



HAMBURG
ITS World Congress
11 - 15 Oct 2021

Experience Future Mobility Now

Official Show Preview



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See you at
ITS World Congress
in Hamburg
11 - 15 October
Hall 4, Booth EG110



Welcome to the 27th ITS World Congress

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I am thrilled to welcome the ITS Community to the 27th ITS World Congress in Hamburg from 11 to 15 October after nearly two years apart. I really look forward to discussing the latest intelligent transport solutions face-to-face with international ITS experts, professionals, public and private sector leaders, researchers, engineers, and students, representing all corners of the ITS industry at the ITS World Congress in Hamburg.

This year is a very special year for Ertico as we are celebrating 30 years of innovation. In fact, since 1991, Ertico has coordinated and worked on dozens of European projects, undertaken a central role in public consultations and policy agendas while establishing long-term relations with key players worldwide. Every three years, Ertico has the privilege of organising the ITS World Congress in Europe. This year, it takes place in cooperation with the European Commission, the local Host ITS Hamburg 2021 and ITS America and ITS Asia-Pacific.

To celebrate 30 years of innovation, the ITS World Congress will bring a piece of the future to current times and experience what smarter, cleaner and greener mobility looks like. Ertico will, of course, have a large stand displaying our ongoing activities (5G Loginnov, 5G Meta, 5G-MOBIX, CroCo, Carmen, Ensemble, TM2.0, TN-ITS, SHOW, SolutionPlus, Modales, eCharge4Drivers, MaaS Alliance, FENIX, ADASIS, SENSORIS, ACADEMY and City Moonshot).

Since the ITS World Congress is an ideal channel to foster cooperation with the international

industry community, we believe it is an excellent opportunity to show our gratitude towards our partners. I am very excited to meet many Ertico partners participating in the exhibition and live demos and our partners Volkswagen, Yunex Traffic, Here and Continental sponsoring the Congress. Seeing so many big names in the industry shows great support to the ITS community, and I am very excited to experience their innovative mobility solutions in person.

This year, the ITS World Congress profiles the changing face of mobility, with real-world examples of electric vehicle implementation, shared transport and autonomy taking centre stage, promising delegates the opportunity to Experience Future Mobility Now, as its theme suggests. From October 11-15, 2021, everything in Hamburg will revolve around intelligent mobility, and the six congress topics chosen this year will attentively allow participants to 'Experience Future Mobility Now'. From the latest technologies, innovative solutions for cities and citizens, third mobility dimension, to the integration of different forms of transport into a single, on-demand service. This and much more will be presented to create an unforgettable experience.

Make sure to visit the Ertico stand (B5.135), at any time during the week to discuss smart and sustainable future mobility with the team.

I look forward to meeting you face-to-face after all this time!

Jacob Bangsgaard, CEO, Ertico – ITS Europe

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This year's demos and tours, encompass land, sea and air – and everything in between

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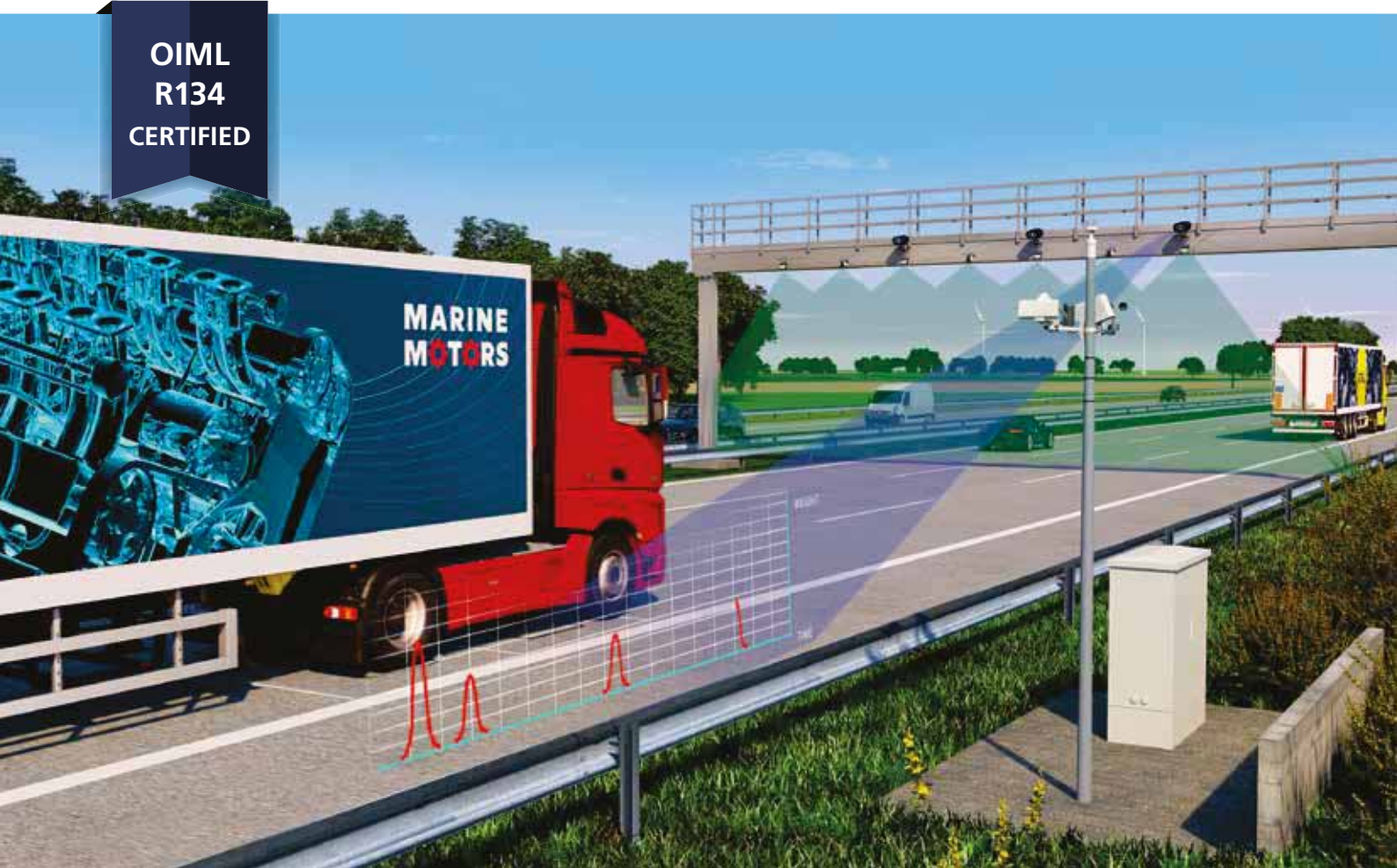
A-Z listing of exhibitors with stand numbers

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 **Traffic Data Systems**
Innovative Technologies

Highlights of the Congress

The ITS World Congress, organised by Ertico - ITS Europe and co-organised by the European Commission, is supported by the German Federal Ministry of Transport and Digital Infrastructure and hosted by Germany's largest port city, Hamburg.

The Congress has drawn an impressive list of high-level speakers who will discuss the six key themes highlighted throughout the Congress: Automated and Connected driving, Mobility as a Service, Intelligent Infrastructure, Goods journey from ports to customers, New Services from new technologies and Solutions from Cities and Citizens.

"This will be one of Europe's largest face-to-face events this year," says Lisa Boch-Andersen, organiser of the ITS World Congress Hamburg 2021 and director of communications and events at Ertico - ITS Europe. "Contributions from the ITS community will be showcased in 180 technical sessions, alongside high-level plenaries and executive presentations, three regional forums, 30 demonstrations and 19 technical visits. For the first time this year, we will have two global forums, and as usual, an innovative start-up programme focused on matchmaking will form part of the programme. Of course, the most important element is people - that's what ITS is all about."

The latest smart mobility solutions

Being part of the ITS World Congress 2021 helps shape the future of smart mobility and shows where you think the ITS sector is heading. It is an opportunity to network with the international smart mobility community

in the ITS World Congress's unique setting. At the ITS World Congress in Hamburg, participants will discover the latest smart mobility solutions from top mobility experts, CEOs, CTOs and key decision-makers that shape the future of ITS.

The high-level programme includes the prestigious opening and closing ceremonies as well as the three plenaries (Ensuring Sustainable Mobility; Delivering safe, efficient and integrated solutions; Navigating data marketplaces in Smart Cities) and six executive sessions covering the six Congress topics. This high-level programme will be attended and include addresses by major personalities as well as high-level industry executives, public officials and academia from around the world, who will share their experiences and views on ITS achievements.

Two global forums

The ITS World Congress is also hosting a high-level ITS World Congress Summit in the presence of Ministers and Industry leaders and forums from the three respective regions; Asia-Pacific, the Americas and Europe. For the first time, two global forums will also be dedicated to the very popular topics on Mobility as a Service, and second, given the importance of Hamburg's role as an international port, freight and logistics.

This year's ITS World Congress in Hamburg will also feature a designated exhibition area and dedicated programme sponsored by the Ertico Start-up Initiative with the theme: Connect, Innovate, Grow. Ertico will also host two separate sessions on the work that has been done through the City Moonshot initiative, focusing on the methodology side, such as the origin of the initiative, the procedures followed to

become a reality, and of course, the results, incorporating the perspective from both cities and the ITS community.

Together with national and international partners, the Hanseatic city of Hamburg will present the latest trends in digitisation, mobility and logistics at the ITS World Congress. The organisers and host kindly thank the Congress Partners for their support: Yunex Traffic, Volkswagen, DB Bahn, Google Cloud, Here, L3 Pilot, Bosch, Continental, Diconium, Mobileye, Sopra Steria, Volocopter, ZF Group, Graphmasters, 5GAA, HVV, Lufthansa and Moia.

Innovative mobility concepts

The exhibition halls, the Congress Centre Hamburg (CCH) and selected locations throughout Hamburg provide the largest industry meeting on these topics. The World Congress aims to make innovative mobility concepts tangible and present an outlook on future developments in the Hanseatic city. The city of Hamburg also invites participants to the ITS World Congress 2021 Public Day to Experience Future Mobility Now on the ground.

Moreover, the demonstration programme is the largest ever seen at a World Congress, pushing the boundaries of technical possibilities within the six Congress themes. The best-rated demonstration will be given the Best Demo Award based on the votes of Congress participants. If you are interested in the future of mobility, then the ITS World Congress is an unmissable opportunity.

► **For any registration-related questions please contact the Registration Team at: +32.2.320.2535 or registrationits@mailcongress.ertico.com**

Highlights of the packed programme

The ITS World Congress gathers an impressive number of ITS stakeholders from the public and private sectors to learn from each other about the latest innovations in products, services and related practices in smart mobility.

This year, the ITS World Congress launched a Congress App on 20 September for participants to keep up-to-date with information and programme straight from a smartphone. The app will provide the possibility to plan the programme, network with all attendees and book meetings in the B2B networking area as well as to book a demonstration. Conference participants can rate all sessions they attend by first registering for those sessions on the app.

Search for 'ITS Congress' in your app store. At the heart of the Congress, the programme offers delegates an unparalleled opportunity to learn about the latest ITS technologies and new mobility concepts. Six key themes are highlighted throughout the congress: Automated and Connected Driving; Mobility as a Service; Intelligent Infrastructure; Goods Journey from Ports to Customers; New Services from New Technologies; and Solutions from Cities and Citizens.

The official Opening Ceremony, addressed by major personalities, will take place on **Monday 10 October**. Keynote speeches will be made by Dr. Peter Tschentscher, First Mayor at the City of Hamburg; Dr. Auma Obama, founder and

director of the Sauti Kuu Foundation; as well as Hajime Amano, secretary general at ITS Asia-Pacific, Dr. Angelos Amditis, chairman of Ertico - ITS Europe, Laura Chace, president and CEO of ITS America and Harry Evers, managing director at ITS Hamburg 2021.

Congress partners will be present and include Michael Peter, CEO of Siemens Mobility (Yunex) and also Dr. Anjes Tjarks, senator for transport and mobility transition at the city of Hamburg as well as a virtual address from Adina-Ioana Vălean, European Commissioner for Transport at the European Commission DG MOVE.

Continued >>



The Host City

The Hanseatic City of Hamburg is one of the most competitive regions in Germany and Europe. As a central logistics hub, it is the place to be for the ITS community in October 2021.

More than 1.8 million people live at the most important European transport axis between Scandinavia, Western, Eastern and Southern Europe. Thanks to its outstanding infrastructure, qualified specialists, innovative companies, and research institutes known for their cutting-edge research,

the city's economy and hence the quality of life in the city continues to grow. In 2035, almost two million people are expected to live in Hamburg.

In Hamburg, future mobility is not just a vision. In line with the city's ITS strategy, more than 35 projects already explore the potential of digital trends for the transport industry today. Hamburg is one of the first German cities to test autonomous and connected vehicles on a manufacturer-independent course right in the city centre. Other projects

include smart parking sensors, traffic-light phase assistants and on-demand shuttles. In addition, the port develops and implements intelligent logistics solutions. At the Altenwerder Container Terminal, for example, automated guided vehicles transport containers to designated locations.

The Congress showcases the latest ITS achievements from Hamburg and the region in line with its strategic mobility plan, giving a keen insight into the available business possibilities in the area.

Covid Measures

Ertico - ITS Europe as the organiser and ITS Hamburg 2021 as Host and co-organiser of the ITS World Congress in Hamburg (11-15 October 2021) have presented a Covid prevention plan to the Hamburg authorities which has now been pre-approved in 2G format.

Under the 2G format, all attendees will need, either to be fully vaccinated with one of the 4 EU recognised vaccinations (Moderna, Pfizer/BioNTech, Janssen/Johnson&Johnson and Oxford/AstraZeneca) or have proof of full recovery from Covid 19 (presentation of a valid vaccination certificate and/or proof of Covid-19 recovery). The ITS World Congress team wants to reassure you that we will implement the latest technology and scientific advice to create a safe and secure environment. Those who wish to visit a 2G event must prove their 'vaccinated' or 'recovered' status and provide a photo ID - more about the 2G format at this link:

<https://itsworldcongress.com/covid-19/>



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ITS WORLD CONGRESS
Hamburg
11 – 15 October 2021
Stand B5.120



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Continued >>

On **Tuesday, 12 October** the ITS World Congress Summit will discuss questions on financing models, modal transportation shifts, public acceptance of a faster transition to sustainable mobility, harmonising standards and regulations in the ITS sector, amongst other topics. High-level industry executives, public officials, and academics worldwide will draw from their experiences and views on ITS achievements and discuss key topical policies, opportunities, and challenges during six executive sessions, all dedicated to the six Congress topics.

1. Where are all the C/AVs?
(Tuesday 12 October at 11:00)
2. Future Mobility, Future City
(Tuesday 12 October at 14:00)
3. Digital evolution or digital revolution
(Tuesday 12 October at 16:00)
4. Smart traffic management: removing the roadblocks (Thursday 14 October at 11:00)
5. Implementation of Green Intelligent Transport Systems (Thursday 14 October at 14:00)
6. Achieving traffic safety: "herd immunity" with vaccinated AVs (Thursday 14 October at 16:00)

Three plenaries will highlight the overarching theme of Experiencing Future Mobility Now. The first plenary on 'Ensuring Sustainable Mobility' takes place on **Tuesday 12 October** at 10:30 am, focusing on the benefits for cities, industries, public authorities and citizens, highlighting the developments in the mobility of people and transport of goods using technologies that have hugely benefited society with accessible, equitable, inclusive, safer and

more efficient services available to all. The plenary will also look at achievements in deploying ITS to address these issues, review the expected benefits from emerging solutions and look at some of the common global challenges on defining sustainable mobility, how to deploy ITS to decarbonise mobility while addressing climate change and maintaining quality services for citizens.

The second plenary on 'Delivering safe, efficient and integrated solutions' takes place on **Wednesday 13 October** at 10:30 am and the focus of the discussion covers mobility for all, logistics services, traffic management, and automation. Integrating mobility for travellers and goods is critical to ensuring that the transport in a region, city and locality is efficient and effective. This plenary will look at what is being done globally to integrate mobility services to bring about efficiency and effectiveness gains and ask some questions about the ways forward.

The third plenary covers the topic of 'Navigating data marketplaces in Smart Cities', which takes place on **Thursday 14 October** at 10:30 am, will focus on data marketplaces, digital infrastructures, and connectivity. This plenary discusses the role of such data marketplaces for mobility ecosystems and the challenges in meeting various stakeholder demands.

The ITS World Congress in Hamburg will offer stakeholders and the ITS community the ultimate platform to experience the most recent ITS innovation and potential for networking. There will be six engaging executive sessions offering the views of global high-level executives throughout the week. Forums from the three regions of

Europe, Asia-Pacific, and the Americas will take place, and for the very first time, two dedicated global forums – one on mobility as a service (MaaS), and another on freight and ports given Hamburg's important role as an international port.

The Technical Programme is the result of the call for contribution process earlier in the year. It has delivered 180 highly focused sessions that promote advances in state of the art and ITS deployment. The sessions include tailor-made special interest sessions, technical/research papers and business presentations.

Participants can also look forward to a dynamic exhibition showcasing the latest innovative solutions and a creative young start-up area where tomorrow's minds will pitch their big ideas to Ertico partners, German industry and companies in the mobility sector under the theme 'Connect, Innovate, Grow'. Under this motto, the start-up programme will include mentoring tours and matchmaking opportunities for start-ups from around the world

'Start-ups, with their creativity and adaptability have the potential and knowledge to help us bring new solutions for tomorrow's journey and are essential for the future of the European economy. We are looking forward with great interest to see what this vibrant start-up community with its new products, services and ideas will bring to the ITS Community in Hamburg,' said Jacob Bangsgaard, Ertico CEO.

• *Additional key activities include 30 Demonstrations, 19 Technical Visits and four Hamburg tours. Visit the overview of the programme.*





Encompass land, sea and air - and everything in between

Demonstrations and technical tours have always been a core component of ITS World Congresses. The programme being put on in Hamburg is nothing short of breathtaking. It presents highlights of the current technical possibilities within the framework of the ITS themes in an interactive way for the visitor and is not to be missed.

At ITS World Congress in Hamburg, demonstrations will take place in front of the exhibition hall, inside and outside Hamburg Messe and on the public road at our test track. Demonstrations will also offer a unique opportunity to bring government, public and media attention to their brands and products.

There will be 30 demonstrations in and around the Hamburg Messe, five urban air mobility (UAM) flight demos at the HomePort and more sea-drones. There will also be the L3Pilot, 5GCroco/5GLoginnov and SynCoPark related to automated driving, while PrioBike and BiDiMoVe improve safety and comfort for bicycles.

Mobility Transition Demonstration Tours

The four Mobility Transition Demonstration Tours highlight around 60 of Hamburg's most innovative ITS schemes, including Hamburg's ITS Anchor Projects. They have been designed around 'Digitising Urban Traffic', 'Logistics Experience', 'Hamburg sets the Pace' and 'Future Rail Experience' and will run Tuesday-Friday during ITS Congress hours. Please note, only the main projects demonstrated in each Mobility Transition Demonstration Tour are listed. All of these projects will also be presented at the ITS Hamburg stand in Hall B4. The Mobility

Transition Demonstration Tours can be booked free of charge by ITS Congress Participants via the ITS Congress App or on-site in the Demonstration Hall B2. Start and end location of each tour will be Hall B2, Boarding Area.

The City of Hamburg is working intensively on the digitalisation of mobility to make transport safer, more efficient, and more environmentally friendly and to make it meet Hamburg's needs. During the Digitalising Urban Traffic Tour in the heart of Hamburg, participants will experience how intelligent infrastructure and digitisation of urban traffic can help to make traffic more environmentally-friendly and comfortable.

The Logistics Experience

The Logistics Experience tour will show projects on the water, underwater, on land and up in the sky focused on ITS logistics solutions. The group will be picked up for a bus ride through the harbour.

During the ride, there will be two narrative threads via tablets in the bus and a tour guide, explaining both the front end and the back end of Hamburg's ITS strategy from the fields of port and logistics at Kattwykbridge and HHLA Container Terminal Altenwerder - CTA. Visitors take the "ITS ferry" at Elbe river back. (Please note: Booking for this tour closes Friday 1 October.)

The Hamburg Sets the Pace Tour, where everybody should have access to a mobility service within five minutes until 2030, focuses on multimodal, reliable, and customer-centric transportation. The road tour offers the chance to visit Hamburg's efforts for a modern mobility mix with public transport, on-demand and sharing services

that can be used in an integrated manner and helpfully complement each other.

Future Rail Experience Tour will look at the digitalisation of rail traffic and the automation of last-mile feeder services making transport in Hamburg more intelligent, smart and comfortable. Experience future mobility now on a highly automated journey from Hamburg Dammtor railway station to Hamburg-Bergedorf, where the fully automated deployment of trains will be demonstrated.

Urban Air Mobility

With the new Congress topic 'New services from new technologies', the ITS World Congress will emphasise the importance of urban air mobility innovation to the ITS community. Unmanned systems can extend existing services, whether they are bound on land, sea or air. This new topic is just as fascinating for the established ITS community as it is for the citizens of the Free and Hanseatic City of Hamburg. As an urban air mobility model city, unmanned aviation is also an important aspect for Hamburg from a strategic point of view.

The ITS World Congress includes 19 technical visits with an exclusive opportunity to explore the most advanced ITS technical developments into real-life operations. Technologies will be shown in available locations, in and around Hamburg and all over Germany: the ITS Team will organise transfers to the sites. Technical visits also require long-distance transfers to the assigned location, which will be scheduled before or after the ITS World Congress days, to give delegates the possibility to attend the technical visit they choose without missing the activities planned in the general Congress programme.

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There's a lot to see on the Swarco stand

Swarco is looking forward to being back at an in-person event after 18 months of pandemic-related exhibition lockdown. On its stand, Swarco will present the full spectrum of its capabilities in sustainable urban mobility management. This ranges from smart traffic lights and controllers via parking solutions to the new Swarco MyCity software suite to manage urban traffic and environment with a single, device-independent control platform. The Green Wave for micromobility will be on display, as will the new Combia LED traffic signal generation with smart add-on features. Visitors will also learn how to design intersections in a more environmentally friendly way. The keyword in this context is Swarco X-Line. Traffic planning, engineering and consulting expertise will be represented at the stand in the same way as the future-oriented topic of Cooperative, Connected and Automated Mobility (CCAM).



A premiere on the exhibition stand will be the novel LED variable message sign generation called CubiLED. This new product gives flexibility to road operators who need dynamic signage on a smaller scale with less demanding configurations. The new VMS builds on the patented

cutting-edge and highly energy-efficient optic system the Swarco customers are used to.

Swarco is a world market supplier of traffic controllers and also presents the ITC-3 controller that can interface with all major traffic management systems on the world market while the controller also features its own high performance adaptive control algorithm called Smart Green.

Apart from contributions to the conference programme and being part of EU-funded research projects, Swarco will offer demo drives on the 9 km test track for automated and interconnected driving (TAVF) in the public urban traffic area of Hamburg. Swarco demonstrates an 'individual green wave' application based on a Traffic Light Forecast (TLF) service in the context of Environment Sensitive Traffic Management (ESTM).

► **Stand: B5.120**
swarco.com

DLR to bring prototype of the U-Shift vehicle concept to the show



On-demand shuttle, flexible distribution centre for parcels or mobile shop – with the disruptive vehicle concept U-Shift, the German Aerospace Centre

(Deutsches Zentrum für Luft- und Raumfahrt; DLR) is breathing new life into the urban mobility and logistics of tomorrow. As a highlight, DLR will be showing

the first drivable prototype at ITS World Congress 2021 in Hamburg.

This concept's main feature – it separates the drive unit, referred to as the 'driveboard', from the pod-shaped superstructures for passengers or cargo. The U-shaped driveboard houses all technical components and systems. This makes it autonomous, electric, and quiet when on the move. To maximise efficiency, the driveboard can be operated around the clock. The pods, which are much cheaper to manufacture, can be designed for a wide variety of applications.

The driveboard is currently still remote-

controlled and is being automated in the current project. The first version of the passenger capsule is equipped with seven fixed seats and one folding seat.

The first U-Shift prototype gives DLR researchers the opportunity to gain initial experience with this disruptive vehicle concept and its diverse application scenarios. The goal is to make tomorrow's mobility more sustainable, efficient, and comfortable while enabling new products, services and business models to emerge.

► **Stand: B5.220**
dlr.de

Meet the Cross Zlin specialists

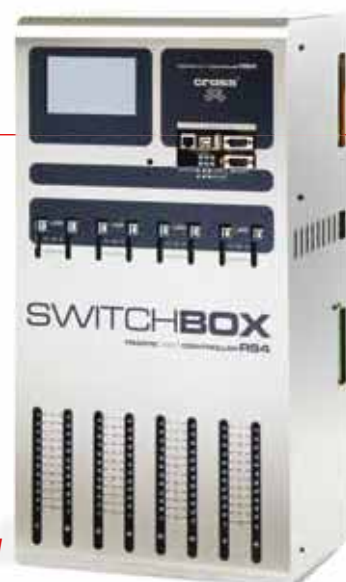
Cross Zlin is an international specialist in ITS and smart cities projects, traffic control, parking, Weigh in Motion, road telematics and road weather status. The company says it will field a team of specialists in Hamburg capable of discussing a potential project of any scale, covering all the bases - from A to Z.

The company says an important factor for clients is the knowledge that any state-of-the-art

proposal will be interoperable with the software or hardware they already have in place and can be customised to suit the given application.

Systems by Cross Zlin have been installed in locations from Japan to Brazil, Norway to Tanzania with the aim of keeping traffic moving, whatever the local conditions.

► **Stand: B7.014**
cross.cz





Cubic's Gridsmart Protect: providing safety for all vulnerable road users

Safety is the most fundamental need at intersections, but existing in-ground detection and approach-based systems simply don't do enough to protect our vulnerable road users (VRU). That's why Cubic Transportation Systems created Gridsmart Protect which the company will be demonstrating in Hamburg.

Gridsmart Protect keeps vulnerable road users safe by tracking pedestrians and cyclists as they enter, travel through, and exit the intersection. Outputs from Protect allow traffic managers to extend clearance times to accommodate each

pedestrian, no matter how quickly or slowly they move through the intersection, giving back the remaining phase time to vehicle traffic when possible.

The system uses touchless pedestrian actuation to provide additional VRU safety by eliminating the need for pedestrians to remember a ped button or touch an unsanitary surface to cross an intersection. Leveraging this feature can also build a more inclusive user experience for the disabled and even detect an 'all clear' when a pedestrian leaves after placing a call. Cubic says it's safety by design; efficiency by default.

Protect is intended for intersections where there is a need for VRU safety and analytics, but where intersections may already have other functioning detection or don't even require traditional detection. This solution was designed to be accessible for every community, regardless of controller or detection technology.

A simple software upgrade is all it takes to transition from Gridsmart Protect to the full Gridsmart System functionality when the need arises.

► **Stand: B5.301**
cubic.com

Movable and emergency barriers from Spie

Netherlands-headquartered Spie, a specialist in traffic management solutions, will use the ITS World Congress to introduce its Veva movable barrier and the Cado emergency barrier. According to Spie, both devices provide added safety for road users and maintenance staff. They also rapidly help ensure the consistency of traffic flows.

► **Stand: B5.511**
movablebarrier.com
emergencybarrier.com



Efkon integrates DSRC into vehicle interior

While millions of DSRC on-board units installed worldwide are mounted behind the vehicle's windshield, Efkon has developed a solution allowing seamless integration of the technology into the vehicle interior, which it will present in Hamburg.

Technically, the small, barely visible electronic device is installed behind the windshield and connected to the control unit located in the interior via a standardised cable harness. It contains a display as well as a slot for using contactless payment cards. The display shows the credit on the pre-paid card. During the passage through a toll station, the toll amount due is debited and displayed. Efkon has developed the patented module for production in Asia.



Major automobile manufacturers, for example Toyota, install the modules directly during production. Aftermarket integration is supported as well. Efkon says its solution is a forward-looking step towards free-flow tolling and is enjoying increasing popularity and acceptance by the customers.

Efkon is presenting the integrated DSRC module and other innovative products for electronic tolling, tachograph and enforcement in Hamburg.

► **Stand: B5.005**
efkon.com

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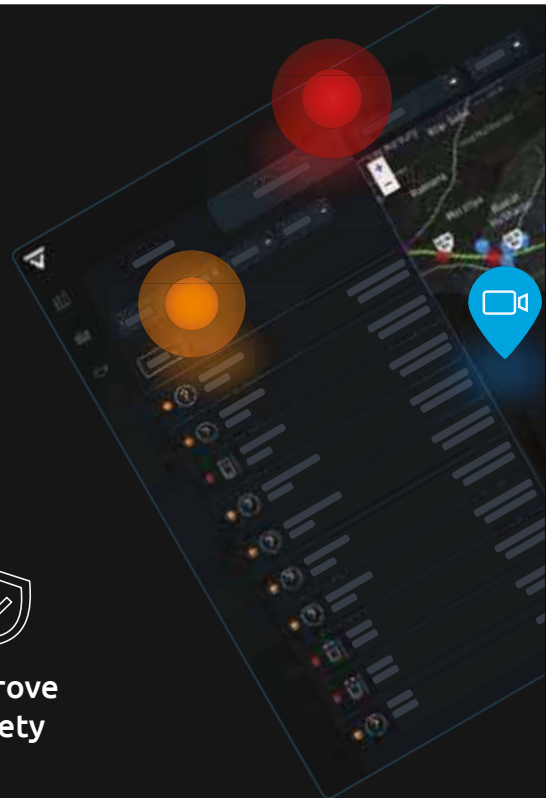


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Parifex will show three road control innovations

Parifex, a leading solution provider in project management for speed enforcement and smart cities, will highlight three innovations including 3D-Lidar technology: the Double-Side Vigie, an extra-urban speed control system; the Nano-Cam, an innovative sensor for mobile real-time data collection and speed enforcement such as vehicle counting and classification; as

well as the Nomad, a multi-infringement sensor designed to fit in the urban infrastructure.

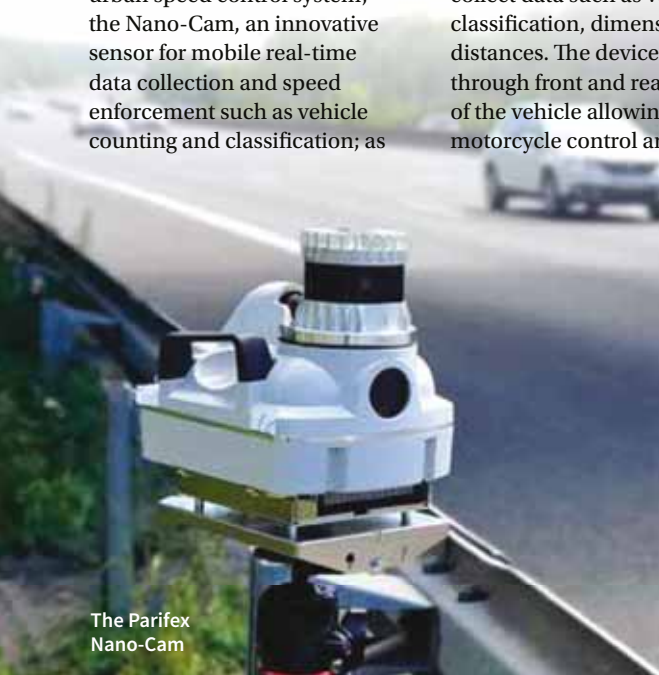
The Double-Side Vigie off-road system can detect various speeding vehicles on different lanes simultaneously and collect data such as vehicle classification, dimensions, distances. The device controls through front and rear pictures of the vehicle allowing motorcycle control and multi-

lane monitoring.

The Nano-Cam range can be used in multiple situations in order to manage road traffic safety. This light, compact, and easily transportable sensor is easy to set up on existing infrastructure or mounted on a tripod. Through the camera, the Nano-Cam enables speed enforcement in any environment and in a 360-degree view. It can collect highly accurate data in real time, such as speed, dimensions, direction, distance of any static or moving objects.

Meanwhile, the Nomad can detect multiple violations such as speeding, red light crossing, safety distance, classification and vehicle identification through its double direction tracking system. The device can be installed on any street furniture and its 3D-Lidar sensor enables an easy set-up and accurate control.

► **Stand: 7.015**
parifex.com



The Parifex Nano-Cam

An instant system from Instant System

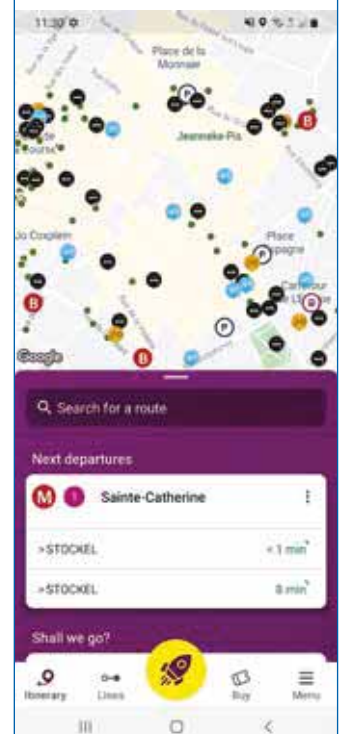
Instant System, a France-headquartered company that provides white label Mobility as a Service (MaaS) will be in Hamburg to present its mobile application.

This offers intermodal/multimodal real-time and predictive journey planning and passenger information. It also provides real-time guidance, ticketing for public transport and booking and payment for alternative mobility services (including bike sharing, e-scooter sharing, car sharing, ride hailing, carpooling).

The solution also features a back-office system allowing communication with users (notifications and messages), mobility flow analysis and the generation of mobility packages.

Instant System says it provides platforms and passenger information applications to more than 70 local authorities and public transport operators.

► **Stand: B5.508**
instant-system.com



The essence of Peek Traffic's GreenFlow



Emergency vehicles en route to an incident have to cross intersections through red lights. Crossing of these intersections is slow and unsafe. Giving them a green light on the route saves time and therefore lives. This is the essence of GreenFlow from Peek Traffic by Dynniq, and the power of C-ITS which will feature in Hamburg.

GreenFlow connects individual vehicles with traffic lights. This enables communication between road users with traffic lights they are approaching. The driver receives feedback on the result of the priority request and obtains information about the traffic lights they are approaching, such as time-to-red, time-to-green, or a speed advice to ensure that they can drive through the green light without stopping.

Peek says this technology is a very innovative instrument to many cities, municipalities and provinces and offers many possibilities for implementing traffic policy, while stimulating a safe and fast traffic flow. In addition, the company's priority services have specific applications for specific road users.

► **Stand: B5.101**
peektraffic.eu

TLEX

THE PROVEN PLATFORM THAT ENABLES CCAM USE-CASES FOR CITIES AND ROAD AUTHORITIES

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for a safer **tomorrow**

Find out why OEMs choose

AUTOCRYPT



Houston Radar to feature SpeedLine Pro and Tetryon solutions

US-based Houston Radar, a leading supplier of Doppler and FMCW radars for the traffic industry with customers in over 55 countries, will feature three major product innovations – SpeedLane Pro, Tetryon traffic cloud server, Armadillo Tracker and the Armadillo Crossfire.

Houston Radar SpeedLane Pro is an industry-leading true dual-beam, ultra-low power side-fire radar. It is designed to accurately detect lane, speed, and class of individual vehicles and compute per lane volume, occupancy, gap, average speed,



85th percentile and headway parameters in up to 16 lanes on the road in all weather conditions. The SpeedLane won the 2016 Intertraffic Award in the Traffic Management Category.

The product is complemented by Houston Radar's Tetryon traffic server; a customisable cloud server used to aggregate data from multiple SpeedLane Pro and Armadillo units in one

central location. The products are designed to seamlessly integrate out of the box to enable rapid deployment of customers' traffic data on the web.

The Armadillo Tracker, a highly portable, fully integrated multi-lane bi-directional traffic statistics gathering device, is a leading non-intrusive collector used around the world that is designed to replace road tubes.

Houston Radar says it is also the smallest and most convenient radar-based stats collection box. The device collects individual time-stamped vehicle counts, speeds and class per direction in up to two adjacent lanes, making it a perfect fit for traffic monitoring and speed study applications.

► **Stand: B5.013**
houston-radar.com



A chance to weigh up Intercomp's wheel and axle weighing scales and applications

Intercomp Company manufactures fixed and portable scales and sensors which incorporate strain gauge technology for static and Weigh in Motion (WIM) applications. This technology, on display in Hamburg, enables accurate, stable, and reliable measurements of wheel and axle weighing applications.

For WIM applications using installed scales, Intercomp's in-ground strain gauge strip sensors for low- and high-speed WIM (HS-WIM), and the LS-WIM axle scale each maintain OIML R134 weigh-in-motion certifications. These fixed WIM scales and sensors give product options delivering stable and accurate readings at speeds ranging from 3mph (5km/h) to 80 mph (130km/h.)

Portable scales will be on display as well, with wireless LS788-WIM portable scales for static and WIM use, and the LP788 low-profile portable scales with both OIML R76 and NTEP certifications. The latest portable scale indicator, the TS30 CPU with intuitive touchscreen interface, will be available for attendees to experience. Bringing new capabilities to wheel load scales, Intercomp will unveil the LTR788 dual-platform scale, which allows for weighing each tyre individually in dual tyre configurations. This enables service inspections of individual tyre ratings and tyre anomalies to be detected with a low-profile portable digital scale.

► **Stand: B5.010**
intercompcompany.com

Sensors for road and rail infrastructure

Sick will be in Hamburg to highlight its wide range of sensors and sensor system solutions for road and rail infrastructure with particular emphasis on Lidar-based sensors/systems and air quality measurement devices for tunnels. Also to be featured will be the company's light curtains and Lidar sensors and systems

for traffic profiling traffic. These measure, detect, classify, count, check vehicles, and monitor other (vulnerable) road users in 3D. They determine the number of axles on trucks for vehicle classification and measure vehicle dimensions to address loading errors.

► **Stand: B7.700**
sick.de



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BICYCLE DETECTION

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Jenoptik – Driving Future Mobility at ITS World Congress

Jenoptik Light & Safety will present innovative and industry-leading solutions from various application areas around traffic monitoring, public safety and road-user charging. With a presence in more than 80 countries and supported by a strong partner network, Jenoptik says it has supplied and installed over 30,000 systems worldwide.

Visitors to the stand will be able to see the multifunctional TraffiTower, which flexibly and modularly combines applications including speed and red-light monitoring, automatic number plate recognition (ANPR) and road-

user charging. The TraffiTower can be operated autonomously for weeks independently of a connection to the power grid. All applications are supported by a powerful back office that uses artificial intelligence to analyse the multitude of data collected in real time and reports hazard alerts, rule violations and other anomalies.

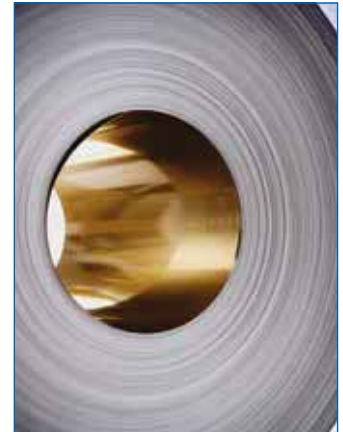
Also being highlighted in Hamburg will be Jenoptik's clean air solutions that help communities and governments effectively reduce emissions in a variety of ways. These solutions provide traffic managers with a valuable and highly cost-

effective tool to reduce air pollution.

With experience from one of the largest toll projects in the world, Jenoptik will also highlight its expertise and competence in all aspects of road-user charging.

With innovation as the driving force, Jenoptik Light & Safety is a global leader whose intelligent solutions are constantly evolving and helping to make roads and communities safer, reduce congestion and emissions, and meet the challenges of future mobility.

► **Stand: B4.EG110**
jenoptik.com



Stainless steel will transport society to a sustainable future

Outokumpu will illustrate why stainless steel, best known for providing strength and corrosion resistance for railcars and road tankers, is a superb material for sustainable transportation at the centre of the circular economy. As visitors to the event will see, the high strength and formability of Outokumpu's new Forta H-Series offers exciting possibilities to help car and bus designers create stronger and lighter structures that boost energy efficiency and increase crash safety. Potentially, the weight of a bus might be cut by 1,000 kg. The heat protection properties of the material are ideal for electric vehicle batteries, while its non-magnetic nature helps build highly efficient electric motors.

Outokumpu adds that stainless steel is also set to play a vital role in the growing hydrogen economy – which is seen as the fuel of the future. It will enable the mass production of the bipolar plates at the heart of fuel cell stacks, as well as vital elements such as the tank and piping that holds the hydrogen fuel under pressure.

► **Stand: B7.220**
outokumpu.com

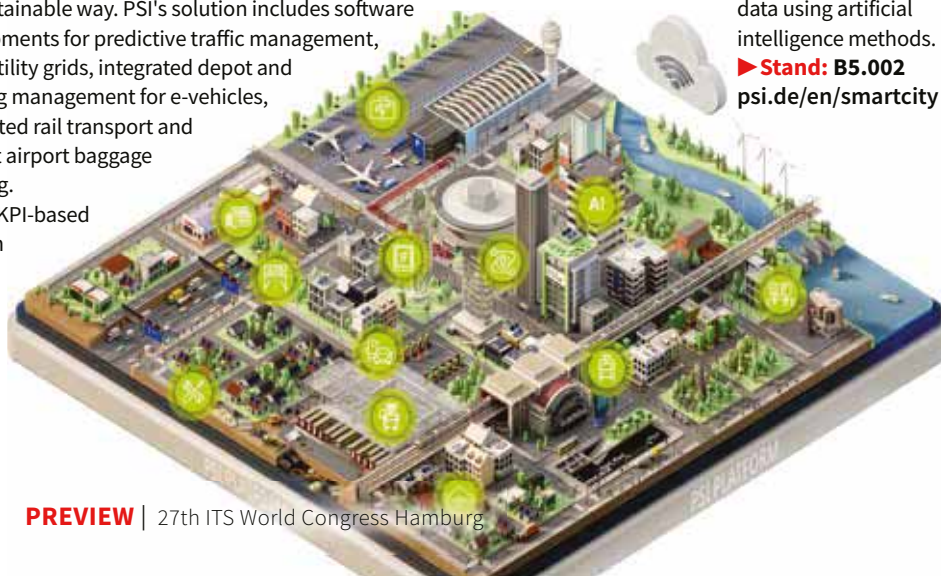
Discover PSI's smart city ecosystem

The PSI Group will present intelligent and integrated software solutions for the sustainable city of tomorrow at this year's ITS World Congress. The focus will be on how AI- and cloud-based software can help to operate urban infrastructures in a reliable, intelligent, and sustainable way. PSI's solution includes software developments for predictive traffic management, smart utility grids, integrated depot and charging management for e-vehicles, automated rail transport and efficient airport baggage handling.

With KPI-based decision

support, software from PSI optimises traffic flow control, electric network management and operational processes in bus and streetcar depots. The basis is value-added analysis of business process data through self-learning processing of historicised data using artificial intelligence methods.

► **Stand: B5.002**
psi.de/en/smartcity



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2V platforms play a crucial role in the easy integration and bi-directional data exchange between roadside equipment, road users, and mobility services. Dutch ITS specialist Monotch has developed a neutral V2X multi-stakeholder platform called TLEX (Traffic Live EXchange) that connects data, transactions and services to improve traffic flow and road safety. The company will use Hamburg to showcase a multitude of the tangible benefits of the platform that accommodates all use cases to their distinct needs and functions.

Monotch says TLEX is an example of a highly scalable system which is specifically designed to send and receive massive volumes of data with ultra-low latency, secured and privacy safeguarded ((ISO27001 and GDPR compliant). The ready-to-use platform with lots of available interfacing and many protocol options (ETSI protocols



Full-fledged TLEX data platform offers tangible C-ITS benefits

and proprietary protocols) is applied in small projects as well as large-scale deployments. In the Netherlands Monotch manages all the intelligent traffic signal controllers and road side equipment data on the TLEX platform. In Scandinavia TLEX is successfully tested in Copenhagen and Trondheim and is currently used in the NordicWay programme to facilitate the Swedish interchange network.

The vendor-independent

platform with open interface which supports a multi-vendor C-ITS eco-system is perfect for cities and road authorities who are dissatisfied with rigid project-oriented solutions. It provides a digital backbone for new connected services and the benefits are countless. Most prominent TLEX I2V benefits are informing road users in real-time, improving traffic flows and giving priority to designated traffic. But TLEX can also be used to warn about hazardous

or congested locations, grant access to emergency services, provide access control in city areas and even for enforcement purposes. Recent measurements in projects indicate a 10% reduction of travel time for prioritised transport, 2% fewer incidents with emergency vehicles and a significant 15% waiting time and emission reduction for traffic passing an intersection.

► **Stand: B5.103**
monotch.com

Kistler to showcase KiTraffic Plus WIM system

Heavy traffic can become a serious strain on infrastructure and road safety, so measurement technology expert Kistler has created a comprehensive solution to monitor vehicles. The company will showcase its modular KiTraffic Plus system that reliably detects overloaded trucks, flat tyres, and registers vehicle dimensions, without stopping traffic flow. Appropriate measures can then be enforced to safeguard roads.

Weigh in Motion (WIM) measurement chains form the basis for KiTraffic Plus. They consist of piezoelectric quartz sensors, which are embedded in the road, measurement peripherals and corresponding software. If required, Kistler can also equip the system with supplementary measurement technology from third-party suppliers, such as cameras for automatic licence plate recognition, measurement technology that records vehicle dimensions, or systems for speed control. KiTraffic Plus features a versatile software package that provides access to live data for pre-selection during traffic controls. It also records the status of the vehicle including all measured parameters, overview image and indications of violations. Kistler says initial reactions from Switzerland show that the new system meets an urgent demand: KiTraffic Plus has already been introduced at several locations for the pre-selection of overloaded vehicles.

► **Stand: B7.002**
kistler.com

Helius and Sora Lidar units on show

US-headquartered Cepton Technologies will be showing Lidar units – the Helius and the Sora Series.

Helius combines Cepton's state-of-the-art, patented, MMT Lidar technology with edge computing and advanced perception software to provide intelligent perception for smart infrastructure applications. The company

says Helius has been deployed by its partners worldwide in enabling various applications, including monitoring road and rail intersections to record accidents and near misses, improving the safety of vulnerable road users and optimising traffic flow. The device delivers fully anonymised data to maximise privacy protection and performs well in

a wide range of indoor and outdoor environments, 24/7, making it a versatile solution for smart cities.

Meanwhile, the Sora series Lidars are best-in-class 380 Hz frame rate sensors that enable high fidelity object profiling at high speeds, for applications



such as road tolling, vehicle and container scanning and similar applications.

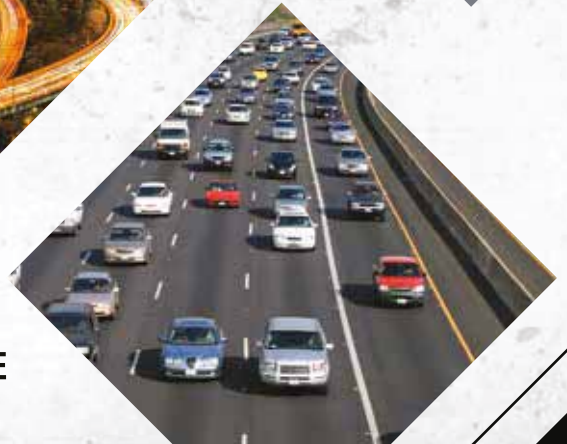
► **Stand: B7.135**
cepton.com

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To learn how Teledyne FLIR ITS keeps traffic flowing safely around the globe, go to TeledyneFLIR.com/traffic



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You need to weigh up WIM systems thoroughly, says TDS



Traffic Data Systems (TDS) will use the ITS World Congress to focus on Weigh in Motion (WIM) systems for enforcement and tolling applications. But more than that, the company is addressing the issue of device certification - in cases where customers opt for the wrong / improper certification, WIM systems will not be legal for enforcement and tolling.

As Florian Weiss, CEO of TDS points out, although there

are several manufacturers of WIM systems, only very few fulfil the requirements of OIML R134. The problem, even within the EU, is that certifications of certain metrological institutes are not recognised by other metrological institutes.

Weiss states that there is no confusion with certification for TDS' WIM systems. For instance, the TDS TMCS-IP / WIM-DSP 32 has been certified by METAS in accordance with

the requirements of OIML R134-1. The system fulfils the requirements of OIML R134 Class F/10. This corresponds to a maximum measuring error of $\pm 5\%$ (initial verification) or $\pm 10\%$ (in-service inspection).

"Traffic Data Systems was the first manufacturer in the world to have a certified and verifiable low and high-speed WIM system with only three rows of sensors," Weiss proudly states. "This not only covers the requirements of OIML

R134-1 (Class F/10), but also the speed range from 5 km/h to 120 km/h for heavy goods vehicles required by the German TLS 2012 standard, Technical Conditions of Supply for Roadside Remote Stations (temperature range: $-30^{\circ}\text{C}/+75^{\circ}\text{C}$ at up to 85% relative humidity). For light goods vehicles, the certified speed range is 5 km/h to 140 km/h."

► **Stand: B4.EG240**
traffic-data-systems.com



Lanternn lights up roads for Valerann

Valerann has launched an innovative, state-of-the-art traffic management software solution.

Lanternn by Valerann enhances traffic management through its real-time data fusion engine that analyses real-time and historical data, using artificial intelligence (AI) and machine learning to give road authorities certainty on the events and trends which are impacting their assets.

Currently deployed in control centres around the world, the system integrates data from all major sources including from roadside, vehicles and road users.

"The ability to use state-of-the-art AI techniques to filter, cross-validate and contextualise this data in an intelligent way is crucial for real-time traffic management," says Valerann co-founder and CEO, Gabriel Jacobson.

"By unlocking those benefits through our proprietary data fusion engine, we

provide our clients certainty and allow them to position themselves at the epicentre of the booming smart mobility ecosystem".

By helping to smooth traffic flow, the company believes this will also contribute to improvements in road safety and air quality.

Valerann says the product adds "significant value to the control centre at all levels to include operational management, logistics as well as long-term process and infrastructure implementation".

As a modular, easily-upgradeable, tailored solution, Lanternn by Valerann fuses indications from multiple sources into one alert using contextual data to verify detections. It also leverages historical data to automate response process planning and recommendation for courses of actions.

valerann.com

IAV's autonomous mobility

For more than a decade, IAV has been developing technologies for urban automated transport and the results are implemented in various vehicles running all over the world. The company's integrated solution, Heat, is fully operational in Hamburg Hafencity, one of the most challenging environments for

driverless vehicles.

IAV says that for urban driving scenarios the company offers flexible, scalable perception data fusion software to combine on-board sensors as well as infrastructure information from different sources, formats and timings for precise situational awareness and prediction. The

second key element – integrated safety vehicle layer – will combine any SDS system layer with rolling chassis and overall vehicle management to achieve safe driving.

► **Stand: B5.235**
iav.de





Innovative toll systems secure the future of mobility

One of the most important future mobility issues deals with how to manage the increased volume of traffic in cities. So, among other things, versatile, flexible and user-friendly tolling systems are in demand. Vitronic's presentation in Hamburg will therefore focus on traffic technology solutions that, among other things, enable the sustainable financing of alternative mobility concepts.

Future-oriented toll technologies enable automatic control of both mobile and stationary units. Attendees

can learn more about mobile toll control vehicles from Vitronic: 102 of them are currently already in use as part of the electronic toll collection system of the National Tax Administration in Poland. In this application, detection, identification and classification of vehicles to be checked is carried out automatically from a moving vehicle.

The heart of the control vehicles is the enforcement bar. This is a mobile, fully automatic licence plate reading and classification system. It enables automatic number plate recognition (ANPR) and

classification into different vehicle classes. In addition, the technology used can recognise licence plates in four directions. Even at high vehicle speeds, the system achieves a very high recognition rate and allows the inspector to concentrate on the suspicious cases identified. The system transmits the captured data to the electronic toll collection system, where it could be compared with a database.

► **Stand: Stand B5.230**
VITRONIC at the ITS World Congress 2021!

ALPR cam the size of a credit card

German company Carrida Technologies will unveil its brand new Carrida Cam Dragon+, a ready-to-use and standalone camera that features on-board licence plate recognition. It can also determine the specific make and model of cars and classify different types of vehicles, such as car, delivery vehicle, truck and bus. This enables detailed traffic statistics and is powered by AI-features of the well-proven Carrida SDK.



Compared to the company's proven and cost-effective Carrida Cam Basic+, the new device provides three-times higher performance, while still maintaining the ultra-compact size, hardly bigger than a credit card. The new model is available with different optics and the company says it can be deployed in unlimited ALPR applications, from access control and parking to safety, security, and law enforcement, to tolling, traffic management and smart city applications.

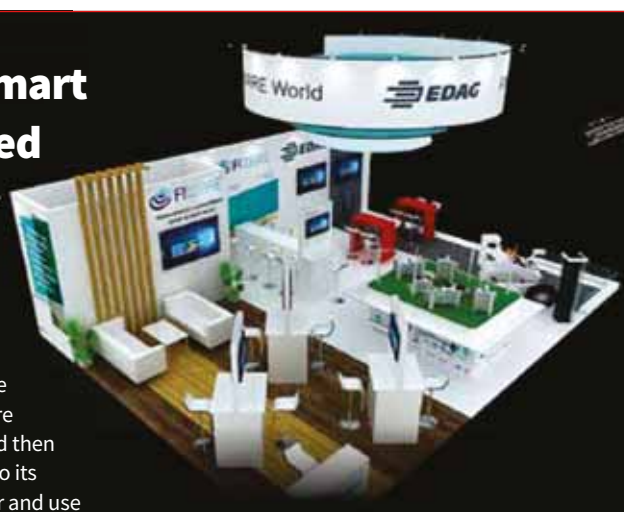
The new device perfectly matches the powerful Carrida SDK ALPR-Engine and enables real-time data streaming via standard network protocols.

► **Stand: B5.505**
carrida-technologies.com

Fiware powers up smart cities with networked mobility

For the very first time, Fiware is joining forces with EDAG to be a major partner at the ITS World Congress 2021. From its key role in the Smart MaaS project to the selected cities in the Smart Cities Made in Germany initiative - that are using Fiware tech to create their smart city platform and then build smart digital solutions on top of it - to its involvement with Gaia-X as Day-1 member and use cases provider, Fiware is an active player when it comes to intelligent transportation systems.

To highlight how the integration of existing technologies can provide users with further choices, create new services, and support jobs and growth in the transport sector, Fiware will bring two concrete use cases - Smart MaaS, Kiel, and



Smart Parking, Wolfsburg - that are contributing to Gaia-X. This project strives to create a trustworthy data infrastructure for Europe, achieving a more efficient management of the transport network for passengers and business is vital.

► **Stand: B5.225**
fiware.org

Yunex Traffic steps onto the global stage in Hamburg

For Yunex Traffic, the ITS World Congress 2021 will be the first major event as a new company. Formerly Siemens Mobility ITS, the new venture will feature technologies, platforms, and systems that improve the quality of life in cities through increased mobility, enhanced safety, and reduced emissions. This will include showcasing digital solutions for tunnel and highway management, adaptive traffic control, connected mobility, clean air zones, as well as right-of-way solutions for fleets and bicycles.

Yunex Traffic says it offers the broadest end-to-end portfolio in the field of intelligent traffic systems for adaptive traffic control and management, highway and tunnel automation, and intelligent solutions for V2X and road pricing.

With digitalisation and the use of disruptive technologies, Yunex Traffic enables city and highway authorities and mobility providers worldwide to make road networks and fleets intelligent, sustainably increase



value over the lifecycle, improve traffic management and ensure availability.

Automation and digitalisation are key elements of the Yunex Traffic portfolio and the capabilities of cloud computing, 5G and AI enable the next level of intelligent traffic management.

For example, Yunex Traffic is making a significant contribution to the identification and support of traffic measures with the

development of a data-driven environmentally sensitive traffic management system in the DIGI-V project in Wiesbaden, Germany. In Würzburg, too, the environmentally oriented traffic and mobility management system is achieving better traffic flow and thus improved air quality for the citizens of the city of Würzburg.

► **Stand: B5.201**
yunextraffic.com

Mobileye can provide critically important data



For more than 20 years Mobileye, an Intel company, has been producing camera-based advanced driver assistance systems (ADAS) that have helped protect drivers from collisions. Its technology, which works by using a camera to scan the road ahead, can be found on over 80 million vehicles and has been

adopted by 27 leading vehicle manufacturers.

Now though, as visitors to the ITS World Congress will learn, the technology can be used for far more than safety and AVs. The GDPR compliant information Mobileye is able to collect is of critical importance to cities, departments of transportation, road operators, utilities and others. While scanning for road hazards, the company's AI technology can also be used to identify, locate and classify roadside assets and mobility information. This means that vehicles equipped with our technology are also able to identify pavement cracks, potholes, worn road striping, traffic signs, manhole locations and much more. In addition, we can locate construction zones, heavily trafficked areas, locations where there are frequent collision 'near-misses' and other valuable mobility information. Moreover this data can be turned into GIS-layers used to create updatable, accurate maps.

► **Stand: B5.200**
mobileye.com

L3Pilot demonstrations and Final Event

The research project L3Pilot is the first comprehensive European pilot test of Automated Driving Functions of SAE Level 3 and partially Level 4 on public roads, unifying 13 major OEMs and altogether 34 partners from 12 countries. By October 2021, partners will have put more than 70 fully equipped passenger cars to test under real-life conditions and evaluated the test drives on public roads in seven European countries, including cross-border activities.

Driving demonstrations in the city of Hamburg and on motorways will invite visitors to tours with 10 cars fully equipped with automated driving systems so that visitors can gain hands-on experience of driving in automated cars.

Furthermore, the demonstration will display 13 prototype vehicles in the exhibition area. Here, guests will be invited to discuss the challenges and the features of the vehicles and the results of the overall research project with high-level experts and senior researchers directly involved in L3Pilot. A two-day conference on October 13 and 14 will go into details of the L3Pilot research. The project celebrates its Final Event of the project in conjunction with the ITS World Congress in Hamburg 2021.

L3Pilot.eu





**ITS WORLD
CONGRESS 2022**
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OF **MOBILITY**

September 18-22, 2022

The 28th ITS World Congress will be held in Los Angeles in 2022, marking the signature event's return to the United States for the first time since 2014. ITS World Congress 2022 will be held September 18-22 at the Los Angeles Convention Center. The premier event for Intelligent Transportation Systems (ITS) will bring together industry stakeholders, including policymakers, OEM's, entrepreneurs, researchers, academics, investors, and other leaders from around the World to connect, network and participate in live education sessions in which industry experts present the latest developments in ITS along with a comprehensive expo floor showcasing cutting-edge technology.

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Autocrypt, a global mobility security solutions provider, is dedicated to ensuring a safe and eco-friendly connected future for not just connected and autonomous vehicles, but all entities related to mobility. This includes everything from electric vehicles, electric vehicle supply equipment (EVSEs), fleet management and mobility services, and even to mobile devices (digital keys, MaaS app services).

The main product being showcased by Autocrypt in Hamburg is AutoCrypt V2X, a software development kit that can be installed onto OBUs and RSUs to secure the technology applications and BSMS transmitted for V2X communications. It supports the IEEE Standard for WAVE (1609.2), ETSI, GBT, and is



AutoCrypt V2X development kit to be featured

in line with the new WP.29 regulations for cybersecurity in vehicles.

As Autocrypt points out, security should be a priority when it comes to considering connected and autonomous technology, and AutoCrypt V2X boasts verification speeds twice

as fast as the industry standard - meeting 5G requirements as well. This ensures that not only is V2X communication secure, but seamless.

Autocrypt was spun off from APAC market-leading security provider Penta Security Systems in 2019, focusing on automotive

security technologies. It was recognised as the Best Auto Cybersecurity Product/Solution of 2019 by TU-Automotive and is acknowledged as one of the top five V2X cybersecurity market leaders in the world.

► **Stand: B5.014**
autocrypt.io



Ride-pooling digital ecosystem

Moia, the young mobility company of the Volkswagen Group, is here in Hamburg to showcase a digital ecosystem for the entire value chain of ride-pooling - from apps to algorithms to fleet management. The company says it combines the best of two worlds: the start-up culture of a young, international mobility company and the extensive experience of the Volkswagen Group.

Currently MOIA offers a fully electric ride-pooling system in Hamburg and Hanover, which helps to make the life of people in urban areas more liveable, cleaner and safer. With the ride-pooling by Moia people share a vehicle, whose start and destination are in a similar direction. Via app the customer sends a ride request. A dynamic pooling algorithm assigns it in fractions of a second to an already existing ride. Customers are picked up and transported together with others on a completely dynamic route.

► **Stand: B5.211**
moia.io

smartmicro to showcase its latest innovation, Com Hub

smartmicro will have a major presence at the ITS World Congress Hamburg to highlight its role as a leading specialist in high-performance sensor technology. Having 25 years of experience, smartmicro emphasises its key motivation to make roads safer, optimise traffic flow, and enable greener, smarter cities. To underline this vision, the company is showcasing the latest innovation Com Hub.

The edge computing device Com Hub is designed to further enhance safety in urban areas. Since most traffic participants,

including pedestrians and cyclists, pass through the inner part of a junction, this area is highly important. Nowadays, four detectors on a signalised intersection typically work independently, without any information exchange among each other.

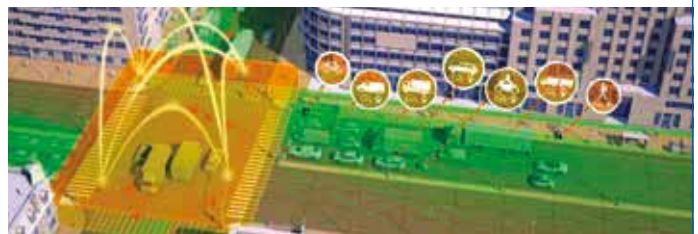
And that's where Com Hub can be of great help - smartmicro's new edge computer enables an interacting system of detectors that provides a complete overview of the four approaches, tracking the speed and position of all objects in the field of view

of the sensors. And not just the approaches: the inner part of the intersection is fully covered and monitored as well.

Com Hub performs data fusion between smartmicro sensors, resulting in much higher detection and classification accuracy. Moreover, the connected

multi-sensor system enables seamless tracking of all traffic participants, from small children up to large trucks, throughout the entire intersection and provides a rich set of data for V2X communication.

► **Stand: B5.006**
smartmicro.de



Ground-breaking new Flir cameras with AI will optimise traffic flow

Flir Systems will showcase two ground-breaking intelligent traffic system cameras, the Flir ThermiCam AI* with thermal imaging and the Flir TrafiCam AI visible camera, both with artificial intelligence (AI) to optimise traffic flow on roadways and at intersections. When combined with the Flir Acyclica cloud platform, cities can apply the AI-camera data to predict traffic, prevent congestion and potential accidents, and create safer roads for drivers, cyclists, and pedestrians, 24 hours a day.

The AI-enabled cameras help control traffic dynamically at the edge through real-time data capture and processing, and provide input to traffic signal controllers at intersections, which improves traffic flow and safety in the moment. With the ability to capture heat energy data through a thermal sensor within the ThermiCam AI, and

a visible low-light, high-definition sensor within the TrafiCam AI, cities' traffic signals have complete continuous monitoring, in all weather conditions and even through smoke for tunnel monitoring. The cameras are also Wi-Fi enabled for travel time calculations and other origin-destination applications. In the future, the cameras can be retrofitted with 5G cellular antennas to support vehicle-to-everything (V2X) connectivity, which will further improve road safety.

The Flir Acyclica cloud platform provides the tools and analytics needed to better understand traffic data. When ThermiCam AI and TrafiCam



AI are paired with the Acyclica cloud platform, cities can apply their AI-based learnings to real time data to make predictive traffic pattern changes for more efficient and safer cities.

**The ThermiCam AI camera is sold as the TrafiSense AI camera in the US and Canada. To learn more visit www.flir.com/trafisense-ai.*

► Stand: B5.401
flir.com/traffic/

Gewi - TIC for Cycling

For many years, Gewi's TIC software product has been used globally by road agencies and service providers to keep drivers informed and enable road operators to monitor, manage and maintain their networks.

Now however, the company has developed the software to address other forms of mobility. Visitors to the Gewi Europe stand at the ITS World Congress will see the latest innovation - TIC for Cycling, reflecting the massive growth in new mobility.

The world is seeing a considerable shift in both travel demand and the way people get around, in part due to the pandemic. For instance, cycling has seen massive growth with governments and transportation agencies investing heavily in creating a safer and greener transport network which supports cycling as a key means of transport. Dedicated cycle ways and roads that support shared cycle space are seeing unprecedented growth.

As Gewi points out, just like the road network, cycle ways are open to problems and incidents, for instance closures, hazards, weather events, and will require maintaining if they are to support and encourage more and more users.

TIC for Cycling captures information about problems affecting a route from a whole range of sources including crowd-sourced information, sensors, weather data service providers, or disaster warning service providers.

The software enables transport agencies to manage cycleways and paths and gives them the ability to inform, in real-time, cyclists and other users about any issues which may have an impact on cycling, just as they can inform drivers using the road network.

► Stand: B5.012
gewi.com

Shell to focus on sustainable transport innovation

A holistic approach to achieve sustainable transport can be seen on the energy company Shell's exhibition area. The company will show how carbon-free or low-carbon energy and fuels, such as hydrogen, bio-LNG, or charge points for electric vehicles support more sustainable transport in various applications – be it heavy duty transport, passenger mobility or even shipping or aviation. In particular, hydrogen may play a crucial role, as a pilot fuel cell electric

truck on Shell's stand will demonstrate. This truck, developed by the Next Mobility Accelerator Consortium which includes Shell, is one of the industry's firsts, shown at in Hamburg. The roll-out of fuel cell electric trucks will start in 2022. The first prototypes will be available for selected customers in 2022 and production will start in 2023.

► Stand: B5.330
www.shell.com



Ibeo presents its 4D solid state Lidar

Ibeo Automotive Systems says it has developed a Lidar sensor system that is unique in the industry.

The company claims its 4D solid state ibeoNext will revolutionise the market for Lidar technology and set completely new standards. Its solid state technology creates a detailed 3D model of the environment with moving objects. Furthermore, the ibeoNext sensor displays an additional image because different surfaces reflect the laser beam to different degrees. This is the fourth property

of every measured point in three-dimensional space, which is why developers and engineers at Ibeo refer to it as 4D environment detection: a so-called intensity image is created, similar to the video image of a black-and-white camera.

The ibeoNext has no moving parts at all which the company says makes the solid state sensor more robust and therefore reliable over a longer period compared to Lidar technology with rotating mirrors. In combination with a wide vertical viewing angle, a high resolution and range as well as



the modular structure of the sensor system that allows a wide range of applications, this solid-state Lidar is the next major step on the way to fully autonomous driving. ibeoNext can be used for

automotive applications as well as many possible applications in the industrial sector.

► **Stand: B7.450**
ibeo-as.com

World-first AI camera technology being tested globally



At the 2018 ITS World Congress, Avanti R&D, a laboratory of automotive, electronics manufacturer, and AI engineers, presented Anonymous Re-ID, the world's first AI traffic camera technology that measures the path of travel for various mobilities.

The company has been conducting pilot runs globally since with governments and data aggregators, and has found there was value in simultaneously acquiring not only traffic information but also environmental data and visualising the correlation between the two. Thus, Avanti added sensors to its AI traffic camera such as PM2.5, ozone, CO2,

gyro and sound. This data is being analysed using statistics and AI in collaboration with the University of Electro-Communications, Tokyo Japan.

Avanti says it has been testing this technology in the US, and within a few months it will be installed in Denmark, and in the future in Thailand and Japan, enabling the differences to be seen in various cultures, climates, and modes of transportation.

In Hamburg, Avanti will share the progress of this research, named Mermaid (Municipal Emission Reduction Monitor Aid).

► **Stand: B7.009**
avantirnd.com

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