# SNART AUTOMOTIVE

Autonomous Vehicles

**Connected Vehicles** 

Cybersecurity

0

Safety 

Infotainment



Race Into The Future With The Connected Car pg 6

M2M/ IoT In Automotive Sector pg 10

Process Of Standardization Of ITS Devices In India Has Started pg 42

# Quectel LTE Modules Enable Your Business to Go One Step Further in the Auto World

Telematics T-BOX

OBD Navigation eCall 4G In-car Wi-Fi



# Transform life on the go with industry's broadest product portfolio!

### Automotive-grade AG35 Module

Qualcomm MDM9628 Chipset dedicated for automotive applications Ideal for auto applications with IATF 16949 requirement Wide operation temperature range (-40°C to +85°C) Automotive quality processes (PPAP, 8D, DFMEA, PFMEA...) Excellent EMC/ESD protection ensures great robustness Compact SMT form factor Multi-constellation GNSS receiver available for applications requiring fast

Multi-constellation GNSS receiver available for applications rec and accurate fixes in any environment



HQ address: 7th Floor, Hongye Building, No.1801 Hongmei Road, Xuhui District, Shanghai 200233, China Tel: 86-21-5108 6236 Fax: 86-21-5445 3668 Web: www.quectel.com Email: info@quectel.com

### Quectel Wireless Solutions

Address is : A-402, Whispering palms Bldg No.4 CHS Ltd., Lokhandwala township, Akurli Road, Kandivali(EAST), Mumbai 400101 Mobile: +91-98202 18317 Tel: + 91 22 4733 4295 Email : dinesh.patkar@quectel.com



# **LONG LIFE TRACKER** With Magnet Mounting

LARGEST INDIAN MANUFACTURERS OF VEHICLE TELEMATICS HARDWARE

Note: ALL PICTURES SHOWN ARE FOR ILLUSTRATION PURPOSE ONLY. ACTUAL PRODUCT MAY VARY DUE TO PRODUCT ENHANCEMENT.

LBS



For more details https://www.itriangle.in /aquila-hardware-tracking -device-bharat101/

**IP67** 



BLE

4.0

GPS

GLONASS

GALILIO

#### Corporate Office

EPO

803/A (803/A-1-3), 76th 'A' Cross, West of Chord Road, 6th Block Rajaji Nagar, Bengaluru, Karnataka 560010. Phone: +91 97399 74443 / 080 23100601 Email : sales@itriangle.in

#### **Branch Office:**

No. 2 Nilayam building, S No. 230/B/4-2. Plot no 10, lane no 5, 2nd stage society, sanjay park. lohegaon, Pune, MH-411032. Phone :020-60126012 / +91 9552926343 Email : kirti@itriangle.in

# Contents November - December 2018

### RACE INTO THE FUTURE WITH THE CONNECTED CAR

Gaur Dattatreya, Robert Bosch Engineering and Business Solutions Pvt Ltd.



| Vehicle Telematics Advanced By 5G Technology, The Next Window Of Opportunity In<br>Connected Cars Market<br>Sharmishtha Jatar, Orbis Research | 08   |
|---|------|
| M2m/ lot In Automotive Sector   | 10   |
| Sushil Kumar, TEC, DoT, Ministry of Communications, Government of India   |      |
| Tech-Driven Subscription Models Are Turning The Automotive Industry Upside Down<br>Iman Ghodosi, Zuora  | 16   |
| 5 Things To Avoid During Tuning The Commercial Vehicle Tracking<br>Abel Korevaar, FleetGO   | 18   |
| How Leading Car Makers Can Respond To Increased Connected Car Demands<br>Risto Vahtra, High Mobility  | 23   |
| Newly Released Indian Standards Relevant To The Field Of Automobiles<br>R.R.Singh, Bureau of Indian Standards                                 | 26   |
| Have Seen The Emphasis Shift From Historical Data Analysis, Towards   |      |
| Real-Timenalytics And Alerting<br>Charles Smith, CMS  | 30   |
| The Promise Of Integrating Road Weather In Vehicle Telematics<br>Glen Denny, Baron Services, Inc.   | 34   |
| News 36   | 5-40 |
| Started The Process Of Standardization Of Its Devices<br>Dr. Madhusudan Joshi, International Centre for Automotive Technology                 | 42   |
| Cover Page Image Courtesy: Volkswagen   |      |

https://www.linkedin.com/company/telematics-wire/

### **SMART AUTOMOTIVE**

Editor & CEO Maneesh Prasad

06

**Director** Lt. Col. M C Verma (Retd.)

Project Director Anuj Sinha

**Corporate Sales Manager** Poonam Mahajan

#### **Editorial Contact**

Asst. Business Editor Piyush Rajan asst.editor@telematicswire.net

Asst. Editor Yashi Mittal +91 98103 40678 asst.editor2@telematicswire.net

#### Advertisement Contact Corporate Sales Executive

Navneet Shekhar asst.mgr@telematicswire.net

**Content Support** Rudravir Singh Arvind

Web Developer Shubham Tiwari Sarita Maurya

**Designer** Jitendar Kumar Tripathi

Publication Address Telematics Wire Pvt. Ltd. D-98 2<sup>nd</sup> Floor, Noida Sec-63 Uttar Pradesh-201301 Email: info@telematicswire.net

Printed and Published by Maneesh Prasad on behalf of Telematics Wire Pvt. Ltd. Telematics Wire Pvt. Ltd. D-98, 2<sup>nd</sup> Floor, Noida Sec-63 Uttar Pradesh-201301 Email: info@telematicswire.net

#### Printed at

@telematicswire

Please Note: No material may be reproduced in whole or part without permission of Telematics Wire Pvt. Ltd. Copyright 2016, Telematics Wire Pvt. Ltd. All rights reserved Telematics Wire Pvt. Ltd. and Smart Automative does not necessarily subscribe to the views and articles in this magazine.

RNI No. UPENG/2015/63476

https://www.facebook.com/telematicswire/

### Industry Standard for ADAS by End of 2019

In the first week of September 18, during an annual meet of an automotive industry body, Shri Nitin Gadkari said that ADAS may be made mandatory by early 2022. Given that we are at the fag end of 2018, its only three years and couple of months before ADAS becomes mandated! First it was AIS 140, not withstanding its flipflop, and now IS for ADAS, a thumbs up to MoRTH for its thought leadership.

Though it would have been better if we would have had a more time to run up to such an important milestone for all forms of automotive- two wheel, four wheel, x-wheel etc. But nonetheless, the institutions which



Maneesh Prasad Editor & CEO

have been responsible for preparing standards have got into action.

In our context in India, since early 90s, initial automotive standards have been prepared and issued by Automotive Industry Standards Committee at ARAI. The AIS Committee formed for each such part/devcie/ specification, majorly has industry representatives in the sub-committee. AIS forms an input or additional reference for industry standards which is later issued by Bureau of Indian Standards. Once the "IS" from BIS is issued, it supersedes the AIS. Case in hand being the IS 16833 which now supersedes the popular AIS 140.

The AIS, which has in general preceded "IS", has also issued draft in public domain for industry inputs/feedback from stakeholders. "IS" which works in parallel but with little different composition, having lesser industry representation in its sub-committee, takes the AIS input and works on it to prepare the "IS" in a BIS specific format. Also a reason for this "IS" taking more time to be published. The present case in point being IS for vehicle tracking which has been prepared by TED 28 in BIS, is open for industry inputs too.

Cutting the long story, in a departure with the precedences where AIS usually comes before IS, there is a different story in the offing for ADAS. BIS is already working on ADAS standard which may be issued by end of 2019, less than a year, considering only few days left in the current year 2018.

Personally I will be seeking answer to- What is the need of having two standards issued when IS has to supersede AIS? Maybe, thereafter intent to take my view to the ministry- MORTH, that it should drive a coordination where the AIS is draft input for BIS to prepare the IS, would change.

...

### **Race Into The Future With The Connected Car**

Remember a time when we had to go to the bank for every transaction, big or small? Or wait in line to buy the latest music CD? Just as smartphones and the internet changed our lives forever, cars are on the fast lane to bring in a revolution. Before long you're likely to hear, "Remember when cars were not smart enough to ensure driver safety, provide intelligent analysis, or offer an enhanced in-car experience?"

What's going to change so radically, you may ask.

#### Shifting gears

Traditionally, automobile companies have focused all their efforts on optimizing engine capabilities, comfort, or look-and-feel. Now the attention moving towards equipping cars is

give a superlative driving experience. It supports vehicle-to-vehicle and vehicleto-infrastructure communication.

According to a report by Gartner, 25 billion connected cars will enable new invehicle services and automated driving capabilities by 2020.

#### Getting the show on the road

There are very strong reasons for this speeding trend towards connected cars. Enhanced efficiency: A connected car will tell you if it anticipates a problem within, or if it needs servicing. It monitors the overall health of the car. By checking traffic, it can avoid traffic jams and, in turn, play a role in reducing pollution and accidents.

Cost savings: A connected car can track fuel usage, identify pilferage, enable nearest petrol station. Or realize when it's lunchtime and directs you to a restaurant where you can get your favorite food. Amazing, right?

Driver safety: This feature can assist the driver in avoiding roads with potholes, averting accidents - and most importantly, summoning help in case of a collision by informing paramedics and authorities. It can alert drivers of external natural hazards. By interacting with other cars and calculating their speed and proximity, a connected car can evade a crash. It can also monitor driver behavior, prevent them from speeding, and warn them if they are tired. Additionally, it can play a big role in the recovery of stolen vehicles.

Entertainment: With voice commands,



2. https://www.statista.com/chart/3168/connected-cars-by-the-numbers-

with internet access so they are linked internally as well as with the outside world. This is meant to bring efficiency, safety, entertainment options etc. to car and driver.

Welcome to the world of the connected car. Simply put, a connected car has devices with capabilities to connect with other parts of the vehicle and with networks outside the car. thanks to sensors and wireless connectivity, to

route optimization, schedule regular maintenance, etc. All this equals to saving time and money.

Advanced navigation: Most cars today are equipped with GPS, but a connected car can take navigation to the next level. Imagine if your car can read your calendar, get your schedule, and prompt you to take the best possible route to your next meeting. Or alert you when you are low on fuel and reroute to the you can get your car to play your favorite song, or tune into your favorite radio station. You can ask it to play your latest audiobook. With Bluetooth connected to the car, you can make and receive calls without touching your phone. In short, you can smoothly cruise along with your car doubling as your assistant.

Remote control: With remote access, you can lock or unlock your car, switch the aircon on, or track all of this from the comfort of your home or office. You can basically manage your apps remotely. An important feature is that you are sent an alert if anyone tries to break into your vehicle.

#### Hitting a speed bump

The connected car is a revolutionary concept, but it also comes with some concerns:

Complicated deployment: If you look at the entire process, it is quite complex in nature. Data will flow from the vehicle to the cloud, where it will enter databases to be analyzed. After this, data analytics and artificial intelligence (AI) will be applied to it. Data insights will come out, which will eventually be fed to applications and then delivered as value. The big challenge here is who owns the data. We don't know for sure; it is still a grey area. Coming to data analytics, no single entity can do it alone; we need multiple stakeholders. Hence, there has to be a whole partnership ecosystem. A variety of new business models will come into play - such as licensing, subscriptions, payper-use, and revenue share. The analytics will be deployed through AI algorithms on the database and probably follow a licensing or subscription business model. The data insights that come out would be useful to many stakeholders. These may be shared with interested stakeholders following a pay-per-use model. Finally, when the value is delivered to customers through applications, it could follow a 'share-of-revenue' business model.

*Hacking*: The Internet of Things (IoT) allows drivers to view, pair, and control their cars through various electronic devices, with the ability to install third-party apps and other functional downloads. This is a major security hazard. Manufacturers, their technology partners, and security experts will have to develop ironclad hardware and software, while adhering to compliance.

*Too many apps causing distraction:* Drivers safety is of paramount importance and having too many apps may compromise safety and also open up grounds for additional liability.

*Internet bandwidth:* Bandwidth consumption is another hurdle to manage. Manufacturers and their bandwidth partners would have to develop various packages to cater to different requirements and budgets. Not all countries have seamless internet bandwidth, so the cars would have to function well in not-so-optimal conditions.

*Consumer data and privacy:* Automakers will have to take data security very seriously and ensure that customer data is shared with contracted third parties only with the express consent of the former. Data flowing in and out of the cloud will have to be extremely secure. Data analysis: Data by itself is not very useful. Data generated would be sent to a database via cloud where it will need to be analyzed and passed through various AI algorithms, to be eventually shared via an application – all in real time.

#### Firmware update Over The Air (FOTA):

One of the most promising features of the connected car will be the ability to modify its functioning remotely via software updates. This will be hugely convenient for car manufacturers and users. Not only will it save the development time of a new car substantially; new functionalities can be developed and incrementally updated on the car. Let's consider an example. A modern car's engine management system has 150,000 data points that have to be set at the factory. Setting these parameters takes a lot of time and effort. Before the vehicle leaves, one can't tell if the application will be used in a bus to ferry people or in a truck transporting liquid. Or if the terrain is hilly or flat. There are a lot of scenarios to deal with. Now imagine how simple things would be if we simply let the vehicle leave the factory with only basic calibration. When it is deployed in the field, one could get the location in real time and refine the necessary parameters accordingly. This is a logical but also very complex process. ecurity is one important issue if data falls into the wrong hands, it could



**Gaur Dattatreya** Vice President, Mobility Solutions Robert Bosch Engineering and Business Solutions Pvt Ltd.

sabotage the whole operation. Another complexity is getting an overview where the propulsion (engine) system, vehicle dynamics system, and other components exchange data at blazingly fast speeds (in mere milliseconds). One will need an overview before one can even start attempting an update.

#### Down the road

Increase in vehicle connectivity will enable the global market for connectivity components and services to touch USD 210 billion by 2020. The global connected car market is set to get bigger and diverse. It is estimated that the driver assistance market will alone touch USD 60 billion. Driver safety, being of paramount importance, will be a USD 41 billion market. Market research company Statista predicts that every new car will be connected in multiple ways by 2025. This is the right time for car manufacturers, OEM manufacturers, and technology companies to roll up their sleeves and grab the opportunity to drive innovation in connected cars, which are being justly touted as the next best thing after smartphones. This is indeed a game for serious players. We have only just scratched the surface.

### Vehicle Telematics Advanced By 5G Technology

The next window of opportunity in Connected Cars Market

### - Sharmishtha Jatar, Orbis Research

Telematics, more colloquially identified as connectivity within a vehicle, has emerged as a popular field of modern communication. It is not only used in passenger cars but is being increasingly installed in existing fleet as well as offroad vehicles. There are numerous benefits of telematics, especially for businesses that depend heavily on automobiles, including safety & security, vehicle running & idle time, GPS, driver logs and diagnostics. Information of this nature is used to understand various aspects including telehealth, regular maintenance and availing appropriate insurance in case of accidents. A telematics unit typically collects all the necessary data of the vehicle and shares it with the user as well as OEM's and insurance companies. As the telematics market has tremendous future prospects due to various factors including government norms and regulations, every field and function of this particular technology is anticipated to grow significantly with a scope for advancement in each of these pockets. Additionally, the emergence of IoT a few years back and its commercialization in every field is likely to drive the growth of the telematics market as well. Concepts such as Internet of Everything (IoE),

immediate future like tabs and fitbits are doing at present. The familiarization of such concepts is going to result in a higher consumer acceptance and thus, a great potential for innovation and growth for anyone who taps on this growth. The global vehicle telematics market, limited only to passenger and commercial vehicles, was valued at USD 41.66 billion in 2017, a rise of more than 17% over the previous year. The figure below includes the estimated market changes between 2015 and 2025. The market is projected to grow at a CAGR of close to 25% from 2015 to 2025 Telematics as an industry is burgeoning with the revolution in communication technology and connectivity solutions. Inexpensive sensors. efficient data collection recording minute changes, data analytics and machine learning have enabled the telematics service providers to offer a wide array of services. These range from monitoring the vehicle and equipment to preparing for various contingencies beforehand and mobilize appropriate response for the situation. Vehicle telematics has already gained a strong position in Europe and North America backed by strong support from regulations and consumer demand. The market scenario is pretty



cellular vehicle-to-everything (C-V2X)and Vehicle-to-everything (V2X) are bound to roll off our tongues in the much on an autopilot in these regions driven by strong movement to develop better solutions for the industrial sector. The market players are focusing on generating competitive advantage by scaling up fast supported by cloud services and LTE based connectivity solutions. With autonomous vehicles making inroads to the market there is a higher need for the vehicles to be able to communicate with their surrounding environment. Telematics is a step towards creating such an ecosystem and creating a network of such interacting entities within the system. Fleet management services has the highest potential for generating revenue in the next decade. The figure below demonstrates the estimate distribution of revenue from various applications of vehicle telematics globally. Market players are working unceasingly to develop solutions based on AI and ML to enable seamless operations of an ecosystem and telematics is currently at the centre of this development. It is the structure that is intended to create and maintain harmony in the ecosystem. Telematics is being adopted across all areas ranging from on-road passenger vehicles including two and four-wheelers to off-road heavy equipment used in construction and mining as well as in drones and marine equipment. Vehicle telematics is currently the star of the group and is set to maintain its position for a long time. GPS tracking and insurance services are the chief beneficiaries of vehicle telematics. Connected cars are the major driver for vehicle telematics. The figure below shows the estimated growth of the connected cars market from 2015 to 2025. The connected cars market is anticipated to rise from USD 47.1 billion in 2015 to USD 307.7 billion in 2025. The market is driven by collaboration between technology developers and automotive OEM's. 5G technology is finally at beta mode in the market and numerous pilots are being undertaken by the market leaders or players aspiring to gain a leadership position. The efficient 5G bandwidth allows for a seamless realtime communication with the vehicle. Some of the major initiatives and

Global vehicle telematics market shares by application, 2016 and 2025

collaborations undertaken are listed below.

- LG and Intel in Feb 2016, for developing and test 5G-based telematics technology and gain the first-mover advantage in LTE based telematics solutions
- ▶ In February 2016, DENSO Corporation and NTT DOCOMO, INC. made an agreement to jointly research and develop vehicle control systems that utilize LTE and 5G, to realize advanced-driverassistance and automated-driving-systems
- ▶ In December 2016, LG, Ford, Verizon, Denso and Gemalto joined the 5G Automotive Association(5GAA)
- ▶ LG and Qualcomm Technologies Inc., in Feb 2017, for tests and adoption of 5G and Cellular-V2X (C-V2X) communications into vehicles
- ► In February 2017, Ficosa, joined the 5G Automotive Association (5GAA)
- ▶ In March 2017, Samsung Electronics acquired Harman, a leading solution provider for the connected cars platform
- ➤ In May 2017, Samsung Electronics was elected into a board membership of the 5G Automotive Association (5GAA) general meeting on May 11 th . 5GAA's mission is to speed-up the commercialization of communication solutions that advance mobility and safety on transportation networks.
- In May 2017, Laird joined the Munichbased 5G Automotive Association (5GAA)
- Continental and NTT DOCOMO Inc., in May 2017, collaborated to develop enhanced connected infotainment functionality and to build a platform for cellular-based vehicle-to- everything (C-V2X) wireless communication systems
- ▶ In November 2017, Intel, Ericsson, Toyota, Denso, and NTT DoCoMo declared achievement of speeds of 1Gbps and 600Mbps up while streaming 4K videos from a connected vehicle on a 5G trial network in Japan.
- ▶ In Jan 2018, HARMAN and Samsung demonstrated high-speed connectivity in a futuristic mobility-concept-vehicle powered by the Samsung Networks 5G infrastructure, at CES 2018.HARMAN and Samsung are jointly working on development of modular approaches for advanced vehicle telematics, capable of 1 Gb/s bandwidth.



- In Jan 2018, Continental, Ericsson, Nissan, NTT DOCOMO, INC., OKI and Qualcomm Technologies, Inc., declared plans to carry out their first Cellular-Vehicle-to-Everything (C-V2X) trials in Japan
- ➤ In January 2018, Telefónica presented its 5G Technological Cities project, which hopes topave the way for 5G in Spain. The project will be tested with the initial deployment of 5G infrastructure in Segovia and Talavera de la Reina, in a partnership with Nokia and Ericsson. The initiative comprises the task performed together
- ▶ In March 2018, Huawei declared that it was the first company to complete a 5G NSA (Non-Stand Alone) functional test based on 3GPP. The NSA test was a part of the third- phase of China 's 5G technology tests in Beijing's Huairou District. It was organized by the IMT-2020 (5G) Promotion Group, which aims to meet the ITU's International Mobile Telecommunication system target date of 2020.

These initiatives are a testament that the global vehicle telematics market will see the launch of 5G enabled devices in the market in or before 2020.



with SEAT and FICOSA on connected car applications. Such applications link vehicles to the road infrastructure and citizens andenhance safety and traffic management.

- ▶ In January 2018, Bosch, Vodafone, and Huawei conducted a successful fieldtest using 5G cellular-V2X in a real-time situation
- ▶ In February 2018, Telefónica and Huawei demonstrated the usage of 5G in self-driving- vehicles in a field trial in Spain

ullishly investing in the development of 5G infrastructure in collaboration with OEM providers and are collectively supported by smart cities projects across the world. Connected cars are a part of the goal, i.e., a smart ecosystem of automated entities harmoniously operating and performing their own functions with higher efficiencies. Vehicle telematics is the solution that can enable connected cars and is projected to grow by leaps and bounds until the goal is achieved....

#### Primer

## M2M/ IoT In Automotive Sector

As per projection by GSMA (GSM Association) and Machina Research (World's leading advisor on M2M, Internet of Things and Big Data), there may be around 24 billion connected devices globally around 2020, with a business impact of around US \$ 4.3 trillion. Later on CISCO / Ericsson / ITU projected this to be around 50 billion. Global projections vary from 24 Billion to 50 Billion connected devices by 2020. Such projections entice the industry to explore and tap a wide range of opportunities that the M2M (Machine to Machine) communication / Internet of Things (IoT) concept offers, enabling novel business cases, enhanced workflow, efficiency and improved quality of life. These devices may be in various sectors such as Safety & Surveillance, Automotive, Power, Health care, Smart homes, Intelligent buildings, Environment monitoring and pollution control, Water management, Waste management, Agriculture etc.



Sushil Kumar, ITS Dy. Director General (IoT) Telecommunication Engineering Center Department of Telecommunications Ministry of Communications Government of India

In India, there may be around 2.6 billion connected devices by 2020. As per National Digital Communication Policy (NDCP)- 2018, Eco-system is to be developed for 5 Billion connected devices. Power sector (smart metering and smart grid) and Automotive Sector may have major deployment of M2M devices.

### 1. Problems of Major Indian cities

India with a population of around 1.3 billion is having approx. 33% living in urban areas and 67% in rural areas. As per projections, around 25 persons are migrating per minute from rural areas to urban areas in search of jobs, better education and healthcare. There are problems of Transportation, pollution, health care, Electricity, drinking water, waste management etc. To resolve the

complexity of these issues, M2M/ IoT along with ICT may be used to get the data in real time.

### 2. Issues related to Automotive sector

Automotive sector is the back bone of any country. In India due to rapid rise in number of vehicles with respect to existing infrastructure and slow rate of development in infrastructure sector recent studies show that India faces

- An average Indian spends about 90 minutes a day travelling in major cities, with an average speed of 10 − 15 km/hr on some major roads,
- ➤ Due to congestion, slow speed of freight and waiting time at toll plazas, there is a loss of approx. Rs. 600bn (US \$10.8bn) per annum,
- ▶ In India, around 5 lakhs road accidents happen, causing a loss of around \$20 billion, with 6 lakhs people injured and 1.5 lakhs killed,
- Every year, nearly 36,000 vehicles are stolen, which amount to Rs. 115 crore with only about 14,500 getting traced, often in un-roadworthy conditions, with many components missing,
- Vehicles are the major contributor to air pollution.

The rapidly increasing vehicle population in India puts a heavy demand on traffic management in metropolitan cities and other towns. Intelligent Transportation System is an established route to address this and minimize traffic problems. Traffic jams cost huge loss in terms of time, money & pollution. Widening of roads and creating more lanes can not be the long term sustainable solution as the space is limited. Use of M2M / IoT technology along with ICT infrastructure can help / solve the jams occurring to a large extent. With limitation for growth infrastructure there is a strong need to depend on technology (IoT/M2M) to address challenges, currently faced by the industry. M2M enabled transportation system include telematics and all types of communications in vehicles, between vehicle and citizens/Authorities (car to application), between vehicles (e.g. carto-car), and between vehicles and fixed locations (e.g. car-to-infrastructure).

### 3. M2M Communication/ Internet of Things (IoT)

### 3.1 M2M Communication

It refers to the technologies that allow wired / wireless system to communicate with the devices of same ability. M2M uses a device (sensor, meter etc.) to capture an 'event' (motion, video, location, speed etc.), which is relayed through a network (wireless, wired or hybrid) to an application (software program), that translates the captured event into meaningful information. The enabling technologies for M2M communication are sensor networks, RFID, mobile Internet, wired & wireless communication network, IPv4 / IPv6, etc.

### 3.2 Internet of Things (IoT)

IoT is one of the most disruptive technology as on date across the globe. IoT will be benefitted by a number of technologies such as 5G, Edge / distributed computing, Artificial intelligence, Machine learning, Block chain, Big data analytics etc.

ITU-T in its Recommendation ITU-T Y.2060 (06/2012) has defined Internet

of Things (IoT), as a global infrastructure for the information society, enabling advanced services by interconnecting (physical and virtual) things based on existing and evolving interoperable information and communication technologies. IoT will be having a heterogeneous network, having IP and non IP devices connected through IP Gateways. Gateways will be connected to IoT Platform. Communication technology is an important segment of the IoT domain as the data is required to be transmitted and received in time. If the data is not transmitted in time, it has got no value. A typical network having various communication technologies and Gateways have been shown in Figure – 1.

M2M is a subset of IoT. IoT is a more encompassing phenomenon because it also includes Human-to-Machine communication (H2M). With IoT, the communication is extended via Internet among all the things that surround us.

### 4. Various use cases in Automotive sector

There may be a large no. of use cases depending upon the local requirements. Important use cases are :

- Vehicle tracking,
- e-call (911 in USA and 112 in Europe),
- ▶ V2V and V2I applications,
- Traffic control,
- Navigation, Infotainment,
- ▶ Fleet management,
- ▶ Asset tracking,
- Manufacturing and logistics,
- Intelligent transport System,
- Waste management,
- Water distribution,
- ▶ Smart Parking
- School bus tracking

A number of use cases have been described in detail in the **Technical Report on M2M enablement in Intelligent Transport System<sup>1</sup>** Government of India has already mandated to install GPS/GRPS devices with video camera and panic button in all public transport with cellular connectivity to police stations for woman safety in public transports. RFID based Electronic Toll Collection devices are being deployed in India on various National Highways / Expressways, in decision for planning, operation and other related activities.

### 5. Enabling technologies for M2M / IoT

The enabling technologies for M2M / IoT are sensor networks, RFID, mobile Internet, Location Based





the sub Ghz band 865 MHz – 867 MHz band. In India 112 has been adopted as a common emergency number in line with ITU-T Recommendation E.161.1 (09/2008) "Guidelines to select emergency numbers for public telecommunication network". All existing helpline numbers such as 100- Police, 101- Fire, 102/ 108-Ambulance service will be migrated to 112.

M2M communication / IoT will make the verticals smart by providing the data in real time and will enable to take the Services (LBS), Lab-on-a-Chip (LOC), Augmented Reality (AR), Artificial intelligence, wired & wireless communication network, IPv4 / IPv6 etc.

### 5.1 Communication technologies in M2M/ IoT domain

Communication technologies will play a very important role in the IoT domain as timely transmission of data is required. Data may be from few bytes (meter reading, fire alerts, temperature etc) to several MBs (video from a camera). Data may be in the form of



Figure-2: Emergency call System, call flow diagram

<sup>1</sup> http://tec.gov.in/pdf/M2M/M2M%20Enablement%20in%20ITS.pdf

Nov - Dec 2018 | Smart Automotive | PG.11

#### Primer

bursts. There may be different types of communication technologies covering few centimeters to several kilometers and will be decided depending upon the use case requirement. In Personal area network (PAN)/ Home area network (HAN) / Local area network (LAN)/ Field area network (FAN), low power wireless communication technologies band and in India it is 865-867 MHz. In cellular domain, 3GPP has already released specifications in its Release 13 and onwards for LPWAN services, which may co-exist with the existing cellular network deployment. Three variants in LPWAN technologies in cellular domain are EC-GSM, NB-IOT and LTE MTC. Cellular operators can



#### Figure 3: V2V Communication using DSRC<sup>2</sup>

such as Wi-Fi, ZigBee, 6LoWPAN, Bluetooth Low Energy (BLE), Z-wave etc. may be used to connect the devices with the M2M gateway. GSM 3G/ 4G or fixed line broadband / FTTH may be used for connecting M2M gateway to the server.

### 5.2 Low Power wide area network (LPWAN) technologies

LPWAN technologies have been developed to carry a very small data to a large distance. It covers 2-3 Km in city (dense) areas and 12-15 Km in rural (open) areas. Expected battery life is around 10 years. Use cases: Smart metering, Smart farming (transmitting Soil testing data), Smart bin, transmitting pollution sensor data etc. In non-cellular domain, LPWAN technologies such as LoRa and Sigfox are being deployed across the globe. LoRa and Sigfox networks are deployed in delicensed sub GHz frequency enable LPWAN services in the existing GSM / LTE networks by upgrading the software. Trials have been done and the commercial offerings are also available in a number of countries namely South Korea, Europe, USA etc. TEC had released a **Technical Report on Communication technologies in M2M/ IoT domain.**<sup>3</sup>

#### 5.3 M2M SIM

The normal SIM card is not suitable for harsh conditions of vehicles like vibrations, temperature, and humidity. GSMA has created specifications for embedded M2M SIM, with Over-the-Air (OTA) provisioning. Temperature variation range is from -40 degree to +125 degree Celsius. Embedded SIM technology offers big opportunities for auto manufacturers as the lifecycle of an eSIM is, around 10-15 years. International standards for eSIM have evolved. Embedded SIM will

be quite useful for vehicle tracking services. Embedded SIM may have the subscription from more than one telecom service providers (up to five) and switching is possible from one TSP to another remotely or non-availability of signal from the main TSP.

### Embedded SIM will be the game changer in the IoT domain.

### 5.4 DSRC (Dedicated Short Range Communication)

This technology was developed in USA around 20 years back. It is based on IEEE 802.11p WLAN standards, called as Wireless Access in Vehicular Environment (WAVE). It is working in the frequency range 5.850 -5.925 GHz. FCC has allocated 75 MHz spectrum in the 5.9 GHz band and European Telecommunications Standards Institute (ETSI) has identified of 30 MHz spectrum in the 5.9 GHz band for ITS. It also supports low latency, Vehicle to Vehicle (V2V) and Vehicle to Infrastructure (V2I) communication. Its main uses are Vehicle Safety service, Commercial transaction via cars, Toll collection, Traffic management etc. This technology is being used in USA, Europe, Japan, Korea and Singapore etc. Details about the M2M SIM are available in the technical report released in TEC on V2V/ V2I Radio Spectrum and Embedded SIM.<sup>4</sup>

### 5.5 Cellular V2x (Vehicle to everything)

V2X comprises vehicle to vehicle (V2V), vehicle to infrastructure (V2I), Vehicle to Pedestrian (V2P) and Vehicle to Network (V2N). 3GPP in its Release 14 has provided the specifications for cellular V2X which provides improvements over 802.11p / DSRC technology for active safety use cases and beyond. 5G roadmap will improve the connected vehicle segment built on cellular V2X. Connected vehicle requires heterogeneous connectivity and on device intelligence as shown in Figure-4.

<sup>2</sup> http://tec.gov.in/pdf/M2M/M2M%20Enablement%20in%20ITS.pdf

<sup>&</sup>lt;sup>3</sup> http://tec.gov.in/pdf/M2M/Communication%20Technologies%20in%20IoT%20domain.pdf

<sup>4</sup> http://tec.gov.in/pdf/M2M/V2V%20%20V2I%20Radio%20communication%20and%20Embedded%20SIM.pdf

### 5.6 5G Technology

5G will provide Enhanced mobile broadband with peak data rate of 10 Gbps, Mission critical services (Ultra reliable & low latency communication (URLLC) with RAN latency < 1ms and Massive M2M/ IoT services. URLLC will be quite useful for self-driving vehicles, drones, Robotic surgery and V2V communication. Various applications of 5G have been shown in figure-5. The standards for 5G will be frozen in 2020 and may take further 2-3 years for deployment. However pre standards based deployment are in progress in few cities of USA, South Korea, Japan, China etc. 5G deployment is also expected in India around 2022. Key spectrum bands under discussion for 5G are as:

- ▶ 700 MHz in low range.
- ▶ 3.4-3.6 GHz is globally allocated. Some countries have gone for 3.3- 3.4 GHz. Europe is planning 3.4 - 3.8 GHz range.
- ▶ 24-27.5 GHz, 27.5-29.5 GHz and 37-43.5 GHz in high range.
- ▶ 71 76 GHz and 81-86 GHz range.
- ▶ 24 86 GHz range is under study for WRC 19.

#### 5.7 High end vehicles

High end vehicles are using a large number of sensors for different applications such as motion sensors, weather sensors, parking sensors, Tyre pressure sensor, road status, temperature sensors fuel sensors, temperature sensors, door sensors etc.

### 5.8 Geographic Information System (GIS)

GIS plays an important role in creating maps, model, query, and analyse large quantities of data within a single database according to their location. It is a powerful tool to create maps, integrate information, visualize scenarios, present powerful ideas, and develop effective solutions.



Figure 4: Source: Qualcomm⁵

#### 5.9 High speed Internet services

High speed Internet services on fixed line broadband connection as well as on mobiles (Smart phones) are required for transmission of data from gateway to headend system / cloud. Smart phones may work as a gateway for the devices working on BLE / Wi-Fi. Clouds may share the data on open APIs. Edge computing and Artificial intelligence will further add a value.

### 5.10 Big data analytics to create intelligence

A huge amount of data will be generated from the sensors/ devices. Raw data has got no meaning. Big data analytics may be used to create intelligence. Intelligence may be used in various planning and operational activities.

### 6. Connected Cars (Vehicles) are growing rapidly as the industry moves towards deploying new

technologies that benefit the connected car ecosystem – vehicle manufacturer, vehicle user, vehicle owner, fleet manager, insurer (insurance based on driving behavioral pattern), service agency and the Government – to name a few.

### 7. Network quality of Service (QoS) requirement

M2M communication is different from the voice communication as size of data in M2M may vary from few bytes (meter reading) to several MBs (surveillance video in). In Automotive sector depending upon the use case data size will vary. But the umbrella coverage is required for the vehicles in movement. M2M services requirement are

- Timely transmission is of utmost important.
- Communication network is required to be more reliable with low latency.

# 5G Usage scenarios

Enhanced Mobile Broadband



<sup>5</sup> https://www.qualcomm.com/media/documents/files/cellular-vehicle-to-everything-c-v2x-technologies.pdf

#### Primer

.....

### 8. Challenges related with the technology and policy

A number of challenges related to policy and technology<sup>6</sup> as shown in figure-5 are required to be resolved for the fast and smooth growth of this domain. Due to lack of standardization interoperable technologies, and Industries are working in silos and on proprietary solutions. There should be interoperability at device, Network and application levels. Technologies for sustainability / long life batteries is required for sensors. There is a need to generate indigenous IPR for creation

as members. Any standard approved / adopted by ITU is generally accepted globally. In June 2015, ITU-T has created a new Study Group (SG)-20 to work on IoT and its applications including Smart Cities and communities ITU -T SG-20 has approved / consented a number of standards in the form of technical documents.

National Working Group (NWG) -20 was created in TEC in September 2015, to submit contributions from India, in ITU-T SG-20. Details of TEC participation in ITU-T SG-20 has been given in para 10.2.

### Emerging challenges in relation to IoT



of standards and further contribution in global SDOs. Reliable connectivity, localization of data in cross border traffic, spectrum requirement for low power devices and slow deployment of IPv6 are some of the challenges to be resolved.

#### Standardization at Global level 9

A number of international organizations are working on the standardization in IoT domain namely ITU, IES, ISO, OneM2M, 3GPP, ETSI, IEEE, Continua Health alliance etc.

### 9.1 International Telecommunication Union (ITU)

ITU is having around 193 member states, 700 industries and 200 academia

#### 9.2 OneM2M

TEC

formed

ETSI (Europe), TTC, ARIB (Japan), ATIS, TIA (USA), TTA (Korea) CCSA (China) had come together and created a partnership project OneM2M, to avoid creation of competing M2M standards. They are working to create standards for the common service layer. From India, TSDSI is the member of OneM2M. OneM2M has released first set of specifications in Jan 2015 and its IInd release in March 2016. OneM2M has submitted its technical specifications in ITU-T SG-20 for approval / adoption.

#### 10. Standardization work in Telecommunication Engineering Center (TEC), DoT, India

eleven

holders working groups in the last 2-3 years to work in M2M and IoT domain. Eight working groups are in the verticals namely Power, Health, Safety and Surveillance, Intelligent Transport Systems, Smart Cities, Smart Homes, Smart Village & Agriculture and Environment & Pollution control. Three working groups are in the horizontal area common to all the verticals, namely M2M Gateway & Architecture, Security in IoT domain and Communication Technologies in M2M/ IoT domain. Eleven technical reports have been released so far and available on TEC website (www.tec.gov. in/technical-reports/).These technical reports may be quite useful in preparing eco system for the IoT domain and also for Smart Cities.

- 1. M2M Enablement in Intelligent Transport System
- 2. M2M Enablement in Remote Health Management
- 3. M2M Enablement in Safety & Surveillance Systems
- 4. M2M Gateway & Architecture.
- 5. M2M Number resource requirement and options
- 6. V2V / V2I Radio Communication and Embedded SIM
- 7. Spectrum requirements for PLC and Low Power RF Communications.
- 8. ICT Deployments and strategies for India's smart cities: A curtain raiser
- 9. M2M/ IoT Enablement in Smart Homes
- 10. Communication Technologies in M2M / IoT domain
- 11 M2M Enablement in Power Sector

Technical Reports mentioned at ii and vii are important and related to the IoT development for Automotive sector. TR at v, vii, viii and xi serves across all verticals.

#### 10.1 Actionable points emerged from the technical reports (TRs)

multi-stake <sup>6</sup> https://www.itu.int/en/action/broadband/Documents/Harnessing-IoT-Global-Development.pdf

www.telematicswire.net

- Based on TR and consultations with all the stake holders, TEC proposed 13 digit M2M Numbering plan for SIM based devices/ Gateways which will co-exist with existing 10 digit numbering scheme being used for mobile phones. DoT has approved this scheme and issued orders to all the TSPs for implementation. Five codes of 3 digit each (559, 575, 576, 579 and 597) have been allotted as a M2M identifier.
- 2. Embedded SIM : Based on TR, IR has been prepared in TEC. DoT has approved the use of Embedded SIM with OTA provisioning in May 2018. Ministry of Road Transport and Highways, India has already included Embedded SIM with OTA provisioning in AIS140 standard which specifies the conditions and specifications for the use of connected devices in vehicles.<sup>7</sup>
- 3. Spectrum requirement for Low power RF communications in Sub GHz band.
- Any device / Gateway having direct connectivity with PSTN / PLMN should have static IP (IPv6 or dual stack). BIS has mandated IPv6 for Smart meters to be connected on Cellular technologies, IS16444.
- 5. Licensing for LPWAN on non-cellular technologies, providing public services.
- 6. Common service layer requirement at the platforms, important for data sharing, Security and interoperability.

### 10.2 International collaboration

Based on the technical reports released in TEC, contributions have been prepared and submitted in ITU-T SG-20 meetings time to time.

Template for use cases for submission in ITU-T SG-20 was approved based on Indian contribution in July 2016. Work item "Y.IoT-use cases" was also created in ITU-T SG-20, based on Indian contribution for submitting use cases. Contributions submitted from India and related to Automotive sector are as given below:

Based on the technical reports released in TEC, contributions have been prepared and submitted in ITU-T SG-20 meetings time to time.

Template for use cases for submission in ITU-T SG-20 was approved based on Indian contribution in July 2016. Work item "Y.IoT-use cases" was also created in ITU-T SG-20, based on Indian contribution for submitting use cases.

It is having six use cases [five use cases (i to v) from India and one (vi) from Egypt] submitted time to time in the last 2-3 years and further revised. Contributions submitted from India and related to Automotive sector are as given below:

- 1. Vehicle emergency call system for automotive road safety
- 2. Digitization and automation of Vehicle Tracking, Safety, Conformance, Registration and Transfer via the application of e-SIM and Digital Identity
- 3. Remote monitoring the health of a patient
- 4. Connected Smart homes.
- 5. Advanced metering infrastructure (AMI)
- 6. RFID Based Digital Identification for Vehicle Tracking, Registration, and Data Transfer

Supplement Y.IoT-Use-cases has been consented / agreed in ITU-T SG-20 meeting, Wuxi, China, 3-13 December 2018, making it as an International standard.

### 10.3 Device testing and Certification

M2M devices need to conform to EMI/ EMC, safety, security standards, technical protocol, IPv6, SAR etc based on international standards and best practices. Essential requirements (ERs) have been prepared under MTCTE (mandatory testing and certification of telecom equipment) scheme, for a no. of smart devices such as Location Tracking device, Smart Meters, Smart watch, IoT Gateway, POS machines, Smart security camera and feedback device etc. and are available on TEC website. MTCTE is being implemented in phased manner from 1<sup>st</sup> Jan 2019.

#### Conclusion

M2M/ IoT will play a big role in making the automotive sector smart, which in turn will help in resolving a number of issues and improving the quality of life. Some services such as Vehicle tracking, geo fencing etc. are being provided in silos by the various device manufacturers / application providers. For large proliferation of the services and also to have economies of scale, interoperability at device, network and application level is required. With the large scale deployment of LTE services and 5G to come in near future, V2V and V2I services as a part of Intelligent transport system may become a reality. Connected vehicle scenario may have bunch of technologies such as Cellular, WiFi, DSRC etc. depending upon the availability of eco-system. Sharing of data across verticals (connected vehicle and smart parking, health vertical and connected vehicles) and between the platform is also required. For this common service layer in the platforms and interoperability between various platforms is required.

#### **References:**

- TEC Technical Reports are available on TEC web link www.tec.gov.in/ technical-reports
- Harnessing the Internet of Things for Global development by CISCO and ITU. https://www.itu.int/en/action/ broadband/Documents/Harnessing-IoT-Global-Development.pdf •••

<sup>7</sup> https://araiindia.com/hmr/Control/AIS/921201744153PMAIS-140.pdf

### **Tech-Driven Subscription Models Are Turning The Automotive Industry Upside Down**

The subscription model is revolutionising the way many industries operate, with the emphasis shifting from selling products and services to building direct and ongoing relationships with customers that now expect 'more'. The Australian public transport industry is an example of this, with both the Melbourne transport initiatives, it is not difficult to see why the Australian automotive industry and car manufacturers are now embracing the benefits of subscription as well.

#### It's already happening overseas

As Zuora's CEO and cofounder, Tien Tzuo states in his new book, upgrades and then head to the dealership to pick up your vehicle. And best yet there's no need for loans, price haggling, registration or insurance. Key players in the automotive industry today are already offering subscription services overseas – including most name-brand auto manufacturers. BMW is currently



Image Courtesy: Zoura

City Council and the Adelaide City Council announcing recently that they are considering a monthly transport subscription fee for a combination of public transport, bike share and ride share services. With subscription models already being adopted for public SUBSCRIBED: Why the Subscription Model Will be Your Company's Future - and What to Do About It, subscription services within the automotive industry will be as simple as choosing a mobile phone plan - you pick your model online, select a 24 or 36 month plan, add your testing out a subscription service in the US, allowing customers to trade vehicles as regularly as they want over a month-long period. Other automobile companies such as Cadillac and Volvo are actively testing subscriptions -- and in a recent ad campaign in the US, Volvo even encouraged customers not to buy cars but to subscribe instead. Cadillac is offering the BOOK by Cadillac subscription system, in which consumers can rent up to 18 different cars per year. And Volvo already allows US based customers to subscribe to its compact SUV - the Volvo XC40 - for \$USD600 per month which includes insurance, maintenance. wear-and-tear, 24/7customer care and additional concierge services like the ability to have packages delivered to the car. For consumers, it's a better option than a traditional lease because a lease limits users to one car for a fixed period of time, whereas a subscription allows customers access to frequent upgrades.

### So what are the benefits of subscription models?

With a general lack of interest in car ownership being shown amongst millennials, car manufacturers are now competing with affordable ride-sharing services like Go-Get, and a generation of consumers who are more 'practical' than they are auto-centric. As manufacturers look to aggressively compete against ride-sharing companies now eating into their market share, subscription-based models for the automotive industry are taking hold in Australia and elsewhere. For both global and local manufacturers, subscription services mean more predictable demand, as well as the ability to act on the direct insights into customers that a subscription model enables. For consumers, this could potentially mean earlier or increased access to international car models, greater choice of vehicles for different occasions, and in many cases, removal of maintenance altogether. Meanwhile, costs the introduction of subscription car services will no doubt create disruption and opportunities for those industries reliant on the automotive industry, i.e the insurance and maintenance industries. Such industries will also need to reevaluate their business models to cater to their changing markets.

### The current model isn't profitfriendly

The current business model for the automobile industry relies on franchised independent dealerships selling cars to individuals and businesses, where profits are reliant on the continued sales of cars. However, there is a lost opportunity in the volume of vehicles often sitting by idly, waiting to be purchased and therefore not contributing to profits. This business model is fast experiencing disruption, as consumers begin to value convenience and access to upgrades over ownership.

There has also been a shift from consumers wanting to physically own products, to wanting to be able to consume products as a service in order to gain more value. Specialists have found that people are spending more money than ever on technology, but this focus has been on online subscription services, rather than on physical technological devices. For car manufacturers and retailers, it is no longer just about selling cars from the lot - the emphasis is now on transporting the customer and making this journey as personalised as possible.

### Consumer demand is driving the change

The automotive industry is undergoing extensive change with the growing development of electric vehicles, selfdriving vehicles and driver-assistance systems altering the way people move around their environments. The effects of electrical vehicles will be felt on the automotive industry by as early as 2020, with 86% of consumers already looking for driver-assistance systems to increase safety. The desire for consumers to be able to use products as a service and increased technological advancements in the automotive industry are likely to fuel change towards a subscription-based model.

Subscription services are attractive to consumers compared to traditional ways of purchasing products, with the main reasons beingflexibility and



Iman Ghodosi VP and GM APAC, Zuora

Iman Ghodosi is Zuora's General Manager for the Asia Pacific Region. He has wealth of experience and a proven track record in leading and growing successful teams and delivering mission critical systems.

convenience. Consumers like also smaller up-front investment costs and a reduction in the overall cost of using the product, two additional benefits afforded by subscriptions that ownership can't match. Plus, consumers enjoy being able to adjust capacity and cancel their subscriptions with relative ease. For carowners, this is particularly important due to the substantial debt and maintenance costs that come with owning a vehicle. Furthermore, paying a periodic (usually monthly) recurring subscription fee can increase the perceived benefits and pleasure associated with using a product. Subscription models for the automotive industry can offer customers a flexible and convenient middle-ground between owning a car and using a ridesharing service. They can also provide consumers with greater choice over what vehicle they want to drive. This opens up drivers to a world of affordable luxury, allowing them to move around the urban environment in style. No longer a pipe dream, consumers can rent out their ideal car at a fraction of the cost of buying it outright.

### **5 Things To Avoid During Tuning The Commercial** Vehicle Tracking

Are you a Transport Company running a fleet of trucks or buses to carry out your commercial activities?

#### Yes,

You must be looking for effective fleet management system for growth of your business. Trucks and buses are valuable assets of your business and protecting them against road accidents and hijacking must be, naturally, your prime concern. Most accidents are caused due to rash and careless driving. GPS enabled fleet tracking system is a boon to modern commercial vehicle owners. It helps locating your fleet movement discreetly. institute officials and family members of the passengers. This technology has helped great way in discreet location of your fleet movement. So, treat the following tips as a stock of arrows in your quiver. GPS fleet tracking system has certainly helped in increasing efficiency and productivity in businesses related with fleet of vehicles. It not only helps in cost and time savings, but also has proved very effective system in discreet location of your fleet movement.

### **Benefits:**

Fitting any vehicle with a GPS tracking system, whether commercial or private, gives the user a number of benefits.



GPS fleet tracking systems are very effective in public transportation, particularly in a fleet of commercial trucks, school buses or metered taxis. These systems help the concerned transport company or the school administration to know the exact location of a particular vehicle. It improves the safety of both, the vehicle and its passengers. Drivers of vehicles fitted with GPS enabled devices are able to make required adjustments in their route to tackle traffic congestion problems. Efficient route management helps saving on fuel and vehicle maintenance cost. Many schools and corporate houses are opting to install GPS tracking system in their fleet of buses. This gives peace of mind to These benefits can have direct influence on your finances, car security and vehicle usage, all ultimately leading to benefits for the owner.

#### Security

Installing GPS tracking to a vehicle has a number of instantaneous effects on its security. GPS tracking means you are always able to know where your car or van is situated at any moment of the day or night. By geo-tagging your vehicle, whereby you define a particular area or zone, out of which it must not travel, you can instantly be notified if it leaves the works compound, your street or the garage at the end of your garden.

### Theft

Car theft is a particular problem and

tagged vehicles can also warn the owner if they are moved. The GPS tracking system will be able to tell if the car has shifted even slightly and an alert will be triggered. GPS tracking also means that owners stand a greater chance of recovering any stolen vehicle as it can be followed and traced, ensuring its eventual discovery.

### Monitoring

Monitoring is of great benefit, especially for fleet vehicles but also provides private users who will benefit greatly from the ability to locate their vehicle. This can be especially useful if you are trying to find your car in a full car park, after two weeks away in the sun.

### GPS tracking

The most obvious result of tracking solutions are sat nav systems, meaning you are less likely to get lost, than if you rely on conventional paper maps. Although you still have to exercise a certain amount of common sense and make sure you put the right location into your system.

### Fuel saving

Modern GPS tracking systems can provide drivers with a vast array of data concerning their journeys, while of particular interest to business users, private drivers can also benefit from knowing the best routes, quietest streets and quickest roads to take in a morning. Data regarding your driving habits can also cut down on fuel consumption and help save money on fuel.

### Things To Avoid While Tuning With Commercial Vehicle Tracking.

### Take Plenty Of Time To Review The Initial Requirements And Quotes

If you don't dedicate an adequate amount of time to review the quotes from the OEM or upfit vendor, you risk missing crucial details.

#### Common oversights include:

- Not including a trailer brake controller if your fleet vehicles will be required to do towing
- Not giving adequate instructions on the layout of decals
- Not including a block heater if your fleet operates in cold climates
- Not including an adequately sized battery and alternator for auxiliary equipment

Every fleet is unique and industryspecific. These are just a few possible details that could be neglected. Trying to use a one size fits all approach in an attempt to save time and money can come back to bite you in the end, ultimately costing you more resources by the time the project is completed.

### Don't Overload Your Fleet Vehicles

It's surprisingly common for even experienced fleet managers to simply overlook or underestimate the amount of stress all the additional aftermarket equipment will put on the vehicle. Safety and payload requirements must be considered when fleet vehicle upfitting so balance and towing ability aren't compromised. A great new decked out van isn't much use if it's not able to meet safety standards and tow loads when required.

### Try Not To Void The OEM Warranty If Possible

It's essential to ensure the upfitter is well aware of any alterations to the vehicle that will void the manufacturer warranty. Voiding the warranty may be necessary depending on the up fitting required. However, you're going to want to know this ahead of time, so you're not shocked when you take your fleet vehicle in for maintenance, and you're told it's no longer under warranty.

### Do Your Best To Anticipate Future Requirements

It's worthwhile to take a moment to reflect and imagine as best you can where your business might be 5, 10 years from now. It can be challenging to add on significant installations on top of an already fully upfitted vehicle. If you anticipate needing additional up fitting specs in the future, it may be wise to consider how those future installations would fit into the picture.

"

Tracking system can have direct influence on your finances, car security and vehicle usage, all ultimately leading to benefits for the owner. **9** 

### Try and Keep The Process As Simple As Possible

Time is money. It can be tempting to shop around each upfit spec to try and get the best deal possible. However, at a certain point, you need to ask yourself how much all the extra time and effort of taking your vehicle to different vendors is worth to you. It may be worth paying a bit of a premium to have all the work done under one roof if it saves you a significant amount of time in the end. Having all your fleet vehicle up fitting done at one location will also avoid having different vendors pointing the finger at other pieces of equipment saying that it's obstructing their ability to complete their work. It's also important to try your best to resist the temptation of installing "nice to have" but not necessary pieces of equipment that could crowd the vehicle and take up space that might be needed to for more critical equipment in the future.

### Give Adequate Attention To The Graphics

A fleet vehicle is mostly a moving billboard for your business, despite some people disagreeing they should be. It's worthwhile to sit down with your team and put some serious thought into how you're going to utilize this free piece of advertising best. It's worth spending a



Abel Korevaar Consultant FleetGO

Abel Korevaar is a consultant at FleetGO, a leading European telematics service provider. He likes to follow the latest trends in technology and is responsible for the content at FleetGO.

bit of extra money to get some quality graphics that will grab people's attention and help build your brand recognition.

### Consider Installing GPS Tracking During Your Fleet Vehicle Upfitting

Fleet vehicle upfitting of an individual vehicle so it can perform well on its own is very important. Fleets work best when they are organized, and each vehicle is being utilized optimally. Fill out the contact form at the bottom of the page to set up a meeting with a Nero, fleet consultant. We would welcome the opportunity to learn about your fleet and discuss ways vehicle tracking can enhance operational efficiency and save your business money. FleetGo are an exceptional provider of fleet management and field services management with over numerous customers worldwide. We offer solutions for fleet management services focusing on delivering products to enhance the profitability and productivity of your fleet. In fact, we aim to offer choice and scalability with their solutions and offer an attractive Beat Any Price offer. We are rapidly becoming a big name on the global vehicle tracking scene.

#### Technology

# **Cellular V2X Outperforms DSRC**

As the industry moves towards 5G and regulators worldwide are looking into future rules for connected cars technologies, the 5G Automotive Association (5GAA) has conducted tests to compare the performance of 802.11p/DSRC (known in Europe as ITS-G5) and Cellular V2X PC5 radio technologies delivering in V2V (Vehicle-To-Vehicle) safety messages. The test results show that Cellular Vehicle-to-everything (C-V2X) communications technology, direct consistently outperforms 802.11p/ DSRC. With a natural evolution

• Greater resiliency to interference (e.g. arising from other devices)

These performance advantages are particularly important in the most difficult environments such as nonline-of-sight scenarios (e.g., around a corner, highway queue forming etc.), where resident onboard sensors and radars have certain limitations. Reliable and timely radio performance is a crucial requirement that all those with a stake in transport safety depend on to deliver critical safety applications. Such test procedures are a prerequisite to comparing the available radio



Image Courtesy: 5GAA

path towards the low latency and high bandwidth benefits of 5G NR, C-V2X also demonstrated superior performance in several dimensions, including the following:

- Enhanced reliability over extended communications range;
- Better non-line-of-sight performance; and

technologies, and the results are very clear: C-V2X direct communications (PC5) performs better. The V2V radio performance tests were conducted by 5GAA members over a period spanning six months from March through September 2018. C-V2X combines on a single technology platform a direct short-range mode operating over ITS spectrum (not requiring any network coverage or subscription) and a longrange mode using traditional cellular networks operating over the mobile network operator licensed spectrum. The above-mentioned tests were conducted using only the C-V2X direct short-range communication mode without any network involvement. C-V2X current realization is based on LTE-V2X and will evolve into 5G-V2X (also called 5G New Radio or "5G NR") to deliver additional capabilities and support new services C-V2X is commercially available and reuses the decades' long investment into protocols and upper layer applications to improve safety, deliver traffic efficiency, and support automated driving. The design and execution of each experiment were set up to ensure that environmental conditions, radio frequency parameters, system integration details, and physical structures were consistent when comparing 802.11p/DSRC and C-V2X direct communications. As yet another strong signal about the global momentum behind C-V2X, 5GAA today counts 102 members (40% from Europe, 35% Asia-Pacific and 25% Americas), an increase of 60% since January 2018, quite a movement for a 2-year-old organization. 5GAA brings together the automotive and ICT industry leaders from all world regions among which carmakers, Tier-1 suppliers, mobile network operators, chipset manufacturers, test equipment vendors, telecom suppliers, and traffic signal suppliers in order to continue C-V2X field tests and to accelerate invehicle and infrastructure commercial deployments, foreseen beginning in 2019 globally. •••





## **IoT Fleet Management Solution**



### **Alibaba Smart Mobility Initiatives**

Alibaba Group's mission is to make it easy to do business anywhere, and the company aims to achieve sustainable growth for 102 years. Alibaba has announced a series of smart mobility initiatives in partnership with auto brands and technology service providers. The announcement was made during The Cloud Computing Conference.

### Partnering with Bosch on Automated Valet Parking

Alibaba Cloud, the cloud-computing arm of Alibaba Group, and Bosch, a global supplier of technology services, announced plans to introduce Automated Valet Parking (AVP) solutions in China. Both parties will work together to enable the infrastructure-based, driverless parking solution. The technology is powered by software in a cloud and it will offer



Image Courtesy: Bosch

a fully automated valet parking service in the near future. As part of the cooperation, Bosch will provide its AVP technology, its experience in systems engineering and its IoT competencies. Alibaba Cloud, meanwhile, will share its technologies and its experience in cloud computing, data analysis and smart mobility. Both parties intend to explore building showcase sites to demonstrate next-generation AVP technology throughout China. The two companies are also committed to exploring future opportunities in connected mobility in China and abroad. AVP is an ideal accompaniment to smart cities, an area

in which both Bosch and Alibaba aim to become significant players. AVP is also an important milestone on the road to autonomous driving.

### Partnering with Volvo Cars for Car-to-Home AI services

Alibaba A.I. Labs, the department leading consumer AI product development at Alibaba, announced it is upgrading its auto Artificial Intelligence solution, Tmall Genie Auto, by partnering with Volvo Cars and adding car-tohome AI services. Tmall

Genie is an AI-powered smart assistant developed by the Labs. Through the upgraded solution, Volvo Cars drivers with a Tmall Genie-compatible device

will be able to monitor and control their smarthome devices from their cars, starting next year. Some of the newly added services include:

• Running a status check on humidity, temperature, light and air conditioning at home, as well as the on and off status of smart home appliances;

- Controlling appliance functions, including turning on the heater, air conditioning, door lock and air purifier;
- ➤ Turning on the "home model" when drivers are 10 minutes away from home, which readies smart appliances for your arrival while you're still in the car.

Over 90 appliance brands are already in the Tmall Genie ecosystem, enabling over 600 smart home appliances to be easily connected for car-to-home AI services. Last June, Alibaba A.I. Labs partnered with Daimler, Audi and Volvo Cars to offer home-to-car AI services through Tmall Genie Auto. The Labs also rolled out in-car AI services by integrating the speech-interaction and Natural Language Processing features



Image Courtesy: Alizila

of AliGenie, the AI platform behind Tmall Genie. This technology supports voice commands for different tasks, such as identifying nearby attractions and restaurants, booking hotels and movie tickets and ordering to-go boxes by activating the cars' navigation and infotainment systems.

### Partnering with Ford for New Internet Car

As part of the strategic cooperation inked last December between Alibaba Group and Ford, the auto brand confirmed that Ford Kuga SUV customers will be able to order the car which has a 10.4-inch center screen and software powered by AliOS later this year. The debut of this technology in the Kuga marks another milestone in strengthening ties between the two leaders in their respective fields, and highlights the rapid growth of internet-connected cars in China. As of today, there are over 500,000 AliOS equipped Internet vehicles on the road in China. Alibaba Group's mission is to make it easy to do business anywhere, and the company aims to achieve sustainable growth for 102 years. For the fiscal year ended.

March 2018, the company reported revenues of US\$39.9 billion. •••

PG.22 | Smart Automotive | Nov - Dec 2018

### How Leading Car Makers Can Respond To Increased Connected Car Demands

When we think of the future of mobility, one thing we can be certain of is an increase in the adoption of connected devices, in particular connected vehicles. The global connected car market is expected to exceed \$219 Billion by 2025, with the number of vehicles worldwide expected to be 2.03 Billion by 2030.

The popularity of connected cars is largely down to the convenience that Internet of Things (IoT) technology can offer to drivers and car owners, as well as increased efficiency, safety and lifestyle/ entertainment features. But how are car makers dealing with this current consumer demand and, if the popularity of the industry continues to accelerate at its current pace - as expected - how will OEMs cope with future consumer expectations? In this article we want to take a look at some of the ways in which car makers can secure their standing as future mobility providers as the market evolves and accelerates inline with the exploding IoT market.

#### Current state of connected car market

Drivers and other car users are waking up to the advantages connected vehicles can offer them in terms of safety, convenience and efficiency. Let's take a closer look at what's luring customers away from traditional vehicles and towards connected ones:

#### Safety

There are numerous ways in which connected vehicles can improve the safety of drivers, passengers and vulnerable road users like pedestrians and cyclists. A major part of this safety revolution is the sensory equipment installed into connected cars which works to prevent accidents between vehicles and between vehicles and pedestrians. These sensors, when coupled with smart technology, have already been proven to significantly reduce road accidents; the sensors detect oncoming vehicles or objects, and, when the driver does not react in time, the car can correct human oversight using smart technology. Finally, real time updates direct to the dashboard keep the driver informed about dangerous road hazards or weather conditions. These live updates ensure that drivers make the safest decisions while driving.

#### Convenience

Convenience to the driver and passengers is perhaps the largest draw to potential connected car customers. A connected car enhances the experience of owning or using a car thanks to the vast array of connected car apps and services which blend seamlessly with the smart phone applications the user has already incorporated into his or her routine. The connected vehicle naturally leads on from these, creating more consistent and harmonious experiences that connect flawlessly with the rest of the user's daily interactions. In addition, many routine tasks like parking can be automatized, or part-automatized, simply making life easier for drivers.

#### Efficiencies

There are numerous financial and environmental advantages to driving a connected car. Potential engineering or technical problems with the vehicle can be detected much earlier by the vehicle itself, which will then alert the driver to what needs to be repaired.

Early detection of these issues ensures that faults don't become more serious (and therefore, more expensive to fix), saving the driver time and money later down the line.

Additionally, a connected car is always aware of the most efficient route a driver should take, taking into account minute by minute changes in weather, road conditions, accidents or traffic. Thanks to this, significant amounts of money



**Risto Vahtra** CEO High Mobility

Risto began his career in technical design before turning his hand to building user experience concepts at Volvo Cars and connected car applications with many premium European automakers. Always fascinated by the emotions that the automobile evokes in people, he cofounded HIGH MOBILITY to reimagine how automakers, designers and software developers can better collaborate in the pursuit of creating fully programmable cars.

and time can be saved. It's good news for the environment too as the vehicle will spend less time sitting in traffic, polluting the air around it.

### What should car makers do if they want to meet consumer demand?

### Share data

As we have seen, thanks to the host of advantages IoT technology can offer car drivers, consumer demand for connected vehicles from both businesses like haulage firms and taxi fleets as well as individual drivers is on the rise. But how can car makers meet this demand in order to give customers what they want? One area that holds a great deal of unlocked potential right now is data

#### View Point

sharing. Currently major car makers are extremely cautious in how they handle the sharing of customer data, and rightly so. With huge concerns within the industry and beyond about the risk of cyber attacks and other types of security breaches as well as well- documented user concerns about the protection of personal data and a user's right to privacy, any data sharing that car makers engage in needs to be undertaken in such a way as to preclude any potential risks. Additionally, customers need to be reassured that their data is not collected or used without their permission and that their personal privacy and security is guaranteed. But carmakers need to do more than simply reassure. A crucial responsibility for major vehicle manufacturers will be to alert users to the importance of which devices they allow to connect to their car and for what purpose. This is where user consent needs to be sought and GDPR regulations stringently applied. Third party IoT vendors must clearly define why their want to interact with the car and what they plan to do with any data that they get from the car, but it's the job of the OEMs to reassure users of their data security. When this responsibility has been fully on-boarded by OEMs, it will make responding to connected car demands from drivers even easier. What's clear is that although car makers see the huge potential in IoT technology and the opportunities that await them in new digital products, they are extremely serious about getting things right from the start, particularly in regard to data sharing. What could help ease things along more quickly would be the general adoption by multiple car makers of a business model that is proven to protect consumer data while simultaneously providing car makers and third party applications with the data they need to provide optimum services to users. There are several car companies making strides in this area right now. Mercedes-Benz is a great example of a carmaker taking a progressive approach to data sharing. The auto giant has set up suborganisations within its business which

are specifically designed to handle data. In doing so, monetisation via the use of APIs is not attached to the organisation at large, but instead managed by a separate unit that is required to become sustainable by itself through digital business models. This method ensures the security of data, and prevents unnecessary data transference that could potentially leave users vulnerable and their privacy compromised. It also makes these sub- organisations accountable for their actions and totally self-sufficient.

### Enable developers to build better services

A crucial element to carmakers' success in responding to driver needs will be by facilitating app development. This will only be achieved by connecting with the already thriving (connected car) application development community.

Online developer communities are notoriously hard to penetrate from outside organisations as many developers perceive big business as going against the free and open source culture that is intrinsic to the creativity, discovery and innovation that developers value so highly. And it makes sense that the opensource culture is so revered: it is this aspect of app development that makes it such an exciting field to be a part of. In contrast, big corporations can often be perceived as closed and bureaucratic and therefore stifling the very experimentation that leads to technological breakthroughs and discoveries.

However when original source code is made freely available for redistribution and modification by development teams innovation can flourish. Once car companies are able to share their data in a secure way with developers we will be making strides towards creating services which directly respond to connected car demands from drivers. As we outlined in the previous section, secure data sharing will be the first step to enabling developers to build better services. But besides simply sharing car data and connecting with development communities who wish to work with it, what else can carmakers do to enable developers to build better services that meet the demands of drivers and car users? A significant step that carmakers can make to further enable development is by providing the key resources for app development and innovation that developers need to get started. By offering programmers the tools and expertise they need to work on their connected car applications car makers will be able to connect with developers at an earlier stage of development. Indeed, it will make carmakers crucial to the process itself. For, despite the millions of software and app developers working on ground breaking products around the world, right now working as a 'connected car developer' is still relatively niche. If carmakers can offer easy to understand documentation, tools and expertise to developers with an interest in the field, we will very soon have much larger numbers of connected car developers, more innovation and more great products to offer customers. In addition car manufacturers will be able to guide application development towards meeting their current needs, as well as explore innovative products from smaller companies and invest in industry-changing applications before they hit the market. Some great examples of car makers who are already doing this are Porsche, with their NEXT OI Competition, and Mercedes-Benz, via their Mercedes-Benz Digital Challenge back in 2017. These competitions allowed developers access to connected car APIs specifically for Porsche and Mercedes-Benz vehicles, as well as SDKs for different operating systems. Using car emulators, developers could test their apps and services on different vehicle models in a true-to-life environment therefore foregoing the need to interact with or access real vehicles. With free, easy access, tutorials, tools and workspaces available for developers, innovation naturally flourished. Competitions like these give carmakers the chance to provide developers with specific vehicle APIs to work with, with functions taken

directly from their own vehicles so that applications can be tailored to their vehicles and their specific customer base. In both cases innovation was highly rewarded which lead to many of the applicants pursuing exciting new ideas for connected car apps and services.

### **Engage enablers**

In order for car companies to successfully engage with developer communities and provide developers with the facilities they need to develop innovative apps and services for their car models. advanced technical enablers are needed to provide both the car companies and the developers with the technical support to bridge the gap. This technical support could consist of workspaces within which developers can build their apps and communicate with their team members, to SDKs and tutorials. Additionally technology such as car emulators that provide a realistic testing ground for connected car APIs can be provided in these workspaces by enablers, based precisely on the vehicle designs from car makers themselves. At HIGH MOBILITY we've had first hand experience of working as an enabler with numerous companies, including Iota and Daimler, through the provision of permanent workspaces on our platform that are tailor-made for their branding and vehicles. These workspaces can consist of competition modules, pilots for upcoming projects or even separate app approval. As an enabler between the OEM and the development community we have had the advantage of being able to see connected car app development from both sides.

- ▶ From the side of the OEM we have seen how these companies are looking to engage and work with developers to create user-orientated applications that function specifically with their vehicle models to the benefit of their target customer.
- ▶ From the side of the developer, they are seeking access to data and tools to build and test their applications and experiment with new APIs.



As the 'middleman' we are able to provide a workspace which both sides can access. The developer can build his or her team, connect with other teams and exchange ideas, access SDKs and tutorials, submit applications for pilot projects, enter competitions and gain help or advice from technical experts. The OEM can take a look at what the developers are working on, study analytics of mostused APIs and track trends in software development, have a direct link to the developer community, and be a part of the app-making process from day one. In doing so the OEM has the unique opportunity to work with developers to build tailor-made products that fit their customer's needs.

#### Conclusion

Carmakers are right to be extremely cautious in their approach to data sharing. However with the three-pronged approach we've outlined car makers can more successfully respond to customers' needs and wants. Put simply, educating users on how and when to share their data, taking full responsibility for user security and implementing a business model that is proven to protect consumer data while simultaneously providing car makers and third party applications with the information they need to provide optimum services could be a great first step for carmakers to make the most of this IoT opportunity. Secondly, carmakers are able to enable the development of better services through the sharing of data and by opening up their source code. This will attract and retain the developer community, who thrive on innovation, problem solving and creative challenges. Offering developers key services, tools and resources will also endear developers to the industry and ensure that building key customer services is a painless process. Thirdly, engaging the enablers who work between the third party services and the car manufacturers will bridge the skills and tools gap that currently makes connected car app development such a disjointed process. We're excited to see how carmakers continue to build on the fantastic work that has already been done in the field of connected cars and, for ourselves as an enabler we're looking forward to further bridging the gap between the manufacturer and the development community. We don't think we'll be waiting long before connected car developers make up a significant percentage of the development community in their own right and we can't wait.

### Indian Standards For Automotive Released In 2017-18

### - R.R. Singh, Head, Transport Engineering Department, Bureau of Indian Standards

Bureau of Indian Standards (BIS), the national standards body of India is engaged in the process of formulation of national standards with active involvement of relevant stake holders. BIS has brought out more than 19000 standards till date. These standards include standards on products, methods of tests, code of practices, management systems etc. Transport Engineering Department of BIS is a dedicated Department for formulation of Standards related to Automotive Sector. TED of BIS has brought out following Standards related to Automotive Sector in 2017-2018.

### IS 7631/ISO 22915-4: 2009: Industrial Trucks–Pallet Stackers, Double Stackers and Order Picking Trucks with operator Position Elevating up to and including 1 200 mm Lift Height – Verification of Stability (Second Revision)

This standard is an identical adoption of ISO 22915-4:2009. This standard specifies verification of stability of Pallet Stackers, Double Stackers and Order Picking Trucks with operator position elevating up to and including 1 200 mm lift height. This test method standard is relevant for ensuring safety of industrial trucks. Max load and max. height of lifting has been specified in the standard in order to prevent overturning of trucks on flat as well as on slopes. Proper implementation of this standard will be useful in prevention of accidents during material handling in manufacturing units such as Automobiles OEMs and warehouses, godowns, stores etc. Potential users of this standard are manufacturers of industrial and forklift trucks and test agencies such as ARAI, CIRT, GARC, ICAT etc who are engaged in testing of pallet stackers.

### IS 15611 (Part 1)/ ISO 22915-5 : 2014 Industrial Trucks – Single Side Loading Trucks – Verification of Stability (First Revision)

This standard is an identical adoption of ISO 22915-5:2014. This standard

specifies verification of stability of single side loading trucks. This test method standard is relevant for ensuring safety of industrial trucks. Max load and max. height of lifting has been specified in the standard in order to prevent overturning of trucks on flat as well as on slopes. Proper implementation of this standard will be useful in prevention of accidents during material handling in manufacturing units such as Automobiles and warehouses. godowns, stores etc. Potential users of this standard are manufacturers of industrial and forklift trucks and test agencies such as ARAI,CIRT,GARC,ICAT etc who are engaged in testing of pallet stackers.

### IS 10766/ ISO 3842 : 2006 : Road Vehicles – Fifth Wheels – Interchangeabilty (Second Revision).

This standard is an identical adoption of ISO 3842:2006. This standard lays down the dimensional characteristics necessary for mounting and interchangeability of the fifth wheel mounted on plate or directly on frame. Fifth wheel is an interchangeable flexible coupling used between tractor and trailer. This standard lays down the dimensional characteristics necessary for mounting and interchangeability of the fifth wheel. This standard is useful for the manufacturers of Industrial Tractors and Trailers. Potential users of this standard are Industrial trucks and trailers are manufacturing units of all types, logistics companies, ware houses, godowns and large departmental stores. Proper implementation of this standard will be quite useful for manufacturers of fifth wheel and test agencies such as ARAI, CIRT, GARC, ICAT etc

### IS 13302 (Part 2) :2018/ ISO 22915-14 : 2010 : Industrial Trucks – Verification of Stability Part 2 Rough-Terrain Variable – Reach Trucks (Second Revision)

This standard is an identical adoption of ISO 22915-14:2010. This standard specifies tests for verifying the stability of rough-terrain variable reach trucks, equipped with fork arms or with load carrying or non-load carrying attachments. It is not applicable to those trucks designed for handling freight containers or for lifting people or suspended loads. This test method standard is relevant for ensuring safety of industrial trucks by ensuring its stability. Verification of stability tests according to this standard helps to prevent overturning of trucks on flat surfaces as well as on slopes. Proper implementation of this standard will be useful in prevention of accidents during material handling in manufacturing units such as Automobiles OEMs, warehouses, godowns, stores, ports ,yards and container depots etc. Potential users of this standard are manufacturers of industrial and forklift trucks and test agencies such as ARAI, CIRT, GARC, ICAT etc who are engaged in testing of industrial trucks.

### IS 13302 (Part 1) :2018/ ISO 22915-13 : 2012 : Industrial Trucks – Verification of Stability Part 2 Rough-Terrain Trucks with Mast (Second Revision)

This standard is an identical adoption of ISO 22915-13 : 2012. This standard specifies the tests for verifying the stability of rough-terrain counterbalanced trucks with mast, equipped with fork arms or with load handling attachments with a rated load up to and including 10 000 kg. It is not applicable to those trucks designed for handling freight containers.

This test method standard is relevant for ensuring safety of industrial trucks by ensuring its stability. Verification of stability tests according to this standard helps to prevent overturning of trucks on flat surfaces as well as on slopes. Proper implementation of this standard will be useful in prevention of accidents during material handling in manufacturing units such as Automobiles OEMs and warehouses, godowns, stores, ports ,yards and container depots etc. Potential users of this standard are manufacturers of industrial and forklift trucks and test agencies such as ARAI, CIRT, GARC, ICAT etc who are engaged in testing of industrial trucks.

IS 7621 : 2018/ ISO 6055 : 2004 Industrial Trucks – Overhead Guards – Specification and Testing. (Second Revision)

This standard is an identical adoption of ISO 6055 : 2004. This standard specifies the requirements and testing of overhead guards, operator's leg and feet protection, Roll over protection system ( ROPS) and falling-object protection system( FOPS) for any type of high lift, rider operated, powered industrial truck with a lift height exceeding 1800 mm. Proper implementation of this standard will be useful in prevention of accidents during material handling in manufacturing units such as Automobiles and warehouses, godowns, stores ,ports, vards and container depots etc. Potential users of this standard are manufacturers of industrial and forklift trucks and test agencies such as ARAI,CIRT,GARC,ICAT etc who are engaged in testing of industrial trucks.

### IS 12726 : 2018 / ISO 22915-21 : 2009 : Industrial Trucks – Order-Picking Trucks with Operator position Elevating Above 1 200 mm – Verification of Stability. (First Revision)

This standard is an identical adoption of ISO 22915-21 : 2009. This standard specifies the tests for verifying the stability of order-picking trucks with an elevating operator position, as defined in ISO 5053, Where the operator position can be raised to an elevation above 1 200 mm. It is applicable to industrial trucks fitted with fork arms, platforms and/or integrated attachments under normal operating conditions. It is not applicable to trucks fitted with a load carrier that can be shifted laterally or pivoted out of the truck's longitudinal center plane. Proper implementation of this standard will be useful in prevention of accidents during material handling in manufacturing units such as Automobiles OEM, warehouses, godowns, stores ,ports, yards and container depots etc. This standard is useful for the manufacturers of Industrial Tractors and Trailers. Potential users of this standard are manufacturers of industrial and forklift

trucks and test agencies such as ARAI,CIRT,GARC,ICAT etc who are engaged in testing of industrial trucks.

### IS 15514 : 2018 / ISO 22915-10 : 2008 : Industrial Trucks – Verification of Stability – Additional Stability Test for Trucks Operating in the Special Condition of Stacking with Load Laterally Displaced by Powered Devices. (First Revision)

This standard is an identical adoption of ISO 22915-10 : 2008. This standard deals with the safety of industrial trucks , as defined in ISO 5053, relative to their stability and verification of that stability. For the purpose of ISO 22915, industrial trucks are wheeled. Self-propelled or pedestrian-propelled vehicles, excepting those running on rails. They are either operator controlled or driverless and designed to carry, tow, push, lift, stack or tier in racks. This standard specifies an additional test for verifying the stability of a laden truck fitted with a powered load-handling device, such as a side, which can displace the centre of gravity to a substantial, predetermined extent from the longitudinal centre plane of the truck. Such devices are used in that mode for depositing and retrieving a load with the mast vertical or raised to maximum boom angle and extension. A displacement is considered to be a substantial displacement if it is more than

- ▶ 100 mm, for a truck with a rated capacity < 5000 kg,
- ▶ 150 mm, for a truck with a rated capacity  $\geq$  5000 kg and  $\leq$  10 000 kg,
- ▶ 250 mm, for a truck with a rated capacity > 10 000 kg and < 20 000 kg,</p>
- ▶ 100 mm, for a truck with a rated capacity < 20 000 kg.

Proper implementation of this standard will be useful in prevention of accidents during material handling in manufacturing units such as Automobiles OEM, warehouses, godowns, stores ,ports, yards and container depots etc. This standard is useful for the manufacturers of Industrial Tractors and Trailers. Potential users of this standard are manufacturers of industrial and forklift trucks and test agencies such as ARAI,CIRT,GARC,ICAT etc who are engaged in testing of industrial trucks.

IS 7552 : 2018 / ISO 22915-8 : 2008 : Industrial Trucks – Verification of Stability – Additional Stability Test for Trucks Operating in the Special Condition of Stacking with Mast Tilted Forward and Load elevated. (Second Revision)

This standard is an identical adoption of ISO 22915-21 : 2009. This standard deals with the safety of industrial trucks, as defined in ISO 5053, relative to their stability and the verification of that stability. For the purposes of ISO 22915, industrial trucks are wheeled, self-propelled or pedestrian-propelled vehicles, excepting those running on rails. They are either operator-controlled or driverless and designed to carry, tow, push, lift, stack or tier in racks. This standard specifies an additional test for verifying the stability of a truck stacking with mast tilted forward and load in the elevated position. It is applicable to the following types of truck:

- counterbalanced trucks with tiltable masts, as specified in ISO 22915-2;
- ▶ reach (retractable mast or forks) and straddle trucks with tiltable masts, as specified in ISO 22915-3;
- pallet stackers with tiltable masts, as specified in ISO 22915-4;
- bidirectional and multidirectional (retractable mast or forks) trucks with tiltable masts, as specified in ISO 22195-7;
- rough-terrain trucks with tiltable masts 1);
- counterbalanced trucks fitted with articulated steering with tiltable masts 1).

Proper implementation of this standard will be useful in prevention of accidents during material handling in manufacturing units such as Automobiles OEM, warehouses, godowns, stores ports, yards and container depots etc. This standard is useful for the manufacturers of Industrial Tractors and Trailers. Potential users of this standard are manufacturers of industrial and forklift trucks and test agencies such as ARAI,CIRT,GARC,ICAT etc who are engaged in testing of industrial trucks.

IS 14771 : 2015/ISO 9112 : 2008 Truck and Bus Tyres — Methods of Measuring

### *Tyre Rolling Circumference — Loaded New tyres (First Revision)*

This Standard specifies two methods for measuring the rolling circumference and the number of revolutions per distance (kilometre) of new commercial vehicle tyres, under loaded conditions, for use on trucks and buses. The first method is a drum method consisting of loading a test tyre mounted on a free axle against a driven road wheel (or drum) of specified diameter. The Second method involves a vehicle whose drive axle is equipped with the test tyres driven on a straight, paved road. the values thus obtained are not intended for use as levels of performance or quality. This Standard applies to all truck and bus tyres. This standard contains terms and definitions, methods of measuring truck and bus tyre rolling circumference of loaded new tyres by two method. This Standard will be useful for tyre manufacturing and tyre testing agencies.

### IS 15704 : 2018 Automotive Vehicles — Retreaded Pneumatic Tyres For Commercial Vehicles — Specification (First Revision)

Retreading is quite popular practice for the tyres used on commercial vehicles. It has been observed that the tyre carcass is intact even when the tyre tread is worn out. Hence, replacing tread with a new one results in material saving and environment protection. The cost of retreading is significantly less than that of a new tyre of same size. IS 15704 : 2018 prescribes to the production of retreaded tyres intended to be fitted for vehicles in categories M2, M3, N, T3 and T4. It does not, however, apply to retreaded tyres with a speed capability below 80 km/h and tyres originally produced without speed symbols and/or load indices. This Standard will be useful for retreading units and tyre testing agencies.

### IS 15524 : 2018 Automotive Vehicles — Retreading Of Tyres By The Pre-Cured Process — Specification (First Revision)

This standard covers the retreading of tyres by the pre-cured tread process, for passenger cars, light-trucks, trucks and buses, lays down requirements for the casings, the methods of retreading, and the equipment to be used, as well as for the finished product. This standard was first published in 2004. This standard has been revised to keep pace with the latest technological advancement in the field of retreading of tyres by pre-cured process for automotive vehicles. This standard has been undertaken after due consideration of the practices prevalent in the industry. The new standard is an improved version of the old one and requirements of aluminium wheels have also been added in the standard. This Standard will be quite useful for retreading units and tyre testing agencies.

### IS 3028 (Part 1) : 2018 Automotive Vehicles – Noise Emitted By Moving Vehicles – Specification And Method Of Measurement Part 1: L2 Category

This standard specifies the method for measuring the external noise emitted in moving condition by two wheelers. Vehicle noise plays an important role in curbing noise pollution and this standard will help in proper measurement of two wheeler noise. This Standard will be quite useful for Two Wheeler Manufacturers, Test Agencies etc.

### IS 16903 : 2018 Automotive Vehicles – Seats, Their Anchorages And Head Restraints For Passenger Vehicles Of Categories L7, M2, M3 And Goods Vehicles Of Category N — Specification

Seats, Their Anchorages And Head Restraints of Passenger Vehicles form an integral part of vehicles passive safety system. The compliance of Seats, anchorages and head restraints to this Standard will ensure that these components are of good quality and provide adequate protection to the occupants in case of any mishap. This standard specifies the requirements of the dimensions, space and strength of the seats (both driver and passengers) and their anchorages, whether or not fitted with head restraints and the characteristics of head restraints of passenger carrying vehicles of categories L7, M2, M3 and goods

vehicles of category N as defined in IS 14272 : 2011 'Automotive Vehicles -Types — Terminology' in respect to the seats intended to be installed facing forward. This standard also specifies the requirements of dimensions, space and strength of the seats (both driver and passenger) and their anchorages of quadricycles. However, this standard does not apply to folding, tumbling, side-facing or rearward-facing seats, sleeper seats or to any head restraints fitted to these seats. The probable users of this standard are manufacturers of Seats, their Anchorages and Head Restraints and testing agencies involved in the testing of these items.

### IS 16904 : 2018 Survival Space For The Protection of The Occupants of The Cab of a Commercial Vehicle

In case of crash of any commercial vehicle, the cab of the commercial vehicle should have adequate survival space. In absence of adequate survival space the occupants of cab may suffer from suffocation and injuries. The compliance of Seats, anchorages and head restraints to this Standard will ensure adequate survival space in the cab of Commercial Vehicles and they provide adequate protection to the occupants in case of any mishap. The probable users of this standard are OEMs, body builders and testing agencies involved in the testing of Commercial Vehicles.

### IS 16905 : 2018 Automotive Vehicles — Front Underrun Protective Devices (FUPDs) - General Requirements

Front Under Run Protective Device plays an important role in case of a heavy vehicle hits a passenger car from behind. Proper fitment of FUPD ensures that the smaller vehicle does not get stuck under the front portion of heavy vehicle. This is an important Passive Safety Feature of Commercial vehicles. The FUPDs manufactured in compliance of this standard will ensure that FUPDs are of good quality and provide adequate protection to the smaller vehicles in case of any mishap. The probable users of this standard are manufacturers of FUPDs, OEMs and testing agencies involved in the testing of these FUPDs ....



www.bosch-iero.cor

### Have Seen The Emphasis Shift From Historical Data Analysis, Towards Real-Time Analytics And Alerting



Charles Smith CEO and founder CMS

Founded in 2012, CMS's award-winning data aggregation and risk management solutions makes connected vehicle data actionable. Its hardware-agnostic, SaaS offerings are licensed globally by leading telematics providers, OEMs, and insurance organisations.

Telematics Wire talks with Charles Smith, CEO and founder of Collision Management Systems (CMS). Excerpts of the interview:

### What is driving data explosion in connected vehicle?

The first wave of mobile technology radically changed the way we move around our cities and beyond. By assimilating masses of data points, on vehicle position and relative road speed, it created new ways of managing fleets of vehicles and enabled real-time navigation. Today, the humble vehicle of old, with its mechanical controls and switches, has been transformed with embedded and aftermarket sensors and on-board computers into a hub capable of delivering the next wave of mobile technology. There are now over 330 million vehicles, connected via telematics or by in-vehicle apps[i], each with more processing power than put a man on the moon. The current data explosion is being driven by sophisticated ADAS systems, the precursor to fully autonomous vehicles, which generate masses of new data points and utilise real-time video. Commercially available aftermarket systems are also sending information on vehicle faults, lane departure, driver fatigue, tailgating, proximity to other vehicles, etc. According to McKinsey, connected cars create up to 25 gigabytes of data per hour, more than a month>s worth of 24-hour music streaming. Looking to the future, fully automated vehicles will take this even further. They will have to gather enormous quantities of data from a huge variety of sources in order to think for themselves; to function and respond like a 'human brain'; and make complex driving decisions in realtime. There is then the vast amounts of data that will be needed for third-parties to review issues and incidents should anything go wrong. Multiply this with the millions of vehicles on the roads and it's easy to see how data volumes will be pushed off-the-scale.

### *Will connected vehicle data assist in the growth of Insurance telematics sector?*

Young driver insurance has been the bedrock of insurance telematics for several years now. The reality, however, is that while there are many new drivers taking out telematics policies, people are going into mainstream insurance just as fast so total connections are plateauing. In addition, the cost of professional or even self-fit telematics makes the economics unsustainable for insurance companies as they fight to stay profitable against rising claim costs. Yet CMS believes that connected vehicles can deliver new growth for this sector. With lower cost embedded OEM devices, the economic challenge falls away. Customers will be able to link their data to their insurance policy seamlessly and their previous driving history can be unlocked to help them get a better price. All of this depends on data quality. At present, retro-fit telematics devices are rich in data, but embedded devices are often simpler which can affect data quality. Insurers will be reliant on motor manufacturers for data sourcing, with no guarantees on what data will be available, in what format and, importantly, at what cost. At present many motor manufacturers haven't worked out their commercial models for data-sharing.

### What can be the other use cases "Data" in the automotive sector?

For automotive OEMs, there's huge value in having real-time access to connected vehicle data to help control the customer experience around a breakdown or accident. Fast response and recovery, with rapid turnaround or replacement vehicles, can all drive revenue in the OEM's own dealer/repair network. Sending data 'over-the-air', opens up two-way data communication between the OEM and the vehicle to springboard new applications. For example, diagnosing and adjusting tuning and ratio settings in real-life driving situations to improve engine and gearbox lifetime. OEMs are even using the data to analyse exactly how and when drivers are using specific features, such as sun roofs, helping them to respond to the voice of the customer more intelligently. When autonomous vehicles eventually become the norm, there will no longer be a 'driver' experience only a 'passenger' one.



Current connected car services help us understand how passengers interact with vehicles and provide valuable insight on the chargeable services that could be delivered to passengers in autonomous pods in the future. Organisations such as Google and Facebook, have already shown how mobile can be used as a platform to monetise location-based services. Similarly, the growth of in-car concierge and infotainment services will make pod-users the key consumers of new datasets

### Discuss the challenges of Data Protection and Cybersecurity in automotive space and how they can be negotiated?

Recent issues with social platforms, advertising, and data-harvesting, have highlighted just how little people know about their personal data – what's being collected, where it's going, and how it's being used. The introduction of GDPR is helping to address this balance, but there is a general consensus across industries that data-services need to be more transparent. Cars are already connected wirelessly to a myriad of third-parties diagnostics, through infotainment, location-based services, and telematics, which is starting to push data protection up the automotive agenda. Indeed, for our own global clients, such as Swiss Re, CMS must ensure any vehicle data is processed and the country of origin and in accordance with all relevant local and international guidelines. It's easy to envisage a scenario in the future, where customers request their vehicle-based data to be centrally stored, signing up to a third-party like Google, to consolidate and manage it on their behalf. As aftermarket devices become more embedded and cars become increasingly connected to the wider IoT ecosystem, the potential attack surface will become much larger, resulting in new risks and potential threats to personal safety, security and privacy. One way to simplify

the challenge, while still allowing for rapid innovation, is for OEMs to develop a secure perimeter layer that acts as a 'security fence' for all internal systems, rather trying to lock-down individual modules. Secure in-car gateways could then ensure that any transmission/ communication was controlled using various forms of authentication. OEMs, tier-one suppliers and IT service providers will have to work together to understand vulnerabilities and develop cybersecurity solutions to keep car-data secure.Regulation has a key part to play in this. In 2017, the UK government issued 'The Key Principles of Vehicle Cyber Security for Connected and Automated Vehicles', which offers some guidelines for maintaining the security of wirelessly connected cars.

### What are your views on the increased use of Analytics in the automotive sector, where do you see it going?

For the past five years, CMS has been

working to make data actionable for telematics companies and insurers. During this time, we have seen the emphasis shift from historical data analysis, towards real-time analytics and alerting - particularly on driver risk. Applications which predict events, require significantly more data - tens of billions of data points, rather than hundreds of millions. The glaring issue is that there often isn't enough raw data to train the analytic models. In some instances, in-device filtering limits the information available so impacts its usefulness. Instead, of trying to shrink data, the emphasis should be on developing scalable, data aggregation and analytic solutions that invisibly and seamlessly automate the handling of largescale data while retaining its richness. Delivering actionable information while minimising the data burden on people and services. Increasingly, analytics is giving us a better understanding of the driver, their behaviour, their interaction with the vehicle, their surroundings and other road users. This information will form the foundation to build more personalised and targeted car-related services and safer and more enjoyable user experiences. Analytics also unlocks the value pool inherent in data, so it can be monetised by third parties, as long as the data-use is authorised in advance with the car owner/driver. For example, geo-linked advertising, personalised to the driver on in-car infotainment systems as piloted recently by General Motors. Aggregating analytics across millions of vehicles will also deliver new insight and identify trends that can be used to make roads safer, cities smarter, vehicles more environmentally-friendly and traffic more manageable.

### *Comment for the need for "dynamic collaboration" in automotive ecosystem.*

The era of big technology companies delivering the whole technology stack is declining. Instead they are becoming the glue that sticks all the players together. This is most apparent with Amazon Web Services and Microsoft Azure. Automotive business models are also changing and so is the technology supporting it. This requires brand new solutions to be created, not just tweaks or upgrades, making the pace of change very high. To accommodate this, companies are specialising and co-operating even if they compete (co-opetition), driven largely by the increasing complexity and data volume required to solve certain problems using machine learning. If dynamic collaboration works, then the ability for customers to move or make their data available increases substantially, ultimately underpinning new products and business models. At the moment this is fine as this new market is growing so fast and there is room for everyone. It will become more interesting when growth starts to plateau, and companies start to focus on the new data revenue opportunities. Realising that open sharing may not be good for their short-term revenue growth (even though closing it down will harm them in the long term). Over the next few years, we will see the development of more symbiotic relationships between auto, tech and wireless players as well as governments and insurers, with the aim of making 'mobility' smarter, safer and more efficient. At CMS, we are already actively involved in several collaborative projects such as Transport Systems Catapult and the Silverstone Technology Cluster. We are also partnering with multiple large and small companies to deliver solutions that would be impossible alone, creating embedded end-to-end, data/telematics/ connectivity propositions that improve and add value to every element in the chain.

How is Cloud empowering automotive companies to expand business agility and capability?

Cloud has enabled small companies to access the same infrastructure that used to be reserved for the IBM's of the world. It also gives large organisations such as motor manufacturers the opportunity to work with smaller more innovative organisations, who can use the cloud to deliver new types of specialist applications and services, faster, more nimbly, and with less resource than if they tried to do it themselves. The cloud is also allowing OEMs and insurers to exploit SaaS services, to enhance the accuracy and functionality of their telematics solutions. At CMS, our software can be licensed and supplied over the cloud to embed new capability for global customers, while hitting high standards in development practices and ensuring GDPR compliance. Using Microsoft Azure also gives us additional deployment capability,to a common standard, across multiple data centres in different countries. Automotive companies are already using cloud technology across their businesses, for supply-chain, operations, manufacturing, and logistics, but they have yet to exploit it to connect vehicles and consumers. This may leave a gap in the market for the likes of Amazon, Android etc. who are creating the common platforms that are being embedded in the vehicles and link back to common cloud systems that everyone knows. We already have Alexa in retro-fit hardware, soon it may be built-in. While many OEMs are happy to wait for generic platforms, players like Volkswagen are walking up to the potential. It has invested 3.5 billion Euros in a new connected computing platform, vw.OS, which it aims to introduce in all its electric vehicles by 2020. This will connect embedded applications to handle vehicle functionality and provide consumers with connection to exciting new lifestyle services. It will be interesting to see how this battle for incar cloud ownership plays out.

MADE IN INDIA



# AIS 140 Certified GPS Tracker Smallest and Accurate Tracker

- Embedded and normal (eUICC- eSIM)
- 72-channel u-bloxM8 engine
- UBX-M8030 Concurrent reception of up to 3 GNSS (GPS, Galileo, GLONASS, BeiDou)
- 3 Axis Accelerometer, Gyroscope and Temperature
- 2 Analog Input, 4 Digital input and 2 Digital output
- AIS 140 Dual IP addresses for PVT and SOS and Third IP for VAS Services.
- 64000 Tracking Records (10 year data retention).
- Internal Battery upto 6 Hours
- IP66 Enclosure.

Volty IoT Solutions Pvt Ltd, 4th Floor Plot No: 703/A, Road No: 36, Jubilee Hills, Hyderabad-500033 www.transync.in





# The Promise Of Integrating Road Weather In Vehicle Telematics

- Glen Denny, Baron Services, Inc.

Delivery of better weather guidance to drivers is essential, especially realtime updates on the elements drivers face on the roads. This data enables pre-planning of employee schedules, supply chains, and assets that could be in jeopardy when there are dangerous road or weather conditions. New technology is available that can easily integrate weather data into next generation vehicle telematics platforms, including navigation, routing/planning software, mobile apps and other in-vehicle deployments. Specific weather data can also be integrated with smart vehicle safety features as part of the development of autonomous vehicles. Increasing demand for weather information on telematics platforms are developed by automotive manufacturers and service providers like manufacturers of navigation and in-car mapping systems. While a primary concern of trucking, shipping, and insurance markets, weather information is also of interest to other public safety organizations, including schools, hospitals, departments of transportation, and large employers. In short, anyone with assets on the road benefits from high quality localized weather condition information. Consumers in general recognize the importance of weather data for their connected vehicles. While a recent study of 14,000 car owners showed that map apps are the number one choice for those with connected cars, 49 percent of survey participants cited weather apps as the second most important type of vehicle app. Being informed about the weather helps people plan ahead and feel prepared, even scheduling work days based on predicted conditions. Many drivers rely on current conditions or the forecast of bad roads from local television weather reporters. But when driving is involved, both businesses and consumers need more than just basic weather information like the chance of rain or the day's high. Drivers need guidance regarding how the weather will affect them moment to moment in transit. After all, weather is the second largest cause of non-recurring congestion and accounts for 25 percent of all delays. According to the Federal Highway Administration, nearly 1 billion hours are lost each year due to weather-related delays. Perhaps more importantly, weather can have a significant impact on our lives and those of friends and family. Last year, 7,000 people were killed and more than 800,000 people were injured on our roads as a direct result of adverse weather conditions. One of the latest examples took place in April 2017, when eight people died in rain-soaked Houston after they drove into flood waters or were caught inside their vehicles during a flash flood. Even with the advent of satellite radio and incar apps, delivery of weather guidance to drivers hasn't changed much since the first radio was installed in a vehicle 94 years ago. Drivers get very little actionable weather information, with the exception of the radio presenter providing occasional guidance during breaking weather events. There is definitely room for significant improvement in terms of providing real-time updates on weather affecting driving conditions.

### Telematics to accurately forecast conditions and allow planning to avoid bad roads

Road weather has been a part of vehicle telematics platforms for some time. For example, nearly a decade ago, Baron developed patented roadway weather information that is focused on identifying location-specific conditions based on a vehicle's current location. A version of this technology is deployed in the SiriusXM NavWeather service and has been adapted for use in onboard entertainment or navigation systems in more than 30 automotive makes and models. The basic information includes up to three days of forecasts, with watches and audible alerts that let drivers get the information without having to take their eyes off the road to view a display. Other similar weather systems have been developed for use in several major automotive manufacturers' vehicles, as well as a major national fleet management and transportation technology firm. As broadband and cellular service became more widely available, interest began to move from the one-way data streams offered by SiriusXM to two-way, connected car applications. The proliferation of OEM's that are including 3G, 4G, and proposed 5G wireless mobile technology services in vehicles only increases the availability of road weather safety features. While improved data pathways are available now, vehicle designers are still trying to determine the best way to interface with newer navigation systems. Interest is high in providing drivers information on what road conditions would be several days from now - or a mile ahead of them. To meet this need, Baron developed Baron Telematics Weather, building off its proven weather telematics technology. The platform makes use of an exclusive eight-year road weather archive and offers realtime and archived traffic incident data. It provides accurate forecasting of conditions that allows planning to avoid bad roads three days in advance. The unique 72-hour forecast

conditions and half-mile resolution covers all atmospheric threats that affect vehicles, including winds, hail, and heavy rain, as well as road surface conditions like ice, snow, and ponding. The new Baron telematics technology makes use of a proprietary land surface weather model that analyzes conditions from at and below the surface, taking into consideration the surface type. It also shows temperature changes to provide information on whether the temperatures are warming up or cooling down such that ice might be forming. The minute by minute updates provide drivers with intelligence on what is down the road and what they are going to encounter. Availability of more preemptive data - in advance -will enable drivers to better plan to and ultimately improve productivity. For example, if black ice is causing accidents and delays ahead, the driver can be alerted to its exact location

a partnership with Total Traffic & Weather Network (TTWN). The service is for terrestrial digital radio enabled vehicles (including Toyota, Lexus and others) and delivers information in a variety of pathways, including over-the-air broadcasts. HD radio. satellite radio, and Internet-connected distribution systems. In the future, there will likely be multiple delivery methods for weather telematics based on the vehicle's price range. These will range from 4G systems, 1-way narrow pipelines into a vehicle like Sirius XM enabled receivers, API/2-way Internet connected data connections, and the TTWN terrestrial base. Wherever there is connectivity or radio broadcast, there will be a pathway for weather telematics. Weather telematics enables the future of autonomy In addition to providing access to weather data for driving planning purposes, a robust weather telematics platform has a major provide data to warn the driver and disengage the feature before entering snow-covered roads. Electronic stability control - ESC works great in slippery wet or icy conditions, but in heavy snow where vehicles get stuck the ESC system can make it very difficult to drive or get the vehicle out of deep snow. Weather telematics can alert drivers of heavy snow-covered roads and turn-off traction control in those conditions. Adaptive cruise control -During heavy precipitation, radars used to detect traffic just ahead or behind the car can suffer signal loss (attenuation), rendering the system nearly useless. Telematics data can be used to warn the driver of heavy precipitation just ahead so the ACC will disengage. Data on current road conditions can also be used to adjust the distance between cars and speed. Collision warning system - Radar used to sense objects



and provided alternative routing. The information can be delivered via map form and an audible alert. Access to the data in the Baron Telematics Weather API allows developers to easily integrate the service into navigation, routing/planning software, mobile apps, and in-vehicle deployments. For example, Baron recently announced role to play in the future of autonomous and/or smart vehicles. For example, the following smart-vehicle features are made safer with high resolution weather data: Lane-keep assist – In the lane-keep assist function, the sideview cameras used to detect lanes are rendered useless when roads are snow-covered. Weather telematics can just ahead is rendered nearly useless during heavy precipitation. Telematics data can be used to warn the driver of heavy precipitation and the CWS will disengage. The data can also be used to adjust the CWS timing based on current road conditions.

#### **Proven technology**

Unique patented technology is now available that constantly analyzes all roadway conditions in the United continental States and provides

location specific information and conditions. This technology can be easily integrated into a variety of telematics platforms to improve driver response time and increase safety. With the new technology, drivers can keep their eyes on the road while receiving critical information on approaching conditions. ---

### GLOSA lets car talk to traffic light

Jaguar Land Rover's Green Light Optimal Speed Advisory (GLOSA) system allows cars to "talk" to traffic

a junction. ICW informs drivers if other cars are approaching from another road and can suggest the order in which cars



lights and inform the driver the speed they should drive as they approach junctions or signals. GLOSA is being tested alongside a host of other measures to slash the time commuters spend in traffic. For example, Intersection Collision Warning (ICW) alerts drivers when it is unsafe to proceed at should proceed at a junction. Jaguar Land Rover has also addressed time lost to searching for a parking space by providing real-time information of available spaces to drivers and developed an Emergency Vehicle Warning to alert motorists when a fire engine, police car or ambulance is approaching.

# Walmart with Ford, tests grocery delivery using autonomous vehicles

Walmart is offering grocery delivery in nearly 100 metro areas and is taking a step further, the company is partnering with Ford to explore delivery with autonomous vehicle technology. The and is already connected to Ford's digital platform. Together, the companies will gather crucial data to learn the best way to bring items to customers. Walmart also recently explored a small pilot



pilot program with Ford is taking place in Miami-Dade County. In Miami, Postmates — an American logistics company –serves as the delivery partner project with Waymo, to start exploring how customers will want to use selfdriving cars when it comes to their grocery shopping. •••

### Infosys Innovation Hub in Arizona to have a special focus on autonomous technologies

Infosys, a leader in consulting, technology and next-generation services, has announced that it will open its next Technology and Innovation Hub in the State of Arizona and hire 1,000 American workers in the state by 2023. This announcement reinforces Infosys' May 2017 commitment to open Technology and Innovation Hubs in the United States and hire 10,000 American workers. To date, Infosys has hired 5,874 American workers against this commitment. The Arizona Technology and Innovation Hub will have a special focus on autonomous technologies, Internet of Things (IOT), full-stack engineering, data science and cyber security. Infosys' investment in Arizona is a continuation of the company's commitment to accelerate innovation for American enterprise by amplifying top local talent with the best global talent and to shrink the IT skills gap in the marketplace. Infosys' new Arizona employees will include recent graduates from the state's prestigious network of colleges, universities and community colleges, as well as local professionals who will benefit from upskilling through Infosys' world-class training curriculum. This investment also enables Infosys to build on the strength of its existing Arizona network of highly skilled professionals. To date, Infosys has opened two Technology and Innovation Hubs, one in Indianapolis, Indiana and another in Raleigh, North Carolina. Infosys has also announced an additional Technology and Innovation Hub in Hartford, Connecticut and a unique Design and Innovation Hub in Providence, Rhode Island.





# Your Vehicle, Our Vigilance

### We help you track with our **Intelligent** and customised **Vehicle Tracking Solutions** for various industries and also provide detailed insightful reports.



### Hyundai Mobis and Tata Elxsi to develop simulation tool for autonomous driving

Mobis Technical Centre, India has announced their collaboration with Tata Elxsi for the development of Synthetic Scene Generator Tool. The companies are working together to develop a tool that can replicate every real-world scenario an automobile could encounter, which could run into millions of possibilities. This tool would help accelerate the ongoing research and development support HMTCI is providing to their OEMs in Autonomous Driving.

Commenting on the developemt, Shaju S, Head of Automotive Division of Tata Elxsi said, "Our leadership position in automotive engineering services and Autonomous driving technologies, coupled with digital capabilities will be a valuable addition for Hyundai Mobis. We are delighted to be partnering with Hyundai Mobis in realizing their vision for the future of autonomous driving."

### Volkswagen to use Microsoft Azure for its Automotive Cloud

Volkswagen has chosen Microsoft Azure platform as the foundation for Automotive Cloud and connected car services for its fleet. Volkswagen will also establish a new automotive cloud development office in North America and Microsoft will help support its initial development. Entering into a between Volkswagen and Microsoft on September 28, 2018. From 2020 onwards, more than 5 million new Volkswagen brand vehicles per year will be fully connected and will be part of the Internet of Things (IoT) in the cloud. In the future, all in-car services for vehicles of the core Volkswagen brand as well as



Image Courtesy: Volkswagen

strategic partnership, Volkswagen and Microsoft Corp. will collaborate to develop the 'Volkswagen Automotive Cloud', The Supervisory Board of Volkswagen AG approved the conclusion of an agreement to this effect

the Group-wide cloud-based platform (also known as One Digital Platform, ODP) will be built on Microsoft's Azure cloud platform and services as well as Azure IoT Edge. •••

# Bosch to enter car-sharing business

Bosch is launching a new sharing service for electric vans. Together with toom, a subsidiary of the German retail group Rewe, the company will be testing the service at hardware stores, which is precisely where there is a demand for vans with sufficient space to carry heavy and bulky purchases.

Bosch is already well versed in the sharing services business, as demonstrated by Coup, its rental service for electric scooters. Since its launch in 2016, Coup has constantly expanded, and now has a fleet of 3,500 scooters in Berlin, Paris, and Madrid.

- Launch in December 2018: customers of toom hardware stores will test the new service.
- Last-minute availability: use an app to book a van, climb in, and transport bulky purchases home, all stress-free.

Bosch has opted exclusively for electrically powered vehicles. The vansharing service will initially be offered in Germany, at hardware stores in Berlin, Frankfurt, Leipzig, Troisdorf, and Freiburg. At these stores, charge spots are already in place for the small electric vans, which are provided by StreetScooter. The company believes that shared electric vans have scope for application outside the hardware-store sector: if the new sharing service proves popular, Bosch plans to expand it to include other partners, whether these be other toom stores, furniture stores, supermarkets, or electronics stores. It is also interesting to note that Mobility Solutions is the largest Bosch Group business sector. •••





122

## Automotive grade u-blox M8 GNSS modules



NEO-M8L Automotive grade GNSS and Dead Reckoning module with accurate navigation under all signal conditions.



NEO-M8Q Automotive grade GNSS module with operational range -40°C to +105°C.



**MAX-M8Q** The smallest automotive grade GNSS module with extended operating temperature range  $-40^{\circ}$ C to  $+105^{\circ}$ C. Pin to pin compatible with professional grade MAX module.

U-blox Singapore Pte. Ltd. DBS House-26,Cunningham Road,Bangaluru - 560052 Ph. No.- +91-80405092, Mob. No.: +91-9945329985 E-mail: info\_in@u-blox.com

# Honda to work jointly with Cruise and GM to develop autonomous vehicles

Honda will work jointly with Cruise and General Motors to fund and develop a purpose-built autonomous vehicle for the world's best design, engineering and manufacturing expertise, and global reach to establish them as the leader in



Cruise that can serve a wide variety of use cases and be manufactured at high volume for global deployment.

Honda will contribute approximately \$2 billion over 12 years to these initiatives, which, together with a \$750 million equity investment in Cruise, brings its total commitment to the project to \$2.75 billion.

In addition to the recently announced SoftBank investments, this transaction brings the post-money valuation of Cruise to \$14.6 billion.

"This is the logical next step in General Motors and Honda's relationship, given our joint work on electric vehicles, and our close integration with Cruise," said General Motors Chairman and CEO Mary Barra. "Together, we can provide Cruise with

deploy selfto driving vehicles at scale." "Honda chose collaborate to with Cruise and Motors General based on their leadership in autonomous and

autonomous

vehicle technology

- while they move

electric vehicle technology and our shared vision of a zero-emissions and zero-collision world," said Honda Executive Vice President and Representative Director COO Seiji Kuraishi. "We will complement their strengths through our expertise in space efficiency and design to develop the most desirable and effective shared autonomous vehicle."

"With the backing of General Motors, SoftBank and now Honda, Cruise is deeply resourced to accomplish our mission to safely deploy autonomous technology across the globe," said Cruise CEO Kyle Vogt. "The Honda partnership paves the way for massive scale by bringing a beautiful, efficient, and purposebuilt vehicle to our network of shared autonomous vehicles."

### WABCO and Baidu collaborate on Level 4 autonomous driving

WABCO Holdings has signed a MoU with Baidu to collaborate on developing suite of solutions for L4 Autonomous. This will be an open platform allowing OEMs and fleets to utilize WABCO's and Baidu's core safety and AI technologies while providing them an opportunity to develop solutions. Baidu's Apollo, its open autonomous driving software platform, while WABCO will provide access to its own ADOPT<sup>™</sup> (Autonomous Driving Open Platform Technology) ecosystem. The next step, will be to work together to combine the required content of Baidu's Apollo software platform, integrating all the safety and redundancy protocols necessary for road release in order to develop turnkey, hub-to-hub, L 4 highway solutions for the commercial vehicle world. WABCO and Baidu will open them up to WABCO customers (Fleets and OEs) allowing them to develop their own solutions that align with their specific autonomous driving goals. In order to develop these Level 4 autonomous driving applications, customers could either seek to leverage the existing full software stack, or select specific software modules and functionality.

### Baidu and Volvo Cars to co develop L4 autonomous cars

Baidu and Volvo Cars have announced a strategic partnership to jointly develop Level 4 autonomous driving passenger cars for the Chinese market with the goal of mass production. The aim of the collaboration is to achieve mass production of the L4 autonomous cars over the next few years. Under this collaboration, Baidu will empower Volvo with the capabilities of Apollo, Baidu's autonomous driving platform, while Volvo will provide access to its expertise and advanced technologies of the automotive industry. Baidu has been developing autonomous driving technology since 2013. For intelligent vehicles to travel freely and safely, intelligent roads and infrastructure are required. By the end of 2018, Baidu's Apollo Intelligent Vehicle Infrastructure Cooperative Systems (IVICS) will leverage Apollo's capabilities in autonomous driving to bring together intelligent vehicles and infrastructure, an important step towards developing future intelligent transportation. ---



## High Performance Automotive Test Solutions

### Test and Measurement Solutions for the Connected Car

**Ensuring Connectivity...** 



| <b>+</b> | WIRELESS CONNECTIVITY<br>LTE/2G/3G, Bluetooth, Wi-Fi                                |
|----------|---|
| ÷        | SAFETY AND DRIVER AIDS<br>————————————————————————————————————                      |
| ⊕        | IN-VEHICLE NETWORKS<br>———— Antennas, Connectors, RF Cables, Ethernet,Optical fiber |
| <b>⊕</b> | INTELLIGENT TRANSPORT SYSTEMS<br>V2X, DSRC, 802.11p                                 |
| <b>⊕</b> | ELECTROMAGNETIC INTERFERENCE<br>———————————————————————————————————                 |

Write to us : ACIN-sales@anritsu.com for demo and application Discussion

Anritsu India Pvt Ltd

### Interview

### **Started The Process Of Standardization Of ITS Devices**



**Dr. Madhusudan Joshi** Deputy General Manager International Centre for Automotive Technology

ICAT has played an important role in testing and certification body for vehicle tracking device, as per the guidelines in AIS 140 and now newly notified BIS 16833. In discussion with Madhusudan Joshi, Telematics Wire explores what more ICAT has for the vehicle telematics industry.

You have been instrumental in the preparation of IS 16833 and actively participating in making AIS 140, would you like to share your experience or views on this?

In my opinion it is a very good beginning, especially in BIS that we have started the process of standardization of ITS devices. It is very much required and is happening at the right time. We have successfully made Indian standards for automotive tracking devices, RFID tags, LED destination boards for buses etc. The standards for Reverse Parking Assistance Systems (RPAS), Advance Driver Assistance System (ADAS), Complete Bus ITS Systems etc. are under preparation at BIS under TED.28. The BIS committee, TED.28 is quite active and has able participation from the SIAM, ACMA, Academia, consultants, test agencies etc who have contributed tremendously towards this activity. As a matter of fact, the support from BIS has also been extraordinary and prompt. Overall it has been a great experience.

Now that AIS 140 is notified, what are the other initiatives which ICAT is taking in terms of standard formulation in automotive sector.

As indicated above, ICAT is actively involved in ITS standard formulation on several topics related to ITS which includes Reverse Parking Assistance Systems (RPAS), Advance Driver Assistance System (ADAS), Complete Bus ITS Systems, Tyre pressure

"

We should be able to finalize the scope of Indian Standard on ADAS by end of January'19.

monitoring system (TPMS) etc. We are interested in taking up some new topics for ITS standardization which are related to upcoming vehicle technologies like connected vehicles, shared mobility and autonomous vehicles, e-mobility etc. We also intend to work on intelligent traffic management system, expanding the scope of RFID standards for parking & logistics management application, remote health monitoring of vehicles, cyber security related to automotive, artificial intelligence etc.

### What will be the roadmap for ADAS standard and policy in India?

ADAS is an upcoming technology. We have agreed in-principle to formulate the standard on this topic at TED.28 committee of BIS. Since the subject may have a broader coverage in future, we have decided to have a modular approach in the upcoming IS standard so that the future updates can be accommodated in this standard without much hassle. We have requested the market leaders in these product lines to update the standard committee on the current developments and upcoming technologies related to ADAS. In addition to this we have made a detailed study of the standards that are being made or are in making at the international level. I think we should be able to finalize the scope of Indian Standard on ADAS by end of January'19. Subsequently we would create sun- panels to prepare drafts on each sub-topic of the standard. I am hopeful that we should be able to submit our final recommendations to BIS by October'19.

ICAT is also working closely with **NITI** Aayog for intelligent transport system in smart cities. Can you share some of the development in this regard?

The developments related to ITS at NITI Aayog are more towards national ITS policy formulation. It would be difficult for me to comment anything further on this question at this stage. ----



We customize our solution to fit your needs. We are your Software Engineering Company !





### **Constant improvements**

We iterate quickly with software updates happening every day.



6)

### Integration ready

Our software is built from the ground up to support integrations.

### Mobile-first approach

0

0

1 0.00

0

16:39

(

We believe the future of fleet management is mobile.

## ÅŶ

### **Responsive service**

We're passionate about helping our customers succeed.

GET IT ON

Google Play

Uffizio India Software Consultants Pvt Ltd.

- O2632 227102
   O2632
   O263
   O2632
   O263
   O263
   O263
   O263
   O263
   O263
   O26
   O26
- @ info@uffizio.in
- www.uffizio.in



# CV 2019

ADAS & Autonomous: When Safety Meets Autonomy

Smart & Shared: Vision for Road Transport

Vehicle Telematics: Creating New Business Experience

Securing Data Driven and Software Defined Mobility

### 4<sup>th</sup> International Conference & Exhibition

# CONNECTED VEHICLE 2019

6 - 7 March, Radisson Blu, Bengaluru

Organised by

TELEMATICS WIRE

Center Of Excellence - IoT

1200+ Delegates 60+ Speakers 15+ Sessions 75+ Exhibitors

### Sponsorship & Exhibition

Anuj Sinha +91 8744088838 anuj.sinha@telematicswire.net

### **Delegate Registration**

Poonam Mahajan +91 9560895016 mgr\_corpsales@telematicswire.net Speaker & Panel Slot

Yashi Mittal +91 9810340678 asst.editor2@telematicswire.net