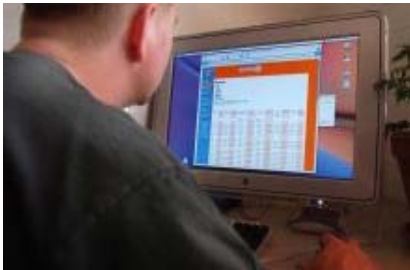


Dear reader,

our world, and the transport sector with it, is increasingly equipped with information and communication technologies. Intelligent transport systems (ITS) are a "hot topic". A great amount of ITS applications are about monitoring car and freight traffic flows in technical traffic management centres. But there are also many fields of Mobility Management that benefit from ICT applications. In its new White Paper [Roadmap to a Single European Transport Area](#), the European Commission stresses the importance of real-time multimodal information and smart integrated ticketing. In this e-update, we will give you a short overview of the many technological innovations in this field. For readers who are lost in the technical jargon and abbreviations used in many texts on ITS, we include a glossary at the end of this e-update.

## Real-time travel information



In this information age, reliable up-to-date information is expected to be available at moments when it is needed. PT operator [Veolia's Observatory of Urban Lifestyles](#) found that 20% of people do not use public transport because of a lack of information. It begins before the trip, when the decision how to travel is made. But also during trips, when waiting at a bus stop or making an interchange, people need up-to-date information. Many communication channels can and should be used:



- Travel information websites. For instance in Aalborg (DK), the main websites were redesigned to give passengers the opportunity to personalise the website's pages according to their preferences with "gadgets" like real time information for their favourite bus stop ([more information](#)).
- Social network sites like Facebook and Twitter (for instance in [Terrassa, ES](#))
- Mobile phones: SMS alerts and information requests by SMS (for instance in [La Rochelle, FR](#))
- Websites for internet-enabled mobile phones and PDAs (for instance [Trafikanten](#) in Norway or [NextBuses](#) in the UK)
- Smartphone applications or "apps" like [MyBus](#) (UK) or [Take me home](#) (Aalborg, DK). Using GPS, these apps take the user's present location as a starting point. [UITP's Youth Parliament Y4PT](#) has developed [SmartCruise](#): a concept of smartphone apps that link public transport passenger requirements with modern smartphone technologies.
- Personal navigation systems for people with special needs, with information on accessibility of the vehicles and stations - see for instance the [MAPPED project](#)
- Screens and speakers at stations and stops. The municipality of Brighton and Hove (UK) installed [talking bus stops](#) for the blind and partially sighted.
- Inside vehicles, preferably both visual and audio information. With GPS vehicle location technology, these messages are always accurate, even in case of delays. See for instance London's [iBus project](#).
- Screens and touch-screen computers in strategic places like hospitals, shopping centres and universities.

Read more about innovative information systems for public transport in the CIVITAS II Policy Advice Note on [Public Transport Information](#) (available in several languages in the [CIVITAS Download Centre](#)). You can get a glimpse of the complexity of a high-quality public transport information system in this [video](#) about the system in Madrid (ES).

Evidently, real-time information is not only useful for passengers, but also for public transport operators. Contemporary public transport management software allows them to monitor operations and intervene in case of disruptions, instantly recalculating timetables and

employee schedules in order to minimise delays and nuisance to the passengers. Flexible transport services become easier to manage with ITS, as routes and timetables can be generated in real time based on incoming requests (for instance the ColBus in Bologna: [MobilityMag](#) 18, p.70-74). Automatic passenger counting allows providers to adapt their timetables to the actual demand of their passengers.

## Find your way through the world - in any mode



Up till now, the main focus of route maps has been on car drivers. However, people using their smartphone to consult a map, are more likely to be walking in a city, looking for a place of interest or the next bus stop. Maps are continuously growing in content, with the addition of points of interest like museums or pharmacies (e.g. the [multimodal trip planner](#) of the island of Lesbos, GR). The key challenge is to keep the maps as up-to-date as possible. Today, the possibility exists to use the feedback of people who are actually using the information to update the map. TomTom already uses this kind of "community input" to keep its GPS car navigation maps up-to-date.

Applications for alternative modes of transport arise, such as:

- cycling and bike sharing: the [Villo! bike sharing application for smartphones](#) in Brussels (BE);
- walking: [Walkit.com](#) (UK) is a route planner dedicated to walking in the city;
- public transport: several European cities have shared their public transport information with [Google Transit](#), enabling the passenger to plan a public transport trip on Google Maps;

More and more platforms for multi-modal information are created, combining information from different sources. In the UK for instance, public transport operators provide their timetables to the [national Traveline website](#), which is fed directly into the [Transport Direct multimodal journey planner](#). In France, the [PASSIM portal](#) helps you find all available travel information services in your area. Some platforms offer a direct comparison between modes, on the basis of travel times, walking distances, costs or environmental impacts. The travel web portal of the Attica Region (GR) compares travel times for your trip based on real-time information (see this [magazine article in Thinking Highways](#)).

## Green lights for soft modes



In order to reduce travel times and increase reliability, buses and trams can be given priority at intersections, meaning that traffic lights turn green when a public transport vehicle is approaching. The system can be limited to those vehicles that are running behind schedule (e.g. in [Aalborg, DK](#)). In combination with bus lane signalling measures, bus prioritisation can reduce journey times of buses of up to 15% at times of heavy congestion (source: [Mott MacDonald](#)). Read more about prioritising public transport in the [CIVITAS II Policy Advice Note on Public Transport Priority](#) (available in several languages in the [CIVITAS Download Centre](#)).

For cyclists too, avoiding red lights is a huge advantage. In [Copenhagen \(DK\)](#), [Amsterdam \(NL\)](#) and [Odense \(DK\)](#), traffic lights on a particularly busy route are reprogrammed to create a green wave for cyclists. If you cycle down the green wave at a fixed speed (e.g. 20 km/h in Copenhagen), you will always have a green light at every intersection - good to experience in this [great video](#).

## No more excuses not to pay

ICT has also entered the domain of ticketing by automating and digitalising public transport ticket sales. Electronic ticketing or e-ticketing has a lot of advantages as compared to paper ticketing and on-board sales, such as reduced boarding times at stops, increased punctuality, decreased workload for drivers, 24/24 access to ticket sales, and reduced fare dodging. Electronic ticketing systems have the additional benefit of collecting passenger and trip statistics that can be used to optimise services.

Roughly the same channels that are used for the delivery of travel information, can be used for ticket sales. At stations and in the streets, vending machines can automate ticket sales (applied for instance in [Norwich, UK](#)). More flexibility is offered by ticket sales through the



internet and mobile phones, for instance [SkyCash in Warsaw \(PL\)](#). For mobile phones without internet connection, several public transport operators offer payment by SMS text message, for instance the [Belgian Ping Ping service](#).

Many operators replace tickets with reusable smart cards that can be loaded with credit for check-in check-out trips or with a specific single or season ticket. Some examples are the [Dutch OV-Chipkaart](#), the [London Oyster Card](#) or the [German eTicket \(DE\)](#). In the Netherlands, iPhone users can download an application that reminds them they check out their OV-Chipkaart when they approach their destination. In France, several operators use a memory stick in stead of a smart card, enabling travellers to reload their [travel pass at home](#). Most smart card systems use contactless smart cards that do not need to be inserted in a card reader, but are held close to it. This is called Nearfield Communication (NFC) technology. It is already possible to equip a cell phone with NFP, so you can pay for your ticket by swiping your cell phone over the reader. It was first implemented in Europe in 2007 by the German operator RMV ([case study](#), [video](#)) and in Oulu, Finland ([case study 1](#), [case study 2 - video](#)) in the framework of the [SMART TOUCH project](#) (2006-2008). Read all about the benefits of NFC technology for public transport in the [NFC Forum's white paper NFC in Public Transport](#). The same technology is used to gain access through faregates, to open carsharing vehicles ([see our previous e-update](#)) and to pay for parking (see [this case study from Oulu, FI](#); [video](#)).

In stead of implementing a separate smart card system, some operators use already existing infrastructure. In countries that issue compulsory electronic ID-cards, like Estonia and Belgium, tickets are simply loaded onto the ID-card. See for instance the [Tallinn \(EE\)](#) example. In London, a system will be implemented by the end of 2012 allowing travellers to pay on the whole transport network with a swipe of their contactless banc or credit card ([more information](#)).

Read more about innovative ticketing systems for public transport in the [CIVITAS II Policy Advice Note on Ticketing](#) (available in several languages in the [CIVITAS Download Centre](#)).

The [EMTA Study on electronic ticketing in public transport](#) (2008) gives an excellent overview of e-ticketing schemes and technologies.

E-ticketing paves the way for integrated tickets - allowing you to travel on vehicles of different operators or even different modes with one single ticket. According to a recent [Eurobarometer survey](#) conducted in 27 EU countries, nearly three quarters of EU citizens (71%) said they would consider using public transport more frequently if it would be possible to buy a single ticket covering all transport modes. According to a [study by the British Department for Transport](#), a national smart ticketing system would offer high value for money. The European Commission has launched a [study](#) which aims to provide a comprehensive overview of the different tarification and ticketing schemes in use, to prepare the way for a single-ticket system.

## Europe invests in ITS



Several of the many European ITS projects are related to Mobility Management:

- [VIAJEO](#) is designing and implementing an information platform that will allow different operators and authorities to exchange real-time and historic data.
- Pre-trip information services and on-trip travel guidance services are being developed by [In-Time](#), [SMART-WAY](#), and [iTRAVEL](#) (finalised).
- [NICHES+](#) and [CIVITAS-Plus](#) stimulate the take-up of real-time information and smart ticketing services.
- [STADIUM](#) is developing a handbook on ITS for large events, such as the London Olympics in 2012.
- The [European Bus System of the Future \(EBSF\)](#) project aims to develop a new and intelligent generation of urban bus system.

Some projects are working on seamless travel and ticketing across the European borders:

- The **IFM project** has set the first steps in international compatibility of public transport smart cards - they managed to load tickets of three different countries on one single smart card ([more information](#)). The impetus for the project was given by the UITP Focus Paper "Everybody Local Everywhere".
- In **EASYWAY**, 21 member states are cooperating with relevant stakeholders on Europe-wide ITS deployment.
- The **E-FRAME project** is developing a European architecture for ITS.

## Useful links

- [European Commission ITS pages](#)
- [European Commission's ITS Directive and Action Plan \(July 2010\) and Action Plan on Urban Mobility \(Sept. 2009\)](#)
- [UITP Information Technology pages](#)
- [MobilityMag Issue 18: ITS and Ticketing](#)
- [Ertico - ITS Europe](#)
- [Network of National ITS Associations](#)
- [UK National Technical Framework for ITS](#)
- **CHOUETTE**, the French open source software for the standardisation of public transport information

## Talk the talk - ITS Glossary

**AFC:** Automatic Fare Collection, also known as **AFR:** Automatic Revenue Collection: a ticketing system where passengers need a ticket to gain access to the railway.

**AVL:** Automatic vehicle location.

**CCTV:** Closed-circuit television: the use of video cameras for surveillance and monitoring.

**EFC:** Electronic Fee Collection.

**GPS:** Global Positioning System, used for instance in car navigation systems.

**ICT:** Information and Communication Technologies.

**ITS:** Intelligent transport systems.

**IVR:** Interactive Voice Response: a technology which makes it possible for a computer to interact with humans on the phone. It enables passengers for instance to access next bus and schedule information or fares or receive service updates without speaking with a real person.

**NFC:** Nearfield Communication: a technology which enables data-exchange between devices just a few centimeters or inches apart. Will become common technology in cell phones.

**POI:** places of interest - added to route maps in order to make their contents richer and more useful.

**RFID:** Radio frequency identification: An automatic identification technology that transmits the identity of an object or person wirelessly, using radio waves.

**RTPI:** Real Time Passenger Information.

**Telematics:** The integrated use of telecommunications and informatics, in vehicles and for control of moving vehicles. Transport telematics systems (TTS) are a synonym for ITS.

**VMS:** Variable Message Sign or Dynamic Message Sign (DMS): an electronic sign that can display changing messages.

## Related events



- **ECOMM 2011**  
18-20 May 2011 - Toulouse, France  
Register now: [www.ecomm2011.eu](http://www.ecomm2011.eu)
- **European ITS Congress**  
6-9 June 2011 - Lyon, France  
[website](#)
- **IT-Trans 2012: IT Solutions for Public Transport**  
15-17 February 2012 - Karlsruhe, Germany  
[website](#)

- ITS World Congress: Smarter on the way  
22-26 Octobre 2012 - Vienna, Austria  
[website](#)

For more events, please visit the [EPOMM Calendar](#).

