Intelligent Transport Systems UK
Empowering Transport Technology

review

Annual Review 2024

its-uk.org

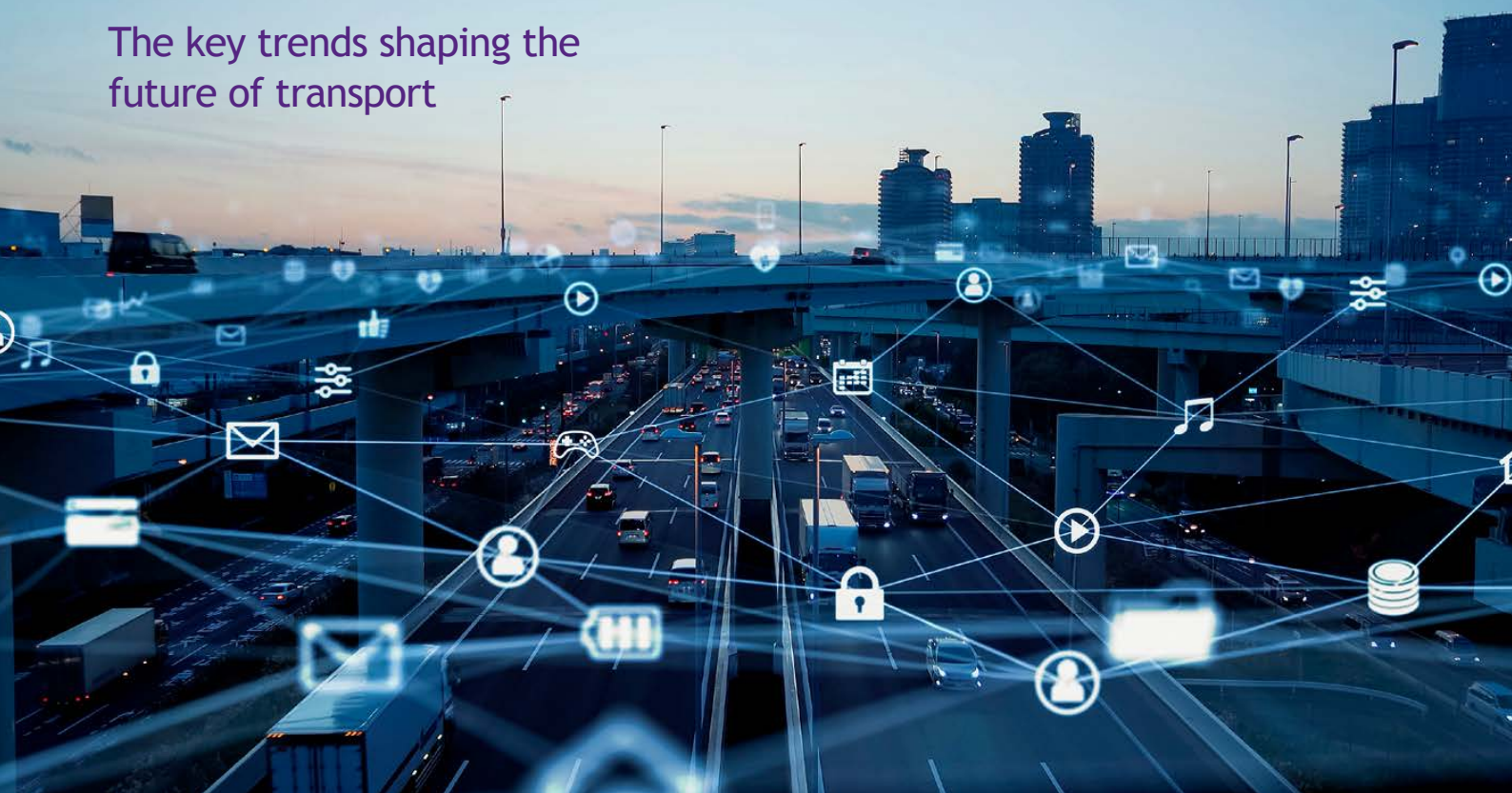
Andy Lord of Transport for London: How technology can transform the capital's transport system

Davin Crowley-Sweet of National Highways: A data-driven approach to improving customer experience

Anne Shaw of Transport for the West Midlands: What does the future of transport look like?

Connected. Automated. Integrated. Sustainable.

The key trends shaping the future of transport



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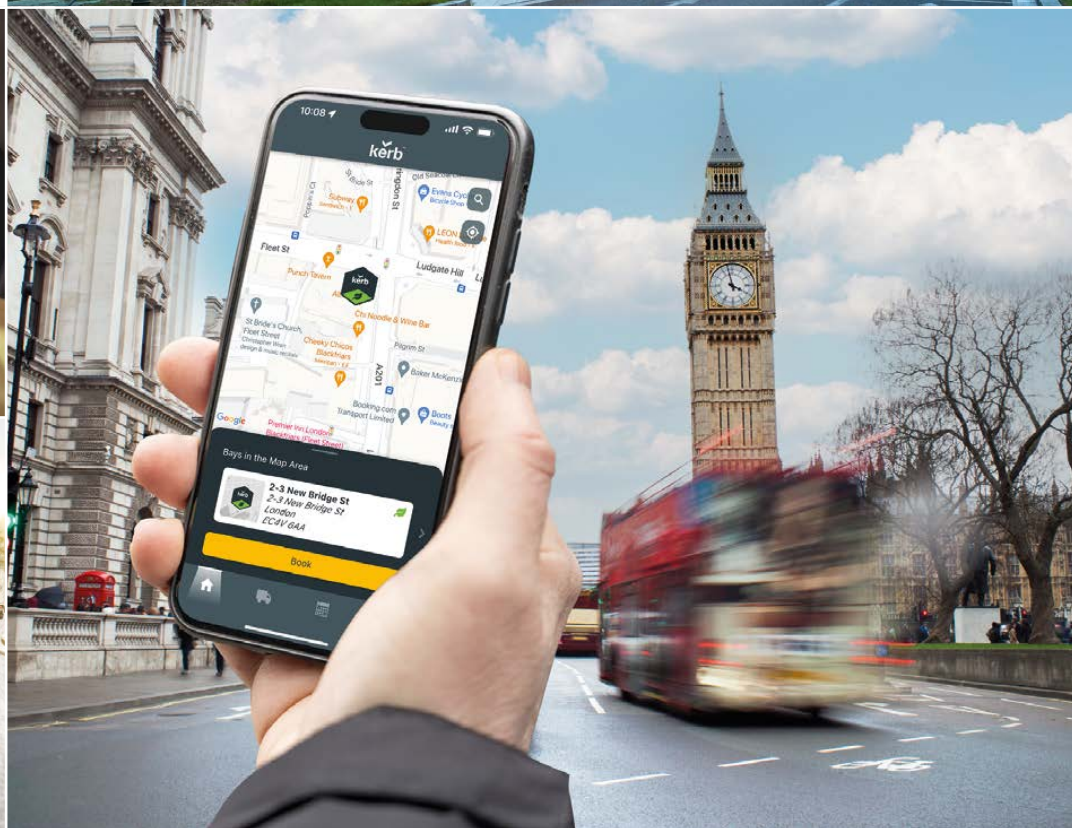

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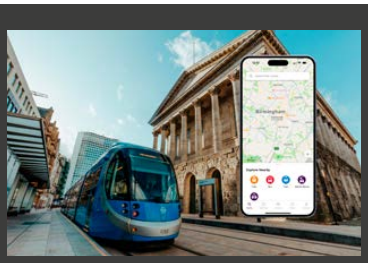
56 Turning our RD&I challenges into opportunities...



Intelligent Transport Systems UK
Empowering Transport Technology

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FROM THE PRESIDENT

Connected. Automated. Integrated. Sustainable.

Steve Norris
President, ITS UK and former Transport Minister

There has surely never been a time in the history of the developed world when we have faced a more existential global challenge than we do today.

The planet is warming and the impact is potentially devastating. Weather patterns are altering across the globe and the consequences are already visible. Why this is happening may still be a matter for debate but what we know for certain is that levels of carbon in the atmosphere urgently need to be lowered and the impact of methane on the ozone layer needs to be controlled. Those of us whose expertise is in transport technology have a vital role to play in ensuring that transport which is a massive 29% of global greenhouse gas emissions becomes greener and substantially more sustainable.

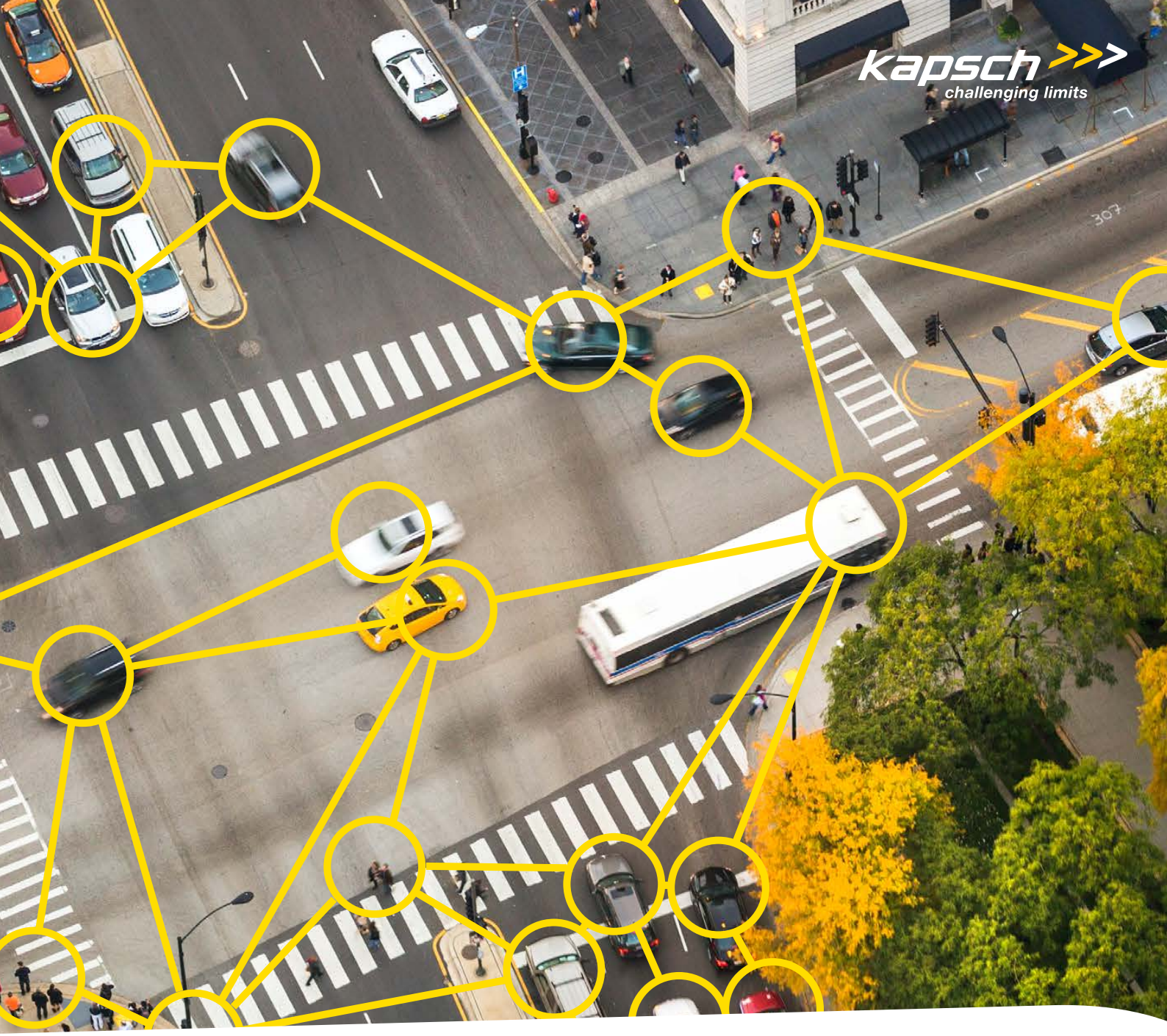
As we phase out fossil fuel we will also move to charging for road use deploying distance based technology. This surely has to come sooner rather than later.

The technologies around electric vehicles (EVs) suggest we may be able to stop the use of fossil fuels but we need to ensure that the power on which EVs rely is itself produced sustainably. It is ironic that today your EV may still on occasions be using power from a coal fired power station. The trouble is that government has set target dates by which we will phase out new internal combustion engines but already these are looking hopelessly optimistic. EV sales are stalling not least because incentives are being removed. And if you can't access power at home the cost of charging on street is as expensive as fossil fuel. Range anxiety and the threat of having to replace the battery all militate against saving the planet.

There's also growing recognition that to provide the power we need to serve an all electric vehicle park the grid will need to be three times its current size and we will need to be generating four times the amount of clean energy. This, while our planning system ensures that major applications are actually taking longer to deliver necessary consents. And while the car can lend itself to green power the logistics industry still has a huge way to go. A 38 tonne truck would need a battery weighing 7.5 tonnes – far more than the weight of an internal combustion engine powered by diesel. We urgently need to understand the role of green hydrogen in the energy mix given its prevalence in the atmosphere and to ensure that our planning system can deliver the necessary consents in a realistic timescale. Whoever forms the next government sometime later this year will need to set stretching but realistic targets by which transport in UK can decarbonised.

It is also clear that for now at least the social consequences of decarbonisation are being felt much more painfully by those at the bottom of the income scale. The cheapest EV currently costs around £27,000 – way beyond the budget of at least half the population. Penalties ostensibly aimed at improving air quality mean that only poor people are forced to pay more. A massive expansion of public transport including demand responsive transport is going to be vital in ensuring that those not fortunate enough to afford an EV can still access their jobs. As we phase out fossil fuels we will also move to charging for road use, deploying distance based technology. This surely has to come sooner rather than later given the significance of fuel taxes in our economy. In all this ITS plays a major role. Our expertise will be the base on which we travel safely, eliminating the deaths and serious injuries we have tolerated for so long, connecting families and communities, enabling the clean transportation of goods and people and pointing to the time when our successors will say that having stopped the rise of carbon emissions, we can actually start to reduce them. I'm not holding my breath.

Steve Norris
President, ITS UK



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FROM THE CHAIR

Connected. Automated. Integrated. Sustainable.

Stuart Scott
Chair, ITS UK

It is my pleasure to welcome you to our ITS UK 2024 Annual Review.

This report covers a second year of very significant change for ITS UK. Throughout 2023 we have continued to develop our organisation, increasing both the scope and breadth of our offering for the benefit of our members.

This review reflects both of these ambitions, in its themes of Connected. Automated. Integrated. Sustainable, but also in the quality and quantity of content.

Recently we have marked reaching 175 members of Intelligent Transport Systems UK, a refection of our increasing relevance and influence over a broader sector. I am very pleased to say that a glance through the membership section of the website shows an increasing number of members who are across all modes of transport, from highways to rail, bus to micromobility, reflecting our broader integrated transport emphasis.

And, you will note that the introductions to this Review all have a strong strategy or policy focus. This is not a coincidence.

ITS UK has a unique position, with a membership that spans the spectrum of our sector. I firmly believe that we as an organisation have a world-leading technical and technology capability - and one that covers all aspects of the industry, from consultancy and design and supply through to operation and maintenance. That excellence is core to our success.

I am determined that the significance and value of the organisation's role is recognised not just in our sector but providing a trusted advisor to external stakeholders too.

So, we are also working to be recognised internationally as the leading UK ITS organisation. We attended a significant number of international conferences and events last year and, our recent ITS Exports Study – which surveyed members' overseas priorities – now means we are fully aligned with our members export aspirations.

The same applies domestically, on the policy front. The Second National Infrastructure Assessment, published in October 2023, states that improving transport provision is crucial to the goal of levelling up economic opportunities in all parts of the country. The Assessment addressed two key challenges to supporting regional growth, first, improved urban mobility and addressing congestion, and second, multimodal interurban transport strategies.

Both of these areas apply to ITS UK's work, whether in the regions or in cities. As our President, Steve Norris, referred to in his introduction, it is not just about improving efficiency to save time, we all have a real environmental and social obligation to reduce our impact on the planet.

Maximising the efficiency of our transport network can no longer be about doing the best that we can in our silos. The real value is in integration and ITS UK is in the ideal position to advise and deliver on that need. As we look forward, we'll continue to make the case for a more integrated, efficient, transport sector, through technology.

I would like to conclude with a few thank you's. First, my thanks once again to our Board Members and Forum Officers for their continued volunteer support to the organisation, and particularly to my predecessor Ryan Hood who helped ensure a smooth transition both to me and our new Chief Executive Max Sugarman.

Maximising the efficiency of our transport network can no longer be about doing the best that we can in our silos. The real value is in integration and ITS UK is in the ideal position to advise and deliver on that need.

Thanks too to the ITS UK team for providing the engine room that keeps our organisation rolling forward, and of course to all of you, our members – for without your continued support, energy and commitment there is no ITS UK.

Finally, I must thank Max Sugarman and the team for driving and supporting the changes to the organisation, which is now ready to take on the challenges of our ever-changing transport technology sector.

Stuart Scott
Chair, ITS UK

FROM THE CHIEF EXECUTIVE

A strategic approach to intelligent transport

Max Sugarman
Chief Executive,
ITS UK

2024 is a year of major decisions for UK transport. The recent May elections have seen newly elected Mayors and Councillors appointed; an upcoming General Election is fast approaching; and a Spending Review looms on the horizon. Across road and rail, we are seeing the start of new funding periods, whether Control Period 7, the funding cycle for Network Rail which began in April, or Road Investment Strategy 3, the equivalent for National Highways, which begins in just under a year.

All these major decision points provide us with the opportunity to do things differently, and specifically to look at the role technology can play in creating a more effective, better transport network for all. The theme of this year's Annual Review, "Connected. Automated. Integrated. Sustainable.", reflects some of the key areas where intelligent transport has a fundamental role to play. But if the UK is to seize the opportunities that technology provides, it needs to treat ITS as a key strategic sector, not simply as a 'nice to have'.

- **CONNECTED:** We have more data from our transport network than ever before, but there is little chance we are utilising it as well as we could. We need a step-change in how governments, from local to national, use that data to better inform a more effective, safer and greener network.
- **AUTOMATED:** With the Automated Vehicle Bill making its way through Parliament, the UK has set a clear path for the introduction of self-driving vehicles. The question now is 'what next?' – how do we utilise the regulatory framework set by government to support a strong and vibrant CAM sector?
- **INTEGRATED:** Whether its Mobility as a Service, Demand Responsive Transport or Mobility Hubs, the UK should be leading the way in new forms of mobility. Investment and a strategic vision for areas like smart ticketing will be vital.
- **SUSTAINABLE:** Ultimately, little of what we do will matter if we don't face climate change head-on. We need government to be prepared to take bold action – such as facing up to the inevitability of a national, dynamic road user charging scheme. Ensuring this is delivered equitably, in a way that garners public support, will be essential.

WHAT IS ITS UK'S ROLE?

The four topics above clearly show some of the big issues coming down the line for transport technology providers. The future is very much ours to make, but it will require a champion for intelligent transport, to make the case for this industry at the highest levels.

Over the past year, we've been gearing up ITS UK to take up that role, and have already had considerable success. Whether its writing to the Prime Minister to call for a Future of Transport Bill; campaigning for reform to the Home Office approval process for enforcement technology; or urging changes to the VAT regulations to support Demand Responsive Transport – our voice is now being heard by senior politicians and policy makers of all political views and creeds.

As we move through this year of change, we'll continue to make the case for a growing and vibrant ITS sector and one that is seen as a strategic partner of government.

Max Sugarman

Chief Executive, ITS UK

ABOUT ITS UK

ITS UK offers everything to need to succeed

We support 175+ Members from across the intelligent transport sector, including multinationals through to start-ups, and both public and private sector organisations, with local authorities, and academia in membership too.

Priscilla Ross
Membership Executive, ITS UK

WHAT DOES ITS UK DO?

We have four pillars of activity – making connections and information sharing; influencing policy; export promotion; and celebrating the sector.

MAKING CONNECTIONS AND SHARING INFORMATION

We bring members together through networking opportunities and events. We host major conferences, dinners, receptions, seminars and more, helping to build the connections you need within the industry. Through our weekly newsletter, we keep members abreast of the latest developments, and our 15 Forums cover the big trends and issues facing the industry. Our new Members Area is the go-to location for new information and intelligence, covering policy updates, competitions and tender monitoring.

INFLUENCING POLICY

We support the sector to make its voice heard. We work with government, politicians, and the press to make the case for transport technology. For example, our campaign to 'Get HOTA Working' has seen the Home Office launch a call for evidence on changes to the approval process for enforcement technology. And shortly we'll be launching our Manifesto ahead of the General Election.

REACH OUT ACROSS THE GLOBE

We support UK businesses to develop their exports potential and to reach new markets overseas. This year, we've already attended Intertraffic and we're working with our partners and fellow ITS organisations around the world to see what other overseas markets we can engage with. We're also a key partner with Transport for the West Midlands and the Department for Transport in delivering the World Congress in Birmingham, taking place in 2027.

PROMOTE AND CELEBRATE THE SECTOR

We promote the work of the sector and act as a platform to showcase the industry's news, by highlighting stories and developments from members, and through our annual Awards, which bring together the industry to recognise the fantastic work our members do. We also promote and celebrate early career professionals through our yearly Essay Competition.

Membership is a great way to navigate the sector and keep up-to-date on the latest developments. Why not find out if membership is for you? Get in touch via the details below - we'd be happy to chat!

contact@its-uk.org
its-uk.org
+44(0) 207 709 3003
@its_uk_org

Our Events and Exports Programme is packed full of opportunities to meet, network and influence the sector

2024 is a busy year for ITS UK, as we continue our extensive events and international outreach programme. With nearly 50 events, of all shapes and sizes held last year, there has never been a better time to get involved in what we do.

Rukshan Soysa
Operations Manager,
ITS UK

OUR EVENTS & FORUM PROGRAMME

ITS UK's Forum programme is at the heart of our activity as an industry association. Our Forums are where our members come together to network, where you can hear the latest updates from different parts of the sector and where we bring industry together to influence on key themes and issues of pertinence. They are where issues are discussed, ideas shared, and new connections made.

We run a total of 15 Forums and they are open to all within our membership, with regular updates and meetings throughout the year. As a Member of ITS UK, you have access to Forums, including the two meetings a year each organise, the library of presentations from past Forums on our Members Area, and the opportunity to put yourself forward to speak at a Forum event. Attending a Forum, or getting involved in speaking opportunities is a great way to form new business contacts and hear about the latest trends and developments in the sector.

Outside of our Forum meetings, we also host a swathe of events across the year:

- **The ITS UK Annual Conference**, held as part of Interchange, the two-day transport show.
- **An Annual Parliamentary reception**, offering Members the chance to meet and network with senior Ministers, MPs and Peers.
- **The ITS UK President's Dinner and Awards**, held every year since 2006 to celebrate and showcase the very best of ITS. As a Member you can submit an award entry into one of the many categories, with the chance to be presented with a prestigious accolade at the gala dinner in November.
- **And we host a range of breakfast meetings, online sessions, webinars and roundtables**, all of which are accessible for Members. Already in 2024, we've had briefings on the Space for Business funding programme, the opportunities for ITS companies from Horizon Europe and the Big ITS Conversation, which brings together a range of local authorities and public sector organisations for members to meet.

OUR EXPORTS AND INTERNATIONAL PROGRAMME

In November 2023, we launched the first ITS UK Exports Study, which identified the key overseas markets, opportunities and barriers to trade for the ITS sector. Launched with the Transport Technology Forum (TTF), this study pinpointed specific countries that the sector views as priority markets - the United States, Australia, Germany, France and the Netherlands.

In 2024, our focus is very much on these five markets. In April 2024, we took a UK delegation to Intertraffic in Amsterdam and we are planning potential similar delegation visits to the ITS Australia Summit and to the US in future. And of course, we will be at the ITS World Congress in Dubai in September, supporting the TTF-led UK pavilion; an important event as we move towards hosting a World Congress ourselves at Birmingham's NEC in 2027.

We are also utilising our connections with overseas ITS bodies, utilising the 35+ agreements we have with ITS membership organisations around the world. In particular, we're working with the ITS Network of Nationals, a coalition of some 30 ITS membership bodies across Europe, to support international partnerships and networking amongst our respective memberships.

The ITS sector has huge export potential and through our Members' input, ITS UK is working together to promote UK transport technology capabilities on the international stage. We hope you can join us at an overseas show or trade mission soon!

If you'd like to find out more, contact me at Rukshan.soysa@its-uk.org and I'll happily help get you involved.

If you're a member of ITS UK, you can sign up to as many Forums as you wish. **To join a Forum simply email contact@its-uk.org** letting us know which you'd like to join.

ITS UK Forums

Forums are open to all members and are a great way to keep up-to-date on the latest developments across the sector. Each Forum holds around two events a year, both in-person and online with meetings held around the country.

ACTIVE TRAVEL

The Active Travel Forum covers all aspects of intelligent transport's application in active travel and micromobility, including walking, cycling, eScooters and much more.

The Forum explores how we can use technology and data to increase the amount of active travel in the UK, working with key organisations like Active Travel England. The Forum provides updates and presentations regularly on the latest thinking within the active travel space.

CONNECTED VEHICLES

Cooperative Systems and Connected & Autonomous Vehicles are attracting huge interest. They potentially offer a new set of tools for traffic managers to improve capacity, safety and the environment, after current initiatives like ATM have delivered all they can. They also offer road users opportunities to use less fuel, have a more comfortable journey and avoid accidents. And they allow the vehicle industry to add value to their products and achieve better vehicle performance.

This is a very broad area - from guided vehicles to the simple sharing of information. This Forum is dedicated to looking at the Connected and Autonomous Vehicle space in all its forms, providing a place for the latest developments and thinking to be shared.

DATA

The Data Forum explores the ever-growing use of data from the transport network. That includes across different modes of transport and at local, regional and national levels. The Forum explores how public authorities can open up data to improve services, the commercial and policy environment around its use and how the industry can ensure it brings the public with it in using data appropriately. The Forum often discusses topics around data security and privacy too.

EARLY CAREERS

This Forum provides a focus for the younger generation of ITS professionals. It holds regular events to inform and create networks, and shares relevant information. It has a particular interest in training, career development and qualifications in ITS. It also enjoys a growing international participation which helps the UK participants build valuable networks for their future careers.

ENFORCEMENT

The Enforcement Forum works to identify the factors effecting compliance to traffic regulations and laws, including enforcement, and to identify the requirements of the police, local authorities and other statutory bodies that may be helped by ITS technologies. It promotes awareness of ITS technologies available and needed to encourage compliance with, or enforce road traffic law or regulations, and seeks to correct misapprehensions and incorrect information in the public domain.

It also identifies and seeks to address the potential legal and institutional barriers to implementation of ITS technologies. Finally, it works to ensure that any international standards in compliance and enforcement technology are appropriate and workable from a UK viewpoint.

FREIGHT

The Freight Forum works to allow freight and logistics practitioners to access leading edge developments in telematics so as to illustrate what is or may be on offer, and to allow ITS members the opportunity to learn of the challenges and opportunities currently facing the logistics and freight industry.

INCLUSIVE MOBILITY

The Inclusive Mobility Forum brings together ITS professionals, implementers, suppliers, researchers, and end users, including a wide range of disabled and older people and their representative bodies. It has been successful in attracting the regular participation of disabled members who provide valuable insights and advice into how ITS can best be used to assist with their travel requirements.

The IMF informs implementers and the user community of the latest developments in ITS, whilst gathering advice on the needs of disabled and older people in the design, development and deployment of ITS.

ADVOCACY AND PUBLIC AFFAIRS GROUP

The Advocacy and Public Affairs Group is the committee for communications, PR, policy and public affairs professionals in membership to set ITS UK's advocacy plans and directions. The Group meets once a quarter and provides members the change to feed into the organisation's comms and public affairs strategy.

MARITIME

This group works to identify the current passenger and freight logistics handling requirements of the ports, logistics companies and other bodies that may be helped by ITS technologies. It promotes awareness of available ITS technologies and how they may be used to enhance transfer of passengers and goods within and outside of ports and in the surrounding hinterland, including integration with the road and rail networks, and road and rail network management systems.

The Forum also highlights the use of new technology on board vessels and how this is likely to enhance the efficiency and environmental performance of the sector.

MOBILITY AS A SERVICE

Mobility as a Service (MaaS) is an area that is attracting huge interest and value. This group aims to cover the focus on providing travellers mobility solutions based on their travel needs, exploring how this can be delivered practically. The movement towards MaaS is complimented by a whole plethora of innovative and creative mobility service providers such as ride-sharing, e-hailing services, bike sharing and car-sharing programmes, all of which are explored within this Forum.

PUBLIC TRANSPORT

The Public Transport Forum provides a focus for ITS UK members and others who are interested in the use of ITS in public transport, including passenger information systems pre- and during trip, safety and security systems, fleet management, AVL, smartcards and other forms of ticketing, ticket retail systems, and more.

ROAD USER CHARGING

The Road User Charging (RUC) Forum is the UK's expert group in all RUC-related matters. It promotes best practice in the application of road user charging solutions that contribute to infrastructure improvement, congestion management and environmental benefits. Membership includes local authorities, industry suppliers, tolling operators, consultants and academics, and Government agencies. The group facilitates information exchange about the implementation of RUC, from the use of charging technologies to back office and central systems.

SMART ENVIRONMENT

The Smart Environment Forum provides a forum for all ITS UK members with an interest in effects of transport and environment related impacts on exposure, health and climate change. It enables them to share knowledge, discuss their views and investigate the feasibility of and resulting benefits from the application of ITS to manage the environment and deliver long term sustainability.

The group includes those concerned with the measurement and modelling of the environment, the climate change impact of travel choices and the distribution of goods, as well as establishing ways to deliver climate targets set by the Government.

USER BEHAVIOUR

The User Behaviour Forum advises the ITS sector on the needs and abilities of users in the design, development and deployment of ITS. It also utilises and promotes the skills and knowledge of the UK human factors community engaged in research, design and implementation of ITS.

WOMEN IN ITS

The Women in ITS group is for engineers and transport professionals seeking to promote the value of a career in ITS, especially for women. Its objectives are to inspire women in ITS, facilitate the professional development of women in ITS, improve women's image of ITS, promote ITS as a career, and contribute knowledge and experience from a woman's perspective to the professional debate.

Sign up to these Forums on the Members Area at www.its-uk.civiplus.net or email contact@its-uk.org

Navigating the maze: Finding the right insurance policy for your tech business

Sioma have partnered with ITS UK to provide members with insurance support, including an annual consultation for all new and renewing members. Below, they set out why getting the right insurance policy is so vital.

Alexander Margolin
Managing Director, Sioma

In today's rapidly evolving technological landscape, businesses face a myriad of risks, from data breaches to intellectual property disputes and everything in between. For technology companies, in particular, these risks can be especially complex and daunting. That's where having the right insurance coverage becomes crucial. Finding the appropriate insurance policy tailored to your tech business isn't just about ticking off a box; it's about safeguarding your company's future and mitigating potential financial losses. Here's how to navigate the maze and ensure you get your insurance right.

1. Assess Your Risks: The first step in finding the right insurance policy is to identify and assess your business's specific risks. For a technology company, this could include cyber threats, product liability, professional indemnity, and business interruption, among others. Conducting a comprehensive risk assessment will help you understand the potential exposures your business faces and the types of insurance coverage you'll need to mitigate these risks effectively.

2. Understand Insurance Options: Once you've identified your risks, it's essential to familiarise yourself with the different types of insurance policies available. For tech businesses, some common insurance options include cyber liability insurance, professional indemnity insurance, employers/public/product liability insurance, and business interruption insurance. Each type of insurance provides coverage for different risks, so it's crucial to choose the policies that best align with your business's needs and exposures.

3. Work with an Experienced Broker: Navigating the complexities of insurance policies can be challenging, especially for tech companies with unique risks. Partnering with an experienced insurance broker who specialises in working with technology clients can be invaluable. A knowledgeable broker will understand the intricacies of the tech industry and can help you tailor insurance solutions to fit your specific requirements. They can also provide guidance on policy limits, endorsements, and exclusions to ensure you have comprehensive coverage.

4. Compare Quotes and Coverage: Once you've identified your risks and selected the types of insurance policies you need, it's time to shop around and compare quotes from different insurers. While price is undoubtedly a factor, it shouldn't be the sole determining factor. Make sure to carefully review each policy's coverage terms, limits, deductibles, and exclusions to understand what is and isn't covered. Pay close attention to any endorsements or add-ons that may be necessary to fill gaps in coverage.

5. Review and Update Regularly: The insurance needs of a tech business can evolve rapidly as the company grows and its operations change. It's essential to regularly review and update your insurance coverage to ensure it remains adequate and relevant. As your business expands into new markets, launches new products or services, or adopts new technologies, your insurance needs may change. Schedule regular meetings with your insurance broker to reassess your risks and make any necessary adjustments to your coverage.

At Sioma, we are a boutique insurance brokerage based in Mayfair that focus on complex insurance risks including the technology and global transport sector. Find out more at www.sioma.co.uk

Bid Support Tuesdays: Bringing simplicity to tendering

In March, ITS UK announced a new package of market support, exclusively for members, including a Tender and Competitions Monitoring Service (available on the Members Area) and monthly Bid Support Tuesdays.

Held online on the third Tuesday of every month, Bid Support Tuesday's see ITS UK's two bid experts, Pippa Birch and Phil Seymour, answer all and every question about the bidding process, as well as giving advice on how to make your bids as effective as possible.

WHO ARE THE EXPERTS?

Phil Seymour is the principal at an independent RICS chartered surveyor business and is an expert on construction costs. He has extensive experience of transport infrastructure construction and maintenance and works with public & private organisations procuring civil engineering projects. He supports engineers and contractors with commercial advice, supply chain strategies, contractual analysis and pricing for their tenders. Phil is a member of the CICES, RICS, IAT, ITS UK and CIHT.

Pippa Birch has been a bid and tender professional for over two decades. Her bid consultancy, Pipster Solutions Ltd, is the only one in the UK specialising in highways and civil engineering. She is APMP Professional certified (bid professional), and an active member of the IAT and CIHT, with many highways-specific awards to her name, including those from the Worshipful Paviors, IAT's Certificate of Merit for services to the institute, and the Shell Bitumen Award for Excellence. Her award-winning business builds long term partnerships with clients, helping them navigate public tenders to ensure they win the contracts needed to grow their businesses. Her team reviews, manages, writes quality submissions, and coordinates bids and tenders, ensuring compliant, high scoring submissions.

Pippa Birch

Phil Seymour

WHAT DO WE COVER?

The sessions are split between webinars and workshops, with webinars allowing Phil and Pippa to explain particular aspects of the tendering process, followed by a workshop where members can participate and get involved. Upcoming topics this year will include storyboarding, getting your sums right and delving into social value requirements.

WHY SHOULD YOU ATTEND?

Whether your tendering team is large or small or whether you're an experienced bidder or new in the industry, these sessions always provide something new. They're a great way of gaining some top tips from seasoned experts – and they're all part of your membership!

WHAT ARE PIPPA AND PHIL'S TENDERING TIPS?

- **Know your customer** – understand, and address, their pain points to make your submission customer focussed and stand out from the crowd
- **Get to know the submission portal** – play with it way before the submission date
- **Read the documents** – turn every page to make sure you find every requirement
- **Understand the evaluation criteria** - how will they score price, quality and social value?
- **Answer the question** – storyboard and plan your responses – approach, benefits, evidence
- **Make sure you are compliant** - including word and page count, and file names

INTERESTED IN FINDING OUT MORE?

Login at the Members Area (**www.its-uk.civiplus.net**) and click on 'Tenders, Bids and Competitions' at the bottom of the page.

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YUNEX TRAFFIC

How technology is transforming transport in London

2024 is a year of huge opportunity for the transport sector across the UK. It is clear that transport is a key policy priority in this year's regional and national elections.

As the country's transport leaders and innovators, we must ensure that transport is recognised as the key that unlocks growth, productivity and prospects.

Transport plays a critical role in this country's trajectory towards decarbonisation and sustainability. It is crucial to levelling up cities across the UK, enabling new homes, jobs and opportunities. Transport can modernise and revolutionise the UK, through embedding new technologies and smart systems into everyday life and everyday journeys. However, for this to be the case, there needs to be substantial and sustained capital investment from government.

In London, it is our intention to unlock as much potential as we can through our transport network. Reflecting on my first 18 months as London's transport commissioner, it has been rewarding to oversee significant progress on our network in such a short space of time. Despite budgetary pressures, our ridership is growing steadily, our capital investment is increasing, and our network is continuing to modernise, putting us in good shape for the future.

Our optimism for the future of the network is reflected in our commitment to investing approximately £2bn to deliver our 2024 Business Plan over the coming year. Innovation and modernisation form key threads throughout the plan, as we improve the network through renewals and upgrades to signalling, track, fleets and stations. Intelligent solutions and technology are woven into our capital projects as standard, enhancing our customer offering, improving reliability and performance and encouraging vital modal shift.

Our Four Lines Modernisation Programme is transforming the signalling system on our sub surface lines, bringing it into the digital age. With 62 stations already benefitting from the upgrade, the project is increasing capacity and enabling faster, more frequent and more reliable journeys to our four sub-surface lines.

We are progressing with replacing our ageing rolling stock with brand new, state-of-the-art fleets, built with accessibility, comfort and the customer at the forefront. The Docklands Light Railway will be the first line to benefit from new stock this year, with the Piccadilly line following suit. We also continue to roll out greater wi-fi, 4G and 5G connectivity across the tube and Elizabeth line networks, ensuring customers remain connected on the go, all of this following on from the amazing success of our flagship Elizabeth line.

We are leading the way in the bus

Andy Lord Commissioner
Transport for London

industry with our pathway to net-zero. Our zero-emission bus fleet is growing and our journey to full electrification of the network is progressing as we introduce new technologies and models. Our experience and reach as an organisation also means we can work with other transport authorities and cities across the country and the world, accelerating the transition to net-zero. We are also improving the attractiveness of bus travel through improving bus journey times, using technology that optimises traffic signals to prioritise buses.

Whilst technology is front and centre of our major capital projects and essential to our day-to-day operations, we are also embedding pioneering systems and data-driven solutions into all aspects of our transport network, including safety, active travel and our roads.

Technology and data are front and centre of our efforts to improve and ensure safety on our network, through our work towards achieving Vision Zero – our strategy to eradicate all serious injuries and deaths on our network.

In January, we launched our ground-breaking inequalities dashboard tool, the first of its kind in Europe. This pioneering tool provides empirical evidence as to how levels of deprivation are linked to higher levels of road casualties. Using this data, we are reinforcing the case for targeted investment and interventions on TfL and London borough roads. In collaboration with boroughs, data will be used to inform and develop local transport plans and ensure transport interventions reduce road danger inequalities across the capital.

We are introducing a wide range of vehicle safety technologies and features, such as advanced driver assistance systems, that have the potential to save lives and prevent life-changing injuries on an immense scale. We are rolling out intelligent speed assistance technology across our bus and operational support fleets, which will ensure greater compliance with speed limits and improve road safety, whilst helping drivers stay within speed limits, and further safety improvements for our fleets are in the pipeline this year.

We are collaborating with a number of third parties to harness the power of data and analytics to inform our decision making on road safety schemes and understand and identify potential accident hotspots. We have partnered with Mercedes-Benzes Data-as-a-Service team to make London's streets safer, especially for those walking and cycling by employing Mercedes Benz aggregated vehicle data to improve vehicular responsiveness to surroundings. This work is demonstrating how data can provide life-saving insights to inform road risk modelling and decision making.

We are also making advances with technology in our active travel sphere, encouraging Londoners to opt for walking and cycling through smart technological integration. We have partnered with Google to improve cycling navigation through updating Google Maps algorithms to prioritise cycling on safer, quieter roads, considering traffic conditions and the availability of high-quality cycling infrastructure. This work has the potential to improve millions of cycling journeys across London and beyond.

We are also prioritising digital wayfinding, exploring the role it can play in improving safety, accessibility and inclusivity of walking and wheeling journeys. We are bringing together app developers, innovators, end users and stakeholders to tease out the biggest barriers around existing wayfinding tools and navigation experiences, with the aim to ensure our TfL go navigation app and third party apps serve customer needs and encourage mode shift to active travel.

Technology and data are front and centre of our efforts to improve and ensure safety on our network, through our work towards achieving Vision Zero – our strategy to eradicate all serious injuries and deaths on our network.

Technology and innovation are ingrained within TfL's DNA. We recognise how vital the role of technology and data is within the transport industry, and we know that we have to be on the front foot of technological advancement, so that our network can respond to modern transport challenges. Essential to achieving this is strong partnership working with industry leaders and building productive, sustained relationships with our supply chain.

Our progress will not stop there. We are continuously planning our next series of successes and devising how our network needs to grow and adapt over the next few decades to unlock the potential London has and welcome future generations to the capital.

However, progress will be constrained without sustained, committed capital investment from government into transport infrastructure in London and across the country.

Central government needs to work in partnership with local, regional and transport authorities and commit to long-term funding for transport. With this in place, the country and its cities will profit of a wealth of benefits, and we can unlock greater inward investment and confidence in the UK, its markets and its supply chain.

With a focus on long-term investment into transport infrastructure across the county, the transport sector will have the financial security and the confidence to maintain momentum and continue its trajectory towards an integrated, synergised transport system, fit for the 21st century.

Our industry has the power to revolutionise the country through building and delivering innovative transport systems that complement our cities, are resilient in the face of challenge and are capable of responding to the ever changing, diverse needs of the country as it evolves. I look forward to working with our industry partners as we chart the course towards our bright future.

AtkinsRéalis

TECHNOLOGY TO TRANSFORM COMMUNITIES

At AtkinsRéalis, we're using our technical brilliance in acoustics, technology assessment, modelling and asset management to support the development of the Department for Transport's strategy for new digital technologies to help reduce nuisance, automate noise enforcement and restore quiet to local streets.

www.atkinsrealis.com

Improving customer experiences through data-driven journeys

Davin Crowley-Sweet, Chief Data Officer at National Highways, shares how data is central to the organisation, strengthening its role as a customer service provider.

Davin Crowley-Sweet
Chief Data Officer,
National Highways

In the time since I joined National Highways 7 years ago, the company has evolved its role from being a builder to an operator to now becoming a customer service provider. It's been a significant period of change where we have made bold decisions about our role in a fast changing, digital world. Rather than competing in the journey planning market, we made the choice to invest in the unique data we hold about the network, entering the world of information provision and connected services.

VALUING OUR DATA

Our journey started with our vision to become a data-driven company.

At National Highways, we hold a vast amount of data about how we design, build, maintain and operate the strategic road network – the 4,500 miles of motorway and major A-roads in England that we oversee.

We took the time to understand the value of our own data at National Highways, recognising the global shift in how organisations generate a higher proportion of value from intangible assets rather than physical assets.

With our data asset value currently standing at £69 billion, it's almost half of the total value of our physical assets, including roads, lanes, structures and our technology, which total £156 billion.

We put our data on the balance sheet and started thinking about how we could invest in the data that will realise the most value for our customers and UK plc.

RESPONDING TO OUR CUSTOMERS' NEEDS

Listening to our customers, they want

real-time, accurate and reliable information about their journeys in whatever app or channel they choose.

National Highways recognises that our customers rely on wayfinders and satellite navigation companies to navigate their journeys, so we need to share trusted information and form partnerships with key players in the mobility market, resulting in our customers feeling better informed, safe and in control of their journeys.

This is what led us to invest in our first connected services programme, which delivers in new technology, services and capability to work with businesses as our new customers using a new business-to-business-to-customer B2B2C model.

BUILDING THE FOUNDATIONS OF CONNECTED SERVICES

After laying the foundations through an integration platform to connect our internal data with the external market, we have built new services and interfaces (commonly known as APIs – Application Programming Interfaces) to share with organisations like journey planners, technology companies, car manufacturers, freight and logistics providers and local authorities. All subscribers can access the APIs on our National Highways Developer Portal offering real-time data for free, as part of the Government Open Data service.

Years of customer research informed the selection of an initial set of data services geared to drive the highest value for customers, including road and lane closures and diversion routes, which will improve traffic flow across the network. We are not only using physical infrastructure to create capacity on our roads, but we are also using digital infrastructure to unlock new capacity at a lower cost, which is more sustainable and less disruptive to our communities.

CONNECTING THROUGH PARTNERSHIPS

National Highways' purpose of connecting the country takes on new meaning as we form new connections through the digital partnerships we create with the market. All of this activity comes together in our newly formed Digital Lab, which offers data-led insights and innovation across the connected services ecosystem.

By building relationships with organisations based on shared purpose and goals, we have the potential to drive greater value for customers than we can on our own. As an example, we are convening partners in an immersive event around accessible highways where we hope to bring together data, insights and our collective commitment across the market to discover innovative solutions for neurodiverse drivers.

We are excited about what these digital partnerships will bring and have started to engage with fellow members of ITS UK as part of our Digital Lab offering.

LOOKING AHEAD

At National Highways our customers are at the heart of everything we do and our continued aim is that our customers feel better informed, safe and in control of their journeys. The connected services we are delivering now are just the beginning and our continued investment as a connected service provider has the potential to unlock significant social and economic value for our customers and communities.

We look forward to continuing to work with our fellow members of ITS UK to connect the country, realising greater value for our customers together.

Driving a new collaborative ITS Ecosystem

Digital ecosystems are spreading widely across both home and business applications and are adding significant value across many industries and markets.

Martin Andrews
Head of Product Management, Yunex Traffic (UK)

Integrated multi-media platforms, connected vehicle systems and financial institutions are just a few of the many new applications and providers that feature in our everyday lives. And one of the keys to their success is the fact that a number of often diverse companies have come together to solve a common problem.

Ecosystems are perceived in different ways by different people, but are generally defined as an interdependent network of solutions and partners that jointly create value. Essentially, a set of interconnected systems, devices and capabilities that function as a single unit, and include a variety of suppliers, customers, applications, and data users.

But what does this mean for the ITS sector? It certainly makes sense for the industry to identify opportunities for increased collaboration, and for a closer, more seamless integration of systems and data. Whilst this is not new - the UTMC programme had similar aims in the late 1990s to create a more open approach to ITS in urban areas - a culture of cooperation, interoperability and collaboration will likely accelerate the drive toward an ITS ecosystem that will deliver value and ultimately real benefits to the travelling public.

With proven competencies and established platforms and solutions at the heart of ITS control rooms across the UK, companies like Yunex Traffic who have invested heavily in ITS, are well placed to orchestrate and deliver successful digital ecosystems. To that end, we are increasingly working with industry partners to develop interconnected, digitally-enabled collaborations to meet changing needs.

A collaborative ITS ecosystem enables a full range of on-street equipment and related data sources (such as sensors, cameras and floating vehicle data) to communicate via defined interfaces and protocols with a rich variety of data analytics, forecasting algorithms, and artificial intelligence capabilities. Ultimately, this will provide enhanced perception data, decisions and insights to key data consumers.

Yunex Traffic's Stratos outstations provide the link between the on-street equipment and the company's UTC, Stratos and FUSION management and control solutions. Whilst these systems already support industry standards such as UTMC and Datex II, we are working with industry suppliers and TOPAS to help define the TR2545 specification to unlock richer insights for enhanced detector equipment.

Whilst the core platform in this case would be managed by Yunex Traffic, the wider ecosystem elements would be facilitated by partners, working collaboratively to share knowledge and data to deliver desired specific outcomes. Indeed, an incubator concept could also be supported by this model.

Clearly, efficient interfacing will play an important role in the success of digital ecosystems, with appropriate

standards updated to align with modern development processes and technologies. And whilst interfaces define interactions between hardware and software, it is also important to recognise they provide a critical link between the ecosystem and its human users. The ecosystem's user interface needs to consider a new population of users, who may be new to the ITS industry, and whilst bringing different perspective and skillsets to their role, may not be familiar with traditional (and often legacy) ITS data commands and terminology.

In time, it is also highly likely that ITS ecosystems will provide useful information to a much wider set of users beyond traffic managers, including the DfT and other research and funding bodies.

This ecosystem approach and collaborative model reflect the DfT's objectives in its Transport Technology Forum, which aims to support local authorities through its Intelligent Traffic Management Fund (ITMF). As part of the bidding process for the allocation of funds, the DfT is encouraging local authorities to deliver innovative, but practical, solutions that demonstrate the application of new traffic optimisation technology.

A collaborative ITS ecosystem solution would fit these requirements. It would provide the enabling framework to incorporate SMEs into the solution and capitalise on the use of new emerging trends in computing and data science - including AI and machine learning, complex data processing, analysis and modelling – as well as new and advanced forms of detection and monitoring.

DfT guidance also singles out newer technologies such as optimisation, which use these data trends, and Yunex Traffic's FUSION intelligent adaptive control solution fits firmly in this space. FUSION continuously monitors approaching traffic and develops accurate indicators of congestion and traffic disruption using a wide range of data sources.

The system ensures traffic management decisions and target outcomes for all road users, not just cars, are policy-driven. Traffic signal timings can be optimised to enable more people and goods to move around our towns and cities with fewer delays, or to ensure active travel modes and cleaner air outcomes are prioritised.

As a result, road users will benefit from improved journey times, traffic flows and responses to incidents, as well as better data and customer information. In turn, this will lead to reduced congestion and improved air quality, making cities healthier, more sustainable and more attractive.

DIGITAL TWIN SOLUTION FOR TEES VALLEY

In line with the DfT's objectives, and in an industry first, Yunex Traffic and Aimsun are delivering a digital twin solution for Tees Valley Combined Authority (TVCA). Although in its early stages, this innovative solution is essentially an ecosystem in itself and will deliver a range of benefits, including improving bus service reliability and reducing delays, congestion and emissions across its transport network.

The digital twin will use simulation and data analytics to predict future network conditions, allowing traffic management actions to be implemented either automatically or with the involvement of a traffic operator. Machine learning algorithms enable the Tees Valley traffic management team to continually monitor and evaluate real-time traffic, bus, and signal data feeds across the entire transport network. The digital twin draws data from Yunex Traffic's existing Stratos and UTC-UX traffic management systems, with this real time data now integrated with the Aimsun Live predictive decision support system in a single, powerful platform.

Within just a few minutes of receiving the data, the digital twin will provide comprehensive predictions and assessments of near-real-time and upcoming traffic states, up to 60 minutes into the future. This predictive element allows for a far more proactive approach to traffic management. Not only will it get late-running buses back on time, it will also identify buses that look likely to fall behind schedule and help them get back on track before the delay even occurs.

The automated digital twin will bring cost savings from reduced manning of existing systems, and also help the authority implement the best strategies to reduce congestion and emissions, whilst providing a future-proof platform for testing future mobility solutions.

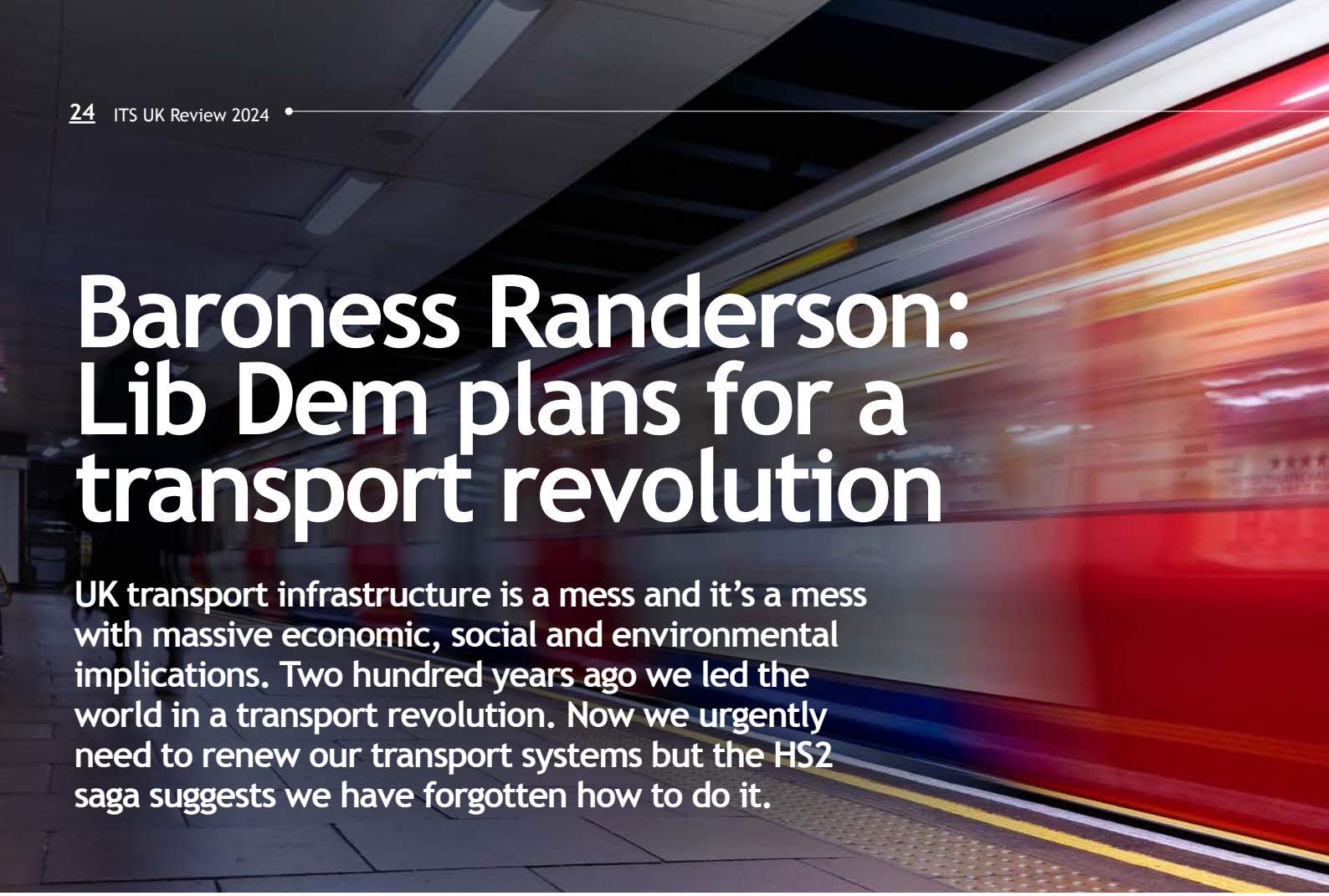
By delivering improvements in bus service reliability and reducing congestion emissions in schemes such as this, the aim is to continue to build confidence in public transport and encourage more people to use greener and more sustainable modes of transport.

The digital twin for TVCA and the Collaborative ecosystem concept place Yunex Traffic at the centre of an exciting new technological and cultural era for the ITS sector.

YUNEX TRAFFIC – THE SUPPLIER OF CHOICE FOR INTEGRATED ITS SOLUTIONS

A leader in intelligent transport systems and with the majority share of the UK urban traffic control and management software market, Yunex Traffic has a proven track record designing, developing, manufacturing, installing and maintaining a wide portfolio of intelligent traffic systems. We help transport authorities nationwide optimise their road networks, deploying the latest digital technology to make them more intelligent, efficient, sustainable, and safer.

Employing more than 1,000 people in 17 regional depots across the UK, our global manufacturing facility in Poole has a 200 strong team, and we have over 300 field service engineers and more than 90 research and development professionals in our business, bringing decades of expertise and experience to developing new products and systems.



Baroness Randerson: Lib Dem plans for a transport revolution

UK transport infrastructure is a mess and it's a mess with massive economic, social and environmental implications. Two hundred years ago we led the world in a transport revolution. Now we urgently need to renew our transport systems but the HS2 saga suggests we have forgotten how to do it.

Liberal Democrats aim to create a more equal society, and a more prosperous economy, which puts our personal health and the health of our planet at its core. That requires a very different approach from the one taken in recent years, and technology will be crucial to achieving these changes.

A fairer society means much greater investment in public transport. The Government talks a lot about how much they subsidise trains and buses, but we need to change the terms of debate and talk about investment instead.

Reversing the decline in bus services, modern zero emission buses and better real time passenger information, multi modal integration of services and smart ticketing – all these are achievable with greater investment. They would transform many areas that have been left behind economically, including rural areas which have become bus deserts. It is the poorest, the youngest and the oldest of us who rely most on bus services. Improving them, and giving local authorities more powers to organise the bus services they need, will help young people to get to college, into training and a job. It will help all of us get into town for shopping, so good for the high street. It will enable us to keep our hospital appointments or visit our family. And much more.

While fuel duty has been frozen, train and bus fare increases have run ahead of inflation. If we are to encourage more people to use public transport then it has to be more affordable. Fairer fares are a Lib Dem commitment and we suggest for example a Young Person's Buscard for 19-25 year olds, offering a third off fares. We would freeze rail fares while Great British Rail is established and gets to work on rolling out smart ticketing. We will maintain the £2 cap on bus fares while we use technology and data to review bus fares and establish a fairer structure.

Our railways have become notoriously unreliable and to solve this we will immediately press ahead with setting up Great British Rail to co-ordinate both the network and train operating services: crucially taking decision making out of the direct control of Ministers. Too many ministerial u-turns and too much short term thinking has played havoc with investment in rail modernisation. We will invest in modern technology to significantly extend electrification, and to pilot other alternatives such as batteries. We will upgrade stations and greatly improve disabled access. We will work with local authorities to set up new light rail schemes.

In London 25% of journeys are by car. In the rest of the UK that figure is 75%. We all deserve a London style intensity of public transport provision. Tackling climate crisis requires an urgent change in our reliance on cars and how much we walk and cycle, as well as how we use public transport. Lib

In London 25% of journeys are by car. In the rest of the UK that figure is 75%. We all deserve a London style intensity of public transport provision.

Dems plan an important investment in a nationwide active travel strategy. E-bikes and e-scooters offer opportunities as well as challenges and they need proper modern regulation in order to maximise the potential benefits they offer. Not only are they an alternative to car travel but they are useful for deliveries.

However, the car will remain central to the lives of very many families and sadly the Government has failed to take the lead in the transition to electric vehicles. We believe it was a big mistake for the Government to drop the 2030 date for all new cars and vans to be zero-emission. It undermined investment in automobile manufacturing and removed the incentive for both commercial and private purchasers to buy EVs. We need to restore that incentive and we will also take the lead in ensuring a much faster roll-out of public charging points. We need to ensure they are equally easy to find wherever you live, that they are accessible to people with disabilities and that they cost no more to use whether you are charging at home or in a public place. That would mean reducing VAT on public chargers to 5%.

Just as cars will remain important to the lives of many people for the foreseeable future, so will aviation. Therefore it is essential that we reduce the climate impact of flying. We need to encourage research and development to make UK a world leader in zero-carbon flight, supporting research into Sustainable Aviation Fuel, hydrogen and electricity. It is time to reform taxation of international flights but we must avoid inflating the cost of summer holidays for ordinary families. So we suggest a new super tax on private jet flights. We also need to modernise airspace to reduce both air and noise pollution around airports, and we must improve public transport access to many airports.

As an island, our ports are vital to our economy, for freight and for passenger services. The cruise industry for instance, is increasingly important. Yet port authorities find it very difficult to decarbonise their services because it is so difficult to expand links to the National Grid. This is a problem that affects many aspects of our transport systems and holds back the roll out of zero carbon technologies. We must reform the way projects are prioritised and expand Grid capacity.

When specialists are asked about the future of transport, we tend to become misty eyed about drone deliveries and the joys of the open road travelled in an Automated Vehicle. Both of those offer revolutionary change but for most people the advantages of changes in technology are much more routine. The vast majority of us travel beyond our immediate neighbourhood. Those few who can't do so, or do not wish to do so, still depend on others being able to travel to them, to deliver goods or services. We all depend on transport. The transport transformation we need – from family holidays using electric cars, to multi-modal ticketing on integrated public transport for your daily commute – all of it requires us to apply new technological solutions to long-standing, routine problems.

Britain has fallen behind in investment in the research and the infrastructure modernisation we need to implement this transformation. We need a fresh approach to the importance of efficient transport, led by a fresh Government, prepared to commit to long term planning and investment.

Baroness Randerson, Liberal Democrat
Transport Spokesperson

We need a fresh approach to the importance of efficient transport, led by a fresh Government, prepared to commit to long term planning and investment.

Go Green: How to use traffic technology to improve local sustainability credentials

In April 2023, Defra published its Air Quality Strategy, laying out a strategy and framework for local authorities to follow to support the UK in achieving its local and national objectives.

Mike Guerin
Head of Business Development, SWARCO UK & Ireland

Road traffic is a major drain on air quality, with fuel-based engines emitting harmful greenhouse gases and fine particulate matter. The UK's urban areas are reported to have NO2 levels up to 5.2 times the World Health Organisation's recommended levels, so it's clear why this needs to be addressed.

Defra's goals are ambitious, aiming to reduce average population exposure to fine particulate particle matter (PM2.5) in the air by 35% by 2040. Reaching these targets will require authorities to employ impactful strategies, which will need to include turning to technology.

Data from Juniper Research suggests that smart traffic technologies could help cut 205 million metric tonnes of CO2 by 2027 with continued investment and implementation. There are a variety of ways that technologies can be used to monitor, assess and improve air quality, and by focusing on the following measures, local authorities can make better progress towards their sustainability targets.

YOU CAN'T MANAGE WHAT YOU CAN'T MEASURE

It may sound obvious, but it's impossible for local authorities to set future sustainability targets and goals, without having a clear picture of the current situation. Data – and ongoing benchmarking – needs to be central to any sustainability strategy to demonstrate progress and allow decision-makers to see which levers are most effective, and to inform what needs to be done next. Where does data come from?

Air quality sensors can be embedded throughout cities and towns to collect and report data in real time concerning air pollution and weather and give a clearer picture of what is in the air. By combining historical and real-time data, other technologies, such as variable message signs (VMS), can be incorporated to influence driver behaviour. If you can use traffic technology to, for example, prevent a vehicle from idling (which releases 450g of CO2 per ten minutes), or from entering already congested areas you can measure the impact of changes. As well as in-the-moment improvements, data can be used by town planners for long-term strategies to model the impact of implementing new projects, such as adding an extra priority lane to a road.

MINIMISING CONGESTION

VMS, along with C-ITS technology, informs road users about live pollution levels and allows them to make informed decisions. Vehicles can be diverted away from traffic jams and heavily polluted areas and this reduction in congestion is one of the most efficient ways to reduce pollution in cities. Using simulation software, Strasbourg in France, for example, found that vehicle stops could be reduced by 9%, and nitrogen oxide and particulate matter could be reduced by 8% and 9% respectively, by installing an adaptive traffic control system as an air pollution control measure.

Signage can also be used to promote alternative transport options, such as park and ride to minimise private cars in city centres, and display where parking is available to reduce the time circulating for a space.

EFFICIENT HARDWARE

When updating traffic signals, local authorities should ensure that hardware installed is both durable and low energy. LED signals can operate on very little energy input, with some being totally off-grid.

Harnessing renewable energy such as solar and wind to power signs displays a continued commitment to green energy and improving air pollution. By choosing products that have proved longevity, local councils will save money in the long run and ensure that locked-in carbon isn't wasted from products that need frequent upgrades or replacements.

PRIORITISING PUBLIC TRANSPORT

Encouraging car users to take public transport hugely cuts emissions, but that will only happen where public transport is an attractive option. Key methods of achieving this are integrated fares, so tickets are easy to access and cover multiple transit modes, and physical planning that prioritises public transport, such as bus lanes.

Bus priority schemes are a great example of technology supporting physical planning. For example, traffic management systems (TMS) can detect buses approaching traffic lights, ensuring they stay green until the bus passes through. This makes buses a more efficient mode of transport than cars, subsequently encouraging their use.

PROMOTE E-MOBILITY

When it comes to traffic pollution, electric vehicles are, of course, the key way to eliminate harmful engine pollutants. Clean air zones across Europe and impending bans on petrol and diesel cars are encouraging uptake, but EVs still only account for 3.1% of cars on UK roads.

However, one of the main barriers to EV ownership is concerns about infrastructure. Local authorities need a robust EV strategy to ensure there are – and will continue to be – an adequate provision of charging points throughout their districts to build trust in e-mobility and encourage more people to make the switch.

As a council looking to make significant advances in improving air quality for your constituents, smart traffic management should be high on your list of solutions. SWARCO is already helping local authorities to 'think green' and supporting them to reduce harmful pollutants in towns and cities, so if you want to speak with one of our experts to help you go green visit www.swarco.com/gogreen-uk-0 or contact mike.guerin@swarco.com.

Directory
ITS UK members

Intelligent Transport Systems UK
Empowering Transport Technology

Organisation (E Executive Member)	Contact details	Our Sectors	Our Services
4way Consulting 4way delivers specialist technology consultancy advice and support, working with clients who provide high-quality transportation and mobility solutions for their customers. We collaborate with our clients, designing and delivery innovative digital solutions which make Connected Roads, Smart Cities, and Future Mobility a reality.	Jason Loader T: (0)77 3800 1336 E: jason.loader@4wayconsulting.com W: www.4wayconsulting.com	Road | Active Travel & Micromobility | Integrated Transport	Enforcement | Cooperative systems & CAM | IoT, 5G & Connectivity | EV & Charging technology | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance
Acusensus	Shaun Miller T: +61 476 897 395 E: shaun@acusensus.com W: www.acusensus.com	Road	Enforcement
AECOM	Lee Street T: +44 7900 910563 E: lee.street@aecom.com W: www.aecom.com	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
Aimsun	James Daniels T: 020 3695 7895 E: James.Daniels@aimsun.com W: www.aimsun.com	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Light or heavy rail	Traffic Management | Digital twins & predictive maintenance
Alchera Technologies	Anna Jordan T: 07851228046 E: anna@alcheratechnologies	Road | Bus or Coach | Active Travel & Micromobility | Integrated Transport | Freight, Logistics or Maritime	Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | EV & Charging technology | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance
Algosystems Qatar A market leader in ITS | ICT | cybersecurity | and Security systems with a proven track record of executed projects in the state of Qatar and the Middle East. Our clients include government | semi-government | and private enterprises. As a part of the Region 2030 vision | we aim to provide world-class technology solutions.	Moath Alomari T:+974555773833 E:ceo@algosystems-qatar.com / mouathmf@yahoo.com	Road | Shared Mobility | Parking | Integrated Transport | Drones or UAVs | Light or heavy rail	Tolling or road user charging | Enforcement | Cooperative systems & CAM | IoT, 5G & Connectivity | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Mobility as a Service
Allan Hill	Allan Hill T: 07517457486 E: allanhill.deecee@gmail.com		
Amalo Consulting Ltd	Nathan Brook T: 07564 051739 E: nathan@amalo.co.uk W: www.amalo.co.uk	Road	Traffic Signals
E **Amey**	Tom Cox and Emily See E: tom.cox@amey.co.uk and emily.see@amey.co.uk W: www.amey.co.uk	Road | Active Travel & Micromobility | Shared Mobility | Integrated Transport | Freight, Logistics or Maritime | Light or heavy rail	Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | EV & Charging technology | Digital twins & predictive maintenance | Mobility as a Service
Amazon Web Services (AWS)	Jack Lamport E: jlamport@amazon.co.uk W: www.amazon.co.uk		
ANGOKA	Richard Barrington T: 07590034674 E: r.barrington@angoka.io W: www.angoka.io	Road | Bus or Coach | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs	Cooperative systems & CAM | IoT | 5G & Connectivity | EV & Charging technology | Traffic Management | Data Services & Cloud | Mobility as a Service | Cyber Security for Digital Systems

Organisation (E Executive Member)	Contact details	Our Sectors	Our Services
ARCADIS **E Arcadis** Delivering sustainable design, engineering, and consultancy solutions. Arcadis is the world's leading company delivering intelligence-driven sustainable design, engineering, and consultancy solutions for natural and built assets. We are more than 36,000 architects, data analysts, designers, engineers, project planners, and technical experts, all driven by our passion for improving quality of life.	Graeme Scott T: +44 141 331 4500 E: graeme.scott@arcadis.com W: www.arcadis.com	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail | Aviation | Maritime/Ports	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service | Smart Cities and Communities | Network Management and Operations | Air Quality and Environmental | Climate Technologies
Ardesey	Ben Cole T: +44 (0)7775 935285 E: ben@ardesey.com W: www.ardesey.com	Communications | Marketing | Engagement	Associated Services, such as recruitment, communications or HR
E Arup	Alastair Boswell T: 0781 301 5020 E: alastair.boswell@arup.com W: www.arup.com		
Aston University	Maria Chli T: 0121 204 3443 E: m.chli@aston.ac.uk W: www.maria-chli.org	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service | Associated Services, such as recruitment, communications or HR
AtkinsRéalis **E AtkinsRéalis** We're AtkinsRéalis, a world-leading design, engineering and project management organisation. We connect people, data and technology to transform the world's infrastructure and energy systems. We deliver solutions that improve safety and deliver faster, more efficient journeys to customers by engineering a better future for our plant and its people.	Jake Masters T: +44 1372 752 180 E: jake.master@atkinsglobal.com W: www.atkinsrealis.com	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT, 5G & Connectivity Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service | Associated Services, such as recruitment, communications or HR
E Balfour Beatty	Nick Fearnhead M: +44 (0)7707 269146 E: nick.fearnhead@balfourbeatty.com W: www.balfourbeatty.com	Road | Bus or Coach | Integrated Transport | Freight, Logistics or Maritime | Light or heavy rail	Tolling or road user charging | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance
Bank Top Consulting **Bank Top Consulting** Bank Top Consulting provides expertise in Technology Consultancy and Strategic Business Development through advising transport and automotive clients on ITS, Traffic Management Systems, Digital Highways, Connected Vehicle Mobility and CAM. Our Advisory and Programme Delivery experience supports Public and Public Sector Organisations, Automotive Companies, Technology Integrators and Transport Network Operators.	Richard Schofield T: 07775 662842 E: richard.schofield@banktop.tech W: www.banktop.tech	Road | Integrated Transport	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT, 5G & Connectivity EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance
British Motorcyclists Federation	Anna Zee T: 07791 570819 E: Anna.zee@bmf.co.uk W: www.bmf.co.uk	Road | Parking | Integrated Transport | Freight, Logistics or Maritime	Tolling or road user charging | Enforcement | Cooperative systems & CAM | IoT | 5G & Connectivity | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Mobility as a Service
Boundary Concepts	Mark Reynolds T: (0) 7736 159 853 E: mark@boundaryconcepts.com	Road | Rail	Enforcement | Demand responsive transport | Traffic Management | Integrated assessment of need & Training | Risk Based Assessments of Need for Road Restaints and Hostile Vehicle Mitigation
Bournemouth Christchurch and Poole Council	Michelle Fillingham T: 01202 128584 E: michelle.fillingham@bcpcouncil.gov.uk W: bcpcouncil.gov.uk	Road	Demand responsive transport | IoT | 5G & Connectivity | Traffic Management
British Parking Association	Yasmin Jefferies T: 01444 447311 E: yasmin.j@britishparking.co.uk W: www.britishparking.co.uk	Parking	Enforcement | Ticketing & Payments | EV & Charging technology | Traffic Management | Mobility as a Service

Organisation (E Executive Member)	Contact details	Our Sectors	Our Services
BT Active Intelligence	Sara Rodriguez Terres E: sara.rodriguezterres@bt.com W: https://activeintelligence.bt.com/		
Burden Consulting	Mike Burden T: 07850 348 134 E: mike.burden@burdenconsulting.co.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Light or heavy rail	Tolling or road user charging | Enforcement | Demand responsive transport | Passenger Experience & Journey Planning | Ticketing & Payments | Data Services & Cloud | Mobility as a Service
Centras Associates	Alan Gentle T: 07810708128 E: alan.gentle@centras.co.uk W: www.centras.co.uk		
Cenex	Tara Martin T: 07483 054331 E: tara.martin@cenex.co.uk W: www.cenex.co.uk		
Chris Kennett Consulting	Chris Kennett T: 07753804411 E: chris@chriskennett.consulting W: www.chriskennett.consulting	Road	Traffic Management
E **Clearview Intelligence**	Ashley Morrell-Swain T: 01908 088008 E: Ashley.Morrell-Swain@clearview-intelligence.com Alternate: Nick Lanigan E: nick.lanigan@clearview-intelligence.com T: 07738 958 773 W: www.clearview-intelligence.com	Road | Active Travel & Micromobility | Parking	Traffic Management | Data Services & Cloud
Clearway Group	Simon Waterfall T: 0203 325 0250 E: Simon.waterfall@clearway.co.uk W: www.clearway.co.uk		
Coeval	Scott Hatcher T: 07585 941627/0121 427 9590 E: scott.hatcher@coeval.uk.com W: www.coeval.uk.com	Road | Active Travel & Micromobility | Parking | Integrated Transport	Signage and Overheight detection
E **Cognizant Worldwide**	Natasha Cordell T: (0) 7385 425069 E: Natasha.Cordell@cognizant.com W: www.cognizant.com	Road | Bus or Coach | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	IoT | 5G & Connectivity | Data Services & Cloud | Digital twins & predictive maintenance | IT Services
E **Connected Places Catapult**	Silvia Peneva T: 07909 208874 E: silvia.peneva@cp.catapult.org.uk W: www.cp.catapult.org.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	IoT | 5G & Connectivity | Passenger Experience & Journey Planning | EV & Charging technology | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
Costain Integration Technology Solutions	Sarah Atkinson E: sarah.atkinson@costain.com M: 07889875560 W: www.costain.com	Road | Integrated Transport | Light or heavy rail	Cooperative systems & CAM | IoT | 5G & Connectivity | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance
Coventry University	Kevin Vincent T: 079749 84581 E: aa7850@coventry.ac.uk W: www.coventry.ac.uk		
E **Crown Commercial Service (CCS)**	Steve Sopp T: 07759 133957 E: steve.sopp@crowncommercial.gov.uk W: https://www.crowncommercial.gov.uk/about-ccs/	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
E **Cubic Transportation Systems**	Krishna Desai T: 01737 782560 E: krishna.desai@cubic.com W: www.cubic.com/transportation		
E **Department for Infrastructure NI**	Philip Robinson E: philip.robinson@infrastructure-ni.gov.uk W: www.infrastructure-ni.gov.uk	Road	IoT | 5G & Connectivity | Telematics & Navigation Systems
Dorset Council	Lloyd Squibb T: 01305 225086 E: lloyd.squibb@dorsetcouncil.gov.uk W: www.traveldorset.org	Road | Bus or Coach | Active Travel & Micromobility | Parking | Integrated Transport	Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Data Services & Cloud | Mobility as a Service

Organisation (E Executive Member)	Contact details	Our Sectors	Our Services
egis **E Egis** Egis is a leading global consulting, engineering and operating firm. We work side by side with our clients, across every aspect of transport and the built environment to build a more balanced, sustainable and resilient world. Our talented people care deeply about using their creativity and expertise to shape a better future for communities all around the globe.	Name : Xavier Odolant T: + 33 6 22 86 42 63 E: xavier.odolant@egis.fr W: http://www.egis-group.com/	Road | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Light or heavy rail	Tolling or road user charging | Enforcement | Ticketing & Payments | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
emovis Abertis Mobility Services **emovis** Emovis, part of Abertis Mobility Services, is specialized in intelligent mobility solutions. We provide state-of-the-art toll-based mobility solutions and services, including Free Flow Tolling, Road Usage Charging, Next-gen Customer Service, Image Review, and Smart Enforcement. We are present in 12 countries, catering to public transportation agencies' quality and efficiency needs.	Dean Hamiliton T: (0) 7399 115505 E: dean.hamilton@emovis.co.uk W: www.emovis.com	Road	Tolling or road user charging | Enforcement
Electronic Media Servics (EMS)	Andrew Lambert T: 01428751655 E: andrew.lambert@ems-uk.com W: www.emovis.com		
Essex County Council	Jo Heynes T: 01245 342556 E: Jo.Heynes@essexhighways.org W: www.essex.gov.uk/highways	Road | Bus or Coach | Active Travel & Micromobility | Parking | Integrated Transport	Enforcement | Passenger Experience & Journey Planning | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Digital twins & predictive maintenance | Associated Services, such as recruitment, communications or HR
Fewzed	Ryan Wood T: 07868 575748 E: ryan@fewzed.co.uk W: www.fewzed.co.uk		
E Gaist	Jake Lawson T: 01535 280066 E: jake.lawson@gaist.co.uk W: www.gaist.co.uk	Road | Active Travel & Micromobility	Condition Surveying and Asset Inventory/ Provision of Scheme Identification and Lifecycle Modelling
General Noise	Jason Dunne T: 07734856901 E: Jason@generalnoise.co.uk		
Genyz Transport Solution	Debo Shopade T: +44 79123 13058 E: debo.shopade@genyztransport.com W: www.genyztransport.com	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Integrated Transport | Freight, Logistics or Maritime | Light or heavy rail	IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Mobility as a Service
GEWI	Danny Woolard T: +44 7880 007415 E: danny.woolard@gewi.com W: www.gewi.com	Road | Active Travel & Micromobility | Integrated Transport	Cooperative systems & CAM | Traffic Management | Telematics & Navigation Systems | Work Zone Management | Emergency Alerts & Warnings | Connected Vehicles
E Glasgow City Council	Nicola Bell T: 0141 287 9447 E: nicola.bell@glasgow.gov.uk W: www.glasgow.gov.uk	Road | Active Travel & Micromobility | Parking | Integrated Transport	Enforcement | Traffic Management & Signal Maintenance
GoodVision	Daniel Stofan T: 420725365980 E: daniel.stofan@goodvisionlive.com W: www.goodvisionlive.com		
GoSwift	Madis Sassid E: madis.sassiad@goswift.eu W: www,goswift.eu	Freight, Logistics or Maritime	Demand responsive transport
Grid Smarter Cities Ltd	Neil Herron T: 07776202045 E: neil.herron@gridsmartercities.com	Road | Parking | Integrated Transport | Freight, Logistics or Maritime	Tolling or road user charging | Enforcement | IoT | 5G & Connectivity | Ticketing & Payments | EV & Charging technology | Traffic Management | Digital twins & predictive maintenance
HAAS Alert	Gareth Evans T: 07791869365 E: gareth@haasalert.com W: https://www.haasalert.com/		
Hampshire County Council	Emma Bower T: 07739 050679 E: emma.bower@hants.gov.uk W: www.hants.gov.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking	Enforcement | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | EV & Charging technology | Traffic Management | Mobility as a Service

Organisation (E Executive Member)	Contact details	Our Sectors	Our Services
Harrod Booth Consulting Ltd	Jon Harrod Booth T: 07990 520 404 E: Jon@harrodbooth.com	Road | Shared Mobility | Parking | Integrated Transport	Cooperative systems & CAM | EV & Charging technology | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance
Hertfordshire County Council	Derek Twigg T: 01992 658113 E: Derek.twigg@hertfordshire.gov.uk W: www.hertfordshire.gov.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Drones or UAVs	Tolling or road user charging | Enforcement | Demand responsive transport | Passenger Experience & Journey Planning | EV & Charging technology | Traffic Management | Digital twins & predictive maintenance | Mobility as a Service
Highway Access Solutions	Andrew Dennison T: 01159 560008 / 07738 274470 E: andrew@highwayaccess.co.uk W: www.highwayaccess.co.uk	Road | Active Travel & Micromobility | Parking | Other	Transport Planning Consultancy
Ian Routledge Consultancy	Peter Routledge T: 01904 793666 E: peter@irconsultancy.co.uk W: www.irconsultancy.co.uk	Road	IoT | 5G & Connectivity | Data Services & Cloud | Digital twins & predictive maintenance | traffic management & signals
Imperial Civil Enforcement Solutions Ltd	Ashley Bijster T: 0117 925 1700 E: ashley.bijster@imperial.co.uk W: www.imperial.co.uk	Road | Active Travel & Micromobility | Parking | Integrated Transport	Tolling or road user charging | Enforcement | Ticketing & Payments
Imperial College London	Dr Aruna Sivakumar T: 01254 248177 E: a.sivakumar@imperial.ac.uk W: www.imperial.ac.uk/	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Research
E **Innovate UK**	Conor Chaplin T: 07566 777049 E: conor.chaplin@iuk.ktn-uk.org W: www.innovateuk.org		
INRIX	Dominic Paulo T: (0)7976456 473 E: dominic.paulo@inrix.com W: www.inrix.com	Road | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime	Tolling or road user charging | Demand responsive transport | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Data Services & Cloud | Mobility as a Service | Saftey Analytics | Curb Analytics
Institute of Highway Engineer (IHE)	Steve Spender E: steve.spender@theihe.org W: https://www.theihe.org/	Road	Highways Maintenance and Management
Intellias	Alexander Goncharuk T: 020 3287 8937 E: legal@digitallyinspired.com W: www.intellias.com	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Light or heavy rail	Tolling or road user charging | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
Intelligent Instruments	Steve Gosling T: 02381 555080 E: info@intelligentinstruments.co.uk W: www.intelligentinstruments.co.uk	Road	Enforcement | Ticketing & Payments | Data Services & Cloud | Noise
Interchange	Andrew Dowding T: +44 (0)7802 174890 E: Andrew.Dowding@ MeetingsofMinds.co.uk W: www.interchange-uk.com	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Associated Services, such as recruitment, communications or HR
Ioki - a DB Company	Anna Filby T: 4915237422357 E: anna.filby@ioki.com W: https://ioki.com/en/home/		
Isquaredt	Tim Gammons T: +44 7824 622387 E: tim@isquaredt.co.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime	Tolling or road user charging | Passenger Experience & Journey Planning | Ticketing & Payments | Traffic Management | Mobility as a Service
ISR Recruitment Ltd	Simon Mattock T: 07931 335414 E: smattock@isrecruit.com W: www.isrecruit.com	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs	Associated Services, such as recruitment, communications or HR

Organisation (E Executive Member)	Contact details	Our Sectors	Our Services
ITS Now	Alistair Gollop T: 07717 224 366 E: alistair.gollop@itsnow.org W: http://itsnow.org/	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime	Educational and informative resources across the ITS sector
ITSO Ltd	Julie Liburd T: 07776182290 E: julie.liburd@itso.org.uk W: www.itso.org.uk		
E **Jacobs**	Pryce Evans T: + 44 (0)7767 615176 E: Pryce.Evans@jacobs.com W: www.jacobs.com	Road | Active Travel & Micromobility | Shared Mobility | Integrated Transport | Freight, Logistics or Maritime | Light or heavy rail	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Digital twins & predictive maintenance | Mobility as a Service
JCT Consultancy	John Nightingale T: +44 (0) 1522 751010 E: sales@jctconsultancy.co.uk W: www.jctconsultancy.co.uk	Road | Bus or Coach | Integrated Transport	Traffic Management
JENOPTIK E **JENOPTIK (UK) Ltd** Jenoptik UK is part of the Smart Mobility Solutions division of Jenoptik | providing ANPR based | innovative | and sustainable solutions including technology and services for Road Safety | Public Security and Road User Charging. Our customers include local and central government | police and enforcement agencies | as well as public and private organisations.	Victoria Curran T: +44 1183 130303 E: victoria.curran@jenoptik.co.uk W: www.jenoptik.com	Road | Parking	Tolling or road user charging | Enforcement | Traffic Management | Data Services & Cloud
Jeremy Evans	Jeremy Evans T: 07811 943 051 E: jeremyevans@btconnect.com		
JFG Communications	Jo Field T: 0208 050 3156 E: jo@jfgcomms.co.uk W: www.jfgcomms.co.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Light or heavy rail	Associated Services, such as recruitment, communications or HR
Journeo	Paul Nelson T: 0203 651 9166 E: paul.nelson@journeo.com W: www.journeo.com	Bus or Coach | Parking | Integrated Transport | Light or heavy rail	IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Telematics & Navigation Systems | Digital twins & predictive maintenance | Security | Fleet Management | Real Time Passenger Information
E **Kapsch TrafficCom Ltd**	Tim Wray T: +44 7421834874 E: tim.wray@kapsch.net W: www.kapsch.net	Road | Integrated Transport	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | Traffic Management
Kier Services, Highways (Technology)	Duncan Rogers T: 07976 344189 E: Duncan.Rogers@kier.co.uk W: www.kier.co.uk		
KL Systems	George Brown T: 07889 950310 E: gbkls@hotmail.co.uk W: www.klsystems.co.uk	Road | Integrated Transport	Cooperative systems & CAM | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance
Kokpits	Name: Mohammed Alshekh Deeb E: mohammed@kokpits.com W: https://www.kokpits.com/	Integrated Transport	Demand Responsive Transport | Traffic Management | Mobility as a Service
Laser Tech	Hardeep Ubhey T: 01926698686 E: hardeep.ubhey@ltiuk.com		
Levett Business Services	Neil Levett T: 07774 290522 E: neil@levweb.uk W: www.levweb.uk		
E **Mason Street Furniture**	Mark Roberts T: 07896113202 E: Mark.Roberts@msfltd.co.uk	Road | Active Travel & Micromobility | Parking | Integrated Transport	Tolling or road user charging | Enforcement | IoT | 5G & Connectivity | EV & Charging technology
Marston Holdings	Rob Kinch T: +44 7920 109360 E: rkinch@videalert.com W: www.marstonholdings.co.uk		

Organisation (E Executive Member)	Contact details	Our Sectors	Our Services
Messagemaker Displays **Messagemaker Displays** Exceptional personal service, collabration and innovation are the 3 pillars to Messagemaker Displays, a leading supplier of LED traffic Mangement Sign to the highways Industry. Their range has solutions for all applications; from a 20mph zone speed sign to a tunnel Lane Control Sign and a motorway VMS.	Daniella de Nobrega T: 01737 774081 E: daniella@stocksigns.co.uk W: www.messagemaker.co.uk/ www.stocksigns.co.uk	Road | Parking | Integrated Transport | Light or heavy rail	Traffic Management
MobileMark antenna solutions **Mobile Mark Europe** Mobile Mark designs and manufactures antennas for 30MHz – 7.2GHz. For Public Transit, Fleet Management, 3G/4G,5G LTE, Wireless Video/Surveillance, ITS/DSRC, EV Charging, Robotics, Smart Highways, Smart Cities. Products include site, mobile, device and embedded antennas. We continue to develop antennas for global markets across the wireless spectrum. View more of our range by visiting www.mobilemark.com	Linda Clark T: 01543 459555 E: lclark@mobilemarkeurope.co.uk W: www.mobilemark.com	Road | Bus or Coach | Active Travel & Micromobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs	Communications Antennas
Mobility Flow	Chris Cowen T: 07929395727 E: Chris@mobilityflow.co.uk W: https://mobilityflow.co.uk/	Road | Active Travel & Micromobility | Shared Mobility | Integrated Transport | Freight, Logistics or Maritime	Cooperative systems & CAM | Passenger Experience & Journey Planning | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
Mobius Networks	Peter Simm T: 07500 332761 E: peters@mobiusnetworks.co.uk W: www.mobiusnetworks.co.uk	Road | Bus or Coach | Parking | Light or heavy rail	Tolling or road user charging | Enforcement | IoT | 5G & Connectivity | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud
Morodo	Ozan Gonec T:07395 350649 E: ozangonenc@gmail.com		
E **Mott MacDonald**	Stuart Scott T: 0141 222 4575 E: Stuart.scott@mottmac.com W: www.mottmac.com		
E **National Highways**	Vivi Michalaki T: +44 (0) 300 470 4512 E: Vivi.Michalaki@nationalhighways.co.uk W: www.nationalhighways.co.uk		
Navtech Radar	Meirion Winmill T: 01235 832419 E: meirion.winmill@navtechradar.com W: www.navtechradar.com	Road	Tolling or road user charging | Traffic Management | Digital twins & predictive maintenance
E **Neology UK Ltd**	James Riley or Luke Normington E: jriley@uk.neology.net or lnormington@uk.neology.net		
E **Netcompany**	Tom Richards T: 07709 449 728 E: tom.richards@netcompany.com W: https://netcompany.com/	Road | Bus or Coach | Integrated Transport | Freight, Logistics or Maritime | Light or heavy rail	Tolling or road user charging | Passenger Experience & Journey Planning | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance
Newcastle University	Phil Blythe E: Phil.blythe@newcastle.ac.uk W: https://www.ncl.ac.uk/engineering/research/civil-engineering/future-mobility/	Road | Active Travel & Micromobility | Shared Mobility | Freight, Logistics or Maritime | Light or heavy rail | Electric Vehicles | Environment	Research, Teaching and Learning
Nicander Ltd	Sam Brierley T: 07733014995 E: sam.brierley@nicander.co.uk W: www.nicander.co.uk Alternate contact: Rachael Quinn, T: +44 7717 811053 E: rachael.quinn@nicander.co.uk	Road | Bus or Coach | Integrated Transport	Data Services & Cloud | Digital twins & predictive maintenance
E **Nokia**	Mihnea Trifan T: 07816373350 E: mihnea.trifan@nokia.com W: www.nokia.com	Road | Integrated Transport | Drones or UAVs	IoT | 5G & Connectivity | Data Services & Cloud | Digital twins & predictive maintenance | Telecommunications
Ordnance Survey	Dave Russell T: +44 (0)7899 955298 E: david.russell@os.uk W: www.os.uk	Geospatial intelligence & mapping	

Organisation (E Executive Member)	Contact details	Our Sectors	Our Services
Oxfordshire County Council	Ruth Anderson T: 07825 755549 E: ruth.anderson@oxfordshire.gov.uk W: www.oxfordshire.gov.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs	Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Digital twins & predictive maintenance | Mobility as a Service | Air quality
P. Ducker Systems Ltd	Tim Whiteley T: 01332 280195 E: tim.whiteley@pdslimited.co.uk W: www.pdslimited.co.uk	Road | Active Travel & Micromobility | Integrated Transport	IoT | 5G & Connectivity | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance
Parliamentary Advisory Council for Transport Safety (PACTS)	Jamie Hassall T: 0207 222 7732 E: Jamie.hassall@pacts.org.uk W: www.pacts.org.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Enforcement | Cooperative systems & CAM | Telematics & Navigation Systems | Data Services & Cloud | Safety
Peter White	Peter White E: peterrwhite@gmail.com		
PH Initiatives Ltd	Paul Hutton T: 07919 163525 E: paul@phinitiatives.com W: www.phinitiatives.com	Road | Active Travel & Micromobility | Parking | Integrated Transport	Tolling or road user charging | Enforcement | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Associated Services, such as recruitment, communications or HR
Pipster Solutions	Pippa Birch T: 077875016552 E: pippa@pipster-solutions.co.uk W: www.pipster-solutions.co.uk	Bid Consultation, Management and Writing	Bid Consultation, Management, and Writing
PTV UK	Devrim Kara T: 0121 585 6633 E: devrim.kara@ptvgroup.com W: www.ptvgroup.com	Other	Tolling or road user charging | Demand responsive transport | Passenger Experience & Journey Planning | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service | Transport planning and modelling
Q-FREE **Q-Free** Q-Free UK provides a diverse range of ITS products and solutions that supply traffic data to help tackle congestion, promote sustainable travel, and support the delivery of national/local transport objectives. Q-Free UK's product portfolio: • High Speed Weigh-in-Motion • Traffic Count & Classification Monitoring • Cycle and Pedestrian Monitoring • Bluetooth™ Journey Time Monitoring	Jazzmyne Luke E: Jazzmyne.Luke@q-free.com W: www.q-free.com	Road | Active Travel & Micromobility	Tolling or road user charging | IoT | 5G & Connectivity | Traffic Management | Data Services & Cloud
E **Railway Industry Association**	Rose Garber T: 07824 665 007 E: rose.garber@riagb.org.uk W: www.riagb.org.uk		
E **RedSpeed International Ltd**	Stacey Sharif E: Stacey.Sharif@redspeed-int.com OR Sales@redspeed-int.com W: www.redspeed-int.com		
Reed Mobility	Nick Reed T: +44 7967 757820 E: nick@reed-mobility.co.uk W: www.reed-mobility.co.uk/	Road | Integrated Transport	Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Mobility as a Service | Safety
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Rennicks UK	Robert Tait T: +44 (0)1928 579966 E: rtait@rennicks.com W: www.rennicks.com	Road | Active Travel & Micromobility | Integrated Transport	Cooperative systems & CAM | IoT | 5G & Connectivity | Traffic Management
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Royal Institute of Navigation	John Pottle T: 020 7591 3134 E: director@rin.org.uk W: www.rin.org.uk	Road | Integrated Transport | Drones or UAVs	Tolling or road user charging | Cooperative systems & CAM | IoT | 5G & Connectivity | Telematics & Navigation Systems
Satellite Applications Catapult	Ashweeni Beeharee T: +44 (0)1235 567 999 E: ashweeni.beeharee@sa.catapult.org.uk W: https://sa.catapult.org.uk/		
SEA Ltd	Alastair Cobb T: 01373 852151 E: alastair.cobb@sea.co.uk W: www.sea.co.uk	Road | Parking | Integrated Transport | Freight, Logistics or Maritime | Light or heavy rail	Tolling or road user charging | Enforcement | IoT | 5G & Connectivity | Traffic Management | Data Services & Cloud
Secure Elements Ltd	Saket Mohan T: 07869637964 E: saket.mohan@secureelements.co.uk W: www.secureelements.co.uk	Other	IoT | 5G & Connectivity | Data Services & Cloud | Automotive Cybersecurity
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SG Transport Innovation Ltd	Stephen George T: 07977 492901 E: stevegeorge@sgti.co.uk W: www.sgti.co.uk		
SICE UK	Francisco Roldan T: 07771392519 E: fjroldan@sice.com W: www.sice.com/en		
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Smartjar	John Paddington T: 07538 792252 E: john.paddington@smartjar.co.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport	Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Mobility as a Service
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Society of Motor Manufacturers and Traders Ltd	Reema Parmar T: +44 (0)20 7344 9204 E: rparmar@smmt.co.uk W: www.smmt.co.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | EV & Charging technology | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
E **Sopra Steria**	Mark Oldfield T: 07738895448 E: mark.oldfield@soprasteria.com W: www.soprasteria.co.uk/	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Enforcement | Passenger Experience & Journey Planning | Ticketing & Payments | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service | Associated Services, such as recruitment, communications or HR
South Coast Science	David Johnson T: 07555460252 E: david.johnson@southcoastscience.com		

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E SRL Traffic Systems One of Europe's largest suppliers of mobile ITS, SRL has 30 depots across the UK and Ireland. SRL offer solar-hybrid temporary traffic signals, industry-leading VMS, intelligent plant crossings, portable CCTV, work-zone safety barriers, and portable UTMC. SRL's Urban64 can replicate all functionality of permanent systems, offering unrivalled reliability and functionality.	Alison Spooner E: alison.spooner@srl.co.uk W: www.srl.co.uk	Road | Active Travel & Micromobility Shared Mobility | Integrated Transport | Light or heavy rail	Demand responsive transport | IoT, 5G & Connectivity | Traffic Management | Mobility as a Service
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Starling Technologies	Andrew Caleya Chetty T: 07507 723012 E: andrew@starlingtech.co.uk W: www.starlingtech.co.uk	Road	Traffic Management | Data Services & Cloud | Safety
Steve Kearns	Steve Kearns T: 07866 265840 E: stevekearns17@hotmail.com		
SWARCO Traffic Limited / SWARCO UK & Ireland	John Pickworth T: 01748 824624 E: john.pickworth@swarco.com W: www.swarco.com	Road | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport	Passenger Experience & Journey Planning | Traffic Management | Data Services & Cloud
E SYSTRA	Eifion Jenkins 3rd Floor, 1 Carey Lane, London, England EC2V 8AE T: 020 3855 0079 E: mmuldoon@systra.com W: www.systra.co.uk/en/	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Light or heavy rail	Tolling or road user charging | Enforcement | Demand responsive transport | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
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Tamar Bridge & Torpoint Ferry Joint Committee	Andrew Vallance T: 01752 361577 E: andrew.vallance@tamarcrossings.org.uk W: www.tamarcrossings.org.uk		
Tech App Ltd	John Turner T: 07927 181267 E: john.turner@techappuk.com W: www.techappuk.com	Road | Bus or Coach | Active Travel & Micromobility | Integrated Transport | Drones or UAVs | Light or heavy rail	Tolling or road user charging | Enforcement | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
Teledyne FLIR	Sukhdev Bhogal T: 07513 020925 E: Sukhdev.Bhogal@teledyneflir.com W: https://www.flir.com/traffic/	Road | Shared Mobility | Integrated Transport | Other	Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Thermal cameras
Telent Technology Services Limited	Nigel Weldon T: 07793220075 E: Nigel.Weldon@telent.com W: www.telent.com		
Theoremus	Matt Kendrick T: 07858 411 891 E: mkendrick@theoremus.com W: www.theoremus.com	Bus or Coach | Shared Mobility | Integrated Transport	IoT | 5G & Connectivity | Ticketing & Payments | Digital twins & predictive maintenance | Mobility as a Service
The Traffic Group	Ian Hind T: 01452 854212 E: ian.hind@agd-systems.com W: www.agd-systems.com	Road | Active Travel & Micromobility | Parking | Other	Enforcement | Passenger Experience & Journey Planning | Traffic Management
Total Transportation Consultants Ltd	Jorgen Pedersen T: 07912-631210 E: totaltransportationconsultants@gmail.com		
Tim Rivett Consulting	Tim Rivett T: 07479 950850 E: tim@timrivett.co.uk W: www.timrivett.co.uk	Bus or Coach | Active Travel & Micromobility | Shared Mobility | Integrated Transport	Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
Trainline	Matthew Peake E: matthew.peake@thetrainline.com W: https://www.thetrainline.com/		

Organisation (E Executive Member)	Contact details	Our Sectors	Our Services
Transport Associates	Nigel Wall T: 07802 204759 E: nigel.wall@shadow-creek.biz W: www.transport-associates.net	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service | Associated Services, such as recruitment, communications or HR
Transport for Greater Manchester	Richard Dolphin T: 0161 244 1800 E: Richard.Dolphin@tfgm.com W: www.tfgm.com Alternate contact: David Watts T: 0161 244 1837 E: David.watts@tfgm.com	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service | Associated Services, such as recruitment, communications or HR
E **Transport for London**	Irfan Shaffi T: 020 3054 2721 E: irfanshaffi@tfl.gov.uk W: www.tfl.gov.uk		
E **Transport for West Midlands**	Chris Lane T: 0121 214 7022 E: chris.lane@tfwm.org.uk W: www.tfwm.org.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service | Associated Services, such as recruitment, communications or HR
Transport Logic Limited	Mike Hayward T: mike.hayward@transportlogic.co.uk E: info@transportlogic.co.uk W: www.transportlogic.co.uk		
E **Transport Research Laboratory (TRL)**	James Long T: +44 (0)1344 770434 E: jlong@trl.co.uk W: www.trl.co.uk		
E **Transport Scotland**	Stephen Davies T: 0141 272 7947 E: stephen.davies@transport.gov.scot W: www.transport.gov.scot	Road | Active Travel & Micromobility | Integrated Transport | Light or heavy rail	Enforcement | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
Trapeze Group (UK)	Paul Everson T: 0844 561 6771 E: paul.everson@trapezegroup.com W: www.trapezegroup.com	Bus or Coach | Active Travel & Micromobility | Shared Mobility | Integrated Transport	Demand responsive transport | Passenger Experience & Journey Planning | Ticketing & Payments | Data Services & Cloud | Mobility as a Service
Trevor Ellis Consulting	Trevor Ellis T: 07796 424363 E: trevor@trevorellis.co.uk W: www.trevorellis.co.uk	Road	Tolling or road user charging | Enforcement
Truvelo (UK)	Calvin Hutt T: 020 8847 7700 E: calvin@truvelouk.com W: www.truvelouk.com	Parking | Other	Enforcement | EV & Charging technology | Traffic Management | Data Services & Cloud
University of Leeds	Oliver Carsten T: 0113 343 5348 E: o.m.j.carsten@its.leeds.ac.uk W: www.its.leeds.ac.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Light or heavy rail	Tolling or road user charging | Enforcement | Demand responsive transport | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Digital twins & predictive maintenance | Mobility as a Service
University of Southampton	Simon Blainey T: (0)23 8059 2834 E: t.j.cherrett@soton.ac.uk W: www.trg.soton.ac.uk	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Demand responsive transport | Cooperative systems & CAM | Passenger Experience & Journey Planning | Traffic Management | Digital twins & predictive maintenance | Mobility as a Service
University of Warwick	Siddartha Khastgir T: 024 7615 1528 E: S.Khastgir.1@warwick.ac.uk	Road | Bus or Coach | Integrated Transport | Freight, Logistics or Maritime	Cooperative systems & CAM | Safety

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Vaisala	Daniel Johns T: 07867 557812 E: daniel.johns@vaisala.com W: www.vaisala.com		
E **Valerann UK**	Olga Gonzalez T: +44 20 8133 7691 E: olga.gonzalez@valerann.com W: www.valerann.com	Road | Integrated Transport	Data Services & Cloud | Safety | Road Traffic Management
Verra Mobility	Oliver Bain T: +447534862803 E: Oliver.Bain@VerraMobility.com W: www.verramobility.com	Road | Bus or Coach | Shared Mobility | Parking | Integrated Transport	Tolling or road user charging | Enforcement | Ticketing & Payments | Traffic Management
Via Transporation UK (ride with via)	Samuel Griffiths T: 07736068351 E: samuel.griffiths@ridewithvia.com W: https://ridewithvia.com/		
Virizion Services Ltd	Sharon Kindleysides T: 07712 583868 E: sharon.kindleysides@gmail.com		
VivaCity	Vitor Kono E: vitor.kono@vivacitylabs.com W: www.vivacitylabs.com	Road | Bus or Coach | Active Travel & Micromobility | Shared Mobility | Integrated Transport	Demand responsive transport | Traffic Management | Data Services & Cloud | Mobility as a Service
Fits Traffic (WeAreDots)	Juris Vilder T: 371 67509912 E: info@wearedots.com W: www.wearedots.com	Road	Tolling or road user charging | Enforcement | Traffic Management | Data Services & Cloud
Westcotec	Olly Samways		
White Willow Consulting Ltd	Andy Graham T: 07979 248298 E: andy@whitewillow.Biz W: www.whitewillow.biz	Road | Active Travel & Micromobility | Parking | Freight, Logistics or Maritime	Tolling or road user charging | Enforcement | Cooperative systems & CAM | IoT | 5G & Connectivity | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance
Will Baxter Design Agency	Will Baxter	Road | Bus or Coach | Light or heavy rail	Design
WJ Group	Tom Howarth T: 07970 907898 E: tom.howarth@wj.uk W: www.wj.uk		
E **Worldline**	Martin Howell T: 07855 981912 E: martin.howell@worldline.com W: www.worldline.com		
wsp E **WSP Group Limited** Through excellent technical delivery and leadership, WSP's Intelligent Infrastructure team are established global influencers in net zero, vision zero and digitally enabled design. Our growing range of capabilities allows us to play a leading role in enabling Future Ready, decarbonised and digitally transformed transportation, satisfying the ever-evolving needs of society.	Catherine Whitfield E: Catherine.Whitfield@wsp.com W: www.wsp.com	Road | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime | Drones or UAVs | Light or heavy rail	Tolling or road user charging | Enforcement | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | Ticketing & Payments | EV & Charging technology | Traffic Management | Telematics & Navigation Systems | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
E **Yunex Traffic**	Matthew Vincent T: 07808 822258 E: matthew.vincent@yunextraffic.com W: www.siemenstraffic.com	Road | Active Travel & Micromobility | Shared Mobility | Parking | Integrated Transport | Freight, Logistics or Maritime	Tolling or road user charging | Enforcement | Cooperative systems & CAM | IoT | 5G & Connectivity | Passenger Experience & Journey Planning | EV & Charging technology | Traffic Management | Data Services & Cloud | Digital twins & predictive maintenance | Mobility as a Service
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Overcoming the challenge of accurately monitoring and evaluating the benefits of Travel Demand Management interventions

With the Department for Transport (DfT) reporting road traffic returning to pre-pandemic levels, it is no surprise that the UK's strategic and local road networks are under increasing strain from customer demand. Government sustainability commitments, such as Net Zero, also mean there is a stronger focus on solutions that promote sustainable travel choices and achieve decarbonisation goals.

Graham Nichols
Intelligent Mobility Leader, Arup

Travel Demand Management (TDM) is a set of scalable intervention strategies aimed at achieving one of four outcomes, defined as the 'four Rs', that aim to influence localised travel behaviour, optimising network demand and alleviating congestion during delivery of major schemes, large trip generating events and periods of recurrent congestion. Potential interventions are diverse and include from roadside deployment of physical infrastructure, digital and data driven solutions and applications, and customer engagement activities and incentivisation.

TDM as an approach to network management is not new. One of the strengths of TDM is that it is flexible, providing an environment that supports innovation and offers a route to trial new interventions, technologies, and approaches early in their lifecycle.

There has since been a significant shift in priorities within the transport sector with a growing focus on monitoring and evaluation by transport authorities seeking to justify the value of investment due to limited budgets. This includes undertaking benefits mapping exercises to identify potential benefits, how they can be measured, and the associated success which drives an outcomes-based approach. The diversity of TDM interventions and the potential for innovative new solutions means sourcing accurate, granular data that can demonstrate the benefits of a specific intervention is one of the key challenges to TDM. Traditional travel and transport datasets often do not provide the required insight or baseline for analysis. There are several ways in which this can be overcome:

- Collaboration is key to the success of monitoring the impacts of TDM interventions, with national, regional, and local cross-mode transport authorities required to share data, as well as engage with local trip generators and travellers for additional data. This can be through staff travel surveys, workplace travel grants, and stakeholder engagement

The Four Rs

- **Reduce unnecessary journeys**
- **Reroute journeys to less congested roads**
- **Retime journeys to avoid peak demands**
- **Remode journeys to alternative ways to travel**

to collect data from travellers, providing evidence of the benefits the interventions delivered in terms of customer behaviour changes.

- Building monitoring and evaluation data requirements into the design of interventions. The mobile app gamification intervention 'Beat the Street' incentivises travellers to shift to active travel modes by rewarding them for tapping a network of dedicated sensors across the game area (usually a town). The data collected by the intervention can be used to assess uptake, changes over time, and impacts on local traffic.
- Adopting emerging digital and data techniques, such as Digital Twins of integrated transport networks or the creation of synthetic populations, activity-based demand models, and simulations using Agent Based Modelling (ABM) techniques, to develop robust forecasts of TDM benefits during planning. Opening-up multi-modal transport data can drive the development of new applications and solutions by service providers that aim to influence traveller behaviours.

Going forward, rigorous monitoring to develop an evidence base is essential for shaping best practices in future projects and providing valuable insights for upcoming initiatives. This will demonstrate the effectiveness of TDM investments, their ability to deliver value for money, achieve desired outcomes, and align with strategic transport goals.

Optimising the performance of our transport networks – the emergence of a national mosaic of operational Digital Twins

The outcomes users seek from transport remain largely consistent – safe, clean, accessible, low-cost, efficient, resilient, personalised and seamlessly integrated to name a few. What's really changing is how the network is used, and the technological landscape that supports it. It's this last point that is enabling the transport industry to think differently about how we achieve these outcomes, now and into the future.

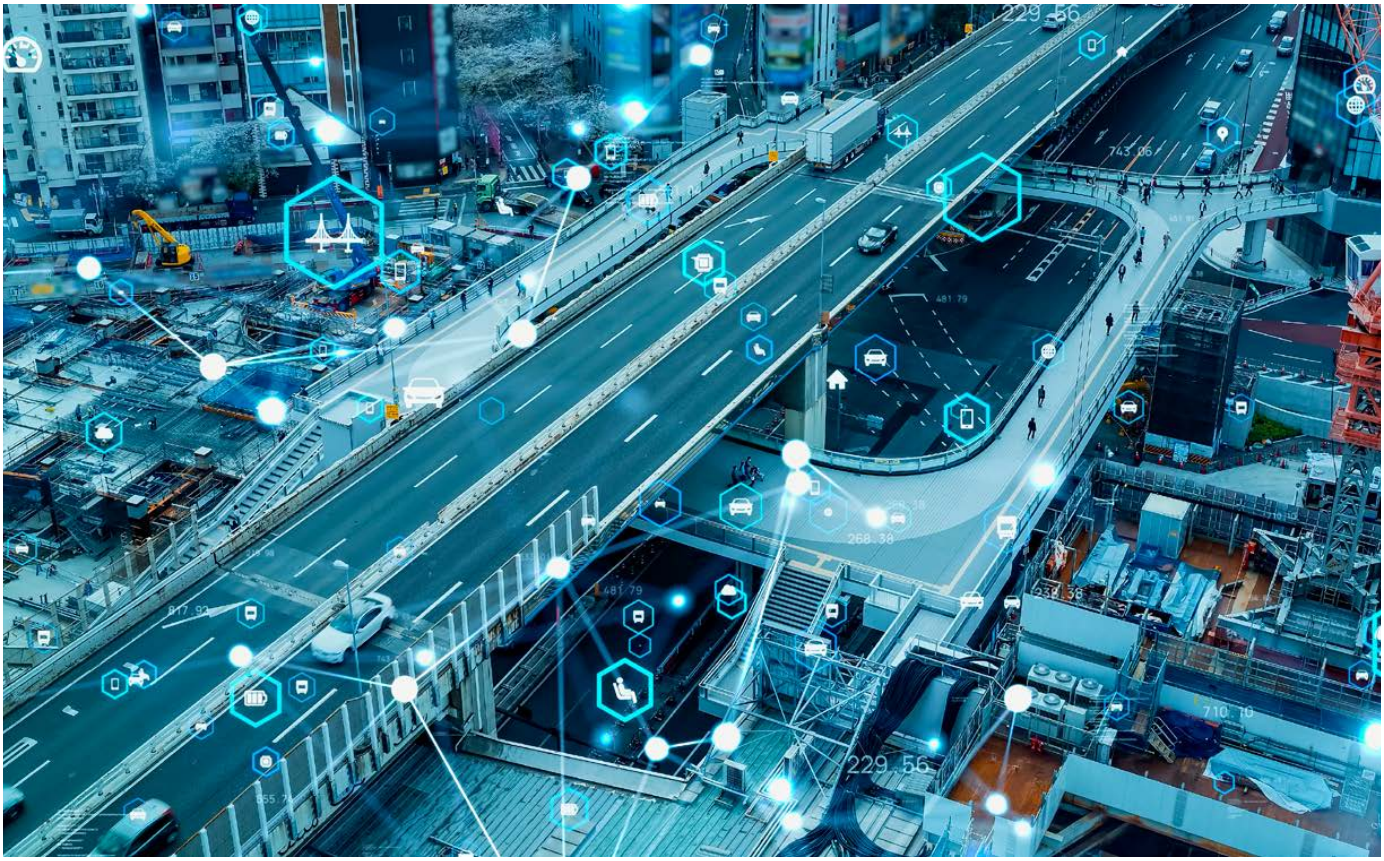
Ryan Hood
Digital Highways Leader, Arup

One such way of thinking differently is the application of 'digital twins', a term gaining popularity, and nearly always presented as a future state never to be achieved. Yet NASA has been applying such concepts to digitally replicate the extreme environments it operates in with real benefits for decades. And many of us use Waze, including near real-time traffic and hazard information, every day. This new state is really the adoption of the digital twin concept, a high fidelity digital representation of a physical transport system, with a two-way dynamic connection between the cyber and physical worlds, at massive scale (city, region and nation scale). The ability to connect agencies across places, connect transport modes - land sea and air, and link to adjacent sectors such as environment, energy, and telecommunications, presents real opportunities to truly understand and improve our transport systems.

This increased connectivity can increase situational awareness of what is happening across networks and improve responsiveness and resilience when disruptions occur. Instead of one single monolithic twin of the UK transport system, what is emerging is a complex mosaic of connected twins sharing relevant data about the performance of the network, emergent action to optimise the transport system locally and as a whole.

Transport for London (TfL) has developed a digital twin for surface transport operations, part of the Surface Intelligent Transport System (SITS) programme generating a Benefit Cost Ratio (BCR) exceeding 7:1, with expected value for money benefits of £1bn from 2028. The insights generated is leading to improvements in situational awareness, incident management, congestion relief, air quality, road safety, and supporting the prioritisation of bus services and active travel across London.

Similarly, Transport for West Midlands Regional Transport Coordination Centre (TfWM RTCC) and Incident Management System has led to significant improvements in situational awareness and network resilience, coordination with local authorities, transport operators, and emergency services, as well as communication with transport users – improvements of 10% in bus route punctuality have



been reported in some instances.

Portsmouth City Council Network Management team has begun to track ferries against timetables, utilising anomaly detection and alerts to get ahead of consequential impacts on approach roads to the ports in the case that there is a problem with the ferry system.

Arup has also been working with the US Virginia Department of Transport Regional Multi-Modal Mobility Programme (RM3P), supporting the implementation of Integrated Corridor Management (ICM). RM3P facilitates a multi-agency approach to major multi-modal transport corridors, with the concept building on previous ICM pilots that have demonstrated a BCR of 10 to 20:1 – improving coordination of response to travel disruptions and collaborative planning, enhancing connections and creating dynamic incentives for individual travellers. This is ultimately leading to more reliable commutes, better journeys for users, and a potential 20% reduction in crashes.

The Department for Transport (DfT) Transport Research Innovation Board (TRIB) has picked up on these developments, connecting with wider Government initiatives such as the National Digital Twin Programme (NDTP) and Cyber-Physical Infrastructure, generating greater focus and increased investment in this space. In 2023 the TRIB Roadmap was launched as a guide for the transport sector; this year, the DfT has created a dedicated Digital Twin team, sharpening the focus and programme of activity to drive benefits and change.

One key aspect of this is to ensure developments are based on solid foundations. This includes the business case, evidencing the potential scale of economic benefits to the UK and identifying challenges in realising them.

One key aspect of this is to ensure developments are based on solid foundations. This includes the business case, evidencing the potential scale of economic benefits to the UK and identifying challenges in realising them. To me there are already significant benefits but to truly deliver a more optimised, integrated transport network will require recognising the value in data and digital infrastructure alongside strong leadership, wide engagement and coordination and attracting the relevant talent and skills.

Contact the Authors:

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How UK transport is becoming more connected and autonomous

At Zenzic we are immersed in the CAM world on a daily basis, so sometimes it is a good idea to take a step back to see just how far the industry has come, as well as look to see how much more needs done to get CAM deployments on the road.

Mark Cracknell
Executive Director, Zenzic

At Zenzic's recent Innovators Day, our third annual event, I was able to reflect on just how much has been accomplished in the last 12 months - there has been challenges, and many remain to be worked through, but with the AV Bill moving through Parliament over recent months there is a renewed confidence across the industry that the UK is well positioned to be a strong leader in the deployment of CAM. The mood in the room was overwhelmingly positive, and made it feel like CAM is here, and here to stay.

The Zenzic mission is to enable the UK CAM industry to flourish. We want the UK to be the world's best location for deployment of CAM technology, driven by UK companies out-performing their global competitors in the supply chain.

The six CAM Deployment consortia and the 13 UK CAM Supply Chain projects are all cutting edge, globally leading deployments and innovations that showcase the strengths of UK CAM, in the public realm, in freight and logistics as well as in supply chain innovation. From Belfast to Edinburgh, to Cambridge and Birmingham, these consortia are always keen to share their activities with the wider CAM community. If ITS members would like to know more about them then please get in touch and we can arrange a call, or even a visit to see the projects in action.

Our latest strategic research report examines the current UK CAM Supply Chain capabilities, its geographic distribution and identifies areas of UK strength and potential opportunities for the UK. Discussing this report with industry and government has really helped to crystalise the opportunities the UK has to be a global leader in CAM.

In the near future, we are publishing a new insights report about what is needed to create a sustainable connected and automated mobility industry with a strong business models and use cases at its centre. This includes recommending that there is a clear CAM focus or UK CAM 'identity', the creation of a coordinated, sector-level strategy which includes specific interventions and a government and industry focus on areas of high opportunities that provide a CAM service.

The Zenzic mission is to enable the UK CAM industry to flourish. We want the UK to be the world's best location for deployment of CAM technology, driven by UK companies out-performing their global competitors in the supply chain.

The report encourages a focus on early commercial opportunities, that are seen as stepping stones to more complex use cases and that help to build a better understanding of the demand of services in the UK. This Government supported focus being on the use-cases that benefit the society and economy directly.

Other aspects of the report focus on:

• Enabling deployments through a strong market pull and with clear regulation is a critical factor in their success. We see that this would involve collaboration between technology providers and potential operators and commissioners to formulate the business case for operational services and encourage a strong demand for CAM solutions.

• We also know that the public sector is one of the critical stakeholders to deliver connected and automated mobility, and its support is required to help bridge the gap and provide support to understand the commercial business case.

• Insurance is also a central tenant in the development of CAM, it is imperative that new risk models are developed so that CAM services and technologies can be priced fairly and be ready for wider deployment.

• To ensure that the UK has a strong global position we need to collaboratively showcase UK activity in CAM in key markets, including engagement with global industry bodies and promote internationally what progress is happening to increase visibility and lead on CAM - Made in the UK products.

There is often debate about Connectivity or Automation – what needs to be done first? We see that they are entirely interconnected and CAM cannot be successful without both having mutual focus – the answer is Connectivity AND Automation. For connectivity, this means the creation of data standards and data sharing frameworks and a clear understanding of the current planned coverage and infrastructure strategy. We think it is really important that CAM included in the National Digital Twin Programme as well as seeing the standardisation and maintaining of HD-Maps in real-time.

Two more areas that need focus are public acceptance and skills – often the two areas that the industry considers the hardest to advance, and that need even more external support. There is a strong view from the stakeholders that we have spoken to that through a structured approach to collaboration, government and industry would benefit from a focus on the public perception of CAM and its benefits. Whilst some good work has already been done, this needs to continue as deployments take shape.

Shaping the influence as CAM is part of the future transport solution, solving 'pain points', rather than a replacement of existing transport provision is a positive intention to accelerate the deployment of CAM.

With skills, the formulation of a strategy for attracting talent from adjacent industries and retaining this talent in CAM, through recognising the potential for sector and personal progression opportunities, would be a major positive step forward. One option could be to engage with organisations that already try to tap into upskilling underutilised talent, to try understand how CAM-specific skills can be added to or similar activities created for CAM industry. Other steps to increase skills in the sector include developing operators' understanding the roles evolution in the job market CAM concerns and importantly leveraging public outreach organisations such as PAVE.

WHAT'S NEXT?

Looking ahead, the next 12 months will be critical for much of the industry. We are looking ahead to the completion of primary legislation, the creation of secondary legislation, the completion of the CAM Deployments and CAM Supply Chain projects, as well as getting further certainty from Government on how and where the committed £150 million will be spent over the next five years.

With ITS World Congress 2027 due to be hosted in the UK, we have an exciting 'north star' to aim for to create an extra-special showcase, putting the UK CAM industry on the global map.

We would love to engage more with ITS UK members. We are always keen to have a conversation about what CAM activities you are doing, what challenges you are experiencing, our your thoughts about the insights our team publishes. Our email is **info@zenzic.io** to contact the team. If you want to know more about the CAM Deployments, the UK CAM Supply Chain, CAM Scale-Up UK or CAM Testbed UK please get in touch.

Unlocking smooth urban mobility: tackling the growing road access challenge

Around the world, traffic congestion poses significant challenges for city governments and citizens. It impacts the economy, air quality, and safety.

Tim Wray
Sales Director - UK & Ireland,
Kapsch TrafficCom

In 2022, UK drivers spent an average of 80 hours stuck in traffic, with London, Bristol, and Manchester being the most affected cities. Across the UK, 79 out of 110 urban areas saw a year-on-year increase in congestion. This not only raises costs for motorists and the economy but also affects road safety. The number of road deaths in the UK has stagnated since 2012, and by 2022, 23% of these deaths will be pedestrians. Addressing these issues is crucial for both efficiency and safety.

Traditional transportation policy approaches focus on supply and demand management, but demand management is crucial. Current traffic management solutions optimize traffic flow but lack influence over driver behavior. There is minimal direct communication with drivers, with the exception of Connected Vehicles that fail to effectively influence behavior as their focus is on road safety.

To overcome these limitations and mitigate the effects of traffic, a new dynamic between vehicles and road infrastructure is essential.

BETTER USE AND INTEGRATION OF EXISTING SYSTEMS

Interoperability of systems is a first step in enabling the exchange of information needed to manage traffic demand. With the use of overarching management systems, vast amounts of traffic information, previously isolated and underutilised by numerous disparate systems, can now be combined to maximise information value, including innovative data management tools to support new decision making.

The Traffic and Mobility Management system interacts with all existing road infrastructures in real time, directly involving and guiding road users. It is based on an umbrella system that brings together data from multiple traffic management systems - including traffic lights, signage, congestion charging, access control, and others. This data is then combined with other rich data from vehicles, cell phones, and navigation systems to support far better routing and traffic management.

By leveraging AI and forecasting tools, the system provides up-to-date traffic conditions, enabling informed decision-making. Additionally, automated decisioning tools initiate coordinated and real-time responses to changing traffic conditions, adjust traffic light timing and guide drivers using virtual message signs.

Signaling optimisation plays a crucial role in combating congestion as part of an intelligent traffic management strategy. It empowers city authorities to dynamically respond to changing traffic conditions and fine-tune traffic light timings, particularly at intersections with heavy one-way traffic. Traditionally, implementing such solutions required costly roadside infrastructure and sensors for real-time traffic monitoring. However, advancements in technology now allow authorities to leverage data from connected vehicles and anonymised smartphone data, significantly reducing initial setup costs. By utilising AI technology, this traffic data can be analysed in real time, leading to optimized signal prioritisation and timing.

In Buenos Aires, Argentina, Kapsch TrafficCom has installed EcoTrafiX™, a web-based integrated mobility solution, as a dashboard system that integrates the existing multiple traffic management systems into a single, coordinated environment. This supports centralised aggregation and analysis of traffic data, giving city officials a real-time view of traffic across the city for faster, more effective responses that help reduce congestion and optimise traffic flow. Ultimately, the goal is to deploy demand management solutions that influence driver behavior and, over time, reduce reliance on private

vehicles in the city.

Traffic data can also be obtained from video streams coming from new or existing cameras, using the Kapsch Deep Learning Versatile Platform. This provides a non-intrusive, rich stream of various data labels such as number of vehicles or classification of vehicle type, with current speed estimate and direction of travel for traffic analysis.

In Montreal, Canada, Kapsch TrafficCom deploys its Cooperative Intelligent Transportation System (C-ITS) suite. This includes the Deep Learning Versatile Platform at 19 city centre intersections. Real-time analysis of video feeds from existing cameras by the Deep Learning Video Platform triggers immediate alarms for critical events, minimising response time. The system also detects and classifies vehicles, pedestrians, and cyclists, identifying congestion and potential hazards. By delivering real-time warnings to vehicles, accidents are reduced, and transportation operators gain insights to reduce congestion.

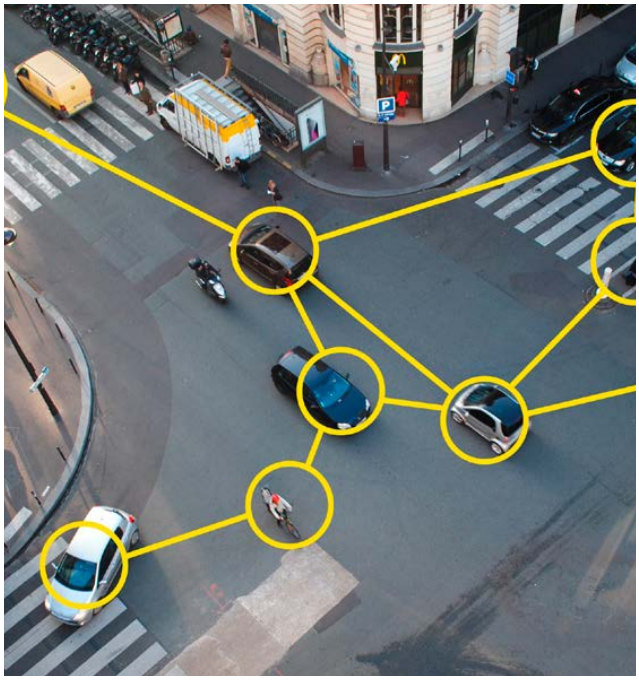
PREDICTIVE AND PROACTIVE TRAFFIC MANAGEMENT

The Traffic and Mobility Management uses advanced algorithms and data analysis from various sources (vehicles, sensors, video footage, mobile phones, and social networks). This enables cities to predict and manage traffic fluctuations effectively. It handles demand peaks (like weekend football matches) and forecasts traffic changes in the next 15 or 30 minutes. By leveraging predictive analytics and AI, agencies proactively manage traffic through routing strategies, user-friendly apps suggesting alternative transportation options, and other measures. This capability is crucial for preventing congestion and enhancing the user experience.

The Spanish city of Seville has chosen Kapsch TrafficCom to deploy the Mobility Data Platform. This platform integrates data from sensors, cameras, and existing traffic systems citywide. It accurately predicts and manages mobility needs and traffic patterns in real time. Key features include real-time parking information, dynamic traffic management to prevent congestion, and demand-responsive control of public transportation during major events. Additionally, it monitors environmental and public health indicators, such as temperature, air quality, emissions, and noise pollution, enabling timely interventions.

INVOLVING USERS AND FOSTERING CONNECTED DRIVING

By leveraging data from in-vehicle systems and drivers' mobile devices, smarter and more effective traffic management strategies can be developed. For instance, vehicle data powers innovative navigation apps that optimise traffic routes and ensure compliance with transportation standards. Additionally, AI and machine learning enhance smartphone and in-vehicle apps, allowing drivers to anticipate upcoming traffic lights (red, yellow, or green) and set optimal driving speeds. Austrian capital Vienna's Traffic Management 2.0, in which Kapsch TrafficCom is implementing a comprehensive set of measures implemented by, includes networked traffic lights that prevent congestion and turn green for approaching vehicles. An intelligent navigation system anticipates critical traffic situations, proactively avoiding congestion and safeguarding sensitive areas like schools. Additionally, the Green Light Optimal Speed Advisory (GLOSA) uses traffic light data to guide drivers through a continuous 'green wave,' saving time and fuel.



With C-ITS, authorities can inform drivers of various road conditions such as congestion, road works, or other pertinent information that is typically relayed via message signs from traffic management centres. This allows authorities to engage directly with drivers in real-time, providing timely information as they navigate the roads.

The Irish government has launched the C-ITS pilot program as part of the Network Intelligence and Management System (NIMS) project. Delivered by Kapsch TrafficCom, this technology enables seamless communication between vehicles, roadside infrastructure, and traffic control centres. Safety alerts, including collision and congestion warnings, roadworks updates, weather conditions, and electric vehicle charging point information, are delivered directly to drivers via smartphone apps or tablets connected to roadside units installed on the M50 and M1 motorways in Dublin. The goal is to enhance traffic flow, reduce adverse effects of growth, optimise motorway network performance, and coordinate incident responses.

To learn more about the features and benefits of cooperative ITS and traffic management, or to find out how Kapsch TrafficCom can help you realize your vision for improved road safety and traffic management, please visit our website at Connected Vehicle kapsch.net or contact us today at ktc.experts@kapsch.net

What does the future look like for transport in the West Midlands?

Anne Shaw
Executive Director, Transport for West Midlands

WHO ARE WE?

We are Transport for West Midlands (TfWM), part of the West Midlands Combined Authority (WMCA). We strive for a vibrant region fuelled by transport choices that are not just inclusive and fair, but appealing. We're here to offer options that people want to use, all while positively shaping our community, improving the local environment, and boosting the health and happiness of our residents.

As the transport arm of West Midlands Combined Authority, TfWM is accountable for 'Reimagining Transport in the West Midlands'.

JOURNEYS FOR EVERYONE

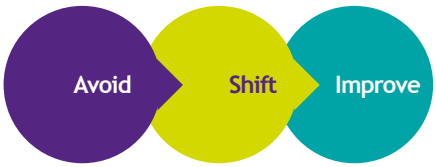
Our purpose is to ensure there are journeys for everyone so as a combined authority, we can create a better connected, more prosperous, fairer, greener and healthier region.

Our success relies on our collective efforts and shared responsibility, working with colleagues and stakeholders. It is only through collaboration and cooperation that we can truly achieve a better-connected West Midlands. Our response is to ensure that there are journeys experiences users want to repeat

This in turn leads to sustainable travel behaviours and equitable access to opportunity. Technology has an important role to play and it is a key tool in delivering our strategies.

Journey experiences are fundamental to deliver our outcomes. We must establish what networks, services, changes, interventions, and innovations are required to deliver the desired user experiences. These lead to sustainable behaviours and ultimately deliver the outcomes we want. Fundamental to this is understanding our public. We have invested time and effort understanding behaviour and what interventions and technologies actually make a practical difference.

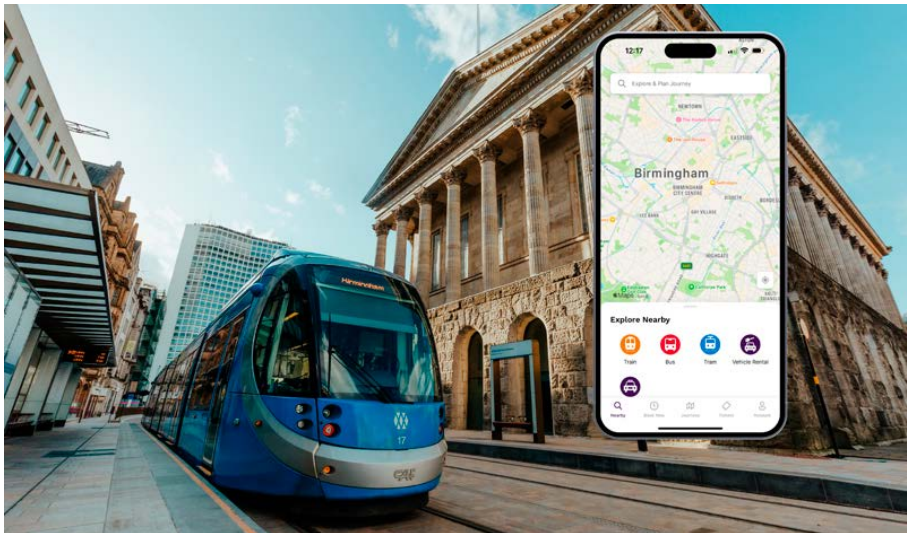
Our strategy to make all this happen is made up of three strands.



First, is enabling opportunities to avoid travelling, whilst still doing the things you enjoy and need to and whilst being economically productive and sustainable. During the pandemic we learned how to use technology to be local and get more quality and productive time. We now rely heavily on that technology to connect us and to interact with others everyday. Avoiding some trips and living more locally helps us to off set the impact on our time, community and environment of longer trips.

In order to be able to choose to avoid travelling, the places people work and live must have what they need nearby and for these to be accessible easily and conveniently. Technology has moved on from being a nice-to-have and expectations on the availability and experience of it have increased. We as a population expect tracked on demand services, including planning and ticketing at our fingertips on a smartphone.

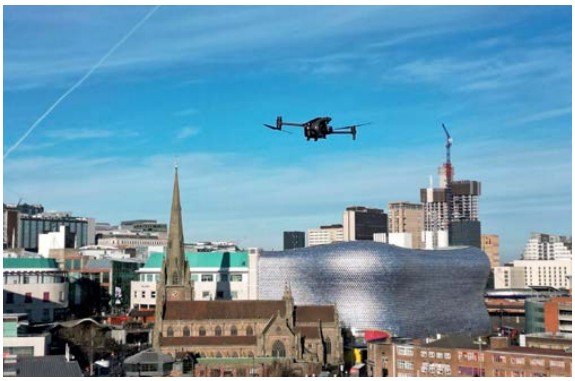
Secondly, if people do need to travel, can they shift travel behaviour? We will often ask whether there is the opportunity to travel earlier, take a different route or try a different mode. Change in travel behaviour doesn't need to be a binary choice. If everyone could make a more sustainable travel choice once a week the collective impact would be massive. To help support these choices we capture a detailed understanding of the operation of the whole transport network. We use technology intelligently to capture, analyse and then provide information to the travelling public that allows them to



Mobility as a Service gives convenient access to public & private transport using realtime transport information and integrated smart ticketing.

make better decisions. For example, providing in-vehicle messaging to drivers when there is congestion or an incident.

Though these services do already exist, information from a trusted source such as TfWM, using our own sensors, local knowledge and incorporating data from services such as Waze provides a better outcome for the traveller and improves network efficiency.



Our trained drone pilots support network management, planning, incidents, and events.

Finally, when you do need to travel we focus on how we can improve what you are travelling on and in, be it an electric car, a hydrogen bus, an electric taxi, or on a lower carbon highway that is safer and better managed with connected technologies.

UNDERSTANDING OUR POPULATION

To understand what interventions work we first need to understand our people, their personal circumstances and what motivates them. This is an excellent example of data engineering using multiple data sets to learn something new.

We first undertook detailed socio-economic segmentation of the population. Then created travel personas and finally established an online market research community.

This community has been invaluable in both exploring new transport initiatives but also what role the public think technology can play in transport. Surveys have included the use of 5G, and the acceptance of connected and automated mobility.

AND OUR NETWORK

Our Key Route Network is 605km of highways. Whilst consisting of only 7% of the actual roads it carries 51% of all traffic. Working in partnership we forge a collaborative and holistic approach to coordination through our Regional Transport Coordination Centre (RTCC). We are also establishing clearer core and secondary bus networks around a light and local rail backbone, all interwoven with active travel infrastructure. This is receiving nearly £5bn of capital investment, including new stations, metro, bus priority, vehicles and many km's of cycle route.

We ensure this runs smoothly through the build and business as usual operations by working with our partner authorities to proactively manage the traffic.

We also continue to enhance both the monitoring and management capability through the use of new techniques, such as drones. We are also supporting the exploration of innovative technology to influence journey decision making in real time, including the use of in-vehicle virtual variable messaging.

LOOKING AHEAD

We are reimagining how we will travel in the future. This requires investigations into new technologies, delivery methods, behaviour change and development of long-term strategies. To make the most of positive developments in technology and ideas we have developed a substantial portfolio of innovation projects.

Concurrently we have worked to develop the business cases and rationale behind these projects. This work has been underpinned by our

Our Regional Transport Coordination Centre takes data from machine learning roadside edge cameras, sensors and other big data feeds, including anonymised Police ANPR and Waze to provide intelligent network management and puts that information on street and in the vehicles of the people who need it.

Trailblazer Devolution Deal, as well as wider strategies.

Over the last five years we have been part of multiple projects focused on the progression of Connected and Automated Mobility (CAM). The majority of the projects have been funded by the Centre for Connected & Autonomous Vehicles (CCAV).

We continue to build on our legacy experience with a number of current CAM projects. Some of these projects are more policy focused whilst others are looking at the technology and business case. These projects provide the foundation for TfWM to understand when and where automated vehicle technology is ready for general use in public transport, the business case for these types of services and the operational and legal challenges and constraints.

Sometimes this new technology comes as a new mode, such as Very Light Rail (VLR). This is a tram system with lighter trains and shallower tracks, meaning more people can be carried for less money than a conventional tram system. The Coventry VLR system is planned to be tested within Coventry city centre.

Research and manufacturing is taking place at the Very light Rail National Innovation Centre in Dudley. The hope is that after a successful pilot in Coventry, this will be expanded within the West Midlands and exported to other parts of the country and across the world. The work on Coventry VLR is being led by Coventry City Council, with TfWM taking a key role in the overall programme management and exploitation of the technology into our wider transport system.

Coventry is becoming the first electric bus city and trialling inductive charging.

Investment in new transport innovation is vital to ensure the transport system in the West Midlands is forward-looking and able to progress. It also gives our region the opportunity to become a centre of innovation and provide employment.

TRANSPORT SANDBOX

Within the 'Trailblazer' devolution deal (March 2023), it was established that the West Midlands would become a 'sandbox' for transport innovation.

This agreed approach, with government support, gives an opportunity for greater flexibility for innovative proposals to be developed and tested within our area. The sandbox includes several use cases including:

- Enable low speed zero emission and automated vehicle trials.
- Explore the regulatory challenges facing demand responsive transport.
- Explore the use of dynamic traffic management and digitising streets.
- Explore the implications of, and options for, introducing simplified side road zebra crossings.
- Working with government on new low speed zero emission vehicles.

ITS WORLD CONGRESS 2027

We have been selected as the preferred host for the ITS World Congress in 2027, this will be held at the NEC in Birmingham in partnership with ERTICO, ITS UK and DfT. We believe this is not just an opportunity for the West Midlands but an excellent platform for the UK to showcase it's strengths. We will be hosting a wide range of demonstrators and technical visits during the event and will be promoting what the UK has to offer at the various World Congresses running up to 2027. We would welcome engagement from any organisation wanting to be involved.

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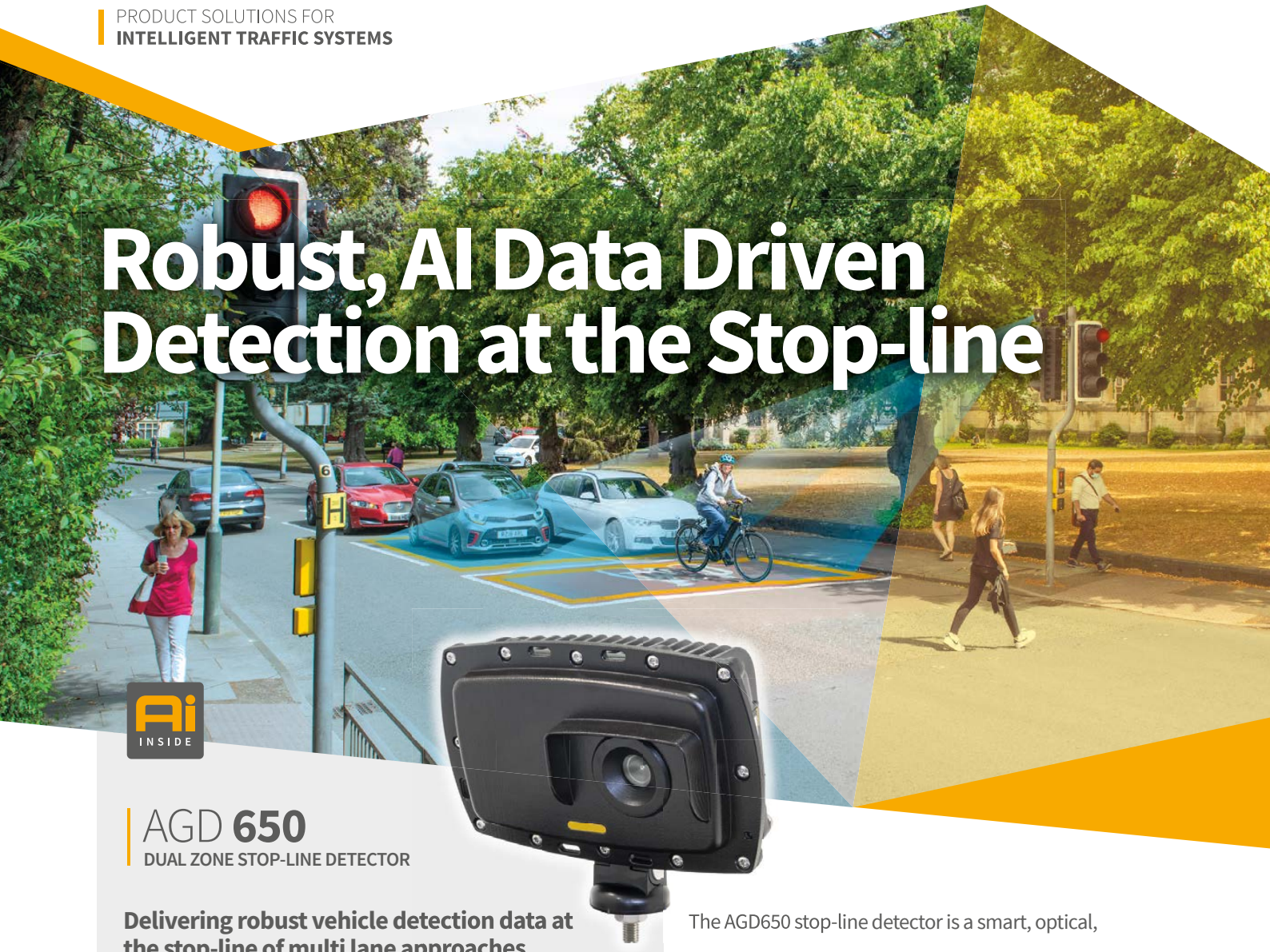

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The AGD650 stop-line detector is a smart, optical, dynamic environment detector that makes intersections and junctions more efficient by delivering robust vehicle detection data at the stop-line of multi lane approaches.

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The Digital Kerb

The humble kerb. Not just there for parking, but key for transport and city operations.

Graeme Scott
Business Unit Director - Consulting Services, Intelligence Business Area
Arcadis

As transport professionals we're all familiar with the evolution of our sector in recent years, and the impact this has had on the demand for kerb space. At the same time, urban centres have experienced challenges in their own right, with major changes in retail and personal habits, which too have an impact on the kerb. To address these competing demands, and fully harness the benefits and opportunities which are possible, a range of new policy measures are being introduced. These, coupled with supporting technologies, can make the transition to more flexible and workable kerb environments relatively painless.

POLICY MEASURES

The Department for Transport (DfT), for example, has announced that it's going to push ahead with digitising Traffic Regulation Orders (TROs) in England. This means that we'll see local authorities publishing Digital TROs (D-TROs) in a DfT-specified format that will guarantee levels of service and underpin more efficient management and operation of networks. D-TRO information will be published on local authorities' websites.

The DfT has said that, through open D-TROs, information on such as parking bay locations, road closures, road use restrictions and cycle lane locations could be made available to technology and sat nav companies, and to road users. The aim is to improve data management, record-keeping and record accuracy, and to improve roads' performance. A joint DfT/Transport Technology Forum (TTF) Working Group has been established to: assist D-TRO adoption and roll-out through the sharing of best practice; act as a channel for input and comment, and provide oversight of development and delivery; and develop a D-TRO user community.

It's recognised, then, that we need to raise awareness and manage change in ways that encourage willingness and not resistance.

MULTI-FACETED CHALLENGE

Cities face many challenges, and the situation in our high streets is readily apparent to us all. Retail is in decline, or at the very least has yet to find a realistic long-term counter to online shopping.

Experience indicates that a more mixed approach to our urban centres - a combination of residential, commercial and leisure - is the way forward. You can't as yet, for instance, fully enjoy a sensual experience, such as a meal with friends, online. Covid lockdowns demonstrated an increased demand, which has continued since, for outdoor dining and therefore another kerb use that needs to be planned and considered by authorities. Taken together all such uses means larger numbers of people looking to engage in a broader range of activities across a longer period of the day, pointing towards the need for use of the kerbside to be planned and considered by authorities as well as more widely available and flexible transport solutions. .

With regard to ITS more specifically, mobility itself is evolving. The more recent upsurge in kerbside deliveries isn't the only influence. For years now, multimodality has been the mantra for urban areas, with full-scale Mobility as a Service being, perhaps, the ultimate expression or aim.

Even with just the more traditional modes of transport, that had already brought people and vehicles into conflict. It resulted in more pedestrians and other vulnerable road

Experience indicates that a more mixed approach to our urban centres - a combination of residential, commercial and leisure - is the way forward.

users being in closer proximity to often highly congested roads. More recently, we've had the arrival of micro-mobility, and myriad electric solutions for personal transport as well as, increasingly, small-scale commercial use. These all need safe areas to drop off/pick up and be stored or charged whilst their owners go off and play.

Charging is also required for Electric Vehicles (EVs). Even though people are starting to get to grips with range anxiety, and more of them realise that a modern, fully charged EV can offer broadly the same absolute range as a hydrocarbon-powered vehicle, we desperately need more charging capacity. On-street solutions are maturing and it's very clear that these can't and won't be restricted to traditional locations such as car parks and petrol stations — in fact, the TTF suggested in late 2023 that EV chargepoint roll-out should underpin an eventual national kerbside framework and strategy.

We'll continue to need to cater for public and private-hire transport. We'll still need conventional parking for a good time yet because, ambitions towards Net Zero notwithstanding, economic reality and the cost of new vehicles is a significant influence on the rate of replacement in the national parc. Nor should we forget green space; trees and other foliage can help to mitigate airborne and noise pollution, and provide both ambience and shade.

And, as a brief aside, increasingly we'll have to cater for the needs of Cooperative and Autonomous Vehicles (CAVs). Local ordinances, for instance parking restrictions, are typically posted on static signage which is unreadable by CAVs. A lot of geo-ringfencing and coding, as well as the obligatory standardisation work, has had to go on to give us solutions for both strategic and arterial roads, as well as more crowded urban environments. At an international level, this work has now been going on for a decade and more, and has matured.

TIMING OUT

Our kerbside and on-kerb activities are going to have to learn to share space temporally. Charging, parking, deliveries, pop-up retail, al fresco dining, temporary restrictions to cater for short term or seasonal events and other things besides are all going to have to somehow co-exist in the same places, albeit at different times.

Digitalisation is the way forward and technology solutions are available that can make real differences very quickly.

Internationally, and principally in North America, we at Arcadis have achieved some notable successes on behalf of clients using our CurbIQ suite (curb being the North American spelling of our kerb – a personal bone of contention for me!) CurbIQ has been designed specifically to address the challenges faced at the kerbside, and balance access for pedestrians, parking, deliveries, mobility providers, vendors and more, allowing a range of revenue and sustainability goals to be achieved.

In the Municipality of Jasper, in the Canadian Rockies, CurbIQ has been used to track on- and off-street parking in order to better balance residents' and visitors' needs in an environment which, as a major tourism centre,experiences wide seasonal fluctuations.

An advantage of CurbIQ is its ability to work with other solutions. In Arlington County, Virginia, it has been used as the systems integrator of software from multiple suppliers and has helped to improve parking performance across a total of 4,500 metered spaces. Elsewhere, it has been integrated with the Hotspot parking app to provide users with easy access to combined parking and payment information.

Improving parking is one thing. Where it gets really interesting is in relation to many of the issues outlined above.

In the City of Columbus, Ohio, CurbIQ has demonstrated its ability to integrate ordinance information in a digital format, resulting in the kind of digital kerb inventory now increasingly identified as being necessary here in the UK.

Similarly, in Southern California it has been used to support pilots of kerbside strategies which include repurposing existing on-street parking as parklets, patios and loading zones; these pilots have included work to find effective methods of enforcing these new uses.

We have also been working with other cities, such as Dublin, Toronto and Ann Arbor, and about to commence new projects in the states of California and Washington. The reason such cites are using tools such as Curb IQ is to better understand their kerbside regulations and plan and optimise their goals and broader transport and operational plans.

PROVIDING DIRECTION

Solutions, no matter how capable, can't exist in a vacuum. Numerous organisations besides the DfT are keen to provide some form of policy steer.

In addition to the D-TRO announcement, the Kerbside Taskforce was launched in 2022, wth the purpose being to bring more voices to the conversation and to help policy-makers find a way forward – delaying actions increases the potential for more problems to arise, and opportunities to be missed. ADEPT is one of the Taskforce members. Mark Corbin, Chair National Traffic Managers, noted that one of the key barriers to progress is the salience of the issue — put simply, he noted, kerbside management is not at the top of anyone's agenda.

Since then, the Taskforce has advocated for the use of Digital Traffic Orders. This included an open letter asking for them to be included in the King's Speech 2023.

Collectively, then, we are getting some traction. We are seeing some major organisations coming together in order to promote a real and pressing need.

Ultimately, all of this has to be about addressing the key aims of transport policy — maximising safety and sustainability. Most of the collisions involving pedestrians and cyclists occur at the kerb, and they represent around 40% of the UK's KSI numbers. As competition for space intensifies, it's clear that many people are starting to recognise the importance of getting things right.

The humble kerb is becoming the digital kerb, and contributing to the successful operation of transport and cities!

Accelerating automation in construction

Connectivity and automation are emerging as the answer to the transformation of construction, driving a safer, smoother and greener future for the industry. We explore whether ITS holds the key to accelerating urgent change through learning from its parallel journey on the road to connected autonomous vehicles (CAV).

Tom Grahamslaw
Associate Director, WSP

Cormac Browne
Principal Consultant, WSP

The construction industry is one of the largest sectors of the UK economy. However the sector is facing significant challenges centred on productivity, an aging workforce and increasing costs of raw materials and delivery. Compounding these issues are the imperatives of improving safety within construction and driving improved sustainability. To enact change, there is a drive towards revolutionising construction through digital transformation framed by Industry 4.0 and Modern Methods of Construction.

The 'Connected Site' is part of a wider vision for the transformation of construction, focusing on a digital approach to onsite assembly. It is a scalable toolbox involving the targeted introduction of technology and innovation to address challenges and improve project delivery. A core component of this transformation journey is the adoption of Connected and Autonomous Plant (CAP), technologies which make use of connectivity to allow seamless transfer of information to automate and improve the delivery of onsite construction tasks.

The development of CAP within the construction sector is happening in parallel to that of CAV. From the similarities of the names, it is clear that both CAP and CAV are closely related, delivering comparable outcomes for each sector regarding safety and efficiency. Currently, both CAP and CAV are in the early stages of their journey towards business as usual, and this offers the potential for a mutually beneficial exchange of knowledge and best practice to accelerate adoption.

SIMILARITIES AND DIFFERENCES ON THE REALISATION JOURNEY

To explore the similarities and differences between CAP and CAV it is critical to consider the full context of both, as both innovations are taking place in highly complex environments. Adopting a system-based approach, which considers people, place, process, data, and technology, provides clarity and ensures that CAP and CAV are considered holistically. Integrating this through the realisation journey will allow ITS to fully leverage its experience and expertise in delivering change, and forms a significant opportunity.

Similarities and Differences between CAP and CAV

Pillars of the whole system	Similarities	Differences
People	• Removing the requirement for human-led operation. • Public acceptability around the introduction of automation.	• Early CAP use cases on sites have greater risks due to the mix of pedestrians and machine.
Place	• The need to operate in mixed environments in their initial deployment - i.e. alongside human controlled vehicles.	• There is potential for much greater control over the CAP operating environment (in terms of layout and access) than CAV operating on the public network. • The road environment is built for vehicles (CAV) to travel on whereas CAP will operate in environments not purpose built for its use.
Process	• Controls on safety, cybersecurity, data privacy, standards for vehicles and machines. • Significant concerns around liability and how roles and responsibilities surrounding use are defined and agreed.	• Public vs private adoption creates a variances in the processes required to be followed to support delivery.
Data	• Supply of data about the environment they operate in and the tasks they have carried out back to OEMs, operators, and potentially asset owners.	• CAP requires bespoke data for every task that it completes to correctly execute the construction task.
Technology	• Fundamental technologies are the same: • Connectivity to link to infrastructure, other vehicles, and wider networks. • Machine control systems which perceive their environment and autonomously manipulate the vehicle.	• CAP is a umbrella of varying machine types conducting a range of activities. • CAV centres on a singular focus i.e. the movement of a vehicle from A to B.

THE ROLE OF ITS

The growth of CAP within the construction sector offers a unique opportunity for the ITS community to provide significant value in accelerating its adoption by leveraging their expertise, existing technologies, and collaborative networks.

Developing an interoperable connectivity platform - Drawing on the experiences gained while developing CAV, ITS can provide expert knowledge around the facilitation of communications services, data repositories, and sensor networks tailored to industrial applications, collaborating with industry stakeholders to accelerate their deployment onsite.

Establishing interoperable standards - Equally beneficial, the sector can provide invaluable experience in the creation and adoption of interoperable standards and interfaces, ensuring compatibility, scalability and seamless integration with existing infrastructure and equipment. ITS can collaborate with regulatory agencies, industry associations and standards bodies to establish clear guidelines and frameworks conducive to CAP adoption.

Accelerate adoption by adapting CAV outcomes - Furthermore, ITS can adapt processes developed for the CAV journey around ensuring regulatory compliance, adherence to safety standards and the creation of robust certification processes to suit CAP within the construction sector, accelerating its maturity. Building on the results of CAV trials within the UK and abroad, ITS can jumpstart the answers to how liability concerns, insurance requirements, data privacy of autonomous operations, and what legal and regulatory challenges need to be answered so that a smooth adoption of CAP is feasible.

Provide data driven insights to enhance efficiency - Through processing and interpreting the vast amounts of data generated by transport systems, ITS has developed considerable expertise in providing actionable data driven insights. Leveraging this experience, ITS can offer significant value to the CAP industry by optimising the layout, configuration, and connectivity of infrastructure elements, to facilitate autonomous operations and data exchange thereby enhancing efficiency and productivity.

The UK construction industry is experiencing a revolutionary opportunity for change, brought about by the need to overcome significant safety, efficiency, and environmental challenges. A core element of this opportunity is digitalisation, an area in which ITS can offer a vast wealth of experience and expertise. In particular, the adoption of CAP within construction shares many parallels with the rollout of CAV within transportation, creating the potential for ITS to accelerate the deployment of CAP by leveraging the experience and outcomes from CAV.

For further information, please explore the WSP global white paper, 'Embracing Connected Sites in Construction' via the WSP website.

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Turning our RD&I challenges into opportunities...

Research, Development & Innovation is key in unlocking opportunities within Network Rail and the wider rail sector to improve safety, reduce cost, achieve Net Zero, improve customer experience and to deliver a more sustainable railway for future generations.

Robert Ampomah
Chief Technology Officer,
Network Rail

In our Control Period 6 (CP6), 2019-2024, Network Rail invested £237 million in a dedicated portfolio of RD&I to develop and deploy new and innovative processes and products. We also secured £63 million in matched funding from our partners, allowing us to better share lessons learnt and accelerate technology development.

Over the past five years, through a process of a continuous review of priorities and technologies, we have delivered 16 new products for use by Network Rail's routes & regions. These provide automated ways of working, valuable information to make decisions, improved safety and opportunities to be more efficient. Examples range from machines that can inspect both surface and sub surface in tunnels, using machine learning to classify asset defects, to research which identified technical opportunities to reduce the cost of electrification that is set to save the railway £10ms per annum. In total we have delivered over £185m of financial efficiencies to the regions to-date.

We have witnessed huge huge changes in the railway in the last five years, including a global pandemic which has significantly changed the patterns of demand for train travel, extreme weather events, changes to maintenance practices and proposals for industry reform that look likely to lead to a change in the industry operating model. RD&I plays a vital role in preparing for the challenges ahead, driving us to find alternative solutions and embrace new opportunities. As we move into Control Period 7 (CP7), 2024-2029, this has never been more important.

It's vital we have a clear long-term vision for general advancements needed in the rail industry and the role technology plays in enabling this vision. The industry Rail Technical Strategy (RTS) provides this vision. We've collaborated closely with the Railway Safety and Standards Board (RSSB) and the wider industry to monitor our progress against this vision, and to refresh the roadmap for the next 20 years. It's equally important that we understand and address the local challenges on different parts of Network Rail.

Network Rail operates 20,000 miles of track, 30,000 bridges, tunnels and viaducts and thousands of signals, level crossings and stations, across 5 devolved regions and 14 routes, each with their own unique combinations of infrastructure, geography and traffic. We've worked hard during CP6 to make sure region and route teams are embedded in RD&I projects, so they can shape the project specifications and outputs and make sure solutions deliver the benefits they are seeking. We're going to build on this, developing opportunities for

our regional colleagues to create more connections to our supply chain partners including start-ups and SMEs, to find solutions to the immediate and very real challenges that region and route colleagues face.

LOOKING AHEAD TO CONTROL PERIOD 7

Our challenges do not diminish in CP7 despite a generous five year financial settlement of £43.1Bn. But we are building on our successes and learning from CP6. We have to deliver further efficiencies in running the railway, improve train performance, deliver further improvements to public, passenger and workforce safety, and respond to weather and climate change threats. One new area of focus for our RD&I plans is our capital delivery activity – we will spend almost 50% of our overall CP7 budget renewing parts of our infrastructure. We need to find novel ways of doing this more efficiently, to slow down the rate at which this part of our cost base is increasing. While we have a substantial £146m RD&I budget for the next five years, we've identified another £100m of high priority RD&I we'd like to deliver. We will continue to assess every new RD&I proposal carefully in terms of its potential return on investment. We'll apply our robust stage gate decision-making to make sure we 'fail fast, learn fast', only funding projects to maturity where our confidence in the benefits we'll deliver continues to grow.

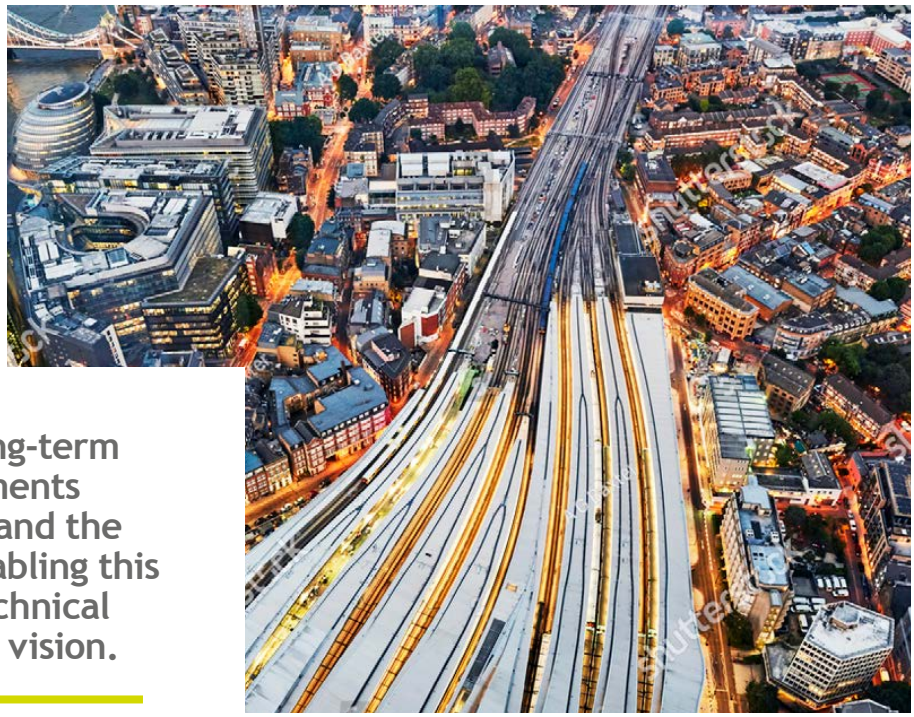
Building on the work on the long-term vision for the railway and the RTS, we are creating clear requirements for new technology or processes within Network Rail. These define the capabilities that need RD&I support to reach our future railway needs, including optimising our assets and operations to make them more resilient, introducing more automation, expanding the use of digitalisation, caring for our environment and improving passenger experience.

COLLABORATION IS KEY

Our partnerships with stakeholders in the innovation ecosystem are even more critical to our success in CP7. We are building on the collaborations we formed in CP6, focussing on improved dialogue with government, Arm's Length Bodies, academia, European and international rail infrastructure managers, other funding bodies and all potential supply chain partners (including those not already familiar with the rail industry). We plan to share our technology requirements more often and more clearly, as part of our efforts to support and promote development of solutions for our routes and regions.

One way we are looking to support this is with the Unlocking Innovation Programme delivered by the Railway Industry Association (RIA). The programme has ran throughout CP6, supported by Network Rail's RD&I team, as well as the UK Rail Research and Innovation Network (UKRRIN), and Telent. This year we have built a campaign that focuses on Network Rail routes and regions, with a series of events happening throughout 2024 across the country. The events will focus on the opportunities to bring innovation to every part of our network, as well as engage with key major programmes for local geographic areas. The agenda has been shaped by regional teams so the key areas of challenge for that region lead the topics to be covered by suppliers at the event. The events are kicking off in York on 30th April, covering the Eastern region in Network Rail, with challenge areas including infrastructure monitoring, inspection, decision support tools, and weather resilience. We are hoping to deliver real value for both suppliers in sharing their developments in these areas and for colleagues in Eastern region through linking technical solutions or research to tackle some of the current local challenges.

To deliver our CP7 commitments we will need brave thinking. We intend to be more open to new ideas designed to challenge the conventional ways of working – doing more of the same is not going to be enough to deliver the safety, financial and train performance improvements our funders and customers expect. By working with a pioneering attitude and focussing on RD&I we can meet the challenges we are facing over the next five years head on.



It's vital we have a clear long-term vision for general advancements needed in the rail industry and the role technology plays in enabling this vision. The industry Rail Technical Strategy (RTS) provides this vision.

Pioneering sustainable urban mobility

As urbanisation accelerates worldwide, the need for sustainable transportation solutions becomes increasingly important. Intelligent Transport Systems stand out as a transformative approach to managing urban mobility efficiently and sustainably.

Kieran Corbally
Senior Commercial Manager,
AGD Systems

By integrating advanced technologies such as artificial intelligence and data analytics, ITS optimises traffic flow, enhances safety, and minimises environmental impact. Sustainability is the goal to aspire to for those invested in ITS and working towards the common purpose, it will be possible.

ENHANCED TRAFFIC FLOW MANAGEMENT

Of course, integration lies at the heart of ITS, enabling seamless coordination between system components to optimise traffic flow dynamically. By analysing data from sensors, cameras and radars, ITS analyses real-time traffic conditions and proactively adjusts signal timings. This dynamic optimisation minimises congestion, reduces travel times, and enhances overall traffic flow efficiency. However, the true potential of ITS is realised through combining other transportation systems such as public transit, cycle networks, and pedestrian footways. By synchronising traffic signals with transit schedules and prioritising non-motorised modes of transportation, combined ITS fosters multimodal mobility and promotes sustainable travel choices.

DATA

Integration enhances the effectiveness of safety measures implemented by ITS, ensuring comprehensive protection for all road users. Real-time monitoring and predictive analytics, enable proactive identification and mitigation of potential hazards. Automated and adaptive signal control systems can respond to cars, buses and other forms of modern transport, adjusting traffic signals to expedite their passage. By seamlessly incorporating safety measures across all components of the transportation ecosystem, ITS enhances road safety and minimises risks, thereby promoting sustainable urban mobility.

Along with data fusion from multiple sources, inductive loops, above ground detection or bus operated data, and other opensource data platforms, the combined systems giving fuller traffic information leading to a more collaborative approach to the management of the traffic flow.

PRODUCT OBSOLESCENCE AND LONGEVITY

In the fast-paced realm of technology, product obsolescence is a significant concern for ITS deployments. Rapid advancements in hardware and software can render existing systems outdated and incompatible with emerging standards. To address this challenge, ITS stakeholders must prioritise product longevity and scalability when selecting technologies and vendors. Investing in standardised protocols, and modular architectures can future-proof ITS deployments, enabling seamless introduction of new features and updates over time. Likewise, engaging in long-term partnerships with technology providers fosters a collaborative approach support and maintenance, ensuring the continued reliability and performance of ITS solutions throughout their lifecycle. By addressing product obsolescence proactively, ITS initiatives can maximise their return on investment and sustainably meet the evolving needs of urban transportation. With the recent funding made available by the Department for Transport, the path to updating obsolete technology and tuning up traffic lights already in the ITS system is a real step towards a more sustainable future.

TECHNOLOGY YOU CAN RELY ON

Reliability is paramount in the operation of ITS, as system failures can lead to disruptions in traffic flow, safety hazards, and increased environmental impact. Mean Time Between Failure (MTBF) is a key

metric used to assess the long-term performance of ITS components and systems. By quantifying the average time between failures, MTBF provides insights into the robustness and resilience of ITS deployments. To maximise dependability, ITS stakeholders must prioritise quality assurance, rigorous testing, and preventive maintenance practices. Proactive monitoring and fault detection systems enable early identification of potential issues, allowing for timely intervention and mitigation. By focusing on consistency and MTBF, ITS initiatives can minimise disruptions, enhance user confidence, and deliver consistent performance in support of sustainable urban mobility goals.

OPTIMISED RESOURCE UTILISATION

Dynamic routing systems, coupled with real-time traffic data and public transit schedules, guide vehicles along the most efficient paths, reducing fuel consumption and travel times. Furthermore, incorporation of renewable energy sources and energy management systems enhances the sustainability of transportation infrastructure, reducing reliance on fossil fuels and lowering carbon emissions. ITS can promote eco-friendly transportation practices contributing to a much greener urban environment. When vehicles can maintain a steady speed and operate more efficiently there is a reduction in emissions, helping to reduce pollution and improve local air quality.

ENVIRONMENTAL SUSTAINABILITY

The role in maximising the environmental benefits of ITS is fostered collaboration between transportation stakeholders and promoting sustainable practices. By working with urban planning initiatives and environmental policies, ITS facilitates the development of pedestrian-friendly infrastructure, cycle lanes, and green spaces, encouraging active transportation. By aligning transportation strategies with environmental goals, ITS contributes to the creation of healthier and more sustainable urban environments.

SMART INFRASTRUCTURE DEVELOPMENT

Integration drives the development of smart infrastructure, laying the foundation for comprehensive urban mobility solutions and future advancements. By putting together existing infrastructure elements such as traffic signals, roadways, and public transit systems, ITS leverages existing assets to enhance functionality and efficiency. Also, incorporation of emerging technologies such as autonomous vehicles and connected mobility platforms facilitates seamless interoperability and enables the realisation of a complete transportation ecosystem. By adopting collaboration between public and private stakeholders and promoting open data standards, ITS can accelerate innovation and fosters the development of next-generation transportation solutions. Smart city initiatives enable efficient urban planning, promoting sustainability, resilience, and quality of life for residents. By driving the development of smart infrastructure, ITS paves the way for a more connected, efficient, and sustainable urban future.

Combining Intelligent Traffic Control Systems is essential for maximising their effectiveness and realising their full potential in fostering sustainable urban mobility. By seamlessly coordinating efforts across modern transportation systems and stakeholders, integrated ITS optimises traffic flow, enhances safety measures, and minimises environmental impact. This drives the development of smart infrastructure and facilitates the adoption of emerging technologies, paving the way for a more connected, efficient, and resilient urban transportation ecosystem. As cities continue to grow and evolve, embracing joined up systems is essential for unlocking the transformative power of ITS and building sustainable communities for the future.

AGD are poised to meet the needs of today and the future challenges of tomorrow by focusing on innovation, sustainability, and collaboration. With unwavering commitment to excellence and forward-thinking approach, AGD look forward to being part of the conversation in shaping the future of intelligent transportation systems, creating safer, more efficient, and more sustainable urban environments for generations to come.

As cities continue to grow and evolve, embracing joined up systems is essential for unlocking the transformative power of ITS and building sustainable communities for the future.

INTERNATIONAL VIEW

ITS from around the World

Last November, ITS UK, in partnership with the Transport Technology Forum, produced the ITS Export Study, setting out the priority overseas markets for UK companies involved in transport technology. The study highlighted America, Australia, the Netherlands and Germany as four of the priority markets for UK companies.

In this article, we ask the leaders of ITS associations in these key nations to give an overview of their sector and the work they do...

Laura Chase
CEO, ITS America

In January of 2024, ITS America laid out core priorities in the areas of connectivity, digital infrastructure, automation, artificial intelligence, and new funding policy to drive the industry forward towards our ultimate goal of scaling deployment of ITS technologies to advance safer, greener, smarter mobility for all.

The progress we have made towards our 2024 goals is significant and we expect continued advancements throughout the year.

- With 43,000 deaths on US roadways each year, investments in connectivity to save lives and reduce crashes are paramount. ITS America has been working closely with USDOT and our members to provide input and feedback to USDOT's National Interoperable Connectivity Deployment plan to enable a national framework for implementation of V2X. We expect the plan to be finalised later this spring and provide continued momentum for deployment of V2X to save lives.
- ITS America is working with USDOT to inform development of a national vision, framework, and ecosystem of use cases for digital infrastructure to provide the necessary foundation for investment and interoperability at a national scale.
- ITS America is leading the responsible use and deployment of artificial intelligence in transportation to enable societal outcomes of safer, more sustainable, efficient, and accessible mobility.
- ITS America is creating a framework for successful deployment of automated vehicles with a focus on safety, collaboration and infrastructure needs to support their integration into the transportation system.
- We are developing policy for the next transportation reauthorisation to include new policy on digital infrastructure and a new technology funding program that supports sustainable funding, captures the unique needs of technology, and addresses procurement challenges.
- We are creating a new ITS America Training Academy to prepare our transportation workforce for the future. We will launch this new academy in autumn of 2024 with a first course focused on transportation data – including data collection, processing, interoperability and practical use cases and applications.
- We will continue to lead the national conversation in 2024 toward a goal of increased adoption and deployment of ITS solutions across the country, solutions that can save lives every day.

In addition, ITS America will continue to create resources to support practitioners and developers of emerging technologies. A few recent examples of resources created in support of our priorities are:

The ITS Technology Use Case Library serves as a complementary resource to other databases focused on quantifying

the benefits of deploying ITS technologies, such as the U.S. DOT's Benefits, Costs, and Lessons Learned Map.

AI in Transportation and Mobility explores how artificial intelligence (AI) can fundamentally change the capabilities of the American transportation sector, while outlining key challenges and solutions associated with the deployment of transportation AI technology.

The Digital Infrastructure Strategy Report outlines real-world use cases for digital infrastructure deployment and provides a roadmap for successful implementation by U.S. DOT.

V2X Decoded FAQ - provides a reference guide for transportation stakeholders on V2X terminology.

Visit https://itsa.org/advocacy-materials/ to see all ITS America resources.

Susan Harris
CEO, ITS Australia

Australia's ITS sector is a thriving and connected ecosystem of locally and internationally represented transport technology companies, government agencies at the local, state, and national level, and academic institutions—all committed to a better transport future for the nation.

As the industry peak body, ITS Australia represents the interests 150 + member organisations, creating opportunities for collaboration, supporting world-leading research to guide policy making, sharing important sector news from Australia and abroad, and nurturing the next generation of talent that will underpin a thriving ITS industry into the future.

In the past 12 months, Australia's ITS sector has continued to focus on growing the evidence-base on ITS innovation and opportunities, and advocating and supporting better policy making to drive transport outcomes.

A current research project, 'Integrated connected data for safer, more efficient traffic management operations' led by industry research body iMOVE Australia and with the support of ITS Australia and government agencies from across the country, is examining how better to leverage the wealth of data coming from different sources such as connected vehicles to enhance how we manage transport networks, reduce congestion and emissions, and enhance safety for all modes of travel.

In addition, a new national project, led by the University of Melbourne and supported by the federal and major state government agencies will investigate a nationally harmonised approach to the C-ITS and include a significant trial in the state of Victoria across more than 30 intersections in five key corridors to support safety benefits and technology readiness across a large area.

The support of major national and state-based transport agencies is an important feature of the research agenda, particularly the C-ITS agenda, which is further supported by the announcement that all infrastructure and transport ministers across Australia have endorsed the principles for a national approach to C-ITS. This coordinated approach to C-ITS deployment is critical to the success of the technology and also aligns Australia with international partners.

From a mobility perspective, transport-on-demand is becoming integral to providing a meaningful shared transport solution in lower-density areas. Transport Canberra and City Services, a branch of the ACT Government, is looking to build and further develop a comprehensive journey planner for customers in Australia's capital, Canberra, inclusive of public transport as well as cycling, walking, taxis, Uber and car rentals as transport options, wheelchair-accessible services, school busses, and more. This follows the ODIN PASS program, developed in Queensland, representing Australia's largest Mobility as a Service (MaaS) research trial. ODIN PASS uses a MaaS platform to plan and book travel from the ODIN PASS smartphone app for eight different transport modes.

In February 2023, Australia's ITS sector gathered in Brisbane, Queensland to recognise excellence in our local industry and celebrate success at the 14th Annual ITS Australia Awards. Across the seven award category winners, a key theme to emerge was a dedication to safety across all modes of transport. Winning projects included a successful C-ITS roadworks demonstration project in Queensland, a data visualisation platform using GPS to improve tram services in Melbourne; and a collaborative research partnership to advance and commercialise autonomous vehicle technology.

The Australian ITS sector continues its focus on building a thriving and resilient workforce through a series of initiatives supported by the industry peak body. The ITS Australia NextGens is a program run by a committee of volunteer young professionals and continues to attract a diverse range of talented people from across the sector. Well into its third year, the NextGens delivers behind-the-scenes site visits, online and in-person networking activities, and a platform for meaningful industry connections. Similarly, the ITS Australia Mentorship Program, which matches mentees seeking an opportunity to grow personally and professionally with more experienced mentors from the industry, is now in its second year. Both activities contribute to developing and retaining the best Australian talent in the ITS sector.

Guenther Webber
Director, ITS Germany e.V. & Chair, ITS Network of Nationals

Intelligent Transport Systems are enablers to create a better and more sustainable future for transport and mobility. The state of play, the emphasis on various aspects and the policies for implementing ITS however are quite different in various countries.

To deploy ITS across Europe, the exchange of experience, partnering and cooperation between the different stakeholders are paramount. The mission of ITS Nationals and its national ITS organisations, is to facilitate this exchange, foster mutual collaboration, and increase visibility and the relevance of the ITS industry.

The basis for good dialogue is in understanding different situations – so, let's have a look at the state of ITS in Germany.

Germany places a strong emphasis on developing and deploying ITS to address urban and increasingly rural mobility, improve road safety, and reduce environmental impact. Some key aspects of the ITS industry include:

Technological Innovation: German companies and organisations are at the forefront of developing cutting-edge ITS technologies, including advanced traffic management systems, connected and autonomous vehicles (CAVs), intelligent infrastructure, and integrated mobility solutions.

Particularly in focus are Artificial Intelligence and Mobility (AIAMO) and the Mobility Data Space (MDS). AIAMO is developing AI-based environmental and mobility management to make mobility more efficient, resource efficient, safe and responsive. Emphasis is on mobility services especially for SMEs and smaller cities. The MDS brings together those who need data for innovative mobility solutions and those who want to monetise their data assets.

Such innovation is driven by Germany's numerous research institutions, universities, public-private partnerships, and a lively startup scene.

Government Support: The EU, the German government as well as federal states provide support for research and development through funding programs and initiatives. This support fosters collaboration between industry players, research institutions, communities, and government agencies thereby accelerating the deployment of ITS solutions.

Deployment of Pilot Projects: Germany serves as a testing ground for ITS pilot projects aimed at demonstrating the feasibility and effectiveness of new technologies and mobility concepts. These pilot projects included Autonomous Shuttle Buses in city and rural areas, testbeds for automated and connected vehicles, truck-platooning in real motorway driving and parking guidance system for lorries.

A new form of pilot projects are Living Labs. These are user-centered, open innovation ecosystems based on a systematic user co-creation approach integrating research and innovation processes in real life settings, combining the technology proof of a pilot with social acceptance research. Various Living Labs have been set up focusing on different aspects of mobility with the most prominent one being in Hamburg testing digital mobility of the future in everyday life.

Challenges and Opportunities: Despite innovation and technology evolution and many pilot projects, the deployment of ITS solutions faces many challenges leading to a gap between what is possible and what is in operation. These challenges are regulatory and organisational hurdles, data privacy concerns, public acceptance, need for cooperation and infrastructure modernisation. However, these challenges also present opportunities to create more efficient, sustainable, and user-centric mobility solutions.

Overall, ITS in Germany is thriving, driven by a combination of technological innovation, government support, collaborative partnerships, and a very strong focus on sustainability.

An essential prerequisite for ITS is technology innovation but the key for success are human factors, the willingness and ability to learn, cooperate and public acceptance. To address the latter is the key task of the national ITS associations and ITS Nationals. I invite you to get in touch: www.itsnetwork.org

Marc Verhage
Chairman, Connekt (ITS Netherlands)

In the dynamic landscape of ITS, the Netherlands stands out as a frontrunner, showcasing innovative solutions and embracing cutting-edge technologies to enhance mobility, safety, and sustainability.

As we delve into the current status of the ITS industry in the Netherlands, it becomes evident that the nation's commitment to pioneering initiatives and collaborative frameworks has positioned it as a global leader in intelligent mobility.

The Netherlands boasts a robust ecosystem for ITS development and deployment, driven by a blend of public and private sector collaborations, academic research, and governmental support. One of the cornerstones of the Dutch ITS landscape is its emphasis on fostering smart mobility solutions that cater to the diverse needs of its citizens while addressing pressing urban challenges such as congestion and pollution.

In recent years, there has been a significant surge in the adoption of advanced technologies within the Dutch ITS industry. From connected and autonomous vehicles (CAVs) to integrated traffic management systems and Mobility as a Service (MaaS) platforms, stakeholders across the value chain are actively investing in innovative solutions to redefine the future of transportation. Notably, the Netherlands has emerged as a testing ground for autonomous vehicles, with various pilot projects underway to evaluate their feasibility and safety on Dutch roads.

Moreover, the Dutch government's strategic focus on sustainability and environmental stewardship has propelled the integration of clean energy solutions within the ITS domain. Initiatives promoting electric vehicles (EVs), cycling infrastructure, and alternative modes of transportation underscore the nation's commitment to fostering eco-friendly mobility options and reducing carbon emissions.

Furthermore, the Netherlands' strategic geographical location and its status as a major logistics hub have catalysed advancements in freight and logistics ITS solutions. From intelligent freight management systems to real-time cargo tracking technologies, Dutch enterprises are spearheading innovations aimed at optimising supply chain operations and enhancing freight efficiency.

The Netherlands stands at the forefront of the global ITS revolution, leveraging its innovative spirit, collaborative ethos, and strategic vision to drive transformative changes in transportation.

However, despite the remarkable progress, the Dutch ITS industry faces several challenges that warrant attention. Chief among these is the need for seamless interoperability and standardisation across diverse ITS applications and systems. Achieving harmonisation and data exchange between different stakeholders remains a key priority to unlock the full potential of smart mobility solutions and ensure their scalability and effectiveness.

Moreover, as the ITS landscape continues to evolve, cybersecurity emerges as a critical concern. Safeguarding interconnected ITS infrastructures and data against cyber threats and ensuring robust resilience mechanisms are imperative to maintain public trust and confidence in smart mobility technologies.

Looking ahead, the future trajectory of the Dutch ITS industry is poised for further growth and innovation. With ongoing investments in research and development, collaborative initiatives, and policy frameworks that prioritise sustainability and inclusivity, the Netherlands is well-positioned to shape the next generation of intelligent transportation systems and pave the way for a more connected, efficient, and resilient mobility ecosystem.

In conclusion, the Netherlands stands at the forefront of the global ITS revolution, leveraging its innovative spirit, collaborative ethos, and strategic vision to drive transformative changes in transportation. By embracing emerging technologies, fostering public-private partnerships, and prioritising sustainability, the Dutch ITS industry is charting a course towards a more integrated, accessible, and sustainable mobility future.

For more information about Mobility in the Netherlands, please contact Connekt (ITS Netherlands). Connekt is the network for innovation in sustainable mobility and logistics with over 100 members active in the Netherlands and abroad.

From parking meters to a digital kerbside – how the next 'space race' will revolutionise the last mile

The first parking innovation revolution in the UK was in 1958 with parking meters being installed on the streets of Mayfair by Westminster City Council to alleviate traffic congestion and promote turnover in parking spaces.

Neil Herron
CEO and Founder
Grid Smarter Cities

The next fundamental change came following the Road Traffic Act 1991. With increasing problems of town centre congestion, and demand for on-street parking, coupled with the pressures on police resources, the Act permitted local authorities to apply for the legal powers to take over enforcement from the police. In return they would be allowed to keep the proceeds.

The next real innovation came when Pay by Phone parking followed in the mid-2000's. It is now more or less ubiquitous both on and off-street for Britain's motorists.

However, there is one sector that until now has operated on the same local authority assets but with different desires, needs and wants.

THE FREIGHT, SERVICING AND DELIVERY SECTOR

Commercial operators delivering beer to pubs, food to restaurants, parcels to homes and businesses and all provide essential service and maintenance for telecoms, utilities and the like. Until now, they have had to work under a raft of complex regulations often differing from borough to borough, city to city, where loading rules on double and single yellow lines differ even in adjoining boroughs, often having different time limits.

The fundamental issue for commercial operators is that the whole of the kerbspace operates on a 'first come first served basis' and this is where the problem lies.

THE DIGITAL REVOLUTION – THE BOOKABLE KERB

However, there is hope and help on the horizon. The digital revolution is set to transform cities, taking the kerb from a 'first come first served' approach to a flexible, dynamic bookable, optimisable and monetisable city asset, transformational for last mile logistics.

THIS INNOVATION REVOLUTION IS DELIVERED BY KERB, A TWO-SIDED PLATFORM DEVELOPED BY GRID SMARTER CITIES

Increases in urban population, the growth of home deliveries and the reduction of available kerbspace for commercial vehicle activities with

A digital Smart Sign brings the platform to life at the kerbside with bookings shown in real time

more pedestrianised areas, cycle lanes and LTNs is building pressure. However, an expectation of a clean, green urban realm with a café culture can only happen if the coffee and croissants are able to be delivered!

The revolution to drive fleet transition to electrification, to reduce congestion and drive forward improvements in air quality, and sustainability, as well as achieving decarbonisation is going to require collaboration and coordination between operators and cities alike.

Authorities are setting ambitious targets in their freight strategies and action plans, such as the City of Westminster, who have committed to their absolute numbers of freight, servicing and delivery vehicles reducing by 80% by 2040.

This ambitious strategy and expectation is not going to be restricted to Westminster. Other boroughs, and likewise cities, across the UK, and around the world, 'will require similar targets'. To achieve this, cities will need a tried and tested 'tool kit.'

Thus, the perfect storm has arrived and the way to address it is not as difficult and demanding as it appears at first glance.

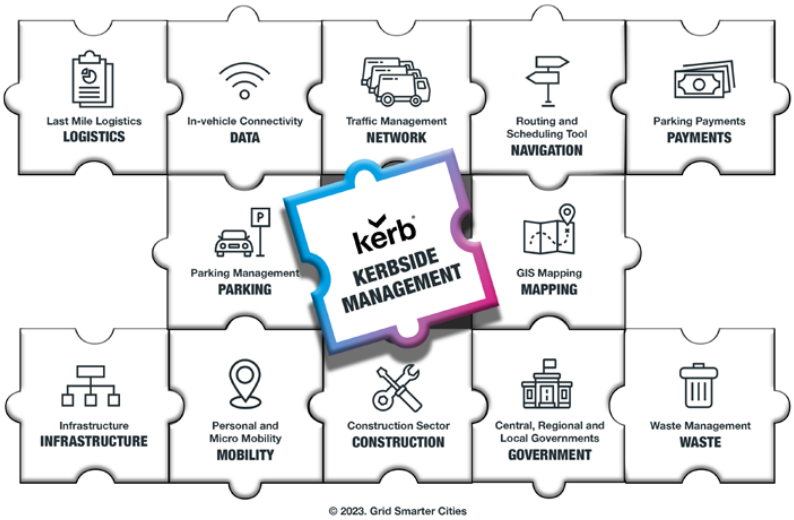
Albert Einstein said If you can't explain it simply, you don't understand it well enough.

We believe that the key component to enable the delivery of radical and transformational change is right under our feet … the kerbspace!

To deliver the outcomes required it needs to be bookable.

The activities shown below are 'connected' to the kerb and form the key components of the connected, last mile ecosystem.

What is required is a cooperative and collaborative approach towards the creation of a platform of interconnected, interoperable solutions that can deliver major impacts and benefits for the last mile logistics sector, thereby, delivering big outcomes for cities.



The freight servicing and delivery sector is going to enable the delivery at scale of the digital revolution set to transform cities taking the kerb from a 'first come first served' piece of city infrastructure into a flexible, dynamic bookable, optimisable and monetisable city asset delivering significant impacts for last mile logistics and beneficial environmental and societal outcomes for cities.

Neil Herron, CEO and Founder, Grid Smarter Cities

At Grid Smarter Cities we believe that the future city is simple, practical and connected and therefore by default smart, digital and optimised. This city of the future is achievable now, using existing policy and legislative frameworks. Get the kerb right and all the other jigsaw pieces fall into place.

KEY LAST MILE COMPONENTS

TRANSITION TO EV

It is not just about creating new EV charging sites, but also about optimising existing ones. Many cities have bus depots (there are 88 in London alone) that have, or can expand their EV charging infrastructure to open up capacity and 'sweat the asset' while the buses are out in operation during the day.

TRANSITION TO ZERO TAILPIPE EMISSIONS VEHICLES

Cities need freight, delivery and servicing vehicles to enable businesses to function and to transition all commercial vehicles to zero tailpipe emissions will require an optimised, integrated infrastructure and adequate power provision, which are currently major hurdles.

Facilitating the smoothest transition we believe will come from allowing preferred access to the kerb for certain classes of vehicles, the first example being a trial of two bookable EV-only delivery vehicle bays in Westminster led by Councillor Paul Dimoldenberg.

We're not going to change the world with two bays, the councillor explained. But if it works over the next 18 months, then it gives us the go ahead to unveil more of these bays, right across Westminster so that we have a network of bays so that businesses can have a choice of where they book a spot at a time that suits them.

The London Borough of Southwark are also pioneers with a series of bookable loading bays on the busy Walworth Road High Street. More London boroughs are set to follow suit in the coming months via an initiative led by the Cross River Partnership.

INTERMODALITY

Whether river to road, rail to road or road (in bulk form) to road, all involve cross-docking which, where applied correctly can reduce the amount of dedicated space required by repurposing existing assets with no requirement for any additional warehousing or on-site storage space i.e. done using rail yards, piers and wharves, car parks or even using areas of kerbside as floating micro-hubs.

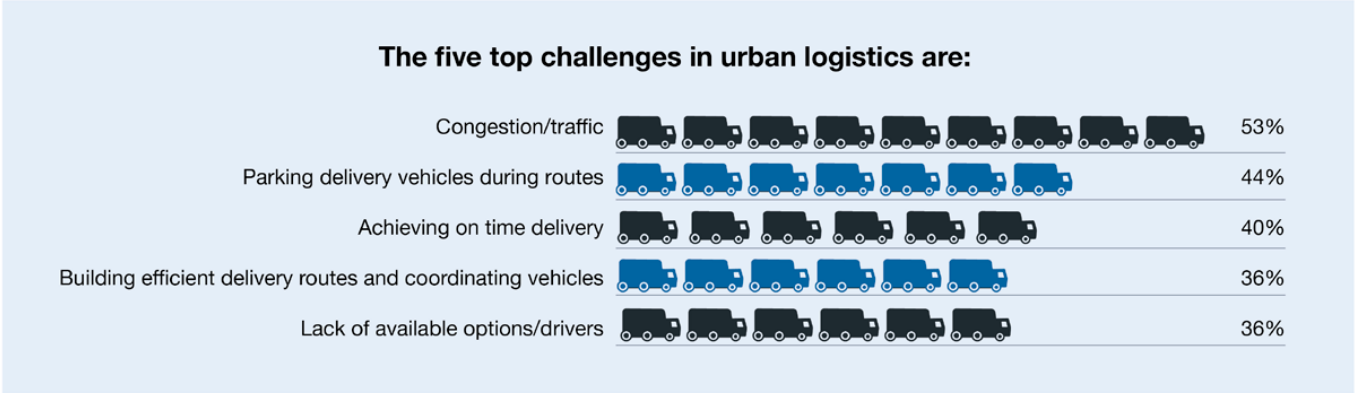
This commercially viable business case means faster adoption, with preferred access to the final destination and provides a competitive advantage to using zero emission vehicles whether EV vans or E-cargo bikes.

DATA

Connected vehicles provide live information back to companies and city authorities. A digital twin is a digital representation of a vehicle on the cloud that synchronises data with the vehicle in real time. Therefore, data sharing among vehicles can be accomplished by their digital twins on the cloud without any physical limitations.

Parcel Lockers, consolidation centres, integration of intelligent traffic signalling are all part of the wider solution suite that involves degrees of behavioural change as well as technological innovation.

The space race has begun and collaboration, coordination and interoperability is going to be key, making circling the block a thing of the past.



A recent White Paper Vans in the City: opening up gridlocked cities to a connected and electrified future by Reuters Events Supply Chain partnership with Ford Pro identified the top challenges in urban logistics

It is not just about creating new EV charging sites, but also about optimising existing ones. Many cities have bus depots (there are 88 in London alone) that have, or can expand their EV charging infrastructure to open up capacity and 'sweat the asset' while the buses are out in operation during the day.

WOMEN IN ITS

Can we do more to inspire inclusion?

ITS UK's vision is for a cleaner, safer, and more effective transport network. To achieve this vision, we can't underestimate the benefits of being inclusive and creating inclusive solutions.

By understanding and valuing inclusion, more accessible and considerate transport networks can be created, as well as more accessible and inclusive work environments for those who use, operate, and maintain our network. For 2024, the International Women's Day (March 8, 2024) theme is Inspiring Inclusion, an excellent framework for the ITS UK Women in ITS (WITS) Forum to use for our focus area this year. We will be asking ourselves and the wider ITS UK Forums, and membership organisations, how they are going to do more in 2024 to inspire inclusion?

The Oxford dictionary definition of inclusion is: The action or state of including or of being included within a group or structure.

LOOK BACK AT 2023

In 2023, we witnessed a significant stride towards inclusivity as the Women in ITS Forum established itself as a powerful advocate for diversity within ITS UK. Holding a webinar in March to raise awareness for International Women's Day, an event in Birmingham for International Women in Engineering Day in June and closing the year by joining forces with the Early Careers Forum in November. We demonstrated our commitment to expanding inclusivity beyond gender, upskilling the next generation of ITS professionals, and setting the stage for an even more impactful 2024.

Gemma Tredwell, Chair

Beckie Faulkner, Vice Chair

Rebecca Bollen, Vice Chair

The joint event, held on 23 November and hosted by UTAC Millbrook showcased WITS commitment to inclusion and diversity by providing a platform for professionals and emerging talents in the ITS field to come together. The morning featured a diverse lineup of speakers from different genders, racial backgrounds and ages who shared valuable insights into career progression and opportunities within ITS.

The networking session over lunch was a vibrant display of the allyship within the WITS and Early Careers communities, as attendees engaged in meaningful conversations, fostering connections that transcend traditional boundaries. In the afternoon, the event took an exciting turn as participants explored UTAC Millbrook's cutting-edge facilities. The immersive experience included a ride on the circuit in an electric bus and hands-on engagement with driver simulation tools. Attendees fearlessly embraced the driving simulator challenge, reaching speeds of over 140mph.

SUPPORTING A DIVERSE AND WELCOMING SECTOR

Historically the WITS forum has focussed on gender in our sector where it is acknowledged women are underrepresented. 12% of those working in engineering are female compared to 51% of the UK population according to the Engineering UK Equality, Diversity, and Inclusion Strategy 2019-22. For 2024 we are widening the lens to challenge ourselves and others to think more broadly across equality, diversity, and inclusion (EDI) priorities.

WHAT DO ALL OF THESE TERMS MEAN? (As defined in Equality, diversity, and inclusivity in engineering, 2013 to 2022: A review)

Diversity
A group or organisation is diverse when it includes people with various characteristics, backgrounds and experiences.

Equality
Non-discrimination, equal opportunity, and equality of outcome. Equality is the removal of barriers to fairness and the transformation of society so that all may participate.

Inclusion
The extent to which people feel valued for who they are (their personal and professional background, experience, and skills) and the extent to which people feel they belong or fit in their profession or organisation, regardless of their characteristics.

Benefits of addressing EDI priorities include a happier workforce by applying inclusive organisational people policies and personal development opportunities, whilst also attracting a more diverse workforce. By being more representative of the users of our products and services we will gain valuable market insight. We aim to unlock some of the diversity within our forums and understand how diversity of thought can bring innovation, problem solving and critical challenge.

KEY QUESTIONS TO ASK

Why do we care? - Our sector can't afford to exclude large numbers of the population or let talented individuals leave or not even consider working within the sector.

What have we done? - Many a women's network and employee resource group has been set up, usually by underrepresented groups for their own groups to create a safe space, share experiences and knowledge and promote opportunities.

How do we improve? – We need to do more! A wider EDI consideration above and beyond gender is required around the nine protected characteristics within the Equality Act 2010 and more recently intersectionality where a number of these characteristics may interconnect to shape your experience. The nine protected characteristics are age, disability, gender reassignment, marriage and civil partnership. pregnancy and maternity, race, religion or belief, sex and sexual orientation.

Where do I start? Everyone has a responsibility and an opportunity to make a difference. If you're sitting comfortably and don't think this affects you there is a good chance you have not been impacted by inequalities or unfairness.

- **Educate yourself.** It's not up to those who are underrepresented and who need help to educate you. Following associations and groups on social media, listening to podcasts and reading books from thought leaders in EDI will raise awareness. Complete EDI training such as unconscious bias training and Impact through inclusion, there are lots available online, through your organisations and even free through LinkedIn.
- **Become an Ally:** you may or may not know whether employee resource groups (ERG) or networks already exist in your organisation. It's a good place to start by finding out. What challenges are they facing? What are their priorities? Do they have the resources they need? Can you be an ally or an ambassador to help make a change? Can advice be sought from the ERG on a project to help with user experiences or design requirements?
- **Focus on small wins:** Read your workplace EDI policy and action plans, is it doing the bare minimum or is it pushing forward to improve the work environment and our communities. Ask questions in project meetings to consider if the team are all acting with an inclusion mindset. Can you make an impact to social value, user experience or Equality Impact Assessments (EQIA)?
- **And lastly be brave.** We all make mistakes when exploring and learning about a new environment. We all have a level of inbuilt biases within us where our upbringing and what we have absorbed through the media and life experiences may make assumptions about particular groups or individuals. Take yourself to a place of 'constructive discomfort' to allow yourself to be open to learning, listening and supporting.

Women in ITS forum chair Gemma Tredwell says:

"Our customers come from a wide and diverse background and include network operators, maintainers, designers, SME's, road users etc. To understand and meet their needs we need to broaden our membership as wide as possible. Technology is traditionally and remains to be developed at a fast pace, the advancement of AI and need for cyber security just two examples which provide both challenges and opportunities for the ITS industry.

We need a diverse group of experts who can use the advances in technology to meet the needs of the user and therefore we need to include and promote ITS to as wide an audience as possible. And this starts with us! We will be looking at educating, allyship and actions we can take in 2024 to make ITS-UK an inclusive and exciting place to promote, share knowledge and showcase ITS."

Navigating digital transformation

In this article, Kim Vigilia interviews Netcompany's UK Managing Director Richard Davies and his team on their approach to a step-change iterative transformation.

In March 2024, government agency Active Travel England (ATE) announced £101m in funding to encourage citizens across the country to choose walking and cycling as their preferred method of transport and promote development of high-quality walk and cycle routes, side road zebra crossing expansion, and to offer free e-cycle loans.

The announcement was one of several bold visions the UK government has financed in the past year alone, alongside the Network North plan for transport, and National Highway's Strategic Road Network Initial Report.

These announcements signal a rare alignment in long-term goals across our transport sector. Although it encompassed Net Zero, sustainability, and Vision Zero efforts, the scope of projects moves towards a more connected country, economic prosperity, and the health and happiness of citizens.

An alignment in vision and mandate is a great first step, but delivering it – to budget, on time, and with the least risk – is where other organisations falter. Fortunately, the practicality of modern technology and its application within complex sectors are finally lining up.

To deliver these grand plans, we need a flexible and pragmatic digital transformation plan.

FROM LEGACY SYSTEMS TO FUTURE TECHNOLOGIES

Given the hype around artificial intelligence (AI) and machine learning, the allure of new data-driven platforms cropping up for the ITS ecosystem is tempting. However, the 'big-bang' approach necessary to implement such solution-first platforms are not viable for the public sector, since a rapid replacement of legacy systems could instead cause irreparable disruption.

One of the common misconceptions around adopting AI and data-driven decision-making is that once you 'turn it on,' you must apply it to everything and all at once. "There is an idea that from Day One, everything will be automated and there will be too much change", says Andy Bellamy, Managing Architect, Netcompany. "When we work with clients on applying new technology, we tell them to look at their process, people, and existing technology and together, we assess where value can be added to existing and future processes. Then, we build a programme to deliver it alongside smaller implementations, so that we can see the value-add, the efficiency, and build on that trust until the organisation is ready for a full adoption."

Even with a grace period built in between the old and new platforms, the risk of downtime or other delays within an organisation's day-to-day deliveries is too high.

Instead, the team at Netcompany use a step-change methodology in their iterative digital transformation, which means new technology is introduced in batches, and is run within a shadow process alongside its current chain. Aligning closely with its clients' adoption pace, the fragments of the legacy systems are replaced bit by bit, until the entire system is ready to run fully on the new platform.

This approach has seen success in organisations dealing with complicated systems that process sensitive citizen data, deal with multiple moving factors, and face uncontrollable conditions, like weather.

"We've seen early successes in the air and supply chain industries replacing decades-old, fragmented legacy systems and transitioning them to real-time decision-making powerhouses in as little as three to four years", says Richard Davies, UK Managing Partner, Netcompany. "For us, it's not about updating the old system with new parts – we're co-developing adaptable

platforms that our clients will build a new data-driven future on."

From a tactical perspective, that might mean predictive decision-making, intelligent traffic management, or using real-time insights between traffic systems, cars, and road authorities. In the long-term, it will help economies prosper from user-centric designs and streamline citizen experiences.

Ready for growth and change, leaders across the sector reflect eagerness for innovation adoption.

In last year's Annual Review, National Highways CEO Nick Harris wrote about their own step-change approach to transport infrastructure in the UK within their Digital Roads strategy, and the use of digital technologies such as digital twins for roads and bridges. In the same article, he also mentions the use of AI for to prolong the life of roads, bridges, and structures.

"What's exciting about transformation is that it never finishes – it's never a done job", says Caroline Hildreth, Principal, Netcompany. "Organisations will continue to innovate and move forward to keep up with technology as it becomes better. As the world gets more connected, more insight and data will be generated, and the focus will be on how to harness insights to improve processes and outcomes."

That means we must build for the long-term, even if we start with small steps forward. The industry needs to ensure have the mechanics and foundation to build on through time, so then when we are ready to implement AI-enabled processes, we can pivot quickly.

PULSE: A SINGLE SOURCE OF TRUTH

Once the vision, goals, and outcomes are aligned, the next step is to plan, develop, and build a 'single source of truth' platform that will power future data-driven decision-making.

In siloes, this could be straightforward. However, across the vast interdependencies within the transport ecosystem, an industry-wide set of standards, language, and systems would take decades to realise, and even then, possible only when all agencies agree to a set of definitions.

To circumvent this challenge, Netcompany has developed a base technology platform that can simultaneously adapt existing systems' data inputs, and layer them with insight from newly built extensions to achieve a single source of truth. The platform, PULSE, then becomes a 'control tower' for a real-time data ecosystem, which allows organisations to share and act on transparent and useable data – with no latency.

With a focus on simultaneous and real-time analysis, prediction, and maintenance, PULSE is a cost-effective, sustainable modular and reusable platform that prevents vendor lock-in down the line.

"Don't build something new if you've already got something in place that we can customise – that's what we tell clients when they want to buy something off-the-shelf", says Davies. "Reusing technology saves money, is more efficient, and protects clients from a lot of wasted time and effort. As part of Netcompany's responsible digitalisation, we reuse solutions to expedite high-quality delivery, mitigate risks, enhance sustainability, drive down costs and shorten time-to-market."

In March 2024, PULSE was confirmed as part of P&O Ferries' legacy replacement programme in the UK. The platform is already used as the basis of Copenhagen Airport's unified operational management system AIRHART.

IN CLOSING: COLLABORATION, PARTNERSHIP, AND THE OUTLOOK

Successful digital transformation only works when clients and partners communicate effectively and build a two-way trust system. That means spending a lot of time together, focusing on objectives and the tasks at hand, and tackling them as a single unit.

Reflecting on the blended team created with the Chief Technology Officer of National Highways, Chris Paton, Bellamy says: "He always maintained that we leave our badge at the door. 'Together, we're all National Highways, and that we share a common and good purpose.' We have seen great outcomes working so closely together like that – not only do you achieve trust faster, but also find a way to be transparent with each other, have clear communication, so that we can focus on how to develop technology plans that will support their digital roads strategy."

The future of digitalisation in transport is bright, with a lot to look forward to in the next few years.

"There's a lot happening around RIS3 that I'm looking forward to seeing how it unfolds, and to understand how we could support those initiatives, especially around harnessing data insights and coordinating technologies, says Hildreth. "I'm also excited for the blend of transport professionals I'm meeting, which is introducing new conversations around how to better use technology to address low carbon emissions and tackle Vision Zero goals in the future."

Richard Davies
UK Managing Director, Netcompany

Caroline Hildreth
Principal, Netcompany

Andy Bellamy
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PULSE

Digitising Transport for the Future

PULSE is your personal control tower in the dynamic world of business data. It's your compass, breaking down barriers and providing a clear, unified view of plans, actions, and outcomes, empowering you to adapt and thrive in any circumstance.

Read more about PULSE at netcompany.com

Netcompany

Driving toward the future: How technology is revolutionising transportation

In an era marked by rapid technological advancements, the transportation sector is undergoing a profound transformation.

John Piper
Sales & Marketing Director
Jenoptik UK

Victoria Curran
Marketing Executive,
Jenoptik UK

From connected vehicles to automated traffic management systems, technology is reshaping, not just the way we move, but also the way we consider and engage with transportation - making our roads and wider transport networks more connected, automated, integrated, and sustainable.

Connected ITS exist in many forms today. However, technical evolutions aligned with market needs, to maximise investment and infrastructure, increase this need for connectivity and will drive the development of systems in the future. The emergence of the Internet of Things (IoT) and 5G connectivity has paved the way for vehicles to communicate with each other and with the infrastructure around them in real-time. This connectivity enables features such as predictive maintenance, real-time traffic updates, and enhanced safety measures. Commuters can now receive alerts about road conditions, accidents, or detours, allowing for smoother and more efficient travel experiences.

Yet, the increase in our ability to understand and analyse the trends and behaviours of transportation networks will also need to be matched by the capturing devices present to provide this raw data, images, and updates.

There are thousands of ANPR cameras deployed for speed enforcement across the UK road network. Whilst currently approved by the Home Office solely for that purpose, and not permitted to be utilised or connected to other systems, these networks of cameras have potential beyond their primary function. Through harnessing the data they generate, a broader convergence of data across various endpoints becomes feasible, rather than compartmentalising into silos.

One avenue for leveraging ANPR data is enhancing traffic management systems. Real-time insights into vehicle movements can optimise traffic flow, mitigate congestion, and improve overall road safety. Additionally, ANPR data can contribute to urban planning initiatives by providing valuable information on traffic patterns, peak hours, and popular routes, aiding in infrastructure development and public transportation planning.

ANPR data can be utilised by the Police for purposes beyond speed enforcement, such as identifying stolen vehicles, locating suspects, or investigating criminal activities. Integrating ANPR data with other data sources/databases can enhance the effectiveness of crime prevention and detection efforts. Moreover, ANPR data can support environmental initiatives by analysing vehicle emissions and promoting the use of eco-friendly transportation modes. By integrating ANPR data with environmental monitoring systems, policymakers can develop targeted strategies to reduce pollution and promote sustainable urban mobility.

When considering Autonomous Vehicles (AVs), these are no longer a concept of the distant future but a tangible reality in the here and now. Through

By embracing Innovation and collaboration, we could create a more connected, automated, integrated, and sustainable future for transportation

advancements in artificial intelligence, sensor technology, and machine learning algorithms, AVs can navigate roads, interpret traffic signals, and react to obstacles with human-like precision. AVs will continue to evolve, not just driven by the technology but also in the way that allows them to become a seamless part of the variable users of our road networks - holding the promise of significantly reducing traffic accidents and fatalities while optimising efficiency and reducing emissions. The increasing introduction of connected and AVs would present a much larger shift in our comprehension of ITS connected systems, with roadside technology interacting with vehicles to both transmit and receive real-time safety, congestion, and traffic information.

Integrated transport systems are breaking down traditional silos between different modes of transportation. Apps and platforms now offer seamless integration of public transport, car-sharing, cycling, and walking routes, providing users with comprehensive mobility solutions tailored to their preferences and needs. This integration not only enhances convenience for travellers but also promotes the use of sustainable modes of transport, reducing reliance on single-occupancy vehicles.

We can also look to the benefits integrated systems have for those responsible for keeping our roads and urban areas safe and secure.

In recent years we have seen a surge in the use of ANPR technology to help manage our road networks and urban areas through Road User Charging, Clean Air Zones, Moving Traffic Offences and Car Park Management. Back-office systems hosted in the Cloud, with additional access on handheld and mobile devices are becoming more prevalent, making ANPR data more accessible and valuable to those who need it and can exploit its usage.

When considering automation, speed enforcement (spot / average and red light) is already a successfully deployed automated solution. However, as new technology provides the capability to enforce a wider variety of driver behaviours and offences, the associated automation of those systems is a key consideration. The increased use of Artificial Intelligence to detect and understand more complex roadside behaviours provide new opportunities for ITS. Although, in order to maintain trust in the system, the automated nature must be backed up by human sense checking, at least in their early days.

Technological innovations also play a pivotal role in making transportation more sustainable. Electric vehicles (EVs) powered by renewable energy sources are becoming increasingly prevalent, reducing greenhouse gas emissions and dependence on fossil fuels. Additionally, smart infrastructure solutions such as electric vehicle charging stations, dynamic tolling, and traffic management systems are being deployed to optimise energy usage and minimise environmental impact. We've also seen the introduction of off-grid power such as solar and hydrogen fuel cells deployed for permanent and temporary enforcement systems - enabling the use of enforcement in areas with no access to traditional power sources.

Leveraging technology to support the sustainability of transport infrastructure amidst the growing number of vehicles on UK roads is also a well-established practice. From tolling on bridges to highway-wide variable speed systems, enforcement using camera technology is an effective way of modifying driver behaviour to optimise the usage and effectiveness of the road network. This utilisation is likely to continue and inevitably expand as governments continue to consider the necessity for greater Road User Charging schemes to support and sustain the needed investment. Another benefit of using enforcement technology in modifying driver speeds (particularly over longer stretches of road) is the overall reduction in vehicle emissions on these sections of road. We can look to the roll out of average speed along five key routes in Wales as a fantastic example of this in practice.

While technology holds immense potential to revolutionise transportation, it also presents challenges that must be addressed. Concerns around data privacy, cybersecurity, and the ethical implications of autonomous vehicles require careful consideration and regulation. Moreover, ensuring equitable access to these technological advancements is crucial to prevent exacerbating existing disparities in mobility. As we navigate the complexities of an increasingly interconnected world, technology continues to redefine the way we move and interact with our transportation networks. By embracing innovation and collaboration, we could create a more connected, automated, integrated, and sustainable future for transportation—one where efficiency, safety, and environmental stewardship are at the forefront of our collective journey toward progress.

Future-proofing ITS to manage road networks in the 'hybrid state'

Road operators are now able to be smarter about using technology to support network operations, while also preparing for the connected and automated mobility of the future.

Dr Jill Hayden
Technical Director, AtkinsRéalis

Aston Brand
Senior Consultant, AtkinsRéalis

There are significant benefits to be gained by combining systems and data to maximise multiple outcomes:

- **Resilience:**

ITS has become an essential tool in managing safety, congestion and road user experience. While this has enabled great efficiencies, the operation of the network has become heavily dependent on technology and when this fails, it can result in significant disruption. The wealth of systems for measuring traffic conditions, controlling traffic, and informing drivers provides opportunities for integration to remove single points of failure.

- **Performance:**

Using multiple data sources for decision making, or multiple channels for information provision, can improve the performance of existing technology, without adding more roadside devices.

- **Reducing infrastructure:**

Connected vehicles are now a reality and many road network operators see the potential to remove roadside infrastructure over time, with the move to connected vehicle data and in-vehicle information systems. For example, National Highways aims to reduce and, where possible, eliminate the need for roadside technology by 2035.

HOW TO NAVIGATE THE HYBRID STATE?

'Detection and information ecosystems can help mitigate challenges of the 'hybrid state'.

For the foreseeable future, we expect road operators to continue to provide the same services but the mechanisms for doing so will change in a move away from roadside infrastructure.

This change will not happen overnight, so there are questions about what will happen in the hybrid state, where both roadside and connected vehicle technology exist together. But there is still some way to go to manage this transition.

THE EVOLUTION OF DETECTION SYSTEMS – IMPROVED 'DATA IN'

Currently road operators often use a single sensor type for a single detection purpose. For example, on smart motorways, National Highways has one type of radar (side-fire) to detect queues, a different type (scanning) to detect stopped vehicles, and operators in control rooms use CCTV to detect, verify and monitor incidents. But scanning radar and CCTV can detect queues too, and CCTV and radars can also detect stopped vehicles.

One option would be to use just one sensor type to detect everything, removing all others and simplifying the system. However, if this system failed, there would be no 'incident' detection at all, thereby reducing resilience.

A more resilient alternative is to combine multiple existing data sources, so that if one is faulty, other data sources are available. Unfortunately, the current system architectures used by road operators do not allow this.

We need a detection ecosystem, in which multiple detector types provide multiple outputs. When fusing the sensor data, we can maximise the benefits and minimise the weaknesses of each sensor type. Sensor fusion is well-established in aerospace, robotics and autonomous vehicles. *(Figure 1)*

Most importantly, an architecture which can use multiple data sources will be able to evolve over time to deliver the same services using different technologies. In the short term, it can increase performance and resilience.

The addition of connected vehicle data sources such as eCall and SRTI1, will increase in penetration over time, until eventually roadside detectors will be decommissioned, reducing cost and carbon, when connected vehicle sensors can be relied on. *(Figure 2)*

KEY CONSIDERATIONS

• Different data sources are not automatically interchangeable. For example, floating vehicle data aggregates speeds from vehicles travelling along a road segment, whereas loops measure speed at a specific point location. The speed data from each is subtly different so we should not assume that floating vehicle data could be swapped in, without modifying algorithms or trigger thresholds for taking actions.

• The more inputs to a sensor data fusion system, the greater complexity. This means increased processing power, data storage, and significantly enhanced testing to give the assurance required to guarantee reliable performance.

• However, the potential benefits of improved performance and resilience and a roadmap to reducing infrastructure are likely to outweigh the costs of implementing the detection ecosystem.

INFORMATION SYSTEMS - IMPROVED 'INFORMATION OUT'

Variable message signs (VMS) at the roadside are currently the primary source of information provision from road operators to road user. An information ecosystem would take information types as the inputs, and the multiple output channels would include variable message signs and in-vehicle communication.

The benefits include provision of more personalised, timely and accurate information and the potential to reduce roadside infrastructure and associated costs.

VMS are only available at specific, limited locations on certain classes of road. Therefore, in-vehicle information could provide far greater flexibility. By tailoring information to different driver preferences and vehicle types, there is greater potential to improve network conditions with more relevant and specific information directly to the driver.

As with detection, the information ecosystem would allow the use of multiple output channels during the 'hybrid state', with roadside message signs eventually being decommissioned. We recognise the difficulties of making sure that roadside and in-vehicle information does not conflict or confuse; but a robust information ecosystem could enable more consistent and accurate information to be shared.

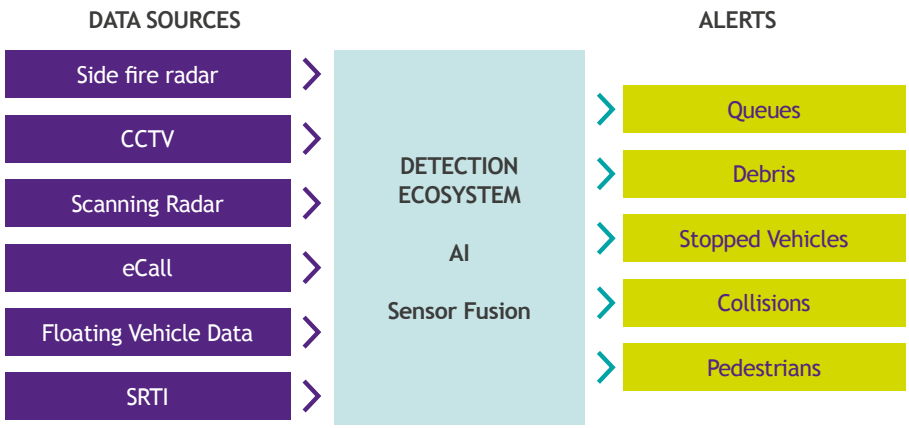

Figure 1

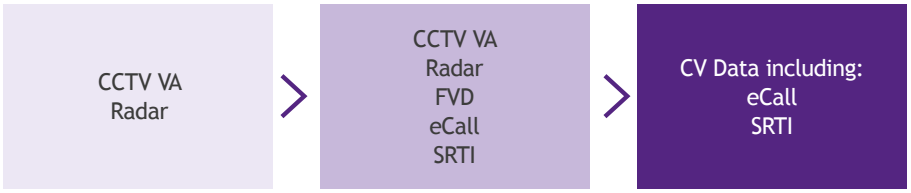

Figure 2

IMPORTANCE OF CONSIDERING THE CUSTOMER

These decisions are not purely down to road operators. Many of the benefits we want to realise through ITS – including safety and congestion – are emergent properties of the road system, which arise due to the interactions between its many parts.

For instance, congestion is not associated with one individual vehicle, or road, but results from the interactions of all of them and others, including for example, the weather. Technology's impact relies on the decisions of consumers and citizens to accept it.

The successful operation of the system is dependent on customer behaviour to achieve the desired outcomes. The road user needs to respond to the information provided in the way operators expect them to, and in some cases, the operator may rely on customer data for technologies to work effectively. Public trust, acceptance and participation are essential factors. We need the road user to want this and believe their experience will be improved.

National Highways (in partnership with AtkinsRéalis, Ipsos and Simon Christmas Ltd) has conducted research to understand the benefits and risks of increased data collection and information provision from a customer perspective. This research culminated in participants co-creating fifteen principles they wanted National Highways (and its partners) to follow in relation to digital technologies that collect data from, and provide information to, people and their vehicles. Participants also highlighted that as road users, they want to be consulted on changes and informed of progress.

The results of this work will inform and support National Highways and others to successfully navigate digital transformation in a way that receives public support.

FUTURE-PROOFING ROAD NETWORK OPERATIONS

Today's infrastructure is already operating in the hybrid state, with roadside and connected vehicle technologies co-existing, and this hybrid model will remain for several years to come. It brings significant challenges around how to make best use of both, but also great opportunities to improve safety, reduce congestion and better inform road users, whilst simultaneously reducing costs.

Mitigating climate change, reducing emissions and pollution, transforming energy and mobility systems are challenging tasks for the cities on their way to become climate neutral by 2050.

SWARCO is ready to lend support when it comes to reshaping urban and inter-urban mobility with ITS technologies.
Together, we can make big steps towards reaching the Green Deal goals and improving quality of life for us and future generations.
Let's make Europe green. Deal?

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