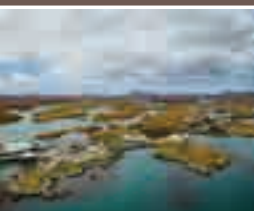




Clearing the air

Buses could cut a swathe through NOx emissions



Seamless simplicity

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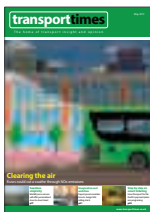
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Wanted: a bold response to air quality threat

The delay to the Government's response to the High Court ruling on air quality is a pity.

Though the official line is that it has been delayed because of the election, it is a missed opportunity for the Government to take a firm stance on air quality and show leadership.

It's difficult to avoid the conclusion that it has been viewed as a bad news story rather than an opportunity to take immediate action to tackle the harmful emissions from diesel vehicles that have become a public health emergency.

Clean air zones are likely to be created in most urban areas. It is crucial that buses are viewed as an integral part of the solution to air quality challenges rather than just a problem.

The research I carried out for Greener Journeys showed that in terms of value for taxpayers' money, retrofitting buses offers 15 times more value than a diesel car scrappage scheme, and that a scrappage scheme for buses offers 11 times more value than the diesel car option. Yet all the talk in the media relates to diesel car scrappage.

It's crucial that the policy on clean air zones is based on hard



Retrofitting buses offers 15 times more value than a diesel car scrappage scheme

evidence rather than political expediency. So far the Department for Environment, Food and Rural Affairs has focused on buses, lorries and vans when recommending charging offending vehicles for entry to the zones. However, if you look at the evidence, NOx per passenger journey is 10 times as high for the latest Euro 6 diesel car as the latest Euro VI bus.

There is much the car manufacturers can learn from the success that has been achieved by UK bus manufacturers in cutting emissions, and in robust testing which gives everyone confidence in their forecasts. It should also be remembered that 80% of new buses are manufactured in the UK compared with only 13% of cars.

If buses are seen as integral to the solution to poor air quality then we will focus on policies to achieve modal shift from the car and tackle congestion. Congestion and pollution are inextricably linked. In nose-to-tail traffic, tailpipe emissions are four times as high as in free-flowing traffic. Research by Professor Peter White of the University of Westminster shows that effective bus priority can produce 75% less emissions per passenger km for bus passengers compared with car passengers.

If we are bold and visionary we can create urban centres which are clean and vibrant and attractive for people to shop, work and socialise in. This will only happen if we prioritise sustainable transport and achieve a modal shift from the car.

London mayor Sadiq Khan has made tackling unacceptable levels of air pollution his number one priority. He has shown leadership. His proposals for a geographically extended ultra low emissions zone are commendable.

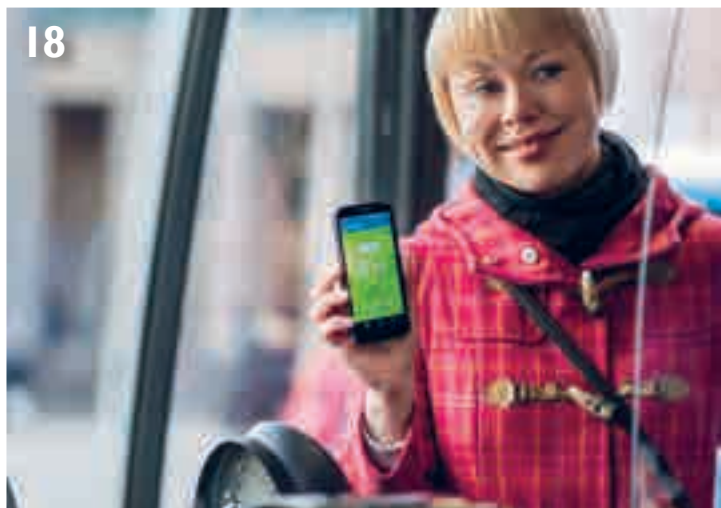
He must follow this up with radical measures to tackle congestion, and the Government needs to come up with a coherent strategy to tackle congestion and air quality.

David Begg

David Begg is publisher of Transport Times and a non-executive director of Heathrow Airport Holdings Ltd



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Francis Paonessa, head of Network Rail's infrastructure projects division, manages some of the UK's largest construction projects – on top of a working railway. Jeanette Bowden met him

15 June

Grand Central Hotel, Glasgow

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Transport touches all of our lives. I want to discuss and hear what it can do for our economic health, how it can shape our society and, importantly, how the sector will face and respond to the challenges and opportunities that the future will bring.

For those reasons I look forward to attending the Scottish Transport Summit on 15 June.

Humza Yousaf MSP, Scottish Transport Minister

The Scottish Government has committed to introduce a Transport Bill during this parliamentary session. It will ensure that there is a viable set of options for local authorities to draw upon in improving bus services in their area be that via partnership, local franchising or municipal bus companies as well as setting the framework for nation-wide multi-modal smart ticketing. They will also be looking at how they can improve passenger information.

Meanwhile Scotland's railways are undergoing a period of enhancement and expansion unmatched since the Victorian era. With the railway becoming more important to the nation's prosperity and growing significantly, what is the best strategy to increase capacity and frequency on the network to deliver the railways that Scotland deserves and what should be the priorities for the 2017 high level output statement?

Questions for debate include:-

- What should be the role of transport in growing the economy and social inclusion?
- What does Scotland do well on bus, rail and ferries and what can be improved?
- Do governance structures support desired outcomes?
- What role can technology play?
- How do we meet the challenges of disruptive technologies?
- How do we ensure that local authorities have the tools to improve transport in their area?
- How do we safeguard the country's railway needs, both now and in the future?

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- Bill Reeve, Director of Rail, Transport Scotland
- Prof David Begg, Chief Executive, Transport Times
- Peter Strachan, Managing Director, Serco Caledonian Sleeper
- Sam Smith, Programme Manager, Borders Railway Blueprint
- Prof Iain Doherty (Chair), Professor of Public Policy and Governance, University of Glasgow Adam Smith Business School
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Scrappage scheme 'should prioritise buses, not cars'



A scrappage or retrofit scheme for older buses would be 15 times as cost-effective as paying motorists to scrap older diesel cars, says a new report by Greener Journeys.

Fitting emission reduction equipment to bring older buses to the latest standard would cost £12 per kilogram of nitrogen oxides saved, compared with £175/kg for a diesel car scrappage scheme.

The report, *Improving Air Quality in Towns and Cities*, also calls for diesel cars to be subject to clean air zones to be introduced in major cities. It warns that without government support for replacing older buses, operators will be forced to dramatically increase fares or cut services.

On Tuesday this week (April 25) the Government was summoned back to the High Court after a bid to delay publication of its latest Clean Air Strategy. The court had set a deadline of this Monday following a challenge last year by ClientEarth to the Government's earlier proposals. ClientEarth successfully argued that the earlier strategy did not do enough to bring the UK into compliance with EU regulations on air pollution.

The Government angered politicians and environmental groups by lodging an application to the court late last Friday,

seeking to delay publication on the grounds that it would break pre-election propriety (or *purdah*) rules. It has applied to publish draft plans on 30 June followed by the full policy in September. The High Court set a hearing for Thursday, after *TT* went to press.

Under the former plan, clean air zones were to be established in Birmingham, Leeds, Nottingham, Derby and Southampton. It was expected the number would be considerably increased in the new strategy. Older diesel lorries and buses would be charged to enter the zones, but not diesel cars.

Air pollution, particularly NO_x, is linked to between 40,000 and 50,000 deaths a year in the UK from cancer, asthma, heart disease, stroke and others. In Greater London, more than 50% of NO_x comes from road transport, mainly from diesel vehicles.

The Greener Journeys report, written by former government adviser and *Transport Times* publisher David Begg, calls on the Government to put buses at the centre of its air quality strategy. It warns that without support for retrofitting or scrapping older buses, fares would have to rise by 40% to meet the cost of replacement.

Progress in clean diesel bus technology has exceeded that of diesel car technology, the report argues. Since 2004, NO_x emissions from diesel buses

have been reduced by a factor of 20. Real world testing of diesel buses meeting the latest Euro VI standard demonstrates a 95% reduction in NO_x emissions compared with Euro V. A journey by a Euro 6 diesel car travelling at 25km/h emits 10 times the per passenger NO_x of a comparable journey by a Euro VI diesel bus, according to analysis by the Low Carbon Vehicle Partnership.

The improvement in performance of Euro VI buses compared with Euro V is mainly due to the use of selective catalytic reduction technology, which uses a combination of a catalyst and an additive (commercially known as AdBlue) injected into the exhaust system. This breaks down nitrogen oxides to produce nitrogen and water.

SCRT has been successfully retrofitted to hundreds of older buses by companies including Transport for London and Lothian Buses, bringing them up to Euro VI standard.

Based on NO_x emissions travelling at 25km/h, retrofitting a Euro V diesel bus travelling 65,000km in urban centres annually at a cost of £17,000 would equate to £12/kg of nitrogen oxides saved over a life of five years.

By comparison, scrapping a Euro 3 diesel car travelling 5,000km in urban centres annually at a cost to the Government of £2,000, and replacing it with a Euro 6 car lasting 10 years, equates to £175/kg of NO_x saved.

Scrapping a Euro III diesel bus travelling 65,000km in urban centres annually, with the Government paying its £20,000

book value to remove it from service two years early, would represent £16/kg of NO_x saved.

The report adds that coupling this with measures to encourage modal switch from car to bus could be "transformative", reducing congestion and taking cars off the road.

But it warns that without government support for retrofitting, the impact on bus passengers "will be severe". If operators tried to recover the cost of replacing buses through fares, they would increase by 40%, resulting in a 20% fall in patronage. Fare increases of this magnitude are not plausible, but the likely result would be a combination of fare increases and service cuts.

Conversely, "If decision-makers put buses at the centre of strategies to tackle air quality and congestion they will achieve a virtuous circle of falling costs, higher frequencies, lower fares and higher patronage," the report says.

Prof Begg said: "The most effective way to reduce air pollution is not to replace older diesel cars with newer models – it is to reduce the number of cars on the road and invest in clean public transport which can dramatically cut the level of emissions per passenger."

Greener Journeys chief executive Claire Haigh said: "Air quality is among the most pressing concerns in towns and cities across the UK, and this report highlights the key role of buses as an integral part of the solution. Any Government money that is available for scrappage schemes should be directed to buses first."



Claire Haigh and David Begg



Carne outlines cautious approach to next rail investment plan

Network Rail's plan for rail investment for the five year period beginning in 2019 will be fundamentally different from that of the previous five years, said chief executive Mark Carne.

Control period 5 (2014-19) had been "very challenging", he said. "We must not enter CP6 in the same way."

Instead, building on Network Rail's devolution to eight autonomous "routes", the plan for control period 6 will have "devolved businesses at its heart and the digital railway at its core".

In a briefing to journalists, Mr Carne said: "The reclassification of Network Rail was a profound change that changed our whole relationship with the government."

Control period 5 contained a long list of projects and a mechanism that allowed the network operator to work on an emerging cost basis with the regulator, allowing projects to go ahead if increased borrowing was considered efficient. This mechanism no longer exists.

"This time we don't want to raise expectations unnecessarily," Mr Carne said.

Route managing director for London and North West Martin Frobisher said that for CP6, "We've done a lot of workshops with Transport Focus and other stakeholders. There's been a lot more collaboration to create a plan that everyone's bought into." The previous plan had been a two-way process between Network Rail and the Office of Rail and Road.

Mr Carne said the lessons from CP5 had been learned. "Most importantly we will have a thought-through, bottom-up plan developed by people who understand how to run the railway and what's required."

He added: "We will have to work incredibly hard to get the funding we need."

Plans for CP6 will be unveiled in July in the Government's high level output statement white paper, accompanied by a formal statement of funds available.

"CP6 will be primarily renewals, with a series of independent projects, which will



Network Rail chief executive Mark Carne

get independent funding when appropriate," he said. Improvement and enhancement programmes would not go ahead until ready. Mr Carne accepted that many of the projects in CP5 were committed to before they were sufficiently mature.

The coming HLOS would not, therefore, be a list of definite projects as in the past. "There will be a range of possible projects we will progressively study until we think they're mature." There would be continuing projects and core projects, to which others would be added.

Asked whether the new approach worked against the principle of providing a secure "pipeline" of work ahead, giving confidence and certainty to suppliers, he said that this had proved to be something of an illusion. Instead there would be "[a number of] opportunities we're looking at, but we're not going to promise anything until we've done the work. Then the Government can decide which it wants."

He added: "We want to ensure continuity wherever possible, for example on electrification."

He stressed: "The five-year cycle is good and an essential thing for stability of the industry as regards continuity, certainty about the work bank, and the opportunity to invest for suppliers."


Network Rail was seeking to attract new sources of funding for projects in a more difficult fiscal climate and was working with developers, councils and local enterprise partnerships. There was significant enthusiasm for this, he said – for example at Crewe, where the station is planned to be transformed to create a hub for HS2. "The appetite is amazing for a new station and for regeneration," he said.

The company was looking at funding, in which a third party invested to undertake a rail project, benefiting later from the resulting increase in land value, rather than financing in which the company would borrow the money, to be repaid from proceeds

later. It was proposed to entirely redevelop Clapham Junction, an area of 18ha, funding it through a housing development on the site after the track had been relaid.

Asked whether the advent of bi-mode trains would result in plans for electrification being cut back where the economic case was less robust, Mr Carne said: "Electrification is not itself the key outcome – passenger benefits are. We're constantly looking at the best way of providing the benefits."

Mr Frobisher added that bi-mode trains would allow some stretches of electrification to go ahead on a discontinuous basis where it would otherwise be impossible to make an economic case – "for example, Settle to Carlisle, because of the tunnels... as battery technology improves, discontinuous electrification becomes possible."

 All new trains for the UK network should be specified with the European Train Control System, because the cost of retrofitting it later was too high, said Martin Frobisher.

Plans for the digital railway – in which advanced signalling systems are expected to release significant extra capacity on the network – are entering "a very interesting phase" after the chancellor clearly signalled an interest by providing initial funding this year's Budget.

Train operating companies were increasingly thinking about modern trains and train controls, and Network Rail was working with them and the DfT on how this could be incorporated into franchise terms. There could be an impact on franchise length because this would require significant investment and there would need to be time to get a return.

David Waboso, who joined from TfL last year, was leading the programme. The plan would be to tackle "the most difficult and congested routes first".

The Wessex and Brighton main lines would be "clear priorities". It would be necessary to "create a structure that allows the private sector to lead in specifying, financing and delivery", Mr Frobisher said.

MPs give cross-party support to Crossrail 2



Crossrail 2 will relieve crowding at stations such as Waterloo

Over 50 MPs from constituencies around the country have come together to urge the Government to back Crossrail 2. Meanwhile industry leaders have stressed that, in the heat of the general election campaign, it is important not to forget that transport investment benefits the economy as a whole, no matter where it is situated.

A total of 59 MPs of all parties signed a joint letter to chancellor Philip Hammond and transport secretary Chris Grayling urging them to “boost the entire country” by giving Crossrail 2 the go-ahead. The project’s business case is under consideration, and approval would allow Transport for London to develop the design in enough detail to submit a hybrid bill to parliament to get the necessary powers for construc-

tion. Crossrail 2 could then be carrying passengers by 2033.

The MPs generally represent constituencies in Bedfordshire, Cambridgeshire, Essex, Hampshire, Hertfordshire, London and Surrey but include Newcastle upon Tyne Central MP Chi Onwurah. They stressed the project was of “national significance”.

The letter says: “Crossrail 2 now deserves national support as a scheme that will generate funds to the Exchequer that more than cover its costs. At a time of economic challenges, it is crucial that we invest – as a clear signal to the rest of the world that Britain is preparing for growth. Backing for Crossrail 2 would also give firms across the country the certainty they need to invest in the skills needed for our long-term future.”

The letter highlighted that the benefits of Crossrail 2 would be

felt across the UK, boosting the economy by up to £150bn. Some 200,000 jobs and 200,000 new homes will be supported, as well as 60,000 supply chain jobs and 18,000 apprentices across the country, making a major contribution to solving the housing crisis and supporting employment centres. More than 30% of the new homes would be outside London.

Crossrail 2 will dramatically improve journey times and connectivity from the Solent to the Wash, supporters argue. More than a million public transport journeys every day will be improved, with 40% of the transport benefits falling outside London. It will relieve congestion on the overcrowded rail lines from Portsmouth and Cambridge, and link with HS2 at Euston. It will also relieve pressure on the Underground.

Without the additional capacity the project provides, its proponents argue, overcrowding and closures at stations including Victoria, Clapham Junction and Waterloo will get worse, and Euston will be “utterly unable” to cope with passenger numbers from HS2.

London businesses have indicated that they are prepared to contribute through local taxes and levies, and the capital has shown that it can meet half the total cost of the project.

London mayor Sadiq Khan said: “The Government cannot ignore the growing national demand for it to back Crossrail 2. The fact that more than 50 MPs from across the country have crossed political lines to join together shows just how important the project is for the whole nation.”

“It is essential for the UK economy, for jobs, for the housing market and for our transport network. We’ve shown how London can pay directly for half of the cost: it’s time the government gave its unwavering support.”

Crossrail 2 would connect the national rail network in Surrey and Hertfordshire, with a tunnel beneath central London between Wimbledon and Tottenham Hale and New Southgate.

The National Infrastructure Commission recommended last year that ministers should back the project.

The MPs’ backing follows similar concerted calls in recent weeks from business leaders, housebuilders, property developers and housing associations, and councils as far afield as Cambridge and Portsmouth.

Infrastructure ‘not a competition between regions’

Transport experts stressed that transport investment benefits the whole economy and that, as the election campaign gets under way, it should not be seen as a competition between regions. So just as Crossrail 2 would create jobs in the supply chain around the country, investment in projects in the north of England would also benefit the UK as a whole.

Transport for the North director of strategy Nigel Foster

said: “As has been acknowledged by the recent industrial strategy green paper and by successive governments over the last 15 years, investing in strategic infrastructure is vital for sustainable economic growth and prosperity.”

“Transport infrastructure projects, like HS2, Northern Powerhouse Rail and Crossrail 2, complement rather than compete with each other, providing the crucial links needed to deliver the connec-

tivity the United Kingdom needs in the 21st century.”

Luke Raikes, senior research fellow at PPR North, said: “Infrastructure investment isn’t simply an either/or choice between regions – the right investments can benefit the national economy. IPPR North argue that northern prosperity is national prosperity, and that proper east-west connectivity in the north of England would benefit the whole country.”

“Our research shows that

an east-west super-corridor for freight could be created, allowing goods to be delivered directly to destinations in the north rather than coming in to southern ports and being transported onwards by motorway.

“And as we leave the EU it’s essential that the Government’s industrial strategy uses transport infrastructure as a catalyst for growth in industries such as life sciences, energy, digital and advanced manufacturing across the North.”

Transport and the election

What will the election mean for transport? On this page **Stephen Joseph** of the Campaign for Better Transport and London First infrastructure director **David Leam** outline some of the transport issues, while **James Bethell** asks: what is Mayism?



David Leam,
infrastructure director,
London First

June's general election rather overshadows May's "Metro Mayor" elections. Yet how this new generation of city leaders use the role could have at least as much impact on future transport investment as the identity of the new government.

We've seen in London the investment that successive mayors have helped attract to the capital's transport system. There's no reason why in time the new metro-mayors couldn't bring similar benefits to the West Midlands, Greater Manchester, Liverpool and beyond.

But will metro mayors be able to collaborate as well as compete? Will we find ourselves locked in arguments about the relative merits of investing in one city instead of another; in Northern Powerhouse Rail or in Crossrail 2?

Or could we see the emergence of powerful new coalitions, with the mayors coming together to champion their common need – for sustained investment in commuter and inter-city transport and to be given the powers and resources by government to facilitate that?

I know which of those the Treasury will find harder to handle. So instead of defaulting to squabbles over who gets which slice of the pie, let's concentrate our efforts on making the pie bigger and more bounteous. England's cities must all hang together, or most assuredly will all hang separately.



Stephen Joseph, chief
executive, Campaign
for Better Transport

In a Brexit-dominated election issues like transport will struggle to get noticed, but the next government will undoubtedly face a number of transport challenges. The first is air pollution, or how to clean up air in cities without annoying motorists. The risk is that the Government shies away from tackling polluting diesel cars and trucks, or promoting modal shift, and goes for soft targets like buses.

Second is the crisis in local transport. Successive spending cuts have led to a huge backlog in local road maintenance, a collapse of supported bus services, limited and sporadic investment in sustainable transport and a loss of experienced council staff. This means that proper planning of transport and development is giving way to chaotic car-based sprawl where developers get anything they want and local roads jam up.

Third, there are big delivery challenges, especially on the railways with franchising and Network Rail.

Finally, trends in transport costs will be a challenge, with motoring and road freight costs stable or falling while public transport fares and rail freight costs have increased. Resolving these will require new and sometimes radical measures – more devolution, more public involvement and new forms of taxation, charging and financing for transport, especially for promoting clean air and reducing traffic.

James Bethell, CEO, Westbourne Communications

With the election approaching and a Conservative victory widely predicted, it is a good time to wonder what a popular mandate for "Mayism", unfettered by a slender Commons majority, might mean for transport.

Born in Home Counties and forged at the Home Office, "Mayism" is more of a mindset or an instinct than a manifesto. Its values are decency and fairness, it prefers the proven over the theoretical, and it eschews ideology.

There's no transport policy in Mayism. But with some informed speculation it is possible to tease out certain tendencies that will be relevant to transport policy.

Mayism is about taking tough decisions. The prime minister thinks that her sensible, deliberative, anti-political approach is good at cracking "the big problems". She is proud of her announcement on Heathrow and the determined implementation of the political settlement.

Nonetheless, Mayism doesn't want to overturn industries, at least not this side of Brexit. Privatising Network Rail or the road network, or nationalising the train operators, is not on the agenda. Nor is it ideologically committed to balancing the budget. Fiscal pressure on HS2, overspending CP5 projects and the draft CP6 budget are reduced.

Mayism is pro-business, but is sceptical of the way big business treats the little guy. This was best articulated by Chris Grayling's challenging "we must focus on passengers" speech in December last year. Mayism wants to make life better for ordinary people by addressing the sort of thoughtless, petty niggles that drive voters mad. Ryanair better watch out. The train industry should redouble its efforts to sort out its baffling ticketing arrangements.

Mayism loves innovation and wants to help (with, for instance, industrial strategies and energetic export trips), but is intolerant of "crony capitalism". The energy price cap is an example of



Downing Street's willingness to intervene when angered (and the polls align). Look out, Network Rail contractors who run over budget and platforms like Uber or Deliveroo which take unfair advantage of the tax system or take advantage of their workers.

Mayism is worried about the bosses who seemingly take the mick. "We will make Britain a country that works not for a privileged few, but for every one of us," the PM said as she entered Downing Street for the first time. Chief executives need to look at their remuneration arrangements, particularly if they are handling taxpayers' money. PFI investors should expect scrutiny. By the same logic, over-reaching train drivers will get no sympathy.

Mayism is proud of British businesses, particularly if they are keen to export. Similarly, it is worried about British businesses suffering from unfair competition from overseas competitors, especially if they are state-sponsored. Foreign businesses need to ensure they are giving a fair deal to British workers, taxpayers and the economy. Foreign-owned train operators, train manufacturers, state-owned airlines and subsidy-supported car manufacturers should audit their Britishness.

Lastly, Mayists recognise that affordable transport can support social mobility and is part of the story of bringing the country back together again. So the Conservatives' seemingly incongruous support for public transport investment seems likely to continue.

NAO criticises DfT flexible ticketing scheme

The Government's South East Flexible Ticketing programme failed to achieve its aims despite going £9m over budget, according to a report by the National Audit Office.

Only 8% of participating companies' season ticket sales in the 12 months to March 2017 were on smartcard, the NAO said.

The DfT intervened to speed up the introduction of smart ticketing schemes, on the grounds that progress by train operating companies was slow. It set up the programme in January 2012 to improve coordination, speed up the introduction and increase take up of smart ticketing. The department was the funder of the programme with the Rail Delivery Group as the primary agent, working with train operating companies to set up the necessary infrastructure.

The department's original ambition in 2012 was to improve the experience for passengers and reduce costs to train operating companies of selling tickets. An original aim was to have flexible



Baroness Kramer sought to speed up flexible ticketing as a minister

ticketing, including discounted, part-time season tickets, in operation on 11 franchises running services into London by 2014. By this month, the programme had enabled five of the 11 train operating companies to offer season tickets on smartcards.

Only one of the five train operators currently offers part time season tickets, the NAO says.

The original budget of £45m was increased to £54m. This was spent on developing a central smart ticketing back office, and installing or upgrading infra-

structure such as ticket validators, ticket barriers and ticket vending machines. £26m was spent on the department and Rail Delivery Group's management of the programme.

The scope of the programme was reduced twice, and the department has now completed the reduced objectives agreed in 2016. At this point the department estimated another £42m was needed to pay for additional ticket barriers and validators to achieve the full scope set out in 2014.

Responsibility for managing the central back office has been handed to the Rail Delivery Group. The back office can now be used by other train operating companies to operate their own smart ticketing scheme and the RDG is promoting this capability to train operators across the country.

By March 2017, two franchises outside south-east England were using the back office. The RDG estimates that the back office is currently using around 5% of its capacity.

ADL scoops biggest share of Stagecoach order

Stagecoach has announced orders for over 340 new buses and coaches, worth over £70m in total.

The new fleet, equipped with USB charging points and most having free Wi-Fi, will be introduced in the current financial year. The company says around half will meet the government's low carbon emission bus specification and around two-thirds will have stop-start technology, which automatically shuts off the engine at bus stops on door opening, restarting when the doors close. This improves fuel economy but also, by cutting gaseous emissions at bus stops,

greatly improves overall air quality in the vicinity of the bus. Noise is also reduced.

Over 90% of the overall order went to Alexander Dennis, which will supply 181 Enviro400 double deck buses, 102 Enviro200 midi and single deck buses and 31 Plaxton coaches.

In addition Wrightbus will supply 18 StreetLite micro-hybrid single deckers, seven open top double deckers and two Eclipse-Volvo single deckers. The open top buses are the first the company has ever ordered.

The order takes Stagecoach's total orders over the last 11 years to over 7,000 buses and coaches, with a value of over £1bn.



Alexander Dennis will supply Stagecoach with 31 Plaxton Elites

Bus Services Bill will gain Royal Assent this week

The Bus Services Bill completed its passage through Parliament on Tuesday this week (25 April) and was expected to receive Royal Assent on Thursday.

The House of Lords completed its consideration of 23 outstanding amendments where the

Commons and Lords disagreed in under an hour, to pave the way for it to become law.

There had been concern that, with Parliament being dissolved next week, if the Lords had decided not to give way on areas of disagreement, the bill would not have become law before the

election. The new government would then have had to revive it in the next Parliament.

In the event the main outstanding issue, whether local authorities should be allowed to form municipal bus companies, was agreed without further dissent, with the Lords accepting

the original Commons position prohibiting them from doing so.

Had the bill not been passed, one of its main provisions, giving the new regional mayors powers to introduce bus franchising, would not have been in place in time for the metro-mayor elections next week.

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Quitting Europe will leave a hole in UK planning

It's not widely appreciated how far Europe contributes to UK infrastructure planning and funding, but it will be necessary to create a structure to replace it by the time the UK leaves the EU



For the next two years, the big issue will be Brexit, now we've set the clock ticking under Article 50 of the Lisbon Treaty. Yet it's hard to fathom what will change in the transport sector.

Part of the problem stems from a rather profound national ignorance of what the EU does (let alone what the UK has done for the EU). In her 2013 book, *How Europe shapes British Public Policy*, academic Janice Morphet explained how we have been subject to a continuing deceit. While the Government has played a key role in drafting much EU legislation, policy implementation, especially where investment is concerned, is generally draped in a narrative of British government initiative – as if the feel-good factor would be lost were its provenance to be known. Unsurprisingly, with this history of carefree misrepresentation, it is unclear – in transport as in other areas – what will change come Brexit day two years hence.

Fortunately, published at the end of February, Prof Morphet's new book *Beyond Brexit?* is here to help. As visiting professor at UCL's Bartlett School of Planning, Janice has great knowledge of planning, infrastructure and land use – the wider policy mix within which many transport planning decisions are taken – and she knows the European Commission inside out. Her book provides a rare chance to get a better understanding of the wide overlay of EU policy on our national affairs, including (and specifically so here) on transport.

One of the main concerns expressed in her book is that while under the Great Repeal Bill existing EU legislation will be transposed into UK law, the treaties from which they are derived (and which provide their fundamental principles and legal framework) will not. Why this matters is that the EU policies of cohesion and subsidiarity – along with the principles of the single market itself

(the development of which was of course a UK initiative led by Lord Cockfield in the second half of the 1980s) – have no legislative or constitutional presence in Britain, yet are fundamental to policies and investment planning that determine transport provision.

So, by way of example, the devolved nations, the super-regions of the North and Midlands, the London mayoralty powers, the City Deals and mayors of combined authorities are each an enactment, at some level, of the EU subsidiarity principle. As is widely understood, with devolved powers (including for producing longer term strategic plans) comes the certainty and clarity that supports investment and better transport services.

EU structural funds are crucial for areas that have weak economic performance

If we want to address those communities that feel abandoned and missing out on metropolitan prosperity – the widely-identified despair component of the Brexit vote – then the EU's cohesion principle needs a national equivalent, and funding too. After 2020, the EU will adopt new policies on macroeconomic strategies to tie together plans in housing, infrastructure and skill development across large regions: will the UK have the wherewithal to do the equivalent nationally (no spatial plan) or regionally (limited funding)?

EU structural funds are widespread and feature in multiple local enterprise partnership programmes, for instance those of Swindon & Wiltshire and Leicester & Leicestershire. They are crucial for places that have weak economic performance such as Cornwall, parts of Wales and the north east of England: places that

voted for Brexit, but then local political leaders put in an urgent request to ensure that replacement funding was put in place.

The European Investment Bank made €6.6bn loans to the UK in 2015, and transport accounted for 22% of this. EIB funds go right across the transport spectrum: for the Jubilee Line, the Second Severn Crossing, the Port of Liverpool, new rolling stock in East Anglia... While existing loans will be honoured, the EIB will be unable to make further loans to such transport projects post-Brexit unless there is unanimous agreement among the 27 member states that it should do so.

The Trans-European Transport Networks have existed since 1996, and under that programme funding has gone into HS1, Crossrail, the West Coast route modernisation, and the A14 (part of a euro-route from Crete to Donegal!), including for the Cambridge busway. Following a re-set in 2013, HS2, the Northern Hub and schemes in South Wales were added. Designation as a trans-European corridor obviates the need for national primary legislation. Prof Morphet suggests that post-Brexit, such projects will need to start one stage further back in the planning approval process: a role for the NIC or for the new sub-national transport bodies, perhaps.

And then there are many other programmes such as Interreg or the Sustainable Urban Mobility Plans launched in Bristol and already taken up by 20 places in England, Northern Ireland, Wales and Scotland, coordinated by Act TravelWise.

Our planning framework is European, and to avoid an investment hiatus in transport, we'll need a suitably devolved national apparatus by 2020.

Jim Steer is director and founder of Steer Davies Gleave.

A revolution for bus passengers is in the air

New legislation, the arrival of metro-mayors, and the rise of bus partnerships are grounds for optimism that bus passenger numbers can be increased – with commitment and the right targets

Things are stirring for passengers in the bus world in England. A new legal framework for bus – the first in three decades – is imminent with new primary legislation and guidance. New mayors are being elected. New ways of working are developing. Bus companies are looking at new ways to boost bus passenger growth.

The last point is a vital consideration, given that bus use is declining in England – 2% between in the two years to 2016 – and has been outside London for nearly 10 years. Also publicly subsidised mileage decreased by 26% in metropolitan areas and nearly 40% in non-metropolitan areas between in the 10 years to 2016. By contrast, though, commercial mileage is showing a slight increase.

A declining market in itself might be a shot in the arm to bus companies and authorities. Bus companies have a greater impetus to attract more users both for now and the longer term.

Transport Focus research shows that there is potential for the bus market to grow by attracting infrequent users and non-users of bus. We asked 2,400 people from this category whether they were willing to make more journeys by bus. 28% said they wouldn't mind making more bus journeys. And 54% of infrequent users said they were willing to make more journeys by bus. This is some cause for optimism.

Aware of the importance of younger people to the future of bus, Transport Focus is researching their needs. This will provide insights to help the industry provide a service that is more in tune with their needs and interests. We look forward to discussing the findings with the bus industry later this year.

New ways of doing things through partnerships between transport authorities and bus op-

erators are developing. The Bus Alliance in the West Midlands is in the vanguard. It brings together the transport authority, the region's bus operators and the police, with an independent chair from Transport Focus.

Overall bus passenger satisfaction has risen from 79% in autumn 2012 to 85% in autumn 2016, and other elements of satisfaction followed. The increase is directly linked to the partnership concentrating on key factors identified through the Transport Focus Bus Passenger Survey as priorities for improvement. Its aim is to secure passenger satisfaction levels at around 85%, as measured by the survey. It has been responding to passenger needs, suspension

Liverpool's City-Region Bus Alliance is close to achieving its target to increase the number of farepaying passengers by 10%

of bus lanes, air quality, and keeping up with growth. This will be helped by the operators and partners investing £150m between now and 2021.

In Liverpool, the City Region Bus Alliance involves the transport authority Merseytravel, Arriva and Stagecoach. Established in 2016, the partners are aligning themselves behind common aims, and aspire to be the "best in class". One target is to increase the number of farepaying passengers by 10% over the four years to 2018. The partners have invested in new buses and other improvements such as on board Wi-Fi, USB charging points and new ticket offerings. There has been a 9.7% increase in passengers – already close to the 2018 target.

Another target is to increase passenger satisfaction, measured by the BPS, to 95%. They have

seen increases in overall satisfaction from 89 to 90% – higher than other metropolitan areas.

Last year, the West Yorkshire Combined Authority worked with Arriva, First, Transdev and West Yorkshire Bus Operators to develop the Bus 18 strategy. Their pledges are to make buses easy to use, reduce emissions, and improve passenger satisfaction.

So what are the ingredients of success? It is early days, but already it is possible to identify some themes. First, partnerships need a set of commitments and stretching targets that the partners work towards. They can use the bus passenger survey as a tool to assess where they need to focus – together – to make a difference to passengers. They can track this over time to see the difference their efforts are making. The latest survey has shown that congestion, particularly in the metropolitan areas, is affecting passengers. Partners can work together to identify and develop solutions to such problems.

Second, they need the commitment of the partners to drive the partnership forward without institutional barriers getting in the way. Transport Focus will be keen to see how these and other partnerships develop in years to come and we are willing to play our part.

To conclude, things are changing. The need to attract new passengers must play a part. The prospect of new legislation is helping to change thinking and approaches so things can be done differently. The challenge will be to make sure that all this benefits the passenger.

Anthony Smith is chief executive of Transport Focus.



On time, on budget – just fifty years late

Governments take so long to plan large infrastructure projects that by the time they go ahead they may no longer be the right priorities for the economy



Deciding on the timing of transport investment can be as important as deciding which investment to make. A rail station that opens a few months in advance of new homes being built is used very differently from the same rail station built a few years after the houses have been constructed.

Over time, different short-term effects may converge towards similar long-term benefits, but this can take 30 years or more. The lifetime benefits of the investment depend on scheduling based on the needs of the economy.

Over £2bn of Transport Scotland's investment in the Queensferry Crossing, the M8 Edinburgh-Glasgow motorway missing link, and the Edinburgh to Glasgow Railway are due to be completed over the next few months. The news headlines are about whether they will be on time. But when is the right time for these schemes to open?

Large transport investment is typically planned over decades. By the time the benefits arrive, the needs of the economy may be very different from when the schemes were conceived.

Public expectations that large projects will be built grow over time, and people plan their lives around the expected changes. People have been expecting the completion of a motorway between Glasgow and Edinburgh for some time, so it is not clear whether the opening this year will be a few weeks early or 50 years late.

Similarly, with the Queensferry Crossing, people have been planning around its completion since the early 1990s when contracts were first scheduled for issue, so there are 25 years of expectations to add to the new three-month delay recently scheduled.

One positive aspect of the timing of these major construction

projects has been to create jobs to soften the effects of the economic downturn. In the downturn in the 1990s after Black Wednesday, an earlier attempt to complete the M8 came within hours of the contract being signed until a rethink on public spending halted the scheme. Jobs in construction, at a time when workers were being made redundant from the Ravenscraig steel plant, could have been an important boost to the economic benefits of the scheme, but the required investment structures were not available in the 1990s.

The current deal to finance the M8 includes a bond issue and a loan from the European Investment Bank. The consortium responsible for designing,

Borrowing to invest is only a good strategy if the right investment is made

building and operating the road will recover the funds over 33 years from payments made to it by the Scottish Government. The financing structures for the Queensferry Crossing and the Edinburgh to Glasgow railway also envisage loans paid back in the years ahead.

There is logic in shifting the timing of the payments back, to allow the benefits of the transport investment in the economy to help generate the wealth to service the debt. However, borrowing to invest is only a good strategy if the right investment is made. The economy has changed radically in the last 25 years, so legacy transport projects should not necessarily be the top priorities for this type of investment.

In the 1980s one transport planning controversy was whether to build a dual or single carriageway road to Inverness.

At that time, dual carriageways were being built to similarly remote areas of Italy, Portugal, Spain and France, but the A9 was built as a single carriageway. The next £3bn of road investment planned by the Scottish Government – to dual the A9 – should bring it into line with the rest of Europe.

But playing catch-up is not necessarily the best investment strategy. By the time the A9 is dualled, it is already reasonably clear that the interactions between the road infrastructure and vehicles will be as important as the configuration of the road itself. Lanes may need to be taken out to accommodate new types of technology. Borrowing £3bn for infrastructure that needs a major refit would not be such a good investment.

The future is uncertain. A major problem for governments is that uncertainty and public investment do not go well together. The public does not agree what risks public authorities should take.

Transport Scotland's investment model for the M8 is a good one since the road operator can potentially be allowed to take risks, such as on future technology needs, alongside meeting more certain contractual obligations.

The business models for big projects like Crossrail, HS2 and the Queensferry Crossing attract the headlines. Perhaps it is time to review how bigger, and more expensive, investment challenges than these can be tackled, so that future transport investment capabilities can be available in time, rather than 25 years late like the M8.

Derek Halden is Director of DHC Loop Connections www.dhcl.co.uk and Secretary of the transport think tank www.stsg.org

Coordinating roadworks: how hard can it be?

A new initiative by the Department of Transport may finally come up with a solution to the problem of planning and organising roadworks, says **Steve Gooding**

Picture this: it is a bright, sunny day and you are driving along quite happily, when up ahead you spy the temporary traffic lights and colourful array of cones that identify works in the road.

You stop, and as you wait for the lights to turn green you inevitably find yourself musing on the fact that, aside from you and the motorists in other cars forming a long, orderly queue behind you, there's not a soul to be seen. Not a pickaxe being swung, not the rattle of a pneumatic drill to disturb the birdsong.

And what's worse is that this is not a unique experience – it's not even a unique experience on this stretch of road.

At last the green light signals 'go' and as you pull away there's one thought in your mind: "does it really have to be this way?"

None of us are drivers 24/7 – when we get home we all want the gas, electricity, water and broadband to be on tap, and given the extent to which utility distribution systems lie buried beneath our roads, we know it's inevitable that those roads are going to have to be dug up to repair and renew these networks. The roads themselves need work from time to time to keep them in fine fettle.

The thing is, when we're held up we don't really care whose works they are, and we can't help suspecting, when we see yet another empty worksite, that whoever's responsible could have managed them more efficiently, planned them more effectively, completed them more swiftly and co-ordinated them far better. And that all this could surely be achieved without sending our utility bills and council tax through the roof. After all, how hard can a bit of planning and co-ordination be?

Clearly the answer must be "harder than you'd think", because we've been wrestling with this issue for more years

than I care to remember (and I can remember the cones hotline).

Good news, then, that the folk at the Department for Transport are having another "drains up" look at whether more could be done to improve the streetworks regime. But given the fact that successive governments have tried to address this question – from the New Roads and Streetworks Act in 1991 through the Traffic Management Act of 2005 and on to numerous regulations to allow permits and lane rental schemes to be developed, not to mention several tomes of well-intentioned guidance – given all that, why is it different this time?

Perhaps it's because this time the DfT is focusing on the fact that an effective planning and

Isn't it time we adopted a keyhole surgery approach that avoids post-roadworks patching?

co-ordination system needs accurate and up-to-date information to be logged in a readily accessible format; then the people doing the planning can see each others' plans, and traffic managers can take account of the implications over their network at any one time. Because the world of data and data management has come a very long way since the 1990s. This is the digital age: timely, then, to be revisiting the electronic transfer of notices (EToN) specification to see whether something more user-friendly could be devised.

Turning to the vexed question of co-ordination, undertakers proposing works in the street have long been under a statutory duty to co-operate with the highway authority. But requiring people to do things is rarely as effective as encouraging them to do things which are ultimately in

their own best interests. So it is with businesses, whose chief executives naturally tend to spend their time worrying about their bottom line financial results.

What's needed is some clever thinking to see whether not just the obligations on companies but also the incentives could be better aligned. That's one of the things to emerge from the Staffordshire Connected Roadworks Project – widely referred to as the Heineken Project in homage to the lager commercial of yore, which portrayed numerous workmen taking advantage of the same hole in the road to install and repair their trunking.

There are benefits to be gained, not least from sharing prospective plans far earlier in the process rather than waiting until those plans go firm and thus become incredibly hard to change. But are they large enough financially to provide an incentive for the right behaviour?

How come we're still so ready to break the road surface when alternatives to trenching have been available for years, but cost more? Isn't it time to adopt a "keyhole surgery" approach that would avoid the post-works patching that inevitably results in the potholes that rattle our teeth and tip us from our bicycles?

The DfT team is to be commended for seeking to engage widely with those involved in the planning and execution of streetworks – utilities, contractors and highway authorities – but the conversation needs to involve the utility regulators too if this nut is going to be cracked.

Let's hope they're successful in good time to mark the 20th anniversary of the Heineken ad's first airing in 2018... now wouldn't that be refreshing?

Steve Gooding is director of the RAC Foundation



Steve Gooding: "Incentives as well as obligations are needed"

Brexit and spending will be election dividing lines

The UK's strategy in negotiations to leave the UK will be the dominant theme in the general election, but a number of transport issues can be expected to surface in the debate



Mike Indian: "Evidence suggests rail renationalisation is popular with voters"

This will be an election unlike any other. The decision by Theresa May to call a snap General Election on 8 June may be her most audacious decision since coming to office last July. However, it is one rooted in cold, calculated reasoning. She has a unique opportunity to strengthen her hand both at home and in Brussels, taking advantage of an almost unprecedented honeymoon period.

With the brutal speed at which the British political system can move, the UK has been thrown into its third General Election in seven years. But what does it mean for the transport sector?

Ministers have only a short time in which to agree or abandon remaining bills before Parliament is dissolved on 3 May. With the House of Lords accepting amendments from the House of Commons this week, the Bus Services Bill now only awaits Royal Assent and is expected to become law this week. Metro-mayors, whose elections will still go ahead on 4 May, will welcome the new powers. However, the Vehicle Technology and Aviation Bill will not have any time to progress and will fall. Its provisions on automated vehicles, civil aviation, laser pointers and other elements could still make it into the Conservative manifesto, though.

Another possible manifesto pledge for the Tories, still unfulfilled from 2015, is the commitment to place the National Infrastructure Commission on a statutory footing. Chancellor Philip Hammond sent a clear signal that he intends to keep this legacy of his predecessor, George Osborne, by appointing Lord Adonis and Sir John Armitt to permanent positions to lead it. It would be quite a coup given it was in the 2015 Labour manifesto.

All eyes will be on the Government's Air Quality Plan as

well, which ministers sought to delay beyond the 24 April publication deadline imposed by the High Court. If the court agrees to the Government's application for a delay (the hearing was to take place after *TT* went to press) the proposed new deadline for publication of the draft will be 30 June, making it one of the first items in the in-tray for the incoming government to address.

This election is unusual in recent times to be taking place without the question of airport expansion hanging over it. Last year's decision to provide provisional backing to Heathrow runs contrary to the "no ifs, no buts" of the Conservatives' 2010 manifesto. Ministers have laid the draft National Policy Statement before Parliament and

This poll is unusual in recent times to be taking place without the question of airport expansion hanging over it

with the final vote scheduled for winter this year, the General Election should not affect the timing of this process.

However, that will not prevent the issue being raised on the campaign trail, especially in south-west London. The Liberal Democrats, opposed to expansion at the last election, are looking to retake seats such as Twickenham, and the Richmond Park by-election showed that they are a viable threat. Brexit and Heathrow expansion are two sticks they will use to mercifully beat sitting Conservatives.

Meanwhile, Jeremy Corbyn's Labour Party can be expected to make hay out of its pledge to renationalise the railways. This totemic policy of the left has polling evidence that it is very

popular with the public, including many Conservative voters. It was not for nothing that Mr Corbyn singled out Southern Rail in his first key speech of the campaign on 20 April.

Recent controversy over the awarding of HS2 contracts could see Mr Corbyn wheel out his pledge to commence work on HS3 before any further work north of Birmingham takes place. Transport infrastructure in the South will be well lobbied for as parties will be encouraged by their London MPs to commit to Crossrail 2.

The biggest dividing lines of the campaign will come around cash. While the cut and thrust of debate will centre on Brexit, Philip Hammond and shadow chancellor John McDonnell will trade blows on the merits of the Tories' targeted investment approach versus Labour's commitment to borrow £500bn. Each will argue only their method can deliver the prosperity the UK needs as the next Government steers the country into uncharted waters.

As ever with politics, it all boils down to money.

Mike Indian is a senior political analyst at DeHavilland

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Seamless simplicity

Mobility as a service, which will offer personalised door-to-door travel via a single pricing system and account in a similar way to a mobile phone contract, is about to take off. **George Hazel** introduces the concept, and on the following pages **David Fowler** outlines plans for Helsinki and the West Midlands

Mobility as a Service (MaaS) has emerged over the past two years as the dominant force in mobility development. The concept has disrupted traditional transport thinking and introduced new players into the mobility market from other industrial sectors. MaaS is driven by market forces and advances in technology. People want personalised services because of increased complexity of living and the need to see value in services related to their needs. Advances in smart technology, notably through mobile, are able to provide that personalised service profiled to lifestyle needs and desires.

The combination of market push and smart technology pull is driving the development of MaaS across the world. This has moved mobility provision from an operational model to a service model and that plays into the world of retail, service and ICT companies.

The future of mobility will be focused on personalised mobility pack-

ages matched to the lifestyle needs of people and businesses, much like mobile phone packages of today. These packages will be sold and managed by MaaS service providers, or aggregators, who will know their customers and manage their needs and desires.

Aggregators come between the user and the supplier offering personalised, door-to-door, seamless mobility through one pricing system and account. They form partnerships with suppliers through technical integrators. Companies like AirBnB and Skyscanner are good examples of aggregators. Their aim is to "own" the customer and provide lifestyle services through use of their platform. Mobility is a gateway into lifestyle services and this is a very large new, global market.

The aggregators, or mobility service providers, will potentially be in a powerful position because they will build up an ever-increasing and detailed profile of every customer and will therefore be able to offer personalised services over a wide range of products. They can also shape the market

for public sector bodies like city councils to enable them to hit health, economic or environmental targets.

Many of them operate from an ICT business model rather than a legacy transport operations based model. However, they will need to form partnerships with other companies to provide mobility services throughout the MaaS value chain.

There is a lot of discussion at present about MaaS and the threats and opportunities it brings. Although the concept is understood in principle and there is an acceptance that MaaS is going to happen, at present there is no clear view as to the commercial model to make it happen. The companies and models emerging vary from a new private company in Finland, Maas Global, formed from a number of companies interested in MaaS, through partnership models between the public and private sectors, to a model controlled by the public sector and provided through franchises by private companies, favoured in places such as Sweden.



Dr George Hazel OBE is programme manager of MaaS Scotland



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MaaS is at an early stage of development; there is a lack of examples of any of these models and, therefore, a great need to demonstrate their effectiveness through “phase one” demonstration projects, gaining first mover advantage for those who provide commercial examples.

A major area of debate concerns the management and control of data. Mobility service providers will receive streams of data from all the suppliers in order to provide a seamless, door-to-door service. However, there is nervousness about one company controlling all the data, and hence a number of models are being discussed about how to ensure privacy, security and trust for people and business users and the companies.

The definition of MaaS

The core concept of MaaS is the provision of seamless, door-to-door mobility services profiled to the personal lifestyle needs of each customer through a mobility service provider.

Sampo Heitenan, the chief executive of Maas Global, says: “MaaS brings every kind of transport together into a single, intuitive mobile app. It seamlessly combines transport options from different providers, handling everything from travel planning to payments. Whether you prefer to buy journeys on demand or subscribe to an affordable monthly package, MaaS manages your travel needs in the smartest way possible. MaaS is a hassle-free and environmentally sound alternative to private car ownership. It makes worrying about route planning, parking and car maintenance a thing of the past,

helping you go places more easily and more efficiently than ever before.”

This definition reflects the way MaaS Global is developing MaaS.

Transport Systems Catapult defines MaaS as “a new concept that offers consumers access to a range of vehicle types and journey experiences. MaaS may be perceived by travellers as a ‘better choice’ and may change how we currently travel. In the future the private car may not be perceived as such a popular choice for getting from A to B.”

Frost and Sullivan has defined the mobility systems provider as “an entity, or combination of entities, in the value chain which provides the right combination of various modes of transport to offer an integrated, multi-modal, door-to-door mobility solution, [using] technological expertise, operational excellence, infrastructural advancements and innovative business propositions”.

Although definitions vary, they all share the common thread of a single point of delivery supplying a customer-focused, seamless and valued mobility service.

The development of MaaS

MaaS has developed out of smart mobility, also called intelligent mobility, complete mobility, Total Transport and other similar titles. Over the past 20 to 30 years transport systems have incorporated more and more technology as hardware and software have developed. The main areas of development were in intelligent transport systems and traffic management systems.

This covered areas such as variable message signs, traffic signal networks, smart ticketing and pricing and

vehicle recognition systems. During the 2000s transport systems began to be influenced by other global trends such as personalisation, complexity of lifestyles and the development of the internet and smart infrastructure, notably smartphones.

The impact of these global trends was identified in the Siemens report *Megacity Challenges* in 2006. The report looked at 25 megacities, interviewed 522 city leaders and examined the impact of global trends on five areas of city life – health, water and drainage, safety and security, energy, and transport.

The report coined the term Complete Mobility and showed that future mobility systems needed to be user-focused, seamless and valued by the customer. This is true for developing cities, cities in transition and developed cities.

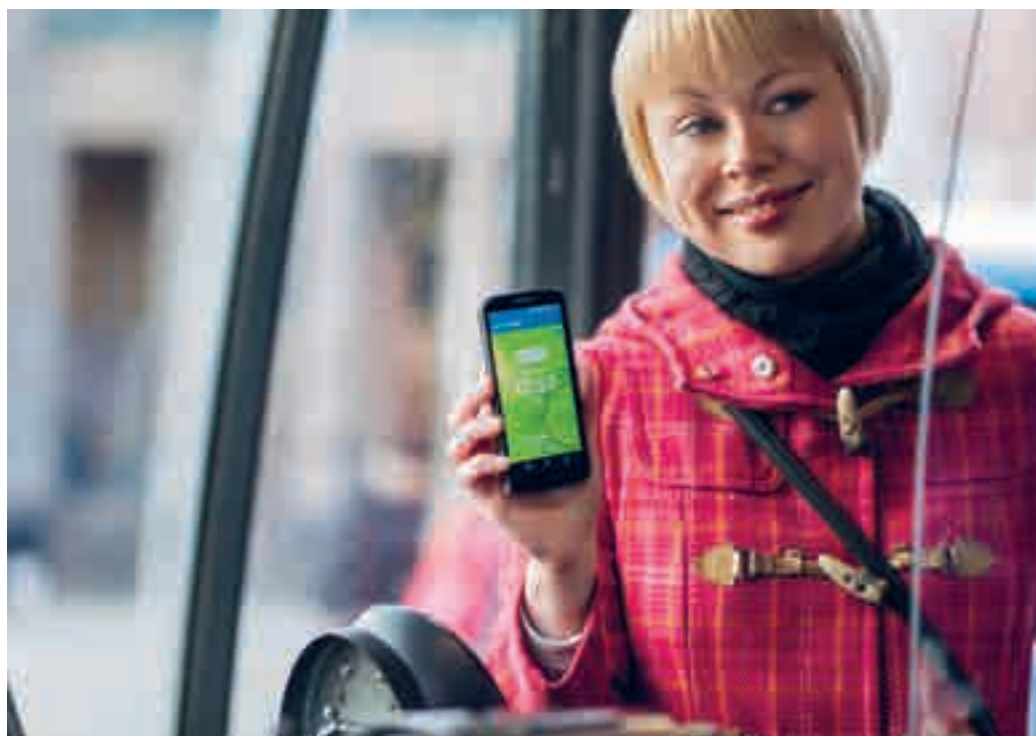
This finding turned the transport world on its head, moving it from being an operations-based business to a service-based business. It changed it from a top-down system of delivery, led by strategic plans and operators, to a bottom-up customer-based service system. This is having a profound effect on future mobility in that it means that non-traditional transport companies see a global market opportunity in providing a personalised, door-to-door mobility service, through creating one platform, one account and one pricing system.

This has led to the growth of aggregators similar to Skyscanner, Airbnb and Trivago. The same process can be seen in other sectors such as energy, where aggregator companies have come between the customer and energy providers. The aggregators, or in the case of MaaS, mobility service providers, are in a powerful position, potentially controlling all the data streams that come from suppliers to the customer. They can offer personalised services, because of their expertise in profiling and incentivisation methods, to the customer but also to regions, cities and event spaces to help achieve strategic targets and performance indicators. They can also offer other value added services, thereby supplying an ever-increasing portfolio of lifestyle services, taking management fees on all transactions and services.

Over the past three years Scottish Enterprise has supported work to develop MaaS in Scotland led by industry. I was appointed smart mobility network integrator for Scotland to build an alliance of companies interested in MaaS partnering with the public sector. The alliance comprised 50 companies who worked together to understand and develop MaaS.

Scottish Enterprise has supported the alliance for a further year

Previous page: projects being developed by MaaS Scotland include one to test the applicability of MaaS to rural and island communities Below: Helsinki is leading the way in introducing MaaS



Upwardly mobile

Following live trials, MaaS is about to be opened up to a wider audience in Helsinki. The West Midlands is following close behind

under a hosting arrangement with Technology Scotland in partnership with ScotlandIS. The alliance is now called MaaS Scotland and is to launch a website and details of how to join over the next few weeks. I have been appointed programme manager for MaaS Scotland for the next year, working with the staff of Technology Scotland and ScotlandIS.

MaaS Scotland has established links with other MaaS alliances nationally and internationally, as it will take international collaboration to develop MaaS across international boundaries. Over the past three years, through the development of MaaS Scotland and discussions with other MaaS networks in Europe and the US, Scotland has become recognised as one of the leading locations for the development of MaaS internationally.

MaaS Scotland is developing seven MaaS phase one projects in Scotland in partnership with local councils and Transport Scotland. These include testing the applicability of MaaS in rural and island communities as well as urban areas. MaaS Scotland is also in discussions with the Knowledge Transfer Network and Transport Systems Catapult, MaaS Alliance Europe, Travel Spirit (a collaborative platform for open source projects supporting MaaS) and Transport for West Midlands/Whim. MaaS Scotland is keen to form partnerships with other MaaS networks to develop and deliver MaaS.

In my experience, arising from working on the development of MaaS over the past 10 years, there are a number of key points that need to be made:

- MaaS must be industry led in partnership with the public sector.
- It must be built on partnerships between companies, the public sector and universities across a number of industry segments, notably transport/mobility, energy and ICT.
- It must work with other with other MaaS networks nationally in the UK and internationally.
- It must develop and deliver MaaS phase one projects to show how MaaS works commercially and addresses social and environmental objectives.
- An investment fund needs to be created jointly by the public and private sector, to kick-start these phase one projects.
- A data management system needs to be developed. This system eventually needs to integrate with other MaaS ecosystems, rather like mobile roaming.

MaaS Scotland is hosted by Technology Scotland partnering with ScotlandIS
Website: www.maas-scotland.com
Email: info@maas-scotland.com

People's mobility needs are complex. In the city you may have a choice of bus, tram, train, or increasingly bike hire, but can you pay for them all together? If you feel like a ride into the country there may be no alternative to a car. And how easy is planning a journey? Can you be sure you won't run into unexpected disruption?

Mobility as a service aims to provide answers to these questions, by bringing all forms of transport under a single umbrella, where users can plan and pay for them all together.

Ultimately you'd pay a single monthly subscription, in a similar way to a mobile phone contract, entitling you to a given amount of transport tailored to your needs.

This may seem like a remote concept but it's nearer than you may think. A live trial is under way in Helsinki; another is due to go live in the West Midlands imminently. Earlier this month it was announced that a trial would start in Amsterdam in the autumn, all using the Whim app, developed by Maas Global.

Mobility as a service is still a relatively new concept with differing interpretations of what it entails.

Cubic Transportation Systems strategy director Andy Taylor thinks of MaaS as having two essential components – providing transport between two locations, combining public and private transportation services and payment for all of them into a single solution; with a simple planning app bringing all modes together with real time data.

"Once you have those two platforms and you give people the ability to do seamless journey planning, they'll have more confidence in transport as a whole. When you build that trust you can start to package services and move to the subscription model," he says.

Sampo Hietanen, founder and chief executive of MaaS Global, says "I'd say MaaS aims to answer the question: what would be as desirable as owning your own car, from an individual perspective? MaaS should supply the same service promise as the car, the same freedom of mobility without the hassle of car ownership."

Mr Taylor says the core components of MaaS already exist. TfL and Cubic's contactless payment system is "an ideal platform" with potential to

develop into a single payment platform for all modes. The Citymapper app is a complete guide to journey planning; what is missing is a link between planning and booking. The other missing link is a trip planning tool that uses real-time data – currently journey planners don't generally provide up to date information about disruption and bus diversions, or tell you if a bus stop is closed.

"As soon as people start doubting the information you've lost the confidence," Mr Taylor says. "You need the two platforms of seamless planning and booking plus payment to be able to push people towards the subscription model and stop using their own vehicles."

He adds that demographics are also pushing things towards the subscription models. "Millennials are less likely to own a car or take driving lessons." They also feel less need for ownership, preferring services such as Netflix and Spotify.

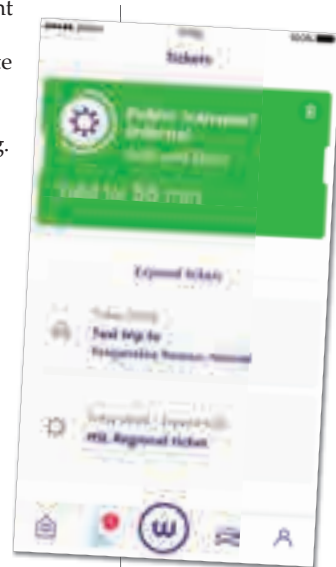
For transport to adopt a similar service mentality, simplicity is key. "What we've seen in London, San Francisco and Chicago is when you bring multiple modes into a single payment platform there's greater uptake because you've simplified the choice."

Similarly, TfL's pay as you go capping gives customers confidence that "they're on your side". It sends the message "we want you to use us as much as you can so we'll make it as easy as we can."

Mr Hietanen says that he had been developing the concept of mobility as a service for over 10 years but didn't think it would be possible for it to be adopted before 2020. "Somehow the concept started flying much faster than we expected," he says. "People wanted to support it."

MaaS Global looked for partners for an operational trial about a year ago "to see if we could integrate services, including payment in the background."

Helsinki was keen to participate. A trial began last June, with paying customers since October. It covers public transport including buses, commuter trains, trams, metro, the



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Suomenlinna ferry and taxis; Whim-car, a daily rental car scheme; and a “more typical” car rental and car share service, supplied by Sixt. Bike hire is to be added when the bike season starts again in the Helsinki region in May.

The trial has so far been limited to around 100 users. “It was all about experience, to make sure we can manage and have the pricing correct,” says Mr Hietanen. Another 2,000 people are on the waiting list to join.

“The app works nicely,” he says, but there have been problems on the supply side. Specifically, 1,500 taxis have been signed up (Whim links to a central dispatching system to book them), but this is not considered enough. “If you order a taxi and there’s no availability, that’s no good if you’ve paid a monthly fee,” he says. MaaS Global is working on recruiting another thousand taxis before “opening the floodgates” to more users, which it is hoped could be this month. He notes that Whim users spend about €100 more on taxis every month than they did previously.

He praises the support of HSL, Helsinki’s equivalent of Transport for London, for the project. Also supporting the uptake of MaaS is new legislation due to take effect on 1 January next year requiring transport operators to provide an application program interface (API) covering ticketing, payment, and service data, open to third party service providers.

The TfWM implementation will soon overtake Helsinki simply because of the size of the population, Mr Hietanen predicts.



The trial came about because of the interest of TfWM executives in supporting the concept and the fact that it could be done without a large budget. MaaS Global was also attracted by the strong relationship between TfGM and the bus operators, and strong political support.

“We’re bringing together all public and private transport through one mobile phone app,” says head of smart transport Chris Lane. TfWM wanted to answer the question: “Can MaaS mean that you’ll be able to do without a private car?”

The project will cover bus, train, tram, car share, taxis and car hire. TfWM used its influence to help gain the participation of important partners – National Express subsidiary Travel West Midlands for bus, Enterprise for car hire (the company is developing a car share business) and Silver Rail to provide the ability to book any rail ticket.

As in Helsinki, users will be able to use the Whim app in two ways – to plan a journey in advance, or to set off and make decisions en route. Pay as you go and subscription will be available.

Wherever available mobile ticketing will be used, to keep everything “in the phone”, says Mr Lane. By coincidence, Travel West Midlands is introducing mobile ticketing at the moment, using Masabi’s solution which allows the ticket to be displayed as either an image of a ticket or a bar code.

MaaS Global will enter commercial agreements with the transport operators to provide their services. Users will pay for travel via Whim, and MaaS Global will then distribute revenue to the operators.

An advantage will be the convenience of bringing together private taxis as well as the usual forms of public transport. This could reinforce an already observed trend. “People are starting to take short taxi jour-

neys to Metro stops,” says Mr Lane. “We think Whim might encourage using public transport more: once you’re in a car you might think, instead of driving to a station, I might as well drive all the way. We’re in this to find out whether it works and to understand what the public wants.”

Currently commercial contracts between MaaS Global and the other partners are well on the way to being finalised, working towards going live, possibly as soon as May. Initially MaaS Global will recruit users. A limited target of 500 users in the first year has been agreed, although if the system is working successfully it will be possible to increase this with the partners’ agreement. Travel West Midlands believes Whim will attract people who are not currently bus users, and if this is the case is likely to support increasing the numbers.

TfWM will study a control group of about 50 people to get an indication of how different demographic groups view MaaS. Will it be of interest to people who are already concessionary travel pass holders, for example? It will work with Transport Systems Catapult, acting as an adviser and “critical friend”, and with a university to analyse the data.

A year from now Mr Lane says TfWM “would like to see MaaS Global being successful and starting to increase numbers”.

Mr Hietanen says that if it is successful in the West Midlands, MaaS Global would like to expand elsewhere in the UK. TfL has been “extremely open” to the concept, he says, but adds that so does the UK in general.

In summary, he says, “the UK seems quite ready from many perspectives. The players seem quite open and keen to get business. We’re hoping to make the whole UK an example of the alternative to car ownership.”

MaaS movement

Interest in mobility as a service is increasing on several fronts.

Cubic has been appointed system integrator by Transport for Greater Manchester for its Optis (Optimised Public Transport Integration System) project to create a route planning system using real-time data covering all modes. It is working with partners Cloud Amber (management of static and real-time travel information), SilverRail (advanced journey planning) and MXData (app development and user interface).

The MaaS Alliance has been formed by organisations with an interest in MaaS to clarify and focus the concept, and how to achieve it, in Europe and out to the rest of the world. It is not a standards body, but nevertheless aims to make sure that when MaaS solutions are developed they will be capable of being used in Barcelona as easily as London. Its board of directors includes Cubic’s Andy Taylor and MaaS Global’s Sampo Hietanen.

ITS UK has also set up a working group to act as a focus for MaaS in the UK.

Initiatives around the world include a trial due to start in April in New South Wales of an app covering payment for taxis. In Chicago, the Divvy bike share scheme is being added to Cubic’s Ventra system (Chicago’s equivalent of Oyster) – an early example of integrating a private organisation with a public transport system.



Imagination and ambition

What will the first passengers think when they board HS2? It should be an experience to instil a sense of national achievement, with the passenger at its heart. A panel of industry leaders considered what was needed to achieve that goal

HS2 has the ability to fire the public's imagination. It has the potential to match the 2012 Olympics in the way it inspires national pride.

Passengers' expectations for the rolling stock will be high. Beyond getting the basics right, the rolling stock needs to meet the requirements of a wide range of passengers, which will need innovation.

Meeting the expectations of HS2's prospective passengers will require some trade-offs and flexibility, balanced against affordability. It will be important that the procurement process reflects this.

This is the distilled wisdom from a cross-section of transport industry leaders brought together by Siemens Rail Systems to explore the question of putting the passenger at the heart of rolling stock for High Speed 2. A round table discussion was held, organised and chaired by *Transport Times* and hosted at KPMG. The purpose was to gather views from a range of experts on putting the passenger at the centre of the design process for HS2 rolling stock.

Phase one of High Speed 2, which will connect London to the West Midlands, recently gained Royal Assent. Preparatory work is already under way to allow the main construction contracts to start early next year, and procurement of rolling stock is due to begin soon with the issue of the prequalification questionnaire. The route will initially be operated by the winner of the West Coast Partnership franchise.

Siemens' Eurostar trains are part of its fourth generation of high speed trains, designed and built for railways around the world. Even with this experience, the company felt that for HS2 it was vital to see beyond the engineering project and focus even more on the experience for passengers. It sought the views of the expert panel on what this means for rolling stock design.

Passenger expectations

Transport Focus has already undertaken extensive work for HS2 Ltd on what passengers expect from the service. In addition to its regular work in producing the National Train Passenger Survey, with HS2 Ltd it convened a group

of people, the Customer Community, to explore their expectations and attitudes. Transport Focus chief executive Anthony Smith explained: "[The Customer Community] thought HS2 was fantastic. This is a potential Olympic moment, Britain at its absolute best; they just loved it. Positive change, not shackled to the Victorian heritage. And they really liked the genuine interest that HS2 was displaying in customers."

The group was asked to address various aspects of the new railway, such as luggage, ticketing and rolling stock, with the aim of getting a sense of what will be important in the future.

The key expectations were: HS2 trains and services would be a national asset and a source of pride for Britain; a "personalised experience" with customer services on a par with retail and airlines; value for money; and the ability to plan a journey easily from door to door using a range of technology.

The group felt there should be more generous provision for luggage, which should be easily accessible and lockable. The group favoured carriages for different needs, such as for business or people with chil-

We've got a chance to design something from scratch with intense attention to detail about how passengers behave

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dren, but not a conventional first class. The prospective passengers would also like at-seat information about the journey on-screen, as well as good quality catering.

A key theme was simplicity of using the new railway, with technology as an enabler but not a replacement for good customer care staff. It was assumed that the important basics such as punctuality, reliability, value for money and information during disruption would be there at a high standard as a matter of course.

"For the first time ever we've got a real chance to design something from scratch with that intense obsessive attention to detail about the way that passengers behave and want to be treated. The design of HS2 could make it a fabulous, seamless, world-class experience," said Mr Smith.

Design vision

Prof Sadie Morgan, chair of the independent design panel for HS2, spoke about design ethos and vision. She said that she saw HS2 as "beautifully ordinary": "It will be world class because as a country we have the ability to design, build and deliver on a world stage. It should be simple and extraordinary but not outwardly luxurious."

It was also strongly felt that HS2's design needed to reflect Britishness. Jeremy White, head of transport at design consultant Seymourpowell, said: "One of the things that's really important is that people feel ownership of HS2. We are British and we have a particular sensibility, a particular style, expectation from service and so on. It needs to reflect our cultural spirit."

Siemens Rail Systems sales director Phil Heathcote added: "Maybe the

comparator is the opening ceremony to the Olympics. Danny Boyle hit a sense of Britishness that wasn't glitzy, wasn't blingy, it was very British and we all related to it."

It was stressed that good design need not add to the cost of the project. Designers were problem-solvers, and they needed to be brought in as early as possible to work most effectively.

Prof Morgan said it was vital that there was a clear design vision which should permeate through all organisations involved in the project. To help construction bidders, the design panel had commissioned specimen designs as part of the process of procurement and dialogue. A similar approach could be taken with the rolling stock procurement.

Inclusion & accessibility

HS2 will need to cater for a wide range of people of different ages and mobility and different journey purposes.

In particular HS2 provides an opportunity to rethink how rolling stock design works for passengers with disabilities. Consultant Ann Frye, who specialises in the transport needs of disabled and older people, said there is a tendency in modern rolling stock to provide only the minimum requirements in spaces for wheelchairs and accessible toilets.

She said: "Wheelchair users need an accessible toilet but they don't necessarily want to sit right next to it. A lot of people would appreciate an environment in which they feel more comfortable and in which they could have flexibility to move. At the moment most wheelchair users on trains in this country feel that they are bundled in with the space for luggage and sometimes bikes. As long as you think any space where if

there's not a wheelchair user it's OK for luggage, it's not good design."

It was also important for the panel to think beyond disability as only meaning wheelchair users. For example consideration should also be given to the needs of passengers with autism or visual impairment. And for older people and people with disabilities, the difficulty of transferring between HS2 and other transport modes would significantly affect their perception of the journey.



Clockwise from top: Siemens has designed four generations of high speed train including the E320 Eurostar and ICE4; the ICE4 features wheelchair lifts and a bike store; ease of interchange is an important consideration; Eurostar interior



Carriage layout

There appeared to be general support for the idea that the interior should not be designed according to the usual standard and first class model. Operators would be keen to explore innovative ideas for passenger accommodation, but were concerned that, when the rolling stock specification was issued, there would not be the flexibility to make this possible.

There were also questions about how luggage should be dealt with.



It should be simple and extraordinary but not outwardly luxurious

Some of the experts consulted were in favour of the idea that luggage should be put somewhere separate from the main passenger accommodation. However, others were concerned that this would lead to long station dwell times if people needed to walk the length of a 400m train to collect luggage, and there could also be security concerns.

Standing room only?

With a 40-minute journey time between London and Birmingham, high speed services will attract commuters. Mr Smith raised the question of whether people should be allowed to stand at peak times, or whether everyone would be expected to have a reserved seat. In the latter case this could mean people being unable to catch the train they want.

Reservation-only is not currently permitted on UK franchises, but there was a view among the experts that HS2 should not automatically adopt the existing model but start from a clean sheet, as far as possible.

However, arguments were advanced against a reservation-only approach. The experience of other countries had depended on the extent of change from the services that pre-dated high speed. In France and Spain high speed services were so much faster than what preceded them that they could be relaunched using a reservation-only model. In Germany there was a much steadier or gradual evolution to higher speeds, and reservation-only had proved unacceptable. The UK was considered to be much closer to the German model.

Keeping up to date

HS2 trains are likely to have a long lifespan, and it was considered that they should be designed to have a

flexible and adaptable interior to allow a response to changing passenger needs. In aviation, passenger jets are designed to allow the entire interior to be completely replaced at intervals. Provision for refurbishment in trains is generally more limited, and there was a feeling that train design should become more like aircraft design in this respect.

Station design

There was a strong view that journeys should be considered as a whole because passengers' perception of a journey is affected by experiences beyond the train itself. Station design is therefore an important factor. This would include aspects such as how long it took to make an interchange, or if assistance requested by a person with a disability failed to appear.

Prospective operators were keen to know at what point HS2 station design became locked in. Ms Morgan said that each station was different in its operational and capacity requirements and each would have to be thought about differently. In each case some aspects would be open to change or influence and others would be fixed by the time an operator was involved. It was not possible to generalise.

Ms Frye said: "If you look at air travel, almost all the problems and people's perceptions of the journey are what happens at the airport, not what happens on board the aircraft. They blame the airline for the way the whole system works. The airport environment colours their picture of the journey, and I suspect it will be the same with this."

Digital technology

Digital technology provides an opportunity to transform passen-

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Any space where, if there's not a wheelchair user, it can be used for luggage is not good design



HS2 independent design panel chair Sadie Morgan



gers' experience on HS2. TfL has led in the introduction of such technology, notably smart ticketing.

The Oyster card and now contactless payment have reduced the cost of fare collection; smart ticketing generally makes the system easier to use and hence helps to increase patronage.

The panel was keen that smart ticketing for HS2 was taken to the next level. For example there could be immediate refunds or retrospective billing, whereby the smartcard or even your mobile phone is able to register if you have had to stand for the whole journey and charges a lower fare. In addition the smart ticketing approach should allow multimodal journeys.

TfL has also pioneered the provision of free, open data. TfL's data on the location of its buses and other services was made freely available so that third party app developers could provide the information to passengers in multiple ways, at virtually no cost to TfL. HS2 could consider a similar approach.

It was noted that there may always be a generation of passengers who feel uncomfortable with technology, and therefore it was impor-

tant that HS2 still provides staff around the station to offer help.

"That's what we know people value: a human presence. They need to be in a public place and to be really helpful to provide reassurance, particularly at times of disruption," said Vernon Everitt, TfL managing director for customers, communication & technology.

Specification

There was a strong consensus among the expert panel that the way in which HS2 Ltd specifies the rolling stock will be crucial. There was general concern that, to strengthen the business case, there will be a desire to pack in as many seats as possible, curtailing scope for creativity.

Once the specification is issued, train manufacturers bidding for the contract will have to follow it if they want to win the contract, whether they agree with it or not.

"We can talk about beautiful design, or extra luggage space or tables. When the business case comes in, you've got to have x number of seats on this train. That's the constant tension," said Virgin Trains director of customer, operations and safety Peter Broadley.

Operators would like to be given a free hand in the West Coast Partnership franchise bid, which will combine a re-let of the existing West Coast franchise with the appointment of the operator for the initial years of HS2, to specify the interior of a train as they saw fit.

Examples from aviation supported this view. Emirates devoted a large area of business class on its Airbus A380s to a bar, which was costly but showed it had decided to prioritise quality of service. Similarly, British Airways had decided a number of years ago to reduce seat density in business class in order to introduce lie-flat beds. It took a much larger share of the market, to the extent that its competitors had to follow suit.

Procurement timing

Another difficulty identified was the relative timing of the procurement processes for the rolling stock and for the West Coast Partnership franchise. The intention in the franchise process is to get the future operator of the high speed franchise on board early. The invitation to tender will be issued late this year, with the franchise due to start in April 2019. But there was concern that the "shadow" high speed operator would not be selected in time to have an input into the train procurement, for which prequalification is due to start soon, with an invitation to tender issued next year and contract award in 2019.

Unique opportunity

Overall, there was a positive feeling that designing a railway from scratch presents unique opportunity to get things right, and to be ambitious to make a huge improvement for rail passengers. For the rolling stock this means there needs to be a greater focus on accessibility for older and disabled passengers, and on the use of digital technologies. There should also be flexibility in the rolling stock design, to allow the interior to be completely replaced or upgraded at intervals. Procurement processes will need to be designed to encourage innovation; this will be constrained or stifled if the specification is too prescriptive. Two particularly difficult questions will be seating capacity and luggage space.

Ultimately, passengers' experiences of HS2 will depend on the whole project, including stations, ticketing, information, and the route alignment. Every organisation involved in the project will need to pay close attention to passengers' needs.

Prof Morgan concluded: "There's extraordinary talent within the [rolling stock] industry, there's huge amounts of innovation. If it's HS2's ambition to let you use that, then there has to be the mechanism to make that happen."



Step by step

Last year Transport for the North said it was looking for quick wins in smart ticketing over the north of England. **David Fowler** finds out how it's doing

For passengers in the North, tangible progress in smart ticketing and information should soon be evident.

Last year Transport for the North revealed a plan in three phases. The first two, smart on rail and the provision of better and more comprehensive fare and service information, were considered potential quick wins. Progress towards these should be visible in six months to a year. The third, longer-term aim was for the widespread introduction of contactless pay as you go ticketing on bus, light rail and local rail services around the major cities. All three have been characterised by close cooperation between TfN, the Department for Transport, operators, local transport authorities and organisations such as Traveline.

The aim is to bring about "a step change over as much of the North as we can as quickly as possible," says TfN integrated and smart travel

programme director Alistair Richards.

The outline business case for the first phase was submitted to the DfT late last year and approved in March; the full business case is expected to follow in May, which would pave the way for contracts to be let. An outline business case for phase two is on track for submission by June, and for phase three in the autumn.

Phase one will introduce smart season tickets and flexible carnets on rail services. Mr Richards says of the business case: "At the time it was submitted the secretary of state was contemplating a national rail smart initiative which had a lot in common with our plans for phase one. Discussions followed to make sure that what we were doing aligned with his ambitions to have smart ticketing on rail by the end of 2018." Heads of terms have now been signed with the DfT so that TfN will lead on this with Northern Rail, TransPennine Express and

Merseyrail, introducing smart season tickets on all routes and flexible carnets on selected routes on rail services.

John Henkel, TfN executive sponsor for integrated and smart travel, says: "This is not a distant programme: we're in the vanguard. We can lead in the North on achieving the secretary of state's national ambitions."

TfN is working closely with the DfT and with the train operating companies, whose representatives have been seconded on to the project team. Ultimately the train operators will enter into contracts with suppliers and are currently gathering finalised offers. These will feed into the full business case, to be submitted in mid to late May.

"There's been very constructive collaboration between TfN, the DfT, Rail North, Merseytravel, [responsible for the Merseyrail concession], the train operators, and the supply base," says Mr Henkel. "We wouldn't have got where we have without it."

Smart season tickets will be introduced on rail services in the North

Dealing with multiple cities adds to the complexity, but we will build the system incrementally

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Smart season tickets and carnets will be introduced initially on routes with gatelines at main stations, with validators to be installed at smaller stations. The forthcoming full business case, once approved, will allow agreements with the train operators, who will then proceed to procurement, with TfN providing funding oversight and support during the implementation phase.

It was thought preferable for the train operators to procure the necessary equipment because they already had relationships with smart ticketing suppliers, and because some of the requirements dovetailed with existing franchise commitments. For example, Northern is buying new ticket machines which will be capable of selling ITSO products.

"If TfN handled the procurement centrally there could be some benefits but you would lose ownership and buy-in from the operators," says Mr Richards. Although in theory there is a risk that different operators will buy incompatible systems, in practice they will all have to be able to communicate with the national Rail Delivery Group back office host operating system [HOPS]."

The second quick win concerns information, aiming to fulfil the needs of passengers for better availability of information about fares and choice of services before they travel, especially in the bus sector. Currently bus operators' websites are passengers' main source of fare information.



"In phase two we're trying to improve this, working with operators and partners such as Traveline to improve the availability of fare information and on disruption," says Mr Richards. Initially this will be planned disruption, such as changes to services at Christmas, which are not usually very well publicised.

The aim is to supply the information through existing channels like Traveline and third party providers of apps. "The services they can provide is only as good as the information," says Mr Richards. "Working with operators and partners like Traveline, we're trying to plug the gaps and make more comprehensive information available."

Mr Henkel adds that like phase one, the aims are closely aligned with government policy, as expressed in the Bus Services Bill. "The bill provides the tools to allow us to move quickly," he says.

The outline business case is being finalised for submission to the DfT by June, so this phase is running about six months behind phase one, with a target for implementation to begin in early 2018. Initially the scheme will be piloted with a few operators, adding others in stages, resulting in "increasingly rich data being provided by existing information providers".

Phase three is the highest profile and most ambitious part of the programme. The aim is "to offer people what they have in London – contactless bank card payment as pay as you

go with capping", says Mr Richards. "We'll be offering the ability to travel and being charged a fair price calculated at the end of the day."

This will also bring commuter rail travel across the North to the same level as existing smart city schemes on bus, effectively creating multi-modal, multi-operator ticketing.

To achieve this TfN is seeking to develop "a back office engine that is media agnostic". Initially it will allow turn up and go travel with contactless EMV, later adding ITSO smartcard as a token or host card emulation (in which a smartphone performs the functions of a smartcard) and wearable devices – "anything that can interact with the devices on the infrastructure such as ticket machines on buses, platform validators and so on", says Mr Richards.

Mr Henkel adds: "Where possible it will allow customers to provide the media they already have," – hence the priority for EMV contactless cards and smartphones, because these do not require the customer to pre-register and set up an account or payment mandate, with ITSO an option for people without a contactless card or smartphone.

TfN is collaborating not just with the four big operators in the region but also National Express/Travel West Midlands because of the desirability of making the system available nationally. So the Confederation of Passenger Transport and Association of Local Bus Managers are also having an input in developing the requirements.



"We're seeking as broad an input into the requirements as possible from potential operators," says Mr Richards.

An outline business case is being developed in parallel and is expected to be ready by autumn, which when approved will allow tenders for the system to be obtained. But a "market-sounding exercise" will take place before that, in late May or June, "to get a better, updated understanding of what the market is able to provide".

There have already been approaches from interested suppliers which either already work in this area or are interested in expanding into it.

"A year or two ago there wouldn't have been such a healthy market. Now there's good, viable competition," says Mr Henkel.

The project is complex not just because of the need to cover many centres of population but also because passengers have a variety of needs.

"We're intending to develop the system for bus and light rail in the first instance – this works well for the city regions," says Mr Richards, "and then add in flows into cities on rail." In a similar way to the carnet proposals, this will happen first on routes where there are gates or validators at each end, gradually broadening the coverage as the infrastructure becomes available.

"Dealing with multiple cities adds to the complexity but we will build the system incrementally, not rushing to do everything on day one," Mr Richards says.

Mr Henkel pays tribute to Transport for London, which has been "a global trailblazer" for contactless ticketing, and has shared its experience and provided peer reviews and other support. He adds that there has been "unprecedented buy-in" from bus companies. "I've never seen such a collective will to make this happen," he says. "There's a shared recognition that this can't be done without working together."

A basic requirement is that it should be possible for any operator to have access to the back office. TfN is engaging with smaller operators through CPT and the Association of Local Bus Managers, and in parallel with its market engagement exercise in May will also be running workshops for the wider operator base to discuss its thoughts about how it sees the system working. "We'd like feedback from as many operators as possible," Mr Richards says. TfN will also be engaging with the ticketing companies.

The intention is that access to the back office will be accessible by bus companies nationally, with the potentially to achieve economies of scale in transaction costs.

Early 2019 is the target date for initial implementation. The focus will be on areas where most travellers are, and so



is likely to be one or more city-regions, initially on bus and light rail. Ultimately the system would be extended to commuter rail. Mr Henkel points out that for this phase not only is the back office critical, but also the provision of card readers in the field. "It depends on everything else being ready," he says.

At the same time he recognises: "Operators and local transport authority partners have strong ambitions and we will do our best to support them."

The major cities of the region already have multi-operator or multi-mode tickets, often introduced under the auspices of the passenger transport executives. This will provide the back office with a comparison or benchmark for what the customer would have spent if they'd bought a ticket for a day's worth of travel in advance. The back office will also compare whether a return (where available) would have been cheaper than two singles – "so the customer doesn't have to worry about what to buy".

The intention is that capping over longer distance, inter-city journeys will be brought into the mix later.

"Step by step, not big bang – that's the correct route," says Mr Henkel. But within two years, passengers can expect to see the benefit of a significant number of those steps.

Clockwise from left: Phase two will improve fare and service information, especially on bus; phase three will offer contactless pay as you go with capping, starting on bus and light rail; TransPennine Express, Merseyrail and Northern will get smart season tickets in phase one



I've never seen such a collective will to make this happen



While you were sleeping...

Francis Paonessa, head of Network Rail's infrastructure projects division, manages some of the UK's largest construction projects – on top of a working railway. **Jeanette Bowden** met him

Last year we reduced possession overrun delay minutes by 65%

It is a typically British attribute to be self-deprecating but, when it comes to rail services, there is a habit of being critical to the point of oblivion to some of the things the industry actually does extremely well.

Network Rail's Infrastructure Projects division is a case in point. When things are going well, on time and on schedule – which is the vast majority of the time – it is taken for granted. The only glimpse of a bigger picture happens when things go wrong, or run late, which is far less common than might be expected.

Given the scale and complexity of modernising a Victorian network while continuing to operate one of the most intensively used railways in Europe, it is astonishing that major projects such as Crossrail and Thameslink over-ground works, the Northern Hub, Manchester's Ordsall Chord and numerous electrification projects happen at all.

Researching the division in preparation for interviewing Francis Paonessa, managing director of Infrastructure

Projects, I was taken aback by the extent of its operations. As well as modernising track, carrying out electrification programmes and undertaking major route and station upgrades, Infrastructure Projects is also called on to rectify some of the chaos wreaked by increasingly volatile climate conditions. Repairs to the Dawlish and – more recently – Dover seawalls are examples of the "orange army's" work.

All this is taking place against a backdrop of passenger numbers having doubled in the last 20 years and being set to double again in the next 25. And this is without touching on freight, another growing sector.

One of the reasons that Infrastructure Projects' work has such a low profile is that its whole virtue is that much of it takes place while most people are sleeping. To keep the railways operating effectively during peak times, much of the division's work occurs at night, at weekends, and during public holiday periods. The flip side of this is that when overruns occur, their impact

happens noticeably and publicly, as at Christmas 2014, with frustrated commuters expressing their anger to the nation's watching media at Finsbury Park.

Network Rail itself acknowledged that there were aspects of its operation it needed to manage better. Following recommendations from the Hendy Report and the Shaw review, and led since 2014 by chief executive Mark Carne, the organisation is keen to iron out such flaws and has begun implementing a number of changes.

Francis Paonessa, who joined Network Rail in the same year as Mr Carne, explains some of the work that has been carried out over the last 18 months to reform and improve the way infrastructure projects are undertaken: "Mark Carne has driven the business towards a more devolved and customer-focused structure, offering national support to the routes. We in Infrastructure Projects have restructured to reflect the same matrix organisation, resulting in eight delivery teams, supported by five national functions.

This allows us to provide the correct level of assurance and governance for the scale of business that we have and allows sharing of best practice across regions and delivery programmes."

He adds: "We have also introduced an improvement plan to address identified shortcomings in our delivery processes, complemented by a formal peer review process that has been well received by external stakeholders, including the Office of Rail and Road."

The results of this can be seen through the dramatic reductions in possession overrun delay minutes. Mr Paonessa explains: "We have focused on how we can mitigate project overruns, as this is crucial for our customers in returning the railway to its working timetable. Last year we reduced possession overrun delay minutes by 65% on the year before." The figure, well over 100,000 minutes for the two preceding years, was brought down to about 45,000.

"For 2016 we matched that performance, bar the fact that the single overrun on West Coast at Christmas (for work on two bridges) pushed us over target. Now we are down at the number of minutes where a single incident can have a dramatic impact."

As a result of lessons learned from Christmas 2014, the way in which projects are organised within possessions has been completely reworked, with a focus on minimising disruption to the travelling public. Mr Paonessa says: "We have put in place a more structured and rigorous process, completely integrated across the business, to make sure we are putting the customer first. We look at the train operators' operations and their contingency plans and seek ways to make our project contingency plans match theirs, so that we minimise any potential (overrun) impact to the passenger."

He adds that last Christmas was a good example: "Although there was an overrun on West Coast, the impact to passengers was mini-

mised by close working with the route and train operators. Basically, we kept passengers moving."

As well as having to complete works in a predetermined and inalterable period, Infrastructure Projects faces the added obstacle of having to plough on regardless in highly unpredictable weather. Last December was particularly severe. He says: "Over Christmas, the weather was appalling. It started with high winds, with freezing fog in the middle and ended with torrential rain. Yet, despite being the biggest Christmas ever for Infrastructure Projects – which incorporated the largest signalling commission ever undertaken in the UK – it was extremely successful."

I pose the question that if devolution is working well, why not take that a stage further and devolve full responsibility – including for infrastructure projects – to a route level. According to Mr Paonessa, there are three main reasons: first, economy of scale; second, consistent sharing of best practice. The third and, in his view, most important reason is "where you are accessing limited specialist supplier resources you need to have a national procurement strategy that balances priorities in a way that would be unworkable if devolved into the eight main regional areas". He uses signalling as an example: "You wouldn't want to arrive at a first-come, first-served basis, or find yourself held hostage on price by trying to use the last available supplier left in the UK. We frequently use up all UK rail-specific capacity, and only by looking in an integrated way can you come up with a strategy, procure the materials and deliver the programme. With this approach we can ensure that the regional requirements are coordinated and prioritised in a way that serves the network and its customers as a whole."

Infrastructure Projects is keen to look after its suppliers and has been responsible for driving some industry-leading best practice, introducing charters that,

Great Western was an example of dates and costs being committed when the project hadn't been fully worked up



for example, assure 21-day payment terms. Infrastructure Projects uses around 60 principal contractors, but also supports a significant number of subcontractors, with a weekly project spend of £110m, "the equivalent of building an Olympic stadium every five weeks on the operational railway".

Furthermore, although the UK operates the safest railway in Europe, a drive to improve safety in all areas continues. Staff lost time accidents, for example, were reduced by 26% in 2015 and by 16% in 2016.

As Mr Paonessa describes the number of different inputs and interfaces associated with upgrades on the railway, a further reason for centralised coordination becomes evident. With Network Rail's safety directorate setting the overall standards for the railway, the DfT defining the main investment programme required through the five-yearly high level output statement process and Network Rail's route asset management teams defining more specific localised requirements, Infrastructure Projects has an important coordinating role in integrating these needs so that the work is carried out across the country in the most effective way.

Mr Paonessa puts this into context with some interesting statistics. Infrastructure Projects is one of the largest infrastructure companies in Europe and responsible for 22% of all UK infrastructure construction spending, or 4% of the overall UK construction market itself, including housebuilding and all general construction projects. And excluding centrally procured materials, "85% of work is competed for, so drives good value for money". The materials used by Infrastructure Projects, including steel and ballast for track, are bought in Britain and benefit the UK economy.

Paonessa adds: "This year we are building £5.7bn of new infrastructure, of which £3.8bn is for enhancements. We have never undertaken more than £3bn of enhancements in a year, so this is a record."

Infrastructure Projects' major obstacle (and cost) is accessing the



Clockwise from opposite page: Francis Paonessa © Network Rail/ Lynn Patrick; a ballast train in Harrogate in February; work at Manchester's Ordsall Chord

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Clockwise from left: London Bridge is being completely rebuilt; the Dover seawall breach; the Network Arch bridge at Ordsall Chord (Matthew Nicol Photography)

network to do the work, during an ever shorter period of time, especially during weekdays. As a result, schedule 4 costs – effectively the cost of borrowing the railway back from the train operator to carry out necessary works – are huge. Mr Paonessa says: “£2m of schedule 4 compensation costs to undertake £0.5 m of work are not unusual at the weekend.”

Accordingly, Infrastructure Projects has focused on improving its efficiency in this area. “Five years ago, we were typically accessing the track for core shifts that lasted in excess of eight hours, and 20% of track renewals necessitated a completely blockade of a route. Now 50% of our track renewal work takes less than eight hours and only 5% of the programme requires blockades.”

Mr Paonessa tackles head on one of the issues that were raised in the recent cross-party select committee findings on Great Western electrification, where cost escalation and delays have come under critical scrutiny.

“I agree, things are costing more”; however, he adds, most increases have not been in the delivery itself, but because cost estimates have increased as the scope of the project becomes clearer. “We have tended to cost at an early stage and regard this as being sacrosanct, yet when you get into detail and know what you’re going to build and in what possession regime, it can cost a lot more.

“The issue is that as an industry we have a tendency to commit ourselves to projects based on a very low level of design maturity and treat an estimate as if it is a well worked-up number, when frequently you wouldn’t have had the opportunity to carry out even the groundwork investigations.”

The GRIP (governance for railway investment projects) has eight different phases. Mr Paonessa explains that often phase two (feasibility) is “taken as read” in cost and scope, whereas phases four and five – the latter

being detailed design and cost phase – are likely to yield a more realistic view of what a project will entail.

He continues: “Great Western was a good example of where dates and costs were committed when the project hadn’t been fully worked up.” The Great Western electrification scheme was agreed in 2009, before either Mr Paonessa or Mark Carne were part of Network Rail’s executive team of. Mr Carne has said in response to the select committee report findings: “Network Rail and the DfT have learnt the lessons from the poor early planning.”

Mr Paonessa adds: “Where we have done the opposite and formed early alliances for projects in order to work up the detail, then quite frequently we can deliver more efficiently and for less.” He alludes to the Norton Bridge rail flyover, a project to transfer traffic from the slow lines on the West Coast main line to onward routes in Stoke, completed in March last year. This entailed diverting four rivers, building 11 bridges and 10km of new track, and moving a million tonnes of earth. “By working closely with the route and the DfT we looked at how to minimise engineering intervention to give the same passenger benefit.” The original cost estimate for the project was around £600m, but by looking at the requirements and scope, it was possible to reduce the cost to £250m and complete it a year early.



Typically it is project overruns that make the news. Mr Paonessa points to examples of projects that have been completed early, due to the improvements in output. “Dover (where the seawall collapsed) opened three months early at the end of 2016. Settle-Carlisle will also open early.” On the latter route, a half-million tonne landslide took the railway with it and Infrastructure Projects was dispatched to build a viaduct over the gap, requiring it first to build an access road to reach the remote site.

While researching for this article, I experienced first-hand the speed of Infrastructure Projects’ delivery. On a Saturday night in February I was rudely awakened by the noise of ballast tamping machines. A 2-mile section of



track was being completely removed and replaced on the Harrogate-Leeds line, which happens to be situated at the end of my garden. On Sunday morning, I joined many onlookers converging on the railway bridges crossing Harrogate’s 80ha stretch of protected grassland to witness the orange army industriously at work.

By 6am on Monday, the track had been completely replaced and trains were once more transporting commuters to their places of work in Leeds and York. On Wednesday, I hopped on the train on the same route to get a connection for a meeting in London. But for my restless night, there would have been no indication of the work that had taken place.

For me, two slightly disrupted nights of sleep; but for the workers on Infrastructure Projects, unsocial hours form their typical working day. With another 200 projects, worth £70m, completed according to plans and without overruns over Easter, I, for one, take my hat off to them for their role in keeping the railways running.

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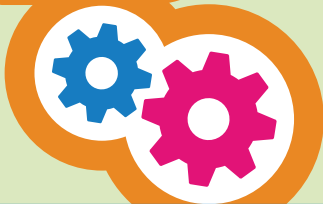


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