



Intelligent Thinking about Intelligent Transport Systems

ITS (UK) Foundation Members' thought pieces
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Don't forget about the customers

The world of intelligent transport is arguably at its most exciting. Concepts that have been largely contained within industry are now becoming mainstream. With always-on digital services being a familiar part of many people's lifestyles, thinking that was once limited to laboratories and proving grounds is becoming the stuff of general discussion. Examine any news channel in any given week and the likelihood is that you'll read countless column inches of news or commentary on connected and autonomous technologies and what it might mean in future. This has to be good not only for our industry now, but also importantly in terms of attracting the next generation of planners, engineers and analysts.

The rapid pace of convergence between highways technology and the vehicles using that infrastructure provides us with significant opportunities to do things very differently. The fact that the vehicle is starting to form part of a new relationship between the driver and the highway will be seismic in terms of potentially delivering improvements to safety, capacity and productivity. However, there's a very important part of the equation that mustn't be overlooked, the customer. Not just the drivers, but the passengers, and importantly the companies that use our highways to produce and deliver the goods and services that keep us and our economies going.

In parallel with ITS developments changes are afoot to the service and payment models that underpin our transportation networks. Shared use and alternative ownership models for private car are becoming commonplace with car clubs and private sharing available via the touch of an app. Smarter forms of ticketing already allow us to touch in and out with just a bank card or mobile phone. This parallel convergence of the how part of transportation paves the way for mobility as a service where single payment, on account, works across all modes.

These changes are all part of a collective progression to putting the users, the customers, and importantly in the case of business, the customer's customer, at the heart of the transportation equation. Technology, both hardware and software, will provide the underlying platforms and networks for this revolution in access, payment, connectivity and automation; but we mustn't forget about the human needs and interfaces. Commercialising what might seem like great ideas will be the acid test. Does connectivity, or a level of automation or service make a difference for the end user and importantly, will they use it and pay for it? How can change be made seamless to become part of the everyday?

Surely for intelligent transport in all its guises to be deemed successful it should be easy to use and easy to engage with for the widest cross section of our society. Perhaps being as simple and ubiquitous as the flick of a light switch is the ultimate test.

Giles Perkins, Mouchel

What does collaboration mean for highway authorities?

How do we give the customer the very best experience when they drive on the road network? We could make investment in improvements, provide extra capacity, deliver higher quality information, ensure better management of roadworks, deploy innovative technology . to name just a few. From this long list, I've long been interested in how better collaboration by the providers . the highway authorities, can play a central role in this ambition. Here are some of my thoughts.

Co-operation between Highway Authorities is mandated by law in the 2004 Traffic Management Act. It's happened, to varying degrees, since long before that and there are many examples of good practice in our industry. England, Wales and Scotland (though not Northern Ireland, interestingly) all follow the model of a single strategic provider and a multitude of local Highway Authorities (LHAs). Let us consider how co-operation can give the customer a better experience at that local/strategic interface.

Highways England has commenced its much awaited investment in back-office technology, via the CHARM project. For the first time, this will enable a more seamless approach to collaboration with our local authority partners and my own project, entitled simply Collaborative Traffic Management has started developing specific examples where we can work together to give the customer a much better experience. Our aspiration is to have a mechanism to develop jointly agreed strategies for effectively managing traffic with any local authority . with the technology backbone and partnership agreement to make that a success. The list of what we can do is actually quite exciting and shows the breadth of possibilities where the technology, skills and framework is there for us to work together in this way.

What is interesting in the English example is that the first ever long-term funding settlement for the English SRN, the 5-year RIS1 programme, coincides with an extended period where LHAs have had their funding reduced. Speak to LHA colleagues at a conference or industry event and this is often the first thing on their lips. There is also enormous disparity between the sizes of LHAs for the SRN provider to collaborate with. Large shire and metropolitan authorities might easily represent a population of more than a million people. A small unitary authority might only cover 150,000 people. The implications for the skill base, technical capability and available funds for those smaller LHAs is fairly easy to predict.

So how do we make this work? As a better understanding of what can be achieved and more compelling examples of the benefits in practice become clear, this will help. Making sure that there we have both money and skills on both sides of the fence, remains a bigger question to answer.

Dr Paul Canning, Highways England

What next for tolling?

If you're involved with telematics technology the most important thing to remember is that however clever your project may be it's not going to work unless you can find a buyer. Twenty years ago when I was a transport minister in John Major's government we were trialling tolling technology. But as the 1997 election loomed I was left under no illusions. We're not going to be tolling and that's it. No ifs, as the present Prime Minister is apt to remark, no buts. And that is how it has stayed ever since. Successive governments of all complexions have put tolling in the too difficult box and refused to lift the lid. After all, if your objective is to persuade people to use smaller cars driven less often isn't fuel duty doing the job perfectly well? And isn't it also the easiest money the government ever collects? In truth that was a powerful argument but times are changing fast and for two reasons I believe the time has come when tolling technology is going to come into its own.

Thanks to the EU emissions regime the next car you buy will be twice as fuel efficient as the one you trade in. Tesla has just taken a quarter of a million orders worldwide for its new cheaper+all . electric vehicle which isn't out for a year and is still likely to cost £35,000 in the UK. Both the Office of Budget Responsibility and the Institute for Fiscal Studies have noted that fuel duty is falling off a cliff and of course in the UK that pays not just for roads but for schools, hospitals and much else besides. And then there's the rise of interest in renewing our Victorian infrastructure and adding more. We know what needs to be done but a key question is still where to find the money. While US, Canadian and Far Eastern funds are happy to invest we need a mechanism to provide a revenue stream. As far as Highways England is concerned that surely means tolling.

In the past the politics of tolling were toxic. But research by the Independent Transport Commission has shown that when confronted with the facts voters are remarkably sensible about what needs to happen. As far as fuel duty is concerned either the government will have to slash spending even harder or raise the deficit through taxes. None of the available options are attractive.

The technology of tolling has become hugely more affordable in recent years. Put all the facts together and there's one inescapable conclusion. Tolling is going to happen. It's no longer a case of if, just a case of when.

Steven Norris, President of ITS (UK)

Why now is the time to take ownership of intelligent transport

We are today in the privileged position of seeing our research into the future of autonomous and connected vehicles in the public eye. Interest, and subsequent coverage, has moved from more tech-focused outlets to mainstream media, with companies in the technology and motor industries alike keen to talk about their particular areas of expertise.

And speculation is rife about how intelligent transport could change our lives, whether it's through cleaner transport, fewer accidents or freeing up space on the roads because people would no longer need to own their own vehicles.

But are we, the intelligent transport experts, making the most of the opportunities to tell our own version of the story?

At present, I don't believe so. Intelligent transport is something we inspect, investigate and interrogate each and every day, and we should be making sure the way we communicate what we do with the outside world - from social media, to interviews, to presentations and everything in between - clearly defines how it works and what connected and autonomous vehicles will do in future.

We should be using our intellect and experience to publically unravel the opportunities and challenges around intelligent transport and its accompanying technology, propelling the world to a new, inclusive future of transport, and making it attractive to those who haven't even heard of the concept before.

While we can debate the terminology endlessly between ourselves - the difference between a connected vehicle, an autonomous vehicle or an assisted vehicle - what the public really wants to know is what it means for them. How will it affect their lives, why should they, their friends or neighbours want to own or use an autonomous vehicle?

Let's show them. We can cut through the swathes of suggested potential uses to make intelligent transport real and meaningful by telling the stories that prove intelligent transport can make life easier, more enjoyable, accessible and inclusive, while helping us all to be a little more environmentally sustainable.

And of course, we need to recruit more people to the industry to help it flourish. Let's grab the opportunity, while intelligent transport is being talked about with such enthusiasm, to talk to potential employees about the details, and to encourage them to work with us, to bring their new ideas, skills and drive, to take us to the next level of intelligent transport research.

We've never had such a great opportunity to tell the public why intelligent transport could very well be the solution to the world's transportation problems - let's take it!

Ian Patey, Mouchel

The next step – testing connected and automated vehicles on real roads

An elderly lady on a mobility scooter using a broom to chase away a duck. Not a typical scenario one would expect to encounter during vehicle prototype testing. However, in 2014, this unlikely situation confronted one of Google's self-driving cars when out assessing its automated capabilities in the Bay Area, San Francisco. The operation of a road vehicle is a relatively simple, governed by four basic operations . steer left, steer right, speed up, slow down. However, the Google example illustrates the infinite complexity that driving truly entails. Weather, traffic, pedestrians, animals . all may contrive to perplex the sensors and software that guide automated vehicles.

Consequently, large datasets of real world driving in a variety of conditions are necessary to provide the substrate upon which these systems can be trained and optimised.

TRL recently launched the UK Smart Mobility Living Lab to address this need. The Living Lab is a strategic initiative from TRL in partnership with the Royal Borough of Greenwich to provide a genuinely open, collaborative innovation environment for the development, testing, and validation of connected and automated vehicles and smart mobility systems. Greenwich is globally recognised as being the historic reference point for time and navigation. However, the borough is also at the forefront of smart city strategy, accelerating the use of technology in meeting the needs of its rapidly growing population through its Digital Greenwich hub. The UK Smart Mobility Living Lab further enhances this strategy with the addition of TRL's unparalleled heritage in driving transport innovation and unique expertise in the field of Connected and Autonomous Vehicles (CAVs).

Greenwich has a range of road types from low volume, private roads and 20mph residential streets through to heavily congested roads, including dual carriageways, red routes and the southern approach to the Blackwall Tunnel. Travel needs in the borough can also be met by services including the Underground, Docklands Light Railway, Thames Clipper river bus, extensive Overground train (including Crossrail) and bus services and the Emirates Air Line cable car, linking Greenwich to the ExCeL Centre and Docklands area. Greenwich also has a variety of land use from low-rise suburban housing to high-rise commercial properties . plus the O2 Arena, the world's most popular entertainment venue. This range of services and features facilitates the study of how connected and automated vehicles interact in the multimodal urban mobility landscape.

For these reasons, TRL chose Greenwich for the UK Smart Mobility Living Lab initiative. It currently plays home to three key Innovate UK-funded projects in which TRL is a key partner. Firstly, TRL is leading the £8m GATEway project that will test three different types of automated vehicle in Greenwich to understand how users come to trust and accept such systems. Secondly, the £5.5m MOVE_UK project, led by Bosch, focuses on capturing large datasets from automated driving systems and comparing that with human driving behaviour in order to validate and accelerate system development. Thirdly, Atlas is a feasibility study led by Ordnance Survey to

investigate opportunities to use automated vehicle services for asset management. The living lab is also a place for private research and development . the ability to interact with daily life in an urban setting in Europe's only megacity has led to extensive international interest with more projects to be announced.

Supported by Innovate UK and the UK Government's Centre for Connected and Autonomous Vehicles (CCAV), the UK Smart Mobility Living Lab brings together TRL's established and respected research credentials and programme of connected and automated vehicle research in the borough of Greenwich . a rich, flexible test environment where vehicle manufacturers and technology developers can collaborate and innovate in this exciting and rapidly developing domain. That said, there are no guarantees that tests in the Living Lab will include pensioners pursuing waterfowl.

Nick Reed, TRL Ltd