-added service providers (VASPs) who are combining traveller information with other telematics-based services. These could provide an attractive option for the future, because they can operate across regional and national boundaries to provide an integrated information service.

Equipment manufacturers will also benefit from a new expanding market for portable terminals, kiosks, and mobile communications services.

THE INFORMED TRAVELLER

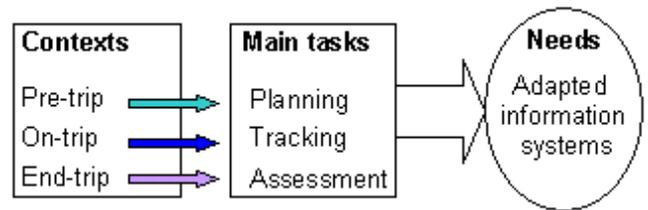
Uncertainty is one of the major problems when travelling. Without consistent information on different transport modes



travellers are unable to assess the optimum way of getting from A to B. “Smart travellers” make use of good information to

make well-informed decisions about their travel plans. Before setting out, trip planning defines the steps which must be taken in order to reach to goals of travel. Each user

has different criteria depending on personal context and reasons for travel. En route, the traveller is “tracking” his or her progress. If there are hold-ups, delays or missed connections, there are alternatives to look up and, choices to be made, based on the best information available. Finally, the user learns from his or her experiences during the journey and applies this new knowledge to future trips. The defined travel process thus consists of three time-based contexts, pre-trip, on-trip and end-trip, (see diagram based on INFOPOLIS ²):



The right information at the right time

The first step is to provide all transport users with detailed information before as well as during the journey. The information provided must be reliable, given at the right time, at the right place and in a form that is comprehensible and accessible.

The latest multi-modal traveller information systems seek to integrate data from different sources and different transport modes into a single unified system. This can enable both transport operation authorities and the individual traveller to make better decisions. A good example is Bayerninfo which has provided the backbone for traveller information services in Munich since 1995. The INFOPOLIS web site: <http://www.ul.ie/~infopolis> provides a review of over 100 multimodal transport information systems, which are grouped into families of systems for evaluation purposes.

Timing

Traveller information systems will be most effective if users receive the right

² INFOPOLIS2 Consortium. Review of current passenger information systems. European Commission – DGXIII. Brussels, Belgium. 1998

information at the right time. Not only does this information need to be accurate, up-to-date and reliable, but also easily accessible and personalised. A bus user is only interested in the information about the specific route and stop that he/she is taking. Other information will be of little value, so information needs to be personalised.

Network information

The provision of basic network information about public transport (e.g. route maps, timetables, interchange parking and other modal inter-connections) is already the established best practice among public transport operators. Users need accurate timetable information if the trains, trams, metro or buses run at intervals longer than ten minutes.

Many timetable enquiries are made by telephone. The core activity of the Dutch OVR (see box) is to offer the Dutch public an integrated travel information service in Holland via one-national telephone number.

The Dutch O V Reisinformatie (OVR)

In the early 1990s the Dutch public transport companies (1 rail, 13 regional bus, 9 city bus, 4 ferry, 10 private) realised that integrated travel information can be a stark marketing instrument. By dialling 0900-9292, you can get integrated information about all transport modes. Between 1992 and 1997 the number of calls rose from 5.8M to 11M. The success of the scheme is attributed to good quality information; easy and quick access, and the low cost.

However the number of calls that can be handled is limited, with up to 20% of calls going unanswered. The latest systems handle the bulk of routine enquiries automatically utilising speech recognition technology, thus freeing the operator for more complex and higher valued services. For example, the ARISE Project is looking at the automation of Dutch, French and Italian railway information systems. It operates in three language environments, each bringing together a service provider, technology provider and system integrators.

Dynamic information

Real-time information can benefit both public transport operators and passengers. Operators can use real-time information to improve fleet management. They can also collect and share better data to improve decision making in service planning.

But real-time information is even more important to passengers to reduce anxiety and uncertainty of waiting and to make more informed decisions. Real-time information is especially important in the case of service disruption or delays, for example by enabling passengers to make better use of waiting times or re-plan their routes to the destination. Real-time information also enhances safety and security by shortening response times to an emergency. The provision of real-time information on public transport services to improve people's confidence in services is also important.



ALTAIR – LCD Passenger Information posts

ALTAIR is a real-time GPS-based automatic vehicle location (AVL) system which is utilised to display waiting times at bus stops in Paris. ALTAIR informs users at bus stops of route numbers, waiting times, final destinations, service disruptions and network information. The information is updated every 25 seconds and up to 8 departure times can be displayed. The same real-time information is also available by telephone. Inside the bus, bus stops are announced and displayed on an LCD.

Travel Information can be provided before the trip as well as during the trip either at the roadside, or in the vehicle. Each situation has different requirements in terms of

information content, accessibility and interactivity.

Pre-trip information

Pre-trip information systems address itinerary planning – traveller's decision – making before the trip. It covers a wide range of information, including routes, schedules, fares, interchange opportunities, points of interest, events and the weather.



Pre-trip information helps travellers to make informed choices on which mode to use, when to make their trip and which route to take. There are a variety of media that can be used, such as touch-tone phones, cellular phones, kiosks, interactive TV and the Internet. Pre-trip information is usually available to users in their homes and increasingly at the workplace (e.g. by intranet)

TRIPlanner in Southampton

TRIPlanners, which provide public and private information for trip planning have been developed by ROMANSE and installed in public locations such as railway stations, shopping centres and libraries. Each unit comprises a touch screen, powerful PC and a printer. For public transport trips, the user selects the start and end of the trip selecting from "areas of the city", "public buildings", "street names" or "other locations". Day or date is selected and the optimum trip using one or a combination of modes is then calculated. A printout of the recommended route is available. All of the information is available in English, French or German.

En-route information

On-trip information systems provide information to passengers who are already en-route or in terminals (e.g. bus-stops). The

overall goal of these systems is to reduce waiting anxiety and increase customer satisfaction by providing route and time specific travel information.

On-board systems

On board systems are mainly concerned with giving itinerary and "next stop" information but can also be programmed to give necessary en-route information to drivers or passengers, such as bus/train arrival and transfer information to the next stops or transfer points.

MEDIA



There is a wide range of means for delivering telematics-based travel information. Each system offers different features, and levels of

sophistication, and may serve different groups of users. Possible delivery media include:

- Audio (e.g. phones, GSM cell-phones, pagers, radio, personal traveller assistants PTAs)
- Video (e.g. cable TV, PTAs, Variable Message Signs)
- Multimedia (e.g. Internet, public interactive terminals)

Increasingly the Internet is regarded as being a very effective medium for providing real-time information and may offer authorities a low-cost method for providing a comprehensive trip planning service covering all transport modes. BayernInfo includes cycle routes amongst its options.

SPECIAL NEEDS

Public transport information systems have great potential for helping people who are physically impaired to travel independently with the right kind of assistance. To succeed the systems need to integrate information tuned to the specific requirements of a range of handicaps and disabilities. The INFOPOLIS guidelines provide a checklist of features that should be incorporated into

transport information design system. For example, blind people can be assisted at bus stops by having the visual information transformed into audio information perhaps by the blind person activating a key fob.

HARMONISING ACROSS MODES

User-friendly presentation and delivery of information, for visitors and tourists as well as for citizens, is also an important. The INFOPOLIS2 project, funded by the European commission, has the objective of securing better harmonisation in the presentation of public transport information.

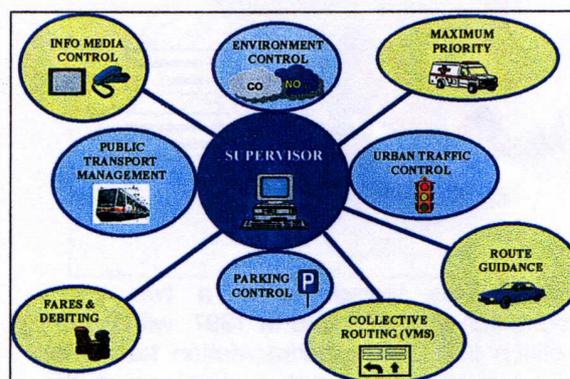
A key element of the success of traveller information systems is an ability to integrate the information across different travel modes and distribute it to in-vehicle systems, traffic and public transport information providers, traffic control centres, police departments, and transit authorities.

Standards

Effective standards help promote compatible systems and the rapid development of transport telematics. Standards for travel information exchange need to be flexible, expandable and non-proprietary in order to be useful across a wide range of products from competing vendors. For example, standard methods for referencing locations are needed for mobile data applications to unambiguously pinpoint the locations of incidents, links, bus stops etc. Without a location referencing standard, the locations used by one system will not be understood by another.

Communications

One of the major objectives of the European INFOTEN Project is to establish an intermodal inter-centre communication network within and between European regions as a backbone for traveller information services. The work addresses the installation of interfaces and converters for the communication between the available service providers and the deployment of communication links.



The aim is to develop an interoperable language independent communication system which addresses common needs: exchange of dynamic and accurate information, language independence, and consistent locational referencing.

System Reliability

One of the most important elements in the success of the implementation of a transport information system is the reliability of the information. This is especially critical for real-time systems. A classic mistake is to put into public operation systems that are not fully developed, and which have not yet achieved the required reliability standards.

INTEGRATION WITH OTHER SERVICES

The longer term is likely to see a convergence of technologies – for example the merging of transport services with telecommunications, the Internet, banking and other financial systems, and smart cards. All of this points to the need to develop systems which are well integrated, flexible and open to new developments.

Further information

Ms Anne Grünkorn
POLIS
Rond-Point Schuman 6, box 8
B-1040 Brussels
Tel. (32-2) 282 84 61
Fax (32-2) 282 84 66