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The Future of Transportation World Conference will bring together world transportation leaders – from automotive manufacturers and their suppliers, transportation authorities and city planners, to business consultants and inventors of new and disruptive global mobility solutions – all with the common goal of devising better solutions for the increasingly demanding challenge of providing safe, efficient, sustainable transportation for the world in 2030 and beyond.

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STREAMS

Getting Transport Off the Ground: Why PATS May Even Beat Fully Autonomous Vehicles – The Skies Are Set To Change

How PATS (personal airborne transportation systems) will shake up personal transportation before 2030. Many companies are significantly advanced in the development of personal airborne transportation systems. In this stream, which will run over two days, we will review where those companies are in their development cycles, taking their overall visions and technologies into account. We will also look at the enabling technologies, the development of high-fidelity urban airspace mapping and how air traffic control will interface with low-level urban and inter-city 'flyers'.

Legal and Technical Issues To Enable Safe and Successful Integration of Autonomous Vehicles

Successful implementation of autonomous vehicles has many hazards and hurdles to overcome. If implementation is managed carefully by car and systems manufacturers, and a legal framework for progressive utilisation and full uptake is realistically guided, autonomous vehicles have the potential to revolutionise personal surface transportation. This two-day session will look at the development of realistic and viable legal frameworks and the issues of over-rapid implementation.

The Challenge For Rail – Is There a Future For Our Longest-Standing Mobility Format?

Is there a role for this form of transport? Rail interfaces very badly with roads, and there would be major advantages in stripping out the rail and underground networks and replacing them with high-speed, high-density autonomous vehicle networks that would transition seamlessly into the existing road infrastructure. So the question here is whether there is a future for rail in a modern transportation environment. Rail and mass-transit operators will present their visions of the future.

Vision Zero – Is There Really the Potential to Achieve the Goal? Tools For Success Examined

Can there really be scope to create a zero-fatality transport environment? The building blocks are apparent already, but is the zero vision a reality on the surface and in the air? And if not, what can

we expect to see in terms of better life-saving systems and methods? Drones are already being developed to deliver essential equipment to paramedics, so it may be that Vision Zero is achieved through a combination of inputs and developments.

Quantum Shifts – Micro and Macro Opportunities For Radically Reducing Surface Congestion

We will examine some remarkably simple changes that would radically transform surface congestion. We will also examine and illustrate macro shifts that would make further significant changes to the overall sustainability and manageability of surface transport.

Environmental Sustainability – The Transition of What Powers Transportation

Major changes are being created by the growing popularity and viability of electric vehicles. We will review the 2030 vision of next-generation vehicles for passengers and freight, and examine the effect of the demise of the internal combustion engine on vehicle manufacturers and the highway infrastructure, including 'filling stations' of the future.

Changing Landscape For Car Manufacturers: Disruptive Change – Will Brands Remain King in a Changing World?

Vehicle manufacturers will see big changes including the probable effects of reductions in vehicle ownership, new ways of selling vehicles to a different ownership profile and challenges from PATS. There will be winners here, who will see their role as personal transport providers with total customer solutions and Internet of Things strategies.

Infrastructure and Project Funding – Radical Technological and Behavioural Change Will Impact Classical Models. Governments and Consortiums Beware – Mistakes Will Have Quantum Downsides

Governments constantly fail to create and provide cohesive transportation planning. Funding frequently dries up. Projects get put back. This session will review successful private funding and joint funding partnerships and how these may be able to be expanded in the future. Who will the players be?



"Autonomous PATs may be easier to implement than autonomous cars"

STREAM 1 GETTING TRANSPORT OFF THE GROUND: WHY PATS MAY CHALLENGE FULLY AUTONOMOUS VEHICLES – THE SKIES ARE SET TO CHANGE

DAY 1 / WEDNESDAY 5 JULY

09:00 - 09:40 Opening Session

Tony Robinson, CEO and founder of UKi Media & Events, plus guest speakers



10:10 - Pop.up: modular ground and air passenger concept vehicle system

Jörg Astalosch, CEO, Italdesign, Italy

Mathias Thomsen, general manager, urban air mobility, Airbus, France

Several studies show that in the next few years the existing traffic situation in megacities will become even more demanding and the number of megacities will increase. Quality of life in those areas is expected to strongly diminish, and consequently all stakeholders are looking for scalable solutions to contribute to relieving congested roads and reducing emissions. The Pop.up project is more than a single vehicle. It is a whole new concept of mobility: modular, multi-modal, sharable, sustainable and high-tech, involving a whole new landscape, a new idea of transportation implying new infrastructures, new regulations and a new approach to mobility.

10:40 - From flying toys to flying taxis

Dr Stephen Wright, senior lecturer in Avionics and Aircraft Systems, University of the West of England, UK

Quads, UAVs, drones: call them what you will. One thing is clear: power, communications and control technologies have converged to cause a breakthrough in capability and cost, and create a new industry. The usage envelope is now expanding into safety-critical applications, to the extent that automatically piloted personal transport systems are being proposed. This talk examines the vast gulf that must be bridged between systems in the consumer drones that we see everywhere, and those for conventional

aircraft. Why are they so cheap and easy to operate, while conventional aircraft are so expensive and demanding? How to cross that bridge?

11:10 - Unmanned aerial transportation network and urban environment

Xiangyu Li, CEO, Beijing Tanizon Tech LLC, USA

The civilian drone will become a revolutionary force to shape future transportation in the role of: carrier of high-spatial/temporal resolution data services; efficient first/last-mile logistics solution; eco-friendly medium-to-short-distance PATs. A particularly under-studied part of the technology is how it would be integrated into urban environments. The data collection, navigation and the regulation of autonomous aerial vehicles rely on secure and affordable GNSS network and ICT technologies. First/last-mile logistics and passenger transportation through drone rely on upgraded warehouses, charging stations, drone zoning and drone parking.

11:40 - PATs – beginning or end of a love affair

Klaus Tritschler, partner, Kiska GmbH, Austria

Personal (electric, autonomous and semi-autonomous) VTOL vehicles are rapidly approaching reality. This paradigm shift in mobility is driven by new technology and the scientific masterminds behind it. Once the technology is proved and available to the market, our love affair will be put to the test. Most companies will likely fail. Only the companies that deliver a consistent and positive end-to-end user experience, and build a trustworthy brand, will ultimately succeed.

12:10 - The future of vertical flight

Mike Hirschberg, executive director, AHS International - The Vertical Flight Technical Society, USA

The helicopter has been the ubiquitous vertical take-off and landing (VTOL) aircraft for 75 years. Although many types of compound helicopters and other high-speed rotorcraft aircraft have flown, only the V-22 Osprey reached operational service in the 20th Century. Today, however, numerous advanced civil and military rotorcraft are in development with impressive capabilities. Even more promising is the advances in batteries, electric motors and autonomy that suggest a whole new paradigm shift may be dawning with the advent of electric VTOL aircraft. This presentation will cover the promise and progress of next generation VTOL aircraft in the 21st Century.

12:40 - 14:00 - Lunch

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14:00 - A possible future history of the rise of electric VTOL

Darrell Swanson, principal consultant - infrastructure and board member – British Aviation Group, AviaSolutions, a GECAS company, UK

In this presentation we will review the Uber Elevate paper and propose an alternative history of the rise of sub-regional airlines and eventual fulfilment of Uber's vision. We will discuss the economics of such sub-regional airlines, outline their likely operating characteristics and identify factors that will be their enablers. Additionally, we will review how sub-regional airlines will reinvigorate beleaguered regional airports and give rise to sub-regional airports. We will also discuss the challenging economic and operating characteristics of airports looking to serve sub-regional airlines.

14:30 - Intra-City aerial mass transportation using internal rotor Fancraft

Dr Rafi Yoeli, president and CEO, Urban Aeronautics Ltd, Israel
Following two decades of development, with over 200 successful flight tests of its unmanned 'Cormorant' Fancraft, Urban Aeronautics is ready to launch its intra-city, Aerial Mass Transportation System initiative. The city of São Paulo, Brazil, where a drive into the city takes 2.5 hours, is already setting an example for intra-city air-taxi systems. Currently, 500 helicopters fly executives to helipads on downtown São Paulo office buildings every morning and ferry them back out of the city at the end of the day. Urban Aeronautics envisions a future city having a much wider-scale mass-transport, aerial system relying on VTOL aircraft with extraordinary seating capacity in relation to their radically reduced footprint. These attributes will be possible through the company's proprietary Fancraft technology. Reduced footprint will liberate future air-taxis from the requirement of immense, real-estate-hungry helipads and will bring an order of magnitude increase in passenger transfer capacity per hour compared with present day helicopters.

15:00 - 15:30 - Break

15:30 - Cognitive demands and limitations for urban air transportation

Diogo Castilho, military officer and test pilot, Massachusetts Institute of Technology (MIT), USA

We can make the use of urban airspace affordable for commuting. As new solutions in control and propulsion deal with noise and emissions limits, it is time to explore the challenges in human-machine interaction and certification. This work discusses the best level of automation for each task and the scenarios in which unsafe control actions interfere with safety. The cognitive limitations are analysed to present feasible mitigating measures for the safe use of vertical urban transportation. The testing phase of prototypes must explore those scenarios to prevent mode confusion and accidents related to the lack of situation awareness.

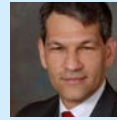
16:00 - 'Drone taxis' and liability – status and outlook

Gerhard Deiters, lawyer/partner, BHO Legal, Germany
Today, wherever and whenever new technologies appear on the horizon, the question of 'liability' (and, as a reflex, 'data protection') is raised. What happens in the case of a drone accident? What are the air passengers' rights if the drone is delayed or has to stop its flight due to the battery running low? Before transportation can get off the ground, all these (and some more) questions have to be answered. The presentation provides an overview of the current situation and an outlook on what should come next.

16:30 - PANEL DISCUSSION

Will urban VTOL/ PAT transportation be achievable and a viable mode of transport within the next 15-30 years?

Moderator: Mike Hirschberg, executive director, AHS International - The Vertical Flight Technical Society, USA



Jörg Astalosch, CEO, Italdesign, Italy



Mathias Thomsen, general manager, urban air mobility, Airbus, France



Florian Reuter, chief executive officer, e-volo GmbH, Germany



Markus Farner, manager innovation and advanced technology, Swiss Federal Office for Civil Aviation, Switzerland



STREAM 1 GETTING TRANSPORT OFF THE GROUND (CONTINUED)

DAY 2 / THURSDAY 6 JULY

09:00 - How German air traffic control plans to control and interface with low-level urban and inter-city 'flyers'

Ralf Heidger, issue management UAS, DFS Deutsche Flugsicherung GmbH, Germany

The SESAR outlook study states that the UAS-based transport market segment will start to evolve with some delay, compared with other UAS segments like inspection, surveying or agriculture. This delay is assumed due to a higher amount of regulative and conceptual preparation, because more risk is involved. There are several activities to note that are on the path to enable such operations: (1) The risk-based approach of regulation by EASA elaborates a framework, where the DFS joined the task force to elaborate more precise classifications and related requirements on product

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certification, registration, identification and qualification; (2) A European WG for 'U-Space' has been set up to create a concept of UAS traffic in VLL airspace, addressing airspace structure, operations, participants and needed systems; (3) In JARUS the risk qualification method of 'Specific operation risk assessment' (SORA) has been developed, and the DFS, together with representatives of German authorities, applies this method in a project for medical transport in an urban environment, and elaborates detailed criteria for safe operations; (4) An explorative project has been set up with DTAG, DHL and others to develop a prototypical UAS traffic management system (UTM), which studies aspects of surveillance, mission planning and validation in a number of use cases, including urban transport. Also the interface with ATM is addressed. The safe and fair integration of UAS-based transport will depend on suitable regulation as well as on the evolution of a preferably automated UTM system that provides situational awareness to all relevant participants. Insights and first results from these activities will be presented.

09:30 - What could a regulatory framework look like?

Dr Oliver Heinrich, lawyer/partner, BHO Legal, Germany
'Classic' passenger transportation via taxi, bus, train and aircraft and transportation of goods is regulated to the tiniest details. For transportation via drones to get off the ground, a new and harmonised legal framework is required, including air traffic control systems (UTM), qualification standards and technical requirements. Further topics are insurance coverage and liability regimes, supporting market development. What is the current status and what could it be like?

10:00 - SORA – risk assessment for unmanned airborne mobility

Markus Farner, manager innovation and advanced technology, Swiss Federal Office for Civil Aviation, Switzerland
Due to the ever-increasing traffic density on all means of ground transportation, logistics and mobility in general are in need of radical new ideas. Mobility is becoming 'intelligent', with people and goods being transported in the most appropriate way by a combination of ground, underground, marine and airborne systems directed towards maximum time and cost efficiency. To be efficient and cost-effective, the new forms of mobility will leverage autonomous vehicles where no driver or pilot is required. As the Swiss CAA we are confronted with concepts and trials of automated logistics by using unmanned aircraft systems (UAS, drones) and automated surveillance of transportation infrastructure by drones. In Switzerland we have been authorising these trials since 2012 using a holistic and risk-based approach – the Guidance for an Authorisation for Low Level Operation (GALLO). In addition, we have led the efforts within the Joint Authorities for Rulemaking on Unmanned Systems (JARUS) to further develop this method into an internationally recognised Specific Operational Risk Assessment (SORA). This new method is used in Switzerland to evaluate the risk of a UAS operation to third parties on the ground and in the air, and to define the required safety barriers as mitigation to ensure safe integration in the aviation system. Because the methodology of the SORA allows the risks associated with the operation as a whole to be understood, new concepts of risk mitigation are possible.

10:30 - 11:00 - Break

11:00 - Handling qualities and training requirements for personal aerial vehicles

Dr Michael Jump, senior lecturer, University of Liverpool, UK
Current regulations require that the human must not be removed from the control loop of an air vehicle. This is in direct opposition to the desire of personal aerial vehicle (PAV) developers to create fully autonomous solutions. There may be an interim solution whereby the human will need to be able to take control when required. The presentation will report on results from the myCopter project that show the handling qualities requirements for a PAV and the associated training required for flight-naïve occupants.

11:30 - Emission-free aviation with hydrogen

Prof Josef Kallo, head of energy systems integration, Deutsches Zentrum für Luft- und Raumfahrt (DLR), Germany (invited)
Electric aircraft propulsion could change the way of using air transportation. In combination with low-noise propulsors, city and regional transportation becomes realistic. From a two-seater to a 40-seater aircraft, new concepts rise on the horizon. This presentation will reveal the latest developments in powertrain technology and aircraft integration and give an overview of the most feasible studies.

12:00 - Aerocity: a new chapter in high-speed transportation

Dr Arvind Gangoli Rao, associate professor, Delft University of Technology, Netherlands

Aerocity is a new concept in high-speed transportation, which combines features from buses, trains and aircraft. Aerocity is shaped as a low-aspect-ratio wing, which provides lift for the vehicle, further amplified by the extreme wing-in-ground effect. This enables Aerocity to hover in close proximity to the ground and dramatically reduces ground friction. The vehicle does not require sophisticated infrastructure such as a high-speed rail or maglev or hyperloop. It can be powered electrically, enabling Aerocity to use renewable energy sources. Aerocity can achieve a top speed of 500km/h.

12:30 - 14:00 - Lunch

14:00 - Design and evaluation of a novel haptic trainer for PAVs

Prof Heinrich Bühlhoff, director, Max Planck Institute for Biological Cybernetics, Germany

This presentation shows that existing civil light helicopters can be augmented to achieve dynamics and handling qualities suitable for PAVs. Furthermore, a novel haptic trainer is presented, which can teach pilots how to stabilise a PAV helicopter in case of automation failure. The haptic trainer is suitable for flight simulators and is based on control algorithms that adaptively vary the intensity of the haptic force on pilot control devices, until the simulator behaves like a real (unaugmented) helicopter. Experiments show that naïve pilots can stabilise the unaugmented helicopter after two hours of training. This haptic trainer could be a time-saving tool for simulator training of PAV and helicopter pilots.

14:30 - Aviation goes electric – does this fit into current regulation?

Manfred Reichel, section manager, CS-23 Aeroplanes, European Aviation Safety Agency (EASA), Germany

Due to the nature of aviation, the high level of public attention aviation gets, and the complexity of the worldwide network in the back, aviation is internationally well regulated and defined, and organised with only limited flexibility. The future possibilities with the upcoming new technology of electric propulsion, hybrid propulsion or More Electric Aircraft go far beyond the current regulations and boundaries. This presentation will give information on how the European Aviation Safety Agency (EASA) will support the introduction of electric and hybrid propulsion in aviation, and what companies need to take into account when going for electrification.

15:00 - Using 'smart automation' and autonomy to enable on-demand mobility (ODM)

Steven Jacobson, president, Autonodyne LLC, USA

There are a number of areas that need further progress to allow ODM to be successful and see widespread adoption. Autonodyne will present the current state of the art and art of the possible for those areas we have under development. Actual results of our development efforts in multi-ship collaborative operations, 4D flight management, full envelope protection, total connectivity to vehicle (e.g. 'vehicle is always connected to the internet') and integration with the (inter)national airspace will be presented. A brief description of our efforts in redundant system monitors, sensor fusion and control station technology will also be presented.

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**“Autonomous new frameworks
and legislative shifts are required
for full implementation”**

STREAM 2 LEGAL AND TECHNICAL ISSUES TO ENABLE SAFE AND SUCCESSFUL INTEGRATION OF AUTONOMOUS VEHICLES

DAY 1 / WEDNESDAY 5 JULY

09:00 - 09:40 Opening Session

Tony Robinson, CEO and founder of UKi Media & Events plus guest speakers



10:10 - Digitisation and automation as the main components for creating the next-generation road transportation – possibilities and challenges

Hamid Zarghampour, chief strategist, Trafikverket, Swedish Transport Administration, Sweden

Highly automated and connected vehicles have the potential to profoundly change road transportation. The intense technical development and the introduction of innovative transport solutions enables creation of the next generation of passenger and freight transport. How real is this really? What are the long-term possibilities, and what are the most important challenges in the short run to create safe and clean road transportation? This speech covers the issues of concern in the near and long term, as well as the key success factors for realising highly automated road transportation systems in the decade ahead.

10:35 - The challenge of approving automated vehicles for road operation

Oliver Carsten, professor of transport safety, Institute for Transport Studies University of Leeds-Expert for European Transport Safety Council, UK

Creating a process for testing and approval of automated vehicles for safe operation on the road presents a considerable challenge. We may wish to look to aviation for precedent, but there are considerable differences between commercial flight and road operations. Automated vehicles will have to interact appropriately with human drivers, motorcycle riders and, in many environments, with pedestrians, cyclists and even horse riders. In addition, for levels of automation below full automation, the vehicle has to be able to interact with the human operator, who is supposed to be able to

resume control if needed. Thus, central to the challenge of safe operation is good and intuitive HMI design, both within the vehicle and to the outside. All of this will pose significant difficulties for the testing and approval authorities, who will need to ensure that safe operation can be verified. This cannot be done just by regulation of the vehicles' sensor capability and of the engineering design of the assistance systems. A case can be made that human-in-the-loop testing will be needed to confirm the usability of the automated modes.

11:00 - AUTOCITS project: regulation study for the adoption of autonomous driving

Dr Jose Naranjo, professor, University Institute for Automobile Research, Spain

Mauro Gil Cabeza, researcher and dissemination leader of Autocits, Indra Sistemas, Spain

This paper describes the first experiences of the AUTOCITS European Project, a regulation study of the adoption of autonomous driving in the European urban nodes. AUTOCITS is a CEF TEN-T European Project approved in Call 2015, which aims to contribute to the deployment of autonomous vehicles on European roads by analysing and improving the current regulations that affect the effective deployment of autonomous vehicles, and demonstrating and assessing the feasibility of these regulations with several pilots. The work of the project will be developed in the TEN-T Atlantic Corridor, involving partners in France, Spain and Portugal.

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11:25 - PANEL DISCUSSION

Determining liability – issues for courts, regulators and law enforcement. PLUS – What are the legal implications for OEMs, suppliers and consumers?

Alex Glassbrook, barrister and author of 'The Law of Driverless Cars: An Introduction', Temple Garden Chambers, UK



Alexander M Geisler, partner, Duane Morris, UK



Daniel Fesler, lawyer-partner, Baker & McKenzie, Belgium



Dr Christian Kessel, partner - head of the International Automotive Group, Bird & Bird LLP, Germany



Gerhard Deiters, lawyer/partner, BHO Legal, Germany



Martijn Steger, chief innovation officer + leader, global business law, Kegler Brown Hill + Ritter, USA



14:25 - Belgian procedure for testing of automated vehicles and how the code of practice contributes to safe testing

David Schoenmaekers, attache at Federal Public Service Mobility and Transport (Belgian transport authority), DG Road Transport and Road Safety Policy Unit, BELGIUM

To support the technological evolution towards automated vehicles, several countries are developing procedures to grant permission for tests. From the government's perspective, the testing of new automated vehicle technologies on public roads or in other public places should be facilitated, but care must be taken that these tests are designed and conducted to minimise potential risk. In Belgium, a code of practice was endorsed in September 2016, inspired by the UK Government's code. Approvals for testing projects have to fulfil the guidelines and recommendations for measures to maintain safety during this testing phase. At the same time, the document highlights some issues that will have to be regulated in view of the market introduction of these new technologies.

14:50 - Global management of roads with autonomous cars

Dr Peter Sapaty, chief research scientist, National Academy of Sciences, UKRAINE

The widely expected and praised use of autonomous cars can change the landscape for car manufacturers who can rethink business models. But driverless cars may remain just toys for a long time, because the main problem is automatic management of roads with numerous driverless cars. We will try to shed scientific light on the management of complex road networks with autonomous cars using high-level networking technology already tested on many applications. Along with optimisation on the infrastructure level, solutions will be shown for local problems by distributed emergency scenarios dynamically covering regions with any number of communicating vehicles.

15:15 - 15:35 - Break

15:35 - Vehicle type approval: interrelationship of national, European and international law NEW

Simone Ruth Schumacher LL.M., research assistant automated driving, Research Institute of Public and Private Security, Institute for Safety and Security Research (FÖPS Berlin), GERMANY

Constructive requirements for vehicle type approval today are dominated by European law and increasingly influenced by international law, whereas national law plays a rather inferior role. The presentation aims at carving out what this three-level regulatory framework promotes and what hinders automated and autonomous driving.

16:00 - Regulatory landscape in Europe and liability risks

Dr Benedikt Wolfers, partner, Freshfields Bruckhaus Deringer, GERMANY

Background: Which regulation is relevant for autonomous vehicles in Europe? Approval: Can autonomous vehicles be type approved in Europe? Current status: Can autonomous vehicles be run in Europe? Risks: Can regulatory compliance exclude liability risks for the manufacturer?

16:25 - Latest legal aspects of testing autonomous vehicles in France

Andrea Martinesco, attorney, Federal Prosecution Office, VEDECOM/UVSQ - member of the LMT (UFLA), FRANCE

The presentation will focus on the legal aspects of the latest testing of autonomous vehicles in France. This includes a new technology demonstration as we saw with Vedecom's demonstration at the ITS World Congress in Bordeaux in 2015, as well as on open roads in Paris and Versailles. An overview of current regulations in Europe and the United States will also be covered.

12:30 - 14:00 - Lunch

The Requirement for European Guidelines on Autonomous Driving

14:00 - Bottlenecks resulting from current regulation, and exploring a number of options to overcome these

Roeland de Bruin LL.M., lecturer, Utrecht University School of Law - Molengraff for Private Law, NETHERLANDS

The presentation will discuss: defining autonomous intelligent vehicles, product liability law, non-harmonised rules on liability for motor vehicles, tracing technology and its impact on data privacy of drivers, passengers and bystanders, GDPR compliance for developers of autonomous intelligent vehicles.

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STREAM 2 LEGAL AND TECHNICAL ISSUES (CONTINUED)

DAY 2 / THURSDAY 6 JULY

Legal Challenges and Determining Liability

Moderator: Alexander M Geisler, partner, Duane Morris, UK

09:00 - From driver assistance systems to autonomous driving: contractual risk allocation in the supply chain and the consequences for liability and recourse along the supply chain

Dr Christian Kessel, partner - head of the International Automotive Group, Bird & Bird LLP, Germany

The new disruptive technology players in the driver assistance and autonomous driving market need to be integrated into the traditional automotive supply chain considering their legal background and culture in their own industries as well as the typical risks associated with software solutions, electronics, connectivity, telecommunication services, cloud and big data offerings. The resulting challenges for appropriate contractual risk allocations are considerable. This presentation will discuss key issues that already appear in practice regarding risk allocation and their repercussions on liability, as well as the effects on taking recourse in case of serial defects, field action or recalls.

09:25 - Liability, insurance and other regulatory issues for autonomous vehicles

Stuart Young, partner, Gowling WLG, UK

David Williams, technical director, AXA Insurance, UK

The presentation will consider the liability and related insurance issues arising from the commercialisation of autonomous vehicles. They will look at the role of insurance in providing market certainty, how the future for insurance might evolve, data and privacy issues in liability/insurance and more widely in commercialising AVs, as well as a brief look at how regulation needs to help the market to emerge in the right way.

09:50 - Data – one of the key factors for regulatory and liability challenges for connected and autonomous vehicles

Dr Stephan Appt LLM, partner, head of Automotive Group, Pinsent Masons Germany LLP, Germany

Established stakeholders within the automotive industry and those new to the market are all chasing connected car data, the 'new oil'. Will the regulatory framework set limits for and control their appetite and who will be permitted to sit at the table? EU laws will shape the framework for using personal data (GDPR) and the Commission is looking at rules for a 'European Data Economy' covering the topic of data ownership and access, portability, interoperability and liability. Are the established product liability rules fit for the future with 'over the air', v2x sensor data exchanges making it difficult to establish the exact source of a problem that leads to damages and who is to be held liable? Is it necessary to use big data to avoid liability? Will camera data cause issues?

10:15 - 10:45 - Break

10:45 - Automated and autonomous vehicles – thoughts about reforming the liability regime

Mathias N Schubert, senior underwriter liability, Treaty Europe, Gen Re | Global Treaty, Germany

The advent of automated and autonomous vehicles raises questions in the area of liability and insurance. The presentation addresses issues in motor

third party liability and product liability (including liability insurance) and reflects on a recent initiative by the European Parliament proposing, inter alia, new liability rules in the area of robotics. The presentation closes with some provocative ideas for novel solutions that may make sense in the long run, in response to the new and emerging technology.

11:10 - Reviewing the product liability issues raised by advanced driver assistance systems (ADAS) and connected and autonomous vehicle (CAV) technologies

Lucy McCormick, barrister, Henderson Chambers, UK

Lucy will cover the key legal and practical considerations, including: consumer expectation, failure to warn, contributory negligence, misuse of the vehicle, the so-called 'state of the art' defence.

11:35 - From theory to real life: how vehicle autonomy is affecting and will affect accidentology and insurance

François Nédey, chief underwriting officer, Allianz France, France

Franck Sommerfeld, member of the board of management, Allianz Versicherungs-AG, Germany

The presentation will discuss: the impact of ADAS on regulation – what needs to be changed, when and in which direction; the impact on frequencies and severity – what do we know (based on actual data/ observations), what do we expect; the impact on the insurance market and distribution; changes to driver behaviour – the good and the bad.

12:00 - Robotic responsibility for machine learning: privacy perspectives in autonomous decisions

Katherine Sheriff, juris doctor, Warshauer Law Group PC; legal scholar, Emory University School of Law, USA

Traditional tort liability relies on concepts emerging from interactions between vehicles and humans. In many ways, tort law reflects the inherent knowledge humans carry in their daily activities and the limitations of epistemological means of acquiring knowledge, while valuing privacy. Although these concepts are flexible and readily ascribable to humans in a wide variety of circumstances, it is unclear how, and if, these concepts should be applicable to artificial intelligence. This paper proposes to extend tort law and knowledge via quantitative dynamic software testing to determine liability for decisions made by artificial intelligence utilised by programming in autonomous vehicles.

12:25 - 13:25 - Lunch

The Safe and Successful Integration of AV Technology

13:25 - Practicalities of testing automated vehicles in public city environments

Prof Nick Reed, director, academy, TRL, UK

This presentation will describe the GATEway project – a collaborative project funded by UK government and industry and led by TRL in which we are testing several different types of automated vehicle in real world public environments on the streets of Greenwich, London. I will describe the testing regime for the vehicles ahead of trials and the regulatory and ethical clearances that achieved in order to undertake our trials protocols. This includes consideration of vehicle technologies, adaptations to infrastructure and liaison with emergency services to develop a robust safety case in which risk is managed effectively to enable the safe evaluation of the technologies under test.

13:50 - Riding the green wave – how connected cars can help to smooth traffic flow and improve drivers' safety

Christian Ress, supervisor automated driving Europe, Ford Research & Advanced Engineering, Germany

UK Autodrive is the largest of the current UK government-supported trials into connected and autonomous vehicles. Taking place across the two host cities of Milton Keynes and Coventry, the three-year project is using multiple car manufacturers (Ford, Jaguar Land Rover, Tata Motors) to trial the compatibility and interoperability of the technology – as well as

examining public attitudes, potential future business models, possible effects on congestion and issues relating to insurance, safety and legislation. In this presentation, Christian Röss will focus on the innovative V2X Connected Car features being developed by UK Autodrive, from connected traffic lights that help motorists minimise red light stops to emergency brake and intersection collision warnings that could potentially improve driver safety.

14:15 - Living-lab for safe integration of autonomous vehicles and other road-users

Klaus Rosino, head of innovation department, Austrian Road Safety Board, Austria

Vienna metropolitan region hosts an independent real-world living lab on sustainable automated driving. Global state-of-the-art is tested in a real-world mixed-traffic test bed from the airport to the city centre conference arena. Main focus: dynamic interaction between pedestrians, two-wheelers and autonomous cars in an urban environment. The test bed includes traffic lights, multimodal integration as well as significant elements of the European C-ITS corridor. Momentum is added by highly visible events accompanying Austrian presidency in EU-Council 2018 and TRA 2018. All this is being set up as truly independent mobility lab open to all. Further details soon: www.wien-zwa.at

14:40 - Future abuses and counter measures

Alex Glassbrook, barrister and author of 'The Law of Driverless Cars: An Introduction', Temple Garden Chambers, UK

As technology innovates and expands, so do the opportunities for abuse. Alex Glassbrook considers the future vulnerabilities of driverless technologies to abusive and criminal behaviour. He reflects on the lessons of defending fraudulent motor accident claims in the UK, and describes how the legal system responded to such claims. He examines how driverless technology might introduce new abuses, and how the law might respond effectively.

15:05 - Are you (still) in the driver's seat? A global view on autonomous driving and connected vehicles

Dr Patrick Ayad, partner - head of automotive, Hogan Lovells International LLP, Germany

Autonomous driving and connected vehicles are transforming the automotive industry sector like no other innovation in decades. The latest industry trends present a wide range of challenges for traditional automotive companies, but they also offer many opportunities for those that manage to enhance their business model from automotive manufacturer to solution and service provider. Reducing exposure to risk and managing the various commercial and legal challenges requires organisations to

anticipate and be prepared to navigate through the emerging legal risks. This presentation explores two of the major trends affecting the automotive market. The impact of these developments on various areas will be identified and then mapped to the businesses changes that will result. The areas examined will include the opportunities driverless cars will generate, the regulatory background, how technology will shift ownership of vehicles, the impact on liability, the result of constant connectivity and the marketing options presented.

15:30 - Dealing with privacy and data ownership

Dr Christoph Werkmeister LLM, associate, Freshfields Bruckhaus Deringer, Germany

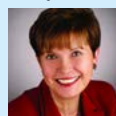
What data is collected/processed by autonomous vehicles? Data protection – what are the risks and who is responsible? Privacy by design as a new approach to compliance. Who has access to the data and who owns it?

15:55 - PANEL DISCUSSION

NEW

Hands off my car – privacy, cybersecurity and other legal challenges of connected cars

Françoise Gilbert, partner, Greenberg Traurig, USA



GT GreenbergTraurig | 50

Raffaele Zallone, counsel, Studio Legale Zallone, Italy



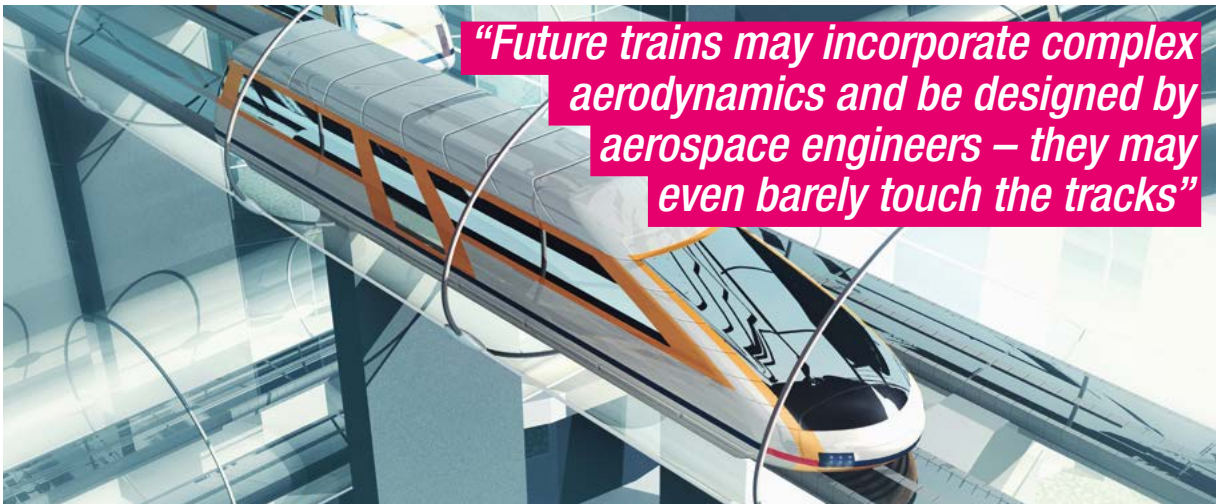
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STREAM 3 THE CHALLENGE FOR RAIL – IS THERE A FUTURE FOR OUR LONGEST-STANDING MOBILITY FORMAT?

DAY 1 / WEDNESDAY 5 JULY

09:00 - 09:40 Opening Session

Tony Robinson, CEO and founder of UKi Media & Events plus guest speakers



10:10 - Key challenges of European rail policy

Dr Libor Lochman, executive director, CER - The Voice of European Railways, Belgium

The European rail sector is today having the opportunity of a renewed renaissance: the mix of the provisions agreed in the Fourth Railway Package together with the progressive digitalisation of the EU economy offer the base for making the railways the backbone of the EU's logistics network (for passengers and freight) and of its economy at large. Succeeding with this strategy will enable rail to become an essential part of the intermodal, door-to-door services. Still there are remaining issues of the existing unbalanced playing field between rail and other transport modes that need to be resolved in order to benefit fully from the potential of railways.

10:40 - The Future of Rail 2050

Cem Budak, director - European rail leader, ARUP, Turkey
Megatrends such as rapid urbanisation, population growth, technological advances and climate change have far-reaching implications for the future world in which rail will operate. Beyond these macro forces, changes will also be driven by the evolving needs and expectations of future passengers. Future of Rail 2050 focuses on the passenger experience, and sets out a forward-looking, inspiring vision for rail. The user journeys imagined here are intended to generate a conversation about the world ahead and provide the big picture context for future planning and decision-making by governments and the rail industry. The hope is that the rail industry will move forward with innovation based not solely on past experiences but also on future possibilities and preferred outcomes.

11:10 - Mobility hotspots – innovative design as a railway regeneration enabler

Dominique Laousse, head of innovation and prospective, SNCF, France

Transportation is global societal disruption initiated by daily uses mutation during the current urban age. Based on new relations to individual times, life spaces and the personal technological bubble, the need for innovation is shifting from transport to mobility. Regenerating the railway focuses on mobility hotspots, with an innovative design challenge to connect all transport modes in a user-friendly/mass-transit-orientated way. Distributed places will help to mix the static and mobile functions of railway and new mobility modes whose pulses could be revealed and managed based on chronotopic analysis to match user expectations, providing renewed urbanity and civility for more sustainable cities.

11:40 - Railway futures

Dr Roberto Palacin, senior research associate/lead for Rail Systems Group, Newcastle University, UK

The presentation will explore the opportunities that lie ahead for railways as part of a future transport system. These include their potential role as the core mass-transit providers in metropolitan areas using mobility solutions based around the idea of MaaS as well as other opportunities maximising rail's inherent advantages, including energy aspects, connectivity and safety. The audience will also be given a peek at what a future rail system might look like.

12:10 - Future planning and present problem-solving

Paul Priestman, designer/chairman, PriestmanGoode, UK

Although R&D into future modes of transport and the long-term direction of rail is undoubtedly important, we must not lose sight of the fact that our current infrastructure is under huge strain and that we need solutions that we can start to implement now. Paul Priestman, designer, future thinker and chairman of leading global transport design consultancy PriestmanGoode, will speak about the challenges the rail industry is facing today, and present two innovative solutions to cope with growing passenger numbers.

12:40 - 14:00 - Lunch

14:00 - Multi-modal mobility

Jeremy White, head of transport, Seymour Powell, UK

Over hundreds of years, we have developed an infrastructure of rail, road

and water ways. These connect our cities and are essential to the future development of our economy. I will explore how an interconnected world of multi-modal transport will lead to a seamless passenger experience and how rail will play a key part in this execution. Uncoupled autonomous rail vehicles will provide flexibility for passengers and operators. This will encourage rail travel and increase efficiency while meeting the capacity demands of the future.

14:30 - How the 'big 3' technologies shape the future of transportation

Bhoopathi Rapolu, head of analytics, EMEA, Cyient, UK
Internet of Things (IoT), AI and 3D printing are our newfound abilities to shape the future as we want it. Rail transportation is neither indifferent nor aloof to them. They are radically transforming the rail industry in: understanding transportation systems like never before; automating parts of train manufacturing, operations and business decision making; predicting outcomes – passenger response, system failures, part replacements, maintenance plans, financial implications and many more. This session will outline leading ideas, practical methodologies and case studies explaining how the big 3 technologies are shaping the future of rail transportation.

15:00 - 15:30 - Break

15:30 - The future of railways is in orchestrating door-to-door journeys

Dr Hans Moonen, management consultant, CGI, Netherlands
The future of railways will be dramatically different. In a world where passengers are always on, cars travel autonomously and transport is increasingly consumed-as-a-service, railways seem to remain traditional companies with a slow pace of innovation. Research confirms that even frequent train travellers mostly appreciate the time aboard the train, but experience the time before and after the train journey as rather stressful. The sector thus has a challenge to remain relevant and attractive in the changing world of mobility. This presentation reveals a (fact-supported) vision for railway operators to develop into mobility orchestrators mastering their clients' door-to-door journeys.

16:00 - High-speed rail in Central Europe: bottleneck between East and West

Petr Šlegř, project manager, Centre for Efficient Transport, Czech Republic

High-speed rail in the Czech Republic has been discussed for more than 10 years, without real progress being made. There is a similar situation in other Central European countries, mainly the post-Communist ones. Without high-speed rail, the public transport in those countries is still not competitive in terms of domestic and international transport. There is a bottleneck between Eastern and Western Europe – some borders still seem to be behind the Iron Curtain. Will TEN-T policy change this situation? What are the major opportunities of HSR in Central Europe?

16:30 - PANEL DISCUSSION

How can rail stay competitive against new mobility solution providers and autonomous vehicles? Can the railway industry survive the threat from new mobility solutions and what changes are required for their long-term sustainability?

Jean-Pierre Loubinoux, director general, International Union of Railways, FRANCE



Giorgio Travaini, head of research and innovation AI, Shift2Rail, BELGIUM



Dominique Laousse, head of innovation and prospective, SNCF, FRANCE



Dr Mark van Hagen, principal consultant customer experience, NS (Netherlands Railways), NETHERLANDS



STREAM 3 THE CHALLENGE FOR RAIL (CONTINUED)

DAY 2 / THURSDAY 6 JULY

09:00 - Digital railways: the backbone of the mobility of tomorrow

Jean-Pierre Loubinoux, director general, International Union of Railways, France

UIC is a technical platform, at the service of its members around the world. It is committed to pragmatic solutions that bring added value to the railway sector and industry. Last year, UIC decided to create a digital platform that aims to share creative ideas, ensure harmonisation, support new developments and boost innovation. It has identified three main areas of potential interest: security (in particular the crucial issue of cybersecurity, in which UIC is very involved), services and productivity.

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09:30 - Train service of the future – give customers what they want

Dr Mark van Hagen, principal consultant customer experience, NS (Netherlands Railways), Netherlands

Train operating companies (TOC) are keen to attract new customers. The way to be successful is high performance and making customers happy. As part of its strategy, at NS (Dutch Railways) the customer comes first and passenger satisfaction is now the number one target and performance indicator. NS supports this ambition with a wealth of insights into the drivers of passenger satisfaction. The key challenge is how to successfully convert these insights into action; meaningful innovation that drives successful business.

10:00 - Smart-Rail – supply chain orientation of the rail freight sector

Ming Chen, senior consultant/project manager, TNO, Netherlands

The current European rail freight market is a complex system involving a great number of different public and private stakeholders, who jointly manage the rail operation. In this situation, the improvements required to become more user orientated always require cooperation between several stakeholders. Smart-Rail is developing new business models facilitated by data/information exchange, which make improvements in the short term possible. Improvement of data exchange is also the start of a transition towards full automation of railways. This automated system should remove the need for bureaucracy and cooperation and will turn this 'machine organisation' into an 'organic organisation' (Mintzberg).

10:30 - 11:00 - Break

11:00 - The risks for an expanding railway

Christian Wolmar, owner, Christian Wolmar, UK

On the face of it, rail has a bright future, with expansion being envisaged across the world. New metro lines in urban areas, high-speed lines linking towns, and mineral railways are all being built across the world. However, rail faces a big challenge in competing with new forms of transport, adopting technology that will keep costs down and responding to safety concerns. The big challenge for rail is how to keep growing while still offering value for money.

11:30 - The unknown unknowns of future passenger journeys

Martin Darbyshire, CEO, Tangerine, UK

Unlocking innovation through a designer's insight into the human behaviours of today, to create future experiences that meet the unmet desires of tomorrow. With almost three decades' experience creating paradigm-shifting products, services and experiences for global brands such as British Airways, LG and Toyota, Martin provides a thoughtful snapshot of how design can create transport solutions with exceptional customer experiences that meet the unimagined future needs of passengers and providers.

12:00 - AeroLiner3000 – the capacity booster for British railways

Andreas Vogler, director, Andreas Vogler Studio, Germany

A train that looks as if the future has already begun: AeroLiner3000. When aerospace designers (Andreas Vogler Studio) and aerospace engineers (German Aerospace Center) explore the future of rail travel, the outcome is low-carbon and light-weight. The train is so light that it stabilises with nose wings against flying out of the tracks. The propulsion system is the finest of mechatronics, making the train barely touch the rails. AeroLiner3000 is showing the potential of a realistic future of train travel.

12:30 - Railway as the mobility backbone of the future

Dr Kurt Fuchs, attorney, www.eisenbahnrecht.com, Germany
Railways are fast and capable of transporting many people or goods at the same time with little demand in terms of space and energy compared with other traffic carriers. They can form the ecological backbone for future travel and transportation. In metropolitan areas, railway-based

public transport will be the only possibility to satisfy the increasing rush-hour traffic. For the railways to meet future requirements, we need silent and convenient vehicles and a massive extension of the railway network. However, long and complex planning processes hamper the necessary network extension. Therefore, new regulations on planning procedures are needed.

13:00 - 14:00 - Lunch

14:00 - Next-generation train for future intermodal transport

Dr Joachim Winter, senior scientist, Institute of Vehicle Concepts, German Aerospace Center (DLR), Germany

Worldwide there is a tendency that already large cities are growing to become mega cities. To manage a city of this size requires the use of digitalisation to make it smart. Thus a network of people and things will be able to rapidly exchange information by means of modern telecommunication and informatics capabilities. This can be used to enhance the traffic in smart cities by providing more mobility for many more people with less traffic. The electrification of cars will not mean the end of traffic jams – but car sharing and improved public transport will. In the same sense transport between smart cities over long distances will require fast, comfortable trains and well-organised hub stations to handle the masses of people with short dwell times.

14:30 - Rail AGVs to transform rail into a container distribution network

Paul Van Bers, innovation manager and strategic B2B consultant, BersCo Consultancy, Netherlands

Trains are suitable for bulk transportation, preferably on fixed lines. Train transportation of containers requires the forwarder to adapt to the train operator. Container and train are basically a mismatch, and the market share is only 10%. For container transportation, the train is a niche player, stuck in the middle between truck and barge. With the rail AGV concept, in which the optimal length is one intelligent self-propelled wagon, rail is again able to compete with trucks in the areas of flexibility, reaction time, service speed, availability, costs and individual service. This will be illuminated.

15:00 - 15:30 - Break

15:30 - Smart, competitive cooperation – the future of rail systems

Miroslav Haltuf, independent consultant, H-Comp Consulting, Czech Republic

The paper will deal with the new position of railway systems under the influence of the 4th Railway package, full liberalisation of railway operation and competition from the road and air industries. New technologies based on digitalisation, big data and IoT, along with innovation and research activities related to customer satisfaction, are the stimulators for rail's new role and position. Making the railway smart and ready for cooperation with other modes of transport is the only chance to keep it alive and ready for further development.

16:00 - Rail's three genetic technologies futureproof freight and passenger positioning

Dr David van der Meulen, managing member, Railway Corporate Strategy Close Corporation, South Africa

Distinguishing rail from all other modes, supporting carries heavy loads by double-decking and double-stacking; guiding supports high-speed with generous vehicle profiles; coupling can reduce average headways. New transport forms cannot pretend to these domains, offering instead on-demand, customised, personalised service, using autonomous single vehicles. They require shorter headway, which increases the significance of dwell time, ultimately to demand parallel or off-line boarding and alighting, rather than serial like rail, which compounds system complexity. Small vehicles destroy fixed guideway capacity, but autonomous transport forms could wonderfully complement and expand rail's freight and passenger appeal in relation to logistics parks and lifestyle mobility.

“Autonomous vehicles have the potential to offer many benefits – societal ones include ageing populations”



STREAM 4 VISION ZERO – IS THERE REALLY THE POTENTIAL TO ACHIEVE THE GOAL? TOOLS FOR SUCCESS EXAMINED

DAY 1 / WEDNESDAY 5 JULY

09:00 - 09:40 Opening Session

Tony Robinson, CEO and founder of UKi Media & Events plus guest speakers



10:10 - Adapting roads to the autonomous vehicle: the need for hybrid infrastructure

Konstandinos Diamandouros, head of office, European Union Road Federation, Belgium

Although there is a consensus that roads will become increasingly automated in the long run, the short to medium term will be characterised by a hybrid traffic flow that will feature the co-existence of conventional and increasingly autonomous vehicles. To reap the benefits of road automation, Europe's policymakers need to start considering how road infrastructure can actually become hybrid insofar as it will be able to cater both for the needs of an increasingly ageing population and ADAS such as AEB, LKA and ISA. The presentation will explore the key issues and challenges around hybrid infrastructure.

10:40 - Vision Zero Advocate Institute: a future without serious injuries and fatalities

Jeffrey Calibaba, chief operating officer, ATS Traffic, Canada
The Vision Zero Advocate Institute, a global leader in the adoption of Vision Zero, presents how the public and private sectors need to rethink their roles and responsibilities for traffic safety. As Vision Zero forces one of the largest shifts in transportation system design, it presents a proactive opportunity for change. Demonstrating the trajectory of Vision Zero through a detailed look at the Vision Zero Advocate Institute's rise and plans for 2030, this presentation will examine the framework for the future, integration of systems approaches and a shift in transportation prioritisation from mobility to the importance of a human life.

11:10 - The future of urban mobility

Roland Werner, head of government affairs and policy, DACH, Uber, Germany

This review will discuss how Uber certainly helps complement the first and last mile. People are more often leaving their own cars at home now. Uber is at its busiest when public transport shuts down or runs irregularly, giving passengers a far more reliable, safe and affordable option and helping people not to drink and drive.

11:40 - A paradigm shift towards the zero-accident vision

Dr Amirasoud Soltani, lecturer - Active Chassis Control Development Environments for Connected and Autonomous Vehicles, Cranfield University, UK

The current technologies to address vehicle safety, comfort and performance are usually focused on vehicle features themselves. However, the future transport systems will consist of networks of vehicles, in an integrated, interconnected and intelligent environment. In this presentation we discuss the influence of the four enabler technologies – electrification, control, autonomy and connectivity – and how they will shape the future of intelligent transport systems. The presentation will also address the necessity of rethinking the development approaches to address these challenges, and exploring the full benefits of the integrated development approach to provide a safe transportation environment towards the zero-accident vision.

12:10 - Future of vehicle safety – what are the casualty reduction priorities?

NEW

Richard Cuerden, chief scientist, engineering & technology, TRL, UK

The presentation considers the likely benefits that will be realised if proposed changes to the European Union's passenger car type-approval requirements, namely updates to the General Safety Regulation (EC 661/2009 published 2009) and Pedestrian Safety Regulation (EC 78/2009 published 2009) are adopted. The additional measures, which could become mandatory, include ADAS features such as AEB, ISA, LKA, driver distraction and drowsiness technologies and secondary safety measures designed to protect occupants and pedestrians in the event of a collision. Vision Zero requires a Safe System approach and it is important

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to quantify what emerging technologies are going to deliver with respect to collision prevention and injury mitigation in the next five to 10 years. This will provide an understanding of the future casualty prevention priorities and lead to the development of strategies that will include vehicle safety design and the performance criteria requirements for the next generation of connected and autonomous vehicles.

12:40 - 14:00 - Lunch

14:00 - Contribution of driverless cars towards zero-fatality: myths and reality

Miguel Fragoso-Recio, managing partner, Syrma & Associates, UK

Autonomous driving technologies extend well beyond conventional onboard systems and offer clear potential to substantially reduce road accidents. Advocates of the driverless car believe it will be smarter, faster and safer than the human driver. Preliminary tests by leading OEMs show superior results hinting at a good possibility of creating an accident-free environment. The presenter will lay out the significant contribution of the various new technologies, potentially towards Vision Zero, as well as the implementation challenges within the current transport infrastructure and business/economic modelling.

14:30 - Safety of active modes in urban mobility: a thought challenge

Prof Dirk Lauwers, professor, Ghent University, Belgium
Exposure-based road safety indicators for active modes (pedestrian and cyclist travel) are poorly documented in the EU. A proposal developed for the European Cyclists' Federation – completing the EC-endorsed World Business Council for Sustainable Development Monitor SMP2.0 – is presented in this paper. Furthermore, dominant patterns of accidents with active modes in urban environments are identified. The approach and patterns are confronted with a critical review of automated vehicle interaction with these modes. Relevant technologies are discussed within a perspective of market introduction of different levels of vehicle automation.

15:00 - 15:30 - Break

15:30 - Pedestrian safety in the age of ubiquitous automated driving **NEW**

Prof Horst Wieker, professor for Telecommunications, HTW Saar - University of Applied Sciences Saarland, Germany
Together with motorcyclists, pedestrians make up around 45% of all road fatalities worldwide. In contrast to vehicle users, pedestrians are seldom protected by driver assistance systems. More than any other traffic participant, they rely on the assistance systems of others to keep them safe. Furthermore, if more and more traffic participants rely on communication and active sensors to detect each other, pedestrians face a greater risk of being overlooked. We highlight concepts and research enhancing cooperative pedestrian safety. We also show the threats that a '100% protection guarantee' for pedestrians will pose to our current mode-mixed traffic infrastructure.

16:00 - PANEL DISCUSSION

Will autonomous vehicles dramatically reduce road fatalities and how soon will they make a significant global impact?

Roland Werner, head of government affairs and policy, DACH, Uber, GERMANY



Dr Amirmasoud Soltani, lecturer - Active Chassis Control Development Environments for Connected and Autonomous Vehicles, Cranfield University, UK



Richard Cuerden, chief scientist, engineering & technology, TRL, UK



Miguel Fragoso-Recio, managing partner, Syrma & Associates, UK



Further panellists to be confirmed shortly will include a leading autonomous instigator and a key transport research institution

STREAM 4 VISION ZERO (CONTINUED)

DAY 2 / THURSDAY 6 JULY

09:00 - Vision Zero – the Swedish experience **NEW**

Prof Anders Lie, specialist, Swedish Transport Administration, Sweden

Vision Zero was chosen as the main traffic safety strategy in Sweden by the parliament in 1997. Since then, the vision has been widely accepted. In this presentation, the basics of Vision Zero are presented along with examples of new strategies. Examples are given for road design, vehicles and road usage. An outlook is also given indicating examples of Vision Zero initiatives around the world.

09:30 - Warning for vulnerable road users by ADAS vehicles

Dr Peter Vertal, head of research, Institute of Forensic Research and Education (IFRE), Slovakia

This paper provides a forensic view of real traffic accidents of pedestrians and their behaviour before the collision. The study of real pedestrian behaviour focuses on the implementation of exterior warning signals of a vehicle for the purposes of the ADAS system. This study used a set of

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more than 200 real traffic accidents involving cars and pedestrians. The accidents were recorded by vehicle dashboard cameras or CCTV cameras, providing a realistic statistical view of pedestrian behaviour before a collision and pedestrian reaction to an oncoming vehicle, and a statistical view of the fundamental aspects of the course of a traffic accident: weather conditions, traffic situation, driving style, type of walking, etc. This analysis shows possible pedestrian behaviour immediately before a collision, the response time and the pedestrian's reaction (stopping, slowing down, stepping back, etc.) in cases where a pedestrian was not warned by an acoustic signal.

10:00 - Some thoughts on Vision Zero from an ITS supplier

NEW

Dr Alexander Lewald, executive board member/CTO, Kapsch TrafficCom AG, Austria

We define Vision Zero as zero accidents, zero congestion and zero emissions. We will discuss how recent technology breakthroughs have enabled us to realise this vision within the next few years, so that we will have hybrid transportation (autonomous/non-autonomous vehicles) for the foreseeable future.

10:30 - 11:00 - Break

11:00 - User-centred design for enhancing traffic safety in partly automated trucks

NEW

Max Ruppert, research associate, Institute for Mobility and Digital Innovation, Stuttgart Media University, Germany

Prof Arnd Engeln, market and advertising research and traffic and transport psychology, Stuttgart Media University, Germany

For automated driving systems to enhance traffic safety, they have to be accepted by the user. In the TANGO research project, funded by the BMWi, in cooperation with Bosch, MAN, VW and Stuttgart University, we apply the user-centred process to the development of a vigilance and activity management system. The system will enable truck drivers to engage in secondary tasks during automated driving phases. To ensure optimal user acceptance, the users will be integrated into the empirical research in all phases of the project. We will present the project outline and first results from qualitative user research.

11:30 - Minnesota Toward Zero Deaths: it's more than just a slogan

Kristine Hernandez, Minnesota Toward Zero Deaths programme coordinator, Minnesota Department of Transportation, USA
Minnesota formed the Toward Zero Deaths programme in 2003, when the state determined that traffic-related deaths were rising and were forecast to continue this trend. TZD, a multi-disciplinary programme, has a three-pronged leadership between the departments of Public Safety, Transportation and Health. The University of Minnesota is also a partner. Although traffic-related deaths have continued to rise throughout the USA, Minnesota's deaths have plateaued. To decrease these numbers, the state is focusing on long-term methods of changing culture. Methods include: ingrainning TZD in the Federal Strategic Highway Safety Plan, establishing a traffic safety culture baseline and social norming techniques.

12:00 - Does 'zero incident' really exist in the transport environment?

Dr Willem Sprong, technical executive, Gibb (Pty) Ltd, South Africa
The National Railway Safety Strategy for South Africa described the innovative new risk-balance model. This model supersedes Reason's Swiss-Cheese model and describes the importance of human factors in risk management. Risk is the product of probability that an incident will occur and the impact that it will have. It is impossible to have a zero probability. Effective and efficient risk management must include the proactive mitigation of the impact that incidents will have. The influence that human factors have on safety is explained, based on the new Risk-Balance model.

12:30 - Lifelong training for road users: a tool to improve road safety

NEW

Laurianne Krid, director general ad interim, FIA, Belgium
This presentation will explore the potential of training and education to contribute to the Vision Zero objective. As human error is still a major contributing factor to road casualties, mobility clubs have a clear role to play here. The FIA Region I advocates for lifelong learning opportunities from a younger to an older age. We support measures such as mandatory traffic education for children across EU 28, a revision of the Driving Licence Directive including multi-phase training systems, and the promotion of voluntary refresher and assessment driving courses for elderly drivers.

13:00 - 14:00 - Lunch

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STREAM 5 QUANTUM SHIFTS – MICRO AND MACRO OPPORTUNITIES FOR RADICALLY REDUCING SURFACE CONGESTION

DAY 1 / WEDNESDAY 5 JULY

09:00 - 09:40 Opening Session

Tony Robinson, CEO and founder of UKi Media & Events plus guest speakers



10:10 - Hyperloop: the broadband for transportation

NEW

Nick Earle, SVP global field operations, Hyperloop One, USA
Hyperloop is the first new mode of transportation in more than 100 years. The technology uses electric propulsion and levitation to move passengers and cargo at faster-than-airline speeds through a low-pressure tube with unprecedented energy efficiency. With direct-to-destination service and departures more than once a minute, Hyperloop can turn metro areas into metro stops and create disruptive, 'packetised' transport networks for freight and passengers. Hyperloop One is the only company in the world building an operational commercial system, with a 500m test track in Nevada. Hear how Hyperloop One is building transformative transportation to create a more connected world.

10:40 - Rethinking roads – the future of highways

Tony Marshall, director, ARUP, UK

Transport infrastructure is facing impacts from a range of issues: capacity constraints, population growth and climate change. Faced with these pressures, what does the future hold for highways up to 2050? This presentation explores the forces we believe may shape highways of the future. Reflecting on Arup's research – Future of Highways – user journeys illustrate how road networks and intermodal transport solutions could operate in years to come, prompting questions including: could driverless vehicles improve the efficiency of roads? And, how can we encourage a step-change in material reuse and material innovation to reduce waste and the need for maintenance?

11:10 - Evaluating the impact of future transport modes

Dr Yvonne Barnard, senior research fellow, University of Leeds, UK

New transport systems are rapidly being developed and tested in the real world. For the evaluation of intelligent transport systems, large-scale field operational tests have provided a major way of determining the potential impact, using a well-established methodology. However, the new generation of automated transport modes requires new ways of providing evidence for the impact, looking beyond safety, mobility and efficiency. Europe, Japan and the USA are collaborating on impact assessment of road automation, and several European projects are investigating new ways of evaluating pilots with automated transport. The presentation will provide a vision for the future of evaluation of innovative systems.

11:40 - Changing the way we think about urban transport

Lars Hesselgren, director of research / senior associate partner, PLP Architecture, UK

Vehicles are becoming smarter, opening up new opportunities to make transportation more efficient, more economic and more environmentally friendly. Instead of competing with each other, how can cars collaborate with each other to avoid known traffic problems, such as congestion and parking? If such collaboration is to be achieved, where does it make the most sense? High-capacity transport systems need dedicated tracks in order to achieve useful capacity, reduce travel times and be safe. If we turn to urban mass transport we see that on the whole, as cities grow, the only place we have where we can put new infrastructure to service existing parts of the city, is underground. This approach leads us to a system based on tunnels for electric cars, where digital control ensures there is no congestion and the system takes you directly to your destination, without interchanging, as is often the case with traditional public transport. Roads take up a huge amount of space – we should rethink how mass transportation works and use the public realm above ground for people, not for cars.

12:10 - 14:00 - Lunch

14:00 - Quantum shift – key enablers and barriers

John D'Arcy, transportation development director, Mott MacDonald, UK

The advancement of technology transcends any specific sector. For example, the integrated technology needed to pilot an autonomous vehicle has been developed and transferred into the automotive sector from multiple areas that include robotics, global positioning and detection. In

this paper, illustrated using case studies from our extensive experience of complex surface transport operations with network operators and transport authorities, we identify and explore technology transfer and the key enablers and barriers within transport planning, modelling, infrastructure design, systems integration and network operations that are required to enable the potential quantum shifts in tackling surface transport congestion.

14:30 - Delft Hyperloop: fast as a plane, convenient as a train

NEW

Maurits Houck, technical officer, Delft Hyperloop, Germany

Thijs Haselhoff, new business development manager, Altheris BV, Netherlands

It started with the challenge from Tesla's CEO to develop a future transportation method. Technical University Delft successfully developed a Delft Hyperloop with the use of Altheris's sensors. The Hyperloop travels through a tube, starting off on wheels and floating on magnets thereafter. This future way of travelling has many advantages over current transportation methods. It is fast (Amsterdam - Paris in 30 minutes), cheap (cheaper than flying), environmentally friendly (powered by renewable energies) and safe (no human errors). During the presentation we will discuss the development of the Hyperloop along with the importance of the Altheris sensors and its effect on future (business) travel of the future.

15:00 - 15:30 - Break

15:30 - Cognitive mobility with personalisation and IoT

Hakan Kostepen, executive director - strategy and innovation, Panasonic, USA

The presentation will discuss shifting transportation elements to mobility with personalisation and IoT tokens around cognitive intelligent life.

16:00 - How to change paradigms to establish sustainable and competitive transportation

Dr Vincent Bourquin, professor, University of Applied Sciences Western Switzerland, Switzerland

The existing transportation systems have shown their limits in fulfilling the requirements of performance and sustainability. The massive growth of transportation has led to significant negative impacts on people, society and the environment. It is clear that disruptive ways need to be established as soon as possible. But which pioneering country or investor will make the first step? On what path should we go? The example of Switzerland and the constant evolution of the Swissmetro project for more than four decades show the potential of improvement associated with an adequate combination of technologies integrated in an engineering systems approach.

10%

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16:30 - PANEL DISCUSSION

**Can we create cities free from traffic jams?
Should cars be banned from city centres?
What radical changes can we introduce
to ensure cities of the future avoid total
gridlock?**

Tony Marshall, director, ARUP, UK



ARUP

Lars Hesselgren, director of research / senior associate partner, PLP Architecture, UK



PLP / ARCHITECTURE

Dr Yvonne Barnard, senior research fellow, University of Leeds, UK



UNIVERSITY OF LEEDS

Hakan Kostepen, executive director - strategy and innovation, Panasonic, USA



Panasonic

STREAM 5 QUANTUM SHIFTS

(CONTINUED)

DAY 2 / THURSDAY 6 JULY

09:00 - Vuelytics – artificial intelligence in transport

Dr Tony Rhoades, CEO, PCRL Vuelytics, UK

The presentation will show how Vuelytics applied artificial intelligence and novel sensor systems are on the verge of bringing about a quantum shift in transport. The outcome is new big data on the cloud, new business models, and a new language and environment for future transport supply chains – likely to cause major disruptions in multiple billion-dollar markets (tyres, servicing, fleet management, insurance, safety, and much more). With 1.2 billion vehicles on the road today, forecast to reach two billion by 2035 (Wards, 2016), this quantum shift will be far reaching.

09:30 - Disruptive transportation technologies in support of sustainable urban development

Dr Christopher Drew, director of sustainability, Adrian Smith + Gordon Gil Architecture, USA

The symbiosis between mass transit and dense urban development is facing an onset of potentially disruptive transportation technologies as the

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growth of low-cost on-demand autonomous transit becomes a reality over the coming years. Changes in road usage, car parking requirements, goods delivery and waste collection strategies, etc. require that we rethink how we configure the relationship between people and transit from a sustainability and urban design perspective. This presentation looks at opportunities coming up and asks the question: How to design new high-density districts and optimise existing ones to maximise benefits from future transportation opportunities?

10:00 - projectMOVE – the future of urban mobility

Derrick Choi, principal, Populous, USA

From autonomous taxis to on-demand public transit to integrated bicycle networks, we are in the midst of an incredible groundswell of first- and last-mile transit innovations that are simple yet transformative in impact. The presentation will highlight internal R&D focusing on first- and last-mile transit innovations from ProjectMOVE, Populous's internal research initiative. Insights will be shared on disruption in US transportation and the key influences that are reimagining the sustainable and equitable public transit systems of the future, driven by the confluence of technological innovation, private-sector investment and the inherent challenges of an ageing national infrastructure.

10:30 - 11:00 - Break

11:00 - Using economic and spatial attributes to determine the mobility mix

Russell Yell, head of intelligent mobility, Steer Davies Gleave, UK

How can the private and public sectors be certain that a sustained quantum shift can be achieved? What factors should be considered to help determine whether an urban environment and its population is ready to shift, and how should this shift be implemented? We will look at a broad range of mobility services and European cities to demonstrate how and why certain services prosper and others will fail.

11:30 - Human-centred mobility for an optimised transport service

Alexandre Milot, industrial liaison officer, Transportation Center of EPFL, Switzerland

Claudio Leonardi, founder and head of the Clip-Air project, Transportation Center of EPFL, Switzerland
The Transportation Centre of EPFL (Swiss Federal Institute of Technology Lausanne in Switzerland) acts as the entry point for external partners eager to initiate cutting-edge research related to transportation and mobility. We are specifically interested in user's preferences, mobility behaviour, etc. using sociology, mathematical modelling and data science. We also develop technologies serving the mobility industry dealing with face recognition, drones inspections, waste heat recovery, etc. Finally, we endeavour to shape transportation systems through traffic management, timetabling, multimodality, etc. Clip-Air is a typical concept of an innovative aircraft able to offer on-demand air transportation combined with the rail network.

12:00 - Don't predict the future – envision it

Karel Golta, CEO, Indeed Innovation GmbH, Germany

Stop thinking about cars, about transporting people from A to B, and start thinking about larger ecosystems of values. It is not about individual technology but about the interplay of human-driven desires that will drive a better future. The rise of AI (artificial intelligence) and autonomous technology will lead to business and value offerings never seen before. The presentation will take you on a journey exploring fundamental new ways that autonomous cars, online shopping and retail, personal finance and healthcare will interlace and thus create a lifestyle ecosystem of the 21st century.

12:30 - 13:30 - Lunch



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13:30 - Demand-responsive transport: the way to a car-free city

Ellen Kuder, vice president of growth, door2door, Germany

The car-free city is the ultimate goal to improve the quality of life of citizens in a sustainable manner. Most concepts believe that public transport will be obsolete and replaced by alternative modes of transportation. However, only by enhancing traditional means of transportation with demand-responsive solutions (DRT) will we be able to achieve the car-free city. Our approach allows a data-driven integration of DRT into the public transport network, expanding the transport offer and making the private car redundant.

14:00 - Integrating traffic management operations with connected/automated vehicle data

Stephen Novosad, senior project manager, HNTB Corp, USA

As the deployment of connected/automated vehicles becomes a reality, massive amounts of data will be generated. With much of the focus on getting the technologies proved and deployed, little has been done to consider the impact that these vehicles and their data will have on agencies who are responsible for managing roadways, expressway, arterials, etc. This presentation discusses the impact of these vehicles and their data from a traffic operations perspective.

14:30 - Easy Motion – a new view of trucking

Ilya King/Knyazev, CEO & co-founder, Easy Motion Ltd, Russia
Easy Motion is an unmanned transport service using the cargo platform – a complete truck without a cabin. We've discovered a solution: the convoy of trucks consists of one truck with a driver and three or four unmanned platforms following the traffic functions of the leader and given distance. Today production cars are equipped with these systems, and we will not invest in them. Thus, we suggest an efficient transportation system with impressive productivity: organising relay traffic, where drivers with licence category B conduct three or four trucks, providing transit up to 22 hours.

15:00 - 15:30 - Break

“Transport can become self-fulfilling and self-sustainable – opportunities for induction charging supported by solar and wind farms are among the options”



STREAM 6 ENVIRONMENTAL SUSTAINABILITY – THE TRANSITION OF WHAT POWERS TRANSPORTATION

DAY 1 / WEDNESDAY 5 JULY

09:00 - 09:40 Opening Session

Tony Robinson, CEO and founder of UKi Media & Events plus guest speakers



10:10 - Climate change risk assessment for German transport infrastructure

Dr Martin Klose, scientist, Federal Highway Research Institute, Germany

Extreme weather, natural hazards and climate change are key challenges to those who own, manage and operate transport infrastructure in the 21st century. The Federal Ministry of Transport and Digital Infrastructure (BMVI) addresses these challenges within the framework of a new research programme focused on the resilient and sustainable development of German transport infrastructure. This presentation introduces selected topics of this research programme and one of its projects dealing with approaches to climate change risk assessment. The project aims at developing a toolset to assess the risks of climate change and natural hazards from a multimodal perspective.

10:40 - Strategic planning for disruptive innovation in mobility

Dr Gereon Meyer, head of strategic projects, VDI/VDE Innovation + Technik GmbH, Germany

Automation and connectivity, as well as electrification, are the big drivers of progress in road-based and other transportation modes. In combination with smart integrated solutions and new service models, these technologies can unfold potential for truly disruptive innovation, leading to a whole new mobility system that makes travel cheaper, cleaner and more accessible, particularly in cities. This presentation provides a comprehensive review of recent attempts to plan strategic research and innovation in Europe from the perspectives of public authorities, industries

and users. It covers (a) the Strategic Transport Research and Innovation Agenda – a set of seven roadmaps dedicated to specific issues across all transport modes, edited for the European Commission; (b) the European Roadmap Electrification of Road Transport and the European Roadmap Smart Systems for Automated Driving, edited by the European Technology Platforms ERTRAC and EPoSS; (c) the Action Plan for the Future of Mobility in Europe, resulting from the user-centric planning process within a publicly funded project, Mobility4EU. This presentation summarises the various actions, the stakeholder consultation processes they build on, and their conclusions on how to plan the future transformation of the European mobility system in an inclusive way.

11:10 - Smart transportation – what it means to us

Kamal Bali, managing director, Volvo India Pvt Limited, India

Today's economies are dramatically changing, giving rise to four disruptive technology-driven trends in the automotive sector: diverse mobility, autonomous driving, electrification and connectivity. Cities are confronted with new challenges in the field of mobility: people – traffic chaos, security and decreasing quality of life; sustainable development – overloaded infrastructure; planet – air pollution, emissions, noise, ecological footprint. The presentation will discuss effective and sustainable transport, the transition to more energy-efficient fuel systems and other disruptive technologies in the automotive space, and policy interventions and states' support required for mass adoption of these technologies.

11:40 - ITS innovations for mobility to increase the environmental sustainability of transport

Josef Czako, CEO, Moving Forward Consulting Ltd, Germany

Intelligent transportation systems (ITS) have been proved worldwide to deliver better road safety, increase efficiency, reduce congestion, ensure financing and foster environmentally friendly mobility. Recent major innovations in mobility are: self-driving cars, mobility as a service (MaaS) and mobility pricing. We need to acknowledge that these innovations are happening around us, due to digitalisation, automation and servitisation. The presentation makes a global analysis of their strengths, opportunities, weaknesses and threats (SWOT), and also explains proper policies and strategies for deployment.

12:10 - Does the internal combustion engine have a viable future?

Dr Marc Stettler, lecturer in Transport and the Environment, Imperial College London, UK

Concentrating on emissions, Dr Marc Stettler, will look at proprietary data

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from more than 1,400 vehicles tested by Emissions Analytics and discuss whether the ICE can meet the demands of ever-increasing emissions standards. He will also consider the impact autonomous vehicles may have on emissions, using data from a study between Imperial College London and Emissions Analytics, which examined how pollutants can be reduced when driving decisions are automated.

12:40 - 14:00 - Lunch

14:00 - Energy-independent vehicles: a bigger market than autonomous vehicles

Dr Peter Harrop, chairman, IDTechEx, UK

Vehicles by land, water and air that are autonomous in navigation and task are gaining all the attention, but their hardware is being commoditised. Adoption is limited. The 'next big thing' will have a larger impact. Think of energy-independent electric vehicles (EIV) such as the Canadian sun-powered helium-filled aerofoils carrying 30 tonnes, Chinese and German mainstream solar cars soon on sale, Italian wind/sun pizza van licensing, solar drones in the upper atmosphere for 5-10 years soon. Electricity utilities and charging networks bypassed: less battery or no battery suffices. Hear the findings of the new IDTechEx report, 'Energy Independent Electric Vehicles 2017-2037'.

14:30 - Fiscal aspects of smart charging

Baerte de Brey, chief international operations, ElaadNL, Netherlands

The Netherlands is one of the leaders in the field of electric transport. The growth of EVs results in a growing availability of storage capacity in the Dutch electricity network. This storage capacity can be used for smart charging, which means the adjustment of the way, the speed and the time of loading, to meet the market and network conditions. It solves congestion and imbalance situations in the network. In the future these situations will increase, due to the growth of EVs and sustainable (decentralised) power. ElaadNL has identified the tax barriers that hinder smart charging.

15:00 - V2G: a new paradigm for transportation – **NEW** the Enel case

Federico Caleno, head of new technologies and global I&N innovation, Enel SpA, Italy

The presentation will explain how Enel is transforming car owners into producers of services to stabilise the Danish electric grid, and how Enel will soon do the same in the UK, Germany and the Netherlands. We allow electric car owners to make money when their cars aren't running, just by connecting them to the charger. We are already doing it, making real money, in Denmark.

15:30 - 16:00 - Break

16:00 - Developing high-power inductive charging technologies for the automotive and transportation industries

Andrew Daga, CEO/founder, Momentum Dynamics Corporation, USA

This presentation will focus on the development high-power inductive charging technologies for the automotive and transportation industries. It describes the need for a technology that allows any type of vehicle or appliance to be connected to the electrical power grid without the use of wires or cables. The technology needs to provide current and future generations of electrically powered vehicles and provide an alternative to plug-in charging as a primary means of charging the batteries of these vehicles. The presentation will outline a technology that can safely transmit electrical energy through air, water and ice, enabling all classes of electric vehicles to be charged without supervision and under all weather conditions. As such, it is the key enabling technology required to practise routine 'opportunity charging', which allows the driving range of all-electric vehicles to be extended.

16:30 - Redefining sustainability

Sedale Turbovsky, CFO, carbonBLU, USA

Sustainability is a word that encompasses many aspects of a business. In transportation it has generally been used in discussions focused on environmental sustainability. carbonBLU is redefining the discussion, with software and services that address all aspects of fleet sustainability. Alternative fuels and advanced vehicles are changing the way we look at transportation. Our goal is to promote intelligent investment in transportation technology, through education and empowerment. Learn about the tools and methods we use to successfully deploy alternative fuel and advanced vehicles.

STREAM 6 ENVIRONMENTAL SUSTAINABILITY (CONTINUED)

DAY 2 / THURSDAY 6 JULY

09:00 - Electrified heavy-duty road transport

Benjamin Wickert, head of business development eHighway, Siemens AG, Germany

To meet constraints faced by road freight in terms of significantly lowering or reducing CO₂ emissions and improving air quality, an electric road system (ERS) based on an overhead contact line (OCL) hybrid heavy-duty vehicle (HDV) has been designed, developed, tested and demonstrated. The ERS demonstrated has twice the energy efficiency of conventional diesel HDVs and enables usage of renewable energy. The ERS can be integrated with existing infrastructure, thus making it easier and cheaper to implement and maintain. Lower energy consumption yields lower operating costs, and the resulting savings can finance the infrastructure investment.

09:30 - Inductive (wireless) charging – the road to sustainable mobility?

Dave OudeNijeweme, managing consultant, E4tech, UK

Electrification – especially of light-duty transportation – is generally accepted as the only available way to achieve the ambitious targets agreed in Paris. Governments have passed legislation that in effect requires increasing market penetration of zero-emission-capable vehicles. In this paper we will examine car utilisation now and in the future, and the impact this might have on the level of GHG reduction xEVs could bring under different transport scenarios. We further examine how inductive charging could significantly increase the number of miles driven on electricity.

10:00 - A sustainable future transport system – how will we move?

Margriet van Schijndel-de Nooij, secretary general, European Automotive Research Partners Association, Belgium

Transport accounts for a significant portion of Europe's CO₂ emission and energy consumption, and it has a huge influence on land use. Major developments like electrification of transport, connected and automated transport as well as Mobility as a Service and shared ownership of vehicles will drastically change our transport options. A systems approach is essential to make best use of all transport modes and the latest technological developments. Thus, for example in reducing fuel consumption and emissions, it is not only the vehicles that should be optimised, but the full chain from well to wheel and the actual availability of energy. Sustainable Urban Mobility Plans and their execution can play a key role in delivering sustainable and future-proof mobility for people and goods. To create and maintain a sustainable, flexible, user-friendly and affordable European transport system, cooperation among stakeholders like cities, industry, research and Member States is essential.

10:30 - 11:00 - Break

11:00 - Getting to zero-carbon freight transport: the role of regulation

NEW

Samuel Kenny, freight and rail transport officer, Transport & Environment, Belgium

Trucks are the cause of almost 30% of CO₂ emissions from road transport. This share will only increase in the future as cars become both more efficient and electric. This presentation will outline the way in which we can transition to a clean freight transport system and the role of new technologies (truck electrification, truck/roadside ITS and 3PL apps) in doing so. What can the policy maker do to promote the adoption and use of such technologies by OEMs and freight companies? Are carrots or sticks the best way forward? Is it possible to get to zero emission?

11:30 - The difference between automated cars and automated public transit

Dennis Mica, business development manager, 2getthere, Netherlands

Although driverless cars are envisioned as a potential solution to the challenges facing cities, the reality is that they will not significantly reduce traffic, nor allow the space in the city used by streets and parking to be repurposed for the betterment of society. The challenge is to remove cars and trucks from cities while at the same time improving mobility and reducing its total costs. To ensure the throughput of any transit system, avoiding the congestion on 'normal' road systems requires unhindered travel – by either creating a car-free city or alternatively by creating a dedicated infrastructure.

12:00 - Driverless cars – they will kill the city and save the suburbs

David Green, principal, global practice leader, Perkins+Will, UK

Driverless cars will radically transform the city and suburbs but in exactly the opposite way that most people believe. Instead of being the saviours of our cities, they will provide the justification for the retention and expansion of the 20th century suburban development model. They will do this because they will simultaneously solve the problem of modern road congestion while increasing the convenience with which we all move about in cars. In order to understand this, one must understand a similar situation that unfolded a century ago when the new technology wasn't driverless cars, but cars with drivers.

12:30 - 14:00 - Lunch

14:00 - New quantitative framework for evaluating urban impacts of autonomous vehicles

Dr Amitai Bin-Nun, director, Autonomous Vehicle Initiative, Securing America's Future Energy, USA

We have developed a new quantitative framework representing the key characteristics of cities, suburbs and rural areas. We generate several potential scenarios representing the potential development trajectories of autonomous vehicles (e.g. used primarily for short trips in dense urban areas or for a broader range of purposes). For each scenario, we construct how the 'utility' of autonomous vehicles will vary in different areas, and how each scenario will impact the population density, vehicle ownership rates and vehicle miles travelled in cities. We will then discuss the implications for policies to encourage the development of specific autonomous vehicle use cases.

14:30 - Mobility in the future (2030) – first nationwide opinion study

Marco Maréchal, strategic (communication) advisor, Connected Strategic Change Processes, Netherlands

Our world is dominated by technology, and that is a good thing. But in the end people and stakeholders have to embrace the new norms of mobility, like self-driving cars. Is it not time to know what people want, what they want the new norms of mobility to be? What are the knowledge, behaviour and attitude towards these issues? If we know this, we can make new services and products and create mass so people will buy them. We conducted the first nationwide survey on this topic and wrote a bestselling book about new mobility.

15:00 - 15:30 - BREAK

15:30 - PANEL DISCUSSION

How will new transportation technology ensure an environmentally sustainable future? What and who will fuel future mobility solutions? How can transportation become energy independent?

Margriet van Schijndel-de Nooij, secretary general, European Automotive Research Partners Association, Belgium



earpa

David Green, principal, global practice leader, Perkins+Will, UK



PERKINS+WILL

Josef Czako, CEO, Moving Forward Consulting Ltd, Germany



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Samuel Kenny, freight and rail transport officer, Transport & Environment, Belgium



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STREAM 7 CHANGING LANDSCAPE FOR CAR MANUFACTURERS: DISRUPTIVE CHANGE – WILL BRANDS REMAIN KING IN A CHANGING WORLD?

DAY 1 / WEDNESDAY 5 JULY

09:00 - 09:40 Opening Session

Tony Robinson, CEO and founder of UKi Media & Events plus guest speakers



10:10 - Key challenges for the automotive industry

Stefan Deix, director, EUCAR, Belgium

Digitalisation, automation and connectivity are certainly dominating trends in the first quarter of the 21st century. They modify the way we think about future mobility. Together with the need for decarbonisation and the societal need for transportation, automotive innovation is happening at an accelerated pace. For these reasons, EUCAR, the European Council for Automotive R&D, decided to launch a major strategic review process with the main objective to identify key challenges for the automotive industry until 2030. EUCAR is the research association of major car and truck manufacturers in Europe.

10:40 - Future mobility – successful with disruptive business models?

Andreas Gissler, managing director, Accenture Strategy, Germany

Urban mobility is the key driver for infrastructure investments – global cities act as gatekeepers. Technology convergence will revolutionise mobility in the cities and beyond. Self-driving vehicles (SDV) might become an integrated part of the city ecosystem involving multiple stakeholders. The future solution has to consider customers' end-to-end mobility and cities' requirements. The competitive landscape regarding mobility solutions is developing with a number of market entrants. Different strategic options for automotive OEMs are seen. The question is: how to position now?

11:10 - Understanding the automotive disruption ahead

Dr Wolfgang Bernhart, senior partner, automotive, Roland Berger Strategy Consultants, Germany

The automotive industry is about to set off on a brand-new path. Whereas before, high expectations for non-linear developments would quickly fade into years of silence, now four major trends – new mobility solutions and a trend towards sharing, autonomous vehicles and advanced driver

assistance systems to reduce fatalities, digitalisation and connectivity as a technical enabler, and electrification to reduce CO₂ emissions as well as local NoX and particulate matters and noise emissions – are meeting at the same point in time. The implications seem clear: the traditional automotive value chain is about to see more disruption in the next decade than it has since the automobile was invented. In this presentation Dr Wolfgang Bernhart, senior partner for automotive at strategy consultant Roland Berger, will set out the challenges for automotive OEMs, how they can position themselves to take advantage of this disruption and provide a framework of indicators to understand where we are with respect to the disruption ahead.

11:40 - Disruptive change facing the 'mobility' supplier

Daron Gifford, partner, Plante Moran, USA

Based on research by Plante Moran, disruptive change to the automotive industry will be the norm. OEMs, suppliers and retailers will be impacted at all levels, with special emphasis on: mass/weight reduction, fewer and global vehicle architectures, targeted emerging market growth, next-generation powertrains, mobility technology – convergence of autonomy and sharing will be the inflection point for upheaval in the automotive industry's role in future mobility. Critical capabilities for competing in this dramatically changed transportation model will be discussed. A framework and approach for strategies to address future challenges will be highlighted.

12:10 - How can OEMs win the power play in tomorrow's radically changed automotive ecosystem?

NEW

Wolf-Dieter Hoppe, associate director, Arthur D. Little GmbH, Germany

Automotive, as it has evolved over the last 100 years, is perceived by many as leading to massive problems throughout the world. Driven by wealth and urbanisation, it has increased pollution and congestion globally and needs to be addressed. Technological development seems to offer solutions: electric mobility leads to much cleaner mobility, car sharing will decrease the number of vehicles in use worldwide, and autonomous driving will help boost the capacity of streets – be they urban or highways. Really? To assess the impact of those key trends, Arthur D. Little has conducted a 360-degree study incorporating perspectives from customers, industry players and regulators. This presentation will outline the conclusions.

12:40 - 14:00 - Lunch

14:00 - Digitising transportation – the era of cognitive technologies in automobiles

Ananth Srinivasan, senior consultant, Frost & Sullivan, Germany

The dawn of the cognitive era, and its impact on businesses, is the central theme of this presentation. Starting with the various artificial intelligence technologies entering the automobile, to growing acceptance of voice UI, and autonomous technologies that have grown from a side theme to a central theme in product development, we will explore how the different stakeholders in the automotive ecosystem are expected to respond. This presentation is also the theme of Frost & Sullivan's flagship automotive thought-leadership event in London this year, and will include insights from this space as needed.

14:30 - PANEL DISCUSSION

What effect will disruptive mobility technology and new personal transportation options have on business models and strategies for automotive manufacturers?

Andreas Gissler, managing director, Accenture Strategy, Germany



accenturestrategy

Dr Wolfgang Bernhart, senior partner, automotive, Roland Berger Strategy Consultants, Germany



**Roland
Berger**

Kamal Bali, managing director, Volvo India Pvt Limited, India



Dr Klaus Schmitz, partner, Arthur D. Little GmbH, Germany



Arthur D Little

Nick Molden, founder and CEO, Emissions Analytics, UK



**EMISSIONS
ANALYTICS**

Heiko Stuis, manager e-mobility product strategy, Daimler AG, Germany

**STREAM 7 CHANGING LANDSCAPE
FOR CAR MANUFACTURERS**
(CONTINUED)

DAY 2 / THURSDAY 6 JULY

09:00 - Road transport – the automotive supplier's perspective for 2030

Dr Alessandro Coda, chief technology officer, CLEPA - The European Association of Automotive Suppliers, Belgium

In the coming months, CLEPA will be analysing the trends and driving forces that will have an impact on road transport in the next 15 to 20 years, and working out the priorities and challenges for the automotive industry (and in particular for the suppliers). The areas that will be analysed cover all the vehicle domains: safety, mobility, energy and environment, including materials and manufacturing. Current and future legislation are of course influencing the scenarios, and the need for innovation and research activities will be highlighted.

09:30 - Meeting the challenges in embracing a rapidly changing future landscape

Andrew Atkins, chief engineer - technology, Ricardo, UK

Through to 2030 the transport product landscape is set to change enormously: changes in buying habits; increasing levels of automation towards fully autonomous vehicles; changing energy vector of choice. These pose a powerful challenge to vehicle producers with new supply chains, technologies and business models to embrace. What is also of interest is what is not changing and how the new dimensions of complexity interact with these. For example, the paramount need for safety will not change. One of the drivers for autonomous vehicles is safety, but cyber assurance and code testing become vital as the ever-increasing connectivity and reliance on automation become central. Furthermore, electricity is a clean-at-point-of-use fuel, but how are we going to ensure its delivery and cleanliness of production as part of a full lifecycle impact of motion? This paper will touch on some of these challenges and the programmes by which Ricardo is exploring the solution space and the impact it might have on car manufacturers.

10:00 - The future of mobility is designed, not built NEW

Max Ackermann, managing director, Berlin, Siberia, Germany

In a future where anyone can build anything, "Can we do this?" is the wrong question to ask. In this multi-modal transportation context, businesses must start asking, "Why should we do this in the first place?" Leading product and service design firm Siberia partners with the world's most ambitious organisations to answer this question. The talk explores the untapped potential in the touchpoints between humans and technology, and why only organisations with a relentless focus on design and user experience will play a part in the future of transportation.

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10:30 - 11:00 - Break

11:00 - Carsharing and ridesharing – two services, one fleet (and other ways to increase utilisation)

Mark Thomas, vice president of marketing, RideCell, USA

The presentation will analyse how to quickly launch and scale a new mobility service to achieve maximum profitability. Learn how vehicle utilisation in new mobility services drives profitability and which techniques to use to achieve the highest utilisation rates. Learn what's required to launch a new mobility service offering, including end-to-end work flow, dispatch, scheduling, balancing supply, demand, CRM and payments. Examine lessons learned from launching one of the largest car-sharing programmes in the US market.

11:30 - Nationwide results of a survey of youngsters – their vision on mobility and possession

Marco Maréchal, CEO/strategic (communication) advisor, Connected Strategic Change Processes, Netherlands

This is the first nationwide research on such a wide scale, when it comes to youth and mobility in the future (2030) and the partial economy. Connected Strategic Change Processes surveyed 1,000 youngsters to find out their needs and wants (knowledge, attitude and behaviour) when it comes to mobility now and in the future (2030) and what their position is in the partial economy. It is necessary for the outside world (people) to get involved. Self-driving cars, cooperative systems, connected e-bikes and connected cars are part of this survey.

12:00 - The implications of a driverless future

Matthew Cockerill, creative director, Seymourpowell, UK

For a century, our cities and the lives in them have been defined by the car. Although great advancements have been made in comfort, features and safety, the basic paradigm of the car is unchanged since carriages became horseless carriages. This speech will explore the implications of a shift to autonomous vehicles and away from private ownership, and the profound effect this will have on the vehicles of the future, the shape of our cities and the lives we lead in them.

12:30 - 14:00 - Lunch

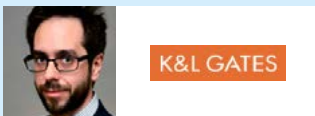
14:00 - PANEL DISCUSSION

What effect will disruptive mobility technology and new personal transportation options have on business models and strategies for automotive manufacturers?

Andy Toth, investment director, Plug and Play Ventures, USA



Claude-Etienne Armingaud, partner, K&L Gates, France



Further panellists to be announced shortly from a key automotive manufacturer and a mobility startup venture



**STREAM 8 INFRASTRUCTURE
AND PROJECT FUNDING:
RADICAL TECHNOLOGICAL AND
BEHAVIOURAL CHANGE WILL IMPACT
CLASSICAL MODELS. GOVERNMENTS
AND CONSORTIUMS BEWARE –
MISTAKES WILL HAVE QUANTUM
DOWNSIDES**

DAY 1 / WEDNESDAY 5 JULY

09:00 - 09:40 Opening Session

Tony Robinson, CEO and founder of UKi Media & Events plus guest speakers



10:10 - Digitalisation and mobility: funding, sustainability and resilience as enabling factors for the successful transition to future forms of mobility

Hans-Peter Egler, CEO, Global Infrastructure Basel (GIB) Foundation, Switzerland

The entire mobility system will undergo a transformative systemic change in the coming years. The transition process from traditional mobility patterns to new forms of transportation will bring challenges and opportunities. First, the transition process will take a considerable amount of time and pose economic, social and environmental risks. Second, the transition will create winners and losers, and foster new models of collaboration. Therefore, a new mode of cooperation between the private and public sectors is required – mobility as a service! In order for this to occur, adequate voluntary and public-sector measures and funding sources are needed. This will imply new funding mechanisms and additional funding streams: funding mechanisms such as innovative FinTech applications, block chain technologies and funding streams tapping on additional institutional money. Furthermore, in the funding space the inclusion of ESG criteria is essential. As a result, policy schemes will also have to be adapted to enable innovative new mobility solutions to develop.

10:40 - Impact of the physical internet on sustainable logistics and transportation

Steffen Kaup, head of future innovation transport and logistics, Daimler AG, Germany

By 2050, the volume of goods that are transported will have increased by around 55%. That just wouldn't be possible with the traffic infrastructure as we know it today. An innovative approach is to face the growing transport demand with a synchromodal transport system. Synchromodal is a synthesis of 'synchro', meaning occurring at the same time, and 'intermodal', referring to multiple means of transport. The model for this system is the internet and its forerunners. A similar solution might also be conceivable for the transport of physical goods, also called the Physical Internet.

11:10 - Future of transport and mobility technology in Dubai – potentials and obstacles to progress

Zeina Nazer, secretary general & director, ITS Arab & Innova Consulting, UK

It is imperative to improve and develop a secure and sustainable transportation system to serve the increasingly high concentration of people living in urban areas and the demand for higher levels of service and information regarding transport services (such as real-time updates on bus and train schedules). Transportation needs now have much more complex solutions than simply building new roads or rail lines. Innovative technology-driven approaches are required to meet these demands. Emerging technologies are playing a central role in Dubai. The integration of technology with transport systems has become a given – particularly with the move towards the development of Dubai Smart City. We will focus on the autonomous vehicle shuttles that are currently operating and the personal air transport systems (PATs) that are due to start flying this year. We will touch on funding for such radical technologies and the wider socioeconomic impact, plus the accompanying infrastructure challenges. Although those emerging technologies present opportunities to improve users' convenience, they also present a major challenge to ensuring those changes do not introduce a significantly higher level of security- and privacy-related risks for their users. Also, questions arise such as where will the funding for such radical technologies come from and what are the social and economic impacts. Last but not least, we will cover the accompanying infrastructure challenges. The challenges listed above will undoubtedly require a cooperative effort between governments, transport bodies and supply chain partners to address.

11:40 - The challenges in funding and financing infrastructure

Gershon Cohen, global head of infrastructure, Aberdeen Asset Management plc, UK

Investing in infrastructure is not just about economic stimulus or spending out of a recession. Instead, it is about laying a solid platform from which countries can transform their economies. There has to be a well-articulated economic, social and political vision about a country and its economy, and a prospectus that details how this will be delivered over the long term, incorporating detailed financial plans. There has to be a very grown-up ideological approach to the acceptance of private capital and public infrastructure providing optimal solutions.

12:10 - 14:00 - Lunch

14:00 - Next-generation infrastructure needs to be responsive to user behaviour

Aernout van der Bend, director general, NGInfra (Next Generation Infrastructures), Netherlands

NGInfra is the Dutch alliance of cross-sectoral infrastructure owners/asset managers. The partners (national authorities of roads, railways, electricity, water supply, main ports of Rotterdam and Schiphol) recognise the importance of sharing interdisciplinary knowledge, experiences and data, and want to achieve responsive connections. Three major societal changes: data revolution, energy revolution and urban revolution. For infrastructure to deliver societal value, it will have to be responsive. Think about new ways of decision making, cross boundaries of organisations, be data

heavy, foster innovation, deal with growing uncertainty and provide more flexibility. Our aim is to create an international network on this basis.

14:30 - How to inject capital into transportation infrastructure build-out?

Boris Galonske, managing director, Silverbergh Partners, Switzerland

Although infrastructure is high on the agenda of the public sector as well as of investors, matching an investment opportunity with capital remains challenging. Initiators of infrastructure projects as well investors need to achieve a common understanding of the opportunity. Risk-return preferences of the investor need to be met. Hence, we will investigate aspects that are important to understand to create a match, e.g. today's infrastructure financing landscape, financing needs and activity, investor types, means of financing, project characteristics, the role of public vs. private funds.

15:00 - 15:30 - Break

15:30 - Future transportation funding – road charging worldwide best practices

Jack Opiola, managing partner/president, D'Artagnan Consulting LLP, USA

This paper presents a high-level analysis of key issues that should be considered for implementation of 'road charge' or distance-based charge based on distance driven rather than fuel consumed. The speaker will address lessons learned from the US states of California, Oregon and Washington, and from countries around the world using this alternative funding mechanism for their future sustainable transportation funding policies. The emphasis will be on a list of identified issues/consideration of critical next steps and thinking around the world as states and countries struggle with fuels excise taxes in the future market of efficient and economic vehicles.

16:00 - PANEL DISCUSSION

Challenges and opportunities for sustainable financing and funding for future infrastructure and mobility projects

Aernout van der Bend, director general, NGInfra (Next Generation Infrastructures), Netherlands



Richard Blyth, head of policy practice and research, Royal Town Planning Institute, UK



Hans-Peter Egler, CEO, Global Infrastructure Basel (GIB) Foundation, SWITZERLAND



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STREAM 8 INFRASTRUCTURE AND PROJECT FUNDING (CONTINUED)

DAY 2 / THURSDAY 6 JULY

09:00 - The future of infrastructure funding

Dr Dejan Makovšek, economist, International Transport Forum at the OECD, France

Policy makers often confuse the terms 'funding' and 'financing'. Without funding, there can be no financing. Funding can come from the users (user charging) or the taxpayers. When private financing is involved, user charging normally implies the transfer of demand risk. Are user charges a safer source of funding than taxpayers? When does it make sense to transfer demand risk? What will the future bring? How will vehicle automation and 'smartness' affect future infrastructure demand and who should be bearing that risk?

09:30 - Transport – the wider benefits

Richard Blyth, head of policy practice and research, Royal Town Planning Institute, UK

Many countries have two problems: (1) How to finance transport investment and (2) How to support growing cities. The presentation will demonstrate that widening the measures for assessing the benefits of transport investment can increase its chances of funding and the chances that it will support economic growth.

10:00 - Reaping bitter harvest or great benefits – time to act!

Dr Tor Skoglund, senior researcher, Sweco, Sweden

The rapid development of highly automated and connected transport will become a game changer. The stark contrast between the speed at which automation is adopted by individuals and the speed at which societies respond will, however, render unwanted effects. Urgent decisions on how to shape future cities and infrastructure will therefore need to be based on a combination of knowledge about what drives behavioural change of individuals as well as an expertise in transport system design. Methods, metrics and measures for successful prediction and sculpting of societal effects from transport automation will be presented.

10:30 - 11:00 - Break

11:00 - Smart mobility pilots near Amsterdam

Jeannet van Arum, director smart mobility, Provincie Noord-Holland, Netherlands

In the Metropolitan Region of Amsterdam, the Province of Noord-Holland is doing pilots on smart mobility for the future. The focus of these projects is in communication with traffic lights, learning from the introduction of autonomous cars. We collaborate with, for instance, Nissan, the future bus of Daimler-Benz, University of Delft, and several service providers like KPN, Vialis, Swarco and Technolution. The pilots are done under public-private partnerships where all parties contribute in kind and in budget.

11:30 - Reliable estimation of cost drivers for transport infrastructure in Australia

Prof Pascal Perez, director, SMART Infrastructure Facility, Australia

A study of transport infrastructure projects across three Australian states shows that: 1) Governments should undertake pre-investigation work prior to tendering, to enable bidders to better assess potential risks and reduce tendering costs; 2) They should deliver large projects incrementally, where feasible and appropriate, to reduce overall project costs; 3) They should put in place better data collection and reporting measures to foster a better decision-making capacity in the long term.

12:00 - New mobility: challenges and new positioning for the infrastructure industry

Rafael Moreno Cela, operations manager, OHL Concesiones, Spain

Several forces are shaping and challenging highways and the infrastructure industry: climate change, urbanisation, technological innovation, demographic shifts and the changing behaviour of travellers. The infrastructure industry is also dealing with the sharing economy, which allows the emergence of new business models that challenge traditional ones and force in some way their transformation. For companies and administrations committed to DBFOM projects, thinking about these trends, new concepts, emerging solutions and issues allows them to look beyond day-to-day activities towards a better understanding of the long-term challenges, and paves the way for a transition to new business models focused on service, technology and sustainability.

12:30 - 14:00 - Break

This programme may be subject to change

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