



Unlocking the transport network

Joining the dots for smarter and safer travel

Congestion and fragmentation

As travellers we are living in an era of increasing peak-time congestion. Transport operators struggle to meet a growing demand while providing an effective off-peak service at a lower cost. Many parts of the UK's road and rail networks are now so close to capacity that even a minor incident can quickly tip them into chaos, with knock-on delays for thousands of travellers. With the prospect of unpredictable journey times, travellers have little choice but to allow for the worst-case congestion scenario if they want to be sure of arriving on time.

Faced with this situation, transport operators are searching for new ways of unblocking and better utilising their networks. Key to this is giving travellers relevant and timely information to enable them to make better travel choices – when to travel, on what mode, on what route and with whom. As a result of their online experiences, people now expect a 'seamless' experience across information sources and the different media they encounter throughout the day. However, the information they currently receive from travel organisations does not live up to these growing expectations.

The problem is compounded by fragmentation across the UK transport sector. Deregulation of the bus and rail industries has created numerous service operators, each with their own systems to manage and objectives to achieve. Beyond the Highways Agency's network, roads are managed by individual local authorities as well as devolved administrations in Wales, Scotland and Northern Ireland. Even within transport modes there are operational silos where the department best-placed to collect information on how a service is operating is not the one who provides that information to travellers.

Consequently, data collection, analysis and dissemination remain fragmented across the industry, leading to incomplete, inconsistent and unreliable information being communicated to the travelling public. New ways of paying for tickets, such as via smart cards, bring the prospect of even more data. But the potential benefits that could be derived from unlocking this data – improved service planning, product design and fraud investigation – may not materialise because of the federated nature of the public transport industry. Since major infrastructure investment is not an option, and indeed all forms of transport spending across all modes are being squeezed, equal doses of innovation and pragmatism will be needed to address this problem.

Information roles and responsibilities

The solution to unblocking the transport network is to join up the parties involved in collecting and collating transport data, create 'a single version of the truth' and then make this available to those who are responsible for disseminating travel information. This will require a careful balance between tighter controls and rules around collection on the one hand, and flexible, innovative arrangements for dissemination and follow-through on the other.

Of course, the idea of pooling data and making it available to all is not new, indeed Detica proposed an 'information wholesaler' model over a decade ago. Since then Transport Direct has made a start on realising this idea and National Rail Enquiries has gone further within the rail sector. However, while these initiatives should be applauded, much work remains to be done, especially in the areas of data quality and consistency where a transport champion would be a major benefit in setting some direction. No initiative so far has inspired the sea change that is needed if the industry is to maximise use of existing transport networks.

So where do we start? Travellers expect information covering a complete journey, which may involve several modes. While information on all modes needs to be joined up, the starting point should be to ensure that – at the very least – information within a mode is flowing effectively. This means paying close attention to each stage of the data management lifecycle, namely:

- **Collection:** making sure the right data is collected, that it is complete and made available in the right format;
- **Collation:** pulling together information from all the available sources into one place;
- **Interpretation:** turning data into information about implications for certain journeys or segments of journeys;
- **Enhancement:** augmenting the current picture with a historical perspective or other relevant information to provide an enriched understanding of the travel situation;
- **Presentation:** providing the information to travellers at the right level of detail, in the right context and via the right media, from variable message signs at the roadside and radio travel bulletins through to navigation device updates.

Within this lifecycle we can recognise three groups of players, or stakeholders:

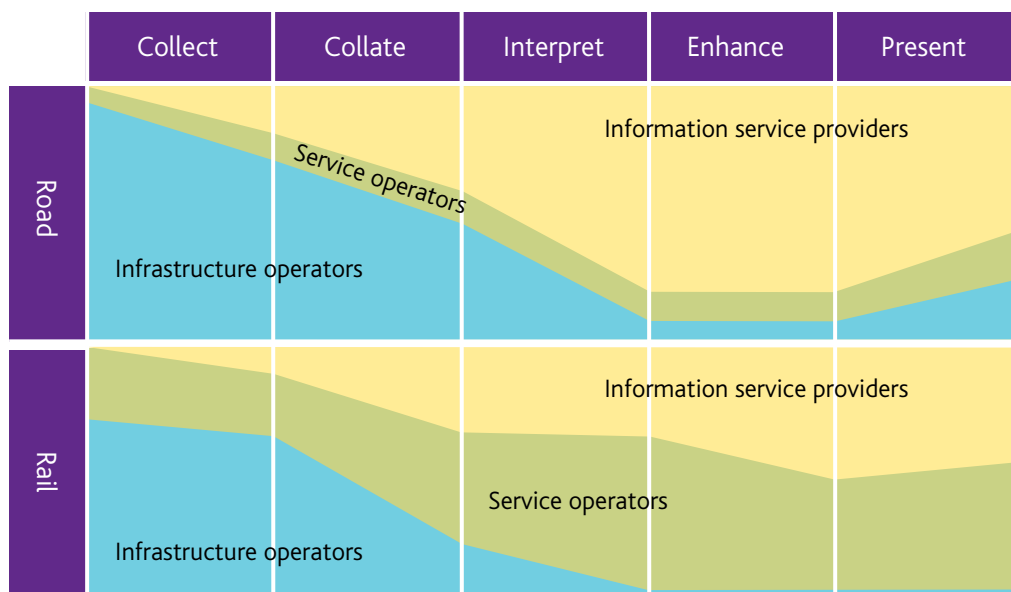
- **Infrastructure operators** who own and/or manage the assets. The Highways Agency and Network Rail are primary infrastructure operators while others include local authorities, Transport for London and private entities such as the M6 Toll Road;
- **Service operators** who provide a transport service using the infrastructure. Bus, coach and train operating companies are the primary service operators;
- **Information service providers** who disseminate information directly to travellers. There are some organisations who focus on this exclusively (such as BBC Travel, ITIS, National Rail Enquiries and Transport Direct) and others (such as the Highways Agency) for whom this is part of a wider scope.

A key challenge will be to agree on the specific information roles and responsibilities among these groups of players. Although there are no strict boundaries between them – the Highways Agency, for example, manages variable message signs while TrafficMaster operates a network of cameras and speed monitoring devices – one could argue that the main focus of an infrastructure operator should be on data collection while that of an information service provider should be on data enhancement and presentation. Where there is a need for greater clarity is in the middle, namely collating and interpreting data. This is where the current spaghetti of connections and conflicting information results in confused and inconsistent messages to travellers.

Consider infrastructure operators. They are in a unique position to be able to monitor conditions on their parts of the network. Their core obligation is to keep the network available, in some cases to certain service levels. So while they are well-placed to collect data, it is not their core business to be creative and innovative about how to disseminate it.

On the other hand transport service operators, particularly train operators, have systems that track train movements across the network and provide customers with real-time information at stations. Because they have the data they need, as well as a direct channel to their customers through which they can interact closely, they have a valid role to play in all parts of the chain.

As for information service providers, these typically use data from other entities (noting the exception of organisations such as TrafficMaster). The strength and differentiation of their offering to their customers is in the way they interpret the information and augment it with other data such as weather reports and typical journey times. The boundaries start to blur when mobile data is used. For example, TomTom employs mobile phone positioning data to revise its own journey time database and update its navigation systems accordingly.



Building momentum for change

While technology plays an important role in joining up data, it is not the only factor to consider. To truly unblock the transport network we need a fundamental change across the industry, a process that will only gain momentum if three key steps are taken.

First, we need a champion to lead the case for a shared information programme and inspire all the stakeholders involved. There will inevitably be areas where different agendas and priorities begin to diverge and building up trust across the organisational boundaries where information is shared will be critical. But the collective business case across all stakeholders is compelling and needs harnessing. This will require a governance structure founded on clear principles, well-defined roles and responsibilities, and plans for realising the potential benefits.

Second, we must improve data quality and consistency. There are gaps in the data that is currently collected and collated. And some data sources are less reliable than others. Because information provision is only as strong as its weakest link, there needs to be a marked improvement here.

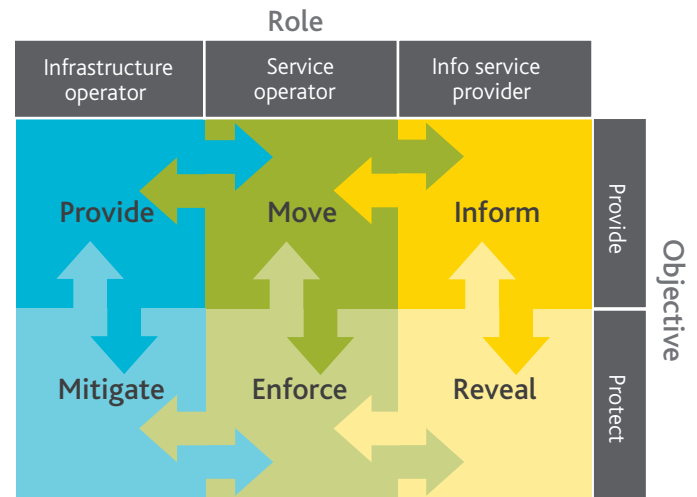
Third, we must provide a platform for innovation. Having collated a consistent pool of information, there is significant scope for innovation around how this is enhanced and provided to travellers. For example, by combining it with other relevant information or tailoring it to a traveller's individual preferences. This will require agreed communication standards, protocols and service levels to ensure information flows smoothly through the various parties and is delivered in a timely manner. It will also require a compelling commercial deal around access to core data, coupled with clear agreements on data quality and availability.

Experience gained from other industries shows that a joined-up intelligence model can deliver significant benefits to all of its participants. The Insurance Fraud Bureau, for example, joins up data on policies and claims data from UK insurers to identify potentially fraudulent claims and speed up genuine claims traffic. And in our own industry, the sharing of resources between VOSA (Vehicle and Operator Services Agency) and the Highways Agency is improving the capture of overweight freight traffic in order to reduce the number of HGV accidents and the disruption they cause.

From service to protection

Joining up journey planning and service running information will help travellers make better and more informed choices and so help unblock congested transport networks. But there are other benefits to be gained. Over and above their primary duty to provide a service to travelling customers, all players involved in the transport industry need to ensure their part of the service is suitably protected from accidental or deliberate disruption. For example:

- infrastructure operators need to design and implement measures to mitigate incidents related to weather, accident or criminal intent;
- service operators need to ensure those misusing or abusing the system or fraudulently obtaining tickets are deterred or caught;
- information service providers need to monitor and investigate activities that could lead to transport services being compromised or disrupted.



With some enhancement, joined-up information management can help identify and eradicate travel by those who should not be using the networks. This will free up more capacity for legitimate travellers, making our transport networks safer and saving money for operators. Many of the 'touchpoints' that provide useful travel information can also help to protect the travelling public. Analysing ticket purchase and gate swipe data can provide insight into likely train loading and congestion patterns. But digging further into the same data can reveal peculiar or implausible ticket purchases.

On the roads, noting a vehicle passing two points can help to understand journey times, but it can also work out if someone has been speeding or if there are vehicles 'in the system' with cloned number plates. It is in congested situations where it is hardest to identify and prevent non-compliance – those with no car insurance or tax disc, those with forged number plates or train tickets, or hauliers who have driven longer than their permitted hours. There are material numbers of these kinds of travellers who should not be travelling, and yet they contribute to congestion and accidents affecting us all.

There are clearly policy and privacy issues to be considered when contemplating such steps. But there are ways of protecting or anonymising data so that compliance activity can be focused on a smaller number of locations or situations. Not taking advantage of this would be a lost opportunity for the industry and its travelling customers.

Regulation and liberalisation

In conclusion, the most pragmatic way of joining up transport industry data will be by combining regulation, to ensure a high quality common pool of data, with liberalisation to encourage its exploitation by private sector information wholesalers and retailers. For example, the sheer speed and inventiveness shown by 3G mobile phone application developers, on platforms such as the iPhone, to 'mash up' public transport data with online mapping and property databases to create new information services, is nothing less than extraordinary. If we can arrive at a situation where there is a revenue stream attached to the data being supplied by transport operators, competition in the marketplace will create pressure to maintain quality and consistency.

If the current fragmented approach to data collection and dissemination is not addressed, passengers will continue to distrust transport information and make poor travel decisions to the detriment of all concerned. If however data can be joined up properly, with travellers coming to trust its accuracy and completeness, then this will unlock a change in traveller behaviour and attitudes to different transport modes. Travel choices will be more informed and the networks will be balanced. And the travelling environment will become safer and more resilient.

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