NCHRP 20-24(128) State of the Art Review of Cooperative Automated Transportation Systems

2022 United Kingdom Scan Tour

July 18-21, 2022

US Panelist Briefing Packet

Map

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NCHRP 20-24(128) State of the Art Review of Cooperative Automated Transportation Systems

2022 UK Trip Briefing Packet

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Why – the purpose of the trip is:

# Trip Overview

* To gain knowledge of the most recent Cooperative Automated Transportation projects, activities, development, and plans, with emphasis on viewing from the perspective of infrastructure owners/operators.
* To broaden our awareness of regional differences between the US and UK when it comes to cooperative automated mobility. We have spent much of the past three years understanding the market drivers and influencing factors in the US, and this trip will help us better compare and contrast to lessons learned in the UK.

Success will be measured by:

* Individual dialogue with participants gathering lessons learned that might go beyond what’s written in a report, press release, or document.
* Having an opportunity to speak with other infrastructure owners/operators and gathering their unique experience in preparing for and engaging in cooperative automated mobility.
* Having an opportunity to speak with private companies or organizations and gathering their experiences in dealing with infrastructure owners/operators in cooperative automated mobility.

The participants are:

* Chief Executives from several US State Departments of Transportation, and some key industry leaders: Scott Marler (Director, Iowa DOT), Julie Lorenz (Secretary, Kansas DOT), Carlos Braceras (Executive Director, Utah DOT), Roger Millar (Secretary, Washington State DOT), Victoria Sheehan (Commissioner, New Hampshire DOT), Patrick McKenna (Director, Missouri DOT), Shante Hastings (Deputy Secretary, Delaware DOT), Randy Iwasaki (Amazon Web Services), Tracy Larkin Thomason (ITS America), John Corbin (US DOT, Federal Highway Administration), King Gee (AASHTO), Waseem Dekelbab (TRB), and Steve Kuciemba (WSP USA).

The format of the trip will be:

* A balance of presentations, hands-on demonstrations/tours, and networking.
* We are meeting with a broad variety of government officials, private companies, and academic institutions and focused on the key topic areas that this project has focused on from the very beginning.

The dates of the trip are:

* The week of July 18, 2022

## General Travel Notes

# Travel Logistics

* All panelists are flying into and departing out of London Heathrow (LHR)
* Travelers will use the weekend (7/16-7/17) to arrive and be ready to begin meetings/visits first thing on Monday morning (7/18).
* A panel meeting will be held Sunday evening (7/17) to review final logistics.
* Our meetings will be in and around London for Monday/Tuesday, in Coventry on Wednesday, and in Oxford on Thursday. We will return to London Thursday evening to accommodate early morning flights on Friday.
* We will have a 29-seat charter bus for Wed/Thur travel, with room to store luggage. A few of our UK hosts will be joining us for the trip to the Midlands so we’ll have extended networking time on the bus.
* Travelers are free to depart starting on Friday morning.
* Travelers bringing additional guests or family members are responsible for any incremental hotel costs above and beyond what a single traveler would incur.
* As of this writing, COVID testing is NOT required to enter the UK or re-enter the US. This policy is constantly shifting, so we will advise immediately before the trip.
* As of this writing, air travel is suffering from frequent delays, cancellations, and re-booking. Monitor conditions carefully before departing on your trip. We also recommend taking advantage of individual airline apps, which are often more effective than trying to speak to a help line. Please communicate with Steve if any delays.
* Dress Code = Business Casual. Most of the groups we’ve spoke to have all encouraged business casual (also known as “smart casual” in the UK). Given the unknowns our advice is to be prepared for flexibility. For men this can simply mean having a tie in your coat pocket, or for women can mean different accessories to your liking/taste.
* We strongly recommend everyone wear comfortable shoes - our days could be long, and we might experience a mix of sitting/standing.
* The weather in London is typically moderate - temperatures this time of season are typically mid-70’s. However, the most current 10-day forecast shows a heat-wave with temps in the low 90’s for part of the trip.
* Because the schedule is still locking-in, and our host participants have ongoing changes, there are additional adjustments to our schedule that could still occur. But our basic in/out logistics and site locations won’t change at this point, only adjustments within each day.

## Hotel Details

All hotel arrangements are being made by Arora (Melissa Jiang, [mjiang@arorapc.com](mailto:mjiang@arorapc.com)), and individual travelers who wish to have any special arrangements (or have additional guests/family members) must coordinate with Melissa.

### London

Arrival through Wednesday Morning

DoubleTree by Hilton London - West End

92 Southampton Row, London, WC1B 4BH

<https://www.hilton.com/en/hotels/lhrlbdi-doubletree-london-west-end/>

We booked *Bed and Breakfast Rate*, which includes breakfast for all the guests in the room. Individual guests will pay for the room and get reimbursed.

### Oxford

Wednesday Night

Premier Inn Oxford City Centre (Westgate)

Greyfriars Court, Paradise Square, Oxford OX1 1BE

<https://www.premierinn.com/gb/en/hotels/england/oxfordshire/oxford/oxford-city-centre-westgate.html>

We booked *Bed and Breakfast Rate*, which includes breakfast for all the guests in the room. Individual guests will pay for the room and get reimbursed.

### London

Thursday Night through Departure

Hilton London Heathrow Airport

Terminal 4 Hounslow TW6 3AF

+44 20 8759 7755

<https://www.hilton.com/en/hotels/lhraptw-hilton-london-heathrow-airport/>

The hotel is next to Terminal 4 close to Terminal 3, which most of the group will fly out from and there is a tube station next to the hotel which will be convenient for the members who want to stay there for an extra night or so. For this hotel, the breakfast is not included in the room rate. Individual guests will pay for the room and get reimbursed.

## London Underground

We will be using the Tube once or twice as part of our official visits, and if you wish to enjoy any of London on your own, the Tube will likely be your mode of choice as well.

When you arrive in London, you have an option to purchase an Oyster Card for your public transit use while in London, or you can pay-as-you-go. Our hosts recommend at least £35 on your card as a starting point.

If you choose not to purchase an Oyster Card, the Underground accepts contactless cards such as Amex, MasterCard, and Visa – as well as mobile payments such as Apple Pay and Google Pay.

## Individual Traveler Information

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | **Name** | **Arrival Date/Time** | **Arrival Flight** | **Departure Date/Time** | **Departure Flight** | **Mobile Number** |
| 1 | Scott Marler | Sunday  July 17, 2022 | Delta 32  Arrives 11:10 am | Friday  7/22/2022 | Delta 11 Departs 9:55 am | 515-357-9463 |
| 2 | Tracy Larkin-Thomason | Saturday 7/16/2022 | Delta 58 Arrives 7:10 am | Thursday  7/28/2022 | Delta 5995 Departs 3:49 pm | 775-247-1777 |
| 3 | Carlos Braceras | Sunday 7/17/2022 | Delta 50  Arrives 1:30 pm | Saturday 7/23/2022 | Delta 11  Departs 9:55 am | 801-244-4351 |
| 4 | Shante Hastings | Saturday 7/16/2022 | American/British 6979  Arrives 9:00 am | Saturday 7/23/2022 | American/British 6980  Departs 4:00 pm | 302.528.8669 |
| 5 | Randy Iwasaki | Saturday 7/16/2022 | United 948 Arrives 10:25 am | Friday 7/22/2022 | United 900 Departs 10:25 am | 916-416-8602 |
| 6 | Victoria Sheehan | Sunday 7/17/2022 | Delta 58 Arrives 7:10 am | Friday 7/22/2022 | British Airways 962  Departs 08:45 am | 603-767-7381 |
| 7 | Roger Millar | Sunday 7/17/2022 | United 27 Arrives 9:40am | Friday 7/22/2022 | United 8253 Departs 4:10 pm | 360-915-2375 |
| 8 | Julie Lorenz | Sunday 7/17/2022 | Delta 32  Arrives 11:10 am | Friday 7/22/2022 | Delta 5995  Departs 12:30 pm | 785-215-1173 |
| 9 | John Corbin | Saturday 7/16/2022 | American 7003  Arrives 6:50 am | Friday 7/22/2022 | American 91    Departs 2:40 pm | 708-325-6256 |
| 10 | King Gee | Thursday 7/14/2022 | United 122  Arrives 8:55 pm | Saturday 7/23/2022 | United 123  Departs 7:45 am | 202-330-1092 |
| 11 | Patrick McKenna | Saturday 7/16/2022 | American 90  Arrives 10:10 pm | Friday 7/22/2022 | American 6948  Departs 11:50 am | 573-645-8241 |
| 12 | Waseem Dekalbab | Sunday  7/17/2022 | United 924 Arrives 10:30 am | Staying in UK | N/A | 571-723-5022 |
| 13 | Steve Kuciemba | Saturday 7/16/2022 | Delta 58 Arrives 7:10 am | Friday 7/22/2022 | Delta 59 Departs 9:40 am | 301-801-6345 |

# Schedule At A Glance

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date** | Monday - 18 July | Tuesday - 19 July | Wednesday - 20 July | Thursday - 21 July |
| **General Location** | London | London | Coventry | Culham/Oxford |
| **Theme** | Policy & Government | On-Road Pilots, Equity, and Private Innovation | Proving Grounds and Large-Scale Testing of CAV | Moving from Test Track to Open Roads, National Research Projects |
| **Summary** | Meetings with UK Dept for Transport, National Highways Agency, Transport for London, in the Westminster area. Discussions cover our full range of topics. | Visit to the Smart Mobility Living Lab, an incubator for innovation and on-road demos of CAM. We’ll meet with a mix of public and private stakeholders including OEMs and tech companies. | Morning visit to Horiba Mira, a private vehicle test facility and proving ground. Afternoon meetings at the National Automotive Innovation Centre and tour of Midlands Future Mobility demos. | Morning visit to Millbrook-Culham to learn about several UK projects focused on transitioning to public roads. Afternoon visit to University of Oxford for research conversation and tour. |
| **Dinner** | Group Dinner w/ITS UK | Dinner on-your-own or in small groups as desired | Dinner on-your-own or in small groups as desired | Group Dinner w/University of Oxford |
| **Hotel** | DoubleTree by Hilton London - West End | DoubleTree by Hilton London - West End | Premier Inn Oxford City | Hilton London Heathrow Airport - Terminal 4 |
| **Transport Logistics** | Tube and Walking | Tube, Walking, and Thames Clipper | Charter Bus | Charter Bus |

\* plus a Sunday evening pre-tour check-in meeting at 7:00 pm in the Hotel Lobby/Lobby Bar

The following pages provide a summary/overview for each day, followed by detailed agendas.

# Day by Day Schedule

For some of the agenda items we have included notes (in red) with specific callouts for our US Panel to consider either as areas we should explore further – or issues that our hosts would appreciate us weighing in on.

## Sunday - 17 July 2022

|  |  |  |  |
| --- | --- | --- | --- |
| **Time** | **Activity** | **Location** | **Notes** |
| 7:00-7:30 pm | Panel Pre-Tour Meeting | Lobby Bar or Open Area  DoubleTree by Hilton London - West End | This is an opportunity for us to do a final review of logistics and prep for the next day. Any last-minute changes or questions can be addressed then. If any attendees aren’t available, please communicate with Steve so he can share any last-minute updates later that evening. |

### Summary

## Monday - 18 July 2022

Our first day of the tour will be heavily focused on meetings with the UK Department for Transport (DfT) and key organizations in the CAM sphere. We will cover a broad variety of topics right out of the gate with dedicated time blocks to emphasize vision, data, connectivity, legislation/regulation, decarbonization, and standards.

### General Schedule

We have two different meeting locations in Westminster, the seat of the capital, both within walking distance of each other.

* 9:30 – 2:00
  + Meetings at the Great Minster House (DfT Offices), including lunch and networking time
  + We’ll take a Taxi or the Underground (TBD) from the hotel
* 2:30 – 5:00
  + Meetings at the Society of Motor Manufacturers and Traders (SMMT), an industry organization with heavy ties into the government and supporting CAM activities nationwide.
  + It’s a short walk from the DfT offices
* Evening
  + Dinner – with ITS UK

### Additional Detail

Speakers will not only be from DfT, but also from the National Highways Agency, Transport for London, the British Standards Institute, and the UK Dept. for Business Energy & Industrial Strategy.

Our principal hosts for this trip will be heavily engaged in this first day of sessions, as they will throughout the four days. The [Centre for Connected & Autonomous Vehicles](https://www.gov.uk/government/organisations/centre-for-connected-and-autonomous-vehicles) (CCAV) is a joint effort by the UK Department for Transport and Department for Business, Energy, & Industrial Strategy.

Michael Talbot and especially Lily Wong Le have been instrumental in helping us arrange the many different details of this trip. We are very grateful for their assistance.

 

Michael Talbot Lily Wong Le

Deputy Director of CCAV International Engagement Lead, CCAV

### Monday Agenda

| **Time** | **Activity** | **Location** | **Notes** |
| --- | --- | --- | --- |
|  | Breakfast | DoubleTree by Hilton London - West End | Breakfast on your own - included in the room rate for all guests |
| 8:30-9:15 am | Transport to First Meeting | Meet in Lobby - DoubleTree by Hilton London - West End | Take the tube as a team to our first meeting site.  5 min walk to Russell Square Station – take the Piccadilly Line toward Heathrow to Green Park station. At Green Park Station – change trains to the Victoria Line toward Brixton to the Pimlico station. Approx 10 min walk to meeting site. |
| 9:15-9:30 | Arrival |  | Allowing time cushion for commute on a Monday morning |
| 9:30-10:00 | Introductions Coffee/Tea | Great Minster House (DfT) 33 Horseferry Road | * Coffees and teas (CCAV providing) * General introductions * Setting the stage for the day * Review of overall itinerary * Brief expectations from each participant * Welcome from Hannah Newell, Director of Future Transport Systems and Environment Directorate within DfT |
| 10:00-10:30 | Vision:  UK Government’s Vision for CAM | Great Minster House (DfT) 33 Horseferry Road | Deputy Head of CCAV, Michael Talbot, will outline the UK government’s vision for CAM including an overview of priority areas of:   * Legislation and regulation * Industry, innovation, and commercialization * Public engagement and societal impacts   20-minute presentation; 10-minute Q&A  US Panel: Vision is a topic we’ve discussed a lot, let’s be prepared to offer our thoughts on vision (or lack thereof) in the US and the efforts underway to address it. Julie and Scott have often been vocal on this topic. |
| MONDAY  10:30-12:00 | Data and Connectivity | Great Minster House (DfT) 33 Horseferry Road | 1. Traffic and technology Division presentation 15 mins – Darren Capes (local emphasis) and Gary Crockford (national emphasis) 2. DfT Data presentation 10 mins – Matt Coleman 3. National highways presentation on digitising the road network 15 mins – Andy Fisher MIET, Team Leader, Connected and Autonomous Vehicles & Davin Crowley-Sweet, National Highways 4. TfL presentation on data 15 mins – Adam Duff, Performance & Planning Manager (Central London)  * Manage and optimize our road network and transport services, data is vital in setting our objectives and measuring those improvements for the customer too. * Provide customers with information allowing them to make an informed journey experience, spanning all our modes – data we also share to third parties as well as using our own journey planner and TfL Go app. * Respond to planned/unplanned events.   30 mins open discussion  CCAV to be in the room to discuss data recording to determine liabilities  US Panel: the UK has experienced some of the same challenges in high-speed/low-latency direct communications (e.g., DSRC vs C-V2X) and isn’t heavily engaged with the EU in their C-ITS program. While we are finally recognizing the “other” types of connected communications and data applications here in the US that bring benefits, they figured it out a year or two earlier and can share some of their lessons learned. Bottom line: there is a lot packed into this session, covering a broad set of data and connectivity topics. Our panel has had a lot of conversations about data – Tracy and John will want to likely discuss digital infrastructure (including digital twins), Carlos and Roger talk about data sharing/expectations as well as connectivity deployment, and others can certainly chime in as well. This 90 min session will fly by quickly. |
| 12:00-1:00 pm | Lunch | Great Minster House (DfT) 33 Horseferry Road | Buffet-style lunch (CCAV handling catering)  Additional DfT and CCAV staff will be invited to join and network (couldn’t fit everyone into the agenda so we’ll use lunch to expand conversations) |
| MONDAY  1:00-2:00 | CAM Legislation and Regulations | Great Minster House (DfT) 33 Horseferry Road | 1. CAM legislation -10 mins, presented by Isobel Pastor Head of CCAV  * UK created a compulsory insurance regime for automated vehicles in 2018, which clarified compensation pay-outs. * We have amended the Highway Code to clarify driver responsibilities and rules on use of self-driving vehicles * UK law leaves a lot of criminal liabilities with the driver; we are creating a new legal framework to determine in which vehicles the driver can safely delegate the responsibilities and to create a new legal entity responsible for the performance of the vehicle. * The framework will create: a process for authorization as self-driving, which will require an appropriate legal entity to vouch for the behavior of the vehicle, share data with insurers and report data to demonstrate safety in use; a framework for remote supervision of vehicles which will not have a responsible human in the vehicle; immunity from certain driving offences for drivers of self-driving vehicles, since the vehicle will be responsible for compliance (e.g., speeding or steering offences). * The framework will also create a new 'in-use regulatory scheme' to ensure vehicles remain safe throughout their life and to enable sanctions to be applied to manufacturers and operators.  1. Regulations: Safety policy and CAVPASS Connected and Automated Vehicles Process for Assuring Safety and Security – 10 mins, presented by Lawrence Thurbin, Head of Safety Policy at CCAV  * Outlining the challenges and opportunities that are driving the need for safety and security assurance process to be developed in the UK * An overview of the CAVPASS program in addressing these needs, what the overarching objective of the program is, and how this will be delivered through the thematic workstreams * How the program fits into broader Governance structures  1. CAM approvals process – 5 mins, presented by Mike Braisher, Head of Innovative Mobility at International Vehicle Standards Division, DfT  * Non-presenter participant: Jamie McFadden - Head of Automated Vehicle Technologies Group, Vehicle Certification Authority * Non-presenter participant: Douglas Hannah - Head of Automated Vehicle Technologies,  1. Open discussion – 30 mins   US Panel: Another session with a broad set of issues and covering several different panel members. They are generally aware of our lack of federal legislation and lack of USDOT regulations but might be interested to hear a few different state perspectives on how individual states are dealing with this. Several different panel members should be able to engage in this topic. We are also encouraged to explore societal impacts and equity issues with Isobel Pastor, Head of CCAV, as this is an area of interest and expertise for her (we’ll discuss equity again on Tuesday, but Isobel can’t be there). |
| 2:00-2:30 | Transfer to new location | SMMT 71 Great Peter St | Short walk between venues, refreshments available upon arrival +networking |
| MONDAY  2:30-3:30 | Automation, Connectivity, Electrification (ACE) in the context of Innovation and Industrialization | SMMT 71 Great Peter St | 1. UK government’s transport net-zero vision - 10 mins, presented by Tom Hyne, Net-Zero Strategy, DfT 2. ACE in the context of the auto industry - 10 mins, presented by Paolo Favino, Head of Innovation at the Automotive Unit, Dept. for Business Energy & Industrial Strategy  * Overview of: UK auto sector, challenges, market failures opportunities, and UK gov approach innovation investment  1. ACE in the context of CCAV’s work - 10 mins presented by Michael Talbot, Deputy Head / David Webb, Head of Innovation at CCAV  * CCAV’s decarbonisation analysis evidence –5 mins, presented by Seyed Toliyat, Analyst at CCAV * A few words on Zenzic / APC’s role – Frances Williamson and Mark Cracknell, Zenzic  1. ACE in the context of industry 10 mins – Mike Hawes, SMMT 2. Open discussion – 20 mins   US Panel: our project hasn’t had a lot of in-depth conversations about CAT in the context of decarbonization, but many of our individual state agencies have started to focus on it more. This is an important factor in future grant requests with the USDOT and is an issue of great importance for the future. After talking with our hosts, here are some questions they might want us to consider:   * What types of environmental impacts are we interested in (Carbon? Air Quality? Biodiversity)? * Have we done anything to establish possible net impact of AVs on carbon emissions? Do we have specific plans for enabling infrastructure? Have we considered the environmental impact of this? * Do we want to get into the topic of EV/battery fires and battery recycling in the room? |
| 3:30-4:00 | Coffee Break | SMMT 71 Great Peter St | Networking opportunity |
| MONDAY  4:00-5:00 | CAM Standards | SMMT 71 Great Peter St | 1. British Standards Institution (BSI) work on CAM standards – 15 mins, presented by Nick Fleming, BSI 2. CCAV / government perspective on CAM standards - 10 mins, presented by David Webb, Head of Innovation at CCAV  * CCAV & BSI will present on the role of industry-driven standards in accelerating the safe, secure deployment of self-driving vehicles in UK. * Successes and lessons learned will be shared about the CAV Standards Development program, commissioned by government, and delivered by BSI, which has produced a dedicated suite of "Publicly Available Specifications" to support the CAV industry through guidance on best practice for the safe development, trialing and deployment of self-driving vehicles in the UK. * CCAV will cover the government's position on the role of standards within the wider legislative and regulatory landscape and BSI will cover the standards development process and this suite's adoption in the UK and internationally.  1. SMMT industry perspective on CAM standards – a few words from David Wong, SMMT 2. Open discussion 25 mins   US Panel: while we often consider standards to be focused on the technical aspects of CAT, their efforts (and this conversation) will traverse both technical and policy standards. They also subscribe to having the government pay for standards development to encourage nationalization and internationalization. After talking with our hosts, here are some questions they might want us to consider:   * Are any states in particular driving standards work and what are their approaches? * In the US context, which emerging areas relating to CAV development lack guidance on best practice and pose the most significant risk to enabling widespread deployment? * Are there feasible opportunities for the UK and USA to collaborate on common standards that support industry players operating in both countries that are tailored to those two contexts in a way that is not possible for an ISO standard to achieve? |
| 5:00 | Adjourn |  | Go together from SMMT back to hotel. TBD taxi versus underground (both approx. 15 minutes) |
| 6:30 | Dinner | Bloomsbury Street Kitchen  9-13 Bloomsbury Street  London  WC1B 3QD | Dinner with ITS UK staff and some board members  US Panel: We don’t have confirmation exactly which ITS UK Board Members will be in attendance, but we anticipate at least 3 or 4, along with some key ITS UK Staff members. Because our panel includes the current ITS America President (Roger) and several ITS America Board Members, this should be a good opportunity to discuss the upcoming ITS World Congress and opportunities for continued collaboration and joint support. |
| 8:00 | Return to Hotel | DoubleTree by Hilton London - West End | Within walking distance of hotel. |

|  |  |
| --- | --- |
| Speakers | **Intro and UK Government’s Vision for CAM** |
| Newell-Wren  @dft.gov.uk | **Claire Wren, job sharing with Hannah Newell, is Director of Future Transport Systems and Environment Directorate (FTSE) at DfT.** The Centre for Connected and Autonomous Vehicles and International Vehicle Standards Division sit within FTSE. She joined DfT in summer 2021 and joined with Hannah Newell in a director job-share. Together they led on Transport Day at COP, and in December 2021 established the new Future Transport Systems and Environment directorate with a mission to create a sustainable transport future. She previously spent 13 years in HM Treasury working in a range of roles, but with an emphasis on supply side policies and also new organisations. Including leading the cross-Whitehall project for supporting for strategic companies in response to COVID and setting up the new UK Infrastructure Bank. She also spent three years at UKGI on secondment sitting on the board of HM Land Registry and setting up the new Geospatial Commission. |
| Michael.Talbot  @CCAV.gov.uk | **Michael Talbot is Deputy Head of the UK’s Government’s Centre for Connected and Autonomous** Vehicles (CCAV) of which he was a founding member in 2015. He recently returned from a two-year industrial secondment to Zenzic, as part of CAM Testbed UK, as their Head of Strategy, delivering a policy he designed. Prior to CCAV, Michael was Head of Horizon Scanning in the UK Government's Horizon Scanning Programme, leading on the Eight Great Technologies, setting up a cross-government emerging technologies community of interest (including CAVs). |
| Lily.WongLe  @CCAV.gov.uk | **Lily Wong Le leads on International Engagement at CCAV.** She drives collaboration with international governments, organisations, and businesses to ensure that the UK is one of the best places to develop, deploy and export connected and automated vehicles. Prior to CCAV she led on DfT’s financial incentives for UK customers to make the switch to electric vehicles. She also led on HMG’s innovation and business policies to support economic growth across local places in England. Prior to working at HMG, Lily was a molecular neuroscientist at Imperial College London. She is passionate about leveraging innovation for societal good from the local, to the national, and the global level. |

### Monday Speaker Bios

|  |  |
| --- | --- |
| Speakers | **Data and Connectivity** |
| Gary.Crockford  @dft.gov.uk | **Gary Crockford MIET is Head of Connectivity in the Traffic and Technology Division of DfT.** Gary is an Engineer and Civil Servant who has worked in electronics, electrical, telecommunications, information technology, research and policy. He has over 30 years’ experience of planning, installing, maintaining and managing Intelligent Transport Solutions (ITS) such as Motorway Communication Systems, Enforcement Systems, CCTV and Traffic Signals. Gary has spent the last 4 years working on Cooperative ITS systems, managing the UK A2M2 connected corridor, leading the UK partnership in the ‘InterCor’ project and representing the UK on the C-Roads Platform. |
| Darren.Capes  @dft.gov.uk | **Darren Capes FIHE FIET is Head of ITS Policy in the Traffic and Technology Division of DfT.** Darren is a qualified civil engineer and has over 30 years’ experience as a Civil Servant. He has an interest in emerging transport tech and the readiness of local highway authorities for vehicle and data tech. He previously also worked on this as Transport Systems Manager for City of York Council. Darren is Vice President of the Institute of Highway Engineers (IHE), and Chair of the Transport Policy Panel of the Institution of Engineering and technology (IET). He manages the Transport Technology Forum for the DfT and speaks regularly on the challenges of emerging transport technology, including to House of Commons and House of Lords Select Committees. |
| Matt.Coleman  @dft.gov.uk | **Matt Coleman is the UK Department for Transport’s Data Lead.** |
| Andrew.Fisher2  @  Nationalhighways  .co.uk | **Andy Fisher is the Connected and Autonomous Vehicles Team Leader at National Highways.** He became team leader in February 2020. Andy previously worked for Cambridgeshire County Council, where he began as a Traffic Signal technician in 2004 before progressing through the organisation to lead the development, deployment and operations of their traffic control and information centre. He joined National Highways in January 2016 to lead on researching and improving the traffic management algorithms for our Smart Motorways. |
| Adam.Duff  @tfl.gov.uk | **Adam Duff is the Performance & Planning Manager for Central London at Transport for London.** Adam has over 18 years’ experience as a practitioner in the management and optimisation of London’s road traffic and signalling systems (UTC/SCOOT). He currently leads network management officers to deliver the Mayor’s Transport Strategy (MTS) and provide customers with the best journey experience possible using UTC SCOOT or designing and implementing changes to highways and junctions to be fit for the future. He also one of eight ‘Silver Commanders’ providing TfL’s incident response team, leading a pan organisational response to any Major Incidents. |
| Oliver.Downey  @CCAV.gov.uk | **Oli Downey is a Senior Policy Adviser on Domestic & International Automated Vehicle Regulations at CCAV.** Domestically, his work focusses on facilitating a data solution for the insurance of vehicles with Automated Lane Keeping Systems (ALKS). Internationally, Oliver attends the United Nations Economic Commission for Europe (UNECE) Global Forum for Road Safety (WP.1) and the Group of Experts for drafting a new legal instrument on the use of automated vehicles in traffic (GE.3). |

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| Speakers | **CAM legislation and regulations** |
| Isobel.Pastor  @CCAV.gov.uk | **Isobel Pastor is Head of the Centre for Connected and Autonomous Vehicles (CCAV).** Previously, she has held several roles in the UK’s Department for Transport and the Department for Business, Energy and Industrial Strategy, including leading on delivery of air quality improvements, a programme to join up the delivery of housing and transport, airspace policy and regulatory delivery policy. |
| A picture containing person, person, wall, indoor  Description automatically generatedLawrence.Thurbin  @CCAV.gov.uk | **Lawrence Thurbin is Head of Safety Policy at CCAV.** Lawrence Thurbinhas worked in transport policy since 2007, recently joining the Department for Transport from Transport for London. He has previously worked for local authorities, leading on policy development and project delivery. He is currently overseeing delivery of the CAVPASS programme, which is working to ensure that CAVs are safe and cyber-secure on the UK’s roads at their deployment and throughout their lifetime. |
| Michael.Braisher  @dft.gov.uk | **Michael Braisher is Head of Innovative Mobility at the International Vehicle Standards Division in DfT.** Michael joined the Department in September 2019, having spent 9 years with Jaguar Land Rover working in the field of vehicle emissions standards and testing. Michael now works on developing safety standards and assessment methods for automated vehicles. |
| Jamie.McFadden  @vca.gov.uk | **Jamie McFadden is Head of Automated Vehicle Technologies Group at the Vehicle Certification Agency.** Jamie McFadden has worked in the field of automotive type approval since graduating with a degree in Mechanical Engineering in 2008. He originally started in the field of vehicle emissions at the VCA, the UK Type Approval Authority, and then progressed to three year spell at Dyson working on their electric car project. He has since returned to the VCA and is now focused on delivery of the certification of connected and automated vehicles**.** |

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| Speakers | **ACE in the context of innovation and industrialisation** |
| Paolo.Favino  @beis.gov.uk | **Paolo Favino is Head of Automotive Technology and Innovation at the Automotive Unit in the Department for Business, Energy, and Industrial Strategy.** As part of this he leads the team working with the Advanced Propulsion Centre to deliver the Automotive Transformation Fund and a series of R&D competitions to accelerate the UK development of zero emission technologies. Before this he led maritime decarbonisation and shipbuilding innovation at the Department for Transport, including establishing the new UK Shipping Office for Reducing Emissions, landing the biggest Government investment in UK maritime. As part of this, he negotiated the funding for this programme during the 2021 Spending Review, landing the biggest Government investment in UK maritime in Britain’s modern history.He also developed decarbonisation measures in road transport policy, promoting the adoption of renewable fuels and developing cross-modal policies on hydrogen. |
| A person wearing glasses  Description automatically generated with medium confidence  David.Webb  @CCAV.gov.uk | **David Webb is Head of Innovation at the Centre for Connected and Autonomous Vehicles.** David is the Head of Innovation at the Centre for Connected and Autonomous Vehicles, where they are responsible for delivering the UK Government’s investment towards supporting the development, deployment and commercialisation of safe and secure CAM technologies, systems and services. |
| S.Toliyat@  soton.ac.uk | **Seyed Toliyat is a postgraduate research student based in Southampton Business School at the University of Southampton.** Seyed’s research centres on safety assessment and risk analysis of AI-based autonomous systems and their applications in urban environments... He also has been carrying out research in collaboration with Department for Transport to constrain the uncertainties surrounding the potential impacts of Connected and Automated Mobility (CAM) on transport carbon emissions. |
| Mark.Cracknell  @zenzic.io | **Mark Cracknell is Director of CAM at Zenzic.**  Mark is a Chartered Engineer and began his career at Transport for London before joining Zenzic and heading up the organisation. Mark works closely with key stakeholders across the CAM ecosystem to accelerate the safe and efficient deployment of CAM in the UK. As Programme Director for CAM, Mark has provided support to CAM Testbed UK, led the creation of the UK CAM roadmap to 2030, which established a UK wide view of the future for CAM, and supports CCAV in defining its future programmes and strategy. |
| Mike Hawes | **Mike Hawes has been SMMT Chief Executive since 2013,** helping promote the industry at home and abroad and representing the trade association’s diverse membership in discussions between the industry, government, stakeholders and media. Since starting his career in the road transport research sector in 1990, Mike has amassed more than three decades of experience in communications and public affairs, the majority of which been in the motor industry. Mike joined SMMT from Bentley Motors, where he held Director positions with responsibility for Global Communications, Government Affairs and CSR. Prior to that, he held senior government and corporate affairs positions at Toyota both in the UK and Europe, where he developed the experience and knowledge needed to promote the interests of the UK’s world renowned automotive industry. |

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| Speakers | **CAM standards** |
| Nick.Fleming  @bsigroup.com | **Nick Fleming is Associate Director, Transport Mobility, BSI (British Standards).** Nick is responsible for BSI’s standards development across transport including standardisation in the field of connected and automated vehicles, leading BSI’s CAV standards programme – sponsored by CCAV – since 2019. Nick has almost a decade of experience in developing standards in support of emerging technologies. |
| David Wong | **David Wong is Senior Technology and Innovation Manager at SMMT**, the UK’s automotive industry body with more than 800 members including all major vehicle manufacturers, component suppliers, aftermarket businesses, technology and engineering firms, and mobility start-ups. David is SMMT’s lead on electric and fuel cell vehicles, connected and automated vehicles, autotech and future mobility innovation. In addition to automotive companies, David often works with stakeholders from technology, transport, telecoms, energy, legal, insurance, infrastructure and government on policy, strategy and market development issues. He also sits on the UK Automotive Council Technology Group and is a Non-Executive Director of Cenex. He was a member of the UK Department for Digital, Culture, Media and Sport’s Future Communications Challenge Group, which advised the UK Government on 5G strategy**.** |
| Ishan.Alam  @CCAV.gov.uk | **Ishan Alam is a Senior Policy Adviser on Safety Policy at CCAV.** Ishan joined CCAV in March 2022, taking responsibility as the central Government liaison for the BSI CAV standards programme and supporting the work through contributing to future standard scoping and ensuring alignment with DfT’s CAVPASS priorities. |

## Tuesday - 19 July 2022

### Summary

Day 2 will begin with one more session that couldn’t be squeezed into the first day (due to availability of speakers), and then will be heavily focused on testing and innovation. We will also have an opportunity to experience two unique commuter options.

### General Schedule

* 9:00
  + Head to meetings - we’ll get to take the new Elizabeth Line (Crossrail)
* 10:00
  + One more policy session on public engagement and equity (the leftover session from day 1)
* 11:45 – 3:00
  + SMLL – tour of the Smart Mobility Living Lab in London, and meetings with several of the companies and organizations involved in this CAM testbed and technology incubator. Includes lunch in the middle.
* 4:00
  + Return to Central London by way of the Thames Clipper

### Additional Detail

To a large degree, [SMLL](https://smartmobility.london/) is a testbed but based on live public roads – many of their demos are fairly limited by that and we won’t be able to do any ride-and-drives unfortunately.

We’ll try and make it interesting and not just sit in a conference room all afternoon, and in fact have arranged a “speed-dating” system to break into small groups and meet with several different organizations and companies in the afternoon. Lunch will also afford additional networking time.

[Crossrail](https://www.crossrail.co.uk/) is London's newest railway, the Elizabeth Line - a transformational new line in London that provides much needed east-west service and is operated by concession.

### Tuesday Agenda

| **Time** | **Activity** | **Location** | **Notes** |
| --- | --- | --- | --- |
| 7:30-8:30 | Panel breakfast together | DoubleTree by Hilton London - West End  92 Southampton Row | Breakfast is included in our room rate. We will sit together and review the itinerary for the day, discuss observations from night before, answer any questions about Day 2 |
| 9:00-10:00 | Crossrail to Woolwich |  | Walk from hotel to Tottenham Court Road State (0.7 mile, 15 min)  Take Elizabeth Line to Woolwich (20 min, 6 stops)  Walk to SMLL office (0.1 mile, 5 min) |
| 10:00-10:30 | Networking Coffee/Tea | Smart Mobility Living Lab (SMLL) 14 Victory Parade Plumstead Road Woolwich | SMLL will organize, but NCHRP project will pay for beverages |
| 10:30-11:30 | Public Engagement and Inclusion/Equity for CAM | SMLL 14 Victory Parade, Plumstead Rd | 1. Overview of UK Equality Act – 10 mins - Sultan Mahmood 2. Public engagement - 15 mins, presented by Rebecca Posner, Head of Social Behavioural Research at CCAV  * Why we engage the public – importance of diversity * How we engage the public –   + education (ALKS toolkit and safe use)   + research (deliberation, observational research)   + behavioural change (changing attitudes, perceptions, increasing willingness)   + Broader impacts of COVID and shared mobility but not directly linked to CAM * What the findings mean and how we’ve used them  1. Open discussion – 35 mins   US Panel: another topic of great interest to our panel, and still relatively new in our conversation history. After talking with our hosts, here are some questions they might want us to consider:   * How do we ensure diversity is represented/embedded in our work? * Do we have any interesting research/findings about different travel demands from protected characteristics groups? * Are we doing anything on education? * Do we have any best practice examples on how we make sure the tech meets the needs of end users / services meet the demands of end users? |
| TUESDAY  11:30-12:30 | Tour of SMLL | SMLL 14 Victory Parade, Plumstead Rd | Will view their control room, vehicles, workshop space, and infrastructure. Will also incorporate some networking time into the tour. SMLL has been operational for almost 2 years, can talk about a lot of different studies and testing in the real world. Can also see digital twin of the roads, have developed various safety scenarios. |
| 12:30-1:00 | Lunch | SMLL 14 Victory Parade, Plumstead Rd | SMLL will organize, but NCHRP project will pay for lunch |
| 1:00-3:00 | SMLL Innovation Community | SMLL 14 Victory Parade, Plumstead Rd | Meet with different stakeholders of SMLL. We will set up several small stations and allow our panel participants to roam around to different stations and learn about different projects in small settings, allowing for more conversation and differing levels of knowledge sharing. Innovation community – Carlota has been getting in touch with them. Stations format, multiple speed dating. Plenty of space at SMLL Woolwich.  US Panel: we are still finalizing which SMLL partners to meet with but have confirmed two insurance companies (Admiral and Aviva). We have requested at least one OEM (they have Nissan, Ford, and Honda participating). We have also requested several technology and telecommunications partners. |
| Somewhere between 3:00-4:00 | Transport back to Central London | Thames Clipper | * Lily will assist us on this very multi-modal journey back to the hotel * Walk to Woolwick (Royal Arsenal) Pier (0.4 mile, 7 min), then take the Elizabeth Line or DLR to Emirates Royal Docks (c. every 5 mins) * From there, take the cable car to North Greenwich Pier (£5, c. every 30 seconds, pay by Oyster or contactless or book ticket ahead) OR Go directly to North Greenwich vis DLR & Jubilee * Walk 5 mins to Uber Boat by Thames Clippers - North Greenwich Pier, North Greenwich, Peninsula Square, Greenwich, London SE10 0PE * Take the Thames Clipper at 15:00, 15:20, 15:40, 16:00, 16:20, 16:45, 17:09, 17:35, 17:55. 48 minute journey to Embankment |
| Open | Dinner | Open | TBD - we can do dinner-on-our-own or do small groups – small window for some sightseeing perhaps. Those with guests in attendance might want to be with them. |

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| Speakers | **Equality and public engagement** |
| Sultan.Mahmood  @dft.gov.uk | **Sultan Mahmood joined the Department for Transport as their Head of Equality Policy** in 2018 after spending 29 years as an EDI specialist consultant and trainer.  Before setting up his own Training and Consultancy company, Sultan worked in the in the field of Community Development facilitating projects around inclusion and consultation with isolated communities. He has also worked in the Voluntary Sector and has been Head Teacher at two Independent Primary Faith Schools.  Sultan is an experienced researcher having undertaken research work for several organisations in the field of health and social care, community development and equality & diversity issues with a focus on the impact on South Asian communities. |
| A close-up of a person smiling  Description automatically generated  Rebecca.Posner  @CCAV.gov.uk | **Rebecca Posner is the Head of Social and Behavioural Research in CCAV.** She is a behavioural psychologist and a member of the British Psychological Society’s division for Academics, Researchers and Teachers in Psychology and division of Cyberpsychology.  She specialises in behaviour change and understanding human behaviour in transport focusing on promoting modal shift to more sustainable and active modes. Her research focuses on applying behavioural sciences to understanding needs and concerns of transport users and embedding principles of human centred design into the development and design of future transport systems to ensure they are more inclusive, accessible and sustainable.  Within CCAV she also advises industry to ensure the best scientific and research principles are adhered to in CCAV funded research, including acting as an advisory board member to academic consortiums. Key priority areas include: public education; safe use and safe interaction with new technologies; understanding the needs and concerns of the public; enabling long term modal shift and uptake of new transport technology. |

### Tuesday Speaker Bios

## Wednesday - 20 July 2022

### Summary

On Day 3 our theme is testing and verification. We check out of our London hotel and head to the West Midlands area of the UK. Here we’ll have several opportunities to learn more about CAM testing facilities and visit a university with an extensive industry-oriented department supporting a broad range of research, testing, and development.

As we depart London, we’ll rely on a charter bus for the next 48 hours to navigate Coventry and Oxford.

### General Schedule

* 9:30-11:00
  + Tour of Horiba Mira and discussions about various tests currently underway
* 12:00-5:00
  + Lunch and Tour of WMG, including discussions about various tests currently underway and other large projects focused on CAM development and verification.
* 5:30
  + Make our way from Coventry down to Oxford and check into next hotel

### Additional Detail

[Horiba Mira](https://www.horiba-mira.com/about-horiba-mira/) is an automotive testing and research company. While it features a three-legged stool similar to our American Center for Mobility (simulation, closed course testing, open road testing), Horiba Mira is a straightforward commercial entity not reliant upon government funding (although some contracts exist). Horiba Mira staff call it the “milking stool” approach – consulting, testing, and complementary technology part. They have over 50 customers co-located in the industrial park – almost like a technology incubator. Have been around for 75 years, but plenty of challenges remain to test systems. Their facilities cannot be viewed by those outside the site, work in a very confidential way with customers. A lot of their work is around ADAS and solving commercial problems.

We’ll hear from [Zenzic](https://zenzic.io/) during the day also. They are a public-private organization with CAM testbeds in several different parts of the UK, as well as doing some research and consulting type of work.

The [Warwick Manufacturing Group](https://warwick.ac.uk/fac/sci/wmg/about) (WMG) is a department within the University of Warwick solely focused driving innovation in partnership with the private sector. Not only is there a big research group housed within WMG, but also a heavy emphasis on skills/education (massive post-grad program). WMG is huge - close to 800 employees. Part of WMG is the [National Automotive Innovation Centre](https://www.youtube.com/watch?v=6A3bcACYvyE), focused on mobility innovation. Here is a good YouTube video demonstrating their focus.

### Wednesday Agenda

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| **Time** | **Activity** | **Location** | **Notes** |
|  | Breakfast | DoubleTree by Hilton London - West End | Breakfast on your own – is included in your room rate. Because of the early departure it’s possible (likely) that breakfast won’t be ready yet. Steve will check with the hotel upon arrival to explore other options. |
| 6:00 | Hotel Check Out | Lobby - DoubleTree by Hilton London - West End | Gather everyone together with luggage in lobby. Check out of hotel, put bags on bus |
| 6:15 | Depart for Midlands | Charter Bus | Depending on traffic, could be 2.5 or 3 hours |
| 9:15-9:30 | Arrival at Horiba Mira | Horiba Mira Watling St | Bus will drop us off |
| 9:30-9:45 | Welcome and Introductions | Horiba Mira Watling St | Horiba Mira is a privately held automotive testing and research company very involved in the CAM space across the UK. |
| 9:45-11:00 | Tour of Test Facilities | Horiba Mira Watling St | Tour various test sites at Horiba Mira. While there we’ll see several tests and have conversations around topics such as Assured CAV, City Circuit, limit handling track, parking technology, etc.  US Panel: in the US we have several proving grounds that do the 3-legged approach of simulation, closed track testing, open road testing. Some are solely owned by OEMs, others were launched with public funding and either still need some public funding or have started to transfer away from it. After talking with our hosts, they didn’t have any questions for us – but that could evolve. |
| 11:00-12:00 | Transport to WMG via bus | half hour transport | Bus will transport us to WMG/NAIC |
| WEDNESDAY  12:00-12:45 | Welcome | Radcliffe House conference room | Introduction to WMG, its business model and unique role bringing together research, industry and government - Prof Paul Jennings, Pro Dean (Research), WMG  An introduction to Transport for West Midlands, the regional transport authority - Chris Lane, Head of Innovation, TfWM |
| 12:45-1:30 | Lunch | Radcliffe House | Buffet lunch with a wide range of options, along with Paul and Chris above technical leaders from the CAV and wider research team will join us – WMG/NAIC is organizing and paying for lunch |
| 1:30–1:45 | Walk across campus to NAIC | NAIC | The National Automotive Innovation Center (NAIC) - The National Automotive Innovation Center is part of the University of Warwick’s Warwick Manufacturing Group (WMG). Jaguar Land Rover is a major investor. Should be a good networking opportunity |
| 1:45-2:15 | Partnerships –  Meeting with Zenzic | NAIC Boardroom | Evolution of Zenzic’s work in response to challenges to discuss Partnerships   * Bhavin Makwana, Zenzic * Phillip Ironside, Zenzic * US Panel: partnerships have always been one of our major topics, and I suspect that some of the conversation will incorporate our thoughts and feedback on partnerships in the US. A key element of our lessons-learned so far is that “you shouldn’t compete on safety” and “collaboration is the new competitive advantage.” Our CAT Coalition is another example of partnerships, and I would expect that to come up also. |
| 2:15-4:00 | WMG Verification and Validation research and facilities | WMG | Introduction to the CAV research, with a focus on Verification and Validation   * Prof Paul Jennings, Pro Dean (Research), WMG   Tour of facilities   * 3xD Simulator for Intelligent Vehicles * 5G lab * Energy Innovation Centre (EIC)   Safety Pool Scenario Database   * Jason Zhang, Lead Engineer   Midlands Future Mobility  Jonathan Smith, Program Manager V&V |
| WEDNESDAY  4:00-5:00 | Key topic discussion | NAIC Boardroom | Open discussion on topics of interest through the day, and potential further collaboration  US Panel: By this point in the trip we have covered a lot of our core topics and the talking points should be fresh. |
| 5:00 | Adjourn |  | Say our farewells and begin boarding the bus. It’s possible the previous session will run long, so we’ve allotted some cushion. |
| 5:30 | Bus to Oxford |  | Approx. 90-minute bus ride |
| 7:00 | Check into hotel | Premier Inn Oxford City Centre (Westgate) hotel  Greyfriars Court, Paradise Square | Individual guests must pay for hotel and get reimbursed. |
| Open | Dinner | Open | Dinner on your own – or gather in small groups – or take in some sightseeing if you choose. |

### Wednesday Speaker Bios

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| HORIBA MIRA |  |
| **A person smiling for the camera  Description automatically generated with low confidence**  **Declan Allen** Managing Director | **Declan joined MIRA in 2011 as Operations Director bringing with him more than 17 years of operational management experience in the automotive and motorsport sector.** In his role as Managing Director, Declan is responsible for developing and implementing the strategic direction of HORIBA MIRA, continuing the development of its engineering and testing services, particularly in new technology areas, ensuring further collaboration with HORIBA in developing test equipment and continuing to expand the business’ international reach through the HORIBA network, particularly in Japan, China, India, Europe and the US.  Prior to joining MIRA, he held a senior role at Mercedes Benz High Performance Engines Ltd, where he was responsible for the assembly and test of engines and kinetic energy recovery systems for a number of leading F1 teams. Previous to this he held senior operational roles with Ricardo in the UK and USA. |
| **A person smiling for the camera  Description automatically generated with low confidence**  **Roisin Hopkins**  Chief Commercial Officer | Roisin joined MIRA in 1991 as a Research Associate and has progressed her career within the business over the last 30 years, she moved into the role of Chief Commercial Officer in 2021. In her current role as Chief Commercial Officer Roisin leads the development, implementation and maintenance of HORIBA MIRA's sales strategy and plans, and runs commercial operations. Roisin has been listed as a finalist in Autocar’s Top 100 Great Women in the British Car Industry in 2016, 2018 and 2022. Prior to her role in commercial, Roisin headed up HORIBA MIRA’s test services business, leading a number of major capital investments including a comprehensive battery test capability, commercial vehicle climatic wind tunnel, heavy vehicle semi-anechoic EMC chamber, advanced emissions test centre, and a real driving emissions service. |
| **Chris Reeves** Head of CAV Tech | Chris joined HORIBA MIRA in 2010 having previously held roles with QinetiQ and BT.  As the Head of Connected Autonomous Vehicle Technologies, his focus is the field of intelligent and connected vehicles and intelligent mobility. He is a recognised international ‘thought leader’ in CAV technologies. He has extensive experience in sensors, embedded electronics, communications and the test and validation of CAV and related technologies. He is a highly experienced technical manager with a proven record of developing and delivering high technology solutions to the automotive, defence, security and telecommunications sectors. |
| **Aaron Mandalia**  CAV Solution Leader | Aaron joined HORIBA MIRA in 2021, as the Solution Leader for Connected and Autonomous Vehicles, having previously worked for JLR, SAIC and Arriva.  Within his role, Aaron supports the commercial activities for the ASSURED CAV facilities and engineering services, ensuring customers achieve their objectives of developing safe, secure, and robust automated technologies. He is an expert in the automotive, transport and mobility sector, having worked on numerous projects investigating the deployment and integration of automated technology to support public transport networks, and as an engineer developing assisted and automated driving systems for a global luxury OEM. |
| **Robert Cartwright** Global Cybersecurity & EMR Leader | Rob joined HORIBA MIRA in 2017 as the Technical Sales Manager for EMC validation facilities.  In 2021 he became the Global Cybersecurity & EMR Solution Leader where he focuses on promoting and supporting the delivery of these key attributes to the evolving automotive industry. This role builds on his solid foundation of electronics knowledge and risk management experience which was gained at Wurth Electronics and Denso. He has a passion for engineering and how advanced technology can improve our lives. Being involved in all aspects of vehicle electronics, from body systems to powertrain and beyond, he recognises the increasing dependency on technology in vehicles. Setting the scene for the evolution of development cycles while delivering agile, rigorous, and uniquely unified programs to ensure safe, secure and reliable functionality. |

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| Warwick Manufacturing Group |  |
| A person in a suit  Description automatically generated with medium confidence  Paul Jennings  Pro Dean Research | Paul is the Research Director at WMG, University of Warwick. For the past 25 years, his own focus has been on collaborative research with the automotive sector. He has built groups in Intelligent Vehicles, Energy Storage and Management, and Experiential Engineering through significant research and capital funding. He has published over 100 academic papers and has been Principal Investigator on over 30 research grants, from sources including EPSRC, Innovate UK and the EU. |
| A person in a blue shirt  Description automatically generated with low confidence  Matthew Higgins  Reader | Matthew, is a Reader at the University of Warwick, where he leads WMGs Connectivity and Communications Technology Research Group within its Intelligent Vehicles Directorate. His research interests span 5G and Beyond, Core Networking, IEEE 802.3xx, GNSS, and Timing, with applications to both the Automotive and Manufacturing domains. Coupled with an overarching motivation to ensure ongoing Resilience of the domain is considered, Matthew leads many high value collaborative projects funded through EPSRC, Innovate UK, and HVMC, as well as also leading multiple projects funded directly from industry. |
| A person smiling for the camera  Description automatically generated with low confidence  Mark Amor-Segan  Chief Engineer | Mark Amor-Segan joined WMG in 2006 after 25years in R&D in the telecommunications industry specialising in fault-tolerant embedded processing platforms, highly distributed processing environments, and diagnostics of complex electronic and software based systems  Mark is Chief Engineer for the WMG Energy Innovation Centre (EIC) at the University of Warwick and has over 15years experience in the testing and characterisation of electrochemical energy storage systems. Having helped to establish the WMG Energy Innovation Centre as one of Europe’s premier battery research centres |
| A person smiling for the camera  Description automatically generated with medium confidence  Jason Zhang  Lead Engineer | Dr. Xizhe Zhang, also known as Jason, is the Simulation Lead in the validation and verification team at WMG, University of Warwick. His expertise covers scenario-based and simulation-based safety assurance workflow for automated systems, ontology design and implementation, language development and toolchain development. He has also been leading the development of several international standardisation projects with the goal of unifying and accelerating activities within the autonomous driving domain. |
| A person smiling for the camera  Description automatically generated with medium confidence  Jonathan Smith  Program Manager | Jonathan has worked at the intersection of industry, research, and policy for over 15 years. With a background in supply chains, start-ups, and economic development, he has built partnerships, projects, and delivery teams that together accelerate innovation. With a particular focus on organising teams and projects to solve complex innovation problems. Jonathan has more recently led on the successful proposal for, and launch of, the Midlands Future Mobility Test Bed. A unique and enabling environment for the scaled testing and deployment of CAV technologies in the real-world. The project brought together a consortium of public and private partners from automotive, infrastructure, local authority, and data services industries to build over 200 miles of development environments and aligned eco-system. |

## Thursday - 21 July 2022

### Summary

Our final day of the trip will be centered in Oxford. We’ll continue our CAM Testing theme for part of the morning, where we get to see the full chain on getting from the laboratory into open-road operations in a Zenzic sponsored test site. Then we’ll transition into more of a research focus for the afternoon at the University of Oxford – and conclude with an opportunity to tour some Oxford University history to end the day.

### General Schedule

* 9:00-1:00
  + UTAC Millbrook-Culham Testing and Transition to Public Roads
* 2:00-5:00
  + University of Oxford Research and Exploration
* 5:00-8:30
  + Dinner & Tour at University of Oxford

### Additional Detail

The [UTAC Millbrook-Culham](https://zenzic.io/testbed-uk/utac-culham-urban-testbed/) testing site is part of the Zenzic consortium of test facilities – mix of public and private funds. Lots of experiencing going from closed test course to open roads – and in doing so have worked a lot with oxford county council to use public roads (we’ll get to meet some of them also).

Zenzic folks are coming to the World Congress this fall, so opportunity for follow-up exists.

Our Oxford visit will feature a variety of topics – starting with brief presentations, then transitioning into a speed-dating environment where panel members can choose which tables to visit and have conversations about specific projects and activities. We have some distinguished Oxford professors lined up, many of whom have also spun-off enterprises from their work and transcend both the academic and business side of operations.

### Thursday Agenda

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| **Time** | **Activity** | **Location** | **Notes** | |
| 6:30 | Panel breakfast | Hotel  Premier Inn Oxford City Centre (Westgate) hotel  Greyfriars Court, Paradise Square | Breakfast included in room rate.  Final day prep, review of previous day - time depends on next steps |
| 7:30-8:30 | Check out of Hotel |  | Gather everyone together with luggage in lobby. Check out of hotel, put bags on bus |
| 8:30-9:00 | Transport to UTAC Oxfordshire | Bus to Culham | Charter bus ride from hotel to Culham, will take approx. 30 minutes |
| 9:00-9:30 | Welcome to UTAC Millbrook-Culham | Culham Science Centre, Abingdon Oxfordshire | Welcome, coffee, tea - Culham to provide  Networking |
| 9:30-10:30 | Working with Local Governments | Culham Science Centre, Abingdon Oxfordshire | Overview of Testbed: UTAC Millbrook-Culham. Focus is progression from closed to open testing   * Includes meeting with Oxford County Council * Meeting with OxLEP, the business development art for Oxfordshire with focus on investment in testing & how companies are using it to get vehicles out * Possibly also hear from the Darwin Innovation Group view   US Panel: after meeting with our hosts they didn’t have any immediate questions for us, but I suspect we’ll have plenty for them. To some degree this could mirror the local government and innovation conversations we had in Phoenix early in the project. |
| THURSDAY  10:30-12:30 | Tabletop Displays and Conversation | Culham Science Centre, Abingdon Oxfordshire | Another opportunity to learn about several prominent UK projects largely led by the Zenzic team.   * Interoperable Simulation * safety case framework * V2X * consumer safety rating   We’ll also learn more about the Oxbotica demos – and their use of facilities for development.  Will likely set up 4 stations, break into small groups, and rotate every 20 minutes like we're doing at SMLL earlier in the week. |
| 12:30-1:15 | Lunch/Networking | Culham Science Centre, Abingdon Oxfordshire | Culham to provide sandwiches |
| 1:15-1:45 | Transport back to Oxford | Bus back to Oxford | Charter bus. Will take approx 30 minutes |
| 2:00-3:30 | Introductions to Staff and Key Topic Overviews | Robert Hooke Building,  Tony Hoare Seminar Room | Welcome to Oxford messages/introductions, followed by presentations on key topics – brief overviews of 5 to 6 different topics setting the stage for later conversations. Will be in a conference setting or lecture hall.  US Panel: they are interested in our input regarding which universities might be doing similar studies, human-machine innovation. There is a strong desire to collaborate and join forces with academia from around the world on some of these issues, and Oxford has a group of investors willing to help make that happen. Some of the investors are from the US also (Perot family of TX, and George Soros in NYC). A representative from their investment arm might be at the meetings also, although not presenting/pitching. |
| 3:30-4:00 | Round-Robin Conversations | Robert Hooke Building,  Tony Hoare Seminar Room | Conversations with various experts   * Speakers from previous session will be seated at high tables and our panel participants can rotate around to different tables depending on the topic. * Speed-networking won’t be on a specific schedule, you can stay at one table the whole time or visit as many as you wish. * Additional displays/posters might also be available to promote projects and testbeds. * Coffee/tea/fruits will be available while you mingle |
| Anticipated Lecturers:   * [Dr Ivan Martinovic](https://www.cs.ox.ac.uk/people/ivan.martinovic/) – secure transport and aerospace control systems, **EV charging system vulnerabilities**. Oxford spinout: PhishAR. A participatory sensor network, OpenSky, which aims at collecting real-world air transportation communication data. * [Dr Lars Kunze](https://eng.ox.ac.uk/people/lars-kunze/): Oxford robotics institute, ethical black box for social robots, autonomous vehicle testbeds and companion robots. **Understanding, especially in the event of an accident or incident, why and how the robot may have been involved and to establish accountability and responsibility**. Through the ethical black box, we will be able to explain the behaviour of a social robot or autonomous vehicle. Conversation analysis between human and robot, as well as social factors affecting the human participant with AI/Natural Language Processing (NLP) pipeline. * [Dr Nik Petrinic](https://eng.ox.ac.uk/people/nik-petrinic/) – materials engineering for extreme environment and resilient systems. Oxford HMC spinout plan: **materials for the future in all industries**. Impact and Shock Mechanics Research for High-Performance Engineering Products. Take all the materials that humans know and put it in a big AI platform instead of very expensive research and blowing stuff up. Includes vehicles when they crash, lightweight materials for the future. He can provide transformational materials for vehicles. * [Dr. Daniel Armanios](https://www.sbs.ox.ac.uk/news/introducing-new-bt-professor-management) – equity, **using big data to explore how infrastructure development determines what the social impact will be**. Part of the human-machine portfolio. Demonstrating this big data-link program. Make people start to see behind the data and how this supports planning. * [Dr. Paul Newman](https://www.ox.ac.uk/news-and-events/find-an-expert/professor-paul-newman) – leads the Oxford Robotics Institute and is **co-founder of Oxbotica** which develops autonomy software systems for vehicles in a wide variety of pilots and deployments. | | | |
| 4:00 | Exclusive 2-hour walking tour with a specialist guide, and Magdalen College visit | Univ of Oxford | Walking tour to see the oldest colleges and most famous University buildings from the outside – including the Radcliffe Camera, Bodleian Library and Old Schools Quadrangle, The Sheldonian, Divinity School, St Mary’s Church and Examination School – 90 minutes. While the Guide will be showing you around the ancient colleges and cobbled streets, you will be entertained on the way with anecdotes about the many famous characters and academics.  Extensive visit of Magdalen College – 30 minutes - one of Oxford’s world-famous colleges, to see its quadrangles, chapel and beautiful gardens. Magdalen (pronounced ‘Maudlen’) has some of the most beautiful buildings in Oxford and it is set in 100 acres of grounds which include the deer park and Addison’s riverside walk. |
| 6:00 | Reception | Gees Gallery | Grade ll listed, Victorian Glasshouse known ‘Gees Restaurant & Bar’ was built in 1897 ([history](https://www.geesrestaurant.co.uk/gees-restaurant-bar-history/)). |
| 6:30 | Dinner | Gees Gallery | Three-course sit-down dinner with wine and conversing with some of the faculty and staff at Oxford. |
| 8:30 | Gather for Return | Bus | Begin to say farewells and board the bus |
| THURSDAY  8:45 | Return to London | Bus to London | Charter bus. Will take approx. 90 minutes. |
| 10:30 | Check into Hotel | Hilton London Heathrow Airport  Terminal 4 Hounslow TW6 3AF | Individual guests must pay for hotel and get reimbursed |

# Materials Provided to UK Hosts

We provided two key handouts in advance to all our meeting locations:

1. Bios for each US delegation member including your email address
2. Summary of key issues that our panel has focused on during the 3-year duration of this project

Both are included in this briefing packet (on the following pages)

NCHRP 20-24(128) State of the Art Review of Cooperative Automated Transportation Systems

2022 UK Trip – US Delegates \*

**Scott Marler** - Director, Iowa DOT - became the Iowa DOT Director in February of 2020. He has worked for the Iowa DOT for over 20 years, with experience in traffic operations, highway project development, regulatory compliance, and the natural environment. Marler has been active in leadership development and workforce planning and has also been instrumental in advancing geospatial technologies and systems throughout the agency. Actively engaged in TSMO (Transportation Systems Management and Operations) and advancing CAV technology. [Scott.Marler@iowadot.us](mailto:Scott.Marler@iowadot.us)

**Julie Lorenz** - Secretary, Kansas DOT - was appointed in January 2019 to lead the Kansas Department of Transportation. With more than 25 years of experience, she is recognized as a national leader in the areas of policy development, collaboration and scenario planning. Previously, she directed national engineering firms’ strategic consulting and public engagement services for transportation projects at the local, regional and national levels. [Julie.Lorenz@ks.gov](mailto:Julie.Lorenz@ks.gov)

**Carlos Braceras** – Executive Director, Utah DOT - was appointed executive director of the Utah Department of Transportation (UDOT) in May 2013. He first joined UDOT in 1986. Prior to being appointed as executive director, he served as deputy director for 12 years. Braceras has also served as the director of UDOT’s Region Three Office, chief geotechnical engineer, chief value engineer, a member of the Legacy Parkway/I-15 North Project team and as a roadway design engineer. [cbraceras@utah.gov](mailto:cbraceras@utah.gov)

**Roger Millar** - Secretary, Washington State DOT - joined the Washington State Department of Transportation as Deputy Secretary in October 2015 and was appointed Secretary in August 2016. He is an experienced land use and transportation engineer, planner and program manager with a focus on planning and implementing transportation systems that are not ends unto themselves; but rather the means toward economic vitality, environmental stewardship, social equity, public health, and aesthetic quality. Roger is also the current Chair of the ITS America Board of Directors. [millarr@wsdot.wa.gov](mailto:millarr@wsdot.wa.gov)

**Victoria Sheehan** - Commissioner, New Hampshire DOT - Sworn in as the Commissioner of the New Hampshire Department of Transportation in October 2015. She brings both transportation engineering and management experience to her role as Commissioner, and in previous posts has worked as a resident engineer and as a project manager, with a record of delivering contracts on-time and on-budget. She also has extensive experience in asset and performance management. [victoria.f.sheehan@dot.nh.gov](mailto:victoria.f.sheehan@dot.nh.gov)

**Shante Hastings** - Deputy Secretary/Chief Engineer, Delaware DOT – joined DelDOT in 2000, and is responsible for the implementation of their annual capital transportation program. She also serves as the Secretary’s designee on national policy issues and is the Department’s liaison with the USDOT Federal Highway Administration. [Shante.Hastings@state.de.us](mailto:Shante.Hastings@state.de.us)

**Patrick McKenna** – Director, Missouri DOT - became Director of the Missouri Department of Transportation in December of 2015. Prior to coming to Missouri, he served as the deputy commissioner of the New Hampshire Department of Transportation. Mr. McKenna also spent 13 years in Washington, D.C. working in the United States Senate, serving as chief financial officer among other positions. [Patrick.mckenna@modot.mo.gov](mailto:Patrick.mckenna@modot.mo.gov)

**Randy Iwasaki** - Amazon Web Services – currently leads the transportation division at Amazon Web Services. Prior to that he served 10 years as executive director of the Contra Costa Transportation Authority (CCTA), and before that in various positions at the California Dept. of Transportation (Caltrans). Iwasaki spent 27 years at Caltrans, a career that took him from civil engineer to chief deputy director and eventually the director of transportation. [randeli@amazon.com](mailto:randeli@amazon.com)

**Tracy Larkin Thomason** – Senior Vice President, ITS America – for the past year at ITS America she has held several positions, including her current post as head of program development. Prior to joining ITS America, she spent more than 30 years at the Nevada DOT holding a variety of positions in highway design, structural design, traffic engineering, maintenance engineering, planning, and right-of-way. She rose to Deputy Director for Southern Nevada. [tlarkin@itsa.org](mailto:tlarkin@itsa.org)

**John Corbin** - US DOT, Federal Highway Administration – serves as the Connected Automated Vehicle Program Manager for the Federal Highway Administration Office of Operations. He is also adjunct faculty at the University of Wisconsin – Milwaukee College of Engineering & Applied Science and the UW Madison College of Engineering. John previously served as the Director of Traffic Operations in Wisconsin and Iowa Departments of Transportation. [john.corbin@dot.gov](mailto:john.corbin@dot.gov)

**King Gee** – AASHTO - is the Director of Safety and Mobility for the American Association of State Highway and Transportation Officials (AASHTO). Over the past 8 years he has provided executive leadership across a broad array of issues. Previously, he had a 35-year career with the Federal Highway Administration where he served in progressively responsible positions related to engineering and program management issues. [kgee@aashto.org](mailto:kgee@aashto.org)

**Waseem Dekelbab** – TRB - an associate program manager for the National Cooperative Highway Research Program (NCHRP), he has worked for the national academies of science, engineering, and medicine since 2016. He has worked previously as a consultant and senior project engineer supporting long term bridge performance program, and as a part-time adjunct professor at the University of Maryland Eastern Shore. [wdekelbab@nas.edu](mailto:wdekelbab@nas.edu)

**A person wearing a purple shirt and tie

Description automatically generated with low confidenceSteve Kuciemba** - WSP USA – senior vice president at WSP USA and serves as the consultant program manager for this NCHRP project and scan tour. Steve has more than 30 years of experience in the ITS field and has worked at a State Department of Transportation (Maryland), for an Automaker (GM), and at ITS America prior to joining WSP 15 years ago. He is a frequent project contributor and public speaker on CAV policy, planning, and technology issues. [steve.kuciemba@wsp.com](mailto:steve.kuciemba@wsp.com)

\* Final list of delegates may change as we approach and execute the trip

NCHRP 20-24(128) State of the Art Review of Cooperative Automated Transportation Systems

2022 UK Trip – Key Issues and Interests

**Vision** - In the US, we often are concerned that AV lacks a singular goal-oriented focus or national vision. As this begins to change, we are keen to learn from other regions and countries how they may have approached this issue, and what lessons learned might be relevant.

**Organizational Readiness** - Many of the US States have talked with auto manufacturers and have been told “just keep the roads in a state of good repair.” But beyond that there remains a diverse set of “asks” from the private sector – some want greater access to right-of-way, some want connected vehicle data exchange, some want the government to just get out of the way; what is it that infrastructure owners/operators can do to help enable better deployment of CAM, and might be doing in the UK?

**Partnerships** - We’ve heard a very strong message over the past few years that partnerships are a foundational need for future mobility. But different organizations, companies, and sectors seem to define partnerships differently. Varying levels of shared risk, investment, and rewards can complicate those partnerships – as can public agency procurement regulations. We always like to learn about experiences from others as to how they have approached this topic area.

**Technology** - Connected Vehicle use cases are of great interest to the public agencies because CV is often an enabler for safety-focused applications. Automated Vehicle use cases are of great interest to private companies, who in many instances are not counting on the availability of ubiquitous connected vehicle data for their deployment. This d sometimes separate development curve is of concern to many in the industry, and in the US is definitely further complicated by some of the regulatory hurdles that have slowed down connected vehicle implementation. Our observations of the UK and EU are that CV and AV are more closely aligned in their development paths – is that accurate? And if so, to what do you attribute that synergy?

**Institutional Issues** - we have seen many examples where multi-disciplinary work groups have been valuable in exploring different institutional concerns and regulatory issues. In the US, however, there is no national regulations for the testing and deployment of AVs, leaving individual states to arrive at their own approaches. We understand that in the UK you focused on passing legislation first, then started large-scale testing; in the US, we are testing first, and talking about legislation second. What lessons learned can you share from your experiences?

**Data** - we have heard from many private companies that government agencies need to be more specific when approaching data sharing arrangements – don’t simply ask for “anything” but instead focus on targeted outcomes or needs. There are no national data sharing regulations, there is a recognition that cybersecurity is a concern, and there is recognition that privacy and anonymization of data remains an important element in this task. We are keen to learn more about the UK’s national data policies, and what individual companies/organizations feel are challenges/benefits to implementing those policies.

**Other Issues** - we have covered a number of important issues in our three years together as a panel, including: (a) people, which could include workforce training or general public outreach or even the impacts that COVID has had on shared mobility; (b) sustainability, which has included everything from decarbonization impacts of CAV to how this technology can have multiple uses; (c) equity, recognizing that CAV can’t only be for wealthy car owners but instead can be an important enable of expanded mobility and increased safety across a wide range of geo-political areas and regions. There is no limit to the topics or issues we are willing to learn about on this trip to the UK.