

UK Real Time Information Group

RTI for the Public: a position paper

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1 Introduction

1.1 This document

- 1.1.1 This document represents a Position Paper for the UK Real Time Information Group (RTIG) on the means by which bus Real Time Information (RTI) might be delivered to the public. Its objective is to help produce a common direction on RTI delivery issues for those involved in the implementation of RTI across the UK, in order to inform the development and implementation of projects over the next 5-10 years. The linking of RTI services with other transport and travel services will be developed in a separate paper.
- 1.1.2 This document is aimed at RTIG members and RTI stakeholders identified in the RTIG National Strategy document. Principally these include:
- Bus operator representatives;
 - Local Authority/PTE representatives;
 - Central Government representatives, to help form policy.
- 1.1.3 The scope of this document does not include the resource demands arising from the findings of the various actions suggested in this position paper. RTIG will need to assess and prioritise these issues based on the desire for a particular RTI service, the need for a specific standard or technological solution, cost, available resources and the time required. Monitoring of the effectiveness and success of RTI provision and the value for money of different dissemination schemes is important and should be assessed. However, these activities are beyond the scope of this document.

1.2 Context

- 1.2.1 The provision of RTI is part of the Government's long term transport policy to encourage intermodal journeying, social inclusion and modal shift to public transport from cars. The choice of methods used to deliver information to the public, in an attractive and cost effective way is, therefore, of great importance.
- 1.2.2 The provision of RTI to the public is a growing area, currently using a variety of dissemination methods including on-street signage, personal mobile devices and the internet. The continued development of a wide range of easy-to-use, cost-effective RTI dissemination mechanisms will ensure the provision of RTI is valued by the traveller.
- 1.2.3 Each RTI implementation project comprises a partnership between a variety of different stakeholders, each with different priorities. LAs will typically be responsible for on-street and public centre displays, and bus operators for on-bus displays. Information over public communications services may be provided by both LAs and operators, as well as by other service providers.
- 1.2.4 The diverse range of dissemination mechanisms will give different benefits in different areas. Nevertheless, there are aspects in which national coordination could result in services which are more readily understood by the public. Indeed for some mechanisms, only a national approach will make sense. The purpose of this document is to review the available dissemination means, and to state RTIG's views on approaches in each case.
- 1.2.5 Section 2 of this document provides a medium term vision for public RTI services. Subsequent sections address how this vision might be realised, and identify a series of proposals for RTIG and others to act upon.

1.3 Status

- 1.3.1 This document is a **final draft** prepared by Centaur Consulting for approval by the Steering Group. This document has been previously reviewed by the Steering Group and Technical Group.

2 Vision

2.1 Introduction

2.1.1 RTIG's overall aim on information dissemination is that:

"Bus RTI should be readily accessible to all members of the public, when and where it will benefit their travel choice and perception of service quality."

2.1.2 This means that:

- for planning and modal choice, RTI should be available shortly before a trip – at home, at work, while shopping etc;
- for comfort, safety and efficiency, RTI should be available before a trip – particularly when on foot, at a bus stop or interchange;
- for comfort and for ease of connections, RTI should be available while travelling on a bus.

2.1.3 Different travellers will find different RTI mechanisms appropriate to their needs, as these mechanisms provide different opportunities for contact. For instance:

- those with internet access, including many office workers, can use web services or mobile internet services;
- text users, including many young people, can use SMS;
- the majority of travellers will use call centre services, kiosks, on-street or on-vehicle displays.

2.1.4 RTIG's view is that a wide range of systems should be used to maximise the availability of bus RTI. The perceived value and use of RTI by the public is expected to increase when RTI is widespread and presented directly to them.

2.2 Public access to RTI

Planning and modal choice: from home or work

2.2.1 From a fixed location, many opportunities are available to request and receive RTI; in particular, RTI could be requested over the telephone or through the internet (via home PCs, mobile phones or PDAs), which provides a rich visual service but is not universally accessible. Those that don't have internet access may in the future receive similar services using broadcast technologies such as interactive digital television or digital radio. In addition, many of the mechanisms used in other circumstances (eg SMS messaging) may be used for their familiarity and convenience.

2.2.2 In the office, RTI services could be delivered to company intranets to give employees travel service updates before they leave work (either to go home or on business). This could be in the form of general information or targeted alerts, in the form of emails to desktop or SMS to mobile phones or messages to handheld devices.

- 2.2.3 At home or at work, links to other information services will be in place such as ticketing, local entertainment, other modes of transportation etc. For example, when a traveller is booking a ticket they could also be offered historical performance against other modes and cost comparators. In addition, a traveller could be offered hotel booking and tickets to city entertainment. Once booked the traveller could request for alerts to be sent via the internet or by SMS, providing updates of any potential delays through the link up of local bus RTI and traffic management systems. This could be followed up by targeted advertising such as offers on coach services or monthly tickets, or by the provision of links to local transport services to encourage multimodal journeying when a traveller is planning a journey.
- 2.2.4 People will benefit from being more informed not only about local bus services but also about wider aspects of travel information. Information on local traffic conditions will also be used to provide notification of service problems, disruptions and route diversions to regular users. If traffic conditions are heavy, for example, an employee may decide to stay at work for an extra half hour rather than wait at a bus stop or sit in traffic. Alternatively, if bad weather is forecast or an evening event is planned (eg football match etc) people may decide to leave work earlier. An employee will be able to check that they haven't missed the last bus and know whether or not they need to make alternative travel arrangements.
- 2.2.5 Telephone services are still a popular method for booking tickets and making timetable enquiries. Existing telephone services will be expanded to include RTI, providing a method of RTI delivery with a low technological barrier for a user to overcome.
- 2.2.6 Increasingly, automated telephone RTI systems will be developed where the travel parameters are collected using voice recognition, with the 'solution' being identified through searching a database. The information could then be passed to a call centre operative's display to deal with the enquiry. In this way, the human interaction element is retained, while an efficient service is being provided. Potentially, RTI may also be provided to a traveller by a fully automated system.
- 2.2.7 Pre-trip RTI may be generic or personalised, and may be 'pull' or 'push'. For instance, a user could simply log on to the local bus service site to see the RTI for his nearest bus stop, and then make his choice. Alternatively, he could set up a request to alert him when the next bus to his destination is *X* minutes from the nearest stop. These services may be packaged and delivered by a variety of entities.

Comfort, safety, efficiency: on foot, at-stop and interchange displays

- 2.2.8 Closer to the trip, a traveller may be walking to or waiting at a stop (or interchange). On foot, there are essentially two possibilities: either town-centre displays and kiosks, or personal mobile devices. The provision of fixed displays acts as a permanent advertisement for a travel service, the value of which can be easily seen in busy interchanges. There remains a strong desire for users of local services to have readily available RTI at stops, which will be offered through countdown signs. If waiting at a stop, comfort can be given to an individual that the bus is on its way. In rural locations this impact may be reduced and RTI dissemination to personal mobile devices may be perceived to be of more value.
- 2.2.9 Ownership of mobile phones is now widespread and represents a readily-available means for a traveller to request and receive RTI. Information updates regarding delays or alterations to scheduled services will give travellers a more informed choice. Voice/SMS/WAP/internet services will also be available, sent directly to mobile phones or PDA's.

- 2.2.10 Comprehensive RTI for bus and coach services will be provided, with larger stations and interchanges giving multimodal information in conjunction with joined up ticketing services, possibly through smartcards. Internet services could be offered in multiple languages at kiosks in major interchanges and tourist information points, which could also vend tickets or advertise ticketing offers in addition to providing RTI. Bus services, routes and stops can be linked to sites of special interest and popular tourist destinations. In addition, joined up ticketing for transport and entrance to tourist sites could be developed.
- 2.2.11 Anyone travelling away from home, especially in an unfamiliar area, requires information in a structure that is as readily digestible as possible. This could take the form of details of local routes and stop locations, RTI and timetables plus details on how to request SMS RTI for bus stops. All this information could readily be provided at interchanges (such as bus, coach and train stations) using RTI information kiosks.
- 2.2.12 Those with disabilities should benefit from the provision of particular RTI on-street facilities. Audio announcements for the visually impaired, or large bright screen displays, are a help; these may be triggered by keyfobs. More generally, displays and kiosks could deactivate when not in use for power savings.

Comfort and information: while travelling

- 2.2.13 While on the bus, the mobile phone or PDA remains a suitable means of accessing RTI, with all the advantages discussed above, as well as the disadvantage of mobile phones and PDAs not being universally available to all social groups.
- 2.2.14 There is scope for providing RTI using on bus displays, for example showing the next stop, time to particular timing points, real time updates on congestion and other relevant news items about the destination area. For larger displays and on appropriate services, tourist information could be provided. For example, RTI could be given as a countdown of the number of stops to the site of interest.

3 Delivering the Vision: overview

3.1 Approach

- 3.1.1 Delivering the vision outlined in Section 2 relies on the implementation of a variety of technology tools, including both central systems to collate and distribute the relevant RTI, and publicly visible display tools.
- 3.1.2 The breadth of RTI dissemination mechanisms is important in order to meet the varied needs of the travellers including commuters, the occasional traveller and tourists. It is also important to ensure that the accessibility of RTI to disabled groups, for example the visually impaired, is increased.
- 3.1.3 This section identifies the key technologies that are currently being used and developed to disseminate RTI to travellers, as well as emerging technologies which could be used to deliver RTI and how they relate to the RTIG vision.
- 3.1.4 Delivery of the vision will result from the continued expansion of existing services, either in terms of scope or the level and range of services on offer. Data transfer standards and data sharing agreements will be necessary and RTIG will need to ensure these are developed through its Technical Group projects.

3.2 Key mechanisms

- 3.2.1 The various RTI delivery mechanisms fall into distinct categories described below. For each category, the underlying technologies are identified (where applicable) and the key issues are introduced. An overarching statement is also presented for each delivery mechanism, from which RTIG's position is developed. The mechanisms addressed are:
 - at-stop signs – Section 4;
 - telephone services – Section 5;
 - mobile device technologies – Section 6;
 - web based services – Section 7;
 - broadcasting services – Section 8;
 - kiosks – Section 9;
 - on-bus equipment – Section 10.

At-stop signs

"At-stop signs will continue to be extensively used to disseminate RTI, becoming increasingly commonplace and valued by travellers"

- 3.2.2 At present, at-stop signage is the most commonly encountered form of RTI and will continue to be an important method of displaying RTI information and means of marketing and publicising public transport services. Key issues include the overarching management of on-street systems and the standardisation of technology used to incorporate added functionality, the technical specification of signs and the containment of costs. In addition, the best practice for displaying information on at-stop signs will need to be researched. A reduction in unit cost may be achieved if a large number of customers wish to use the same display panels.

Telephone services

"Where there is an existing telephone service for bus timetable information, call centre agents will increasingly have real time information available too."

- 3.2.3** RTI dissemination by telephone is a natural extension to existing timetable enquiry lines given the accessibility of telephones at home and at work. Several services are currently being provided in the UK.

Mobile device technologies

"A coordinated approach to SMS based RTI system should be established across the UK"

- 3.2.4 Various schemes have been launched as part of local RTI services, which use SMS messages to relay information about a stop to an individual's mobile telephone. As these schemes have become increasingly commonplace, the issue of whether to create a national scheme or standard should be created has arisen. The impact of a national approach on well established schemes will need to be addressed.

Web based services

"RTI will be increasingly delivered through personalised internet services on both fixed PC networks and on hand held devices"

- 3.2.5** Access to internet ready machines is now commonplace at home, work and increasingly on the move via PDAs, laptops etc. These services will provide an opportunity for a traveller to personalise how and when they receive information. There is also potential for linking up information on intermodal journeys.

Interactive broadcasting

"RTI may feasibly be delivered using interactive broadcast means, via travel information service providers"

- 3.2.6 Digital and satellite television boxes with interactive functionality may serve as another media through which RTI could be delivered to the public. RTIG should investigate the feasibility of developing and offering RTI through these services. Similar considerations apply to digital radio services.

Kiosks

"Bus RTI should be available via kiosks, through liaison with wider e-government initiatives"

- 3.2.7 Internet kiosks are expected to be an important means in particular for tourists, and travellers, to find out about local and national transport. Potentially, kiosks could not only offer bus RTI but also cover other modes of transport including local information such as maps and details, bus stop locations and route information to places of interest and venues.

On-bus equipment

"On-bus RTI displays, where deployed, must be as accessible as on-street displays"

- 3.2.8 On-bus displays are particularly useful on popular tourist routes, for people who are unfamiliar with an area or those on a long journey wishing to know the progress they are making. Information can be displayed in a variety of different ways, with the information content varying. Audio announcements should also be considered as means of providing RTI to passengers.

4 At-stop signs

"At-stop signs will continue to be extensively used to disseminate RTI, becoming increasingly commonplace and valued by travellers"

4.1 Context

- 4.1.1 The most commonly encountered form of RTI by the general public is through countdown signs, be it on the London Underground or at bus stops. Development in the area of countdown signs is set to continue over the next few years. For example, solar powered signs are being developed, which will reduce the cost implementation by removing the need to connect signs to electricity grids. This will be of particular use in rural areas.
- 4.1.2 To facilitate development of this area of RTI dissemination, RTIG needs to take a position in the following areas:
- wider network integration;
 - keyfobs as a suitable mean for the activation of special services;
 - sign standards;
 - best practice guide for signs.

Wider network integration

- 4.1.3 Closer connection to the UTMCI initiative is desirable, especially as bus priority becomes a widespread element of an RTI system. In addition, UTMCI systems can also use RTI to gain valuable information about network conditions such as traffic flows. A close working relationship between RTIG and UTMCI will be mutually beneficial, in particular for implementers, as this may reduce the cost of implementation.
- 4.1.4 One area where this could occur is in communications. UTMCI allows the sharing of communications links to on-street equipment, potentially reducing the capital and operational costs of RTI. Furthermore, the integration with UTMCI communication systems may enable more RTI signs to be provided at other locations, resulting in a wider network of RTI signs from which the general public can benefit.
- 4.1.5 Links between RTIG and UTMCI may facilitate the data transfer standards and agreements that would be required to provide some of the added value services outlined in Section 2. Examples of added value services could be the provision of real-time network status alerts to service providers and or travellers describing traffic jams resulting from rush hour, road-works or an accident.

Keyfobs

- 4.1.6 Keyfobs are used by the visually impaired to access on-street information services. Within bus RTI, keyfobs may represent a suitable technology which could be used to activate special RTI services. Keyfobs are beginning to be used to request audible information from signs. However, problems could arise in the future if a suitable standard is not put in place. In particular, if different operational mechanisms (such as keyfob frequencies) are used by different suppliers or different bus partnerships, then this could lead to a different keyfob being required in different areas of the country.

- 4.1.7 Therefore, RTIG should be aware of any developing standards within the UK, CEN and ISO in this area and should influence the outcome where required or as appropriate. This should be the responsibility of the Architecture and Technical Specification Project. If sufficient standards are not being produced then RTIG may wish to specify its own. Therefore, a specification for keyfobs for RTI bus signs will be available to RTI developers and implementers.

Technical standards for at-stop signs

- 4.1.8 There are numerous types of displays that can be fitted as part of an at-stop display and a high level of technical understanding is required to enable a comparison between kits with similar functionality. An issue, for example, exists regarding the visibility of signs in all weather conditions. It would be beneficial for RTIG to produce a minimum technical specification necessary with which manufacturer's designs must comply, to ensure the robustness of a product on street performance.

Best practice guide for signs

- 4.1.9 Currently, there is no definitive guide to the best practice for displaying RTI on at-stop signs and other variable message signs. It would, therefore, be beneficial for RTIG to put in place a best practice guide for implementers to use when putting together specifications for signs. The guide should be based on the experience gained from the current installations. The best practice guide should include:
- how the RTI information is best displayed eg countdown or schematic representation of bus's progress on the route;
 - how the public wish to receive information and what information they respond to most positively.

4.2 Action plan

Wider network integration

- 4.2.1 Ultimately, there are expected to be many benefits gained from increasing the links between RTIG and UTMC in addition to the benefits covered in 4.1.3 and 4.1.4, which are not covered in the scope of this paper. It is recommended that RTIG follows the action plan below to enhance links with UTMC:
- RTIG to receive regular updates at meetings on the activities of UTMC given by Programme Managers - ongoing;
 - RTIG to identify candidates to represent it at UTMC meetings (and vice versa for UTMC) – ongoing;
 - RTIG to identify technical areas of common interest with UTMC (this could be done through the Technical Group) – end of 2003;
 - RTIG to investigate the possibility of holding joint conferences/meetings - ongoing.

Keyfobs

4.2.2 It is recommended that:

- the Architecture and Technical Specification Project should examine the suitability of keyfobs as an activation mechanism for special RTI services;
- the Architecture and Technical Specification Project to review the suitability of standards in this area and produce a report with appropriate recommendations (including work item priority) and request for suitable resources – end of 2003;

Sign standards

4.2.3 RTIG should request:

- Suppliers Forum and Architecture and Technical Specifications Project to develop a suitable set of technical requirements for at-stop signs.

Best practice guide for signs

4.2.4 It is recommended that:

- RTIG should request implementers to provide feedback from passenger surveys regarding at-stop signs. Information including passenger perceptions of their usefulness, clarity and what features they appreciate most and would like to see/would not like to see would be valuable.
- The Guidelines Project should collate the information provide from passenger feedback along with other available material to produce a best practice guide for at-stop signs.

4.3 Strategic proposals

(Pr-1) RTIG should continue to promote interaction with UTMC to ensure maximum benefit and value is achieved for all schemes.

(Pr-2) RTIG should examine the current standardisation processes underway for keyfobs to ensure their suitability for use within the UK. If no suitable standards are available then RTIG should examine the possibility of specifying its own.

(Pr-3) RTIG should request that the Technical Group produces a recommended national technical specification for at-stop signage. This should allow for flexibility in design and implementation.

(Pr-4) The Guidelines Project should compile a best practice guide for implementation of at-stop signs, including how best to represent the information to be displayed.

5 Telephone services

"Where there is an existing telephone service for bus timetable information, call centre agents will increasingly have real time information available too."

5.1 Context

- 5.1.1 The potential demand for a telephone based RTI service is likely to be high given the widespread availability of telephones and mobile phones. Call centres are popular as a traveller can talk directly to a call centre operator. Automated services, for example using voice recognition, may be used in the future though this may not be as accessible to all as a call centre. A possible solution would be to use aspects of both types of service, such that the human element is retained, while an efficient service is being provided.
- 5.1.2 Traveline currently provides regional services across the UK that supply timetable information; therefore, a natural progression could be to offer RTI as an added value service. Given the organisational and hardware infrastructure in place through Traveline it may be desirable to expand this service to offer RTI rather than set up a new, separate network. Call centre employees might be issued with internet enabled terminals to access RTI information. However, this option would still require a significant amount of effort to implement and operate the system.

5.2 Action plan

- 5.2.1 The action plan for promoting RTI through telephone services is:
- RTIG to develop a formal position on RTI telephone services – end 2003;
 - RTIG to support Traveline in setting up RTI services - ongoing;
 - RTIG to offer to examine the following for Traveline:
 - data sharing agreements;
 - the data format/technical specification and content should be standardised.
- 5.2.2 In parallel, RTIG should work with other organisations to look into:
- cost effective methods to expand existing telephone based systems to be able to provide RTI on request;
 - identifying the resources required to do this on a local and national level;
 - whether provision of voice recognition systems would represent a cost effective solution to the provision of RTI via a telephone service.

5.3 Strategic Proposals

(Pr-5) RTIG should work with Traveline organisations to facilitate the provision of RTI via their existing telephone service. This should include the use of advanced telephony equipment such as interactive voice recognition (IVR).

(Pr-6) *RTIG Technical Group should assess the scope and requirement to provide telephone based RTI and recommend a scalable solution.*

6 Mobile device technologies

"A coordinated approach to SMS based RTI system should be established across the UK"

6.1 Context

- 6.1.1 In general SMS messaging services are widely used and will provide in the short to mid term an important mechanism for delivering RTI to a traveller on the move. Several text based dissemination schemes are currently being implemented throughout the country, though it should be noted that SMS services may not be an attractive option to all social groups due to the cost of sending a SMS to request RTI.
- 6.1.2 Increasingly, PDAs will be available with mobile communications and data transfer facilities, such that more and more devices will be internet and WAP enabled as standard. WAP services to mobile phones can be considered as a 'no frills' version of the internet services (discussed in detail in Section 7), offering the same potential for customisation of personal pages as with web based applications. Due to the current popularity of SMS, the focus of RTIG's activities on mobile data services will reflect this.
- 6.1.3 Currently many SMS based RTI schemes are being implemented on a piecemeal basis. This may create problems in the longer term for passengers being required to know different access numbers (plus bus stop identifier code formats) for different areas. Also it may prevent RTI being offered over a whole journey that crosses two SMS services.
- 6.1.4 Given the demand for these services on existing schemes, and the number of proposed schemes that will come on-line over the next few years, there is much scope for adopting a standard approach or service with a view to producing a best practice guide.
- 6.1.5 RTIG can play a key role in helping coordinate SMS implementation by facilitating coordination between local/regional services. In the longer term, one or more national SMS services may come to fruition. However, it may be expensive due to re-branding and advertising costs for those with schemes already in place to migrate to a new system or to implement a new set of standards.
- 6.1.6 Currently, a standard for a national set of bus stop identifiers is being developed by Transport Direct. This will minimise confusion of travellers and aid implementation. In addition, a national SMS platform is being developed for the Traveline community which could potentially be expanded to include RTI. This may provide the foundation for the action plan below.

6.2 Action plan

- 6.2.1 The action plan for promoting RTI through SMS services is:
 - RTIG to prepare map of SMS schemes and identify areas where coordination may be required – end 2003;
 - Guidelines group to draft a document on the issues surrounding SMS implementation – end 2003;
 - RTIG to continue to support Transport Direct in developing a national standard for bus stop identifiers – ongoing.

6.3 Strategic proposals

***(Pr-7)** RTIG should continue to support the development of a national set of bus stop identifiers.*

***(Pr-8)** RTIG should identify a means to enable any local and national SMS schemes to coexist sensibly.*

***(Pr-9)** RTIG should facilitate coordination between any local, regional and national SMS schemes.*

7 Web based services

"RTI will be increasingly delivered through personalised internet services on both fixed PC networks and on hand held devices"

7.1 Context

- 7.1.1 The internet offers the opportunity to deliver more personalised services directly to the traveller. In many cases, this will allow the traveller to receive RTI prior to travelling, resulting in a smoother journey with less waiting. In the long term, this may encourage increased use of public transport.
- 7.1.2 The growth of the Internet has been phenomenal over the last five years. The barrier to these technologies is low, with many families having internet access at home. Access is also readily available at schools, libraries, universities, on the high street and at work. The internet, and other related services such as WAP, represents a huge growth area for the provision of RTI to the general public.
- 7.1.3 Home internet access among poorer social groups is not so readily available, and particularly in rural areas access to public internet terminals may be limited. These groups are likely to depend more on public transport than more affluent groups, so it is important to ensure that RTI is easily accessible to them either via public internet facilities or other suitable means, dependent on the demographics of the area.
- 7.1.4 Transport Direct is an overarching programme that will draw on RTI across all modes of transport, including bus and coach networks. Strong interaction between RTIG and Transport Direct is mutually beneficial. RTIG already maintains a close relationship with the Transport Direct Programme, since Transport Direct team members regularly attend RTIG meetings.
- 7.1.5 RTI providers will wish to use the work of other 'value-added' service providers, including but not limited to the Transport Direct Portal, to make their information as widely available over internet services as possible. The work done in organisations such as the Travel Information Highway (TIH) initiative, which aims to develop travel data interchange standards, will be of value to RTI implementers.

7.2 Action plan

- 7.2.1 Many RTI Partnerships are implementing web sites to disseminate RTI information. It is proposed that:
 - RTIG should continue to have strong links to Transport Direct – ongoing.
 - RTIG and Transport Direct should jointly assess each other's requirements and how they can be fulfilled – end 2003.
 - RTIG should assess the role of the Transport Direct Portal project in the development of RTI services delivered via the internet – ongoing.
 - RTIG should continue to assess the role of the TIH in the development of data exchange standards, facilitating the widespread access of RTI over the internet – ongoing.

7.3 Strategic proposals

(Pr-10) RTIG should develop the awareness of RTI implementers to travel information delivery opportunities using web services including the Transport Direct Portal.

(Pr-11) RTIG should develop and maintain standards for data exchange between travel information providers and users, working with other initiatives as necessary.

8 Broadcasting Services

"RTI may feasibly be delivered using interactive broadcast means, via travel information service providers"

8.1 Context

- 8.1.1 RTIG is continually looking for new opportunities to enhance existing RTI services and to harness new technologies to deliver improved and widely accessible method to deliver RTI to the public. This could include Interactive Digital Television (IDTV), digital radio and other advancing technologies.
- 8.1.2 IDTV may well become a convenient and cheap RTI dissemination technique within the next 5-10 years. The operational and technical suitability of IDTV to RTI applications needs to be examined. The technology and data systems that would be required to make this a reality would also need to be identified.
- 8.1.3 TPEG (Transport Protocol Experts Group) is an open specification for a protocol that can carry a range of data, in particular traffic and travel information. TPEG is currently being developed for use with digital radio, in cooperation with broadcasters, to provide traffic and travel information. It is expected that this will become increasingly used in the UK when digital radio coverage is expanded and receiver ownership is more commonplace. TPEG may represent an interesting technological approach to RTI broadcasting. RTIG should examine this prospect of using this service at a suitable date. In addition, RTIG will need to ensure the development of appropriate degrees of alignment with broadcasting protocols, such as TPEG.

8.2 Action plan

- 8.2.1 It is recommended that:
- the Technical Group examines the role of TPEG for delivery of RTI to the general public – early 2004;
 - RTIG consider the need for developing an approach to IDTV-based RTI dissemination – in line with the timescales of IDTV service development;
 - RTIG make contact with travel broadcasters to consider their needs for RTI – early 2004;
 - the Technical Group looks into the technical feasibility of broadcasting as an RTI dissemination medium with a view to identify initial technical requirements and basic costing – mid 2004;
 - RTIG undertakes a brief feasibility and scoping study to assess the IDTV opportunity – mid 2004.

8.3 Strategic proposals

(Pr-12) RTIG should look into the feasibility and technical requirements of providing RTI using broadcast technologies.

9 Kiosks

"Bus RTI should be available via kiosks, through liaison with wider e-government initiatives"

9.1 Context

- 9.1.1 Kiosks may be part of RTI schemes but it is anticipated that often they may be part of public information services provided by LAs, Government or organisations such as Traveline. The provision of internet enabled kiosks in towns and cities, as well as at major interchanges, could be used as a basis for providing RTI to all sites that might not be part of an RTI system. In particular kiosks could be specifically designed for tourists, including those from overseas, whilst meeting the Government's recommendations for social inclusion.
- 9.1.2 In addition to delivering bus and coach RTI, these machines could also provide RTI for other modes of transport. This could be an excellent opportunity to provide a multimodal journey planning and information system through the link-up of each of these individual travel systems. The services provided might range from a simple fixed departure board to a full full-feature travel information service.

9.2 Action plan

- 9.2.1 It is recommended that RTIG should:
- make contact with the e-Envoy's office regarding the wider Government Direct initiative – end 2003;
 - actively encourage LAs/PTEs to include bus and coach RTI services in information points and kiosks - ongoing;
 - produce guidance for RTI Partnerships on information guidelines and standards for kiosk delivery/ layout /use etc.

9.3 Strategic proposals

(Pr-13) RTIG should seek an input into e-government activities at national and, through members, local levels.

10 On-bus equipment

"On-bus RTI displays, where deployed, must be as accessible as on-street displays"

10.1 Context

- 10.1.1 Many RTI scheme implementers are fitting on-bus equipment to provide RTI to the traveller on the bus. Little information is available regarding the best practice for displaying information on the buses.
- 10.1.2 Another issue for on-bus equipment is the limited space available on the vehicles, such that installation of kit is often kept to a minimum. Driver displays may not always be fitted, limiting the degree of real time fleet management possible, and therefore reducing the potentially valuable information that could be provided to the bus driver, particularly on longer coach journeys. In the absence of suitable on-bus computers, the drivers are required to enter input parameters, increasing the risk that RTI may become unreliable if the bus parameters are not set up correctly.
- 10.1.3 A driver can be kept informed of traffic incidents and receive instructions from the fleet manager through a variety of methods. In particular, driver displays and two-way communications between drivers and the depots enable the driver to keep passengers informed throughout the journey. Audio announcements provided by the driver should not be under-rated as they provide a human dimension while giving the traveller the perception of a well managed service comprising informed staff. In essence, driver displays essentially permit real time fleet management, the discussion of which is beyond the scope of the paper, but the benefits include the ability to provide accurate, up to the minute information directly to passengers on traffic problems which may affect their journey.
- 10.1.4 To ease the fitting of on-bus equipment, while reducing cost, it would be beneficial for RTIG to provide guidance to the bus industry how best to develop bus design to accommodate RTI equipment and what, if any, equipment might be beneficial to have preinstalled (eg a standard set of wires and conduits for aerials).

10.2 Action plan

- 10.2.1 Typically the bus operators are responsible for on-bus equipment. It is recommended that RTIG should:
- evaluate the need for on-bus displays, their value and the best practice for delivery of RTI to the general public using on-bus displays through the Guidelines Project – spring 2004;
 - request the Guidelines Project to prepare a best practice guide for on-bus displays – summer 2004 ;
 - encourage the fitting of driver display consoles and real time fleet management;
 - encourage bus builders to make provision for RTI equipment in bus designs, and continue to involve them in Suppliers Forum activities where appropriate - ongoing.

10.3 Strategic proposals

(Pr-14) *The Architecture and Technical Specification Project should consider how best to standardise wiring and or connectors so that pre-installed kit on new buses can be provided to enable interoperability and systems integration of RTI systems.*

(Pr-15) *RTIG should continue to support the provision of RTI to passengers using on-bus equipment, in the first instance by developing a cost-benefit assessment.*

11 Summary of Proposals

	Proposal	Responsibility
Pr-1	RTIG should continue to promote interaction with UTMC to ensure maximum benefit and value is achieved for all schemes.	Technical Group
Pr-2	RTIG should examine the current standardisation processes underway for keyfobs to ensure their suitability for use within the UK. If no suitable standards are available then RTIG should examine the possibility of specifying its own.	Architecture and Technical Specifications Project
Pr-3	RTIG should request the Technical Group to produce recommended national technical specifications for at-stop signage. This should allow for flexibility in design and implementation.	Steering Group
Pr-4	The Guidelines Project should compile a best practice guide for implementation of at-stop signs, considering how best to represent the information to be displayed..	Guidelines Project
Pr-5	RTIG should work with Traveline organisations to facilitate the provision of RTI via their existing telephone service. This should include the use of advanced telephony equipment such as interactive voice recognition (IVR).	Steering Group
Pr-6	RTIG Technical Group should assess the scope and requirement to provide telephone based RTI and recommend a scalable solution.	Technical Group
Pr-7	RTIG should continue to support the development of a national set of bus stop identifiers.	Architecture and Technical Specifications Project
Pr-8	RTIG should identify a means to enable any local and national SMS schemes to coexist sensibly.	Architecture and Technical Specifications Project
Pr-9	RTIG should facilitate coordination between any local, regional and national SMS schemes	Steering Group
Pr-10	RTIG should maintain a close relationship with the Transport Direct Portal project, aided by the joint assessment of each others requirements.	Steering Group
Pr-11	RTIG should develop and maintain standards for data exchange between travel information providers and users	Architecture and Technical Specifications Project
Pr-12	RTIG should look into the feasibility and technical requirements of providing RTI using broadcast technologies.	Architecture and Technical Specifications Project and Suppliers Forum

Pr-13	RTIG should seek an input into e-government activities at national and, through members, local levels.	Steering Group
Pr-14	The Architecture and Technical Specification Project should consider how best to standardise wiring and or connectors so that pre-installed kit on new buses can be provided to enable interoperability and systems integration of RTI systems.	Architecture and Technical Specifications Project
Pr-15	RTIG should continue to support the provision of RTI to passengers using on-bus equipment, in the first instance by developing a cost-benefit assessment.	Steering Group