

Intelligent transportation systems

Moving your world
forward



Tomorrow's transport

Faced with spiralling city populations and busier transport networks, the challenge of matching public expectation with day-to-day performance is increasingly important for our clients within the private and public transport environment.

In line with technology innovations in the home, workplace and communal spaces, the public's benchmark for personal mobility is rising quickly. Individuals and communities demand services that are faster, smoother, safer, cheaper and cleaner than ever before.

The good news is that the technology is not just keeping up – it's thinking ahead too. In the hands of Mott MacDonald's team of technology experts, the boom in smart devices and big data analytics will position you to meet the city needs of tomorrow.

Make the connection
With end-to-end capabilities across systems, consultancy and engineering, our Transport Technology Services team can add value and bring efficiencies throughout your project's lifecycle.

Our services and solutions, methodology and global knowledge-sharing, will help you take best advantage of breakthroughs in roadside, mobile, consumer, automotive and environmental technology.

- Ask how we can improve your:
- Traveller safety and sustainability
 - Reliability and resilience
 - Customer service and network capacity
 - Information sharing and efficiency
 - Customer satisfaction and value for money



20 years of great outcomes

Our team's track record in frontline ITS demonstrates our ability to keep our clients at the cutting edge of innovation.

1996
Advised on the Highways Agency's first regional traffic management system.

1998
Launched Midlands Driver Information System (MDIS), providing strategic diversion capability for 13 police forces.

2000
Delivered the floating vehicle data system for iTIS Holdings which grew to one of the world's biggest.

2001
Developed the Highways Agency Logging Environment (HALOGEN) to improve motorway operations.

2002
Delivered the UK's first operational Urban Traffic Management and Control (UTMC) common database system.

2005
Provided design and project management, with Fluor, for the Highways Agency's National Roads Telecommunications Services (NRTS) project, covering emergency telephones, dynamic signs and CCTV cameras.

2006
Delivered an innovative UTMC compliant traffic data analysis system.

2007
Completed Congestion Charge value-added services trials for Transport for London.

2008
Reported on the then Highways Agency's active traffic management pilot project, leading to the roll-out of Smart Motorways.

2009
Became framework supplier for specialist services to Transport Scotland.

2010
Developed an analysis system for Southampton City Council to assess the impact of ITS on traffic in urban areas.

Assisted Transport for London with the installation of the iBus system, using automatic vehicle location, GPS and telecoms networks to optimise bus services for 6.3M people.

2011
Celebrated the opening of the A3 Hindhead Tunnel, for which we designed the communications and control systems.

Delivered Tyne and Wear Regional UTMC system, supporting the UK's biggest urban traffic management and control centre.

2012
Secured a place on the traffic management technology framework offering ITS services for national and local authorities.

2012
Used our Merlin crisis management system for the first time at the London Olympics.

2013
Co-ordinated European research on improving traffic data quality and harvesting social media data.

2014
Delivered our Merlin crisis management system to support the multi-stakeholder transport management team at the Glasgow Commonwealth Games.

2015
Delivered Transport for Greater Manchester's Advanced Traffic Management UTMC system.

2016
Trialling a new concept Maintenance Access Vehicle for Highways England, to improve access to and reduce installation/repair time for advanced motorway indicator signs.

10 reasons to think Mott MacDonald

Our Transport Technology Services are focused on getting you ahead, says portfolio manager Pete McLeod.

1.

Safety

From CDM Principal Designers who uphold the highest standards on the busiest and most complex projects to robust and resilient software systems, safety is our first concern, always.

2.

Systems

Mott MacDonald has been a leader in systems development and technology solutions for over 20 years, providing skills covering all aspects of the software and systems development lifecycle. Our client-focused approach is typified by our flagship systems Osprey and Merlin; our proven solutions are tailored to help you realise your objectives, while preserving and future-proofing investment.

3.

ITS consultancy

We'll take the time to understand your individual circumstances and problem-solve to come up with comprehensive mobility solutions that keep your networks operational, and your end users better informed. From pre-feasibility to post-implementation evaluation, and everything in between, we use and drive innovation backed by real life experience to address challenges in an ever-demanding digitally rich world.

Safety is our first concern, always.

4.

Engineering design

Our dedicated technology practice is part of a multi-disciplinary team, with the all-round skills to deliver engineering projects across the transport sector. We provide advice and design solutions that yield tangible efficiencies.



5.

End-to-end integration

We use ITS in a way that reconciles the needs of disparate users to create an integrated network that can be managed as a single entity. Making your system unified and interoperable is where the true value of ITS lies.

6.

Security

As ITS evolves, having a more sophisticated digital infrastructure model is increasingly critical, and more of a challenge. Our information security specialists develop processes and procedures to ensure that changes to your digital infrastructure and mission critical information are secure.

9.

Procurement expertise

Our team has extensive experience in assisting our clients to procure the technology, systems and services they require. Our business and procurement specialists will work with your team in a number of areas including policy and strategy development, business case preparation, procurement strategy development and European procurement processes.

Making your system applicable, integrated and interoperable is where the true value of ITS lies.

7.

Sustainability

By actively managing incidents on the network to combat congestion, and by encouraging the use of public transport, ITS contributes to reducing energy and resource use, and emissions of greenhouse gases and other pollutants. From highway construction to software solutions, we've shown that sustainability done properly delivers efficiencies that benefit you, society and the environment.

8.

Future-proofing

Given the ever-changing nature of technology, you need a partner that can navigate the complicated road ahead. We apply our expertise to provide strategy, design and delivery of technology solutions that can adapt to your evolving operational requirements.

10.

End user focus

We believe that your customers are our ultimate customers, so we work hard to visualise their needs and concerns. By understanding the bigger picture, we are better positioned to create socio-economic solutions that benefit everyone in the communities you touch.

Making sense of big data

We look beyond the capabilities of enterprise relational databases and utilise new technologies for harnessing big data.

Opportunity

From 2001 to 2016, we have operated and maintained HALOGEN, Highways England’s traffic management system. HALOGEN is the central source for HATMS (Highways Agency Traffic Management Systems) logged data. This includes matrix and variable message sign settings, emergency roadside telephone call records, equipment fault records and identification and location of equipment on the motorway network in England.

Project
HALOGEN

Location
England, UK

Client
Highways England

Expertise
Systems developer and maintainer



Solution

Our team developed a range of reporting tools, websites and system interfaces to allow user access to real-time and historic data. The data throughput and secure storage requirements made this a big data challenge. The system needed to retain at least three years’ worth of data and report on recent events with a near real-time response. Multiple data inputs from disparate systems were collated, verified and processed so that the published data was fit for stakeholder use.

Outcome

HALOGEN allows our client to:

- Analyse the performance of its road network in a variety of ways
- Assess the effectiveness of the roadside technology that supports the network
- Provide a real-time feed of fault data to its roadside telecommunications and technology managing agents
- Compile accurate court witness statements for the Crown Prosecution Service as well as the police

Why does it matter?

Ken Cowan, our business development manager, takes a step back from the what and the how of ITS to ask a fundamental question: Why does ITS matter?

It's rare to see stories about ITS on the front pages of the national newspapers (unless something has gone wrong...). But the truth is that ITS is a subject that will affect almost every single person and usually many times a day. Getting to and from work, taking the kids to school, going on holiday, seeing family – these are all integral to our quality of life and they depend on effective transport links.

There was a time when people were prepared to sit and suffer if their train ran late or their bus broke down or they queued in a traffic jam for an hour. But not now. The inconvenience is simply not acceptable to modern smartphone audiences, who instantly share any feelings of frustration, anger or disappointment. And who can blame them? They want to get to where they are headed quietly and efficiently. We now have to view hassle-free transport as a basic social right.

We all used to think – with the advances in home technology – that people would just work at home and stop travelling to the office. That hasn't happened and it doesn't look likely any time soon. We humans like meeting and socialising and working in teams. But we can use advances in technology to make that urge to travel more rewarding.

It's all about end users

As ITS specialists, we may like to think of ourselves as technicians, engineers and analysts, but ultimately we're all in the service industry – as soon as we take our eye off the end user and the customer experience, then we're going the wrong way down a one-way street. At Mott MacDonald, customers are front of mind at all times. We appreciate the challenge of balancing socio-economic priorities with budget affordability – not least in these times of austerity – and we understand the role of software and data in achieving that balance.

Understanding the effects of policies, projects, and programmes on individuals, communities, societies and service users has become a central element of the project lifecycle. More than ever before, the evidence underpinning the decision-making process is an essential element of project development.

I'm proud to say that ours is a hugely exciting team to be involved with, as we all value the importance of getting the job right. Mott MacDonald has helped Britain's transport links evolve for the last 100 years, and we are determined to play a leading role in the rapid transition to fully autonomous vehicles in the coming decades. Imagine a world moved by driverless cars? We do every day!

For me, the answer to the question 'Why ITS?' has two good answers. Firstly, because modern society demands it. And, secondly, because getting it right for clients is immensely rewarding.



There was a time when people were prepared to sit and suffer. But not now. The inconvenience is simply not acceptable to modern smartphone audiences.



Six steps to better systems

1.

Working out what you need

We'll talk to your staff, stakeholders, suppliers and service users to check requirements and find the solution that best meets your needs and your budget. Using story-boards, mock-ups and prototyping, we can demonstrate options, improve engagement and participation, to optimise the result.

3.

Making the most of data

We develop software to harvest, cleanse, analyse and manipulate data – and extract value from it that enables our clients to operate transport services and systems more effectively. We are strong advocates of ITS standards and have taken a leading role in both the definition and adoption of key standards in the ITS domain including Urban Traffic Management and Control (UTMC), SIRI, RTIG and DATEX II.

5.

Reporting and data analysis

Whatever you ask for, we can deliver it. But we also proactively identify information that can deliver business benefits. We supply easy to understand, high-level overviews and then drill down using clear, user-friendly graphs and dashboards to communicate complex information in a digestible way.

2.

Implementing new systems

Software and hardware... we can integrate third-party systems or develop bespoke solutions, as needed. As well as server-based systems, desktop and web applications, we also develop mobile apps. We take an agile approach to delivery that allows rapid progress, supported by rigorous quality processes, promoting 'right first time' results.

4.

Database design and development

We've been working with 'big data' since long before it became a buzz phrase! We make sense of and validate historic and real-time geospatial, economic and social data, then create the technology and behavioural frameworks for sharing, storing and using it – helping you to gain improved understanding of minute-by-minute operational performance through to long-term trends influencing strategic investment, helping you to make better decisions.

6.

Support

We operate a dedicated helpdesk for all our live systems that's fully staffed in-house – you're dealing with a Mott MacDonald team that starts your journey with you and stays with you until the finish. This includes telephone and email support from fully trained engineers with a deep understanding of the systems being supported. We provide a range of support options, up to and including 24/7 cover. We can provide tailored support packages to meet your specific needs.

“Impressive breadth and depth of experience. Mott MacDonald fields specialist teams.”

Judges, 2015 Partnership Awards
(we were named Technical Advisor of the Year)

Seeing the big picture



Project
Tyne and Wear Regional
UTMC System

Location
Tyne and Wear, UK

Client
Tyne and Wear Integrated
Transport Authority

Expertise
UTMC system supplier

Opportunity

We were tasked with developing a visionary regional Urban Traffic Management and Control (UTMC) system for Tyne and Wear to improve communication and co-ordination between a number of stakeholders.

Solution

Our team evolved a system centred on a UTMC common database, which acts as the main strategic management tool and information repository for the entire Tyne and Wear region to assist all the local authorities with network co-ordination and management. Using our proven UTMC product, Osprey, we integrated a wide range of existing transport systems to provide a regional network view.

Outcome

Osprey provides a rich set of management and control functionality and establishes a cohesive view of the transport network across the region, from a newly installed single regional control centre. Control room operators have access to the common data viewer, allowing them to monitor the network and strategies for the benefit of the travelling public. Data collected from Osprey is circulated in several ways. A dedicated public access traffic and travel information website www.tyneandweartravel.info provides access to the wealth of data contained in the UTMC database. It allows the public to make informed journey choices, and also provides information on upcoming major works in the area. Updates are also provided automatically and manually via Twitter @NECATraffic.

Proven solutions for tackling congestion, controlling crises and communicating with customers

Traffic network management

Osprey is a suite of intelligent smart mobility applications that's built on proven technology, and leverages open standards. Osprey provides cost-effective tools for traffic managers and operations staff, and also provides a platform for outreach to the general public, whether business-as-usual, or in times of crisis. Transport authorities need to monitor, report and advise stakeholders on the status of their networks. Our Osprey system allows them to effectively and efficiently do this through its three packages: Control, Analyse and Inform.

Rapid access to real-time multimodal travel information

Osprey Inform delivers a wealth of dynamic information to travellers via platforms including web, mobile devices, SMS, voice, interactive kiosks and personal navigation devices, empowering public transport users to make informed journey choices.

Crisis management

Merlin, our incident and crisis management solution, helps decision makers to record and share information that is accurate, up-to-date and easy to understand. Intra- and inter-organisational collaboration is improved through a shared information picture, helping decisions to be made and the outcomes disseminated more quickly and effectively.

Innovative management for road scheme programmes

By providing combined design, operational, GIS and financial data, we empower programme managers to plan, track and report on transport schemes more effectively, delivering more predictable results and better value for money.

Traffic modelling software development

We have gained a detailed understanding of traffic models through our development of the DIADEM variable demand modelling software for the DfT. We understand the particular challenges involved in developing this kind of software, including numerical methods, representations of the abstract concepts, managing complexity of algorithm choices and performance engineering. Our understanding of traffic modelling allows us to produce optimal traffic engineering software solutions.

Open data publication

We can provide a platform to allow a wide variety of data sets to be made available to the public, supporting the Open Data agenda and smart cities integration. Our platform allows third parties to subscribe to specific data sets for use in building systems and apps, helping make the most of data.

Information at their fingertips



Opportunity

We undertook a technology refresh of the TrafficWatch NI public website trafficwatchni.com and associated services. The TWNI website is a key source of up-to-the-minute traffic information for the travelling public in Northern Ireland. Information, including planned works and unplanned incidents, CCTV and journey times, is provided on a map-based interface, allowing users to easily zoom into and explore areas of interest.

Solution

Our technical solution consolidated a number of systems, leading to an overall cost saving to the authority in terms of ongoing maintenance costs. The system was tailored to the specific Department for Infrastructure requirements, providing operators with streamlined workflow within the control room. The system provides an easy-to-use, secure user interface to allow Travel Information Control Centre operators to publish real-time information on road conditions around the country. It automatically extracts real-time data from the Department for Infrastructure Urban Traffic Management and Control common database, ensuring that the latest data is available.

Outcome

The public can now register to receive updates via email and SMS, ensuring that they can receive the latest information. The system also includes a Twitter output which allows the Department for Infrastructure to reach a wider target audience of the travelling public, ensuring that they are on-trend with the latest social media developments. Operators can choose which dissemination channels to utilise for each specific event entered in the system. The system also enables information sharing with the Republic of Ireland. It further publishes data in the latest DATEX II formats, allowing automated interchange of data with other organisations.

Project
TrafficWatch

Location
Northern Ireland, UK

Client
Department for Infrastructure

Expertise
Systems developer

Adding value with a bird's eye view

Fraser Macdonald, our Systems lead in Glasgow, explains how joining the dots results in greater efficiency.

Implementing Merlin during the London Olympics in 2012, the Glasgow Commonwealth Games in 2014, and the Baku European Games in 2015 was genuinely ground-breaking work, bringing different organisations and blue light response units into sync.

When we were looking for a name for our suite of systems, back in 2011, we had various ideas, but we kept on coming back to birds of prey. That image of a soaring bird gathering a panoramic view of the environment and then zoning in with rapid precision was too good a metaphor to pass up! So, Osprey and Merlin took flight.

Joining up the information

With Osprey, our clients are able to join up their data sets and gain a wider view, rather than be faced with data silos. For example, co-ordinating data around journey times, car parks and CCTV gives a fuller picture, which can translate into real savings and add tangible value. They'll know which assets are helping and which are obsolete. The true value of ITS is making systems integrated and interoperable – Osprey certainly does that.

The ability to learn from past events and traffic patterns can also save time and money in advance. For example, if an exhibition or concert ends at a certain time, causing chaos on the roads, then the authority can automatically adjust traffic light sequencing to cope better.

Implementing Merlin during the London Olympics in 2012, the Glasgow Commonwealth Games in 2014, and then the Baku European Games in 2015 was so rewarding for the team. It was genuinely ground-breaking work, bringing different organisations and blue light response units into synch. We learned so much about adapting our technology into other aspects of event management, besides transport, which will be relevant for the resilience of the cities and organisations of the future.

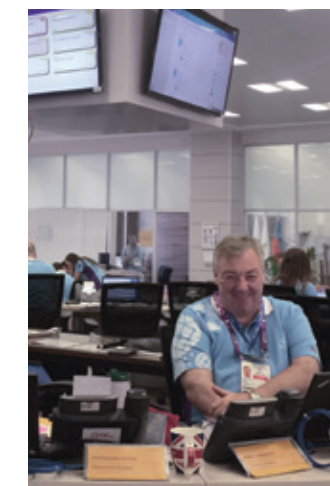


Making money work harder

One of the key challenges facing public bodies in today's economic climate is maintaining legacy systems that they invested in when they had the capital to do so. If they choose to switch them off, then that investment is effectively lost. With automated systems like Osprey, we help support revenue costs by freeing up staff to work elsewhere. And armed with better response times and better use of resources, clients can save both time and money.

Of course, we can never know for sure how much we save clients. The best we can do is estimate the potential clear-up costs or reputational damage that we help clients avoid. The exciting question is where this technology will go next. I can see Merlin especially making a difference to big businesses in the future, as well as helping cities react to emergencies. The sky's the limit!

Mott MacDonald is proud to support the RSPB as an Associate Member.



Working closely with clients, we develop comprehensive mobility solutions that keep your networks operational, and your travellers and operators informed.

Oiling the wheels of transport

From pre-feasibility to post-implementation evaluation, and everything in between, we use and drive innovation to address challenges in an ever-demanding digital-rich world. Our consultancy, design and systems experience and skills combine with international expertise to provide value-adding services for clients who rely on our ability to think laterally and keep their systems moving.

Achieving effective transport operations, and in particular the delivery of an efficient response to an incident affecting multiple modes, requires clear and close co-operation between a number of transportation authorities and stakeholders. Our ITS consultancy offers a cross-modal service to aid this process resulting in improved communications for the benefit of all parties, reducing the impact on end users.

Innovation starts with solid relationships. Only by understanding the complexities and dependencies of clients’ individual circumstances will we provide stable and sustainable solutions with tangible operational benefits. Applying our expertise when possible through a dedicated resource deployed into your team, we provide strategy, design and delivery of technology solutions.

Example outcomes are:

- Strategies and business cases
- On and off-road technology trials
- Feasibility studies and pilots
- Technology evaluation
- Commercial and procurement advice

Progressive procurement

Mott MacDonald has extensive experience in assisting our public sector clients to procure the systems and services they require. Our business and procurement specialists will work with your team in the areas of:

- Policy and strategy development
- Business case preparation
- Benefits identification and realisation planning
- Procurement strategy development
- European procurement processes

We’ll also provide the support you need right the way through procurement itself, from recommending the most effective procurement options through invitation to tender, bidder evaluation, tender award, contract start-up and contract management. All geared to getting the best result for you and your customers.

For those occasions you hope will never happen...



Opportunity

Centralised Maintenance Depot Terminal (CMDTE) is Highways England’s bespoke IT system which monitors and records faults with approximately 7500 emergency roadside telephones (ERTs). The agency needed a flexible, cost-effective management service to keep ERTs in service.

Solution

Utilising our IT expertise and tools via secure remote access to the client’s hosting location, we provide a first-line technical help desk. We provide service and system reporting and dissemination of ERT site data. We provide the configuration manager role for all CMDTE system components, checking that system upgrades and software deployments are right first time. We support the ongoing maintenance of all the system’s assets and documentation, including monitoring security community information and applying security system updates as required.

Outcome

Our continual review of service processes and methodology has helped identify potential improvements as well as cost savings. This project aims to maintain CMDTE’s hardware and software services so that these are available to use when a road user’s vehicle breaks down. A key area of this contract is ensuring that CMDTE’s hardware achieves 99.5% availability and that the web service is available and secure.

Project

Centralised Maintenance Depot Terminal Support

Location

England, UK

Client

Highways England

Expertise

Systems maintainer



Bridging the gap for client action

Stuart Scott, our consultancy lead, explains how problem-solving is all part of the job description.

Our solution increased road worker safety and reduced disruption significantly

One of the best things about working for our ITS consultancy is the sheer variety of challenges that land on our desk. Clients will often come to us when they’ve ground to a halt or got a bit stuck on a project, and they need us to find a way of getting them moving again. In this way, we’re a solutions centre that’s ready to rise to a challenge, drawing from our own experience or knowledge we’ve picked up from other industries.

Leap of imagination

A good example was the maintenance access vehicle we designed to help Highways England replace their gantry-mounted advanced motorway indicators, should they malfunction. There was no way to replace them without significant traffic management and associated disruption. Working with our client, the team developed the idea of converting an airline catering truck, which would provide a mobile platform to rapidly swap the signs. While the inspiration came from another industry, the devil is in the detail. It was at times a painful ride to get to what we have now. The solution reduces disruption time by over 50% and significantly increases road worker safety.

It’s not just physical objects that we need to brainstorm. We help clients plot a course through choppy waters such as procurement contracts. Building close relationships with clients is just as important as the ability to think laterally. You need to gain a high level of trust. Often, they’ll say: “You helped us sort that, so could you get your heads around this too?”



Multimodal outlook

We have a strong multimodal and public transport offering, backed by significant demand management capability. We can provide light touch review and guidance to a fully managed service. Successful schemes demonstrate that pursuing modal shift is effective in addressing congestion, social exclusion and environmental concerns that are ever more common throughout the world.

Connected thinking

One area that can be especially taxing – and intriguing – is smart ticketing. The complexities of creating an integrated smart ticketing system that delivers mobility options on a single ticket with an integrated fare structure shouldn’t be underestimated. You need to balance a lot of different social needs and systems. For example, we’re currently helping one overseas client create a new integrated electronic system from their existing free bus services, paper ticketing and coin-based kiosks. We work closely with our systems design team to accommodate regional and neighbourhood mobility without compromising revenue protection.

Finding the most practical way forward doesn’t always mean starting from scratch, as that can be the most expensive approach. Instead, we help clients work with what they have to find a feasible solution.

There really is a buzz to working here. Of course, it’s not all about cracking codes and unravelling riddles. But I’d be lying if I said we don’t enjoy solving problems. And the more niche the better! Our consultancy exists to oil the wheels of transport and keep our clients moving forward. We see that as a very exciting brief.



Improving the public transport experience

What we offer

One of the great strengths of Mott MacDonald is the diversity and depth that comes from being one of the world's top 20 consultants. You can be confident that we've got the skills needed to solve problems, no matter what they are.

- Strategies
- Business case preparation
- Conceptual demonstrators
- Innovation workshops
- Type approval
- Conducting on and off road technology trials
- System architecture and specification
- Technical standards and specifications
- Technology feasibility studies and pilots
- Technology evaluation
- Procurement

Our internal networks mean we can link to the right experts and deliver great outcomes, no matter where you are.

ITS can assist in improving the user experience for residents and transport users. The provision of simplified ticketing, real-time service information, improved services aligned with user demand, and park and ride, all contribute towards encouraging a modal shift from private to public transport. We have extensive experience, gained in the UK and internationally, in both light rail and bus rapid transit with a particular focus on:

- Control centre and depot specification and design
- Control centre and tram management systems specification
- Vehicle specifications
- Ticketing and payment systems
- Security systems
- On board and tram stop customer interfaces
- Telecommunications (fixed and mobile)
- Provision of information through infrastructure and harnessing of social media

“The firm has placed sustainability at its heart and emphasises the value sustainability brings. It is a real game changer.”

Judges, 2015 NCE Consultants Awards

We were named Sustainability Champions of the Year

Better data, better decisions

Opportunity

The evolution of Highways England's RCC-based Traffic Management Systems to support new SMART-motorway schemes and improve technology at roadside requires a range of technical support and consultancy services to ensure new solutions are deployed in a safe, secure and cost-effective manner. Change administration of site data (configuration data for roadside equipment) is a constant requirement as new schemes are designed and deployed. Trials of new technologies require safe and secure communications routes from supplier networks into the National Roads telecommunication (NRTS) network. Highways England requires a suite of technical services to help it as an organisation support these key service improvements.

Solution

We are providing a range of flexible and specialist support for the systems and technologies that support regional control centres (RCCs) around the UK. This includes:

- Analysis of requests to change the traffic management system
- Information security management
- Computer network design and support within the RCCs and other key Highways England facilities, working alongside the National Roads Telecommunications Services (NRTS) supplier
- Administration of site data (roadside ITS configuration changes)
- Hosting and support of the Highways England site data centre system
- Site data designer expertise
- Production of witness statements for the Crown Prosecution Service



Outcome

By drawing on our deep pool of skills and experience Highways England is getting the help it needs, where and when it's required. We're continually reviewing data management processes and methodologies to identify potential improvements and savings.

Project

Technology software systems

Location

England, UK

Client

Highways England

Expertise

Technical consultancy and support





Stimulation through sustainable transport

Opportunity
The South African National Department of Transport’s Public Transport Action Plan includes a phased implementation of integrated rapid public transport networks (IRPTN). Within the eThekweni community of KwaZulu-Natal, this involves commuter rail, bus and minibus taxi services being upgraded to a more sustainable rail and bus rapid transit network, complemented by feeder bus and other local connections.

Solution
Our team led the systems design and provided vehicle specifications and environmental assessments. The IRPTN, made up of nine corridors, is being rolled out in three phases. The first includes three routes, with 450 buses operating from three depots, serving 51 bus stations. With a partner architect, we designed the size and layout of the transport operations centre (TOC), which will control the IRPTN. Flexibility and scalability were key in the building design and core system specifications to enable the TOC to control an expanding network and take on additional functions.

Outcome
The IRPTN was resilient and cost-effective from day one. It has been designed in anticipation of new standards to safeguard investment and interoperability between systems. The result: a future-proof transport system that is already benefiting residents and workers in eThekweni, and boosting the local economy.

Project
eThekweni IRPTN

Location
KwaZulu-Natal, South Africa

Client
Goba for the Department of Transport

Expertise
ITS design



450
Buses operating from
three depots

51
Bus stations

Richard Scragg, our engineering design lead, explains the importance of thinking small when it comes to delivering big projects.

Translating marginal gains into client advantage

Intelligent transport is a hugely innovative sector, but the truth is that technology innovation alone won't provide clients with the efficiencies they need in today's economic climate. In fact, there's rarely a quick save or miracle cure. Due to the necessary focus on safety, changes in technology are slight, especially from one provider to the next.

But there are clear opportunities for a firm to find competitive advantages. It's about doing the little things right to add value. Those marginal gains all add up to a big difference over a project lifetime. The notion is very well known in sports, and cycling in particular. When all your competitors have equally good bikes, fitness and ability, then you have to look elsewhere to find an edge and shave off a couple of thousands of a second.

In our world, these marginal gains are just as valuable for 'winning the race'. We need to find ever-better processes and streamline our services. Our team recognises the value in liaising and communicating clearly, fine-tuning project management and raising standards of safety. Mott MacDonald's gold medal end-to-end service capability also provides us with tangible opportunities to make valuable savings for clients.

Seeing a project from the perspective of the end user – our clients' customers – is also crucial for making those marginal gains. For example, if you're managing a commuter system like London, Greater Manchester or Glasgow, then you need to understand your users. What are the nuts and bolts of their commute? How can you make their day one or two per cent more pleasant? By replicating those small improvements across many millions of commuters, five times a week, you're making a meaningful difference to the city's wellbeing.

Better transport links really can help whole populations gain that winning feeling, in terms of productivity and harmony. The little changes we make may cause a tiny splash, but they'll ripple out across a city and trunk road network. That seems an ambition worth pursuing.

There are clear opportunities for a firm to find competitive advantages. It's about doing the little things right to add value.

Efficiency when you need it most

The engineering design function within our ITS business has the skills and experience to provide innovative, safe and sustainable solutions for our clients. We're a small, dedicated technology practice with extensive experience working as part of a multi-disciplinary team that contributes to the successful delivery of transport technology projects within the highways division.

As use of the UK trunk road network continues to grow, with well over 4M users a day, we help clients understand this rapid growth and develop solutions that allow them to reinvigorate existing infrastructure and facilitate the flow of goods and labour throughout the country.

Technology can provide such a solution, but given its ever-changing nature can be a complicated road to navigate for a number of reasons including pressure on resources and how best to design and implement major schemes. Applying our expertise either through a dedicated resource deployed into the project team or managing specific work packages, Mott MacDonald is well placed to provide strategy, design and delivery of technology solutions allowing maximum flows and increased safety.

Appreciating how the network interacts with all stakeholders is imperative for developing an integrated network. From initial consultations, we build stakeholder relationships to include all parties within the design process, ensuring the development of the correct whole-life solution for both the short and long term.

Alongside other procurement options, we are a supplier on a number of frameworks including Crown Commercial Service Traffic Management Technology and G-Cloud, which provides clients with a number of convenient and cost-effective procurement routes to access our services.





CIHT Awards - Major project award
Ace Engineering Excellence Awards -
Infrastructure award



“This cutting-edge road scheme has surpassed expectations in almost every way, and sets a new standard for how vital infrastructure improvements can be delivered.”

Philip Hammond
Transport secretary, 2011



21st century transport corridor

Opportunity
The A3, a major trunk road connecting Portsmouth with London, passed through the village of Hindhead and the Devil’s Punch Bowl, a renowned beauty spot and site of special scientific interest. Congestion and accidents were major problems and the flow of 30,000 vehicles a day marred the stunning landscape.

Solution
We designed a bypass and tunnel to speed vehicles past Hindhead. To detect incidents and prevent them turning into traffic snarl-ups on this strategic transport corridor, we fitted the tunnel with state-of-the-art communication and control systems, including the first radar-based detection system using six radar heads and processors in each bore to give full coverage of the tunnel.

Outcome
The fine range discrimination allows for vehicles close to each other to be separately identified and the locations of the radar heads avoid ‘blind spots’ under each head. CCTV cameras provide operators with visual confirmation of traffic flow and incidents. The scheme has been a huge success, reducing congestion and pollution in Hindhead, cutting journey times between the south coast and London, while enhancing the sensitive environment in the Devil’s Punch Bowl. The scheme has increased the amenity value of this area and left a lasting legacy for surrounding communities.

Project
A3 Hindhead improvement

Location
Surrey, UK

Client
Balfour Beatty for the Highways Agency

Expertise
Multidisciplinary design (concept and detailed) and stakeholder engagement

Engineering. Management. Development.