Local Authorities' Smarter Traffic Management Conference

A Report by the Transport Technology Forum

Birmingham, November 28th 2017

Organised on behalf of the Department for Transport in partnership with the IET

About this Document

This document has been prepared by the Transport Technology Forum (TTF) and the Institution of Engineering and Technology (IET)

The Transport Technology Forum is a neutral meeting place for senior policymakers and investors (government, industry and network operators) who are investing in technology for roads management and operation. The Forum promotes a collaborative culture to open up the opportunity and address the caution which has historically impeded efficiency and innovation

The IET is one of the world's largest engineering institutions with over 168,000 members in 150 countries. It is also the most multidisciplinary – to reflect the increasingly diverse nature of engineering in the 21st century. The IET is working to engineer a better world by inspiring, informing and influencing our members, engineers and technicians, and all those who are touched by, or touch, the work of engineers.

Executive Summary

Over 140 people, including 75 from Local Authorities, attended the Smarter Traffic Management conference in Birmingham on 28th November. This was organised by the Department for Transport (DfT) and hosted by the Institution of Engineering and Technology with support from Innovate UK, ITS (UK), the Transport Systems Catapult and the Transport Technology Forum (TTF), who authored this report. Steve Gooding of the RAC Foundation chaired the day, bringing road users' perspectives.

The Roads Minister, Jesse Norman, announced Newcastle, York and Portsmouth as test sites for co-operatively linking vehicles and traffic management, and a £500K competition for local authorities to demonstrate how connected vehicles could reduce asset management costs and improve road conditions.

The audience, including the Minister, heard the hot topics affecting Authorities and the opportunities and challenges they present. An expert panel explored further questions raised interactively, such as developing business cases, selling new ideas to decision makers and innovation.
Birmingham City Council also showed initiatives they are deploying and the challenges of maintaining existing infrastructure.

The day showed significant progress moving from the "base camp" of the previous meeting in Newcastle. The key themes that emerged were:

Bringing people together to share experiences removes siloes and reduce risk of deployment

We need to focus on policy related outcomes and not the technology to deliver them

The opportunities for Authorities to procure new and innovative technology in better ways

The need to think about the customer experience and human factors of new technology

Connected conventional vehicles can be an early win for Local Authorities

While autonomous vehicles develop, authorities still have obligations to manage traffic, and keep today's technology and systems working. We will have "tyres on tarmac" for some time yet

The need for industry to better understand authority challenges as new suppliers emerge

The day then developed actions to address these challenges grouped in themes as follows

Overcoming barriers	Sharing knowhow in existing projects and what is happening elsewhere eg EU A C-ITS Academy to support national training and standards
Connecting vehicles & roads	Common base KPIs and methodology for evaluation and investment Develop an architecture -strong data policy, interoperability and comms focus
Buy in to new investment	Evidencing outcome value in clear language for non-tech readers Use the sum of local benefits to make a strong case for action at national level.
Data	Create a big picture model of the value (in its widest meaning) of sharing data (DfT – underway already) and establish clear definition of who owns data Helping LAs understand General Data Protection Regulation (GDPR) implications
Smart Parking	Legislation to move from paper to digital traffic regulations (DfT – underway already) Avoid exclusive contracts for parking payment collection
The future of UTMC	Fix today's interconnection challenges through standard interoperability tests A 10-year vision for how new policies and expectations drive technology
Procurement	A specification and standards-led single marketplace for ITS Guidance on collaborative and consistent procurement specific to C-ITS

Many of these actions can be delivered through short guidance notes aimed at practitioners and also sharing experience and confidence in deployment. Some are already underway. We need to prepare for a connected future, so a strong common theme was enabling better use of data. Another was best practice exchange between authorities to help reduce perceived risk by sharing experiences from early adopters. Staff skills and capability were also a key barrier.

All the 21 DfT supported Cooperative-Intelligent Transport System (C-ITS) projects also met and shared their knowledge and experiences with other authorities in smart parking, connected traffic management and co-operative ITS. The Transport Technology Forum (TTF) will be fostering these groups going forward through its User Group

The key is now for authorities, industry and government in collaboration to widen and deepen experience, building on the foundation of the current projects, consistently evaluating their benefits and focussing on policy related outcomes rather than simply new technology. This will put co-operative ITS "on the radar" as a clearly justified investment to generate short term public good and help local authorities begin to prepare all our roads for autonomous vehicles.

Foreword – Steve Gooding , RAC Foundation

Across the country, indeed, across the world, local authorities are struggling to tackle multiple competing priorities, amongst them the task of managing traffic to get the most efficient use out of their road networks. Technology has been there to help for many years – at its simplest in managing competing traffic flows at junctions by red, for stop, and green, for go, signals.

So far, so good. But as technology has become more complex, and the art of the possible has become more advanced, it has been frustrating to watch the traffic authorities and the technology innovators drift apart. There's a sense that clever solutions are being developed but going un- or under-used.

There's a suspicion that suppliers perhaps don't understand the extreme financial pressures facing local government, in particular on running cost budgets. And there's no point anyone investing in fancy equipment if there's no realistic capacity to operate and maintain it over time.

That's why the RAC Foundation is keen to help bring both sides together to create a better shared understanding of the challenges and of the possibilities for addressing them. Events like that documented in this report can help. Because we can't sit back and watch as innovative technologies go to waste. Nor does it make any sense for those advanced technologies to be developed into products if those products don't fit into the practical reality of local highway authority life.

What we need is an informed conversation to be happening between potential suppliers and their potential customers. Fostering that conversation won't just benefit both parties, it will benefit us all as road users, and so we're happy to play a part in making it happen.

That's why I applaud the DfT for organising this event and for taking the necessary steps to ensure a good number of local authorities were represented on the day alongside their potential tech company suppliers. The fact that Roads Minister Jesse Norman made time to open the day is a welcome sign that DfT recognises the importance of the role it must play, directly as a funder, but also as a facilitator and convener.
I look forward to seeing many more such events taking place around the country."

Anthony Ferguson's Introduction to the conference

1

Our conference in Birmingham followed on from the initial Newcastle event in summer 2017 and explored the issues and actions raised there. We wanted to move up from that "base camp" so this second DfT-sponsored event was to further promote the uptake of smarter traffic management and co-operative technology, to assist Local Authorities to improve network operation.

It brought together:

- **The 21 DfT funded C-ITS projects (whose progress reports are attached) who met in three themed groups to encourage a "community" of similar projects to share what they learn**
- **Other roads authorities considering or involved in new technology for smarter traffic management both at local and national level. In total 75 people attended from roads authorities**
- **UK industry, suppliers and consultants, both established and new to the market**
- **Other stakeholders, representing the parking sector and the road user.**

We had in all over 140 attendees bringing skills from industry, academia, professional bodies and consultants as well as emerging new innovators – we thank you all for your inputs,

This report summarises the output from the day and draws conclusions about key issues to be addressed and work that is needed to move on. Using this report, the DfT and TTF are developing a programme of follow-up activities, which also will enable the various organisations supporting this event to work to a common agenda with clearly-defined roles.

This report also aims to:

- **Show the progress in smarter traffic management since the last meetng**
- **Capture new actions thematically**
- **Highlight any gaps.**

The conference was organised by the DfT and hosted by the Institution of Engineering and Technology (IET) with support from Innovate UK, ITS (UK), the Transport Systems Catapult and the Transport Technology Forum. I thank them for their energy and especially Graham Hanson for leading the day and setting the agenda.

Thanks also to Steve Gooding of the RAC Foundation who chaired the day, bringing the road users' voice, and of course the Minister, Jesse Norman MP.

An interactive element allowed attendees to use their smartphones to set out their hopes for the day and pose questions to a panel of industry and local authority experts.

TTF also launched its Position Paper "Connected Roads, Vehicles and People: A Key National Opportunity" which highlights the specific short-term benefits of connected but not autonomous vehicles in Traffic Management.

Feedback on the day has been very encouraging – with 80% of survey respondents saying the day was "better or much better than expected". We have a list of items for future conferences to.
I look forward to seeing great progress from all of us at the next event to deliver the outcomes our road network and its users need.

Anthony Fergusson,
January 2018

About this report

2

This report tries to capture and distil the immense amount of discussion and workshops during the day in its appendices, but more importantly focusses on the key issues, actions emerging and who owns them.

Section 3 records at high level the actions from the day across the themes and events, from the morning Local Authority meeting through to the closing discussions

Section 4 looks at the implications of these and

Section 5 suggests a way forward

The questions asked on the day are an annex, along with the attendee list.

Appendices then capture the detail:

Appendix A contains the reports from the individual workshops

Appendix B is the progress reports from each project

Appendix C contains a link to the presentations

3.1 The Hot Topics

These were 5-minute presentations to the Minister and audience on:

The art of the possible – Darren Capes of City of York Council. Darren's key point is that transport investment is just one of many competing priorities and has to deliver clear outcomes and business cases. New technology allows this but the automated vehicle is far further away than the hype would suggest, while connected vehicles offer a new service to authorities if data can be accessed

Local Authority Data – Mark Kemp of Buckinghamshire Count Council. Focussed on the untapped value of data being made available for others to use, and the need for data quality.

Urban Traffic Management and Control (UTMC) and the future – Steve George of the UTMC Development Group (UDG) . Steve showed that UTMC has underpinned traffic management for some years but the policies it helps deliver and the technology is changing fast. Authorities need "glue" to pull together their existing and new system and data, and a vision for what this may mean for the technology needed to support it

Emissions – Professor Phil Blythe, DfT Chief Scientific Advisor – Prof Blythe showed the impacts of emissions on cities and the variety of tools that could be used to mitigate these, ranging from electric vehicles to energy efficient intersections.

What can connected vehicles do for us? – Andy Graham of the TTF - Andy showed that connected vehicles are here today, and do not need to be automated. They can give new forms of data ready for exploitation in asset management and other costs savings. He also promoted the new TTF Position Paper which shows early benefits for the UK connected vehicles of £500m per year.

Smarter Parking – Dan Hubert of AppyParking. Dan showed a vision for the frictionless parking that customers of all types of vehicle will demand, but that is vital for autonomous vehicles. He showed the data and regulatory implications on authorities and how they can help him deliver new services to reduce parking stress and associated congestion and emissions.

New Procurements in London - Irfan Shaffi of TfL Irfan showed how TfL has chosen to "build" rather than "buy" its new system (SITS) based around network optimisation

Skills and capabilities – Stephanie Baxter of the IET. The IET's survey data, and a poll of the audience, showed that finding and keeping the right people with new skills is a key challenge for all the industry.

Helping industry help you - Andrew Payne of TTF. Andrew suggested that innovation and exploiting the rapid pace of technology needs a new mindset and taking risks out of the normal comfort zone for procurers. This may need a new way of thinking about how services and technology is procured.

In summary, key common areas were

- **Valuing outcomes of using smarter traffic management, especially in environmental terms**
- **The need for a vision of the future**
- **Data – its value. Ownership and quality**
- **Short-term opportunities for connecting vehicles and infrastructure for social gain**
- **Innovation and procurement – both mindset and process**
- **Skills and capability**

3.2 Local Authority Community Workshops

Before the conference the Local Authorities met to discuss common themes. The findings were

What is the value of data? - authorities are considering the wider benefits of data and the projects underway have driven many authorities to examine how they use, share and exploit data. This means understanding the data they hold outside of traffic, ensuring silos are connected and exploring new linkages and opportunities such as:

- **Getting our data out there. Ensuring we provide data as and when needed by road users, business and others and building trust to show local authorities have the best data**
- **As transport authorities, we should be gathering data from as many sources as possible, and turning data into intelligence in new, varied and non-traditional way**
- **Better data allows authorities to form closer relationships with public transport providers, freight generators and local businesses. Participants reported that providing useful data to third parties has formed closer, mutually beneficial relationships.**

Getting prepared for the forth coming challenges of Connected and Autonomous Vehicles (CAV). Authorities saw as beneficial involvement in early deployments to understand these

Cross-authority learning is needed for effective delivery of the current C-ITS projects, and to encourage adoption by follow-on authorities. Better sharing would also help consultants and industry delivering services and products authorities need. Even if most authorities do not yet know what they need yet, work done by the projects underway will build experience

Evaluation and business case: There is need to share findings via a common assessment framework that values data in new ways than Webtag. This has been started for Signal Phase and Timing (SPAT) to share good practice. This is a key action emerging

The 21 DfT-funded projects are a way of introducing more local authorities to new technology generally and for promoting wider technology adoption and debate.

Road users – what do they want, and how do authorities meet growing expectations so the authority could be the 'Font of Knowledge' for traffic and road information

Driver behaviour and HMI aspects. There is a question re consistent and compatible HMI

Freight: The business case is not universal – there are "sweet spots". When and where are the best cases for freight priority, and how it is delivered

For Smart Parking we need to

- **Alter legislation to allow minute by minute post payment and avoid exclusivity in parking payment contracts, which removes the value of open data**
- **Have budgets allocated to map regulations digitally (reflecting the Minister's speech)**
- **Have consistent enforcement regulations between London and the rest of the country re remote detection such as Automatic Number Plate Recognition (ANPR)**
- **Develop a community of smart parking authorities and a guide for LAs on how to start smart parking. This will help authorities consider parking for enabling mobility, not an enforcement activity. Parking and traffic are now the same problem and opportunity .**

A key emerging theme was data - it might be expected that authorities want to focus just on technology for road performance, congestion mitigation and journey improvement. In fact, most authorities identified **data opportunities** as a key tool for wider benefits too . There are also data related questions such as what do the forthcoming General Data Protection Regulations (GDPR) mean for local authorities' ability to use data. What are the implications on ANPR, use of Bluetooth for journey times etc? A workshop would be valuable.
The key outcome from these meetings was the start of a community of projects sharing expertise and knowledge. We will assess how best to foster the growth of these groups.

3.3 The Local Scene

Andy Radford of Birmingham City Council gave a presentation on **Smarter Traffic Management in the West Midlands** on behalf of Transport for West Midlands. His focus was on:

Keeping the lights on. Even as a large city he has still not the resources to replace SCOOT loops (of 1000, 200 currently work) or ANPR communications. Hence much of the benefits of capital investment are lost due to the big issue of lack of revenue spend.

Data management – aligning all the various data sources used in a more structured system architecture that maximises use of open data, tailoring to the audience

Mobility as a Service and CAV projects in the Midlands, as well as a SPAT trial using a SCOOT and MOVA network on existing infrastructure cover both new innovations and operational evolutions using current systems

The Workshops

3.4

Each workshop delivered key issues and actions, summarized below and detailed in the appendix.

Workshop	Key Issues	Actions	Responsibility
Overcoming barriers	Everything is broken Backwards compatibility Skill sets Asset conditions Rural ITS viability	1. Investment :Sharing knowhow in LA existing projects and what is happening elsewhere eg EU building from ITS Observatory 2. A "C-ITS Academy" to support national training and set standards	1.DfT, LAs, TTF, IET, ITS(UK) 2.All
Connecting vehicles and infrastructure	Current policy is "no policy" Data policy needed Comms options unclear Need for a technical architecture	1.Common methodology for evaluation and investment 2.Develop architecture with strong data policy, interoperability and comms focus 3. Range of short guides for LAs	1.DfT (underway) 2.DfT and Industry 3.TTF
Buy in to new investment	Technology looking for a problem Local benefits may be too small Lack of evidence of benefits	1.Evidencing outcome in clear language for non-tech readers 2. Add up small local benefits to make larger national ones 3.Build tools to use Trafficmaster data better	1.All 2.LAs 3.DfT
Data	Do we know the value of data? Data may not have monetary value but enables other benefits Data is in siloes there are no agreed valuation models to calculate data benefits.	1.Create a big picture model of the value (in widest meaning) of sharing data 2. Helping LAs understand GDPR implications through guidance 3. recognise data as an asset to recognise its full value. 4. Learn from open source and develop a community	1.(DfT – underway) 2.DfT and TTF 3.LAs 4.Industry and LAs
Smart Parking	Surge and dynamic pricing not allowed, to change behaviour by price not ticket Sensors should be used for enforcement (Electric bays) Opening up data Parking within mobility as a service	1.Legislation to move from paper to digital traffic regulations and allow remote enforcement 2. Avoid exclusive contracts for payments 3. Central Hub for parking payment nationally	1.DfT –research announced in speech 2. LAs 3.DfT/ Industry

Workshop	Key Issues	Actions	Responsibility
The future of UTMC	LA s want principles of "UTMC" not old technology and multiple adaptors. UTMC should function internally, then connect other systems. A disconnect between "traffic "world and expectations of CAV world. Effort needed to make "Today Work first" – eg BCC's loops statistic Systems need to use non-traffic standards … Due to limited resources need more automation It's not clear what data does the vehicle need and provide for UTMC? Put traffic management on the radar, as we still have legal obligations under the Traffic Management Act 2004	1.Fix today's challenges of connection through standard tests 2.A 5- 10-year vision for how new policies drive technology 3. CITS Platform to be asked to provide simple statement of expected payload to and from vehicle (not just protocol) 4.Specify and Use new non-traffic IT standards 5.Consider transition from old to modern roads and systems 6.Find ways to help keep the lights on and educate the need for traffic management in transition to CAVs	1.DfT and industry 2.TTF for DFT 3.DfT 4.LAs and Industry 5.All 6. LAs and industry
Procurement	Rapidly responding to change Overcoming procurement barriers to innovation	1.A standards/ specification -led single marketplace for ITS via a Pseudo 'Amazon' platform 2. Community connecting people 3. Increase appetite for risk 4. Central guidance on funding and C-ITS Procurement 5. A linked in group, social media such as yammer, a shared space 6. Face to face engagement: regular events, and direct meetings such as that by TfWM and TTF User group 7. Newsletter and email	1.CCS/ LAs/ Industry/ DfT? 2. TTF 3.LAs 4. Underway (TTF, IET & DFT) 5.All 6.LAs and TTF 7. IET/ TTF?

Summary

3.5

In addition to the morning meeting, hot topics and panel, this showed key themes are

Understanding road users' expectations and the changing needs of authorities as a result

New types of collaboration for tooling up for LAs to operate in the open data, connected and autonomous vehicles worlds, so sharing findings and experience

4 Implications of the day

4.1 Preparing for the future

Data pervades every discussion, workshop and panel. The need to get a clear view across all LA activities on the value of data and practical issues such as GDPR compliance is a key outcome, and suggests DfT's new Discovery work on data will be pivotal. The key issues are the value of data, open and shared data and what will a vehicle provide?

The C-ITS agenda is a major change for LAs and is "the first existential upheaval for highways in 100 years" (Darren Capes of City of York). There is a gap between LA capability and understanding and the automotive world's expectation and assumptions. So, as well as hard actions below, there needs to be work about mindset, operational style, collaboration, and tooling up to enable C-ITS. This cannot come just from the "roads" world and so needs better communication with parking, automotive, data and above all users. This was identified in the TTF "Connected Vehicles" report

There is a need for a vision, as commonly agreed picture of what the short and long term future. This will act as a guide / roadmap and as glue, and is now underway by the TTF.

Equipping LAs for the future

4.2

Providing solutions cannot always default to DfT, so sharing between authorities is vital. But we need to set up more formal user groups, exchange of data, learning, tools and even contract documents. It was pleasing to see much sharing of advice and information in the meeting margins - and later of HMI designs and open data clauses, but this needs more than just meeting. TTF's user group is one way to develop this but ITS-UK, IET and Innovate UK are also well placed to provide experience and resource to address these with support from DfT.

Skills/capability not just for LA traffic teams but industry and LAs' other staff keeps being mentioned but apart from a C-ITS Academy few solutions are emerging. This may prove the key barrier. We should not ignore this skills gap and hope all will improve.

Smart procurement of innovation and dealing with resource funding are critical issues where industry and LAs can develop solutions but need a simple guidance.

Where is guidance needed?

4.3

Sharing results and knowledge needs a common evaluation approach, moving away from Webtag to value data and value the bridging across siloes, bringing new LAs on board

Preparing for change needs guidance on

Communications to connected vehicles

Emissions – using SPAT and GLOSA. This is underway with DfT research and the SPATULA group

Smart parking – how to open up data

GDPR

Selling the story needs as well as a common benefits approach above

Make it simple – a guide for policy makers on C-ITS

Adding the benefits of small schemes to give a national picture

5 Where next?

DfT were delighted with this conference, as it showed a good investment in the 21 projects that can now be followed up with wider and deeper applicability of more projects and schemes. The feedback was highly positive from our follow up survey. But we do not want to just do more pilots or add extra details to them, we see the need to change gear now. We need to

Measure and clearly explain the outcomes from the foundation projects to enable this widening and deepening across all authorities, gaining political stakeholder buy in by selling the benefits not the technology will be key here

Adopt a collaborative approach to bringing down barriers – the Department can help with guidance, some potential further funding and in slower time addressing legislative barriers, but we cannot solve all the challenges alone. The TTF's Position paper shows the value of wider collaboration with the automotive and parking sectors for the good of road users to rapidly exploit connected vehicles in our networks

Show national level benefit by adding up the incremental benefits authority by authority. As 90% of travel is spread across over 100 bodies, a connected picture of common benefits would aid UK PLC in productivity, emissions and safety as well as congestion;

Think continually about the value of the data we have and the data we need. I am pleased the conference validated our prior decision for a discovery project on Local Authority data and in developing a vision for the future

Work together to both keep the lights on and prepare for the massive changes that lie ahead. Innovation and new thinking will need to replace old ways of doing things, but in a proven policy and safety context.

Closing Remarks

6

We will publish a workplan of the actions that resulted from the meeting. We aim to organise another meeting in Newcastle in October 2018, to start to showcase the outcomes from the projects. In the meantime, I ask you to please help us with work we are now starting on discovery of the benefits of data and on traffic management, on how to reduce emissions through C-ITS, on better procurement and on a vision for future traffic management.

Also, please seize the opportunities offered from our funding of better asset management from vehicles. This is a good example of the joined-up use of data we all foresee.

Again, I thank you all for your attendance and collaboration.

Let's make 2018 the year C-ITS really started to happen.

Anthony Ferguson

7 Attendees

Attendee Name		Organisation
David	Abdulmasih	Ricardo
Ian	Achurch	Northamptonshire County Council
David	Aimson	Buckinghamshire County Council
Kevin	Aitken	Shropshire Council
Alexander	Allen	Medway Council
Ruth	Anderson	Oxfordshire County Council
Andrew	Avallone	Northamptonshire Highways
Alistair	Baldwin	Newcastle City Council
Colin	Balfour	Traak Systems Ltd
Jonathan	Barlow	South Tyneside Council
Hugo	Barnes	Aecom
Stephanie	Baxter	IET
Neill	Bennett	Derbyshire County Council
Michael	Best	Swindon Borough Council
Phil	Blythe	Department for Transport
Trevor	Brennan	Hertfordshire County Council
Ben	Brown	Vaisala
Sunil	Budhdeo	Coventry City Council / TfWM
Sean	Bulmer	City of York Council
Jason	Burrows	WSP
Joel	Burton	Hertfordshire County Council
Darren	Capes	City of York Council
Nicolas	Cary	Waysphere Ltd
Ellis	Clarke	Transport For Greater Manchester
Brent	Collier	Sheffield City Council
Lisa	Collins	Sea
Phil	Cooper	Zircon Software Ltd
Mar	Corbin	Transport for West Midlands
Gavin	Crook	Highways England
Thomas	Crowther	WSP Ltd
Esme	Cushing	Spice Project / Northamptonshire County Council
Paul	Darlow	Portsmouth City Council
Jackie	Davies	Bristol City Council
Ghafoor	Din	Warwickshire County Council
Keith	Dove	Luton Council

Attendee Name		Organisation
George	Economides	Oxfordshire County Council
Simon	Edwards	University Of Newcastle
Earl	Fairclough	Westminster City Council
Mary	Farrar	Calderdale Metropolitan Borough Council
Mark	Fell	WSP Ltd
Martin	Fenlon	Staffordshire County Council
Anthony	Ferguson	Department for Transport
Eleanor	Fitzpatrick	Department for Transport
Joe	Fox	Bolton Council
Rob	Furlong	Knowledge Transfer Network
Stephen	George	Sg Transport Innovation
Richard	Gibson	IDT Ltd
Andrew	Gibson	Transport Technology Forum
Ishwer	Gohil	Milton Keynes Council
Anna	Goldie	North Yorkshire County Council
James	Golding-Graham	Oxfordshire County Council
Steve	Gooding	RAC Foundation
Andy	Graham	Transport Technology Forum
David	Grindley	Northamptonshire County Council
Adam	Halsall	Kier
Graham	Hanson	Department for Transport
Jonathan	Harrod Booth	Harrod Booth Consulting Ltd
Martine	Harvey	Transport Systems Catapult
Kieran	Hemstock	Worcestershire County Council
Daniel	Herbert	Lancashire County Council
Graeme	Hill	Newcastle University
Suzanne	Hoadley	POLIS
Stephen	Hockley	Aecom
Laura	Horsfall	Transport Data Initiative
Neil	Hoskins	Southend On Sea Borough Council
Dan	Hubert	Appyparking
Dom	Hyams	Grid Smarter Cities
Sohail	Ilyas	Peterborough City Council
Ranbir	Jabanda	Coventry City Council
Gavin	Jackman	Aimsun Ltd

Attendee Name		Organisation
Eifion	Jenkins	Transport Systems Catapult
Dave	Jew	Worcestershire County Council
Matthew	Jezzard	Surrey County Council
Teresa	Jolley	Deft153 Ltd
Luke	Keen	Birmingham City Council
Mark	Kemp	Buckinghamshire County Council
Mike	Kester	Hampshire County Council
Jin	Khera	Eastpoint Software
Mark	King	South Gloucestershire Council
Ray	King	Newcastle City Council
Steven	Lain	Luton Council
Simon	Lawrenson	Warrington Borough Council
Lewis	Malin	Kier
Glenford	Mapp	Middlesex University
Paul	Mathieson	Southend On Sea Borough Council
Ian	Mayhew	Siemens
Robert	McDonald	Peter Brett Associates
Ryan	McGowan	Department for Transport
Alby	Miller	Transport Systems Catapult
Jon	Miller	Aecom
Fergie	Miller	Eit Digital
Andrew	Moss	AM Business Solutions Limited
Jonathan	Mundy	Hampshire County Council
Raymond	Newman	Somerset County Council
Liven	Nijs	Liverpool City Council
Beverly	Norman	Somerset County Council
Peter	Parfitt	Buckinghamshire County Council
Mahendra	Patel	Um3p It Consultant Ltd
Anjna	Patel Mbe	Sandwell Metropolitan Borough Council
Dominic	Paulo	Inrix
Andrew	Payne	Naviga Consulting Ltd For TTF
Greg	Pearce	Dorset County Council
Keshav	Phakey	CCAV
Trevor	Platt	Nicander
Alexander	Pocklington	London Borough of Croydon
Phillip	Proctor	Highways England

Attendee Name		Organisation
Simon	Quarta	Rotherham Metropolitan Borough
Gergely	Raccuja	Council
Andrew	Radford	Amey
Sarah	Randall	Birmingham City Council
Amanda	Richards	Croydon Council
David	Rostron	Surrey County Council
Daniel	Ruiz	Warrington Borough Council
John	Rushton	Transport Technology Forum
Eric	Sampson	Adaptor Logic
Richard	Schofield	Richard Schofield Consulting
Mike	Schofield	Transport Technology Forum
Karen	Seager	Coventry City Council
Irfan	Shaffi	Transport For London
Matt	Shaw	Kier
Peter	Simm	Mobius Networks
David	Simper	Blackpool Council
Iain	Steane	Southampton City Council
Frank	Steinheimer	Siemens ITS
Andy	Tatt	Peterborough City Council
Jack	Taylor	Appyparking
Gareth	Tilley	Atkins
Julian	Tipton	Worcestershire County Council
Hannah	Tune	Transport For Greater Manchester
Roy	Tunstall	Liverpool City Council
Tina	Turner	Dynniq
Derek	Twigg	Hertfordshire County Council
Alex	Verploegh	Dynniq
Andrew	Walker	Swarco Traffic
Jack	Walker	Kier
Daniel	Ward	Southampton City Council
Nigel	Weldon	Telent Technology Services Ltd
Ivan	Wells	Highways England
Ash	Wheeler	Interdigital / OneTransport
Tim	Whiteley	PDS Limited
David	Wilson	London Borough of Hounslow
Nicholas	Wood	Kier Highways

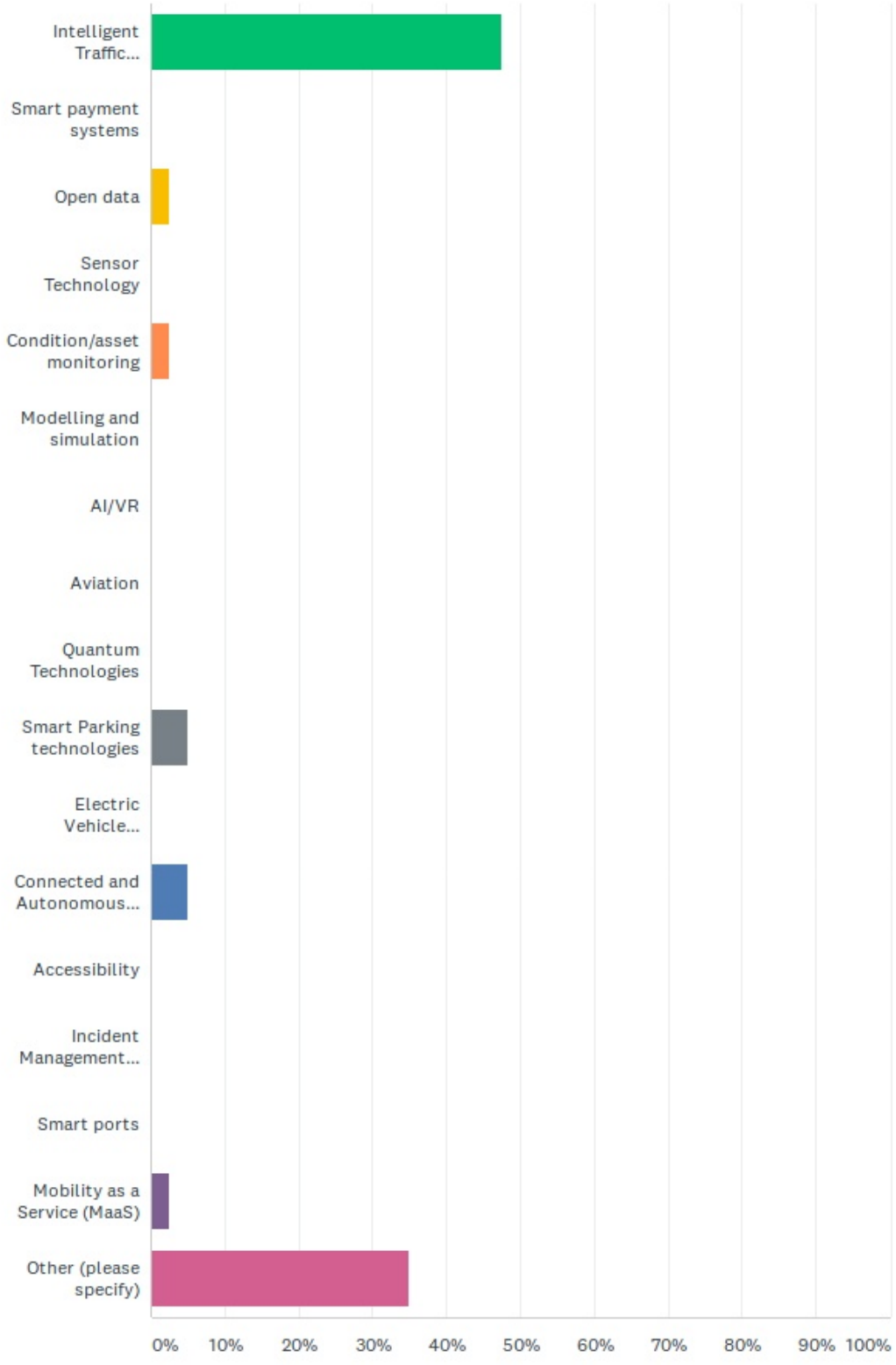
8 Areas of Interest of the Attendees

Which of the following technologies is your organisation currently working on?

Answer Choices	Responses	Number of Respondents
Intelligent Traffic Transport Systems	47.50%	19
Smart payment systems	0.00%	0
Open data	2.50%	1
Sensor Technology	0.00%	0
Condition/asset monitoring	2.50%	1
Modelling and simulation	0.00%	0
AI/VR	0.00%	0
Aviation	0.00%	0
Quantum Technologies	0.00%	0
Smart Parking technologies	5.00%	2
Electric Vehicle Technologies	0.00%	0
Connected and Autonomous Vehicles	5.00%	2
Accessibility	0.00%	0
Incident Management Technologies	0.00%	0
Smart ports	0.00%	0
Mobility as a Service (MaaS)	2.50%	1
Other Reponses	35.00%	14

This is drawn from 40 responses

Which of the following technologies is your organisation currently working on?

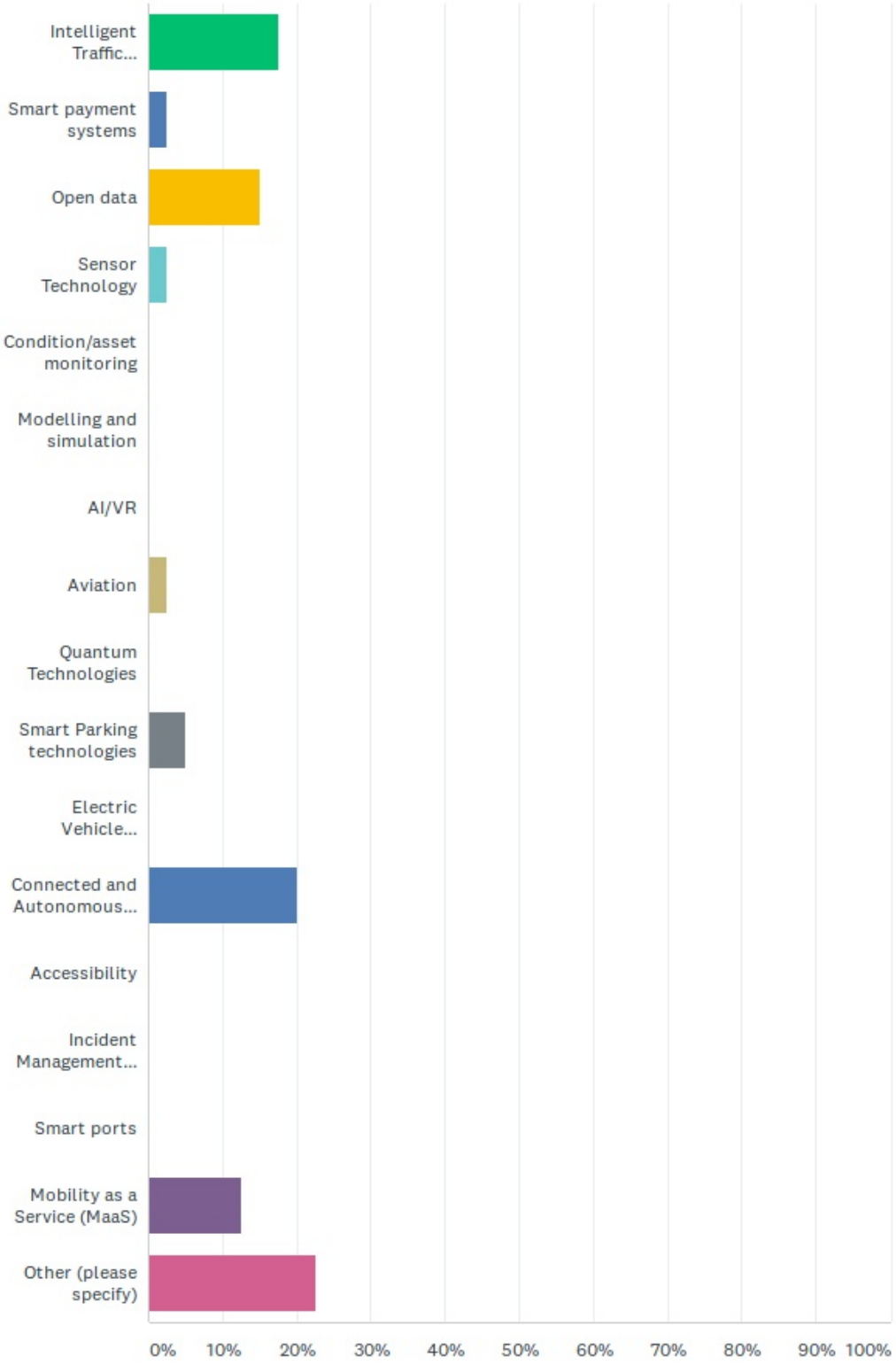


Which of the following technologies do you want to get more involved in if not already.

Answer Choices	Responses	Number of Respondents
Intelligent Traffic Transport Systems	17.50%	7
Smart payment systems	2.50%	1
Open data	15.00%	6
Sensor Technology	2.50%	1
Condition/asset monitoring	0.00%	0
Modelling and simulation	0.00%	0
AI/VR	0.00%	0
Aviation	2.50%	1
Quantum Technologies	0.00%	0
Smart Parking technologies	5.00%	2
Electric Vehicle Technologies	0.00%	0
Connected and Autonomous Vehicles	20.00%	8
Accessibility	0.00%	0
Incident Management Technologies	0.00%	0
Smart ports	0.00%	0
Mobility as a Service (MaaS)	12.50%	5
Other Reponses	22.50%	9

This is drawn from 40 responses

Which of the following technologies do you want to get more involved in if not already.



A Appendix A

Details of workshop outputs where available

A1 Connected technology community workshop

The Group consisted of the following Authorities, undertaking C-ITS projects;

- Hertfordshire County Council
- Peterborough Council
- Liverpool City Council
- City of York Council
- Southampton City Council
- Dorset County Council
- Newcastle City Council / Newcastle University
- Derbyshire County Council
- Swindon Borough Council

The following Authorities are not currently undertaking C-ITS projects, but are interested in learning opportunities from those who are;

- Staffordshire County Council
- Medway Council

These other bodies were represented in the group

- Middlesex University (working with City of York Council)
- AECOM (Working with Derbyshire County Council)
- Nicander Ltd (Working with many authorities, and experience of similar technologies in Dublin)

Discussion

A brief 'round table' highlighted similarities in projects delivered by the participants in the session, with a strong focus on projects integrating new technologies to provide new and improved sources of data and intelligence with the aim of making improvements to network operation. In many cases, this was focused around management of particular problems, such as major new developments or local traffic generators, (ports and industry). The main discussion looked at the direct and indirect benefits the participant authorities considered would be delivered by their projects. Issues raised included, (in no particular order):

Enabling better technologies – C-ITS projects are seen as a way of introducing local authorities to new technology generally and as a way of promoting wider technology adoption, and debate on its use.

What is the value of data? - the participant authorities were starting to consider the wider benefits of data and its uses;

- **Better use of data including Journey Time and Delay data collect and analysis**

Road users – what do they want, and how do authorities meet growing expectations;

- **Management of events, such as sporting events, concerts, etc**
- **Better information provided to road users, (including vulnerable road users)**
- **Better management of major freight traffic generators including industry and ports**

The Council should be the 'Font of Knowledge' with regards to local traffic and road network information;
Better data utilisation. The C-ITS work has driven many authorities to examine the ways in which they use data and share and exploit it;

- **Understanding what data authorities hold outside of traffic and transport**
- **Ensuring that data silos are effectively connected together**
- **Exploring new data linkages and opportunities**

Getting our data out there;

- **Ensuring we are able to provide data as and when it is needed by road users, business and others**
- **Building trust with partners that local authorities have the best data on road conditions and performance.**

As transport authorities, we should be gathering data from as many sources as possible

Turning data into intelligence

Using data and intelligence in new, varied and non-traditional ways

Better data allows authorities to form closer relationships with public transport providers, freight traffic generators and major local businesses.

A number of participants reported that being able to provide useful data to third parties such as bus operators and major employers has allowed them to form closer, mutually beneficial working relationships with them.

Getting local authorities prepared (tooled up) for the coming challenges of CAVs;

Authorities saw as beneficial the involvement in early C-ITS deployments, as this is a way to start understanding the preparations that will be needed for the upcoming CAV challenges authorities will face.

Local authorities should be seen as trusted partners by others in the data arena (data generators, providers, consumers) and as the best source of local roads data and intelligence;

Cross-authority learning is needed;

This was seen as a major barrier to the effective deliver of the current C-ITS projects, and to the adoption of such technologies by follow-on authorities

Better sharing of experience would also help consultants and industry in delivering the services and products that authorities will need). Even if the majority of authorities do not yet know what they need in this area yet, the work done by the C-ITS project currently underway will build experience in general.

Conclusions

Whereas it could be expected that the benefits the participating authorities want to see from C-ITS would focus on road performance, congestion mitigation and journey improvement, it fact, most authorities identified data opportunities as the main benefit. All authorities considered that the focus C-ITS placed on data sources, ownership, data sharing and the opportunities to turn data into intelligence provided a useful insight into future demands and opportunities.

Co-operative ITS Community Workshop

A2

The Group Consisted of the following:

City of York Council	Using FVD and wifi to set signals better, then 5g/g5 and OBD2
BSI	Standards interest and support to COYC
Worcestershire	Incident Management
Somerset	GLOSA and energy efficiency for Hinckley Point power station traffic
Hertfordshire	One Transport Data
Warrington	wifi for journey times
TFGM	A6 MCR to Stockport CAV trial
Newcastle	C-ITC, SPAT and energy efficient junctions, freight, GLOSA
Kier	No projects
Oxfordshire	Vehicle priority and UTMC with Highways England
TTF	Facilitators

Key themes of interest:

Evaluation and business case: The need to share findings.

Action: Talk to Graeme Hill of Newcastle on your own LA work

SPATULA group has been set up for all LAs doing SPAT/ GLOSA to share good practice

Driver behaviour and HMI aspects

Question re consistent and compatible HMI between projects. NCL have reports on behaviour and assessment. They also have an updated HMI .

Post meeting note: TTF contacted Zircon with the following reply:

With regards to the Newcastle GLOSA HMI, I did talk to Ray King at the event yesterday and confirmed that whilst Newcastle do own the software, they are happy for us to make it available to other Local Authorities as is. If any customisations are required then we can make them, and would charge accordingly, and they would also be made available to Newcastle.

If there is interest from other Local Authorities then I would be happy to come talk to them at whatever relevant fora exists.

Data Ownership

Who owns it? Opening up data needs help in existing contracts

New contracts need clauses (NCC have new clauses and words in UTMC contract to ensure open data and happy to share this to others. DfT/ TCC can assist here)

Action: NCC to share for other LA use

Freight

The business case is not universal – there are "sweet spots". When and where are the best cases for freight priority, and how it is delivered.

Action: LAs can share results

Privacy

What does GDPR mean for local authorities eg ANPR, Bluetooth MAC,

Will random MAC addresses for phones reduce Bluetooth capability for journey times in 5 years?

Action: DFT to organise a workshop on GDPR and LAs traffic systems

Action: a short "Ladybird Guide" with recommendations

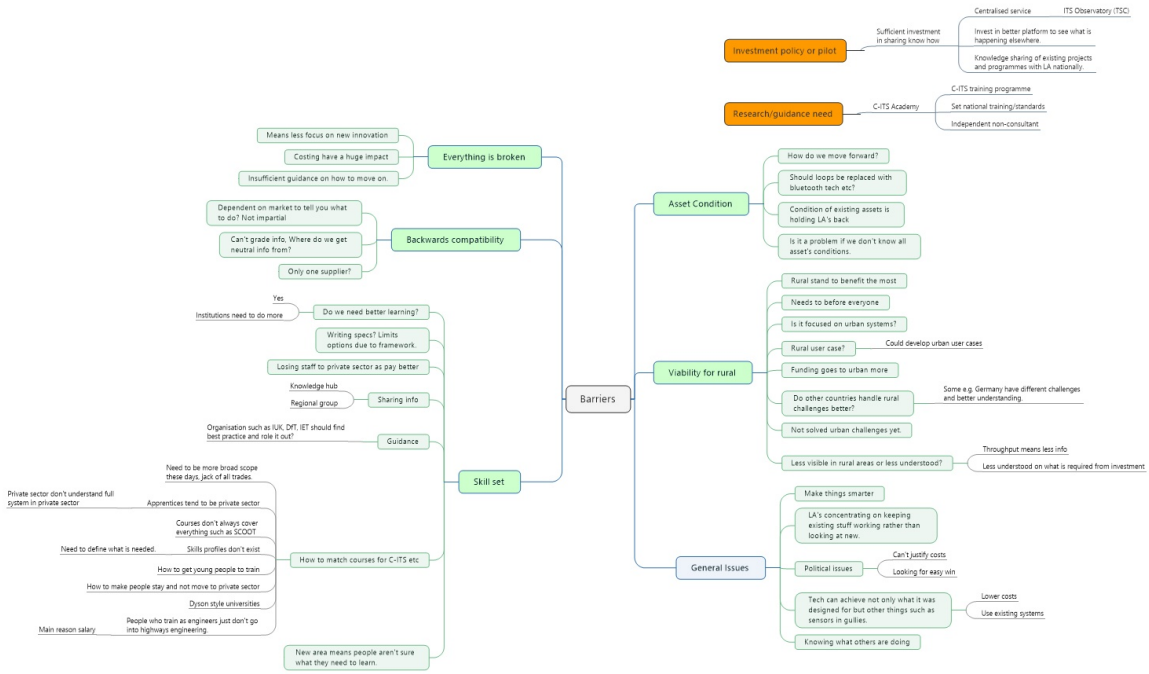
Interoperability of RSUs

This was covered in more detail in the PM session but needs DfT help on:

- Standards, specifically which standards are needed
- UTMC transition
- What's coming into the market

Overcoming barriers

A3



Data

A4

Do we know the value of our data?

No we don't. Too many decisions are taken on the basis of any potential short-term revenue income for selling the data, rather than the true value of the data based on the outcomes the use of that data (as part of a wider data pool) enables across wider society. Selling our data to recoup costs is not the answer. Any potential value of siloed data is minimal. Moreover, the costs of data collection should also be compared to the overall outcomes. Journey time ANPR and safety cameras are not being used because authorities cannot afford to collect the data. We need a mechanism that enables authorities to understand how the use of data benefits high level goals not just in transport, but including environment, health, education and business. If the cost of collecting this data is balanced against the overall outcome benefits then the decision to spend the relatively low sums to equip the ANPR cameras with SIM cards and to collect the speeding and red-light offender data becomes a completely different one.

However, there are no mechanisms or agreed valuation models to calculate these high-level cost benefits. We need to gather real project information in order for us to better understand what we mean by value. We need to refocus pilot projects to test these outcomes and value rather than test the technology. Combing this information will enable us to establish a funding formula to calculate the real value of data that is based on the 'big picture' rather than the current silos of operation.

If we recognise data as an asset (or indeed infrastructure) then we can start to recognise its full value.
To better understand the value of our data, we need to build into the equation the costs for exchanging the data. There are technical issues relating to exchanging data. Defined standards (there are several that are applicable) significant help in being able to exchange data more easily and cheaply, but this could be argued as a relatively simple issue to resolve. As with the assessing the value of data, it is not just about the technology of data exchange. We need to be clearer about who actually owns the data, understand privacy and be clear on the legislation that supports data exchange. We see the impact of large multi-nationals such as Google recent in the news using data with question marks over its legality.

We all know that the value of data will be greater than the sum of its parts. Fusing data will enable authorities to be better informed and make better decisions. If we have too much uncoordinated data, we will not be able to see the 'Wood from the Trees'. We need to better understand what data we have and what we can get from others. You don't always know what you want. If you asked people before the Model T you would get the answer of 'faster horses'. Knowing what data is available should be a relatively straightforward process of talking to each other and letting people experiment. However, knowledge is power, and people tend to hold on to what they have. We need to create the environment of open data exchange.
Not only will the value of data be enhanced by understanding outcomes and the big picture, it will also grow if we are able to gather data from larger areas; this will certainly help the relationship with the larger multi-nationals that are delivering information to their consumers directly.

As with any information service, its value will only be maintained (or grown) if the data that supports it, is kept reliable and up-to-date. Costs associated with ensuring data quality is maintained needs to be fully understood by all parties. People and organisation departments need to fully understand the importance of the data upon the wider big picture model. This will be a critical part of the funding formula that we need to define.
Not only must we maintain data quality, but we must create an environment of agility. Authorities noted that their ICT procurement is somewhat outdated, and they find it difficult in a world where technology and people's

expectations are rapidly changing. The use of smart phones and mobile connectivity mean that people what the latest information now.

Perhaps we can learn from the 'open source' software model, where companies readily freely make their software available to communities of software developers that all join in to enhance the product to the benefit of all. By integrating open source products that use common international standards we are all more able to integrate new sources of products very quickly to realise their benefits. We are not tied to one supplier and are part of a community that all work together for the benefit of all.

The key action is to create the big picture data value model. This links nicely with all the outcome evidence gathering exercise.

Procurement

A5

Prior to the workshop a questionnaire was distributed to all conference delegates. The findings from this will be collated and distributed separately.

Barriers to procuring innovative transport technology solutions

This questionnaire is part of a Department for Transport sponsored project to support local government authorities in planning, procuring and implementing technology and innovative solutions. Your responses will remain confidential and only the aggregate data will be used.

Transport Technology Forum

Which of the following do you perceive as key barriers to the adoption of technology or innovation? Please rank accordingly – Strongly Disagree = 1, Strongly Agree = 10

	Strongly Disagree									Strongly Agree
Suppliers do not engage with us with new ideas and technology solutions	1	2	3	4	5	6	7	8	9	10
We lack the time to engage with suppliers new ideas	1	2	3	4	5	6	7	8	9	10
We are unable to fund the development of innovative solutions	1	2	3	4	5	6	7	8	9	10
We lack knowledge of mechanisms to procure funding for innovative ideas	1	2	3	4	5	6	7	8	9	10
Procurement governance leads to over-prescription of the required solution	1	2	3	4	5	6	7	8	9	10
There is a misalignment between the needs of the commissioning department and procurement colleagues	1	2	3	4	5	6	7	8	9	10
We make limited use of pre-competitive procurement (PCP)	1	2	3	4	5	6	7	8	9	10
Working to develop new solutions in partnership with suppliers, LEPs and other agencies is complex	1	2	3	4	5	6	7	8	9	10
Risk averseness hinders the procurement of innovative solutions	1	2	3	4	5	6	7	8	9	10
Concerns about intellectual property hamper the way we procure services	1	2	3	4	5	6	7	8	9	10

Please identify what actions could be taken to help resolve one of these barriers:

The workshop delegates were presented with the following list of barriers to discuss

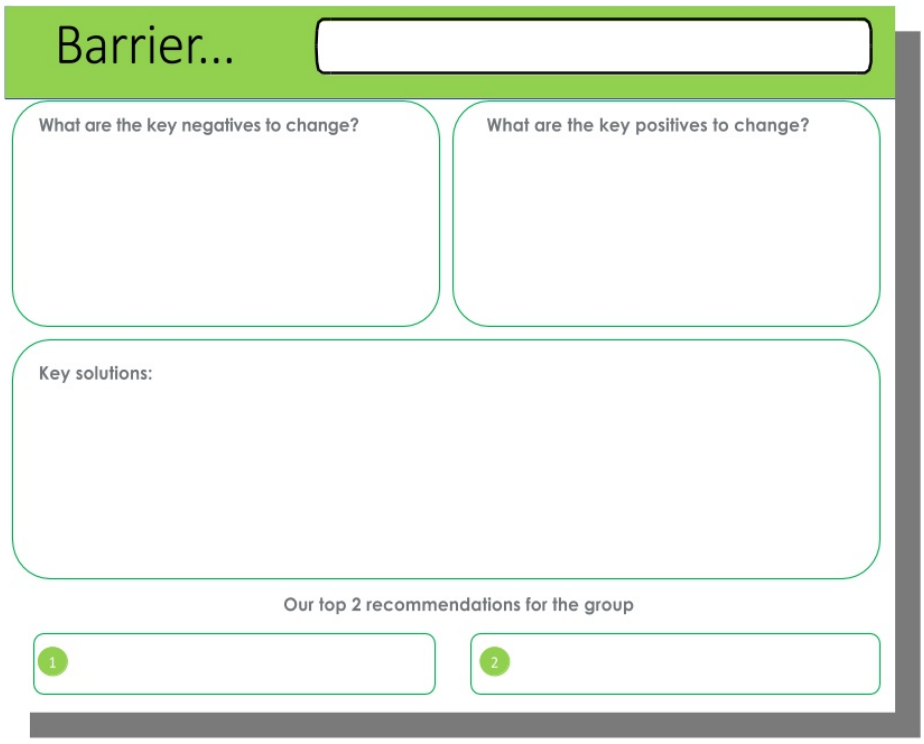
- How local authorities can work with the supply chain to explore innovative solutions
- Working collaboratively with other authorities and other bodies (e.g. LEPs)
- Responding to a rapidly changing technology landscape
- Exploring funding opportunities for the development of innovative solutions
- Overcoming procurement barriers to innovation
- Measuring the value of innovation
- Accommodating intellectual property issues of innovative solutions

3. From this list the following two were selected

- Overcoming procurement barriers to innovation
- Responding to a rapidly changing technology landscape

The delegates divided into four teams, two teams on each of the chosen topics

Each team worked to the following proforma sheet and recorded their discussions



From the four completed sheets, one was chosen and presented back in the following plenary session. All participants were asked about how they would like to keep in touch to encouraging sharing and collaboration.

Findings

Barrier 1: Responding to the rapidly changing technology landscape

What are the key negatives?

- Money and funding (LA and central)
- What do I procure? – What is coming next?
- How do I procure quickly?
- Tie in to existing contracts
- Identifying the need – producing the business case
- Resource/manpower – inc implementation
- Responding to/'selling to' political masters
- Relationship between engineering and procurement
- Risk of failure
- Obsolete by the time it is implemented
- Certainty of technology
- Perceived 'old solution'
- Delays in decision making

What are the key positives?

- Industrial Revolution…to technology revolution
- Shared outcomes/benefits
- Longevity
- Better data and common use
- Defining new specifications
- Social benefits (air quality, economic growth)
- General economic growth and progress (UK PLC, supply chain)
- Motivated engineers!
- Freer flowing, safer roads

Key Solutions

Collaborative working – public/private, LA/LA, National/Local
Centrally provided standards and best practice
Communication of economic health and wellbeing story to council members
Funding – knowing how to access funding
Improved shared platforms
Database of new products (reviews, specs etc.) Amazon style, high level promotion
Bringing solutions to market (investors/test cases)
Sharing business cases
Developed Industry expertise within client organisations
Understand end user wants/needs
'Do once/share many'
Framework standards, common to all, avoid supplier lock in

Top two recommendations

1. Pseudo 'Amazon' platform
2. Community Group, connecting people
1. Increase appetite for risk
2. Central guidance on funding opportunities

Barrier 2: Overcoming procurement barriers to innovation

What are the key negatives?

Procedural barriers for small companies, processes more relevant to big consultancies
Time taken to procure
Knowing what is out there in the market
Existing contracts with suppliers that do not do ITS and prevent alternatives
Lack of relevant procurement model – need new definition

What are the key positives?

TMTii Framework and other frameworks
Appetite – demand led
Pace of innovation
Improving procurement and tendering system
Key Solutions
Define a new market model
Market engagement 'try before you buy'
Collaboration between LAs – if one procures the best solution, then others can without tendering

Single LA market place for TMT – to government standards
Make everyone aware of processes
Better communications between LAs and their procurement teams

Top two recommendations

1. Government standard-led single marketplace for ITS
2. Government guidance on uniform procurement procedure specific to C-ITS/Tech

Keeping in touch

A strong general theme was social media. This included a linked in group, a social media group such as yammer, a shared space or equivalent using messenger with email fall back
Face to face engagement: regular events, and direct meetings such as that offered by TfWM and TTF User Group
Newsletter and email
Overall contact list shared amongst participants

Connecting vehicles and ITS

A6

This group tackled three areas where we needed help for Connected vehicles and Infrastructure to really take off.

What policies were you following, require or were adopting in relation to connected vehicles?:

Improve existing travel modes to create space for new modes (bike/PT)
Understand where vehicles which could help traffic management, traffic modelling and general congestion relief.
Demand responsive public transport, next generation public transport systems
Displaying useable presentable information in connected environment, traveller information
Measure condition or streets, asset management and reduction in surveying costs
"modelling"
their current policy was there was no policy, but coming to events like this today, enables them to develop a policy. so, the actual policy is defining a policy.
Expenditure (limited)
Data Policy
Regulation
DfT policy to enable in an organised approach, the view being we don't need 153 policies, just one that we can all align and follow (within our own capacities and budget)

What concerns or assistance do you need on the technical side of connect vehicles and infrastructure?

Range of "Comms" – options, Future proof (5g, g5, lte, 4g etc)
Sensitive/security of Data a) mandated b) data direct debit mandate
Interoperability
Data distraction (HMI, mobile etc)
Conflicting priorities a) modes b) priority c) adoption d) travel reason e) time
Infrastructure a) location/latency/hosted b) 1st gen DB c) maintenance d) Digital/hardware

What needs to be done or should be monitored to understand Connected Vehicles benefits and Evaluation for enhanced roll out?

Journey times
Road safety
Air quality
Reduction in fuel, stops, congestion
Time to park
Pedestrians
Modal shift
Common base KPIs

The three big topic items that came out for DfT to focus on were:

Common base KPIs for evaluation and ROI
Data Policy
Technical architecture with data, interoperability and coms being the strong elements to focus on

The future of UTMC

A7

Many, but not all Local Autorities have UTMC. All want the principles of "UTMC" but not necessarily the current technology this implies. The challenge is true interoperability – hence the need for a "Standard Standard" due to the many versions of current "UTMC" compliance and need for multiple adaptors needed to integrate systems.

The emphasis for UTMC should be on being guaranteed to function internally, then connect to other systems. CVS and CAVS will need this basic level of working but there is currently a disconnect between real "traffic "world and aspirations/expectations of the CAV world. Effort is needed to Make Today Work first - Andy Radford's SCOOT loops statistic is stark evidence of this. New systems need to come out of the traffic silo in terms of technology – use COTS standards like JSON, XML, etc rather than just Datex. Due to limited resource and skill sets (which are likely to become more acute) they need a higher level of automation within traffic management systems.

In terms of communications to vehicles it's not clear what does the vehicle need and provide and as a community, we need to put traffic management on the radar of future cities, as we still have legal obligations under the TMA 2004

So, requests from the group for DfT are;

Identify and promote "Standard standard" tests for UTMC and post UTMC interoperability and keep these under continuous review. The workshop said that the DfT should (1) ensure the existence of a single standard; and (2) provide the means of ensuring compliance. These would be good things for the DfT to fund

Provide a 10-year vision for traffic management

CITS Platform to be asked to provide simple statement of expected payload to and from vehicle (not just protocol)

For the Community and suppliers;

Use new non traffic standards eg JSON

Consider transition from old to modern

Help keep the lights on!

Produced by the Transport Technology Forum (TTF) and the Institution of Engineering and Technology (IET), on behalf of the Department of Transport (DfT).

www.ttf.uk.net

www.gov.uk/government/organisations/department-for-transport

www.aesin.org.uk