Standards and Guidance Documents

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Any enquiries regarding this document should be sent to us at info@itsnow.org.

TRAFFIC ADVISORY LEAFLET   ITS 7/03

Public Transport Information

This leaflet is one of a series of documents from the ITS Assist Project. ITS Assist is a Department for Transport (DfT) initiative that aims to encourage and promote across the UK the use of Intelligent Transport Systems (ITS) as tools to implement local transport policy objectives.

Public Transport Information Systems provide travellers with journey planning and in-journey information. The systems combine information gathering, processing, communication and delivery technologies to provide a service.

This document provides an introduction to Public Transport Information Systems and the benefits that can be achieved through their deployment.

Public Transport Information in Leicester

GOVERNMENT OBJECTIVES

A key objective of the Government is to make public transport a viable alternative to the car. To support this, the intention is to:

- Make public transport services accessible
- Provide confidence that services are predictable and appropriate

The development of journey planning systems, integrated with fare information and electronic ticketing will support the accessibility of public transport services.

Public transport information systems will increase passenger confidence and satisfaction with services by informing travellers when their vehicle will arrive, and by providing a reason if it is late.

BACKGROUND

The improvement and development of public transport is an essential objective of the Government's ten-year plan to deliver a UK network that is safe, efficient, clean and fair. The provision of information on public transport services by operators and passenger transport authorities is recognised as being key to this objective.

The Transport Act 2000 requires local authorities to consider what information should be provided and how it should be made available. They must also consult with both Bus User Groups and the Traffic Commissioner on the issue.

Most information will still be

delivered on paper, but a great deal of information can be delivered electronically. Electronic delivery provides the benefit that information can be real time taking into account delays and incidents.

For the provision of information electronically, equipment and systems are available and being developed for both light and heavy rail and for buses.

The two key types of information are:

- Journey planning information
- In-journey information (including at stop [or station] information)

Journey planning for heavy rail is available through a range of network owner and service operator websites and from the National Railways Telephone Enquiry Service.

Journey planning information for multi-mode public transport (including bus and light rail) is available through the Traveline initiative (formerly PTI 2000).

Traveline is a service that provides public transport information via a series of linked regional centres. Users can obtain information either by ringing a national number or via a web site. The regional centres are funded by a partnership of local authorities, bus operators and passenger transport executives. The individual systems will be developed and linked over the next few years to enable the provision of national real time information.

Information display at West Bromwich Bus Station

Fare Data

Journey Planning Systems

Traveline Organisations

Information Delivery Systems

Schedule Data

Central Management Systems

PT Operators Systems

Local Authorities

Vehicle Location Equipment

Public Transport Vehicle

PT Operator
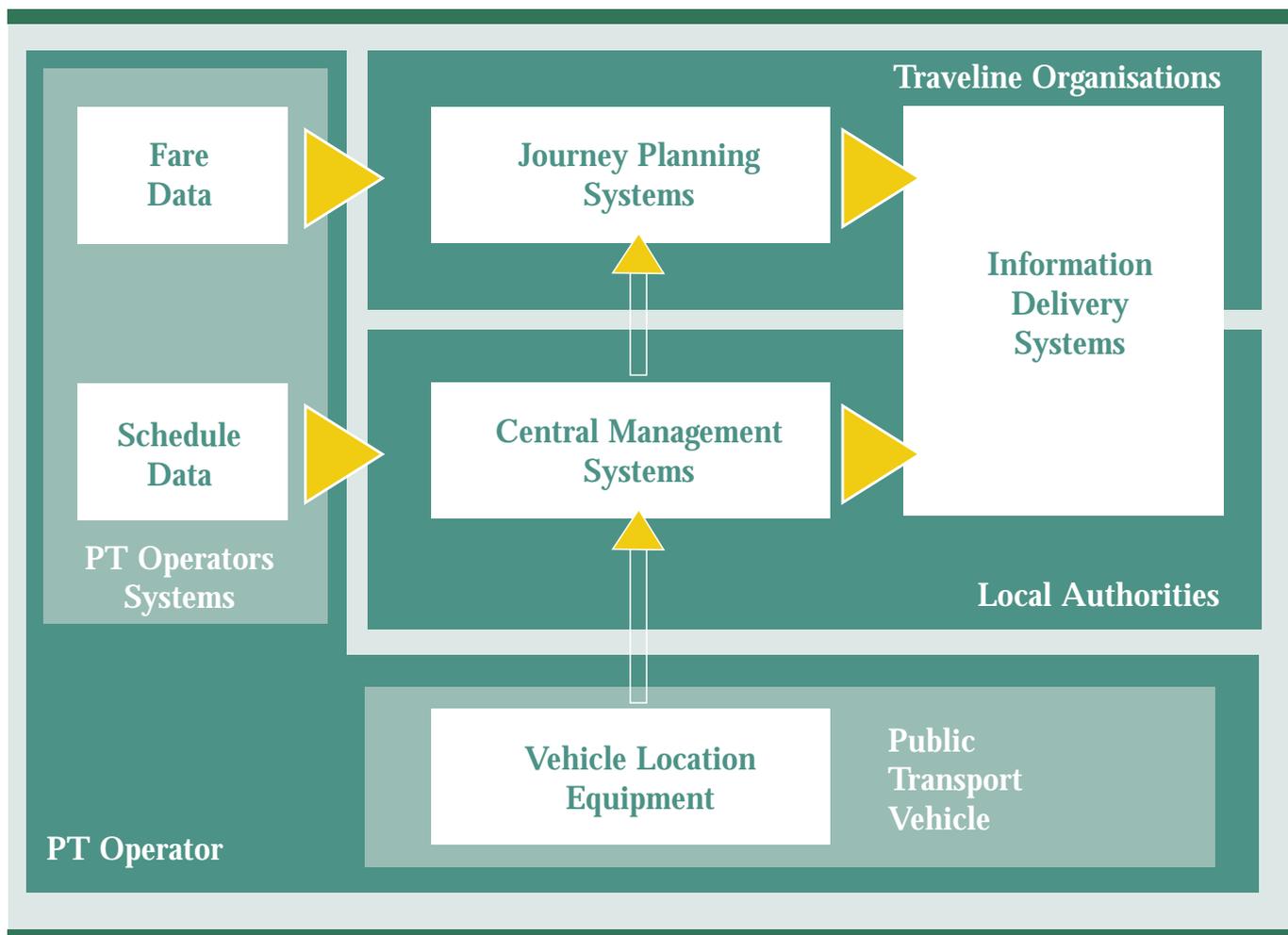
Schematic showing main components of a typical information system

Transport Direct and other research projects will further develop this service by enhancing the mechanisms for gathering and transferring the required data. Transxchange and Journeyweb are two protocols that have been developed to allow queries and journey information to be transferred between different journey planning systems.

In-journey information, based on real time information systems provided by individual operators, is proven and shown to be effective in numerous trial sites. Developments underway include a national approach through the Real Time Information Group (RTIG). This group is developing a standard functional specification for real time systems.

Another key area of development is the collation and delivery of fare information so that journey planning can include cost comparisons.

SYSTEM DESIGN

Most passenger transport information schemes will involve the interests and require the input of more than one organisation, so successful deployment and operation is dependent on the strength of the partnership formed.

The technical issues around a real time information system deployment are discussed in depth in the work being developed by the RTIG. To summarise, the key components of a system are:

- Vehicle location equipment
- Communication systems
- Central processing systems
- Information delivery systems
- Interfaces to other systems
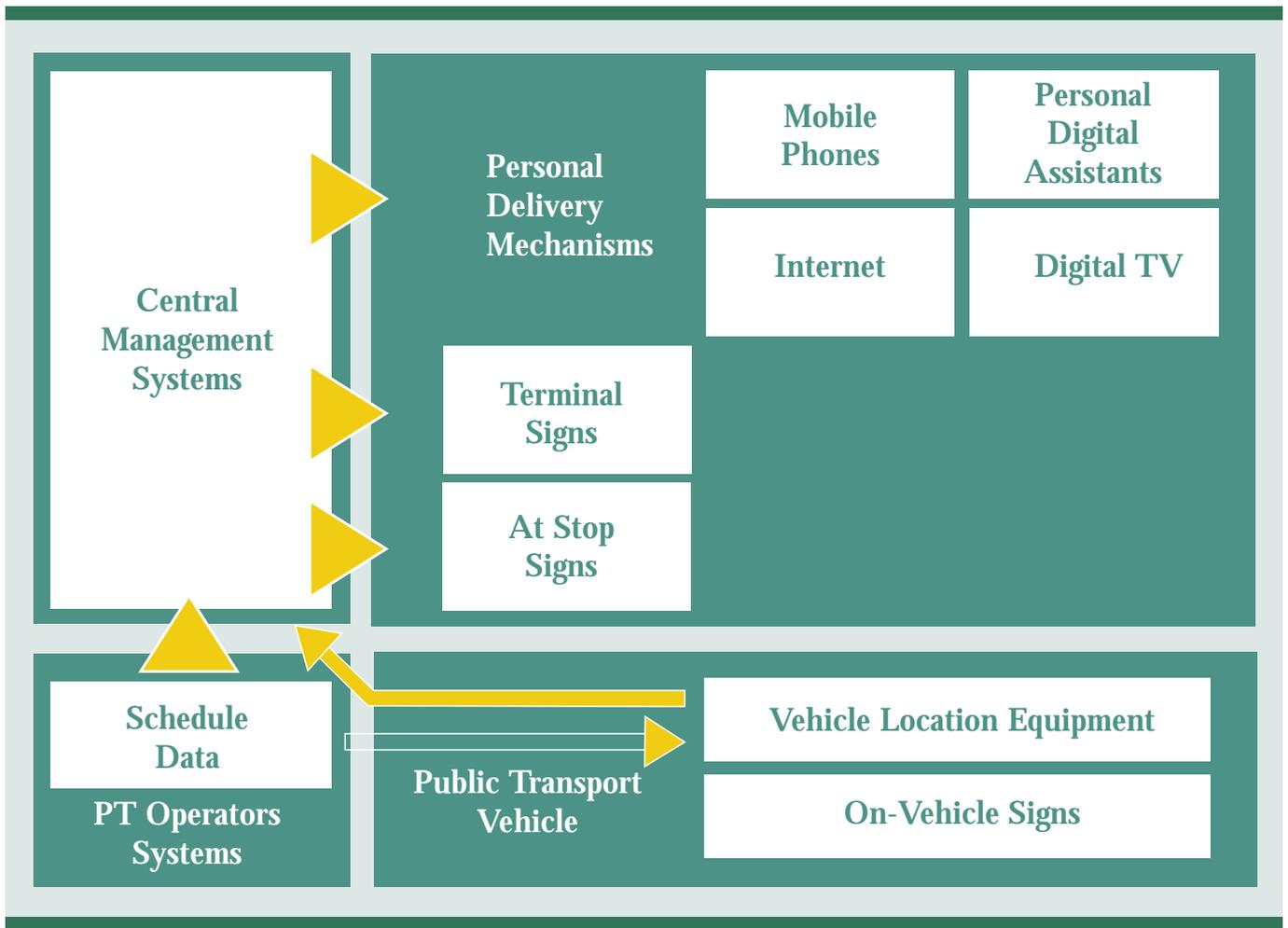
The diagram above illustrates the main components.

In designing any system, it is essential to consider, in addition to the immediate technical objectives, the long-term operation of the system and also the potential future expansion of the system.

For example, a bus real time information system can require buses to be equipped with relatively complex and expensive equipment. Therefore, it may not be possible to equip the complete bus fleet in one phase of work. As a result, due to operational and fleet maintenance constraints, bus operators may end up running unequipped buses on the project routes. This will result in gaps in the information being provided to the traveller and the project objectives not being met in full. Careful early project planning will help operators to foresee these kinds of situations, and devise procedures to avoid them.

Partnership

The delivery of public transport information systems requires the cooperation and partnership of all the parties involved. This may include the

Central Management Systems	Personal Delivery Mechanisms	Mobile Phones	Personal Digital Assistants
		Internet	Digital TV
	Terminal Signs		
	At Stop Signs		

| Schedule Data | Public Transport Vehicle | Vehicle Location Equipment |
| PT Operators Systems | | On-Vehicle Signs |

Schematic showing information delivery mechanisms

public transport operator, local authorities, Passenger Transport Executives (PTE) and Network Rail.

The system designers should carefully consider the system boundaries, as a public transport operator's network is unlikely to align with the local government boundaries.

In addition, these local government and operator boundaries will not be seen as such by the travelling public. Common standards should be used, to ensure interoperability at system interfaces. This means that buses should only have to carry one type of equipment even though they travel through different local government areas, and that passengers will find similar information and services in different areas. The RTIG is developing such a standard.

Delivery Systems

Delivery systems provide information to the end users. They are of two basic forms; general real-time displays, and information provided directly to individual members of the public.

The diagram above shows the key components.

It is now possible to send information directly to the public, for example via mobile phone text messages. The information provided can be general, or tailored to the requirements of the individual eg for a specific route. This tailored service can also be a 'pushed' service, which means that information is pre-selected by the users so that they only receive information in which they are interested and at the relevant time.

AVAILABLE TECHNOLOGIES

Elements of system design that must be considered are:

- User interfaces and central management system functionality. The key decision is to define the services the system must provide for operators and the travelling public

- An automatic vehicle location system. Two types are currently available; roadside based beacons or vehicle based systems using satellite navigation

Typical Web based journey planner screen from Traveline

- The communications system used to transfer data. Data must be transferred between the central systems and the roadside equipment and equipment on the vehicles. There are many different communications technologies available today, but these are generally either wire (telephone cables) or wireless (radio) based

- Display signs. Again there are a number of technologies available for use in different circumstances. These include light emitting diode (LED) signs and magnetic flip disks.

IMPORTANCE OF INTEGRATED SYSTEMS

The importance of creating open interoperable systems cannot be overstated. The ability to manage all modes of transport on an integrated basis is fundamental to Government objectives of sustainability and integration. The Urban Traffic Management and Control (UTMC) and RTIG programmes are leading the way in this field and useful documents are mentioned in the related documents section of this note.

Integration can bring benefits by:

- Integrating Public Transport Information systems and Public Transport Priority Systems to provide priority to vehicles behind schedule

- Sharing communications networks between applications to reduce operating costs

- Providing information to Fleet Management systems to allow operators to better manage their fleets

- Monitoring the performance of differing modes of transport to enhance traffic and public transport management strategies to optimise transport networks against Governmental Objectives

Integration can occur both at a systems and an information level.

REPORTED BENEFITS

Where quality bus corridors are developed the benefits are greater. SUPERROUTE 66 in Ipswich found patronage increased by 40% over the first 5 years of operation.

Passengers numbers on a bus route in Liverpool increased by 5% after a Passenger Information System was installed at a number of stops .

An evaluation study of the STOPWATCH at-stop real-time information system in London showed that 81% of bus users found the information useful for their journey, and 3.7% said they used public transport more as a result.

The introduction of passenger information systems in London resulted in routes showing an increase of 1% in passenger numbers.

EVALUATION

It is recommended that all Local Authorities and PTEs investing in such systems monitor and evaluate the operational performance of systems in accordance with the Guidance on Local Transport Plans produced by the DfT.

Where Public Transport Information systems are developed within a Urban Traffic Management and Control environment the UTMC common database can be used to store data, and a performance evaluation module can be developed to assist in monitoring, optimising and quantifying system performance. 'UTMC 05a Performance Criteria for UTMC Systems Handbook' and related Technical Note provide further advice on this; see the Related Documents section of this note.

FURTHER INFORMATION

The following references provide further information about some of the topics discussed in the text.

General

Real Time Information Group
www.its-focus.org.uk

Association of Transport Co-ordinating Officers (ATCO) - www.atco.org.uk/

Better Information for Bus Passengers (DfT)

Bus information strategy –
www.atco.org.uk/policy/businfostratguidance-first.htm

Guidance on Full Local Transport Plans, (DfT,March 2000)

Journeyweb – www.journeyweb.org.uk

Quality Bus Infrastructure – a manual and guide: (TAS) www.tas-passtrans.co.uk/bus1.htm

Quality Bus Partnership – Good Practice Guide: (TAS)
www.tas-passtrans.co.uk/qbp-gpg.htm

Traveline – www.traveline.org.uk

Transxchange –
www.transxchange.dft.gov.uk

Traveller Information Systems Research, A review and Recommendations for Transport Direct (DfT) – www.local-transport.dft.gov.uk/travinfo/index.htm

Urban Traffic Management and Control –
www.utmc.gov.uk

UTMC 05a Performance Criteria for UTMC Systems Handbook and Technical Note' (DfT) (www.utmc.gov.uk)

Standards

ATCO CIF

Transexchange

ISO 14821 Traffic and Travel Information messages via cellular networks

CEN TC 278: Road Traffic Data: elaboration. Storage, distribution and exchange procedures and formats. Esp WG3 (dimensions of display boards etc)

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www.its-assist.org.uk

To find out more about the wide range of ITS-related initiatives and projects supported by the DfT, and the development of ITS policies to encourage and promote greater deployment of ITS, please contact the Transport Technology and Telematics division of the Department for Transport at: its@dft.gsi.gov.uk

REFERENCES

1. Benefits of ITS Deployment in the UK R. Brown, A Stevens, J Miles – Paper for the ITS World Congress Turin 2000.

2. Review of telematics relevant to public transport: I Wilkinson et al, TRL Report 342

3. ERTICO: ITS City Pioneers – ITS Toolbox – Intelligent City Transport ITS City Pioneers Consortium

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DfT WEBSITE www.dft.gov.uk
Details of Traffic Advisory Leaflets available on the DfT website can be accessed as follows:
From the DfT homepage, click on the Local Transport icon and then on Traffic Advisory Leaflets.
Lastly, click on one of the themes to view material.

The Department for Transport sponsors a wide range of research into traffic management issues. The results published in Traffic Advisory Leaflets are applicable to England, Wales and Scotland. Attention is drawn to variations in statutory provisions or administrative practices between the countries.

The Traffic Advisory Unit (TAU) is a multi-disciplinary group working within the Department for Transport. The TAU seeks to promote the most effective traffic management and parking techniques for the benefit, safety and convenience of all road users.

Department for Transport	**Scottish Executive**	**Llywodrath Cynulliad Cymru** **Welsh Assembly Government**
Requests for unpriced TAU publications to: Charging and Local Transport Division, Zone 3/23, Great Minster House 76 Marsham Street, London, SW1P 4DR. Telephone 020 7944 2478 e-mail: tal@dft.gsi.gov.uk	Within Scotland enquiries should be made to: Neil Weston, Scottish Executive, Development Department, Transport Division 3, Zone 2-F, Victoria Quay, Edinburgh, EH6 6QQ, Telephone 0131 244 0847 e-mail: neil.weston@scotland.gsi.gov.uk	Within Wales, enquiries should be made to: Welsh Assembly Government, Transport Directorate, 2nd Floor, Cathays Park, Cardiff, CF10 3NQ Telephone 029 2082 5111 e-mail: cone@wales.gsi.gov.uk

Cycling

Traffic Management

Walking

Bus Priority Systems

Parking

Signs and Signals

Intelligent Transport Systems