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TRANSPORT360

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TALKING HEADS

Nokia WING rolls out global connectivity to meet 21st Century automotive challenges

FLEET MANAGEMENT

Truckers learn to correct their own bad driving

EXECUTIVE REPORTS

The bike and scooter sharing telematics market

Insurance telematics in Europe & North America

PLUS: Case Study - Nokia WING drives vehicle connectivity into post-roaming era for automotive OEMs • 5StarS consortium publishes assurance framework to build trust in connected and autonomous vehicles • Events: See What's On worldwide • Microsoft Azure and Inmarsat join forces to offer cloud edge IoT services • 'First-of-its-kind' framework launched for safe automated driving systems • www.IoTNowTransport.com

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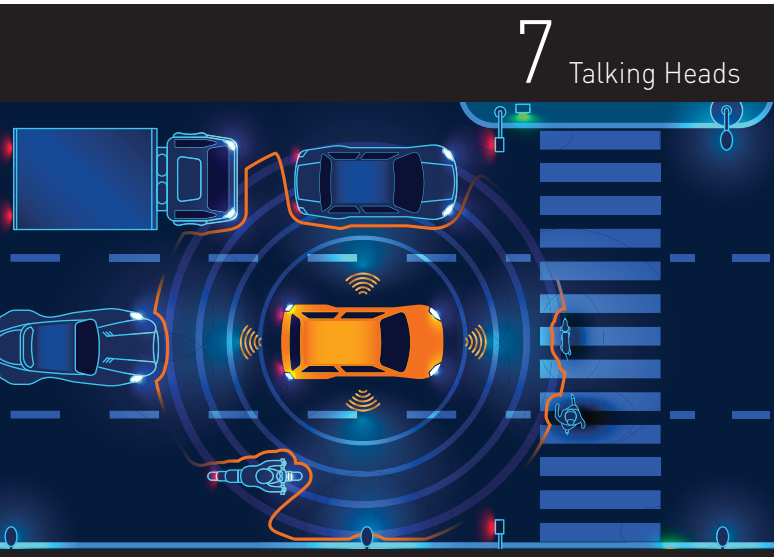

IN THIS ISSUE

(Cover sponsor) Nokia WING
Have you ever wondered how you can enter the world of IoT or further grow your existing IoT business? Would you prefer to win new revenue with low risk and minimal investment, instead of spending CAPEX and time building an IoT network and developing new services?
Welcome to Nokia WING, a managed service that offers operators the ability to support their enterprise customers with global IoT connectivity across borders and technologies.
www.nokia.com/networks/services/wing/

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Transport businesses already rising to major 21st Century challenges

To date, the development of the car has been shaped by the meeting of human and Industry 3.0 machine. That's all changing, however, as the next generation of automotive transport involves the interface of artificial intelligence, machine learning, cellular vehicle-to-vehicle (C-V2V) and vehicle-to-infrastructure (C-V2X) communications, and predictive analytics, to name just a few technologies – and the wetware that is you and me. In fully autonomous vehicles we will be completely bypassed, but today road hauliers are already seeing major benefits (see page 5) from truckers learning to correct their own bad driving habits.

In the meantime, the transport industry – be it the haulage & logistics sectors or automotive – is adapting fast to the growing demands for an IoT network that meets 21st Century needs. In a fascinating, in-depth interview I had recently with the founder and head of WING Business at Nokia, Ankur Bhan described how his company is building a global alliance of partners to address automotive connectivity challenges. Starting on page 7 he explains that the days of reliance on roaming-based cellular connectivity are over, and that we need Nokia WING (Worldwide IoT Network Grid) to enable new infotainment services for car users, as well as additional revenue streams for automotive original equipment manufacturers (OEMs).

There is Breaking News on page 13 of a "first-of-its-kind" safety initiative being taken by no fewer than 11 companies in the automotive and mobility sectors. #TipsHat here to Aptiv, Audi, Baidu, BMW, Continental, Daimler, Fiat Chrysler Automobiles, HERE, Infineon, Intel and Volkswagen who are jointly publishing "Safety First for Automated Driving," (SaFAD), a non-binding organised framework for the development, testing and validation of safe automated passenger vehicles. Cross-industry initiatives like this have been thin on the ground until now so they are to be applauded.

We hope you enjoy these and other articles in the latest issue of IoT Now's Transport360 magazine.

Jeremy Cowan, Editor
Subscribe free for quarterly issues at
http://bit.ly/2vsbVjd

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5StarS publishes assurance framework to build trust in connected and autonomous vehicles

The 5StarS consortium – which brings together the research bodies Ricardo, Roke, HORIBA MIRA, Thatcham Research and Axillium Research to address the cybersecurity threat – has launched its proposed assurance framework for connected and autonomous vehicle cyber security. This runs from design to end of life, and follows a two-year research project funded by Innovate UK.

As vehicle systems connectivity grows – such as in-car entertainment – so it increases exposure to cyber threats, consumers and insurers need to be able to have confidence that vehicle manufacturers are managing cyber security appropriately. The 5StarS assurance framework sets out to build trust in the ability of manufacturers to mitigate against cyber threats and be resilient to attacks.

The Roadmap to Resilience framework will enable manufacturers to gain assurance in the capabilities of their products, use resilience as a market differentiator and establish meaningful ways of communicating cyber derived risk to consumers.

Key benefits for vehicle manufacturers implementing the framework include building consumer trust in the overall safety of vehicles; highlighting vehicle countermeasures against – and resilience to – cyber attacks; cyber risk being reflected in insurance premiums, and the ability to monetise good practice in cyber security through a rating that differentiates their products from the competition in consumers' eyes.

Jerry Williams, managing director for the Roke and Ricardo Digital Resilience partnership, says: "We established the Roke-Ricardo partnership to bring together the best of both organisations in developing effective solutions to the evolving cyber threat. As members of the 5StarS project since its inception, we bring a full understanding of the difficulties associated with assessing cybersecurity as current and emerging threats change over time. We have used this basis of understanding to build an effective vehicle testbed."

"We're now using our newly established, dedicated facility to assess a number of vehicles, using a methodology that is consistent with the 5StarS approach, to get a detailed understanding of how different manufacturers have approached cyber security. This allows us to identify modifications that would improve future vehicles' resilience to cyber attack," he adds.

Nick Tebbutt, business manager, cybersecurity, at **Ricardo**

Nick Tebbutt, Ricardo business manager for cybersecurity, comments, "For many years now, consumers have been able to make their new vehicle purchasing decisions informed by clear and easy-to-understand crash safety ratings. Ricardo is pleased to have played an active role in this project in identifying a methodology through which cyber resilience standards can be consistently assessed. We very much welcome the publication of the 5StarS consultation paper that has been announced by the consortium."
https://5starsproject.com

Haulier sees drivers self-correct their behaviour using ORBCOMM's performance scoring

UK-based haulier Newell & Wright has reportedly enhanced its overall fleet safety with full visibility of driver performance scores providing actionable data to improve behaviour, efficiency and safety. Specialising in container and haulage logistics and freight forwarding, Newell & Wright employs 300+ people and has a fleet of more than 100 vehicles. Instead of separate reports on tachograph compliance, safe driving and fuel performance, ORBCOMM's in-cab and back office solution provides a combined driving style score.

Newell & Wright found that drivers adopt the advice and adapt their driving behaviour to improve themselves against their peers. "In general, across the whole fleet, we have a significant improvement in weekly scores. We very rarely have someone we need to monitor or speak to now. They see their own score; it is human nature to strive not to be at the bottom of the pile every week," says Stephen Newell, operations director at Newell & Wright.

ORBCOMM's driver performance scoring uses summary scores backed up by detailed, transparent data. In the cab, drivers receive intuitive, immediate, driver-friendly feedback and coaching. In the back office, drivers can be compared equally, with drill-downs available into any incident and performance in individual trucks to highlight anomalies in driving style across different vehicles. League tables and scorecards bring the data to life and allow for sharing and easy interpretation by drivers and trainers.

Driver performance scoring from ORBCOMM monitors a range of driver criteria including idling, harsh braking, speeding and acceleration. The information is an indication of which drivers are performing well and where there is room to improve. As well as impacting safety, driver performance impacts on fuel usage, vehicle use, customer satisfaction and ultimately the success of the business.

ERM Advanced Telematics enters IoT with sensors to monitor and track assets

Eitan Kirshenboim, CMO and business development manager, **ERM Advanced Telematics**

International automotive technology supplier ERM Advanced Telematics is expanding its activities from telematics solutions for locating and tracking vehicles, drivers and passengers, to the Internet of Things (IoT) by introducing its IoTLink line of products.

The new sensing solutions use sensors and gateways that enable continuous tracking of assets and monitoring their status according to pre-defined parameters. The products emit constant status signals, as well as alerts of any breach of the pre-defined parameters. In addition, the IoTLink products communicate between themselves using BLE (Bluetooth low energy) technology. The products are also equipped with an internal battery and are easily and quickly installed.

IoTLink products enable tracking, locating and monitoring of assets that are not necessarily in or on the vehicle, such as items that are being transported in crates or are in storage, in containers, in transit, in fields, etc, alongside assets such as activated machines and refrigerators for industrial or home, which use equipment that requires long-distance monitoring. This latest move by ERM, which has focused its efforts on the automotive market, is now offering solutions to new sectors such as agriculture, logistics and any field that requires this type of monitoring. ERM's new IoT solutions will enable complete integration and interfacing of the company's main telematics product line that is based on the StarLink technology.

As part of the new IoTLink line, ERM announced the e2Sens comprehensive sensor, that the company says will be offered at a highly competitive price and will enable the monitoring of assets in real time. e2Sens will also enable periodic reporting based on a list of parameters - humidity, temperature, light, motion, angles, shock, falling, or opening or closing of doors. A complimentary product to e2Sens is e2Gate, which serves as a gateway to the e2Sens sensor and can also act independently as a standalone sensor. e2Gate combines a mobile tracking unit with a sophisticated sensor, and is equipped with a cellular modem, GPS, an internal battery and the capability to monitor temperature, identify an accident, angle, shock, movement and location, all in one device and in real time.

Eitan Kirshenboim, CMO and business development manager at ERM Advanced Telematics, says: "ERM's partners will be able to monitor assets from after the completion of manufacturing, through the phases of storing, transporting to their destination and subsequent installation at the customer's premises or at a site - and keep monitoring the assets during the maintenance phases. This is followed up by continuous tracking and monitoring of the asset or machine along the entire supply chain at any point in time throughout the asset's lifecycle."

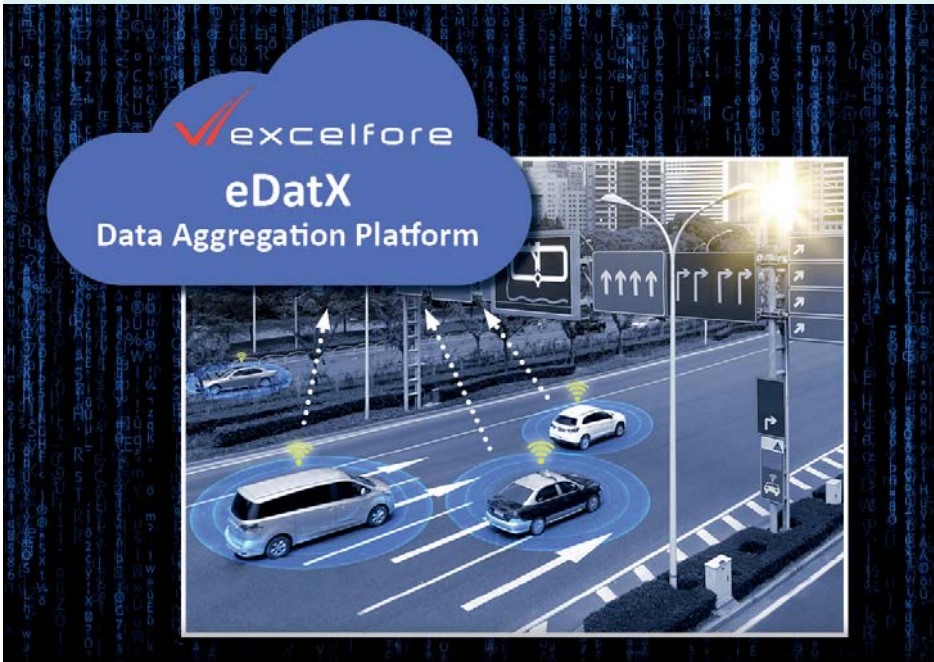
Excelfore launches eDatX data aggregation platform for automotive industry

Excelfore, a specialist in automotive data management, has launched the eDatX™ platform for big data-driven artificial intelligence (AI) learning in error detection, predictive analytics, and advanced algorithm development.

The eDatX platform integrates with eSync Compliant automotive OTA and data gathering pipelines. When combined they create a secure service-oriented architecture to unlock data from any number of sensors and controllers in the connected car. Making the data accessible can drive improved vehicle health and accelerate feature development.

The new eDatX platform enables cloud-based remote evaluation of data gathered across geographically distributed development teams.

Shrinath Acharya, CEO at Excelfore, says, "Handling data effectively can lead to multimillion-dollar savings in accelerated development of many advanced automotive technologies such as electric vehicle powertrain optimization, and can serve as an essential foundation for HPC (High Performance Computing) for ADAS (Advanced Driver Assistance Systems) and autonomous driving."

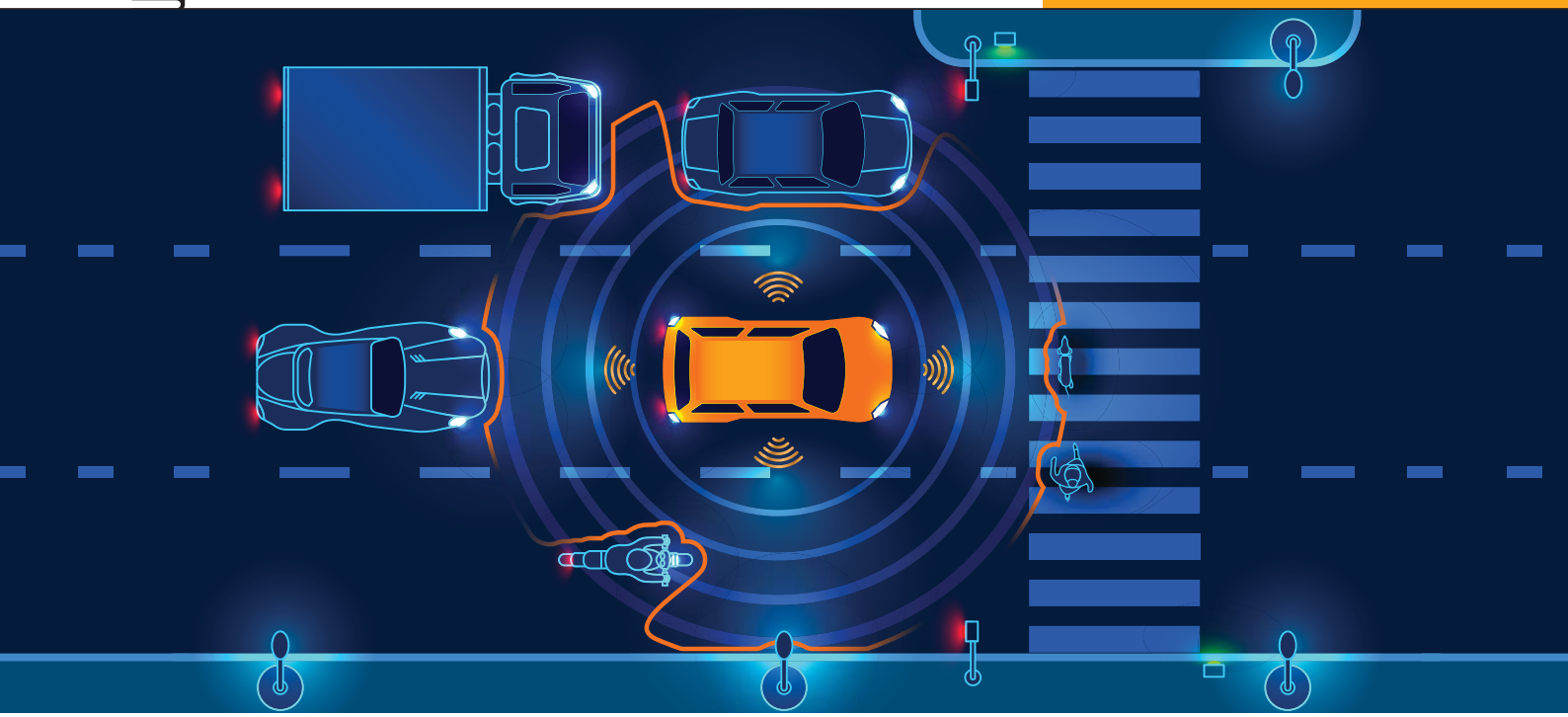


The eDatX™ platform for big data driven AI-learning in fields of error detection, predictive analytics, and advanced algorithm development.

MorningCore licenses CEVA DSP for wireless and automotive communication

California-based CEVA, Inc. (NASDAQ: CEVA), a licensor of signal processing platforms and artificial intelligence (AI) processors for connected devices, reports that MorningCore Technology Co., a subsidiary of China Information and Communication Technologies Group Corp (CICT), has licensed and deployed the CEVA-XC DSP in its family of software-defined radio (SDR) processors and platforms targeting high performance 4G/5G wireless and cellular vehicle-to-everything (C-V2X) applications.

CICT is focused on the research and development of innovations in the telecoms field. MorningCore, formed in 2017 as part of the Datang Group, is responsible for the development and innovation of integrated circuits (ICs) and system-on-chips (SoCs) that enable next-generation wireless communications, such as 5G terminals and cellular v2x modems and infrastructure.



Nokia WING rolls out global connectivity to meet 21st Century automotive challenges

The challenges facing the automotive industry are profound and global. The rewards for success will be immense. Drivers today demand home-grade infotainment, and ecosystem partners (such as insurers and repairers) expect to ramp up their offerings too. Meanwhile, vehicle manufacturers want to know their customers better, offer them more services, and generate new revenues. Here, Jeremy Cowan, editorial director of *IoT Now Transport360* magazine talks exclusively to Ankur Bhan, the founder & head of WING (Worldwide IoT Network Grid) business at **Nokia** about their new solution.

Transport360: Ankur, could you outline the scale and type of connectivity problems for car original equipment makers (OEMs) and automotive service providers?

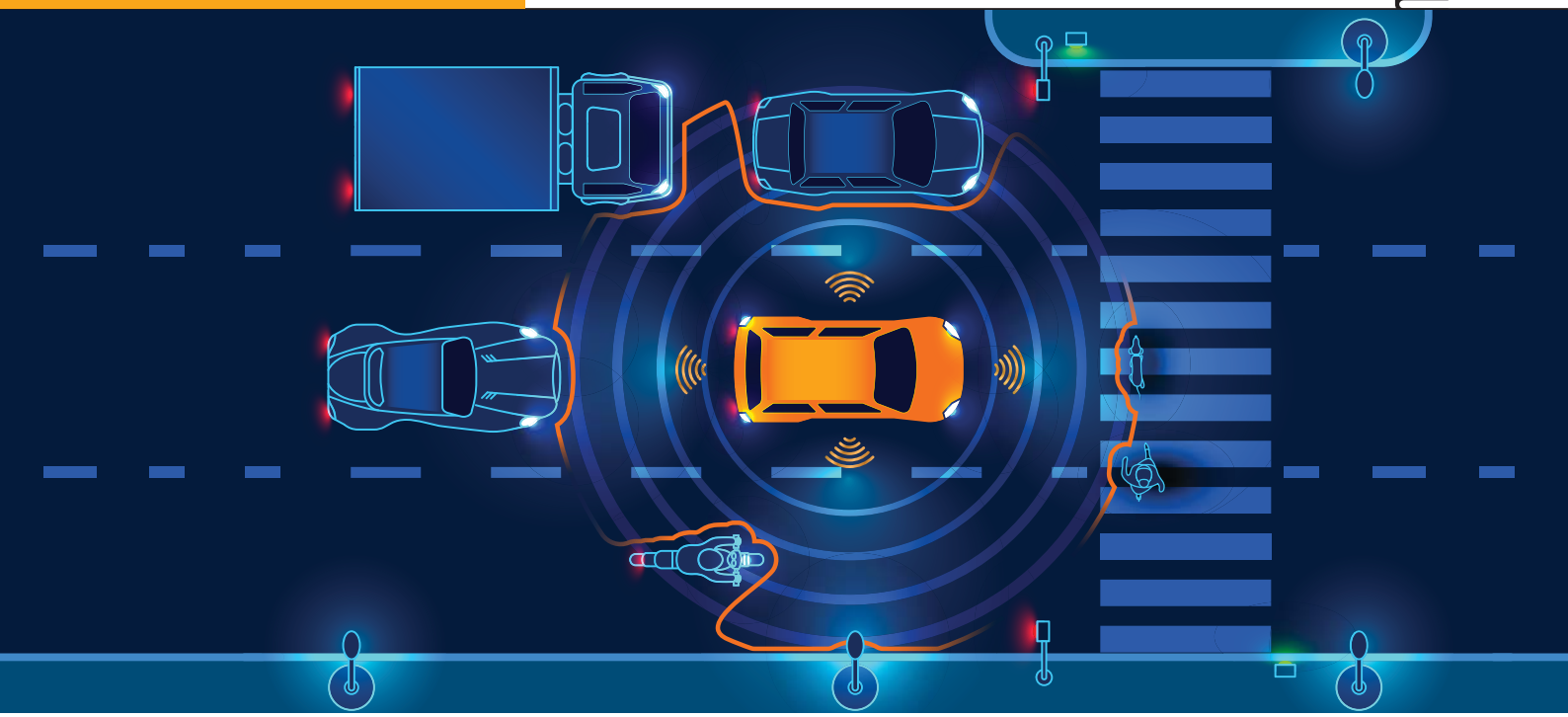
Ankur Bhan, Nokia WING: Jeremy, what we are seeing today in the automotive industry is the accelerated convergence of various transformations, including electric propulsion, car sharing, and driving automation. One of the key enablers is connectivity, that really enables many of these transformations for automotive OEMs. And when we look at the traditional value chain that insulated OEMs from the consumer that is changing rapidly as well.

Automotive OEMs now need to maintain a connection to their car, and customers across their global footprint. This need is opening up new sources of revenue and also driving increased efficiencies in their supply chain. For instance, Audi made a public statement that they want to rate €1 billion in operating profit per year from these after-sale digital services. When compared to its 2018 profitability, we're talking about 30% of their profitability coming from these additional services, so many of these transformations are significant.

Many of these automotive OEMs are still relying on roaming-based cellular connectivity in multiple markets. Also, there are multiple challenges with roaming-based solutions, be it cost control, especially for high bandwidth applications, be it latency because the payload needs to go back to the core location, or regulatory compliance. In many markets, you still have a permanent roaming services ban.

What is needed is a new type of connectivity paradigm. One, which has a simple, straightforward integration for these automotive OEMs, they don't really want to integrate multiple times with multiple different networks. They want reasonably uniform SLAs (service level agreements), a consistent set of operations across all jurisdictions. They want local breakouts that support high volume, high bandwidth, low latency connections, and local data storage to meet sovereignty requirements of various jurisdictions as well. So, what may appear relatively simple at the surface on connectivity, when you peel the onion, you see many of these challenges around cost, latency, data sovereignty. ▶

Ankur Bhan, founder & head of WING business, Nokia



“There are multiple challenges with roaming-based solutions; be it cost control, especially for high bandwidth applications, latency because the payload needs to go back to the core location, or regulatory compliance.”

That requires a new way to connect these automotive OEMs on a global scale.

T360: How have the problems been addressed up to now for connected cars? You've talked about roaming and a bit about why that's not working. Can you elaborate?

AB: Look at any global automotive OEM; they have operations in more than 150 countries. Typically, they have a lead domestic operator as their main partner, and then they have multiple operator partners in various markets. Take an example of an automotive OEM with a reasonably large, established market in the US, and they have a lead operator in that market, and further require connectivity in Europe, India, Asia, China. For such an arrangement to work consistently and seamlessly, you need infrastructure in each of these markets that are pre-integrated at the provisioning layer, and also in the operations layer.

The problem today is that many of these operators have their own systems, their own core network, their own policy controls, the Policy Charging Rules Function. If, for instance, an automotive OEM wants to run a software update in a consistent manner, They need to work through multiple operator core networks. That requires them to integrate in numerous ways; they can't have global SLAs around those specific services. That is the problem they are facing. Roaming doesn't address these challenges because it brings several other new challenges that I was talking about earlier.

A new paradigm is required for connectivity that is consistent, seamless, works in the same way across multiple markets, supports high bandwidth, yet manages the cost control, supports various types of services – not just towards automotive OEMs, but also towards consumers because automotive OEMs want to offer these infotainment services.

Operators are only trying to address this at the surface, they provide a harmonisation at the provisioning interface, but the deep core networks are still quite fragmented, leading it to some of the challenges such as global SLAs. That's the problem that we are solving and redefining, the connectivity paradigm for global automotive OEMs through mobile operators.

T360: What is Nokia WING doing to overcome these problems?

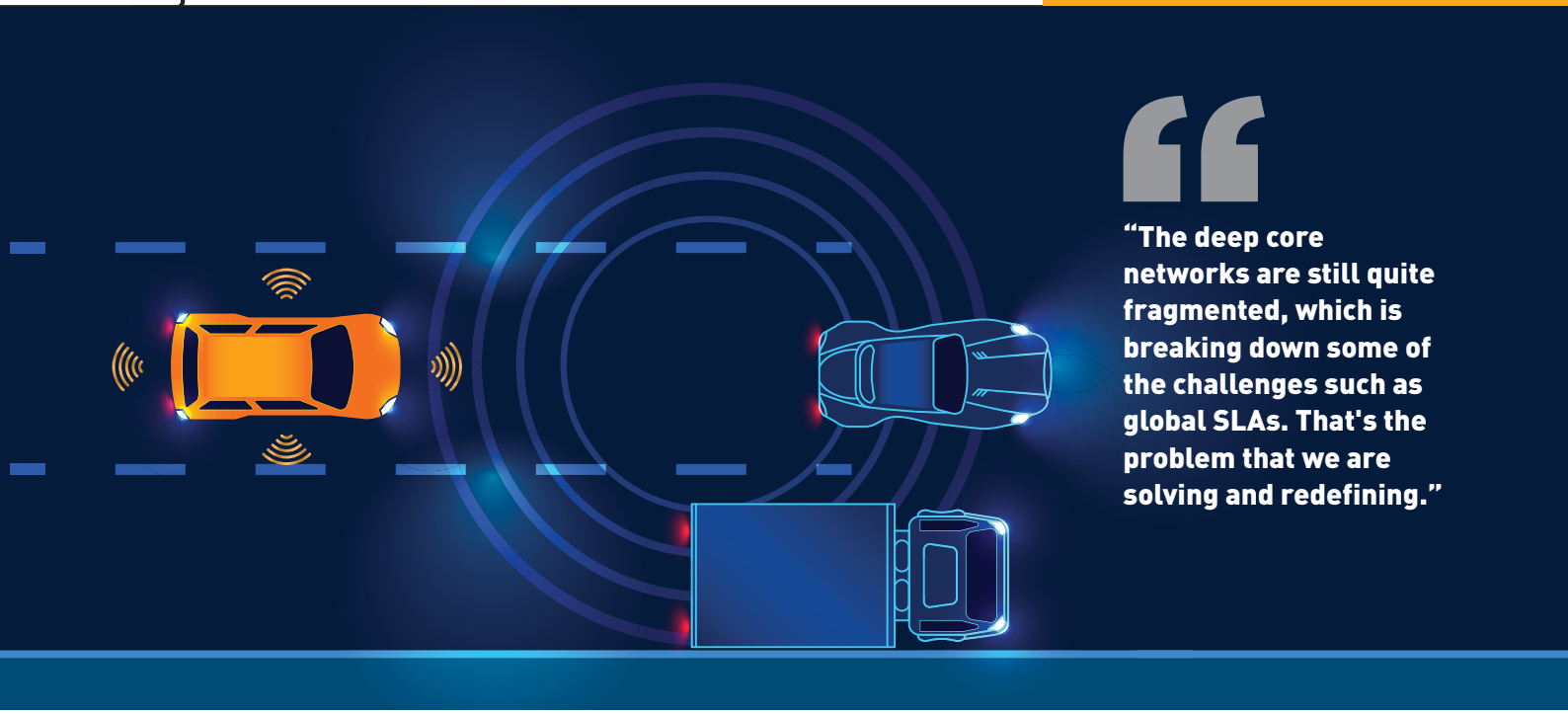
AB: First of all, WING stands for Worldwide IoT Network Grid, and as the name implies, we are building a global IoT infrastructure to support these global use cases that require a different network architecture. We are building a global IoT infrastructure with next-generation capabilities such as the core user plane separation, as is now the requirement in the 5G architecture. This infrastructure, in its first iteration, will be deployed across 32 locations in 20 countries by the end of 2020. That in itself will be the most extensive global footprint of IoT infrastructure by any provider today.

Then this global infrastructure provides a local breakout in multiple locations that meets low latency, data sovereignty, and privacy requirements for these automotive OEMs and their customers. We offer this global infrastructure entirely as a service model, which means there is a low entry barrier for mobile operators and their customers. It is designed as a Pay-as-you-Grow infrastructure model.

So we will provide a full breadth of IoT capabilities including billing, fraud management, privacy, and charging scenarios. I'm talking about control user plane separation, the multi-technology aspect, which means you're supporting all the various cellular IoT, from 2G, 3G, 4G to 5G, but also narrowband and LTE-M capabilities. Whatever you can conceive for the next generation, IoT is all being built into the platform.

T360: To do that, you must need quite a number of partners. Who are your ecosystem partners?

AB: Yes, the IoT is not built in isolation by any single company. We need to work together with multiple partners. First of all, to address the connectivity challenge, we are integrating multiple mobile operators, as part of this infrastructure that can then offer these seamless services to their enterprise customers. That global alliance, which is unique in its inception and operation, is one of the ecosystems that we are strengthening on the connectivity layer for these use cases. AT&T, which is one of the leading IoT service providers and deployed more than 24 million connected cars, is one of the lead operators in enabling such a ▶



"The deep core networks are still quite fragmented, which is breaking down some of the challenges such as global SLAs. That's the problem that we are solving and redefining."

global partnership between operators. Nokia WING is an enablement layer making that happen.

In addition, we integrate with multiple cloud and data centre providers, as well as numerous module manufacturers, the companies that provide SIM management technology. So, it's a rich ecosystem of cloud connectivity, applications all coming together, supporting the next generation of high bandwidth, low latency, global use cases. Some of these use cases were not even possible because of these barriers that exist in the connectivity and cloud layer. With the ecosystem, we are breaking down these barriers and making global services scale much faster across technologies and multiple geographies.

It's not restricted to automotive, it will support consumer appliances, 5G-enabled industrial IoT, and a new wave of connections in the narrowband low-power scale.

T360: How does it differ from something like Cisco Jasper, or the IoT World Alliance?

AB: They have been in the market for a long time, trying to solve the problem more at the surface level, trying to harmonise the interface on how these connected services get provisioned. However, we at WING are taking it further, down many layers, where we are unifying a full cloud-native global core infrastructure that spans multiple technologies – 2G, 3G, 4G, 5G, and LTE-M. The full core infrastructure is also deployed in geographically challenging, or regulatory difficult markets. It is enabling this seamless interface and consistent SLAs across markets.

We're not just restricted at the software layer, we're also providing managed services for this global infrastructure, which means if any enterprise customer has issues in their connected services, anywhere across the globe, they get dealt with in a similar SLA model because Nokia can provide these global operations and streamlining. For the end customer, this means better customer experiences, faster resolution of their problems and consistent SLAs. Consistency also brings down costs in the supply chain, which is one of the big challenges for many global OEMs today.

T360: Is this solution available now?

AB: Absolutely. We are already up and running in our first nodes in Europe, and bringing it to life in several markets in Asia, the US, Latin America and by 2020, we will be in 32 locations across 20 countries, which will give us a more extensive footprint than any other provider at this stage. So yes, we are live and accelerating to build this global connectivity fabric that will fast track many of these use cases.

T360: Can you give us some examples of car makers or OEM clients who have already joined you?

AB: We are working through our operator partners with several automotive OEMs in Europe, Latin America and the United States. They are not directly our customers, so I would not want to name them, but they work through our mobile operator partners. As you know, AT&T has been a leader in the connected car space, so we will have touch points with most of these global automotive brands.

T360: Could you give me an idea then of the operators you're dealing with?

AB: We are already live with three operator partners, we identified AT&T, Tele2, and Marubeni we signed last year. This year, we have made public about Telecom Egypt, (also see link below) and Zain in Saudi Arabia. We are seeing swift adoption of the infrastructure so, you will see many more announcements come through in the next quarters.

T360: Finally, will this global connectivity enable new services that the end user will see?

AB: Absolutely, we give links for automotive OEMs to scale their existing connected services much faster, across the globe. Today, we see connected cars growing fast in the US, Western Europe, and China, but not as quickly in other parts of the world. First, we give scale and remove entry barriers for many other markets where automotive OEMs are feeling challenged. ▶

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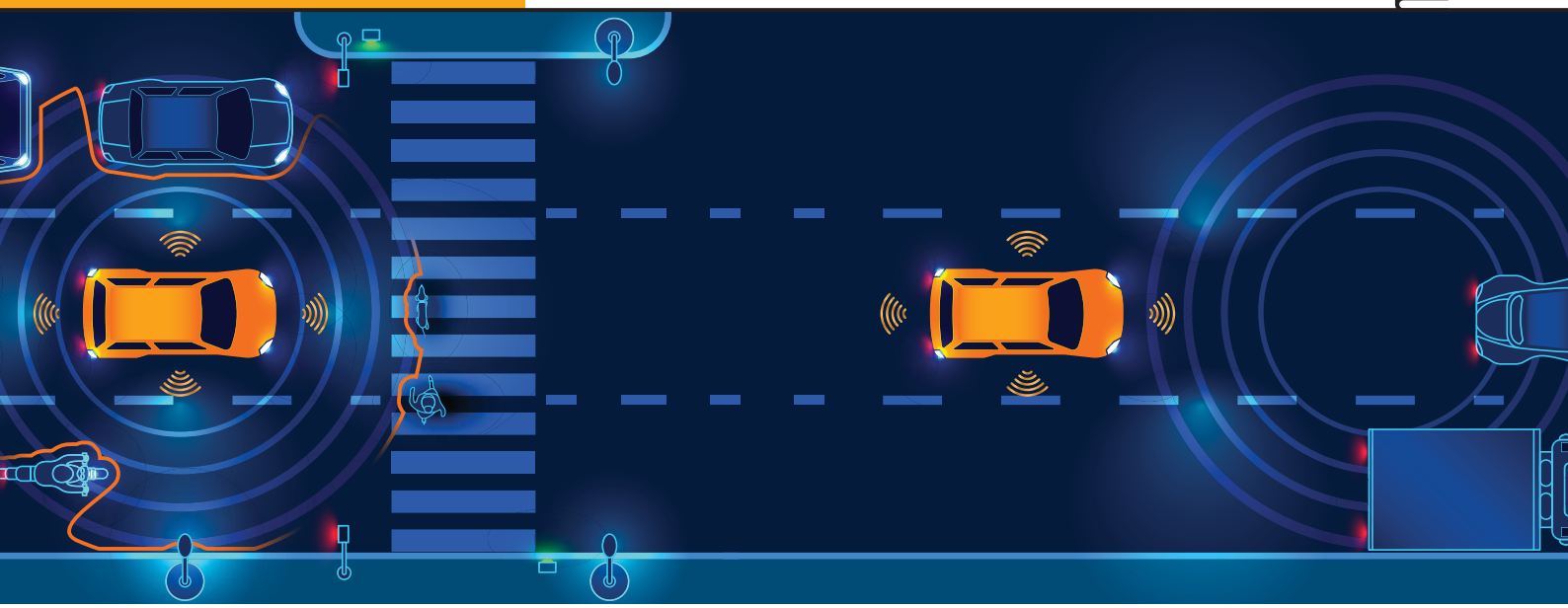

IoT Now's editorial director, Jeremy Cowan was talking to Ankur Bhan, head of the WING business line at Nokia.

Second, as our infrastructure is supporting multiple technologies with 5G we support many of these new services around cellular V2X (vehicle-to-anything communications) which takes the safety of the cars and integrating with the broader ecosystem to a completely new level.

Infotainment services are becoming very important for automotive OEMs; there was a survey in the US by Auto Trader that says up to 90% of new car buyers are now willing to wait for new tech features, and it is becoming an increasingly important decision for car buying. We enable these infotainment features by supporting the low-latency consumer WiFi type use cases which were not possible just from a permanent roaming-based solution.

We will see automotive OEMs accelerate over the air (OTA) software updates. Tesla revolutionised this market, but we now see this increasingly being adopted by all automotive OEMs, not just in the luxury segment but going down to mass markets as well.

I already talked about cellular V2X, that will have a revolutionary impact on the way we drive but also with autonomous driving that is coming in play; you need this ultra-low latency infrastructure with five nines and more reliability levels. In all the diagnostics and repair you will see an entirely new breed of services and disintermediation of the current supply chain as automotive manufacturers get direct visibility of their customers.

They will be able to provide new services and support more use cases, for example, insurance and repair. Also, for the suppliers of these automotive OEMs; they get increased visibility of their parts, and it has an impact on their supply chain as well.

Nokia WING drives vehicle connectivity into post-roaming era for automotive OEMs

Connected Cars Case Study: The networking of cars with the outside world, or connected car, is one of the most significant advancements in the automotive industry in the last 50 years. The connected car is quickly moving from the status of being a luxury to one of necessity. Gartner now predicts connected cars will be the largest driver for cellular Internet of Things (IoT) in terms of volume and revenue. Automotive original equipment manufacturers (OEMs) are grappling with digital transformation on many fronts. Electric propulsion, car sharing, automation, and the need for increased connectivity are fueling significant change for automotive OEMs.

Change is also coming to the relationship between automotive manufacturers and the consumer, with manufacturers wanting constant connection to their cars and customers across a global footprint. Reliable and secure connectivity is necessary to monitor and maintain increasingly intelligent vehicles and to create new avenues to revenue opportunities from connected car consumers. Audi, for instance, expects that by 2025 after-sale digital services will generate operating profit of €1 billion – a figure that represents nearly one-third of their 2018 operating profit.

Today's connectivity model relies on global roaming, which is not sufficient for the demands of a connected car. Global roaming requires a patchwork of roaming partners across various geographies globally and limits the ability of a mobile operator to provide a uniform service level agreement (SLA) which impedes consistent operations for the automotive OEM. Multiple costly operator integrations must be eliminated and automotive OEMs instead must find solutions that enable low latency control, with local data storage to provide for data sovereignty in those countries that require user data to remain in the country.

SPONSORED FEATURE

Automotive OEMs are eager to move towards a more connected future, with many starting production integration this year in preparation for commercial launch next year

Addressing automotive OEM challenges

Nokia's Worldwide IoT Network Grid (WING) **(https://nokia.ly/2QOChD5)** is beginning to address these challenges for automotive OEMs as they deliver global IoT to connected cars. WING is a managed service that helps mobile network operators rapidly enhance their existing IoT offerings with global connectivity. WING offers, the first of its kind, global distributed, cloud-native IoT core infrastructure with a unified IoT management platform. WING enables operators to provide automotive OEMs with seamless, low latency IoT connectivity with a globally harmonised service level agreement.

The WING infrastructure is physically distributed across multiple markets globally to reduce latency and meet local sovereignty laws. The WING infrastructure is multi-tenant in nature, allowing mobile network operators (MNOs) of all sizes – from the smallest tier three up to the largest tier one MNO – access to a pay-as-you-go infrastructure to address the connected car market. Because up to 95% of the WING infrastructure is hosted in the cloud, WING is highly scalable and can be made available in new countries or regions without all the typical delays involved in a standard network build.

Automotive OEMs are already leveraging the WING infrastructure as part of their ongoing relationship with mobile network operators who have selected WING for their global IoT platform. These OEMs see the connected car as a path to owning a software and technology platform that unlocks new business models and revenue opportunities. VW, for instance, has plans to invest US$4 billion through 2025 to drive this software platform evolution, and analyst firms such as Morgan Stanley Research have predicted that software and content will grow to represent 60% of the car's value, up from just 10% today.

Global IoT connectivity

Infotainment is a connected car service that has the potential to drive increased value, but is highly dependent on global IoT connectivity to support well-integrated and immersive experiences. Autotrader has identified it already as a top consideration for new car buyers, with 89% of buyers in the US saying they are willing to wait for must-have tech features. Buyers want rich, immersive multimedia experiences that go beyond playlists on a Bluetooth-tethered smartphone to integrated, personalised high-definition streaming experiences. Infotainment systems will become commerce and advertising platforms, and this evolution will require significantly improved connectivity.

After-sales servicing of vehicles will also go through a significant transformation fueled by improved connectivity. Issues that required a trip to the dealer will be resolved remotely with digital diagnostic tools and over-the-air data exchanges. Owners will be equipped with smartphone applications that will give them real-time visibility of the car's health, and analytics will predict potential problems before they happen, forging a valuable bond between the OEM and global customers.

Finally, as we look to the future and the emergence of cellular vehicle-to-everything (C-V2X) connectivity powered by 5G networks, the driving experience will again be transformed with safe, reliable, and efficient transportation that will culminate in fully autonomous cars. Assisted and automated driving enabled by C-V2X will save countless lives – each year up to 1.3 million people die on roads as a result of human error. C-V2X R16 planned for December 2019 will support advanced safety – for example, the coordination of vehicle operations and sensor sharing, which will result in a significant safety leap.

Commercial launch in 2020

Automotive OEMs are eager to move towards a more connected future, with many starting production integration this year in preparation for commercial launch next year. ABI predicts connections will reach 168 million by 2025 and exceed 1 billion by 2033. However, getting there will require ultra-low latency, five nines or better reliability and very high bandwidth – requirements that can only be delivered with local connections provided by a network such as WING.

Our automotive future will be well connected, and for automotive OEMs to generate the returns needed to bring this future to light, they will need the capability to address these opportunities on a global scale. The mobile network operators who serve the automotive industry will need solutions to offer a consistent service level and the ability to scale quickly as the automotive market changes. Nokia WING is helping mobile network operators rapidly and efficiently deliver considerable connectivity scale and reach to automotive OEMs around the world. ■

Learn more about WING **(https://nokia.ly/2QOChD5)**

Automotive and mobility industry companies publish 'first-of-its-kind' framework for safe automated driving systems

A new white paper, titled "Safety First for Automated Driving" (SaFAD) has been issued by 11 automotive and mobility companies who are collectively emphasising the importance of safety by design for automated vehicles.

Emphasising safety by design, 11 industry leaders across the automotive and automated driving technology spectrum have published "Safety First for Automated Driving," (SaFAD), a non-binding organised framework for the development, testing and validation of safe automated passenger vehicles.

These 11 enterprises – **Aptiv**, **Audi**, **Baidu**, **BMW**, **Continental**, **Daimler**, **Fiat Chrysler Automobiles**, **HERE**, **Infineon**, **Intel** and **Volkswagen** – comprise the broadest representation across the industry and have published, to date, the largest report on how to build, test and operate a safe automated vehicle.

Released on July 2nd, 2019, the SaFAD white paper authors' purpose is to emphasise the importance of safety by design, along with verification and validation, as the industry works toward creating standards for automated driving.

For the first time, SaFAD offers automated vehicle (AV) developers and operators a system for clear traceability that proves AVs to be "safer than the average driver" through components such as cameras or steering systems.

It is also the first time presenting a summary of widely known safety-by-design and verification and validation methods of Level 3 and Level 4 automated driving as defined by the SAE (J3016).

12 Guiding Principles

The foundation of the SaFAD white paper is its 12 Guiding Principles, which are further refined into capabilities of the automated vehicle, from which safe-by-design elements are derived to support the capability and achieve the guiding principles. "Safety

First for Automated Driving" combines the expertise from key companies in the automaker, supplier and technology industries to help direct development of safe automated vehicles.

Interest in and development of automated driving technology has grown at a dramatic rate over the past several years, fueled by the goal of reducing fatalities related to vehicle crashes, improvement of traffic flow and the introduction of new mobility concepts. This rapid growth brings a wide range of development methodologies from established companies and the growing roster of new enterprises.

At an event near you soon

With publication of "Safety First for Automated Driving," authors and experts from each of the participating partners will present the group's work at industry and technology conferences internationally over the next several months. ■

For details of upcoming automotive, mobility and connected transport events turn to "What's On" on page 26.

Insurance telematics in Europe and North America

The integration of telematics technology constitutes the latest revolution for the automotive insurance industry. The concept of telematics is a portmanteau of telecommunications – long-distance communications and informatics (the science of information).

In a new executive report, the analyst firm **Berg Insight** defines telematics in general as the collection of information related to remote objects such as vehicles via telecommunications networks.

The introduction of telematics technology in the context of automotive insurance is commonly referred to as usage-based insurance (UBI) or insurance telematics. Solutions of this type generally enable automotive insurers to improve pricing mechanisms based on actual driving data, gain better control of claims and differentiate their offerings to current and prospective policyholders. Variants of insurance telematics which have been popularised over the years include behaviour-based pricing models such as Pay-As-You-Drive (PAYD), Pay-How-You-Drive (PHYD) and Manage-How-You-Drive (MHYD).

The addressable market for insurance telematics is significant. A total of around 299 million vehicles were in use in the EU23+2 in 2017, including more than 259 million passenger cars. In North America, an estimated ▶

total of around 286 million vehicles were in use in 2017, out of which passenger cars and light trucks are estimated to represent almost 271 million vehicles.

Some kind of basic automotive insurance is mandatory in most developed countries and there are in addition a number of subcategories of insurance that provide coverage for different types of unforeseen events involving motor vehicles. Motor gross written premiums in EU23+2 countries totalled more than €132.3 billion in 2017. The equivalent number for North America was US$231 billion (€204 billion) in 2017.

Growing market

The nascent insurance telematics market is currently in a phase of strong growth which is expected to accelerate in the coming years. Europe and North America so far represent the vast majority of all insurance telematics programmes and active policies from an international perspective, and the front-running national markets include the US, Italy and the UK.

Berg Insight estimates that the total number of insurance telematics policies in force on the European market reached 10.3 million at the end of 2018. Growing at a compound annual growth rate of 36.0%, the number of insurance telematics policies in force in Europe is estimated to reach 47.9 million by 2023. In North America, the total number of insurance telematics policies in force is forecast to increase from an estimated 10.6 million policies at the end of 2018 to reach 49.8 million policies by 2023, representing a compound annual growth rate of 36.2%.

In the US, the top three insurers in terms of UBI policies have all introduced smartphone-based solutions to supplement or replace the previously used OBD dongles. Several US and Canadian insurers have during recent years re-assessed and re-launched their telematics programmes. The North American insurance carriers are also exploring claims-related insurance telematics as well as adding distracted driving parameters in UBI. The European insurance telematics market is still dominated by insurers in Italy and the UK, with an estimated 7.7 million and 1.2 million policies respectively. Uptake in all other markets is considerably lower, with between 150,000 and 300,000 policies in Spain, France and Germany, and 40,000–70,000 policies in Scandinavia, Switzerland, Austria and Benelux.

Multiple industries

The insurance telematics value chain spans multiple industries. Insurers with notable presence in the insurance telematics market include Progressive, UnipolSai, State Farm, Allstate, Generali, Allianz, Admiral, AXA, Liberty Mutual, Intact and Insure The Box. Insurance players can either develop telematics programmes independently or rely on partners to varying degrees. Renowned telematics suppliers active in the insurance field for example include Octo Telematics, Vodafone Automotive, Viasat Group and LexisNexis Risk Solutions.

Targa Telematics, Redtail Telematics, Trak Global Group, Cambridge Mobile Telematics, The Floow, TrueMotion, Modus, CalAmp, Mobile Devices and Scope Technology are also notable players on the market. Automotive OEMs are increasingly taking an active part in the ecosystem. Examples include General Motors, Honda, Renault-Nissan, BMW, Daimler and Hyundai.

The insurance telematics market has seen significant merger and & acquisition (M&A) activity in recent years, involving diverse players from many parts of the ecosystem. Notable deals in 2017–2018 included Octo Telematics' acquisition of the UBI assets of Willis Towers Watson including the DriveAbility Score and Trak Global Group's acquisition of IMS. ■

Million policies	Europe	North America
2018:	10.3	10.6
2019:	13.8	14.3
2020:	18.6	19.5
2021:	25.3	26.5
2022:	34.7	36.3
2023:	47.9	49.8

Figure 1. Insurance telematics policies in force (Europe and North America 2018–2023)

Berg Insight estimates that the total number of insurance telematics policies in force on the European market reached 10.3 million at the end of 2018


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Visitor app launched by City of Helsinki, Tencent and Whim to boost travel and transport experience

Designed for Chinese visitors, the WeChat MyHelsinki mini program is said to be the world's first city app to combine preferred personal recommendations, mobility planning and purchase options for travellers. The new service has been jointly developed by Chinese internet service giant Tencent, Finland's City of Helsinki and the Mobility-as-a-Service pioneer, MaaS Global.

Tia Hallanoro:
It's like having a personal guide but in a digital format.

THE OPPORTUNITY

Since June 25th, Chinese tourists travelling to Helsinki have been able to use the WeChat mobile service to review local recommendations about the best restaurants, shopping, events and sights in town. They can also plan how to get from their hotel to the attraction of their choice, and pay for transportation – all within one mobile service.

The digital service has been developed to respond especially to the needs of independent Chinese travellers, focusing on the whole city as an experience.

The MyHelsinki mini program is a scalable solution for more balanced tourism in cities. The "live like a local" features make it easy for the curious Chinese traveller to discover neighbourhoods beyond the most obvious tourist hot spots and offer access to the local service providers off the beaten path.

With the shortest flight connections to Asia, Helsinki is a natural hub between China and Europe. The MyHelsinki mini program has been designed with the transfer traveller in mind, encouraging them to stop over and spend time between flights enjoying the offerings of Helsinki.

THE SOLUTION

"By collaborating with Tencent and the world's leading Mobility as a Service (MaaS) provider, Whim, we have been able to develop an innovative user-based service that is the first of its kind in the world. The mobile service will help us ensure that visitors gain easy access to the best locally recommended experiences our city has to offer. It's like having a personal guide but in a digital format, the experience is the same – in Helsinki you can be sure that everything will go smoothly and that you will enjoy your stay," says Tia Hallanoro, director of Brand Communications & Digital Development at Helsinki Marketing.

With the shortest flight connections to Asia, Helsinki is a natural hub between China and Europe

Mini programs are web-based apps on WeChat that enable purchases within the service. The app does not have to be downloaded separately, as it is included within WeChat, an all-in-one application with over a billion users. Of more than a billion internet users in China, 97.5% use a mobile device for browsing, and 35% of the 26.5 hours a week spent online are spent on WeChat.

Within the last year, WeChat mini programs have taken off: They now represent 20-30% of total traffic in WeChat. So, the new mini program offers the opportunity to serve Chinese consumers using their preferred digital services throughout their visit. Destination websites are of little importance when Chinese visitors search for information using their favourite mobile apps.

China is changing fast, and during the next 10 years, the country's outbound tourism is estimated to grow to 400 million overseas trips by Chinese residents, accounting for nearly a quarter of global tourism. This cohort will spend over US$453 billion overseas over the next five years. China's urban, digitally savvy young generation are an emerging force not only driving market trends, but changing their country and the world. ▶

THE PARTNERS

"The number of Chinese visitors travelling overseas is growing rapidly and travel patterns are in real transition. Among those travellers in-depth traveling has become a trend. With Helsinki mini program, a comprehensive and reliable one-stop service, Tencent wants to serve them as well as possible," states Zhan Shu, general manager of the Tencent Governmental Affairs and Tourism Center.

In May 2019 Tencent announced its new venture into the travel sector at Tencent Global Digital Ecosystem Summit in Kunming. Yunnan province's seamless online to offline digital travel experience is the domestic flagship, Helsinki mini program is the international showcase. Already from last July, Chinese visitors have been able to find out more about the Finnish capital through local recommendations included in the mini program.

The service is based on the content and user interface of the City of Helsinki's **MyHelsinki.fi** website and open API. Since June this year, Chinese visitors have been able to use the mini program to plan how they get about in Helsinki and pay for purchases using WeChat Pay.

Whim's mobile service enables Chinese visitors to purchase all the travel tickets they need – using a single app. The Whim offering will be launched in two phases: the first phase consists of Helsinki region public transportation system, including local and airport trains, trams, buses and ferries to the nearby islands. The second phase, available later this year, expands the service to include taxis, rental cars and city bikes.

"From the perspective of independent travellers, simply getting about in an unfamiliar city is always one of the key factors that can hamper enjoying the full experience. When all available modes of transport and the most reliable service providers can be reviewed and paid for in your native language using a single app, there is no more need for separate tickets, apps and payment methods," adds Kaj Pyyhtiä, co-founder and chief strategic partnerships officer at MaaS Global.

"The growing trend of independent travelling increases the demand for easy to use local transportation services. For MaaS Global, working together with Helsinki Marketing and Tencent provides an exciting pilot for spreading Mobility as a Service offering to potentially hundreds of cities worldwide," he adds. Comprehensive service offerings are enabled by the City of Helsinki's open data.

IN CONCLUSION

Almost a hundred percent of Chinese tourists travelling abroad use WeChat. The MyHelsinki mini program provides Chinese visitors better and easy access to local sights and service providers. The mini program offers Chinese visitors a genuine local experience and more than just the most obvious tourist attractions.

Helsinki is a global pioneer in providing access to public data and utilising it. The mini program developed together with Tencent utilises Helsinki's open API and data about places, events and public transport and uses this data in its recommendations. Open data enables more in-depth recommendations and tailored services to be offered to Chinese visitors.

"Helsinki aims to be a global trendsetter in the digital revolution, and we strongly believe in collaboration and the possibilities presented by AI and API economy. The importance of genuine local recommendations in city marketing will continue to grow in the future. Our API represents a unique opportunity to share Helsinki's destination information and recommendations through as many channels as possible for use by airlines and travel agencies, for example," comments Tia Hallanoro.

Microsoft, Volkswagen and Inmarsat invest in fleet services on cloud platform plus Azure IoT Edge

Inmarsat says it offers a satellite network promising 99.9% availability with low latency data transmission.

Microsoft is putting billions of dollars into its industrial cloud IoT strategy and recent agreements it has signed with the likes of Inmarsat and Volkswagen show it is determined to have every point covered, writes Antony Savvas.

Microsoft Azure and satellite services firm Inmarsat have just joined forces to offer cloud edge IoT services. The agreement enables Inmarsat's customers to transfer data collected through their IoT solutions to the Microsoft Azure IoT Central platform for analysis, and for Azure customers to access Inmarsat's global satellite network to connect their IoT infrastructure to cloud-based applications.

Global supply chain

The collaboration will initially focus on the delivery of Industrial IoT-based solutions to the agriculture, mining, transportation, fleet and logistics sectors, supporting digitalisation and visibility across the global supply chain.

Customers will gain access to a variety of tools that will help connect "anything to anything", said the partners,▶

bringing together assets in the physical world with applications in the digital world, "no matter how remote the location". For those fleet firms serving remote areas that can not usually rely on getting an orthodox mobile signal to fully support their IoT operations, they now have a ready solution.

Tara MacLachlan, Inmarsat VP of industrial IoT strategy, says: "This collaboration with Microsoft Azure is central to our Industrial IoT strategy and will enable our customers to access the data generated and processed by our intelligent edge IoT solutions, regardless of where their infrastructure is located."

Sam George, director of Azure IoT, comments: "With Inmarsat, customers across industries, from agriculture and mining to the logistics and fleet sectors, will benefit from the power of the intelligent cloud and edge with global satellite connectivity in the most remote parts of the globe."

Inmarsat says it offers a satellite network promising 99.9% availability with low latency data transmission.

Volkswagen

On a more down to earth note, Volkswagen and Microsoft have extended their automotive cloud agreement to China and the US, in addition to Europe. The original deal was announced last year, with Volkswagen saying its Volkswagen Automotive Cloud would connect over 5 million vehicles to the cloud from 2020. Like in the Inmarsat deal, services will be built on Microsoft's cloud platform and services, as well as the Azure IoT Edge.

Volkswagen was already setting up a development centre in Microsoft's home city of Seattle to support the partners' efforts, and the companies say initial developer teams are already hard at work on project work. The workforce here is expected to grow to about 300 engineers in the near future.

Volkswagen envisages creating a fleet of cars that will become mobile IoT hubs linked by Microsoft Azure at the edge.

AT&T connects to Vodafone

It is certainly a busy market growth area, illustrated by the AT&T and Vodafone Business automotive IoT deal announced at Mobile World Congress in Barcelona last month. AT&T and Vodafone Business already provided connected vehicle services and products for the automotive, fleet and insurance industries.

"We will bring together our industry-leading expertise to develop superior and consistent connected vehicle solutions and experiences for customers across our combined footprints in North America, Europe and Africa," they said.

They pointed out that automotive companies face many challenges when deploying connected vehicle solutions across countries. Each market has unique requirements and regulations, and it can be complicated for automakers to work across multiple network operators and vendors.

The goal is to simplify the deployment process, improve operations, deliver innovative solutions, and make the network certification process easier, they said.

Chris Penrose, president for IoT solutions at AT&T, adds: "We each have rich experience in connected vehicle technology. By working together, we can innovate faster and help our global customers bring connectivity, entertainment and telematics to more vehicles across our respective footprints."

The companies will prioritise projects to enhance safety, security and entertainment capabilities.

The author is freelance technology writer, **Antony Savvas**.

Stopping the crash: How technology can save us from distracted driving

Some 66% of traffic accidents are caused by distracted driving and the number of deaths on the road is rising in many countries. By combining tech that is readily available with some that will be vital to automated vehicles – video, AI and data analytics – Nauto has succeeded in preventing collisions right now, writes Annie Turner.

Jennifer Haroon, chief operating officer, **Nauto**, explained how we can make driving safer – and smarter – by using autonomous vehicle tech for drivers at the Move event in London.

She said research has found that psychologically speaking, distracted driving is often compared to drunk driving as people understand it's dangerous, but do it until they suffer consequences. **The AAA Foundation** in the US noted that distracted driving leads to four times as many crashes when you're talking on the phone and almost eight times when texting while driving.

Haroon said, "We think one of the reasons people drive distracted is because they think reading a text only takes a couple of seconds. But, it's more like five and if you're driving at 55 miles per hour, that is like driving blindfolded across an American football field – but of course, most roads we drive on are not empty."

Failures to tackle the issue

Laws and regulations are one way of attacking this problem, but enforcement is difficult, rules vary wildly from state to state and country to country, and people often choose not to comply, just as they choose not to wear seat belts.

Automatic emergency braking is another approach to avoiding crashes caused by distracted driving. However, ▶

If you read a text and drive at 55 miles per hour, that is like driving blindfolded across an American football field.

the US Insurance **Institute for Highway Safety** says it will take until 2045 before 95% of us have automatic emergency braking and, as Haroon says, we just can't wait that long; the situation is too urgent.

Turn to technology

Some commercial vehicle fleets already use telematics in vehicles so managers can use data to detect some incidents, like hard braking and swerving, although they cannot see the cause of the behaviour, only if it is habitual.

Nauto developed a platform to process information from dual-facing video systems that show the context, inside and outside the vehicle to understand what's happening. That way fleet managers can see that one driver's hard braking was a fast reaction to avoid a cyclist, but another had to brake hard because they hadn't noticed that traffic ahead had slowed.

Haroon noted, "Fleet managers and fleet owners are starting to see that there are some real benefits to technology like this. We can use some of the same technology that goes into autonomous vehicles, computer vision, deep learning and see benefits now: we don't have to wait for full autonomy."

Although the tech is the enabler here, the real smarts are about the effort put into understanding human behaviour. We are bombarded constantly by warnings and sign posts on the road while driving and on train journeys it's hard to get more than three minutes without pre-recorded warnings and instructions, as well as some staff members liking the sound of their own voices. The overall effect is we block them out.

Yet Nauto has no shortage of statistics and case studies to demonstrate its approach works. For example, back in summer 2017, Atlas Financial Holdings, which insures commercial vehicles, signed an agreement to deploy Nauto's cameras, telematics and data platform across multiple fleets of its taxi, livery and para-transit customers. One fleet insured by Atlas Financial Holdings saw a 35.5% decrease in collisions.

Nudging works

Nauto continued its research into distracted driving, looking at how to identify the tell-tale signs and the best way to get the driver's attention without driving them mad or making them jump out of their skins.

On that first issue, Haroon explained, "We looked into what types of objects tend to be related to distracted driving. We'd already talked about mobile phones, then we thought what types of movements tend to be part of using a mobile phone when you're in the car? Well, it's very difficult to look at your phone down in your lap while you're driving so people look down and either to the left if they're holding it in the left hand or to the right.

"The other thing people often do is the infamous head bob – looking at the road and texting at the same time. We looked at lots of different ideas, like certain head movements, and even the body position in the cab as an indication that the driver is being distracted."

As for figuring out the best way to get the driver to refocus and to avoid collisions, or at least their severity, Nauto also drew on research carried out by third parties: for example, the US Department of Transportation tell in-vehicle infotainment system makers that user interfaces shouldn't distract the driver for more than two seconds as the situation becomes much more dangerous after two seconds' inattention.

This led Nauto to put a great deal of work into the design of audio alerts. They are already used widely in newer cars, but Nauto concluded people don't like them and tend to switch them off. A good example is that in the US, most drivers turn off the lane-departure warnings in their brand new cars, because the system isn't accurate and the alerts have no obvious purpose – people mostly leave lanes on purpose.

Nudge don't shout – unless you have to

It designed a set of audio alerts that work by voice coaching if something is behavioural and potentially dangerous, up to an urgent alarm and instructions when the situation is becoming dangerous due to inattention to get the driver to look up and act.

In pilots with early adopters, Nauto saw a 54% average decrease in distraction events per hour and one driver had a 70% decrease in distracted events per hour. One of the European fleets the company has been running pilots with has seen a 59% decrease in the severity of collisions: a driver might get into a situation where avoiding a crash is impossible, but the alerts can still prompt the driver to do something that makes the crash less severe.

Haroon claimed, "As we use AI (artificial intelligence), the more companies use our system, the more we can help coach drivers and the more we can save lives. All the time we're learning more about human driving behaviour, driving patterns, even things like road infrastructure. We can take that information and develop even more algorithms that can provide different types of coaching and even other types of real-time prevention."

She concluded, "We're looking forward to working with more fleets here in Europe this year and beyond. But more importantly, we're looking forward to develop even more technologies that stop accidents." ■

Nauto developed a platform to process information from dual-facing video systems that show the context, inside and outside the vehicle to understand what's happening

The author of this blog is freelance technology writer, **Annie Turner**.

The bike and scooter sharing telematics market

Passenger cars and light trucks are the main modes of transportation in most industrialised countries. The vast majority of car trips in metropolitan areas are drive-alone trips with only one person in the car and vehicles are used for only about one hour per day on average.

As the analyst firm **Berg Insight** shows in its new executive report, bikesharing and scootersharing are shared micromobility services that have become available for people who want to complement other modes of transportation. Examples of other mobility services include traditional carsharing, carpooling, ridesharing, taxi and ridesourcing services. Many of these mobility services aim to decrease the cost of transportation, create convenience through fewer ownership responsibilities, as well as reduce congestion and environmental impact. ▶

Shared mobility

Micromobility includes shared mobility services in urban areas that offer short-term rentals of light vehicles such as bikes, scooters or other similar vehicles to paying members or communities. The services aim to reduce urban congestion as well as car usage and car ownership to improve the inner-city landscape and reduce air pollution. Usage is typically billed by the minute/hour with rates that include parking, fuel or charging and maintenance. The services are generally used for short trips between 0–10 kilometres.

Bikesharing is a kind of decentralised bicycle rental service, usually focusing on short term rentals that supplements other modes of transport including walking and public transport. Scootersharing is a membership-based service that offers motorised scooters to qualified drivers in a community. Users do not need to sign a written agreement each time a scooter is reserved and used. The vehicles are usually traditional electric scooters or new types of stand-up electric scooters.

Free floating or station-based

Today, most operators use two operational models – free floating and station-based. The station-based operational model enables members to pick up and return the vehicle at any designated station in a city. The free floating operational model is rapidly gaining users and rides. In 2014, a new wave of free floating bikesharing models emerged from China, causing a change on the market.

Free floating services mean that vehicles can be picked up and dropped off anywhere within a designated area.

New technologies in the form of telematics systems and smartphones are key enablers of bikesharing and scootersharing micromobility services. Free floating micromobility services mostly encompass a telematics system that comprises an on-board computer and a telematics device to capture trip data, enable fleet management and grant access to the vehicle through a smartphone app.

Software platforms include complete systems that can support all the operational activities of a micromobility operation ranging from management of in-vehicle equipment, fleet management, booking management, billing, as well as operations supervision via dashboards and data analytics. Leading vendors of micromobility technology such as connected bike locks, infrastructure for station-based bikesharing and software platforms include Conneqtech, INVERS, COMODULE, Smoove, PBSC and SharingOS.

Commercial micromobility services are offered by specialist bikesharing and scootersharing companies, local governments, other shared mobility operators, as well as public transport operators. Examples of leading free floating bikesharing operators include Ofo, Mobike, Hellobike, Lime, and JUMP. Station-based bikesharing operators include Motivate, Nextbike, JCDecaux (Cyclocity), CycleHop, Clear Channel and DB Call a Bike. Leading traditional scootersharing operators include ECooltra, Muving, Coup, CityScoot and Blinkee.city. During 2017–2018, new services comprising stand up scooters were introduced. The leading operators in this segment include Bird, Lime, Spin and Skip.

Strong growth

The nascent micromobility market is currently in a phase of strong growth which is expected to continue in the coming years. Berg Insight estimates that the total shared micromobility fleet worldwide reached approximately 24.4 million vehicles at the end of 2017. Free floating bikesharing was the most dominant service in terms of deployed vehicles.

Berg Insight forecasts that the bikesharing fleet will reach 36.9 million globally by the end of 2023 and the scootersharing fleet comprising both traditional and stand up scooters will then reach approximately 2.6 million vehicles. The regulatory environment will have a considerable impact on the future for this market. Free floating operators are today facing operational challenges to handle cluttered sidewalks and vandalised vehicles. Regulators decide the types of vehicles allowed on the road, helmet requirements as well as award operator licenses that limit the number of operators and vehicles allowed in the cities. ■

New technologies in the form of telematics systems and smartphones are key enablers of bikesharing and scootersharing micromobility services

(Figs. in Millions)

2017	2018	2019	2020	2021	2022	2023
24.4	24.9	26.7	28.6	30.9	34.5	39.6

Figure 1. The connected bikesharing and scootersharing fleet (World 2017–2022)

Automated Vehicles Symposium
Orlando, USA
15-18 July
https://bit.ly/2VmGcwh

TI Automotive
Pune, India
28-29 Aug
http://tiauto.in

Parking China
Shanghai, China
3-5 Sept
https://parking-china.hk.messefrankfurt.com

Global Digital Forum
Santa Clara, USA
4-5 Sept
https://gdfevent.com

5G Asia
Singapore
10-12 Sept
https://tmt.knect365.com/5g-asia/

Internet of Things World Asia
Singapore
10-11 Sept
https://tmt.knect365.com/iot-world-asia/

New Mobility World
Frankfurt, Germany
10-15 Sept
https://www.iaa.de/en/nmw

Smart City Expo World Congress Atlanta
Atlanta USA
11-13 Sept
https://smartcityexpoatlanta.com

IAA
Frankfurt, Germany
12-22 Sept
https://www.iaa.de/en/cars

Edge Computing Congress
London, UK
17-19 Sept
https://tmt.knect365.com/edge-computing-congress/

Digital Transformation North America
Dallas, USA
23 -27 Sept
https://dtaw.tmforum.org

5G Core Summit
Madrid, Spain
24-25 Sept
https://tmt.knect365.com/5g-core/

GSMA Digital Societies - Mobile 360 Series
Kuala Lumpur, Malaysia
24-26 Sept
https://www.mobile360series.com/digital-societies/

Connected Factory Summit
Stuttgart, Germany
26-27 Sept
https://annolucisevents.com/connected-factory-summit/

Smart Cities Week Washington
Washington, USA
30 Sept-2 Oct
https://www.smartcitiesweek.com/2018-washington/

GSMA Russia & CIS - Mobile 360 Series
Moscow, Russia
8-9 Oct
https://www.mobile360series.com/eurasia/

Internet of Supply Chain
Berlin, Germany
9-10 Oct
https://iosc-de.internetofbusiness.com/?utm_source=iot-now&utm_medium=banner&utm_campaign=partner

e-sim Connect
London, UK
15-16 Oct
https://tmt.knect365.com/e-sim-connect/?utm_source=vanilla&utm_medium=AD&utm_campaign=

Autonomy and Urban Mobility
Paris, France
16-17 Oct
https://www.autonomy.paris/en/

IoT Solutions World Congress
Barcelona, Spain
29-31 Oct
https://www.iotsworldcongress.com/the-event/the-iot-solutions-world-congress/

GSMA MWC Los Angeles
Los Angeles, USA
22-24 Oct
https://www.mwclosangeles.com

Industrial IoT World
Atlanta, USA
31 Oct-1 Nov
https://tmt.knect365.com/industrial-iot-world/

Smart Cities Summit
Atlanta, USA
31 Oct-1 Nov
https://tmt.knect365.com/smart-cities/

Intermodal Europe
Hamburg, Germany
5-7 Nov
https://www.intermodal-events.com/en/home.html

IoT World Africa
Cape Town, South Africa
12-14 Nov
https://tmt.knect365.com/africacom/iot-world-africa

Digital Transformation Asia
Kuala Lumpur, Malaysia
12-14 Nov
https://dta.tmforum.org

Smart City Expo World Congress
Barcelona, Spain
19-21 Nov
http://www.smartcityexpo.com/en/home

IoT Tech Expo North America
Silicon Valley, USA
13-14 Nov
https://www.iottechexpo.com/northamerica/

GSMA Mobile 360 Series MENA
Dubai, Middle East
26-27 Nov
https://www.mobile360series.com/mena/

2nd Connected Cars Summit
London, UK
27-28 Nov
https://www.wplgroup.com/aci/event/connected-cars-summit/

Delivery of Things World
Berlin, Germany
20-21 April, 2020
https://www.deliveryofthingsworld.com

Are Uber and Lyft grinding traffic to a halt in San Francisco?

Cool Use Cases in the Internet of Things (IoT) are popping up all over the world. Here, Bob Emmerson examines what California's urban planners are learning from IoT data, and how it is influencing policy.

MARKET OVERVIEW

Ride sharing has been a disruptive transport technology, going from obscurity to near ubiquity in a matter of a couple of years and having a significant impact on traditional taxi services. The benefits touted by transportation network companies include better pricing, availability and fleet management and most times a better customer experience.

THE PROBLEM

Various studies indicate that ride sharing has also resulted in city centre congestion, mainly because of the additional vehicles purchased primarily for ride share services. For example, travel times in the Golden Gate city increased by 62% between 2010 and 2016. There are 45,000 Uber and Lyft drivers in San Francisco, which is the birthplace of these companies.

THE PLAYERS

The key player in this study was a team from the University of Kentucky. They took transport data and ran it through a travel forecasting tool using two calibration settings – one to simulate the transport mix as it was back in 2010 with no ride-sharing, and one to represent the way things are with Uber and Lyft.

THE SOLUTION

One proposal currently being considered by the city of San Francisco involves congestion pricing. Congestion pricing looks at external costs associated with congestion and charges more for driving during peak periods or in heavy-traffic areas that are more prone to gridlock.

The transportation network companies actually support congestion pricing. It clearly affects them but also other drivers, and if it reduces the number of people in single-occupant vehicles, then it builds their market.

The author is freelance technology writer, **Bob Emmerson.**

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