Recognition of Swarco road markings by lidar and camera tested in the world's biggest climate and wind tunnel in cooperation with ZKW

SWARCO FOCUSES ON MACHINE-READABLE ROAD MARKINGS

Consider for a moment: autonomous vehicles, or indeed cars with driver assistance systems, such as autopilot, depend on road markings to properly position themselves on the road. In preparing for connected and autonomous vehicles (CAV), authorities in Europe and America, and indeed other regions of the world, are recommending stricter standards for the quality of road markings. These include proper design to new standards, good maintenance, and reliable recognition for the human eye and the optical and machine vision systems of vehicles with advanced driver assistance capabilities.

Leading road marking expert Swarco already provides sustainable systems that meet and exceed the strictest demands for both human and machine vision. High retroreflectivity (RL), reaching as much as 1000 mcd/m²/lx in white paint and exceeding 100 mcd/m²/lx under wet conditions, can be readily achieved through drop-on Swarco Solidplus or Swarco Duralux premium glass beads, as demonstrated in test applications in Switzerland (structured cold plastic), in Poland (waterborne paint), and in the United States (yellow thermoplastic dots).

However, Swarco wanted to dive deeper into machine readability and worked with Austrian automotive lighting

How Siemens Mobility Solutions reduces environmental impact

Environmentally sensitive traffic management needs a holistic approach to function so Siemens Mobility is offering an extensive portfolio of different software and hardware solutions. Each of these products helps communities to proactively manage urban and freeway traffic and considerably reduce environmental impact.

Siemens Digital Services provides all elements required for the preparatory phases, from consulting and IoT data integration, to management systems and data analyses. This enables cities, regional authorities and logistics hubs to manage their traffic flows with the mobility operating system - MobilityOS. The system includes control elements for traffic signals, scenario management and coordination elements, simulation models, tolls and tolling systems, data integration tools, analytic and diagnostic apps, and more.

An example of environmentally friendly solutions from Siemens Mobility is ticketing systems, as already in operation in London. Here, traffic is regulated by the so-called London Congestion Charge. Driving in the UltraLow Emission Zone (ULEZ) of the city centre costs up to €28. The price consists of a toxicity charge and a congestion charge. The latter applies only on weekdays in the period from 7am to 6pm. Drivers of EVs pay only the congestion charge.

In Germany, Wiesbaden takes a different approach. Here, measured fine particulate matter values determine which streets are closed, or whether traffic is diverted into less polluted areas. This enables the city to manage traffic flow in real-time on the basis of measured data. Successful operation of this initiative involves a system of traffic signs and signals that can be centrally controlled.
www.mobility.siemens.com

Continued from cover »

specialist ZKW Group to carry out tests in the world's largest climate and wind tunnel in Vienna. Several classes of road marking solutions (paint, tape, structured cold plastic), differing also in RL, were tested for their suitability to be read by machine vision equipment under various conditions: daylight and darkness, dry, mist, rain, heavy rain, and fog, as well as with interfering light (glare effects) and in windy environments. It was found that camera and lidar complemented each other perfectly and their combination was sufficient to correctly recognise all road markings with appropriately high RL. Whereas for a camera, glare and low contrast ratio very significantly lowered marking recognition during daytime, these factors hardly hindered recognition by lidar.

In darkness and under limited visibility conditions, retro-reflectivity played the major role for both camera and lidar. Of course, human drivers also benefit significantly from these new, higher standards of road marking, and they can ultimately help to increase road safety.
www.swarco.com

Tattile
Custom Vision Solutions

SMART ETC
AXLE COUNTER AI BASED

www.tattile.com

NEW INNOVATION FROM IRD FOR SHARING DATA ACROSS MULTIPLE WIM SITES

The main use of data created at commercial vehicle weigh-in-motion (WIM) inspection stations is to screen vehicles for weight, credential and safety violations, to determine which vehicles need static weighing and inspection. Traditionally, commercial vehicle screening sites only used data for that sorting function and to present information to enforcement staff.

Optimising staffing at sites requires knowledge of the times of day when there is the most need for inspection. Up to now, operators across several weigh stations would have to tally inspections by time of day and submit their records for analysis.

A new option for quickly reviewing operations is IRD's

Central Data Management System (CDMS). This modern, dashboard-oriented, cloud-hosted solution, CDMS enables system-wide and station-level historical reporting and data analysis, as well as data quality checks, automated maintenance monitoring, E-Screening data management

and virtual weigh station (VWS) integration. Managers responsible for multiple screening sites can view information from all of them through a single interface.

The CDMS dashboard supports programme management by providing an immediate overview of

operational performance, using key performance indicators (KPIs) related to operations and shows operational or system performance trends, without having to search through system reports for detailed information.

The CDMS dashboard ensures that the overall system can be easily monitored at a high level for optimisation across multiple stations to achieve the agency's objectives. Seamless integration with other IRD weigh station applications including the real-time operator display software, virtual weigh station software, VI2M data reporting software, and iMMS maintenance management system makes the CDMS a valuable addition to any commercial vehicle enforcement programme.
www.irdinc.com

Wireless sensors enable more inventive applications

Loops' days are numbered! According to Sensys Networks, that's because agencies are discovering more and more traffic applications for safety and traffic flow that cannot be solved effectively with traditional loops. In instances where accuracy is critical and distance from power access is a challenge, wireless sensors are stepping up to do the job.

Sensys Networks quotes an example from Chinkum Bank, England. The combination of poor visibility and vehicles that turn across opposite lanes of traffic, causing traffic to queue and stop without warning, creates a hotbed for safety and traffic flow issues.

To remedy this, the local traffic agency leveraged speed

and length information from magnetometers produced by Sensys Networks and installed by Clearview Intelligence. The installation warns drivers in advance to slow down as they approach these junctions when vehicles are stopped ahead, avoiding a potentially dangerous scenario.

The system feeding these automated warning signs is impressively simple. Wireless sensors were chosen specifically for their accuracy and ability to be placed at distances that are impractical for inductive loops. Speed detection sensors monitor if there is any slow moving traffic signifying queuing vehicles. Meanwhile, presence detection sensors monitor any stopped traffic waiting to turn into

the side roads. An additional presence detection sensor monitors traffic driving towards the main road. The data from the sensors furthest from the control cabinet is relayed wirelessly via a repeater unit. This data is then used to trigger warning signs so drivers know if traffic is stopped or turning up ahead.

In addition to this use case, wireless sensors are especially advantageous for applications like adaptive control, midblock and advance detection, and metering on highway entrance ramps. Now, with wireless sensors in their toolkit, agencies are expanding the boundaries of what is possible for improving safety and traffic flow in their roadways.
www.sensysnetworks.com

RAI Amsterdam ready to reopen following social distancing guidelines

RAI Amsterdam is able to reopen its doors in the short term while closely following all guidelines regarding social distancing. The RAI wishes to organise trial events during the summer to test the various ways that visitors and exhibitors can be safely brought together. All the required measures will be taken. A detailed roadmap will help the convention centre get back to business safely

Paul Riemens

The RAI has the key advantage of being able to use its huge complex of over 110,000 m², allowing people to easily move around at a safe distance from each other. "If garden centres, department stores, home furnishing outlets like Ikea and DIY centres are able to open, so too can we," says CEO Paul Riemens.

Prepared for business

Riemens emphasises that visitors to the RAI will be asked to register in advance. This will facilitate a clear picture of the expected number of people and ensure that the RAI can provide them with information about the safety protocols and any additional behavioural rules. "People visiting the RAI do so primarily in relation to their work, not for socialising and recreation as is the case with festivals and the like. These types of business-to-business gatherings will strengthen the awareness levels of all who attend, and it will be easy for people to maintain the rules and keep 1.5 metres apart."

The RAI will determine the setup of the exhibitions, conferences and events itself. "This gives us complete flexibility in terms of regulating visitor flows, including using special routes and one-way traffic. We are able to deliver custom solutions, while always complying with the latest guidelines of the Dutch health authorities and maintaining a strict 1.5-metre distance."

Riemens refers to the situation in Germany, where a clear distinction is being made between exhibitions and large consumer events. The German government has placed exhibitions on its list of permissible sectors which also boost the economy. This means that Germany could follow China in reopening the exhibition and conference industry.

A digitally connected Intertraffic community

With social distancing in place, the Intertraffic community is eager to stay digitally connected and share stories, expert views and advice. As we can't meet up in person right now, knowledge transfer is even more crucial. The Intertraffic team is committed to keep you up to speed on the latest industry developments.

The new Intertraffic webinar series kicked off on 21 April, with Carlo van de Weijer interviewing representatives from PTV Group, Transdev Group, and the Amsterdam Metropolitan Area, Province of North Holland. Views were shared on the latest developments in smart mobility, traffic management, and connected, cooperative and automated driving and the impact of Covid-19 on their respective businesses.

Intertraffic's second webinar aired on the 26 May themed "smart measures to avoid post-Corona traffic congestions". Guest speaker Max Eichhorn of Siemens Mobility elaborated on Siemens' new holistic approach to traffic management in post-Corona times and shared ideas on traffic management measures and smart solutions to avoid congestion. Next on was Jorn de Vries of Flitsmeister. The Flitsmeister app serves 1.7 million users in the Benelux region with real-time traffic information. A close look was given into how this real-time community approach helps to anticipate traffic congestion after lockdown.

Anyone who missed these webinars can still watch the recordings via the Intertraffic website.

The upcoming Intertraffic webinar (23 June) will focus on parking and how contactless solutions may assist us in maintaining social distance and avoiding contamination hazards. Again, host Carlo van de Weijer will put some enticing questions to two smart parking game changers. The detailed programme and a free registration opportunity are available on the Intertraffic website.

Intertraffic webinars are live and interactive and attendees are invited to submit questions via the online chat feature. The integrated polls will give food for thought and direct insight into the point of view of the industry ■

Do you want to share your views with the Intertraffic community? If you are interested in getting involved in a future Intertraffic webinar, please contact the Intertraffic team at **marketing-intertraffic@rai.nl**

SMART TRAFFIC – SAFE TRANSIT
INTELLIGENT TRAFFIC SYSTEMS

From traffic flow optimisation that keeps the city moving to traffic violation detection that facilitates smart driving, Hikvision's Intelligent Traffic Systems deliver reliable, effective and tailored solutions.

• Dedicated, high-performance cameras for event capture, license plate recognition and more
• Reliable embedded video terminals for event recording and control
• A centralised video management platform, unifying all the ITS devices and delivering
  service-extensible applications

The future of road weather monitoring has begun

The evolution of road weather information systems (RWIS) goes on. Sensors are getting better and better. The challenge is to combine the right sensors and software to create a complete solution. **Steven Marks** of OTT HydroMet, a manufacturer of environmental monitoring systems, outlines what road weather monitoring networks could look like in the future

Road maintenance is almost as old as the concept of a road itself. In the Roman Empire, trade goods and military troops were brought over the whole European continent, covering vast distances to remote places, even in Africa and Asia. The Roman logistics network was comprised of a total of 80,000 kilometres of roads, which would embrace the earth at the equator two times. To guarantee safe transport along the mostly cobbled streets, the Romans checked and maintained their roads regularly. Of course, this happened with large time gaps in between. Surprisingly, the principle of checking roads manually according to a fixed schedule is partly still present today.

Road maintenance and road safety are relevant throughout the whole year but are most important in winter months. Fog, snow, and ice are major safety risks. Unfortunately, they do not follow a schedule. In many cities, winter maintenance service still relies on the heavy use of salt throughout the whole operational area, working through a fixed list of roads from the highest to lowest priority.

Weather phenomena are complex. Meteorological parameters can change quickly and differ between places even if they are quite close to each other. This is why road weather experts use the term microclimate. Bridges, tunnels, roads on hills, or on open land react differently and thus require a different treatment. They should therefore be viewed separately.

Data making roads safer
Road maintenance teams cannot be everywhere at once. Even if they tried, this would be highly inefficient. Therefore, sensors provide them with relevant data on the microclimate and the actual road conditions at that point. There is a broad range of sensors measuring meteorological values like temperature, humidity, and wind, but also road-specific parameters like the water and snow layer height, salt concentration, and more. So, we can measure everything we want to know to make our roads safe. What is the challenge then?

Stationary sensors picture the situation at their specific location at a particular time. As mentioned above, the information captured by that station is not necessarily

▶

"Every city has its own topology, traffic volume, and infrastructure. That said, there is no broad-brush solution"

representative. Ideally, a road weather monitoring network would consist of as many measurement stations and sensors as possible. Regarding cost efficiency, the challenge is to combine various types of sensors and synergise their abilities.

Three kinds of sensors

We distinguish mainly between three types of sensors. The first kind are invasive sensors. They are flush-mounted into the road surface and provide a direct measurement of various parameters, such as surface temperature, water and snow film height, salt concentration, and the freezing point.

The second type are non-invasive sensors. Based on optical measuring principles, they detect road surface temperature and the height of a water, snow, or ice layer. Non-invasive sensors are often deployed on bridges, gantries at the backside of traffic signs, or pole mounted.

The third and newest type of sensors are mobile devices. They can be mounted on maintenance vehicles and provide real-time data as the vehicle travels around. Mobile sensors open up new possibilities for efficient and area-wide road condition monitoring.

Best practice from Germany

So, what should an efficient and safe monitoring network look like? Typically, experienced road maintenance workers know the places prone to dangerous weather conditions. We recommend putting invasive sensors there. Further locations should be equipped with non-invasive sensors that expand the network and strengthen the data foundation. Mobile measurements of maintenance service vehicles complete the network by adding measurements from points between stationary sensors.

In the South German city of Geislingen, a road weather system compiled by OTT HydroMet has been providing important data on road weather, and environmental, conditions since the beginning of 2016. A non-invasive NIRS31 ground sensor,

a WS400 compact weather sensor, and a camera are the most important components of the station. In addition, a Marwis mobile road weather sensor is also in use, which provides additional information directly from the patrol vehicle.

Similar setups have been installed in other regions in Germany as well as in the Swiss cities Zurich and Winterthur, too.

Real-time data analysis

Collecting data is the first step, but without proper analysis, it is useless. Modern software solutions gather data from various sources and visualise it on a map. A popular and simple visualisation uses the colours of a traffic light. Risky spots that need immediate treatment are displayed in red, ideal conditions green, and so on. In our

projects, we work with ViewMondo. This software has been developed according to our needs and is being updated with the help of our experience and results from daily work.

What makes our job fascinating is that every project is unique. Every city has its own topology, traffic volume, and infrastructure. That said, there is no broad-brush solution. Designing an efficient road monitoring network requires experience, a well-engineered product portfolio, and flexible software. Having all of that in one place, the future of road weather monitoring has already begun and will save lives, prevent the environment from heavy salt use, and reduce costs of inefficient maintenance service. ∎
www.lufft.com/roadweather

■ Steven Marks is sales leader for road weather applications at OTT HydroMet, responsible for Germany, Austria and Switzerland. He heads an experienced team of nine people, that provides meteorological solutions for a wide range of road weather projects, consisting mainly of proven devices from the Lufft brand, and tailored software.

■ OTT HydroMet synergises over 580 years of experience in environmental monitoring. The company's product portfolio covers seven brands, operating in hydrology, meteorology, and solar monitoring. Regarding road weather applications, the German Lufft brand offers state-of-the-art traffic weather sensors and measurement parameters which are

important for traffic segment safety, whether on roads, railways, in the air, or on the sea.

For more than two decades, professionals around the world have relied on Lufft's stationary or mobile road weather information systems. They are used by ice and road weather detection and traffic control or management

systems, road maintenance depots, and operation managers to monitor road conditions, friction, temperatures, visibility, and more. Data is used to design efficient operational plans and to keep roads free from snow, ice, or water film layers to protect from dangerous traffic situations.
**www.otthydromet.com**

REDUCING ACCIDENTS MEANS
SAVING LIVES

Guiding you safely. Every day our cost-effective marking systems help to save lives on roads all around our planet. They offer safe guidance by day and night under all kinds of weather conditions.

On your travels from A to B and into the future with Smart Driving you are always on track with SWARCO. Talk to us today about the road marking systems of tomorrow.

www.swarco.com/rms
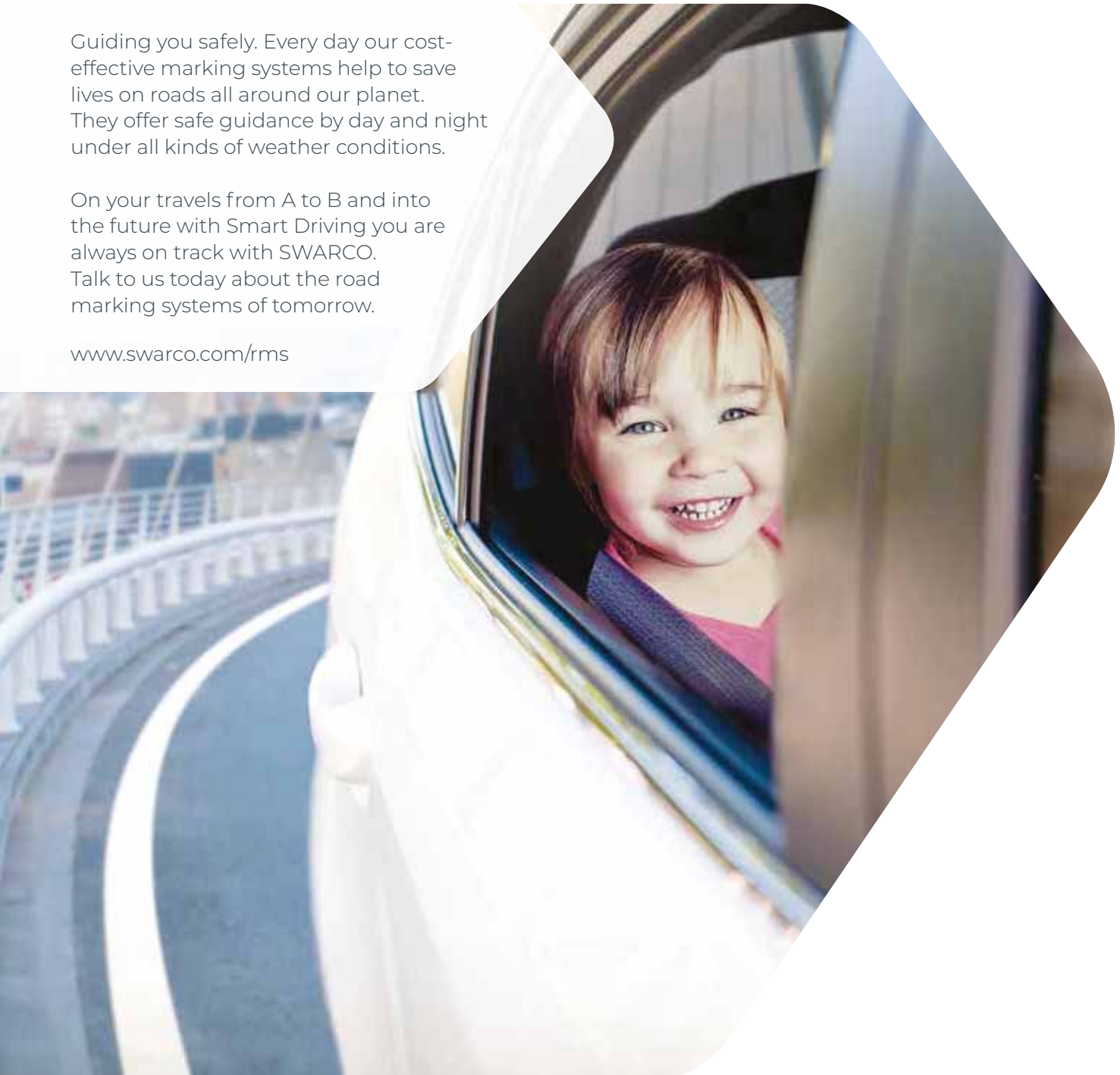
SWARCO | The Better Way. Every Day.

swarco

Road Marking Systems

JENOPTIK CAMERAS TACKLE ROADSIDE NO₂ CONCENTRATIONS

Throughout Europe, many regions are currently failing to meet the EU's air quality targets and new ways to reduce emissions are essential. There is a lot of potential for savings in road transport, especially for nitrogen dioxide (NO_2) emissions.

A telling example of how to improve emissions has been delivered by the Welsh government in cooperation with Jenoptik.

In 2018, five roads in Wales were identified where vehicle emissions have a direct impact on air quality because NO_2 concentrations are above the limit of 40 µg/m³ (EU Ambient Air Quality Directive - 2008/50/EC). To improve the situation, the speed limit was initially reduced to 50 mph (80 km/h). The prerequisite for the success of such a measure is to maintain the prescribed speed. Many drivers had ignored the speed limit and the hoped-for positive effect had failed to materialise. So, since 2019, four routes have been monitored by Vector ANPR cameras to monitor average speed. On the fifth route, variable speed limits were already in place and were monitored using spot speed measurements.

In March 2020 a report was published which provides an updated summary of the NO_2 concentrations recorded at the five sites on the motorway and trunk road network. The report was produced to support the commitment to present results as set out in the Welsh Government supplemental plan to the UK plan for tackling roadside nitrogen dioxide concentrations.

According to the report, average speeds are below 50mph and compliance is much greater (September to December 2019) when compared to the data recorded between June 2018 and August 2019. The trend is decreasing for annual concentrations of NO_2 at all five sites. It appears that the measures that have been implemented are effective in reducing concentrations.
www.jenoptik.com

New parking validation platform

Retailers and local authorities often clash when it comes to deciding how best to re-invigorate their town centres. Retailers believe that part of the answer is by offering customers free parking; local authorities believe that free parking leads to a free-for-all that is difficult to control and easy to abuse. They also have to fund and manage the limited numbers of spaces that are available.

Both agree that 'validated' parking is a possible solution, but the problem has always been the cost, and the challenges at the back end when it comes to collecting what's owed.

WPS, the parking solution provider, has launched a new parking validation platform that overcomes both of these

challenges and more. WeValidate allows any retailer or leisure provider, including hotels, restaurants or attractions, to quickly and easily enroll – online - as a participating validator. There is no contract and participants can choose when and for how long they wish to participate thus removing any administrative hassle for the municipality.

Once enrolled, the participant sets up an account, in a secure environment, and uploads funds to their virtual account via an online payment facility. The participant is then invited to download the validation app (for Android and iOS). The app can be used on a wide range of devices including POS systems, bespoke scanners, tablets, PCs and even smartphones - effectively any device that can scan a barcode and connect to the internet.

WeValidate comes in a complete package, ranging from an app and flexible payment methods to window stickers for participating shops.

The system includes a management 'backend' for the local authority to control clients, build reports and provide insights into usage. Participants in turn can also view their account details and history (remaining funds, usage history reports and statistics) and manage passwords etc.
www.wps-nl.com

Aimsun helps transport modellers work from home

With remote working a necessity at the moment, the transport modelling innovators at Aimsun have worked hard to deliver a number of solutions that people can use from home.

The first step was to give users remote access to the entire suite of Aimsun Next modelling software at no extra cost.

Project owners haven't been locked out either. Even if they don't own Aimsun software, the new, free Viewer gives them a direct window into their transport modelling team's progress. With the Viewer, they can continue to analyse project outputs remotely, which in turn enables closer involvement, better communication and a more efficient workflow.

A free Student edition of the software means that while university computer labs are closed, students can continue working on academic assignments at home. In just a few clicks, students can sign up for a free licence and install it on their personal computer.

Finally, to keep everyone up to speed with new developments, Aimsun's training courses and seminars are now available remotely via virtual meeting rooms. Remote technical support continues to be available around the clock, and the professional services team is working with clients to manage the radical impact that restrictions are having on traffic data.

The Aimsun team hopes that these measures go some way to helping everyone keep business running while they stay home and stay safe.
www.aimsun.com

DUAL SENSING TECHNOLOGY FOR OUTSTANDING VEHICLE DETECTION

The idea behind MinebeaMitsumi's Smart Parking Sensor is clear: grant the highest possible accuracy in wireless vehicle detection. The new device features two different sensing technologies - a magnetic field sensor and a radar sensor operating on ETSI 868MHz, FCC 915MHz and ARIB 920MHz bands. The combination of earth magnetism and radio frequency offers outstanding precision in tracking if a parking lot is busy or available, and enables smart applications, based on parking-related data.

Leveraging MinebeaMitsumi's technology and manufacturing excellence, this highly performing and reliable parking node can be easily fixed onto the road surface both in indoor and outdoor installations, tolerating harsh weather conditions and high mechanical constraints.

The company says mobility managers will appreciate the ability to smoothly implement a complete parking management system. Thanks to the expertise of group company Paradox Engineering in the Internet of Things (IoT), parking sensors can be integrated into PE Smart Urban Network, the IPv6/6LoWPAN solution also including repeaters, gateways, and the PE Smart CMS software management platform.

PE Smart Urban Network allows municipalities to remotely monitor parking facilities, taking advantage of vehicle data to increase average usage rates and car rotation in street level and multi-storey car parks, also controlling time-limited or restricted areas. The solution can be seamlessly combined with mobile apps, variable message panels and traffic guidance systems to design innovative services for urban drivers. Being fully interoperable, the same network can host and support other city services, such as street lighting, public WiFi, traffic video surveillance, and more.
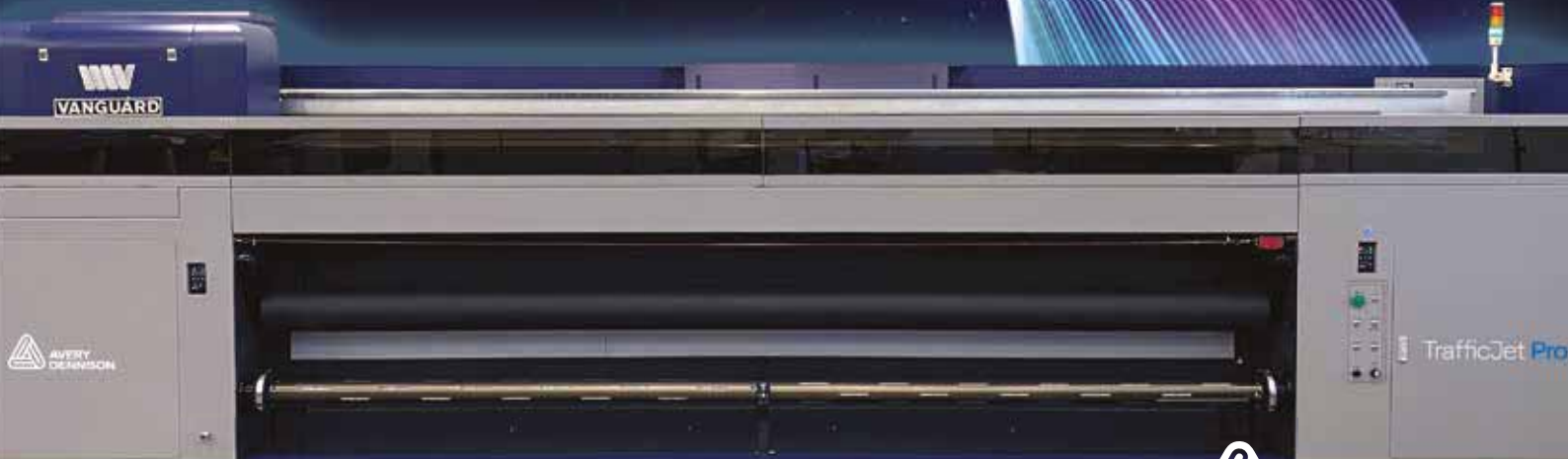**www.pdxeng.ch**

MEET THE ADR PULSAR TRAFFIC COUNTER AND CLASSIFIER

Traffic counts are at the core of all transportation projects. The data provided must be reliable, accurate, and easy to report to all stakeholders involved in the decision-making process to build and improve roadways. For some agencies today, traffic counts are still done by hand, which are time consuming and expensive to perform. Agencies require tools that are cost effective, simple to learn, and easy to facilitate the data to stakeholders.

By utilizing Oriux's portable and easy to use ADR Pulsar traffic counter and classifier, agencies and consultants now have a tool that can easily count, classify, and categorise data more efficiently than they have before.

The Pulsar stores traffic data as time-stamped events in a rugged, lightweight, single piece, aluminum housing with encapsulated electronics and lithium battery, making it an ideal solution for temporary traffic studies. The device can communicate to a Windows-based PC via a USB port and includes a software tool called the Pulsar Reporter to collect the data and create a variety of traffic studies, including volume, axle-based classification and speed.

The Pulsar supports one or two road tube inputs. The optional Street Link accessory also communicates via a USB port to provide GPS coordinates, Pulsar memory, and battery level. Study results may be exported in multiple data file formats including PDF, XLS, CSV or Oriux's PRN.

Oriux, the evolution of Peek, employs over 1,000 people in the Americas and is a technology innovator of ITS and traffic management solutions, providing the world with safer roads and better mobility. The company has more than 25,000 traffic counters in operation worldwide and provides a broad range of products among three different product lines: data collection, detection and intersection control.
www.oriux.com

TRL looking to make SCOOT data openly available

TRL Software has been developing an urban traffic control (UTC) system that includes SCOOT (Split Cycle Offset Optimisation Technique), known as the TRL Software UTC Powered by SCOOT 7. The wealth of data that is produced by SCOOT and the UTC, hitherto, has not always been easily available. TRL's SCOOT UTC produces data which can be accessed in real-time (as SCOOT runs) or stored to be made available offline for later analysis.

Open data historically focused heavily on the belief that "if we open the data they will come". However, the lack of two-way engagement limits the understanding of data requirements and how an authority can better support exploitation.

TRL Software is currently working with a leading UK transport authority in order to explore the possibilities that are created by making SCOOT data openly available. The authority manages the traffic signals across multiple districts from a central control centre, with over 1,000 traffic signals connected to its UTC system. In order to continually improve operation of the network, data needs to be freely available to those who can make valuable use of it.

Within this project, both parties are engaging potential users to better understand their needs, opening up data to a more user-driven approach. As part of the project the SCOOT UTC has been successfully implemented on a selected part of the network, with emphasis on showing that selected SCOOT data can be accessed in a real implementation.

Access to this data allows third-party applications to be developed that process the data into meaningful and informative outcomes designed to benefit the travelling public. Furthermore, these applications could facilitate future developments within the connected vehicle framework.
www.trl.co.uk

© David Herraez | Dreamstime.com

TDS warns: 'Don't stifle innovation!'

Tender documents worldwide for weigh-in-motion (WIM) contracts are generally likely to favour cheaper products, warns one leading manufacturer. Florian Weiss, CEO of Traffic Data Systems, says this is because there is no vision for future requirements and a lack of understanding about innovative WIM technology.

"We're not afraid of competition but we want the competition to be on a level playing field," Weiss says. "Don't stifle innovation! Companies that supply real cutting-edge technology are slowed down or excluded in order to reduce costs. In some cases, people in road authorities do not understand the technology which is being used at the roadside and in cabinets. Often there is also no interaction between different players, such as road authorities, police and so on."

Weiss says that authorities can end up passing responsibility for tendering to engineering consultants who also do not understand the benefits of new technology –

and, in some cases, have little knowledge of standard WIM systems.

"WIM is a very special technology, that only a few companies can really handle," Weiss insists. "Cars and TV sets have to be state of the art: this is something that people can see and understand - but we argue that the same applies to electronics which are used at

the roadside."

He believes road authorities must look ahead in order to ensure they invest taxpayers' money in the best way.

"Buying older technology can be a false economy. the customer isn't buying for 'now' – the infrastructure and technology in a WIM system is going to be operated 10, 20 years from now," Weiss points

out. "For many years, TDS is the only OIML-certified WIM system manufacturer for low- and high-speed operation. Sooner or later, WIM-based tolling and enforcement will be as common as speed enforcement. Therefore, road authorities should start now to prepare the future for this technology."
www.traffic-data-systems.com

DATA AGGREGATOR WITH POWERFUL FEATURES

EDI is highlighting its iCITE (Intelligent Cabinet Interface for Transportation Equipment) Data Aggregator Model DA-400. The device provides cost-effective remote access to real-time performance measures and traffic data from any isolated or networked intersection or arterial roadway. It easily interfaces with any make or model of traffic cabinet or controller (NEMA, ATCC, or Type 33X), to provide real-time traffic counts and parsed data. This can be used to derive a variety of data analytics which may include levels of service, volume/occupancy, arrivals on red, and

high-density detector data.

In cooperation with any iCITE Ready data analytics partner, the ATSPM-ready DA-400 can provide turning movement counts, amber/red actuations, arrivals on red, detector failures, pre-emption details, communications and power failures/alerts, split and interval timing data. The device can also provide the Purdue Coordination Diagram, based upon high resolution data, all tailored to provide automated traffic signal performance measures via a cloud-based user-friendly interface.
www.editraffic.com

Committed to the success of your parking

Smart, reliable and future-proof parking solutions

WPS brings together best-in-class technology and practical innovations. We offer integrated parking solutions and high quality services that make parking easier.
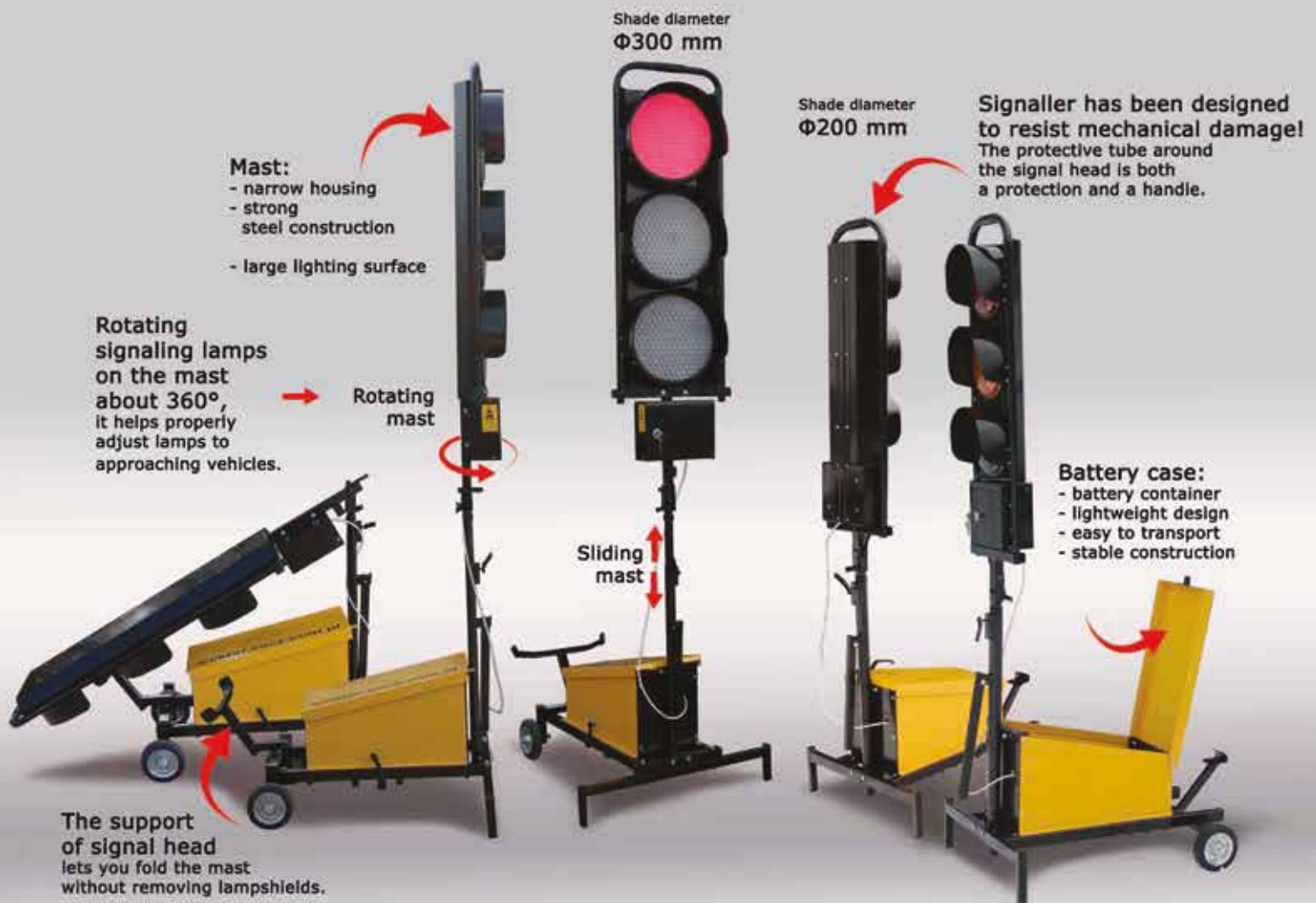
With parking solutions which are smart and reliable, and service concepts you can rely on, we are fully committed to the success of your parking.

WPS parking solutions

wpsparking.com

PORTABLE TRAFFIC LIGHTS

Shade diameter Φ300 mm

Shade diameter Φ200 mm

Signaller has been designed to resist mechanical damage!
The protective tube around the signal head is both a protection and a handle.

Mast:
- narrow housing
- strong steel construction
- large lighting surface

Rotating signaling lamps on the mast about 360°,
it helps properly adjust lamps to approaching vehicles.

Rotating mast

Sliding mast

Battery case:
- battery container
- lightweight design
- easy to transport
- stable construction

The support of signal head lets you fold the mast without removing lampshields.

COUNTER
Function countdown time of lights.

Contrast screen!
It is used to distinguish signal head from the background. It improves visibility of shining lamps, so - improves SAFETY.

3-lamps

Easy to use!
The portable traffic lights are designed so that one person easily could fold and unfold it to work.

Unusual signaling
we make to order: intersection T type, 4-intake (additional chamber for dismantling) and other.

The cover of the lamps and the driver:
The mast is foldable in such a way, that the lamps are protected from the rain, snow or sun, and also from mechanical damage.

2-lamps

4-lamps

We also offer teaching signaling:
- training version for learning for schools and kindergartens
- bicycle places for learning traffic rules

FIGHT GRAFFITI WITH DIGITALLY PRINTED TRAFFIC SIGNS

Traffic sign graffiti and vandalism aren't just an eyesore for municipalities around the world, they're also a major expense and safety concern. Traffic signs marked with spray paint, stickers, and marker ink cause distraction for drivers and can make signs illegible. To alleviate the heavy burden and cost placed on cities from graffiti damage, Avery Dennison created a graffiti-resistant protective film for traffic sign applications.

"By applying OL-1000 anti-graffiti overlay, traffic signs can be simply cleaned instead of replaced. This is a great long-term investment for agencies and also a sustainable solution," says Aaron Means, Avery Dennison Reflective Solutions Global Traffic & Digital Printing

Solutions manager.

Not only does this protective overlay offer easy graffiti cleanability, but it also increases the life of the sign. "For signs printed on the TrafficJet Print System, we've extended the warranty up to 15 years — the longest in the industry with no geographical restrictions. The combination of our sheeting, inks, and overlay provide superior durability compared to computer cut and screen printing," explains Means. Agencies looking to provide this advantage to their cities no longer have a cost hurdle to overcome. This protective overlay does not come at a premium cost — it's standard with every TrafficJet printed sign.

Graffiti presents municipalities with a wide range

of challenges given the effort and costs required to control and remove it. The expense, hours, and safety risks of replacing

street signs does not have to be included in those challenges.
www.reflectives. averydennison.com/trafficjet

Taiwan's first-ever motorcycle PGS debuts

Parkxper, which has already installed more than 40,000 parking guidance system (PGS) spaces in Taiwan, is now expanding into motorcycle PGS too.

In most countries in Asia, more than 70 per cent of the population owns a motorcycle, while in Taiwan, more than 58

per cent of the population owns a motorcycle, resulting in a shortage of motorcycle parking lots.

The Taipei Civic Square parking facility has 1,797 motorcycle spaces and during rush hour, especially when they first enter the lot, with motorcycles parked everywhere,

it is hard for users to see where the vacant spaces are. This is the challenge that riders face every day, not just in Taiwan, but across Asia too.

Parkxper solved this problem by debuting Taiwan's first-ever motorcycle camera-based PGS. Equipped with a self-learning server, the camera recognises

licence plates, even from difficult angles and in a dark environment. The company's own R&D team was able to bring licence plate recognition accuracy in the facility to an amazing 99 per cent.

The camera-based PGS with LED helps the rider by indicating vacant spaces with a green light and occupied spaces by a red light. It eliminates the time for the rider to circle around the lot looking for a space to park, effectively also reducing carbon dioxide emissions within the facility.

Not only does the system help riders find parking faster, but it also helps them to find their motorcycles faster when leaving the lot. With the help of Parkxper Car Finder Kiosks, riders can simply input their licence plate number; it will then show the fastest route to their machine's location. The company points out that the combination of camera-based PGS and Car Finder Kiosk, means it is no longer a nightmare to find parking in a busy parking lot.
www.parkxper.com

France is gearing up for multi-violation control

Road safety is obviously a priority for authorities around the world, and France is no exception. While the mortality on roads rate has been decreasing significantly this past decade, the figures remain worrisome and are still a big concern. In fact, the improvement mainly concerns the extra-urban areas, but the number of accidents has increased in urban areas, with pedestrians and cyclists the most affected.

In 90 per cent of accidents, the "behaviour" component was present so educational, preventive and repressive measures have been taken to deal with the behaviour likely to generate accidents.

Consequently, the French government has been requesting the leading actors on the road safety field to monitor more violations.

Parifex, through its contract with the French government, has developed a solution based on 3D lidar technology and artificial intelligence (via image processing). The combination of both technologies allows maximum benefit from each, and the ability to monitor an impressive number of driving behaviours. This next-generation, non-intrusive system, is indeed able to monitor speed and red light enforcement, tailgating, reserved lanes, priorities, stop signs, seat belt use, and phone use. Additionally, it can differentiate between five categories of vehicle.

This system is currently being tested in France by the state (as part of the contract - the experimentation phase) and by the beginning of 2021 the installation of about a thousand units ordered will start.
www.parifex.com

INTERCOMP LAUNCHES NEW PORTABLE WIM PRODUCTS

Adding to its portfolio of portable scales for vehicle weighing, Intercomp has now released its LS788-WIM portable weigh-in-motion (WIM) scales along with the TS30 CPU touchscreen indicator. The scales are based on the same strain gauge load sensing technology incorporated in Intercomp's vehicle scales and sensors to take advantage of the inherent accuracy and stability of the solid-state technology.

Used in applications ranging from portable weight enforcement efforts to industrial check weighing while monitoring axle and gross vehicle weights (GVW), the LS788-WIM portable scale takes scale design to a different level. Lowering the scale platform height to under 0.9 in (22mm), the low profile scale is deployed with roll-out ramps and a wireless indicator, allowing vehicles to rapidly and easily climb to the low scale height without incident.

The scales are solar powered with cable-free communication to the CPU, and capable of operating in either WIM or static modes. Released alongside the LS788-WIM is the TS30 CPU touchscreen indicator, capable of operating sets of Intercomp wireless scales. With an intuitive touchscreen interface, users easily conduct vehicle weighings, customise and save records, and print via the integrated printer. Fitting in the back of a vehicle, the portable scales and indicator allows for weighing wherever it is required.
www.intercompcompany.com

First ITS highway system in Serbia

Last year, the Republic of Serbia put the country's first highway ITS system into operation, covering about 200 kilometres on the Belgrade – Nis highway in central Serbia. The system of traffic surveillance smart cameras is aimed to improve control and surveillance of highway traffic, reduce accidents with casualties and material losses, and generally improve highway user safety. Additional responsibilities of the ITS system are to detect and sanction oversized vehicles, as well as average speed control.

Along the highway, the ITS system has 28 gantry spots with a total of 56 installed Tattile Vega Smart 2 HD traffic monitoring cameras. There's also six variable message signs (VMS) which are installed on gantries above all three lanes of the highway. These display

information from the traffic monitoring cameras about the traffic situation on the highway and at the toll stations ahead.

The system is embedded into a larger project which includes a tolling system on the highway exits. Data generated by the

Tattile smart traffic cameras along the highway is shared with the tolling stations. One of them, Plaza Smederevo is already equipped with a weigh-in-motion (WIM) system. Measuring of gross and axle weights of vehicles is done without stopping and thus with a minimum influence on traffic flow to maintain a free flow tolling system. The WIM systems are installed on a lane at the tolling plazas making use of existing toll equipment, like optical curtains and ANPR/ALPR cameras, and to potentially be used in future for tolling by weight.

The system operator plans to constantly expand the ITS system across the entire Serbian highway network as well as to further improve system capabilities by adding functionalities such as automatic incident detection algorithms, automatic number plate recognition as well as brand colour and class recognition - functions which can be executed by the already installed Tattile Vega Smart 2HD cameras.
www.tattile.com

THERE'S A LOT MORE TO ROADVISTA'S 922

RoadVista's model 922 hand-held field retroreflectometer is one of the industry's leading instruments for road sign retroreflectivity measurements. But the company points out that the instrument is a whole lot more, with all the features needed for a complete asset management database. The 922 has the ability to record up to 17 different data points.

With versions meeting CEN and ASTM requirements, the system utilises an annular collection geometry. This geometry is advantageous to field instruments because the orientation of the instrument on the sign is not critical, reducing operator fatigue and making it easier for the operator to get a sign measured. Not only is retroreflectivity measured, the 922 also records the date, time, GPS location, ambient temperature and humidity, pass/

fail criteria, and many other user-selected fields and comments.

For data management, RoadVista has partnered with a half-dozen different companies to develop asset management and GIS apps for various platforms. This way, users are not tied down to a specific programme, and providing more flexibility and the ability to integrate the instrument into a user's existing database. The 922 is compatible with Trimble systems, Go-Evo MESH, as well as others. For users without sophisticated database systems, the 922 comes with software to create spreadsheets and GIS map files included. RoadVista says the system is so robust, recently one government agency reported that the 922 was used to inventory their signposts without any retroreflectivity data, using all the information that can be entered into the 922.
www.roadvista.com

REMOVE THE UNCERTAINTY OF WRONG-WAY DRIVER DETECTION

Drivers travelling the wrong way on a highway pose a serious safety risk. The number of deaths due to wrong-way drivers continues to be a problem around the world. Every single day there is a death caused by a wrong-way driver. This problem needs to be solved because roadway users have the right to be able to travel on the road knowing they will be able to return home safely.

Image Sensing Systems is transforming how wrong-way detection systems are implemented. "No roadway manager should have to question the validity of a wrong-way notification when it is received,"

said Seth Anderson, product manager at Image Sensing Systems. "Creating a successful wrong-way system is about more than meeting performance targets, it's about removing that layer of uncertainty and allowing them to focus on resolving the situation. Our wrong-way alerting systems can help in

reducing these risks and remove the uncertainty. This solution provides accurate detection and fast notification to help improve the safety of roadways and helping to give agencies the performance they expect from a wrong-way detection system."
www.marketing.imagesensing. com/wrong_way

North Star Lighting's Camera Lowering Systems rises to new camera trends

About 10 years ago, Camera Lowering Systems, part of North Star Lighting, which has been manufacturing camera lowering systems (CLS) for over 25 years, foresaw that eventually the transportation industry would be using IP cameras. Consequently, the company introduced the hybrid CLS with both an analogue cable and a CAT5e for IP cameras. Some transportation departments still using analogue cameras, chose to purchase these units because they also foresaw

that they would eventually deploy IP cameras.

Camera Lowering Systems reports that more DOTs than ever before are now utilising its CLS products with CAT6 for IP communication as they have been removing the older devices with the analogue units and installing the new IP cameras.

Today, the company now offers camera lowering systems with CAT6 and CAT6a for greater potential bandwidth (10 Gig per second with CAT6a) and greater data

transmission (10GBASE-T with CAT6a). Florida Department of Transportation, District 4, is just completing the installation of a design/build project, which involves taking down 111 units and installing CLS's new system, in the counties of Broward, Palm Beach, and Indian River on I-95. New cameras are also being installed with new high-definition (HD) internet protocol (IP) CCTV cameras with pan-tilt-zoom (PTZ) capabilities.
www.nslights.com

ProTec 161 – the slimmest H1/W3 road restraint system

Peter Berghaus is highlighting the ProTec 161, a slim road restraint system that can be erected without supports. It has been tested successfully, according to DIN EN 1317, with an effective range of W3 for containment levels N2, H1 and L1, meaning more powerful restraint.

Containment level L1, with effective range W3, is a solid supplement particularly for the European market.

In order to develop the improved ProTec 161, the standard elements of the tried-and-true ProTec 160 were connected with newly developed central stands that are force-fit and screwed to the 10-metre elements with two additional central bases. This minimises the pressure the crash barrier puts on the contact surfaces, sustainably protecting road surfaces.

The elements of ProTec 160 have been approved for the list of mobile crash barriers, in accordance with TL-TS of the German Federal Highway Research Institute (BASt) since 2010. This crash barrier system has a narrow width of only 25 cm, low weight and the rubber-padded contact surface. As a result, the risk of undesired pressure marks that may be caused when used for longer periods of time on porous surfaces or during hot summer temperatures is reduced. **www.berghaus-verkehrstechnik.de**

SOPHISTICATED WORK ZONE WARNING SYSTEM

Profilactus from Frike Electronic is designed to alert maintenance personnel to vehicular intrusions in an active work zone in order to reduce property damage and injury.

The sophisticated system is designed for use on motorways, as well as major and minor roads. Sensors are mounted on existing barriers and road-signalling equipment. If these are hit or knocked over, the sensor sends a coded warning message to a base station on the construction site. This then instantly warns all people in the danger zone, by activating warning lights and sirens. Additionally, personal pagers also vibrate, and the system is flexible in enabling customer specific warning devices to be attached.

The Profilactus system is a modular design to fit varying requirements. For instance, a personal pager, together with a sensor, can be used as a small version of the entire system. The pager receives an alarm directly from the sensor and will give an optical, acoustic and vibration warning, with a range of 200m. **www.frike.ch**

CAMERA LOWERING SYSTEMS FOR TRAFFIC ITS AND SECURITY CAMERAS

We Bring CCTV Camera Technology Down To Earth.

Camera Lowering Systems experience in lowering devices dates back to 1967. Their engineering and marketing know how has been a major force in the industry dating back to the pioneering efforts in the development of the first raising and lowering High Mast system in the United States. Based on a proven design, we offer the world's best camera lowering system with three major features:
safety ● simplicity ● value.

Maintenance done safely and easily at ground level.

Our system uses a patented design capable of disconnecting and connecting cameras, utilizing CAT6 or CAT5e Ethernet or analog cable with separate power, without signal loss. All servicing is done at ground level. Hazardous, expensive, and time consuming high lift maintenance trucks and lane closures are eliminated. The efficiency of cameras mounted at 50 meter heights need not present a problem in servicing the CCTV camera or other equipment. Mounting applications include pole, tower, and wall mount.

All signal/electrical contacts are gold plated over nickel over copper, providing the BEST signal and corrosion free contacts in a water-proof disconnect unit.

Gold plated pin and socket contacts with stainless steel alignment pins.

A NORTH STAR LIGHTING PRODUCT ♦ WWW.LOWERING-DEVICE.COM ♦ PHONE: 708-681-4330 ♦ USA

The top 5 global mobility developments

How can we become smarter than smart mobility? Team Intertraffic's **Fleur Kaldenberg**, Content & Online Community Marketeer, outlines the top five mobility developments

Data as the fuel for mobility

Internet of Things, artificial intelligence, big data, 5G; these are the most important developments when it comes to the mobility industry. It is the subject of almost every interview or conversation we have with leaders in the industry. Whether it is about improving road safety; making use of smart traffic light systems; crowdsourcing for the benefit of better urban traffic flow, urban planning or better management of emissions; data is the new fuel for mobility. Thanks to data we can speed up the mobility transition. We can improve the quality of life.

With data we can smarten our traffic management systems and we can receive real-time information on our travel details. The European Commission has calculated that congestion costs nearly €100 billion per year; around one per cent of the EU's GDP. Governments can make good use of mobility data to improve traffic flows and urban planning. They can use data to investigate whether driving 130 or 100 kilometres on the highway decreases traffic jams. Or to crowd source traffic flows at train stations. Or even to improve accessibility for elderly people, making traffic lights switch to red slowly when crossing a busy street.

As Menno Nobel, director of marketing and sales at Thales, mentions in an interview, we have to learn how to use all this data in the smartest way possible. Making the optimum use of the data is not always as easy when dealing with the traditional fragmented nature of the transport industry. How can we make sure all data is combined and shared in a safe way so that we can seamlessly transfer from car to train to bicycle? This is one of the next challenges faced to improve our traffic flows and our environment.

However, a future challenge that comes with data is not only to keep our roads safe, but to keep our data safe. Big data and sharing data has a lot to offer. But new solutions come with new challenges. We have to remain careful which data we share, how and to whom. Privacy regulations can be different, for instance between the US and Europe (GDPR).

Mobility as a Service (MaaS): share to multiply

The majority of travellers have access to the Internet, apps and nav-com systems via smartphone and tablet. Solution vendors are able to customise mobility services based on real-time information and personal preferences. The key concept behind Mobility as a Service (MaaS) is to provide travellers and goods with mobility solutions based on actual travel needs - from personal mobility services or personal travel assistance, service platforms and in-car information systems to smart parking and ride-sharing but also solutions for urban distribution. These are some examples of what can make our travel more comfortable. ▶

© BiancoBlue | Dreamstime.com

© Tetiana Zbrodko | Dreamstime.com

"Not using our cars and travelling by public transport or bicycle is better for our environment"

Urbanisation asks for new needs in transport and new solutions to tackle the problem of congestion and emissions. New transportation modes and shared mobility services have changed traditional transportation services. MaaS combines smart mobility and infrastructure with the use of data. It revolves around shared mobility services. In the Netherlands, we see a rise in vehicle sharing. 41,000 cars were shared in 2018 by 400,000 motorists. Plus, half of the current car owners say they are willing to give up their ownership. But even in other countries, like Mexico, in 2017, 46 per cent of the population used an app for mobility services.

Car sharing is, however, still very low in Europe compared to vehicle ownership. 0.1 per cent of all cars are currently shared. And in Europe and China we find a rise of other shared vehicles, such as scooters and bikes. In 2017 Lisbon launched a bike-sharing scheme, with electric bikes to encourage cycling in the hillier parts of the city.

Amsterdam is leading the way in the Netherlands when it comes to successful MaaS pilots, like in the Zuidas. The city of Amsterdam wants to improve the possibilities for a multimodal area. A selected group of employees in the area was offered €1,000 a month with which they could choose their own preferred transport, except their company car. Handing in their car keys was the only caveat. They were free to travel in any way they wished: first class by train, rent a Tesla or cycle to work if they wanted to save the money for something else. The pilot was so successful that a new MaaS app is planned to be rolled out in 2020.

How can we put MaaS in its full potential? The biggest challenge we seem to face in a lot of discussions involving MaaS is the traditionally fragmented nature of the transport industry. Governments play a

distinctive role in making regulations and protocols for data sharing. Something the Dutch Ministry of Infrastructure & Water Management is already facilitating. As Eric Mink, programme manager of MaaS at the Ministry mentioned at a presentation: "We should not wait for, but develop alongside the market. One year ago we developed an API together with around 30 Dutch vehicle sharing companies. The means of transport of these parties can thus be accessed in a clear and standardised way. And this has been copied internationally. So we can really name it an ecosystem instead of an egosystem." The next step is to decide who is the client owner: MaaS operators or MaaS providers?

MaaS in its full potential will offer the end-user a full perspective and real time information on every mode of transport to decide which one is best to take at a certain time of the day. This organically brings us to the third development: multimodal transport.

The mobility mix: multimodal transport

Thanks to the development of MaaS, a shift in modes of transport is expected. Giving us better insight into all transport helps us to make a better personal choice. We will make use of several modes a day, transferring from bicycle or car to train, subway or taxi. And this can be shared even.

In Amsterdam walking and cycling account for 61 per cent of the journeys, which are healthy and better for the environment. But the next problem is finding a parking spot for the bicycle. When arriving at the train station by bike and finding out the parking station is full, it can be very stressful to find a spot somewhere else. In Amsterdam commuters take at least five minutes extra to park their bike at the

station. This risks missing your train and your appointment. Having one combined digital solution to find information about your travel seems most important for a seamless journey.

Not using our cars and travelling by public transport or bicycle is better for our environment and indeed saves us a lot of space. In Utrecht, in the Netherlands, the world's biggest parking lot for bicycles was opened in 2019 with space for over 12,500 bicycles. However, parking our vehicle, whether it is a car or a bicycle will remain a challenge when we do not know how many spaces there are left. And will there still be enough space in five years' time?

Intelligent infrastructure

A new road revolution is upon us as the reality of autonomous/driverless cars comes ever closer. While artificial intelligence (AI) and sensors built into vehicles will power this new technology, their ability to communicate with each other and with smart road infrastructure is vital. How can we best prepare the advanced road markings, smart signs, wireless communication and cybersecurity needed for this road and digital infrastructure?

It is the combination between software and hardware that matters. We need intelligent infrastructure solutions to capture data. Intelligent road markings and sensors built into vehicles can make our roads both more efficient and safe which is essential when we take into account the fast development of cooperative, connected and automated driving.

Glow in the dark road markings or interactive lights offer us the opportunity to improve the environment by saving electricity and thinking about our animals living in the area. In the city intelligent infrastructure can give us real-time

OVER 30 YEARS OF
INNOVATIONS IN SAFETY

We don't just talk about Innovations in Safety—we live it. For over 30 years, PSS has pioneered breakthrough solutions that can safeguard worksites and save lives. Through continuous innovation, and with consultation, education, and training, we work to save lives today, tomorrow, and for decades to come.

▶ information about the fastest route and available parking space. Smart grids and safe routing can contribute to better crowd management, less air and noise pollution and sustainable urban distribution. Or a traffic light system can help elderly people or children cross the street at their own pace.

The province of Noord-Holland installed intelligent traffic lights, so called iVRI's, on 13 intersections on the provincial roads in the area of Schiphol Airport. The information means that specific target groups, such as cyclists, emergency vehicles, public transport or heavy transport, are given priority over regular traffic. In the upcoming years, all 5,500 traffic lights in the Netherlands are to be replaced with intelligent ones.

What about longer distance journeys of around 500 km? More sustainable solutions such as the Hyperloop or Maglev are already in use. Hyperloop will help us travel 550 km in half an hour, thanks to a vacuum train that travels through a tube. Or the Maglev in Shanghai, a metal object made to levitate by creating an alternating magnetic field under the train. New modes of transport asking for new and intelligent infrastructure could offer an alternative to a plane.

And there are even more examples of sustainable infrastructure. Like in Rome, where people buy a metro ticket paying with a plastic bottle. Or in India where they make highways out of plastics offering the citizens a job collecting the plastic. Inspiring examples where people themselves can make a difference and are engaged by giving them an incentive and combining strengths.

From electric to connected and automated vehicles

At the end of 2018 there were 3.29 million electric vehicles (EVs) worldwide. Although this is still low compared to normal vehicles (one billion), it is estimated that EVs will grow over the next few years. In the *Mobility 2030 Report* by KPMG, it is announced that the Netherlands is ready for the EV market to grow. However, we need to implement the right tools to make driving an EV even more attractive.

The estimated average distance to work in the Netherlands is 40 kilometres. This is within the range of a standard electric battery. And it is noted that the Netherlands has 28 per cent of Europe's charging points. The biggest fear for people to drive an EV is not knowing whether there is a charging station available at the location of their appointment. Also, the price can attract more EVs. There have been good examples of governments subsidising electric driving, but advances in production and drop in battery costs are expected to bring parity to the cost of ownership.

From electric driving to autonomous driving

Fully self-driving vehicles connected to roadside infrastructure and other vehicles emitting and receiving data while the passenger uses the time to do something else than driving, such as working or watching a video. Far-off future or close to reality? Autonomous vehicles can have several functions: blind spot monitoring for trucks, lane departure warning, adaptive cruise control, collision avoidance, park assist and vehicle-to-vehicle communication, up to geofenced autonomous driving and the full experience. It is clear that the uptake of these technologies is fully dependent on the readiness of the eco-system and 5G.

The fast developments in autonomous driving are coming from China. Zero emission is a high priority for the Chinese government. Autonomous driving has even become part of the national shared mobility plan. A recent report from Capgemini, called *Connected Vehicle Trend Radar*, explains that China should be seen as the most dynamic source of innovative ideas. In 2018 the highest number of sales of connected vehicles was in the US with 31 per cent, but China is expected to overtake this.

Others predict that the Netherlands is in the leading position to drive the adoption of CAVs. The province of Noord-Holland has done some fruitful tests involving connected autonomous vehicles. An experiment with a platoon of seven connected cars (cooperative adaptive cruise control)

showed that by sharing and connecting data, cars will pass an intersection much faster.

However, like Peter van der Knaap of research institute SWOV argues, we have to keep in mind that our road safety comes first. When driving an autonomous car we cannot become passive. During research, it was discovered that it could take at least six seconds for experienced drivers to safely take back control in an autonomous vehicle. We might need extra courses or education to be able to drive such a vehicle. Joyce de Winter, exhibition manager of Intertraffic Amsterdam, is not sure if driving a private autonomous car in the city would ever be possible: "In the city, too many modes of transport all come together and it is a big challenge to let them all communicate with each other in the safest way possible."

Autonomous vehicles can have a wide social impact and governments need to think about. It could help reduce congestion and have positive environmental effects meeting zero emission targets. With automated vehicles and robots a new discussion rises: will autonomous vehicles reduce the need for human drivers, for instance in public transport? Again we need to be smart and think of a win-win-win solution. We could use these drivers as personal guidance for elderly people travelling the last mile. We can combine strengths and have impact on society.

The best way to find answers to these questions is by working together and exchanging global knowledge. ■

CSI
AN IMQ GROUP COMPANY

ROAD **INFRASTRUCTURES** **GLOBAL** SERVICE **PROVIDER**

NOTIFIED BODY

- CERTIFICATION
- INITIAL ASSESSMENT
- FACTORY PRODUCTION CONTROL CHECK
- CE CERTIFICATION
- ANNUAL SURVEILLANCE

VIRTUAL LAB

- COMPUTATIONAL MECHANICS
- FOUNDATION ANALYSIS
- INSTALLATION STUDIES
- SOUND ABSORPTION
- INSULATION PROPERTIES (LABORATORY/IN SITU)

TESTING

FULL SCALE CRASH TEST
- ROAD RESTRAINT SYSTEM • MOTORCYCLIST DEVICE
- SUPPORT STRUCTURES FOR ROAD EQUIPMENT
- VEHICLE SECURITY BARRIER SYSTEMS

ON SITE
- PULL-PUSH TESTS
- ABSORPTION MEASUREMENT OF ANTINOISE DEVICES USING THE ADRIENNE METHOD

SMART ROAD
- ITS TYPE V2I, V2V AND I2X TESTING ON CIRCUIT LABORATORY
- ACCREDITED FOR OBU (ON BOARD UNIT), RSE (ROAD SIDE EQUIPMENT) RADIO DEVICES CHECKS
- ADAS TESTS ON THE ROAD WITH AUTONOMOUS VEHICLES

Here Technologies helps SMEs during Covid-19

To meet unprecedented customer demand in the context of the Covid-19 pandemic, Here Technologies has released a new route planning tool that helps small and medium-sized enterprises (SMEs) optimise the delivery of goods and services.

The company's WeGo Deliver allows businesses to plan and dispatch a delivery service without software development or implementation costs. Employees at Here Technologies, a leading location data and technology platform, created Here WeGo Deliver as a give-back opportunity, based on the company's work across the global transport and logistics industry.

"Manually organising and sequencing multiple delivery stops, and drivers, is time-consuming, and the margin for human error is significant," said Christoph Herzig, head of fleet applications at Here Technologies. "Here WeGo Deliver makes it simple for both the business owner and driver by easy uploading, optimising, viewing and dispatching of routes through a web-based dashboard."

Users simply upload all their order destinations and number of drivers to the online planning dashboard, and Here WeGo Deliver optimises each route and delivery sequence. Drivers can receive their delivery route by email, which automatically opens and populates the delivery route end points in the Here WeGo mobile app to provide voice-enabled navigation. Here WeGo is available to download for free on Android and iOS mobile devices. **www.here.com**

Wektor shows the way - safely

Poland-headquartered Wektor has a vast range of warning equipment for road works, including battery lamps, warning lamps, road waves, traffic lights and road signs, as well as road boards on trailers. All the company's products are made according to PN.EN 12352:2010 standards, so quality is assured - but with the substantial benefits of purchasing direct from the manufacturer.

Wektor is inviting overseas agents and distributors to assess its products.

Wektor's product range includes comprehensive equipment for service vehicles. Take the company's light bars, which can be provided with any inscription on the lamps. Wektor's range of light bars includes the LED 2LW EP lamp, which is only 108mm high. With an

aerodynamic shape, and lightweight construction made of aluminum profiles, the Wektor light bar has two modules - 32 very bright 3W LEDs (per segment). At 12V, the power consumption is just 4A and the units come in a range of lengths from 1000 to 1800 mm.

Wektor also has a range of warning arrows, with automatic lift, designed for mounting on vehicles working on the roads. Arrows are made of 15 lamps of 200 mm diameter with the highest lighting parameters according to PN.EN 12352:2010. LED PCB with increased light intensity with a special optical system that meets the parameters of the L8H lamp class (light intensity 2000 cd). Lighting sequences: arrow on the right, on the left and cross.
www.wektor.sacz.com

MAKE EXISTING CAMERAS A WHOLE LOT SMARTER

The ability to convert all cameras in an existing network into smart sensors is an attractive, and hugely beneficial, proposition. DataFromSky's Traffic Embedded is at the forefront of a new generation of Internet of Things (IoT) deep traffic analysers. It is fully GDPR compliant, thanks to its on-board real-time processing pipeline. Existing cameras can monitor every single traffic participant, from pedestrians to buses and everything in between.

Traffic Embedded is a smart brain packaged into a small anti-vandal box that can be installed wherever needed, even on an outdoor light pole. Thanks to the powerful AI inside, it extracts rich traffic analytics on-the-fly from up to six connected cameras.

The device comes with IP66, PoE, and GPIO ports and is compatible with any type of IP camera with H264/H265 RTSP video stream, converting it into a super sensor by a plug in the cable. The list of applications is huge, including traffic control and monitoring, parking management and people counting with open API and various connectivity options.

The compact unit can be configured and personalised by using DataFromSky's configuration tool, Flow. This visual programming traffic language allows its users to programme traffic tasks, create their own data dashboard and manage the unit remotely. It automatically measures the speed, stationary and passage time, recognises colour, licence plate, and much more.

DataFromSky says Traffic Embedded with Flow offers straightforward configuration of analytical tasks with drag and drop simplicity and visual representation, enabling rapid and deep understanding of the situation. What is more, it features an open interface to directly turn smart traffic insights into actions - by controlling traffic lights for example.

Traffic Embedded can convert a current camera network into smart sensors.
www.datafromsky.com

Ford steers rural drivers to safety

Ford has introduced a solution for rural roads which it says can gently steer a vehicle back on track when needed. Road Edge Detection is designed for country driving at speeds of 45-70mph (72-112 km/h) and uses a camera located below the rear view mirror to monitor road edges 50m in front of the vehicle and several metres to the side, the company adds.

The system's advanced algorithm determines when there are clear structural changes from the road to the nearby area while also offering steering support on roads when lane marking is obscured or hidden by leaves, snow or rain.
www.ford.com