

Sweat, Share and Scale – exploiting the ICT potential in Transport

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Russell Square House
10-12 Russell Square
London WC1B 5EE

T 020 7331 2000
F 020 7331 2040
www.intellectuk.org

Information Technology Telecommunications & Electronics Association

Contact: Jon Lindberg, Programme Manager
T 020 7331 2021
E jon.lindberg@intellectuk.org

About Intellect's Transport Group

Intellect's Transport Group was established in 2006 to represent the views of the technology companies involved in the transport arena and inform transport stakeholders of the contributions that ICT can make to the improvement of transport systems.

The members of Intellect's Transport Group provide 21st century technology to all areas of transport in the UK. The group holds seminars with senior level speakers from government departments, agencies and private sector stakeholders. A management committee led by members is responsible for developing the group's programme of activities and setting its overall direction. www.intellectuk.org/transport

About this paper

This paper introduces Intellect's recommendations on how the use of Information and Communications Technologies (ICT) can improve the efficiency of transport systems. These are grouped under three categories – getting more out of existing infrastructure and capabilities, streamlining transport operations to cut costs and taking advantage of the expertise of the ICT industry. You will see that these recommendations are not new; they have all been talked about and adopted across the transport sector. However, Intellect wants to stress that the pressure for efficiency and reform calls for wider and more integrated uptake of these recommendations. The second part of this paper showcases areas where the application of ICT brings benefits to the transport system.

The aim of this paper is to briefly present the views from the technology industry to the key stakeholders in government, authorities, and private sector operators who all play a part in delivering the transport infrastructure in the UK. Intellect will invite these stakeholders to roundtable discussions to explore further by showcasing best practice and examples how these recommendations can be adopted for a more efficient transport system.

The paper was prepared by the Intellect Transport Group management committee.

We welcome any feedback you may have. If you want to find out more please contact Jon Lindberg, Intellect's transport programme manager:

T: 0207 331 2021

E: jon.lindberg@intellectuk.org

Sweat, share and scale – exploiting the ICT potential in Transport

Information and Communications Technology (ICT) has the potential to dramatically improve the efficiency of all parts of the transport system, while at the same time saving money and reducing CO₂ emissions. ICT has already proven beneficial in transport and we would urge government and transport operators to further exploit ICT to improve transport, to improve the economic efficiency of UK PLC as well as contributing significantly to the green agenda.

A recent ITIF and LSE study for example found that an intelligent approach to ICT in transport would deliver increased driver safety, improved operational performance, enhanced mobility, reduced congestion and boosting productivity and expanding economic growth. For example where deployed:

- “Adaptive traffic signal control has resulted in decreasing delays by 20 percent and vehicle emissions by 5 percent where it has been deployed”
- “Ramp metering has contributed to an approximately 10 percent reduction in journey time”
- “Active traffic management, including measures such as hard shoulder running, has contributed around a 10 percent reduction in emissions”¹

Existing ICT solutions contribute to network efficiency, transport safety, emission management, and operations management. We now also face challenging financial pressures where investments will be increasingly scrutinised and in some cases curtailed. ICT will not be exempt from this scrutiny. A review of ICT in transport should therefore be carried out with the aim of maximising benefits through the sweating and sharing of assets as well as promoting interoperability across the sector and scaling systems.

The best way of maintaining and improving delivery for least cost is achieved through smarter implementation of ICT solutions. Whether the aim is to find savings in the transport budget, maintain the current infrastructure for longer as cheaply as possible, or to accelerate transport as an aide to economic competitiveness and recovery, the sensible use of ICT is one of the most cost effective tools government can deploy. Recent changes in information management for example are helping this.

The technology industry understands that there should be a proper emphasis on ensuring that money is spent as effectively as possible and that industry needs to work with government, local authorities and private operators to ensure they obtain the most value out of their ICT assets. We believe that ICT will become an increasingly important factor in both the government and private operators plans for transport.

Intellect has therefore identified a number of recommendations that government and operators should consider for improving the use of ICT to drive savings and improve service delivery. These recommendations cover both better and wider use of ICT in transport and better approaches to investment where it is most needed.

¹ The UK's Digital Road to Recovery, ITIF & LSE, 2009 www.itif.org/files/digitalrecovery.pdf

Intellect's recommendations

Get more out of what you've got

1. Enable access to transport data in real time to third party developers who can deliver personalized, customer-oriented services to citizens quickly and cheaply. Curtail spending on presentation of information and focus on making standardised information available
2. Rationalise existing ICT assets to remove duplication and share across organisations where applicable
3. Encourage sweating and reuse where possible and make sure future procurements can facilitate reuse and sharing.

Streamline the way you do business to cut costs

4. Incentivise a move towards interoperable ICT systems to facilitate the standardisation and sharing of information, taking advantage of thinking and developments in the wider government approach to ICT
5. Use ICT to create efficiencies and savings in wider operations in transport, for example, resource management to extend the life and use of physical assets; and business change programmes to automate processes

Take advantage of the industry's expertise

6. Promote early engagement with industry on strategy, projects and business cases to realise the full ICT potential in transport to ensure we continue the improvement of the transport system
7. Engage more closely with industry to improve approach to procurement.
8. Take advantage of both the domestic and international expertise of the industry and the solutions being deployed and tested elsewhere across the world

By implementing these recommendations Intellect believes that both the UK government and private operators can improve the efficiency of the transport system and drive savings. Critical operational functions within transport such as asset management, service management, scheduling, ticketing, reservations etc are all dependent on high performing and interoperable ICT systems.

Demonstrating the ICT potential – a selection of examples



Improving delivery

- Maintaining the physical assets that make up transport can be expensive. Intellect believes there are two ways to approach better and less costly management of assets: make them last longer and get the maximum from them. Many organisations have invested in systems such as enterprise resource planning, but continued uptake of these systems allows for better planning and maintenance scheduling of physical assets. The Highways Agency's Managed Motorways is an excellent example where technology is deployed not only to extend the life of physical

assets, but also to get more throughput at lower costs than road building or widening. Reducing congestion is critical for improved service for travellers and in reducing delays and disruption to the economy. Traffic control systems provided by our members keep traffic moving and provide vital feedback on the performance of the road network. By joining these systems up with other sources of data relevant authorities can make more informed decisions to manage congestion.

- Improving the reliability of bus services can be done through the use of predictive monitoring technologies that anticipate failure within engine and transmission parts before it happens allowing the operator to recall buses from service for maintenance in a planned way.
- Extending the franchise life for private operators, such as rail franchises will allow for investments in ICT that can dramatically improve business processing and service delivery, through for example, smart ticketing systems that have medium to long term return on investment but clear benefits for passengers and operators. Intellect welcomes the move by government to extend the franchise life of operators.
- Developing technologies like cloud computing and mobile communications can introduce even greater efficiencies through concepts such as “on-demand” IT services, shared services and far more customer oriented channels of communication, such as smart phones and other mobile devices.

Reducing emissions

- Reducing CO₂ emissions in transport can in part be accomplished through better use of information and technology. The immediate availability of accurate traffic information, the integration of satellite, communications and software technologies will allow for better planning to minimise bottle necks by diverting traffic to reduce congestion.
- Encouraging modal shift from car or plane to train/metro/bus/bicycle by increasing transport choice by joining systems with real time updates and integrating end-to-end travel requires modern IT solutions.
- Lorry road user charging, and in the longer term, national road pricing, both reliant on ICT, provides a tool that can help manage demand on roads better which will help reduce congestion and minimise CO₂ and other emissions.

Improving safety

- Increasing demand for transport, particularly in urban and inter-urban transport corridors, leads to more safety implications. ICT plays a crucial role in tackling accident hotspots. Vehicle-to-vehicle, vehicle-to-road systems, Intelligent Speed Adaptation and enforcement technologies all lend a hand to improve safety by making the drivers and traffic controllers aware of the situation around them.
- Feeding intelligent data to traffic control centres through speed limiting to facilitate smoother traffic flows have shown to improve road safety by reducing stop and start scenarios.

Increasing accessibility

- Providing the public greater access to and choice about transport through fairer pricing models and information availability is dependent upon interoperable IT systems that can interpret, communicate and share data quickly.
- Existing initiatives and technologies such as smart ticketing and journey planning improve transport accessibility. But these solutions need to go further to enhance the performance of the transport network. ICT solutions can deliver more cost-effective, automated and self service hubs, improving choice for passengers and enabling better utilisation of human resources.

Advancing quality of life

- Personalising transport information allows citizens and businesses to make more convenient and customized decisions on when and how to travel. By making travel information available through a range of media new and more efficient services can be developed by third party providers. For example the recent move by Transport for London to open up real-time information to the public will have great value for individuals when considering travelling.

Next Steps

We all know transport is facing difficult times in the UK. On the one hand we are experiencing increased demand for travel, which signals a mobile society and facilitates economic activity. On the other hand, government and the economy are facing challenging financial times with a need to cut the deficit without disturbing economic recovery. Transport will have to deliver more for less. There are opportunities for ICT to help transport deliver on this need. Intellect believes these recommendations and examples demonstrate how real improvements in the transport system can be made.

Intellect is calling for government, authorities and private operators to consider these messages and come together to formulate strategies and share expertise to improve the performance of the transport system. Intellect will invite the key stakeholders from government, local authorities, agencies and private operators to roundtable discussions to explore how these recommendations can be implemented for a more efficient transport system.