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Autonomous Vehicles • Connected Vehicles • Cybersecurity • Safety • Infotainment

NavIC

AIS140 mandates its usage in public transport

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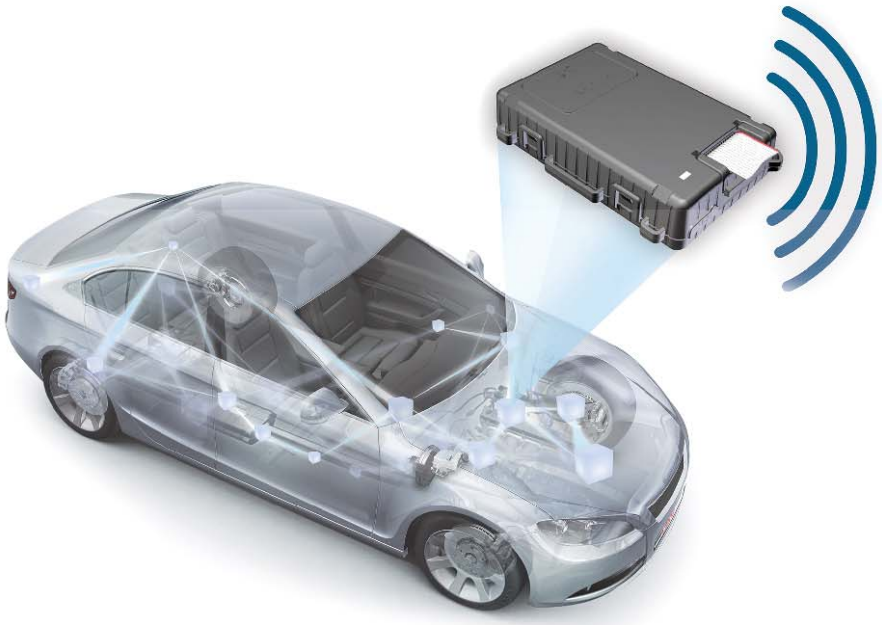

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Editorial

Maneesh Prasad
Editor

Standards and policies are important for regulated and structured growth of any industry, particularly when it has evolved and the ecosystem is on growth path. Vehicle tracking system for public transport can also be seen as a segment where there has been immense effort, and there are innumerable learnings from plethora of pilots and enterprise wide applications. Brining standards would ensure some homogeneity in products being used and interoperability of data from such devices. Policies which are drafted from time to time ensure that the interest of the country are upheld through intervention of dos and don'ts while introducing catalyst of growth. AIS Committee, which primarily deals with industry standards and is not into policy making, which their website also mentions- "…to review the safety in the design, construction, operation and maintenance of motor vehicles"

In view of the above and their recent AIS 140 which mandates usages of IRNSS based chip for tracking from 1st April for public transport vehicle in State Transport Corporations in India; makes one wonder about the transition of AIS Committee, from standards to policy making committee. Not that we or anyone is against the usage of IRNSS/NavIC, in fact we are all proud of it, just we need to be little patient with its implementation.

IRDAI, Insurance Regulatory & Development Authority of India, issued a discussion paper on use of telematics for insurance in August 2017. Insurance which is tariffed, regulated and already at low premium has little margin to offer as incentive for benefits accrued through telematics. It would be challenging and painfully slow process in getting the huge beast dance to a new tune. Yes, once we are into the connected vehicle era, when most of the vehicle coming out of factory are having some kind of embedded connectivity along with inbuilt telematics device, things would begin to move then. In our effort to provide a collective response to IRDAI on behalf of the industry, an industry round table was organised on 4th October where some senior industry leaders, based on their decades of market experience made some very insightful proposition. We will be sharing the round table outcome in our next issue, besides sharing the same with IRDAI and other stakeholders in various ministries.

Insurance and telematics pundits genuinely and rightly offer a long list of benefits associated with telematics for insurance which can help settle the claim without much scope for litigation. But, we have also seen in small towns and rural areas, implementation of regulatory norms has always been a challenge. Particularly if it is something which is perceived as monitoring and can affect their claim, it is bound to have negative acceptance in the absence of concerted awareness campaign.

Though insurance telematics is exciting and welcomed by many of us but it continues to remain obscure as to how it will get implemented.

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Insights from the vantage points in Telematics India 2017

The way the things are changing it is for sure that in some parts of Indian state, economy, technology and society have witnessed quantum change, almost qualifying as exponential. Digital India has emerged as the fast growing economy. Rate at which the digitization is taking place and the transformation being engendered is great. The perception towards technology is also changing and is not seen as a threat. The drive seems to be coming from IoT, a manifestation of networked intelligence and convergence of communication, computing and location technologies.

India lives in villages yet it has been a source of technical manpower to global IT hubs in most IT literate parts of the world. The slow adopters of technology such as the agricultural sector are waking up to the opportunity. Imagine in villages where computer literacy is no better than 8-10 percent, 46 lakhs farmers are selling their produce through eNAM. If IoT can ensure safe disposal of products, then combined by the digital India push, it will have a huge impact on the agricultural sector.

"It has been 26 years from 1991 when the first world wide web page was launched and we can see the impact it has had on our life in the form of Internet. But in IoT the change will be much faster. Quantum of change which has happened in 25 years we will see similar change in the next 5 years. It is being predicted that the asset tracking market is going to grow from 7 Billion USD to 22 Billion USD i.e. three times its present value. Similarly IoT will add 2.9 Trillion worth value in retail chain value system. The change is going to be humongous", said Dr Ajay Kumar, IAS, Additional Secretary, MeiTy while speaking at Telematics India 2017.

Quoting Jeremy Rifkin, an American economist and social theorist, Shri Sawhney opined that IoT has the potential to dramatically reduce the marginal costs for the society. It can reduce costs in communication, energy, transportation in a very impressive manner. He said the reduction in the prices of the key components of the economy also effects competitiveness in the world economy which also makes a compelling case for adopting IoT. We need to bring elements into our economy which help us to serve the unserved or underserved sections of the society.

Speaking at Telematics India 2017 in August at Pune Dr Ajay Kumar mentioned that "the government is working on 100 smart cities, which has opened plethora of opportunities for IoT startups. India has 3rd largest startup ecosystem and also since 2010, one billionaire is emerging in India every month, most from the startups. It is not unreasonable to expect the next billionaire coming out from some IoT based startup." He informed about a government initiative of National common mobility card which aims to encourage digital payments. He also shared with the audience a decision by ministry of road transport to make it mandatory for public transport vehicles to have location tracking service.

Sri R Chandrashekhar, President, NASSCOM

Sri Ajay Prakash Sawhney, IAS, Secretary, MeitY

Shri Ajay Prakash Sawhney, IAS, Secretary Ministry of Electronics and Information Technology addressing the audience at Telematics India said "It is generally expected from the different sectors to grow around the rate of growth of GDP. In physical world 10-12% rate of growth is considered a healthy growth rate. But, the virtual world or the digital world grows according to Moore's law which enables it to grow at an exponential rate. The IoT is a bridge that is helping the virtual world to leap out and come into the physical world, which would also mean that physical world would also grow at the exponential rate".

Dr. Ajay Kumar, IAS, Addl. Secretary, MeitY

For wider adoption and usage of NAVIC, India's own homegrown positioning system, government is encouraging industry to innovate and come up with cost effective chips and modules for the purpose. According to Dr Kumar that the Meity has set up an electronic development fund which has 22 daughter funds with 10900 crores to disburse and startups should take advantage of that. He said the government is setting up common facility centre in Pune that can be used by automotive electronics industry and startups for their benefit.

There are concerns around cyber security, data ownership and data security. The government to combat these issues, has set up a high level committee under retired Supreme Court Justice Shri BN Srikrishna. Dr Kumar warned that the power of the IoT can be misused by people with nefarious designs. Neglect of developing solutions to make our systems more cyber secure is bound to extract a heavy price. He said we need to create test infrastructure and government is in the process of developing testing capabilities for IoT based devices in its STQC labs. He said the private sector should also try to develop capabilities to test IoT devices in their labs.

Mr R Chnadrasekhar, IAS and former Secretary of MeiTY and President Nasscom, on the ocassion of Telematics India 2017, talked about the question he has to confront with, is about the future of the IT industry. "People keep speculating whether the future of the industry is bright or grim. But, we need to go deeper and look at what is happening. Today information technology along with communication technology has permeated almost every sector and automotive sector is the best example. What we see in form of driverless cars only symbolizes the change that is beginning. India has been trying to establish itself as a hub of manufacturing, post liberalization".

ICT industry too has matured over the years and every major company in the world has its presence in India. Today the line between the technology and domains getting blurred. We no longer see automotive company and Technology companies as two different entities. Now, the companies operating in certain domains like to describe themselves as technology companies. IT companies are also foraying into other sectors. At the same time we have seen rise n startups working on junction points and occupying space in between.

Shri Chnadrasekhar further added, "The world we are living in today is an exciting world. Interesting as well as challenging and as they say living in interesting times is not always a curse. The world is brimming with opportunities. India today has a strong automotive sector as well as has an enviable position in the IT sector. In the last 5 years Innovation has emerged as a key value proposition in India and we have today one of the fastest growing ecosystem. Question that lies before us can we create a new value proposition for the entrepreneur and automotive? Can we combine the strength in both these sectors to make something unbeatable. The confluence of all these circumstances apart from being a huge opportunity is also a challenge as we need to develop a new set of skills."

Electric vehicles are being seen as the game changer and in India too the things are shaping up. Quoting Tony Seba, the Secretary said, "EVs are being predicted to be the norm in US by 2030 and IC engines will make way for the electric cars. India has an advantage of having unsaturated market."

What we witnessed in smartphones that we have all kinds of sophisticated technology available to us at affordable prices; similar thing can happen in other sectors too and we may quickly migrate to advanced stages of technology skipping the present technology regimes. Therefore, being at the early stage of IoT has opened a large number of opportunity areas for India.

But it is important that the larger efforts be made and we should not stop at small incremental experiments. After EVs, it is perceived it will be autonomous vehicles which will follow, but we are bit hesitant to that.

Shri R Chandrasekhar (RC), President NASSCOM in discussion with Shri Ajay Prakash Sawhney (Secretary), Secretary MEITY. Shri Chandrasekhar raised some questions that were answered by Shri Ajay Prakash. Audience also participated in this discussion and asked some questions. Here are some of the excerpts of the discussion.

RC: What are the sectors that present the biggest opportunity for the application of IoT?

Secretary: Transportation and logistics sector has a long way to go. Significant part of this sector is unserved or underserved, a good use of technology will help in the spread of this sector. Agriculture is another area, a large population of the country is dependent upon agriculture technology can help bring viability to small holdings. Energy sector is also a sector which is the building block of the economy, there are very good possibilities there but we will need to prioritize the industries within the sector.

RC: What are the challenges that stand in our way of implementation of IoT technologies?

Secretary: Challenges start with awareness itself, people need to be aware of the potential this technology and changes it can bring. Buliding successful showcases and improving the visibility. Fundamental difference between IoT is that it is not IT alone or Hardware alone so the domains have to move in tandem. The sector will have to take the lead role themselves and government will pay a role of evangelist and support the industry. The pain points and opportunities need to be identified and then policies and R&D can be decided. When a new technology is taken up it must be seen as an opportunity rather than a threat. It should be seen as a source of potential revenue not as cost to the system.

RC: Industry is sometimes seen as being too cautious to spend on research and development. Government investments in research and development is basically limited to the government institutions which have not been able to percolate to the private sector in this direction, what role can CoE play here?

Secretary: There has been a lot of effort in research and development specially by some major institutions. The speed of translation of research and development to products and services is an opportunity to improve few things. We have ecosystems working at very different clock speeds like the startup ecosystem work at a certain clock speed here R&D issue is resolved but converting that into market product and service for a wide range of economy is a challenge. Here CoE has to play its role.

RC: How to speed up the adoption of new technologies?

Secretary: The foundation which is now in place was absent 5 years back. Now we have banking, financial inclusion, mobile, biometric system for identification. This creates the foundation on which many more systems can be built. Digital India is basically how we apply these Technologies which benefit different sectors.

RC: Quality, reliability and dependability are required for our industry to compete globally. Should we go for standards?

Secretary-When industry is at nascent stage standards come as part of technological changes, pioneers set up new standards. India has huge population which is underserved or unserved. There are large number of pain points as well. This combination makes India the best place to build products and services. If any product and service works in India they are likely to do well globally as well. Reaching success in this market is the acid test.

RC. IoT requires huge investment, how do you see preparedness of MSMEs to compete with global market. Also there needs to be policy support protecting domestic market and doing well globally.

Secretary: A large number of steps taken by the government like "Make in India" which aims at building an ecosystem conducive to different industries. There are certain tweaks made to ensure products made in India are given preference during purchase. Platforms like government e market are intended to help small entities and businesses having lower dimensions. For encouraging electronic manufacturing in India some policies were introduced that have fetched results that are most visible in manufacturing of mobile which has increased significantly. 82 new businesses have come not only in mobile but across electronic segment. Certain components that were not manufactured in India are now being manufactured here now. ▪▪■

Cybersecurity – A Gating Issue for Safety In A Connected and Automated Vehicle Future

Simon Hartley
Founder, RunSafe

Simon is an expert in cybersecurity, mobility and IoT, co-founder of Washington D.C. based cybersecurity startup RunSafe Security. He is a member of the SAE's IoT Cybersecurity Committee and a contributing author of their new book "Cybersecurity for Commercial Vehicles".

Introduction

Connected, partially and fully automated vehicles hold the potential to transform our lives, making real smart cities and ushering in undreamed-of efficiencies in the transport of people and goods by land and in the future sea, air and even space. Where things go wrong, however, potential harms are much greater than those of historical data breaches around mobile devices, laptops, desktops and the cloud.

Potential harms range from driver distraction, to Distributed Denial-of-Service (DDoS) and ransomware, to property damage and bodily injury, to death and debilitation of critical transport infrastructure. A counter argument to cybersecurity and privacy concerns is that the economic benefits of automation are so huge and the numbers of lives potentially saved so numerous that to focus on anything that might delay mass adoption is to strive for the perfect over the good."

Law and policy

US and international laws and policy governing connected and automated vehicles are decades old, focusing on physical safety and the avoidance of unfair and deceptive commercial practices. They predate the rise of the digital realm with its new risks of cyberattack and data privacy breaches.

Unlike older physical safety standards such as ISO 26262 and NHTSA regulations, newer cybersecurity and privacy legislation is still at the proposal stage. Initiatives include the U.S. Senate "SPY Car" proposal and the "IoT Cybersecurity Improvement" proposal that could cover at least the 200,000 vehicles of the U.S. government's own fleet. Others are embodied in voluntary guidelines and best practices from industry and government bodies including SAE's "Cybersecurity guidebook for cyber-physical vehicle Systems" , NHTSA's "Cybersecurity guidelines for vehicles" and FASTR's "Manifesto towards tomorrow's organically secure vehicle" .

Changing business models

With the rise of connectivity and automation, along with impending end-of-life of internal combustion engines, newer business models of logistics, ride sharing and subscription ownership are opening up and older businesses such as taxi services, car rentals, personal auto insurance, public transportation systems of all kinds, parking garages, gas stations and repair services are beginning to take note. Fears over the potential for mass displacement of human workers by the increasing use of Artificial Intelligence (AI) and Machine Learning (ML) have already been voiced by figures such as India's Transport Minister and oddly even by Tesla's own CEO.

Today's calculus

Fleet telematics, routing apps, insurance companies' driver behavior monitoring dongles, partial automation with Automated Driver Assist Systems (ADAS), Over-the-Air (OTA) software updates and early warning Vehicle to Everything (V2X) systems are already improving vehicle efficiency and safety. Moving up through SAE's driver automation levels has the potential to cut time, fuel and driver costs as well as accidents, which are almost all driven by human

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- **"US and international law and policy governing connected and automated vehicles are decades old, focusing on physical safety and the avoidance of unfair and deceptive commercial practices"**
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- **"While cybersecurity and privacy guidelines are today voluntary, they will become mandatory sooner rather than later if software engineering's 'beta as production' mindset undermines the more safety oriented mechanical engineering approach"**
- **"A counter argument to cybersecurity and privacy concerns is that the economic benefits of automation are so huge and the numbers of lives potentially saved so numerous that to focus on anything that might delay mass adoption is to strive for the perfect over the good."**

An eventful 24-months for products with 15-20 year lifetimes

- **July 2015 FCA - World's first vehicle cybersecurity recall**
- **March 2016 FBI - Motor vehicles increasingly vulnerable to remote exploits**
- **August 2016 FTC - What is your phone telling your rental car?**
- **March 2017 U.S. Senate - Spy Car Act proposal**
- **August 2017 U.S. Senate - IoT Cybersecurity Improvement Act proposal**

error. Economics will likely drive fleet adoption of automation much sooner than for consumers with operating costs driven largely by driver benefits and fuel usage.

It is the very connectedness of vehicles and decision making by software and sensors rather than by drivers that open the door for cyberattack that in turn has the potential to compromise safety. FCA's recall of 1.4 million US vehicles in 2015 following a successful demonstration of cyberattack was prompted by NHTSA's safety concerns since no mandatory US automotive cybersecurity or privacy legislation is yet in place. Justice Sotomayor in her concurrence to the 2012 Supreme Court case "US v. Jones" warned of auto privacy concerns. She noted that unauthorized access to vehicle GPS data alone could disclose "trips to the psychiatrist, the plastic surgeon, the abortion clinic, the AIDS treatment center, the strip club, the criminal defense attorney, the by-the-hour motel, the union meeting, the mosque, synagogue or church, the gay bar and on and on." Today's cars record far more than just GPS and driving data, including potentially all audio and video within and around the vehicle as well as pinging surrounding devices for identification and tagging.

An end-to-end issue

A modern vehicle has around 100 million lines of code running on 100+ Electronic Control Units (ECUs), ranging from simple 8-bit devices to the powerful 64-bit processors that support AI and ML applications that interpret data from a plethora of sensors. Intel estimates that a fully automated vehicle can generate up to 4TB of data per day. In cybersecurity, a defender must defend against all types of attack and an attacker need find only one weak point of entry. Delivering end-to-end cybersecurity means paying attention not just to point areas like a single ECU, network device or SaaS provider but across:

- Systems - from ECUs, to the CAN, J1939 or Ethernet buses, to gateways or collectors, to the cloud, along with the back-end systems supporting updating, analytics and diagnostics,
- Solution stacks – from hardware, to firmware, to hypervisor, container, OS, libraries and apps across all suppliers and versions,
- Product lifecycles – from design, to General Availability (GA), through multiple upgrades and updates, to End-of-Life (EOL) that can be 15 to 20 years,
- People and processes – no matter how great the hardware, software and cloud services designs are they may still be vulnerable to weak security practices around processes, rogue executives or employees and old-fashioned social engineering.

The challenge

There are many lenses through which to analyze and triage cybersecurity risk, its mitigation, avoidance, transference or even acceptance. These include NIST's Cybersecurity Framework (CsF) and various so-called "kill chain" methodologies. Under laying them all is the sheer breadth and complexity of existing systems, their many owners and the constraints of final deliverable costs, time lines and access to expertise. Leading companies need to be first to market or among the first in order to reach scale, attract and maintain media coverage, investment and employees with in-demand skills. These competing priorities can be detrimental to the efforts at compliance and cybersecurity. Attempting to add security by ripping out the past and replacing it with solutions created from the ground up are not generally practical. Much of what is presented as new itself relies on components that are decades old, themselves potentially hiding hidden flaws that escape even the most vigilant inspection tools and teams. Today's cutting edge new code can quickly become tomorrow's "spaghetti", when teams move on, once again hampering re-engineering based efforts. ▪▪■

Automation can be a big part of the answer. Many contractors, managed services providers and integrators over-emphasize staffing-based solutions. Humans are needed in analysis and high value tasks but are not the best placed to retrofit millions of lines of code for security unless delays, quality concerns or cost overruns are built into the Work Breakdown Structure (WBS) as clearly as Full Time Equivalent (FTE) personnel.

Creative use of automation is the key, for example in applying Runtime Application Self Protection (RASP) into existing hardware footprints, or adding AI-based Intrusion Prevent Systems (IPS) into networks.

Conclusions

The economic benefits of connectivity, automation and lives-saved are rightly the focus of vehicle OEMs and suppliers. While cybersecurity and privacy guidelines are today voluntary, they will become mandatory sooner rather than later if software engineering's 'beta as production' mindset undermines the more safety oriented mechanical engineering approach.

Preventable security incidents can potentially undermine public confidence and the scaling, investment and hiring projections that so many companies rely on. Cybersecurity is truly a gating issue. The following three areas are the most apt for improvement:

- Security by design and in needing a strong emphasis on external red teaming and penetration testing, if only to minimize the hubris that can come with decades of industry automotive experience married to just a veneer of cybersecurity expertise,
- Offering a lifetime of OTA software updates, avoiding unlimited vulnerability windows, and
- Raising supply chain transparency, with industry driven cybersecurity scorecards. ▪▪■

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Telematics is a paradigm shift for insurers and consumers alike

Q Can you share your views on Hughes offerings and services in automotive telematics space?

A HUGHES Systique Corporation (HSC), part of the HUGHES group of companies is a leading provider of Outsourced Product Development and Engineering R&D services in the Communications, Automotive, Multimedia and IoT domains. HSC has been offering product development services to Automotive OEM and Tier1/ Tier2 suppliers for quite some time now. We have vast experience in multiple Automotive grade product development which includes In-Vehicle Infotainment System, Connected Cloud solution & ADAS system. We have developed advanced Connected Car Cloud -solution accelerator for our customer in the form of a ready to use cloud system. Machine Learning modelling & inferencing with telematics data can be very easily performed on the Connected Cloud platform. HSC has been a part of NVIDIA Autonomous Driving software development program and have deep experience in Autonomous Vehicle software development.

Q Software seems to be increasingly dominating the automotive telematics space, comment.

A Yes that is true to a large extent. A vehicle and its hardware provides the base platform. But feature innovations are possible majorly through software. Upgradability is one of the key factors to consider for software. Earlier there was very limited scope of software upgrade on vehicles but now as connectivity has become an integral part of a vehicle's features, OTA's are possible that allows new features to be rolled out over the lifetime of the vehicle.

Q Automotive will be vulnerable to cyber attacks and intrusion in cloud services, how could the threat/loss be negated/minimized?

A As connectivity becomes integral part of vehicle, it will inevitably become vulnerable to cyber-attacks. There are multiple ways to handle this issue. Platform Virtualization is one of the key approaches where critical software related to vehicle control runs on a partition and user related application run on a different partition. There are other solutions being developed which use advance machine learning techniques for threat detection and prevention.

Q Where are we (India) in terms of development and adoption in the field of connected cars?

A India is a unique market that is highly competitive and very price sensitive. The concept of connected cars in an Indian context is still at a nascent stage. We need to make a good value proposition for end customer to enable adoption. Data driven services are going to play a major role in it. Intelligent analytics is to be done on various forms of data collected from the vehicle and new services need to be offered to end customer. UBI is a good example of next generation data driven services.

Q With so many autonomous vehicle open source software being released, what next is in store?

A Autonomous vehicle open source software works as the basic platform to the next set of feature innovations. These innovations will be crafted on the premise of providing safety and comfort to passengers in a cost-effective manner.

Q How do you visualize the connected car market in near future?

A Data analytics and knowledge generation will be the key to the connected car market. As the vehicle starts having built-in connectivity, there will be a huge amount of data that will be generated. Automotive Industry would require good infrastructure for processing, storage, encryption and enrichment of data generated by vehicle operations. The data needs to be categorized under several heads and intelligence built to use this data to provide actionable inputs. This is where the connected car industry market will start gaining traction and lead to wider adoption.

Vinod Sood
Managing Director
Hughes Systique Corporation (HSC)

He is a veteran of hi-tech software industry, during his career span of 30 years he has built high performance teams at premier R&D organizations in India. Vinod has an exceptional track record of building profitable and sustainable institutions from conceptualization to maturity. He is member of NASSCOM Engineering R&D and Northern Regional Councils. He is a member of Advisory Committee of the Institute of Informatics and Communications, University of Delhi. Vinod is involved in guiding and mentoring young entrepreneurs and startups and is on the Advisory Boards of some of these startups most notably OYO rooms. He is a TiE Charter member and is part of several CII, NASSCOM and TiE juries to identify emerging startups and innovative product companies. Vinod is alumnus of PEC Chandigarh from where he graduated with a Gold Medal.

Q Where do you see mobility in next couple of decades?

A Shared mobility is a trend that is getting increasingly popular and mobility as a service is also in the offing. More data driven and personalized services will be offered to the customer by the automobile companies. The automobile profits will likely migrate towards service providers. So, car manufacturers may not only stop at just selling the cars, but they will also evolve as mobility services provider in the years to come. ▪▪■

AIS 140 sets the cat amongst the telematics pigeons

Passenger safety has been on high priority for the government for many years, particularly over the last few years it came under arc-light due some unfortunate incidents. Vehicle tracking provides one such safety feature which can help the service provider track the vehicle movement with respect to its scheduled route and time, with some acceptable deviation. There are host of benefits which comes with some of the tracking device leading to improved driving habit and preventive maintenance etc.

Work on "Intelligent Transportation Systems (ITS) - Requirements for Public Transport Vehicle Operation", AIS 140, started quite couple of years ago under the chairmanship of Shri Rakesh Jain, Sr Vice President, DIMTS. The AIS140 committee had representations from government, industry, industry body and headed by quasi-government organisation. Last year they has placed the draft on public domain for inputs from the stakeholders and those associated with the implementation of ITS.

Perhaps not much was read by general telematics industry out of this. Later in May 2017, they issued a finalised draft of AIS 140 with the implementation date for certain aspects from 1st April 2018. Perhaps this too would not have cut much of ice with the industry, had it not been for the iron fist with which the government restricted the sale of Bharat Stage emission standard III vehicles from 1st April 2017.

The message was clear, if date is given for implementation it will be adhered with. Intelligent Transportation Systems (ITS) - Requirements for Public Transport Vehicle Operation (Draft AIS-140/DF1/May 2017) was published on the website of ARAI last month.

Certain sections of the industry reached out to Telematics Wire to have industry round table to collate the industry concerns related to AIS 140. Though, the ball had been set rolling for the publication of the standard, but for general benefit of industry and hoping that the AIS Committee will take up the recommendations in the subsequent amendment to the industry standard, this round table was organised on 4th of August in Noida.

Following are the observations from the industry round table on the finalised draft of AIS 140:

A Short note on GSMA eSIM from Sensorise

The GSMA eSIM is a significant value addition for the IoT / M2M Industry and necessary to ease Indian manufacturer's access to global markets and vital for the success of the Make in India initiative for the IoT / M2M industry. Leading global automotive companies, IT Companies, Mobile device makers and Telecom operators have adopted the GSMA eSIM. Giants such as Samsung, Apple and Asus have already made the eSIM a valuable offering in wearables and mobile devices. The eUICC based GSMA eSIM adds to security, flexibility and quality of service whilst reducing complexities of factory fitment and field service costs. IoT solutions are an eclectic and complex mix of devices, connectivity, cloud and portals. The industrial grade eSIM has already proved to be invaluable for dispersed connected devices enabling security, tamper resistance and industrial grade connectivity solutions for tracking of Public mobile and stationery assets as also Smart City / Smart Infra use cases.

The GSMA eSIM is available from all major manufacturers of SIM cards - Gemalto, G&D, Eastcompeace, Oberthur-Morpho to name a few. All these SIM card suppliers provide eSIM cards in India. The cost of the embedded Industrial form factor is easily recovered in reduced manufacturing and service cost, the benefits of QoS and choice are significant benefits on top. The GSMA eSIM is being used in the country, mostly within Machine-to-Machine (M2M) / IoT use cases [emergency voice service, SMS, data access secured by private APNs] and it will progressively be used in consumer use cases i.e. for use in mobile devices, wearables and consumer electronics. It is envisaged, that in time, an Indian user with an Aadhaar identity will be able to securely download a subscription from any TSP to the eSIM enabled connected personal devices, by simply completing the e-KYC using Aadhaar. This will reduce service costs dramatically, while bringing in the required choice and quality of service for the consumer.

The remote provisionable GSMA eSIM is a secure, standardized technology today, widely adopted globally, supported by all the major global operators. The Indian Industry [Automotive, Energy, Smart Cities, Health, IoT OEMs intending to innovate with hundreds of other remote asset management or mission critical use cases] must seek the benefit of the GSMA eSIM for themselves. The ask must be to make the eSIM a standard and mandatory offering in the country, so that the Indian industry can remain globally competitive, have the required flexibility and choice of connectivity provider, whilst benefitting from the reduction in manufacturing costs, field service costs and security / tampering threats.

Clause 3.1.1.1.a IRNSS is yet to be field proven and it would not be possible to design a device with full/acceptable performance. Neither chip providers nor module vendors have a product to offer in near future. Major GNSS chip suppliers are citing for availability of ES (engineering samples) by 2018 and CS (commercial samples) by 2019. Hence, telematics service providers will hardly be ready with commercially viable offering. (L5 frequency in IRNSS where most of the GNSS are in L1 frequency, will need major modification in IRNSS positioning chipset. Further, module simultaneously supporting L and S bands have their inherent design complexities (e.g., RF front end))	Request the AIS140 committee to consider making it mandatory only after 2019 or 20120 when the IRNSS echo-system is mature for adoption.
Clause 3.1.1.1.b GPS sensitivity is too high and it may make the GPS chips expensive. Acquisition sensitivity of (-) 146 dBm should be sufficient to achieve position accuracy of 2.5m CEP.	Request for relaxation on GPS cold start acquisition sensitivity (-) 140dBm and cold start tracking sensitivity (-) 162 dBm
Clause 3.1.1.2 Digital and Analog I/O electrical specs are not documented. Details of I/Os is needed. How many inputs and outputs are needed should be specified. For eg. 4 digital, does it mean 4 digital Inputs and 4 digital outputs? (Also, in todays context, rarely an analog output is required) In case of analog inputs the voltage range should also be specified and for output the maximum current driving power has to be defined.	Need detailed specification and operating specs for all the I/Os, suggested I/Os: Digital inputs -> 2 nos Digital outputs -> 2 nos Analog inputs -> 2 nos If specific purpose is mentioned, we can have better alternatives and better design
Function required for use in Public Transport City Buses: The GPS and GPRS modules in 'device' should support other equipment on the Bus and there should be no need to install another GPS and GPRS modules on the Bus. Intended Function of Ports should be identified.	Following Text to be added In case of use of such device on 'City Buses' 'Device will interface via RS232 to a) Receive from PIS Sign Controller 'Current Route' information and transmit it to the Control Center. b) Transmit to PIS Sign Controller, GPS location data (Minimum GPRMC sentence) @ 5secs or lower for GPS triggered voice announcement. c) Act as a 'Gateway' for '2-Way Communication' between Control Center and PIS Sign Controller.
Clause 3.1.1.3 1. The proposed solution needs to be technology neutral 2. GSM/GPRS is a candidate sun-set technology Note: This aspect reflects at several other places in the document	Device shall be capable of transmitting data to Backend Control Server (Government authorized server) via Wide Area (Mobile Cellular) Communications network (e.g., GSM/GPRS, UMTS/HSPA, LTE, etc.) as per Communication Protocol in Section 4
Clause 3.1.1.5 Addition of multiple IPs increases additional load on devices in technical terms, it also reduces time to respond, because devices can maintain active connection with only one IP at a time.	Instead of multiple IP, DNS support should be introduced. This way you can beam data to unlimited number of IPs
Clause 3.1.1.7 Batteries are vulnerable to explosions if not charged in a temperature controlled way.	Embedded temperature controlled charging could be considered. Also the materials in battery need to be defined to ensure longetivity, Li-Ion, Ni-Mh batteries should be avoided. Li-Polymer are relatively safe and have good life
Clause 3.1.1.13 Since unique IMEI is already available to identify device, this requirement is redundant.	There are several challenges with this clause, it should not be mandatory
Clause 3.1.1.14 It's not clear whether eSIM should be plastic or chip version. Further details of SIM tray to be provided or not should be clearly mentioned.	eSIM with either plastic/chip version

The upper threshold of 20mA as sleep mode is very high, this would severely affect vehicle battery, 20mA upper limit should be reduced to 5mA.	There should also be a definition of current consumption while device is in full operation, this should be 40mA-60mA for single transmission
Clause 3.1.1.18 It's not clear whether eSIM should be plastic or chip version. Further details of SIM tray to be provided or not should be clearly mentioned. eSIM with either plastic/chip version Nowadays the network coverage is quite high.	Hence, 7.5-10K memory logging should be enough
Clause 3.1.1.21 GPRS module is one of the most sensitive components of vehicle tracking device. So, its reliability is very important.	GPRS module should be made to comply to Mechanical Shock & Random Vibration tests as per IEC 60068-2.
Clause 3.1.1.20 Typo mistake. Device can't output data in NMEA format. Protocol is already provided which is not as per NMEA format	GPS module should support NMEA0183
Clause 3.1.1.21 Support multiple network OTA switching (on-demand/ automatic) capabilities, will make the solution costlier as the SIMs should have data plan from multiple operators Need to have solution which is technology neutral	Embedded SIM with only one operator shall also be acceptable. The Device GPRS communication module shall have…
1. Automotive mode operation procedure is a new for Indian industry. They are used to industry grade process and procedures 2. Embedded SIM goes into a specific method of SIM based operation. It is suggested to keep this technology neutral, so that it will be forward looking	Support Embedded SIM to cater to the automotive operational requirement such as vibration, temperature and humidity and provide long life span with at least 10 years life and more than 1 million read/write cycles
Automative standard of eSIM increases the cost significantly. TO consider Industrial grade Approximate Price are: Industrial eSIM: Rs 60-90 Automative eSIM: Rs 150+	Being an aftermarket fit, specs of Industrial grade will fit the requirement and request consider Industrial grade instead of Automative grade.
Clause 3.1.1.26 Accelerometer is good enough for identifying harsh acceleration, brake and turn. Gyroscope is used for tilt sensing.	Please remove Gyroscope requirement, rather for selecting accelerometer, 'g' values can be mentioned.
Clause 3.1.2.2 The requirement is not clear if the deactivation need to be on physical level at the Button or can be implemented on the server	Need a detailed Explanation of Emergency Button Operation. Its better if it can be documented as SOP(standard operation procedure)
Clause 3.1.2.5 As per the need to have solution which is technology neutral	In absence of cellular both GPRS and GSM networks and on pressing of Emergency Button, the system implementing VLT function shall store the emergency Alert (Alert ID 10 as mentioned in Sub-section 4.2.1 of Communication Protocol Section 4). Once the cellular network becomes GPRS or GSM is available, this alert information shall be sent on high priority to the configured IP addresses as per the communication protocol mentioned in Section 4 or as SMS message along with vehicle location data to configured control center number. The SMS shall consist of parameters as given in Sub-section 4.2.2.
Clause 6.3.2 All the tests are mentioned to be performed as per relevant IS standard.	It should be noted that IS standards are based on ISO/DIN/IEC, so in addition to IS, equivalent ISO/DIN/IEC numbers should also be mentioned or statement should include that equivalent international standards would be acceptable.

Clause 3.1.3.9 It's necessary to define these parameters, as the message size is a parameter to the design, and impacts choice of memory, compute, cache, etc. 1. Mobile number is an information that can be spoofed. Contents need to be tamper proof (e.g., IMEI) Note: If law-enforcement is an objective, it would be useful to reach out to respective entities	For enquiring regarding the parameters such as mobile number, GSM Network strength, vehicle number and other important parameters.
Clause 3.1.4 Device protocols are the soul of a hardware. It's the IP of any device manufacturer and one of the main criteria which differentiates between device manufacturers. The performance and reliability of device heavily depends on the protocol. Hence we request that the document should only mention about the parameters which are required by authorities. The logic and mechanism should be left to device manufacturers.	Its important to include that the protocol should have data safety, security, encryption mechanism. These mechanism should be internationally recognized one and not proprietary. For example SSL (Secure Socket Layer), TLS (Transport Layer Security)
Clause 5.3 SOS key tampering alert also needs to be provided, so specs for the same should be released separately for vehicle supplier	Vehicle supplier should incorporate SOS keys tampering provision and provide interface to VLT device
Clause 5.4 "One non-permanent power line connect to battery after ignition"	This clause is not clear and should to be elaborated
Clause 6.3.2 Pt #1 in Table 6c & Pt #10 in Table 6B Specification looks for device to work at +70 deg C for long hours (say 16hours) and +80 deg C for 1 min in On / OFF conditions for 5 mins	No standard chipset is having features with this high operating temperature, so request to look into this and consider 60deg C
Table 6D Function required for use in Public Transport City Buses:	Following row to be inserted below 'Vehicle Reg. No.' Route No / information from PIS Controller / say '462'
Clause 7.0-10 Security & Privacy of data should be maintained in accordance with applicable laws of Govt authorities.	GPRS module should support IPV6.
Clause 7, Opt Pt2 Point 1 in optional section, already allows for states to setup own BCC. Why is point 2 mentioned specifically with telecom providers	Remove specific mention of telecom, and retain only "service provider"
Annexure C Connector has a description of CAN interface but document doesn't specify any functionality or protocol. Document doesn't specify if CAN is mandatory or optional	Please document use cases for CAN or make it optional in document.

General Observations

- Analog input data in the normal data is not mentioned in protocol
- Alert ID field is not mentioned in the packet format.
- Packet header is provided 2 times in alert message format.
- Message Type spec is given as 2 bytes, but in the value 3 character is provided.
- Emergency alert packet is different in page 31 and page 14
- Cell ID information is test approval section is different and Main section is different.
- Minimum support for CANbus, OBD, K-line protocols should be defined in the document.
- Electrical wiring, harness of device should be minimum FLRY-B (automotive grade, fire resistant)▪▪■

Insurance Telematics in India

Insurance Regulatory and Development Authority of India (IRDAI), the insurance regulator in India had put up 'Discussion paper on Telematics and Motor insurance' on 4th of August 2017. The regulator has asked the insurers to send their views on implementing technology and revisiting the pricing methodology. The insurers have also been told to look at alternatives to conventional telematics devices like smartphones with mobile apps, dongles, black boxes, bluetooth etc.

Highlights of the discussion paper

At present, Motor Insurance in India is being priced based on parameters like the Make and Model of the Vehicle, its capacity, the geographical use etc. The customers who use their vehicles for lesser duration or lesser distances are prone to lesser risks and those who use their vehicles for longer durations and more distances are prone to more risks but both sets of customers today pay the same premium for a particular vehicle. Insurance premiums are being charged based on available information related to limited parameters only. If accurate information and more relevant data are available, premium can be worked out more scientifically, commensurate with the risks involved.

Telematics as a solution

'Telematics' can offer a solution to the above aspects. It can enable insurance companies to use technology not only to assess risks better and also offer more efficient claims services.

There are technologies, enabled through internet connectivity, that offer solutions ranging from embedded vehicle telematics systems to smart phone applications that can assist traditional business models and create new opportunities, which may initiate rethinking on how insurance companies can carry on business. It has been seen that new technologies can enable insurers to offer new and value-added services.

Usage of Telematics in insurance is known as 'Telematics Insurance'. Telematics Insurance is known by several other names—Black Box Insurance, GPS Car Insurance, Smart Box Insurance, Pay-as-you-Drive-Insurance, Usage Based Insurance (UBI) and so on. As can be seen, generally when it comes to insurance, Telematics has application in the Motor segment.

Telematics Insurance works by fitting a vehicle with a small device—commonly known as a 'black box' that records speed patterns and distance travelled as well as data about the type of road/s the driver is driving on and when (whether night or day or during the weekend etc.) and how long he has been driving. The technology can also monitor braking and cornering to build up a picture of the driver's driving style.

Generally, Telematics devices operate with accurate and reliable GPS technology and can capture data like– maximum/average speed travelled, acceleration, braking, cornering, latitude/longitude, elevation, distance travelled, number of journeys, journey time, road type, G-force (impact detection), idle time, number of other cars on the road, weather circumstances etc. Data can also be collected through use of smart phone and on-board diagnostic port. In UK and USA, implementation of Telematics commercially began back in the early 2000s. However, the introduction of smart phone technology combined with an easier and cheaper installation process has enabled as re-launch of Telematics Insurance in 2010 keeping in mind a particular target segment—the young drivers. At present, even in these countries, Telematics Insurance is a niche

market with a few specialised insurers and a few traditional insurance companies too plunging into it.

Insurers use data to calculate the cost of insurance and adjust premium accordingly, with each aspect having an effect on the price that a customer should pay. How the insurer prices is that normally, an up-front fee is charged, which includes the cost of the device and its installation, and then quote an annual premium which can decrease or increase, depending upon driving performance and other factors given above. In addition, the monitoring system is constantly in place during the policy-term. The policy term, driver skills and other factors are monitored constantly and the premium is readjusted/recalculated periodically.

Advantages of Telematics To Customers

- A careful driver who doesn't cover many miles and drives predominantly during off-peak hours could see a reduction in the premium.
- A customer will find the premium to be directly proportional to the performance and usage of his/her vehicles/s bringing in transparency and fairness.
- If one has a black box, it can act as a tracking device—if the vehicle is stolen, there is an increased possibility of its recovery by police.
- Features like e-call, helps provide emergency services through correct location of vehicles, in the event of a crash or other emergency repairs.
- Telematics also facilitates fleets to determine the most efficient routes, saving the costs related to personnel, fuel and maintenance.
- In a driver driven car, the concerns of the owner of the car will be addressed by Telematics by forming of a geofencing. The location of the vehicle is continuously tracked. If the vehicle goes beyond a defined boundary, the vehicle displays an alert on the car's dashboard screen and the designated contact receives an alert on mobile device or receiver system.
- Good driving habits can lead to longevity of the vehicle. Other services like speed alerts, engine and battery health alert, breakdown call, crash alert, emergency calls, other service alerts and notifications etc. can also be availed.
- The insurer can use cloud capabilities to notify drivers of available garages, based on the driver's destination.
- It can warn policyholders when they enter into areas where auto thefts are more common or accident occurrences are high.

Advantages of Telematics To Insurers

- Segmentation of customers by assessing risk based on new parameters through telematics device.
- Improved estimation of accident damages. The collected data can also help hasten claims handling process and reduce loss adjustment expenses.
- During accidents, Telematics can automatically send data to an insurance company immediately after the incident, providing the first notice of loss. By rapidly analyzing data from sensors on brakes, air bags, seat belts and other systems, the insurer can estimate the severity of the accident. The insurer can then initiate a series of appropriate actions, such as calling emergency personnel, contacting an automobile club or towing service, reserving and delivering a rental car to the scene or sending a replacement fleet vehicle in the case of a commercial operation, if the product permits it.
- Reduce fraudulent claims through analysis of driving data (such as hard braking, speed and time) during an accident.
- The data received and compiled can provide insurers with Next-Gen analytical insights through predictive analysis.

Advantages of Telematics To Society

- Telematics makes drivers aware of their driving habit and contributes towards helping them become better drivers.
- It encourages safer and more considerate driving which will ultimately lead to safer roads for all citizens and reduce traffic congestion and pollution.

Challenges posed by Telematics

The use of Telematics has its own challenges as well:

- A driver who is good may still have to pay more premium if he clocks up many miles of driving.
- When an insured switches from one company to another, there could be issues relating to portability of data—the newer company may refuse to take cognizance of previous data.
- There could also be issues surrounding privacy of data and what data can be shared and what cannot.
- Implementing Telematics would involve cost. The cost would need to be integrated into the pricing structure.

Alternatives to Telematics

Alternatives to Telematics are also coming up. Smart phones with certain mobile apps can actually replace a Telematics device. There is another alternative in the form of a 'Dongle' on the On Board Diagnostic (OBD) or car socket, which is an intermediate solution— between the Black Box and a mobile app. OBD devices are easy for the customer to fit and they can synchronize with the mobile app. Car owner can also see the vehicle and driving diagnostics data on his/her mobile screen.

Points where we may need to deliberate

- Cost involved in implementing Telematics and its impact on the pricing of the product.
- Collection and collation of data at individual (insured) level and matters relating to privacy, transfer of data, portability matters involving carry forward of credit for good driving habits etc.
- Need to revisit product structures currently existing, including the duration of products etc.
- Current regulatory framework around products and protection of policyholders interests.
- Use of alternative devices to Telematics.

Outcome of Panel Discussion on Insurance Telematics

Telematics India 2017, had a comprehensive discussion on the topic Insurance Telematics- (Hurdles, Lessons, Future). The discussion was Moderated by Sagar Apte, Founder, CarIQ. The participants of the discussion were: Vijay Kumar, Principal Officer, GoDigit Insurance; Puneet Sahni,AVP- Product Development, SBI General Insurance; Jatinder Singh,AVP UW, Kotak Mahindra General Insurance; Shaun Brashaw, Executive Technology, Altech Netstar. The panelists discussed on various issues related to the topic and The important points that came out during the discussion are as follows:

- The time for Vehicle Telematics has come. It is going to be a key differentiator for the products and services. One of the promising application is emerging in insurance telematics.
- Insurance telematics as a concept is not new, it has been tried and tested in many other countries, so the apprehensions regarding its implementation and regulation are not similar to that of connected cars or autonomous cars.
- Telematics Insurance has been successful in many regions like North Americas, Europe and others and hence there is a good chance that it will be successful in India too.
- In India, motor insurance is at a nascent stage and so is telematics, but both the sectors are coming up and if both of them are clubbed then it can be beneficial for both.
- There are challenges from regulators side, customers side as well as operation side. But with a base of 23 lakh motor vehicles' (excluding two wheelers) insurance every year which creates a huge potential.
- Insurance Telematics can be used to provide value added services like improving driver behaviour etc. Vehicle tracking devices can be used in cases of vehicle thefts and third party liabilities and quick disposal of claims without getting into litigation.
- Although the price of the insurance is de-trariffed but the structure is still tariffed. In India the average premium charged is 1-1.5% of the cost of vehicle, while in developed countries is 3-4%. So the insurance companies will find it difficult to absorb the cost of the device.
- Cooperation between car manufacturer and insurance companies can help in increasing the penetration of insurance telematics but idea is still at nascent stage, the time has not come where vehicles come pre fitted with telematics devices.
- UBI/ PAYD score based pricing to reduce the insurance cost for the customer is in the pipeline and some companies have launched such products.
- The RoI becomes visible only after 2-3 years and it needs to be taken into account. For insurance telematics to be successful it must be the win-win situation for both insurer and insured.
- Partnerships can be forged for adding "value added services".
- Privacy can be a challenge for insurance companies and should be taken care off, although today many companies are handling huge amount of customer data.

Smart Trails and Connected Cars

Piyush Rajan, Asst Editor, Telematics Wire spoke to Jitender Sandhu, M2M Director, ASEAN & India, Gemalto on future of connected devices, cybersecurity and more. Jitender is the Head of ASEAN and India for Gemalto's Machine-to-Machine (M2M) segment.

Jitender Sandhu
M2M Director, ASEAN and India,
Gemalto

Q It is being predicted that in future out of all the connected devices there will be a few number of mobile devices, rest all the devices will be connected through M2M or embedded SIM. Comment.

A Unlike the SIMs being used in mobile devices it will not be possible to change the operators that easily in case of embedded SIMs. Although there are some solutions being developed for operators but they have not reached the maturity level. The policy formation on the operator side is also missing.

Q As more and more devices get connected, the attack surface will increase and so will their vulnerability. How do we tackle this?

A With the increased usage of M2M communication data vulnerability and security threat both will increase. Even a very simple innocent looking data can have huge consequences if it goes into the wrong hands. Metering data for instance gives details of the usage pattern of the client which can be used in many ways. A lot of private and personal data may also be attached to simple data that can also be used in different ways.

Gemalto takes care of data security right from the client device level to the server level. Every data in and data out port Gemalto has security solutions for it.

Q Recently there was an article in American bankers association that in future the connected car industry will in a way swallow the banking industry. What are your views on that?

Banking industry and connected cars are two seperate industries now but as they

A will get aligned the number of transactions will increase many folds and this will be a challenge for us.

Right now things like online shopping etc are taking place which has changed the way transactions used to take place. But in connected cars where voice modulation etc will be used for user authentication it will be a challenge.

Securing the exchange of information and transactions is where the company like Gemalto will play an important role.

Q As things get more and more connected we will have new business models coming up. Would you like to mention some of these?

A As we will have connected cars, we will also have connected homes etc where we will have different devices connected to each other. There may be business models based on repair, maintenance of devices. The devices would be able to send information about their usage and schedule themselves for repair and maintenance automatically. In monitoring of new energy sources like solar energy etc we can have business models built around that. There is a need to have defined road map for technology longevity so that the companies can design their products keeping this in mind.

Q Connectivity is the prime requirement for the things like connected cars to be realized. In India still there are many parts of the country where we do not have connectivity. How to deal with this issue?

A There are many dark spots on the Indian Map. Even in the urban areas the issues like call drops are witnessed. For this the government should come up with a policy that puts a condition like connected data uptime should be 99.99%. Recently, TRAI had asked the operators to pay for the call drops which were not being accepted by them. The government should come up with the norms which sets high standards for service.

Q Technologically we are ready but the absence of regulations is a hurdle. Comment.

A Yes, the government is coming up with new telecom policy which might solve some of the important issues and will help in stabilizing things in the fragmented market. In other countries they have defined guidelines for the devices being used and power consumed by devices. In low band width connectivity, some times even when the service is denied the device keeps sending connectivity requests which put the load on the network. A clear guideline should be there.

Q What are your views on the ownership of data? who owns the data?

A Data being generated can be classified into Personal data and Vehicle data. The vehicle data can belong to OEMs and Personal data can belong to the user or the service provider depending upon the terms and conditions. There is some ambiguity regarding right to privacy eventually as things will get clarified.

Conference Report & Proceedings Telematics India 2017

In its seventh edition, Telematics India 2017 covered a wide range of topics in automotive telematics with over 48 speakers and 650+ delegates who joined this conference from over 22 states and 11 countries across the world. Industry CEOs round table lunch meeting with Shri Ajay Kumar Sawhney, IAS, Secretary MeitY and Shri R Chandrashekhar, President NASSCOM, achieved a substantial progress in aligning government vision and industry perspectives on transformative technologies in mobility and transportation space.

Welcoming the participants to Telematics India 2017 on behalf of CoE-IoT and Telematics Wire Sanjiv Malhotra, CEO, CoE-IoT mentioned that the unlikely sectors benefited greatly from the advancements in technology. He said CoE IoT is to promote innovation and startups and emphasized that collaborative way was the way forward.

Shri Ajay Prakash Sawhney, IAS, Secretary, MeitY, Chief Guest, opened his address by mentioning how the entire area of telematics and IoT is dear to his heart. He compared IoT to a bridge that is helping the virtual world to leap out and come into the physical world, which makes physical world to also grow at the exponential rates characteristic to digital world. Shri Prakash concluded his address with a message that it is important that the larger efforts be made and we should not stop at small incremental experiments. He urged the participants to make it big and help the country go big in this direction.

Dr. Ajay Kumar, IAS, Additional Secretary, MeitY in his inaugural address complimented the audience and expressed satisfaction that the perception towards technology is changing and is not seen as a threat. He briefed on opportunities being created by the government and exhorted industry to come forward and at the same time cautioned that the power of the IoT could be misused by people with nefarious designs. Solutions to make systems more cyber secure, test infrastructure and private sector capabilities will be significant for future.

Shri R Chandrasekhar, President NASSCOM talked about the future of the IT industry. Information technology along with communication technology has permeated almost every sector; and automotive sector is the best example. What we see in form of driverless cars only symbolizes the change that is beginning. Lines amongst the technologies and domains are getting blurred. We no longer see automotive company and Technology companies as two different entities, he brought out there and many other trends in his address.

Nick Gill, Chairman-Global Automotive Sector, Capgemini talked about two themes; can money be generated from telematics; and how to make money. He said unlike earlier, when industry was pushing telematics, we now see the customers are pulling it. Citing connected services he observed that Indian customers are very interested in sharing their data for getting

Dr. Neena Pahuja, Dr. Ajay Kumar, IAS, Shri R Chandrashekhar & Nick Gill launching Smart Automotive magazine

connectivity services, but unwilling to pay for it. Cybersecurity also remains a high influence on the customers while going for connectivity services pointing out that 33% of the customers see mobility services as alternative to owning a car while 63% see it as being complementary to buying a car. Coming to his second theme he said that automotive sector needs to accept that the connectivity has more financial benefit though presently use cases were less technology based and more of innovative business application based and gave examples of apps based use cases.

A Srinivas, Senior Vice President & Head - Product Development, Mahindra & Mahindra said that there is rapid development of technology. Bandwidth and affordability have increased, at the same time the cost of connectivity has come down drastically. There is an evolution of a new kind of lifestyle-a smart lifestyle along with rising stress, increased time on road leading to fatigue. These circumstances have given rise to a need of specific kind of products which can be developed by the convergence taking place between automotive and telecommunication Industry and mentioned some of Mahindra's products providing blend of in car services ranging from Remote Dashboard to Location & whether Services.

Markus Pfefferer, Managing Director-Asia Pacific, Ducker Worldwide talked about connected car which has a pivotal role in transforming mobility. There has been growing convergence among automotive, telecom and IT industries. The connected car will open new monetisation opportunities like location-based advertising, in car payments, usage based insurance, in car infotainment, car sharing etc. India has very less penetration in connected cars, only 2% connected vehicles in passenger cars and 1% in commercial vehicles have any kind of connectivity. India also faces challenges like absence of connected car ready infrastructure.

Dr. Neena Pahuja, DG, ERNET India, Department of Electronics & IT (Deity) in her leadership address talked about different opinions regarding autonomous cars arrival but termed it as inevitable. She said that some work is going on LiFi and we may see a form of vehicle to vehicle communication via LiFi. Autonomous technology can be hugely beneficial for disabled so steps must be taken in this direction. Regarding surface transport, if not totally driverless we can have systems that would be able to avoid accidents. IoT can even be applied in airlines or railwaysnto induce some kind of proactive control to avoid accidents

Randeep Singh Khokar, Head Electrical & Electronics, Tata Motors said connected cars

Industry round table meeting with Shri Ajay Prakash Sawhney, IAS and Shri R Chandrashekhar

are here and everything we know is going digital and we need to adapt to that yet the fact remains that connectivity is yet another challenge that needs to be addressed.

He said the next challenge is about addressing cyber threats and cyber security must be ensured at three levels. Device security – at the device level, which is at TCU/OBD dongle etc, Connection security at Mobile network level for secured data transfer and Cloud security – to take care of the data that's stored and also to secure the Algorithms from getting tampered.

Vivek Tyagi, Director-Business Development & Sales, SanDisk India talked about connected cars which will produce 72 zettabytes of data per year, having a value of USD$450 - $700B. He said every car by 2025 will generate 1TB of data per day. This data would need to be stored. The cars would require removable solutions for applications such as maps, dash cameras and embedded solutions for applications such as IVI, digital clusters, telematics, autonomous drive systems. His company provides solutions like iNAND e.MMC and SD cards. He also introduced some of the products of his company.

Bharath Bellur, Program Manager Connected Mines, Bosch Limited talked about trends of the vehicles in future- electrification, automation, connectivity and multimodality. He said by 2020 there will be 7 Billion connected people and 20 billion connected things. Connectivity is not only coming in general to vehicles but also in off road vehicles and machines. He talked about the connected mines and solutions Bosch offers in mines, like fleet management, production management, dispatch management and maintenance management.

Ankit Jain, Vice President - Ola Play, Ola Cabs talked about the ride hailing industry in India which he said is facing constraints in existing Infrastructure. The cars are designed for the drivers but Ola is trying to bring the control to the rear seat passengers by reinventing the back seat space through Ola Play as in future most of us will be passengers, he said. As the car is being seen as workspace in future, Ola is taking steps in this direction, including personalized experience and entertainment through Ola Play.

Farhana Haque, Vice President & Business Head - IoT, Vodafone opened her talk by bringing out the blurring of lines between different sectors and mentioned that we are now a Gigabit society in India and the way we do things is changing. It is a complex ecosystem where the companies with different backgrounds are partnering in different ways in this fast evolving ecosystem. The role of the telecom

Panel Discussion on Connected Vehicles & Future Mobility

Exhibition Area

companies will be like the blood and veins for the connected devices. The players in this ecosystem, she opined, will need to understand their respective core drivers, develop new innovative business models, and leverage the ecosystem.

Rittu Koshy, Director - Strategy and Operations, Deloitte talked about inception of tracking and geo-positioning, which followed the launch of Sputnik some six decades ago. The current market trends in vehicle monitoring are predictive maintenance; supply chain management and schedule alerts for repair centres. He said that it will transform into things like platooning. Driver and safety which presently include tracking hours of service, monitor safety habits, fuel usage reduction will give way to autonomous vehicles in future. The fleet management will evolve to fleet sharing. He also discussed how UPS through the application of telematics improved its operations.

Jeffry Jacob, Principal, Roland Berger talked about the trends and opportunities in Telematics industry in India. He said Globally, the vehicle telematics market is valued at US$ 39 Billion in 2016 and is dominated by telematics for commercial vehicles. It is expected to grow at CAGR 17% to US$ 103 Billion in 2022. In India, he said the commercial vehicle telematics market is valued at US$ 113 million in 2016 and expected to grow at CAGR 21% in 2017-22. The changing ecosystem will also lead to new alliances, roles and underlying principles.

Sanjeev Malhotra, CEO, CoE-IoT giving welcome address

Vinod Sood, Managing Director, Hughes Systique. According to him, the buzz around autonomous cars is there but we need to focus on making th e cars more capable and safe. The mass adoption of this technology is challenging and would need government support. Artificial Intelligence and Machine Learning should be used for improving road safety. He said that three focus areas A) using data available through OBD device and mobile phones. B) Using dash cams c) Using cameras outside the cars; can help in reducing the accidents. The data collected can be studied along with the help of machine learning and AI to give alerts, warnings etc to drivers and hence prevent the accidents.

Vic Sharma, Head of Business Operations (North America), TrustInSoft talked about importance of cyber security in connected cars, and informed about TrustInSoft Analyzer, which is an advanced static source code analyzer that performs comprehensive mathematical analyses of software to find and resolve source code flaws. He said it can detect all vulnerabilities and is the only software that can mathematically guarantee source code quality.

Ravi Jakhodia, CEO, Minda iConnect, sharing the statistics mentioned that India churns out 3.8 million passenger vehicles and 0.8 million commercial vehicles every year. We are more in need for connectedness than the developed world. Indians are also culturally sharing in nature and hence seamless sharing of cars is easier in India. According to him, three big changes to be observed in India are- i) OEMS have turned the focus towards connected services ii) GST will enable faster goods transportation requiring vehicle tracking Iii) AIS 140 an opportunity to standardise devices in use. He also highlighted possible security threats and remedies in implementing connected cars.

Srinath Manda, Associate Director-Automotive & Transportation, Markets and Markets talked about complex value chain of OEMs, Teir-1s, dealership system, service providers and they all are getting linked through telematics infrastructure. In couple of years telematics market will be 45 million from present 10 million. Automotive segment is a high opportunity segment but in India the present level of penetration of telematics is very low even lower than countries like Indonesia, he said. We also lack in proper infrastructure and connectivity, he remarked.

Vignesh Sridharan, CPO, Axestrack, Vignesh talked about how in India we have vehicle telematics markets which is being driven by the OEMs. Every segment needs data for its own purpose. He concluded by saying- Pre-fit Location modules in vehicles is the way forward, dual focus is essential to drive adoption – owner and user; Flexible Platform to cater to varying business cases of End Users.

G Chiranjeevi, Chief General Manager (O&D), Hindustan Petroleum giving a user segment perspective mentioned that his company has been using vehicle tracking systems since a long time. He mentioned advantages of using system like Dispatch Planning; Monitoring Driver Behaviour; Real time Tracking; Transportation cost optimization; Transporter Discipline.

Panel Discussion on Connected Vehicles & Future Mobility was Moderated by Markus Pfefferer, Managing Director-Asia Pacific, Ducker Worldwide. Panelist in the discussion included Mandeepsingh Khangura, Director, Pointer India; Ankit Jain, Vice President - Ola Play, Ola Cabs; Ankit Taparia, AVP Sales, Globetouch; Mohan BV, Chief Expert of Telematics, Robert Bosch; Ranjit Abhyankar, Senior Technical Manager, Delphi India; Kapil Chawla, Industry Leader - Digital Transformation, Cisco Systems. Some of the key points which were brought up during the discussion included affordable services, Monetisation in new business models, 5G connectivity road map, policy decisions to deal with issues like privacy, data security etc. It became evident in discussion that smart infrastructure, disruptive business models, retrofitted connectivity solutions will play a very important role. Companies are making cultural shifts, roles are getting

changed, product testing life cycle to give way to virtual simulations.

Panel Discussion: ADAS & Autonomous Vehicles Moderator: Roland Haas, Founder & CEO, QSO Technologies; Pankaj Rabha, Platform Solutions Architect, Advanced Car Labs, Intel Corporation; Mohan Desu, Vice President – Design & Mechatronics, Satyam-Venture; Mitali Mishra, CTO, EC. MOBILITY.

Key points which were brought up during the discussion are: (1) Lines are blurring between domains, we are witnessing rise of mechatronics, (2) Paradigm shifts, cultural shifts are being observed and new business models propping up, (3) OEMs are working with startups, represents the cultural change, (4) Human drivers will be a challenge for the autonomous car in early stages, Level 2, level 3 automation looks more possible, (5) Autonomous cars will change everything, even for monitoring we would not need police but an autonomous car with cameras, (6) A rating system can be introduced in the car that can help in introducing automated driving and their regulation too, (7) Advanced technology is resulting in deskilling or upskilling-there was no unanimous opinion, (8) The panelists also could not come on one point whether connectivity and automated driving co existing or can exist independently too.

Panel Discussion: Commercial Fleet Telematics Moderator: Rittu Koshy, Director - Strategy and Operations, Deloitte; Manish Kumar, Senior Vice President (HoD-IT), DIMTS; Kiran A. R., Technical Director, iTriangle; Sudhir G, CEO, GoodsMover.

Key points which were brought up during the discussion are: (1) Certain impetus from the government like GST seems to be working as there is a need for track and trace as trucks will be covering longer distances, (2) Some changes taking place in India that took a long time even in developed countries. Regulations from the government are required to be introduced in this sector to things get standardized, (3) Urbanization has created the need for new routes, therefore route optimization and thus requiring a lot of data, (4) In future we are looking at integration of different modes of transport, (5) Driver no longer seen as deterrent, now driver relay systems have started being used. Trucks with cabins, comfort to driver is being thought of & (6) The industry is getting mature, there is more awareness and people are demanding more such kind of services.

Mahindra displaying its vehicle with telematics feature

Panel Discussion: Connected Services to Connected World Moderator: Maneesh Prasad, Editor & CEO, Telematics Wire.


Randeep Singh Khokar giving leadership address

Panelists: Vishwa Kiran, CEO, CarbookPlus; Gary José Chandy, Business Head (OE-Connected Vehicles), Minda iConnect; Subramanian Thiagarajan, Senior Manager, Renault Nissan; Vaibhav Kumar Singh, Business Consultant, Volvo.

Key points which were brought up during the discussion are: (1) Challenges and opportunities both are there in plenty in connected vehicle market in India, (2) Best practices from Europe which have been successful there can be brought to Indian markets, (3) Value proposition of data is different for different OEM, Teir1, Service provider etc., (4) Data security must be ensured and analytics must be applied according to the user of the data, (5) The focus needs to be on how the services can be utilized by the customer so he/she will be willing to pay for it. The services should be quantified, so the customer can see the monetary benefit, (6) Vehicle tracking, geo fencing, vehicle health monitoring are some of the basic features which are being introduced in cars in India.

Panel Discussion: Telematics Solutions – Moving Up the Value Chain, Srinath Manda, Associate Director-Automotive & Transportation, MarketsandMarkets as moderator of the session. Panelists in the session included Olumide Solarin, CEO, Best School of Motoring (Nigeria), Sharmila H. Amin, Managing Director -South Asia India, Bertling Logistics, Mohit


Vivek Tyagi, Scandisk India giving leadership address

Mehrotra, Managing Director, Omnicomm India, Anand Xavier, Product Management, Global Vehicle Solutions, UBER. Raghav Himatsingka, Founder, Truckola.

Key points which were brought up during the discussion include (1) Clients' readiness to invest in telematics, as they can now see the positive role it plays in increasing the efficiency, (2) The telematics needs to move up from basic track and trace to higher technology applications; only then the penetration is going to increase, (3) One of the impediments for mass adoption of telematics is low awareness and lack of education of truck owners to understand the benefit of telematics insurance models over traditional insurance.

Small number of truck owners do not have profit enough to invest in telematics. Incentivizing better driving behaviors can help in improving driving. The owner driver model is reversing as per the trends and both owner and driver stand to benefit from the cumulative socio economic and operational benefits accruing through telematics technologies.

Panel Discussion: Insurance Telematics (Hurdles, Lessons, Future) was moderated by Sagar Apte, Founder, CarIQ. Panelist included Vijay Kumar, Principal Officer, GoDigit Insurance Puneet Sahni, AVP - Product Development, SBI General Insurance, Jatinder Singh, AVP UW, Kotak Mahindra General Insurance Shaun Brashaw, Executive Technology, Altech Netstar.

Key points brought out during the discussion include the facts such as, Telematics enables insurance companies to offer benefits to the disciplined drivers, lack of regulations, difficulties in operational and revenue side. Insurance telematics business potential is estimated at 6-7 k Crore with Telematics going to be the key differentiator in terms of service and product, few years down the line but existing low cost of insurance in India poses a challenge to accommodate the cost of the device. Data security is an issue and will remain a major challenge besides the fact that RoI for consumers becomes visible only after 2-3 years. ▪▪■

Smart Fleet Management

Atul Kumar
Team Lead, MarketsandMarkets

Atul Kumar has 5+ years' experience in Primary & Secondary Market Research, Business Analysis, Market Trend Mapping & Forecast, and Competitive Intelligence etc. Presently he is associated with MarketsandMarkets as Sr. Research Analyst for Automobile & Transportation research practice.

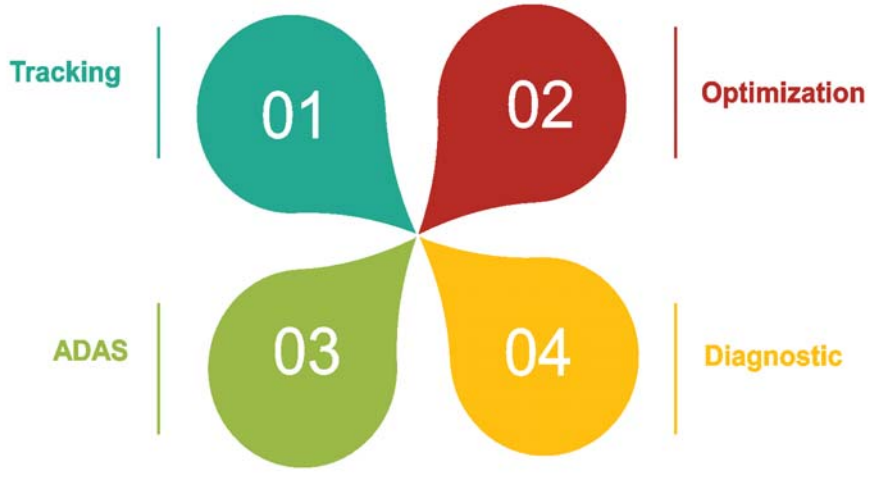
Fleet management is gaining momentum in the industry as fleet operators require real-time tracking, driver management, scheduling of maintenance, servicing of vehicles, vehicle health optimization, and others. These features have helped fleet operators to track lost or stolen cargo and effectively address issues related to it. Also, there have been advancements in over-the-air (OTA) security.

With the increased use of internet and recent developments in connectivity, there has been an increased demand for fleet management to ensure vehicle safety and cut down the idle time. The fleet management solution providers offer an integration of in-vehicle devices with multiple software and services to reduce the turnaround time and increase overall profitability for the operator. The fleet management works on the principle of "Being Connected." The short range connectivity technology is used to share information regarding traffic jams, position, and best possible route and helps in avoiding collisions. There is increased demand for developing systems that will contribute toward reduction of traffic fatalities, help save fuel, and increase efficiency. The market for connectivity technologies is on the rise, and regulatory bodies in Europe and North America are planning to mandate some of these technologies. For example, in Europe, eCall has been mandated for all the new vehicles in the near future. Smart fleet management solutions are used across various modes of transportation ranging from commercial vehicles, vessel maintenance, tracking of railcars, and others. The fleet management technology enhances transparency and enables real-time visibility of fleet movement, fuel management, vehicle maintenance, diagnostics, driver management, and real-time monitoring. Further, it enhances the safety of vehicles and offers cloud storage facilities and data analytics, which would collectively contribute to the growth of the market. Real-time monitoring is estimated to have the highest growth potential in the global fleet management market. It is projected to grow at a promising CAGR from 2017 to 2022. This growth can be attributed to the proven benefits of the system in transport safety.

Fleet Management - Major Components

The smart fleet management market can be segmented into Global Positioning System (GPS), geo-fencing, fuel sensors, advanced driver assistance systems (ADAS), and remote diagnostics.

The market has a promising growth potential for several reasons, including the increasing demand for safety and security in container management and railways. In the automotive sector, fleet management helps to minimize the risks associated with labor, equipment, and vehicle maintenance cost.



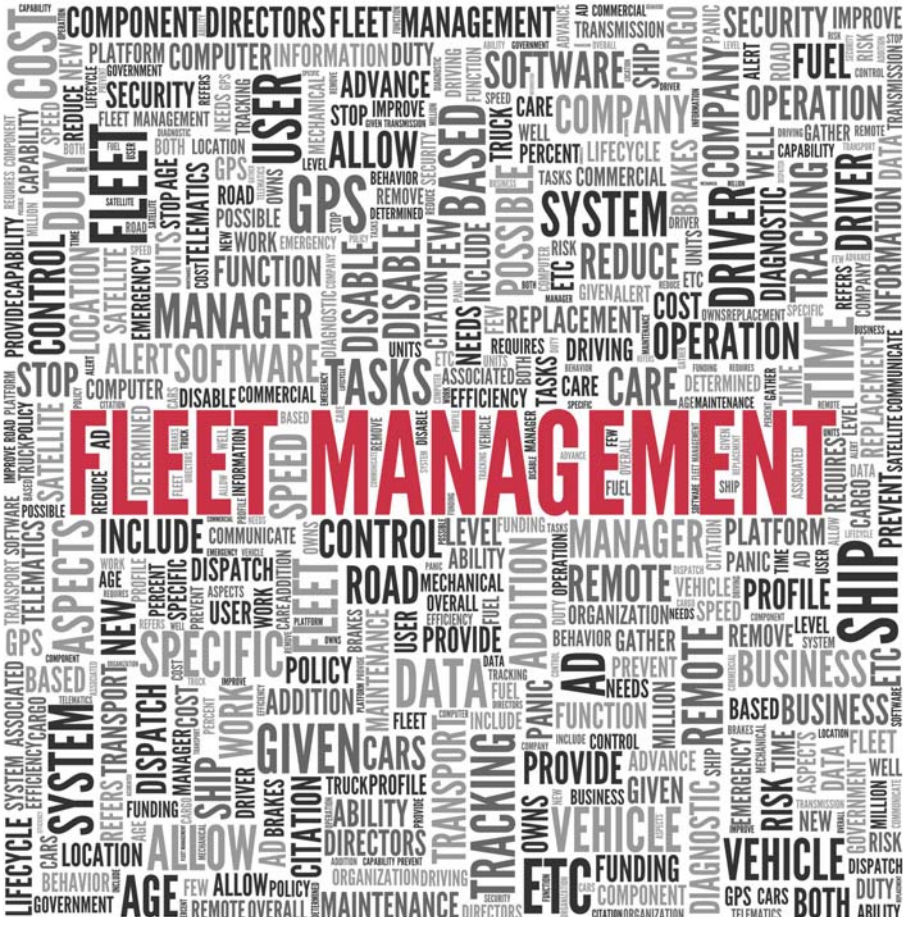
Growing demand for Smart Fleet Management

Developing countries are focused on improving transportation safety and are coming up with stringent safety laws related to connectivity of fleet with the emergency service providers. Mandates such as e-call services have helped the fleet owners in getting alerts in case of emergency.

Fleet operators and logistics companies can capitalize on fleet management technology as it is expected to be one of the main drivers of profitability in the near future. In Europe, the government has made it mandatory to have a lane departure warning system in all trucks by 2018. Likewise, vessel containers must be equipped with tracking system and fuel monitoring systems by 2020. The smart fleet management market is further driven by the legislations about transport safety, advancement in technology, and increased demand for large ships and vessel containers across the globe.

Increasing demand for cloud services for Smart Fleet Management Market

With increasing demand for connectivity and fleet management, smart devices and applications have become the go-to tools for fleet operators. Some of the key issues addressed by cloud management solutions for cloud deployment model include tracking assets, driver monitoring, fleet optimization, and others. Cloud enables the backup and recovery of data and applications on a secondary storage or infrastructure. Organizations are deploying different cloud models to overcome the loopholes of traditional fleet management solutions. Moreover, low maintenance requirements and cost effectiveness of the solutions are some of the other benefits driving the growth of the cloud market. Real-time monitoring, geofencing, advanced driver assistance systems (ADAS), and diagnostic features are incorporated in railways, marine transport, and automotive due to the increase in demand for fleet safety and security in transportation of goods and passengers.



According to experts, fleet management is expected to grow rapidly in the developing nations. Due to regulatory mandates, Asia-Pacific has seen a strong adoption of fleet management solutions such as the installation of Global Positioning System (GPS) in commercial vehicles.

Rising trend of Smart Fleet Management

Artificial Intelligence (AI) influences the fleet operation and management. The trucks with moving lifts and mechanical components function effectively on the move, especially in the maritime industry. Platooning uses the automation technology to allow trucks to travel in connected convoys. Another form of AI is used in the trailers and large trucks; a device is mounted behind the rear view. This device acts as the computerized command center, which captures a 360-degree video of the surroundings. The device uses custom built AI to determine unsafe actions such as tailgating and accidents on the road and alerts the fleet operator in real-time for urgent events. These types of AI devices have opportunities in the railway as well as the maritime industry.

Major Players - Smart Fleet Management Market

Some of the major players in the smart fleet management market are Cisco Systems, Inc. (U.S.), Verizon Communications, Inc. (U.S.), Robert Bosch (Germany), IBM Corporation (U.S.), and Precious Shipping Public Company Limited (U.S.). These players have adopted various business strategies such as new product development, expansion, and partnership to increase their share in the smart fleet management market. ▪▪■

The Birth of "Otto"

Jerry Maldonado

He is Consultant of Cloud, DevOps, IOT, IT Operations and Business Strategy. He has 30 years of hands-on and management experience in the technology industry, and has architected and deployed some of the largest IT Systems in the world. Jerry is a syndicated blogger with articles posted on several technology sites such as ca communities, linked pulse, blogs.ca.com and others. He degrees in Electromechanical Engineering and Computer Science and has numerous certifications with IBM, Microsoft, Computer Associates, Veritas, Legato, and others.

Connected cars are today's reality. No longer is the automobile an isolated part of the ever-increasing internet universe, the car is becoming a center for information and automation. The connected car is slowly evolving to become a major compute platform, an IOT device on wheels, a mobile datacenter, a virgin field of dreams for Tech companies larger and small.

Today's connected cars are more a combination of science fiction and artwork masterfully blended to form the new rise of today's techno beast. Instead of talking about compression ratios and spark advancement, auto shop geeks are talking chip setting, software mods,self-driving add on, advanced diagnostic sensors, sensors that allow the car to see, automatic wipers and foot activated trunk openers. Connected cars of today are selected by consumers not for horsepower or engine size, consumers of today are looking for economic super beasts that can squeeze every mile out of a gallon of gas or every volt out of a charged battery.

Technology is the new word in the car industry. Just yesterday car enthusiast would focus on the rebuilding of engines and transmissions for cruising down the boulevard. Don't get me wrong the cruise strips and fun drives are still on, but the players have changed. Sure, you have the Fords and Chevy's of the world, but gone are the Pontiacs and Chryslers of the world. New players like google, tesla, intel and a slew of other high-tech companies are jumping into the world of the smart automobile.

Every day new ideas and features / functions are introduced in the automobile market. Of these ideas and / or technological improvements many are in the area of speech recognition. With the increased need for motorist to stay focused on the road, voice recognition systems are in big demand. Even with the move to self-driving connected cars, voice recognition will be the primary system for commanding and controlling these cars of the near future. Similarly, natural language voice response will be the norm of the day. Just look at the advances in technologies like Siri, Alexa, Cortina and other speech systems. These systems will pave the way for the birth of "OTTO" you're on board guide to the connected car. "OTTO" would be the human car interface , the communication path towards advanced functions, the companion along for the ride , the keeper of the connected car basically the eyes and ears of you new mode of transportation.

It won't be long till connected cars of the very near future will be able to merge voice pattern recognition with self-driving capabilities, high end Global Positioning System and traffic navigation systems, Online databases and search engine to make drive time more productive and safe. These cars of the future will allow users to simply climb into the vehicle and verbally command the car to take them to destinations, occupants can engage in entertainment and be connected at all times to the rest of the world. Cars will be able to call for roadside assistance before comes to a safe stop on the side of the road. Soon 911 operators will be contacted by the car, sending information about the accident and the vital condition of its passengers (this is something that is currently available with packages like OnStar).

There is precedence in the concept of a Connected Car being coupled with automation to provide advances can be seen in some of today's newest car platforms. These new functions are combining features such as distance sensors, actuators, and radar to allow cars to park themselves. They are leveraging first generation systems that allow for control of climate, radio functions, basic global positioning system functions, and phone operations into the automated machines of tomorrow. All this plus automation to allow cars to park themselves, stop themselves in an emergency, add additional safety for motorist suffering from road fatigue. Even little things like being able to send operational reports to your email account, so you can review and figure out what might be a good time to schedule maintenance.

We are seeing an ever-increasing usage of voice control starting to pop up in the futures list of car manufactures as well as fleet management systems. Fleet management software companies are looking at ways to couple voice commands into their advanced systems to improve driver safety and increase operational efficiencies. Why? Voice commands would allow for better communication between driver and central office. Voice systems would decrease road side failures and increase response times. Voice would make it more natural for the drivers and central office to collaborate. Voice commands are easier to create multi step automated tasks. Via voice systems it will be easier and safe for a driver to ask the car for a status than looking at the gauges or look down at the GPS or route schedule.

Voice control or better yet two-way voice communication would aid in the adoption of the self-driving cars. Passive systems such as braking and lane detection doesn't seem to bother present day drivers simply because they just happen to only trigger an alarm, but the self-driving car is something totally different. It will be a generation before consumers are comfortable not being in control of the vehicle, just look at how many users take advantage of the self-parking feature prevalent in many brands of automobiles. Now add voice to that system such as "Otto please park the car" in which Otto replies "I can do that please pull forward of the spot so I can scan it. ok I am ready please release the wheel and let me know when to proceed" "ok Otto proceed to park" this interaction would be more natural and comforting allowing for far greater adoption of the technology.

In future connected self-driving vehicles coupled with voice and automated systems would allow for a more comfortable interface between the car and the driver. The blending of the technologies with the realization of such advancements is something most humans are already familiar with. Have you seen some of the latest block buster hits with cars of the future that self-drive and have at their core voice controlled systems? This will be the break through and adoption accelerator for the self-driving car. With a voice system, the driver will feel more at ease with allowing the automobile to take control of driving functions.

What would a typical day be in such a vehicle. it could start like this "Otto please take me to the office "might be the new way to start a vehicle. The car would respond with an affirmation of the command and the obligatory "please fasten your seat belt "maybe more personalized version of the system will ask for climate control settings and remind the passenger of safety protocols during movement. As the engine whirs to life, Global Positioning routing is performed to review the route. Communication with the outside world to check on traffic and weather conditions allows for fine tuning the route. Calculations of the most fuel-efficient route further refines the route. All this can be accomplished in the time it takes to buckle your seat belt. Now as your trip begins, continual updating of traffic information is fed into the onboard system. These updates are calculated and OTTO informs you of the ETA to your destination. While you are relaxing listening to your favorite music,news, or broadcast your vehicle is performing self-diagnostics on its operations. Tire pressure, oil pressure, temp sensors, wear sensors, and other sensors check the cars full operation and reports are stored.

> "Vocal Control and response will be the bridge between high end telematics, self driving and connected cars. This technology will be the break through and adoption accelerator for the self-driving car. With a voice system, the driver will feel more at ease with allowing the automobile to take control of driving functions"

Let's say you are running low on fuel on this trip to the office, Otto can chime in and ask "low fuel detected would you like to fuel during this trip?". You reply "Yes Otto cheapest unleaded 87 octanes". Computer software now reaches out to the internet to review gas prices on the current route, then reviews gas prices with a 5-mile deviation of current route taking into account traffic patterns. Then within seconds Otto reports on three gas stations with the lowest prices and potential time to each. "Which station would you like?", "Otto does any of them serve fresh coffee?"

Thru the process of natural conversation, the driver and the automobile become a more efficient and safe combo. Natural conversation coupled with advanced automation, a connected car, and self-drive capabilities are the future of the automobile industry and it would seem to be a software industry. My only con cern is when the cars start thinking for themselves.

MERGING TWO KEY TRENDS IN PERSONAL TRANSPORTATION IN INDIA

"Transportation as a service" and "user based insurance"

Bibhuti Kar
CISCO

Bibhuti Kar has expertise on data centers, cloud and cyber security technologies. He is an author, speaker and blogger on topics spanning technology, government policies, management and leadership.

Have you ever wondered, when your driver took your car to pick up your children from school and something unfortunate happens, what will be covered by your vehicle insurance?

When you rest a car from a self-driving car rental company for your next vacation, are you able to get a better rate for the rental insurance because of your impeccable driving etiquettes?

Why cannot you move your No Claim Bonus from your old car to a new car when you upgrade?

Are you considered a "third party" while taking an app based taxi ride to work, from insurance perspective?

You have hired a driver or called in someone from a service provider temporarily. What is your legal liability towards your paid driver?

Are you aware, if your car is not self-driven you need to buy a cover for your driver, under the Workmen Compensation Act. The size and premium for this cover are both fixed.

Now, let's look at the components of personal transport in its many forms that can individually be insured. And segregate them with the variances or risk that decides the premium.

When one purchases a personal vehicle, the vehicle is bought in owner's name. Whether the owner is also a driver or not, is not checked. The registration is in the name of the owner. The vehicle is insured based on the make and price and linked to the registration number. Although a list of demographic details of the owner is acquired by the insurance company, such as age, marital status, usage etc. those are not factored scientifically in to the risk assessment.

On top of that, many elements are added on to the base package. Such as third party insurance (which is mandatory now), while third party is defined as some one outside of the vehicle. This specifically excludes the driver and the co-passengers. There are other add on elements like 24x7 road side assistance, which is a flat charge, not linked to the condition of the vehicle or past record of failures.

The only element that plays a role in discounting the premium of a car today in India, is NCB or No Claim Bonus. But even that is attached to the registration number, not to the driver who was at the wheel when the accident happened.

It also does not reflect, if the accident was because of a fault of another driver. All it tracks today is whether the owner of the vehicle claimed any insurance for any covered damage to the car.

The urban personal transport in India is mostly self-driven and personally hired driver driven vehicles. However, it is changing rapidly.

Most metropolitan owner-drivers are calling in an app based "Driver by hour" in the evening hours way back from office, if they had to take a couple of drinks in a business social. Car-pooling, shared transport is increasingly common place. Self-driven rental cars are gaining momentum in India.

It is just a matter of time before companies provide self-driven, app based city transport in line of Zipcar, USA are available in India as buying and owning a personal vehicle becomes more and more expensive, cumbersome and most importantly unnecessary.

There is a clear trend towards "Transport as a Service" and congested cities and crumbling infrastructures of India would need to make this transition sooner than later. The millennials are increasingly looking to free themselves from the hassles of owning a vehicle.

So the fundamental way to address all the changes in the transport trend, we need to separate the insurable components of

personal transport. The vehicle and the driver of the vehicle and connect them using technology.

Logging-In to your vehicle as a driver

The missing piece to make Usage Based Insurance (UBI) a possibility for the era of "transport as a service", is the ability to Log-In to the vehicle when a driver takes the driving seat. The same way one logs in to his computer.

When a driver A, drives a vehicle X, the telematics related to driver behavior (sudden breaks and accelerations, speed in different zones etc.) can be linked to the national records of driver 'A' using the Adhaar based platform. Based on analytics and usage driver 'A' can be charged the premium whenever he drives a car, be it rental or self-owned or owned by someone else that authorizes him to drive this vehicle. The premium can be purely based on the time he is driving the car and not an annual contract.

Similarly, each car builds-up an history through its telemetry, accidents, service record, usage pattern, etc. that accurately describes the risk of insuring just the vehicle.

The technology needed to enable login to a car is fairly inexpensive today. Tying that information to vehicle telemetry and exporting them to a multi-tenant storage would provide true User Based Insurance for all kinds of transportation model.

A small step for a brighter future

The Motor Vehicle Act 1988 is a 30-year-old instrument which had not kept pace with the change of dynamics of road transport & information technology. However, recently the Indian cabinet has approved the Motor Vehicle (Amendment) Bill 2016. Apart from 16 key amendments that brings in e-governance and stricter stance towards traffic violations, it also brings in a key requirement that provides for linking of driving license and vehicle registration with Adhaar-based platform. The original intent being better governance and speed of execution such as online issuance of learner's license, or avoidance to duplicate driving license issuance etc. However, intentionally or unintentionally this change helps build a unique platform to radically change the way personal transportation is changing in this country.

In that sense the Motor Vehicle (Amendment) Bill 2016 is a welcome change

India has a head way because of the Motor Vehicle Amendment 2016, that is linking Aadhar to driving license as well as registration of the vehicle. Mandating a simple Log-IN facility to every new vehicle (just like we mandate an emission cert or a seat belt) via policy, and with help of existing telematics and cloud technology, we can build a country of disciplined drivers, decongest our cities and make our roads safer and our commutes predictable. ▪▪■

Audi takes a bold step - A8 has level 3 autonomy

Audi has introduced level 3 autonomy in A8. Level 3 autonomy is considered risky as it requires transferring of control from driver to the car and vice versa which is critical and delay can result in serious consequences. Many automakers like Ford have decided to skip Level 3 entirely and head straight to Level 4, where the vehicle assumes full control of all driving operations. It is thus being seen as a bold step by Audi.

Audi has fundamentally re-engineered the A8 in its fourth generation. One of the top innovations is the Audi AI traffic jam pilot, which takes charge of driving in slow-moving traffic at up to 60 km/h (37.3 mph) on freeways and highways where a physical barrier separates the two carriageways. It allows drivers to stop monitoring the vehicle under this condition.

The traffic jam pilot uses a central driver assistance controller (zFAS) which continously computes an image of the surroundings by merging the data from the sensors like radar, front camera, ultrasonics and laser scanning. But as soon as the system reaches its limit, it calls on the driver to take back control of the task of driving.

The A8 also has AI-based remote parking for both surface spaces and garages. The system doesn't require a driver to be seated in the car and all of that is controlled via a mobile app in the driver's smartphone.

As a range of approval procedures are required and their corresponding timescales also needs to be observed worldwide. Audi will, therefore, be adopting a step-by-step approach to the introduction of the traffic jam pilot in production models. ▪▪■

Germany: Ethics Commission on Automated Driving presents its report

The Ethics Commission on Automated Driving, has developed guidelines for automated driving. The key elements of the report are :

- Automated and connected driving is an ethical imperative if the systems cause fewer accidents than human drivers (positive balance of risk).
- Damage to property must take precedence over personal injury. In hazardous situations, the protection of human life must always have top priority.
- In the event of unavoidable accident situations, any distinction between individuals based on personal features (age, gender, physical or mental constitution) is impermissible.

- In every driving situation, it must be clearly regulated and apparent who is responsible for the driving task: the human or the computer.
- It must be documented and stored who is driving (to resolve possible issues of liability, among other things).
- Drivers must always be able to decide themselves whether their vehicle data are to be forwarded and used (data sovereignty). ▪▪■

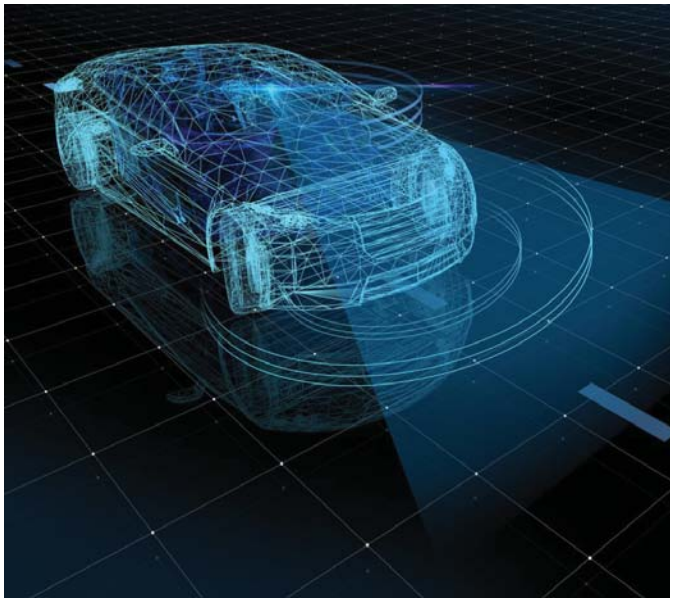
Waymo testing its self-driving cars in real and virtual environment

Waymo recently tested its vehicles in Death Valley, California. The motive behind these tests was to make sure self-driving cars can cool itself and continue to operate under the hottest temperatures, with an engine running at full power and systems running at full capacity. The company put some of its Chrysler Pacifica cars in the desert, covering all aspects of driving.

The company says it is taking more than 200 measurements per second to ensure everything carries on functioning, even in the high temperatures.

Waymo is also testing its self-driving cars using virtual worlds in the software it designed called Carcraft". The company has a secluded base in rural California where it tests complicated real-world like scenarios like roundabouts and driveways in a virtual world. Software named Carcraft is being used by the company to test self-driving car software in virtual re-creations of cities like Mountain View, California, and Austin, Texas.▪▪■

US Committee approves bill to speed up self-driving cars



In U.S., the House Energy & Commerce Committee has unanimously passed SELF DRIVE Act, The act would put federal regulators in the driver's seat and bar states from blocking autonomous vehicles. The proposal would speed up the deployment of self-driving cars without human controls. The House measure is being praised by the Automakers, business groups, and advocates for the blind.

Features of the bill:

- The automakers can get exemptions to deploy up to 25,000 vehicles without meeting existing auto safety standards in the first year.
- The cap can be raised over three years to 100,000 vehicles annually.
- Manufacturers will have to demonstrate self-driving cars are at least as safe as existing vehicles for getting approval.
- States would not set rules on performance standards but registration, licensing, liability, insurance, and safety inspections would be under the states.
- The automakers would not require pre-market approval of advanced vehicle technologies but they would have to submit safety assessment reports to regulators.

The federal rules, at present bar self-driving cars without human controls on U.S. roads and the states too have different rules in the absence of clear federal guidance. The proposal would now go to the Senate. It needs to be seen how the House and Senate settle on a version of the legislation.

UK government releases guidelines regarding automotive cybersecurity

The UK government has released guidelines regarding automotive cybersecurity. The document named as " Principles of cyber security for connected and automated vehicles" was released by the Department for Transport and Centre for the Protection of National Infrastructure.

The quick start guide to vehicle cyber security lists the 8 principles:

1. Organisational security is owned, governed and promoted at board level
2. Security risks are assessed and managed appropriately and proportionately, including those specific to the supply chain
3. Organisations need product aftercare and incident response to ensure systems are secure over their lifetime
4. All organisations, including sub-contractors, suppliers and potential 3rd parties work together to enhance the security of the system
5. Systems are designed using a defence-in-depth approach
6. The security of all software is managed throughout its lifetime
7. The storage and transmission of data is secure and can be controlled
8. the system is designed to be resilient to attacks and respond appropriately when its defences or sensors fail

As we move towards connected vehicles it has become crucial to take the correct steps to make them cyber secure. The instances of hacking and stealing of valuable data need to be combated and for that, there needs to be a consensus among the various stakeholders so that high parameters of security are set and here the government has to play a big role.

Trials of self driving mini-trucks for delivery of goods

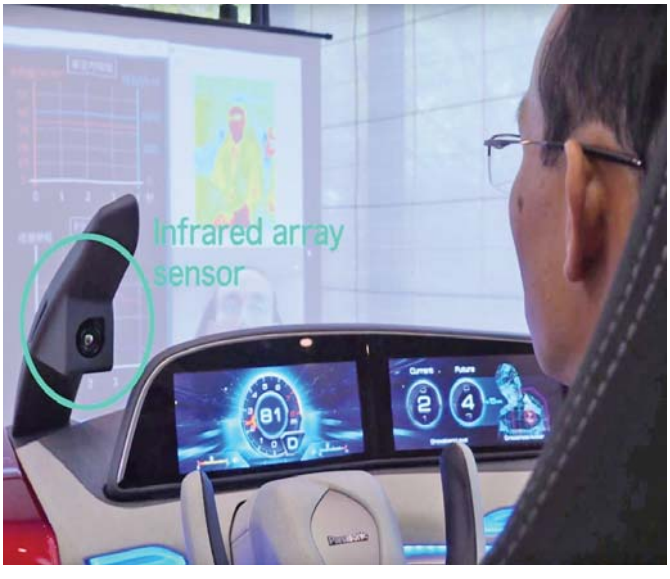
There was a unique exercise conducted by Oxbotica, a technology firm in the UK and Ocado, an online supermarket in the UK. The 10-day trial was "CargoPod", a self-driving minitruck delivering grocery.

The truck uses the combination of cameras and sensors for the purpose. However, a driver is present in the truck along with two persons, one from Ocado and one from Oxbotica, to make sure nothing goes wrong. Customers can order their food online as usual and can collect the delivery themselves by pressing a button on the side of the vehicle to unlock their crate.

A similar experiment was conducted by Domino's Pizza and Ford Motor Co to understand the role that self-driving vehicles can play in pizza delivery and to investigate customer reactions to interacting with a self-driving vehicle as a part of their delivery experience. Both companies are trying to examine and understand customers' perspectives around the future of food delivery with self-driving vehicles.

Some companies like Amazon etc are already working on technologies such as drone delivery and there are also some startups like Europe's Starship Technologies and US firm Marble, that are testing small, wheeled vehicles to deliver parcels and other quick purchases. Although such technologies are in infancy stage right now, in future we hope we will more get to see such innovative technologies. ▪▪■

Panasonic developed a drowsiness-control technology



Panasonic Corporation has developed a drowsiness-control technology for detecting and predicting a person's level of drowsiness and allowing to stay comfortably awake. The features of the technology are:

- Detects shallow drowsiness while the driver is even unaware of by non-contact measurement of blinking features and facial expressions, etc.
- Collects in-vehicle environment data to predict transitions in the driver's drowsiness level.
- Senses and monitors the driver's level of thermal sensation, allowing the person to stay comfortably awake. ▪▪■

Flourish consortium urges the UK government to make clear who has access to the data coming from connected cars

Flourish consortium has urged UK government to make clear who has access to the vast amounts of data coming from connected cars. The consortium is also testing driverless cars in the UK. Flourish consortium includes insurer Axa, engineer Atkins, and law firm Burgess Salmon. The consortium has opined that restricting access to vehicle data will act as an impediment for providing more reliable insurance services and alerting emergency services immediately after an accident. Recently Intel had predicted that fully self-driving cars will produce 4TB of data per day , as cars get increasingly connected, who owns the vast amount of data is the pertinent question. ▪▪■

TomTom and Cisco to work together on traffic information technology

TomTom is developing "ultra-fast lane level traffic technology"supporting autonomous driving and smarter mobility. For this, the company is conducting a research in cooperation with Cisco to leverage roadside data captured by Cisco's array of sensors, routers, and controllers to create the next generation of traffic information technology. The research combines Cisco's data with TomTom's traffic fusion technology and expertise, supported by Cisco's Internet of Things platform. ▪▪■

Apollo- Baidu's open autonomous driving project

Baidu announced that more than 50 partners joined the Apollo open autonomous driving project, forming one of the largest and most diverse autonomous driving ecosystems.
Members of the Apollo alliance:

- Vehicle manufacturers, such as Chery Automobile, FAW Group Corporation, Changan Automobile Group, and Great Wall Motors
- Tier 1 suppliers, including Bosch, Continental Automotive, ZF Friedrichshafen AG, and Desay SV Automotive, among others;
- Key components providers, such as NVIDIA, Microsoft Cloud, ZTE, Velodyne and TomTom;
- Startups, including Autonomous Stuff and Horizon Robotics; and ridesharing companies, such as UCAR and Grab Taxi.
- Five top universities and six local governments.

Apollo is an open platform that provides solution that supports all major features and functions of an autonomous vehicle. Apollo can bolster the work of any developer in autonomous driving, using high-quality source code and data, which developers can use as much or as little as they wish. Open source code portions can be modified, and open capability components are accessible through an API. Apollo's simulation tools and services provide a key solution that is backed by vast amounts of actual autonomous driving scene data, which enables developers to accelerate software iteration and ultimately shorten the development cycle.

As an open platform, Apollo's capabilities will be opened gradually, beginning with autonomous driving technologies for restricted areas in July and fully autonomous driving on urban roads and highways by the end of 2020. The company aims to go in the same way that Google released its Android operating system for smartphones. ▪▪■

Continental invests in driverless electric shuttles

Continental has acquired minority shares in EasyMile, a French autonomous driving company, which is into autonomous shuttles (or robo-taxis). Continental will test its current technologies with EasyMile's autonomous navigation software and systems. ▪▪■

Virtual Instructor-Porsche autonomous racing car software

Porsche is developing a software that can serve as a "virtual instructor"on the race track where a driver can measure their own skill against an ideal lap and obtain real-time feedback on where and how to improve their performance.
Software will be based on the captured data from professional drivers as they drive. This data will be uploaded and utilized by a self-driving Porsche to replicate the entire driving experience on the track.
For the purpose, Porsche plans to get onboard former Formula One racing driver Mark Web-ber, who retired last year after winning nine Grand Prix races. The company will create an app by capturing the way he drives on the track

Vayyar Imaging launched its 3D sensor technology within the automotive and autonomous driving markets

Vayyar Imaging announced the launch of its sensor technology within the automotive and autonomous driving markets. The 3D sensors enable groundbreaking safety advancements and enhance the security of self-driving and autonomous vehicles. Vayyar's sensors can work even in low lighting and extreme environmental condition.

How 3D imaging Changes In-Car Monitoring and Safety?

- Vayyar's embedded 3D sensors scan the interior of a car and give a real-time picture of everything happening within the vehicle.
- By monitoring vital signs from a distance, the sensors can alert a driver who is dozing off or send an alert to a parent if an infant or pet has been left in the car.
- These sensors create a 3D image that enables autonomous cars to identify the number of people inside the car and in case of an accident, optimize airbags to deploy and inflate based on the seating location and size of the vehicle's passengers.
- 3D imaging sensors can be used to remove all blind spots, identifying nearby obstacles, cyclists, vehicles that are too close and self-parking, providing perimeter information both vertically and horizontally or large or small vehicles.
- Vayyar's sensors are agnostic to environmental factors such as darkness, excessive light, heat or fog, allowing them to provide an increased level of safety.
- The company's exclusive tracking and sensing technologies provides a safe human-robot co-working environment, with sophisticated collision avoidance and precise measurements that ensures greater productivity and safer interaction between humans and machines, such as robots, forklifts and small autonomous vehicles.
- 3D sensors also enable volumetric sensing and increased efficiencies in cargo management. When placed inside transport vehicles, the 3D sensors can map available space, the distribution of objects within the container, and also provide cargo integrity while in transit by detecting movements of the cargo in real-time. ▪▪■

Intel to build a fleet of fully autonomous vehicles

Mobileye, an Intel Company, will start building a fleet of fully autonomous (level 4 SAE) vehicles for testing in the United States, Israel and Europe. The first vehicles will be deployed later this year, and the fleet will eventually scale to more than 100 automobiles.

Building these test vehicles, Intel's new entity will combine proprietary capabilities from Mobileye including computer vision, sensing, fusion, mapping and driving policy along with Intel's leading open compute platforms and expertise in data center and 5G communication technologies to deliver a complete "car-to-cloud" system.

The fleet will include multiple car brands and vehicle types to demonstrate the technology's agnostic nature. ▪▪■

Sapcorda Services, a JV to bring high precision GNSS positioning services to mass market applications

Bosch, Geo++, Mitsubishi Electric and u-blox have announced the creation of Sapcorda Services GmbH, a joint venture that will bring high precision GNSS positioning services to mass market applications.

The four parties recognized that existing solutions for GNSS positioning services do not meet the needs of emerging high precision GNSS mass markets. As a result, they decided to join forces to facilitate the establishment of a worldwide available and affordable solution for System Integrators, OEMs and receiver manufacturers. Each partner brings its unique expertise to the joint venture Sapcorda Services.

Sapcorda will offer globally available GNSS positioning services via internet and satellite broadcast and will enable accurate GNSS positioning at centimeter level. The services are designed to serve high volume automotive, industrial and consumer markets. The real-time correction data service will be delivered in a public, open format and is not bound to receiver hardware or systems. More information will be made available later this year. ▪▪■

MuHu launched mobile based ADAS technology

MuHu announced the availability of their Advanced Driver Assistance System (ADAS). It is the first ADAS live camera system to be available on a smartphone or tablet. Leveraging the phone's cameras and local processing capabilities for artificial intelligence-based object recognition, MuHu ADAS technology helps prevent accidents by providing real-time audible and visual warnings to drivers and safety alerts to fleet managers. The MuHu application functions like any app on an Android device. The Android device mounts on the windshield of a vehicle, allowing forward-facing and selfie cameras to process video of the driver and the road ahead. The ADAS alerts the driver of threats in real-time. Simultaneously, the system streams video and alerts to the cloud and intelligently notifies fleet managers of challenges the driver is actively facing. All events, video, and analytics are available in real-time through MuHu's SaaS portal. ▪▪■

Nexar launches road safety App

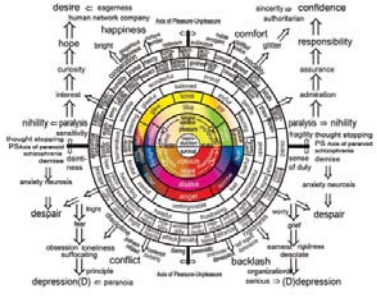
Nexar announced driving safety application,which provides advanced driver-assistance systems (ADAS), including real-time forward-collision warnings and other life-saving features, to hundreds of millions of vehicles whose drivers own Android phones or have Android-based in-vehicle systems. ▪▪■

OmniVision and Netradyne to co-develop driving monitoring system

OmniVision Technologies, in collaboration with Netradyne, will develop Driveri, an aftermarket intelligent driving monitoring system for commercial fleet vehicles and consumer automotive applications. ▪▪■

Renesas' R-Car now supports "Emotion Engine"

Emotion Generation Technology of the Emotion Engine Perceives the Speaker's Emotion with Both Colors and Volume



Provided by cocoro SB Corp.

Renesas Emotion Engine is an artificial sensibility and intelligence technology pioneered by cocoro SB Corp., a SoftBank Group company. The new development kit enables cars with the sensibility to read the driver's emotions and optimally respond to the driver's needs based on their emotional state. Emotion engine can recognize emotional states such as confidence or uncertainty based on the speech of the driver. The car's response to the driver's emotional state is displayed by a new driver-attentive user interface (UI) implemented in the R-Car system-on-chip (SoC). Since it is possible for the car to understand the driver's words and emotional state, it can provide the appropriate response that ensures optimal driver safety. Artificial intelligence based machine learning makes it possible for the car to learn from conversations with the driver. Renesas plans to release the development kit later this year. ▪▪■

Waymo gets patent for technology that can reduce the force of impact experienced during a collision

Waymo is working to design a vehicle that can reduce the force of impact experienced during a collision. The company recently received a patent for technology that would soften a car's body in the event of a collision with a pedestrian.

Aspects of the disclosure relate altering the rigidity of a vehicle's surface. More particularly, the vehicle may contain tension members, the vehicle may identify and respond to a potential collision by altering the tension that is applied to one or more tension members, thereby altering the rigidity of the vehicle's surface. ▪▪■

Waze integrated with Android Auto

Waze has been now integrated with Android Auto. Waze can be used by the cars having Android Auto to navigate via its in-car display, steering wheels, touch screen etc. ▪▪■

DOVU introducing the world's first mobility cryptocurrency

A UK startup DOVU is aiming to become the global marketplace for transport data. It's planning a token sale on 3 Oct 2017. It will create a distributed marketplace for the give and take of transport-related APIs, fuelled by the DOV token. The core team consists of entrepreneurs, data and cloud computing experts, blockchain developers, business consultants, and marketeers. DOVU has received seed funding from Creative England, a fund backed by the UK Government and InMotion Ventures, Jaguar Land Rover's investment arm.

At the moment, transport data is difficult to obtain, holding back insight and progress for the industry. Now, by using blockchain technology, DOVU is providing trust through transparency for data providers, whether corporates or individuals, while opening up the availability of quality data sets for public and enterprise use.

The DOVU system works by creating a distributed marketplace for transport data. Vehicle Hire, Insurance Companies, Ride-sharing and others across the mobility sector can connect to DOVU

to create a giant network of transport-related data resources.

The DOVU platform allows users to mix and match mobility service data, maximizing data value and utility. For example, you could combine car data with insurance data to calculate smarter policies, or use geolocation data in conjunction with weather statistics to inform ride-hailing companies.

Foxconn plans to build autonomous vehicle research and development facility

Foxconn is planning to build multi-b illion dollar autonomous vehicle research and development facility in Michigan. Some news reports have quoted Foxconn Founder and CEO Terry Gou saying that the company willcooperate with Michigan on next generation auto technology, such as Internet of Vehicle and self-driving cars.However, the location has not been decided till now but the company is said to be considering a 515-acre site in Lyon Township near Milford Road and Grand River Avenue. The company along with autonomous cars is also interested in Artificial intelligence and deep learning technology.

Delphi Automotive signs agreement with Innoviz Technologies

Innoviz's proprietary LiDAR sensing solutions will be integrated into Delphi's systems to provide automakers with a comprehensive portfolio of autonomous driving technologies. Innoviz LiDAR technology utilizes a solid-state design to provide longer-range scanning performance and superior object detection and accuracy capabilities.

Denso, Ericsson, Intel, NTT, Toyota etc form consortium to work on automo-tive big data

DENSO, Ericsson, Intel, NTT, NTT DOCOMO, Toyota InfoTechnology Center Co., Ltd. and Toyota Motor Corporation are coming together to form an Automotive Edge Computing Consortium. The objective of the consortium is to develop an ecosystem for connected cars to support emerging services such as intelligent driving, the creation of maps with real-time data and driving assistance based on cloud computing.

The consortium will focus on increasing network capacity to accommodate automotive big data in a reasonable fashion between vehicles and the cloud by means of edge computing and more efficient network design. It will define requirements and develop use cases for emerging mobile devices with a particular focus on the automotive industry, bringing them to standards bodies, industry consortiums and solution providers.

The consortium will also encourage the development of best practices for the distributed and layered computing approach recommended by the members. In the coming months, the aforementioned companies will initiate activities to invite relevant global technology leaders and expand the consortium.

Bosch launches Perfectly Keyless app to replace car keys

Bosch has launched a digital vehicle access system which would turn the smartphone into a car key. As drivers approach their vehicles, their smartphones are identified by the on-board sensors. Once this identification has happened, the vehicle is unlocked without any need for a physical key. Similarly, no key is needed to start the engine or to lock the car again at the end of a journey.

Vehicle owners can also use an app to give other drivers permission to use their vehicles. In a secure process that is protected against unauthorized access, an additional virtual key will then be sent via the cloud to other smartphones. This will allow the providers of car-sharing services and the operators of vehicle fleets to manage access and keys flexibly.

Perfectly Keyless uses a wireless connection to the on-board sensors to measure how far away the smartphone is, and to identify the security key. Once the distance between driver and vehicle is less than two meters, the car door is unlocked.

If Perfectly Keyless detects that the smartphone is in the vehicle, a touch of the start-stop button is enough to start the engine. When the driver gets out of the car at the end of the journey, the system continues to keep a virtual eye on the smartphone. Once driver and phone have moved more than two meters away from the car, it is automatically locked

securely. The system sends an acknowledgment to the driver's smartphone.

If the Smartphone is lost then the app with the digital key can be deactivated online. This blocks access to the vehicle, both for authorized persons and third parties. A new smartphone can be connected with the vehicle at any time, and a new unique security key generated. In the interim period, the conventional vehicle key will work as usual. ▪▪■

Flux Auto aims to make autonomous driving technology affordable more widely available in trucks

A startup in India, Flux Auto aims to make autonomous driving technology more widely available for truck operators at a significantly lower cost.

A Bangalore based startup is developing technology that, when finished, could enable any kind of truck to be retrofitted with self-driving car technology at a far lower price.

The technology being developed by the company doesn't use Lidar, which is being seen as an indispensable element in autonomous vehicles but is very expensive. The company wishes to keep its product in the range of $3000-4000 so it is using cameras along with other sensors like sonar, radar, ultrasonic to sense. It is being claimed that the system being developed would be able to handle cruise control, lane keeping, and collision avoidance. Flux Auto aims to deploy its tech on 2,500 vehicles within the next twelve months. ▪▪■

AGL releases latest version of infotainment platform, forms expert group on virtualization

Seven new companies have joined AGL and The Linux Foundation: Brison, Karamba Security, Lear Corporation, Luxoft, Thundersoft, SafeRide Cyber Security and Wipro Ltd.

Automotive Grade Linux (AGL) has also released the latest version of the infotainment platform, Unified Code Base (UCB) 4.0. The platform includes support for SmartDeviceLink integration, Speech Recognition APIs, secure Over-the-Air Updates (SOTA) and improvements to the App Framework and Software Development Kit (SDK).

AGL is expanding beyond infotainment to develop software profiles using the UCB for telematics, instrument cluster and heads-up-display (HUD). To support these new projects, AGL has formed a new Virtualization Expert Group to identify a hypervisor and develop an AGL virtualization architecture that will help accelerate time-to-market, reduce costs and increase security.

An open virtualization solution could allow for the consolidation of multiple applications such as infotainment, instrument cluster, heads-up-display and rear-seat entertainment, on a single multicore CPU through resource partitioning. This can potentially reduce development costs by enabling OEMs to run independent operating systems simultaneously from a single hardware board. Virtualization can also add another layer of security by isolating safety critical functions from the rest of the operating system, so that the software can't access critical controls like the vehicle CAN bus. ▪▪■

Survey: More than half of new car buyers expect to own at least one self-driving automobile in their household in the next 10 years

Bosch conducted a survey to further understand the sentiment of car owners toward auto-mated driving and ADAS features. The survey reached 1,000 U.S. based new car buyers, aged 18 or older, who have purchased or leased at least one vehicle within the last five model years, and intend to buy or lease a new vehicle again in the future.

Some findings of the survey are as follows:

- More than half – 52 percent – of new car buyers expect to own at least one self-driving automobile in their household in the next 10 years.
- There is confusion about emerging future automated technologies, as 18 percent of survey respondents believe that all new vehicles on the market today are equipped with autopilot, when in fact, it is only available in the limited capacity.
- Although many ADAS and active safety features are available today, the survey reveals that new car buyers have confusion about these solutions. For example, only 21 percent of new car buyers thought electronic stability control (ESC), a system that functions independently of the driver's action and can intervene when needed to keep drivers on the road and reduce rollover accidents, was available in all new automobiles. Meanwhile, ESC, first introduced to the market by Bosch in 1995, has been a mandated feature on all vehicles since the 2012 model year.
- While a majority of consumers accept the idea of owning a self-driving automobile in the next decade, many do not understand the advanced driver assistance systems (ADAS), like automatic emergency braking (AEB), adaptive cruise control, and active safety technologies, like electronic stability control (ESC), currently available on the market.

- Only 14 percent of new car buyers surveyed expect to never own at least one self-driving vehicle, while 14 percent are unsure. Of those who indicated they would own at least one self-driving vehicle, one-third of those expect all of their household vehicles to be self-driving within the next 10 years.
- More than half – 52 percent – of new car buyers expect to own at least one self-driving automobile in their household in the next 10 years.
- According to the study, new car buyers see various potential benefits to self-driving vehicles. Most notably, 61 percent of respondents believe a decrease in traffic accidents is a benefit of adopting automated vehicles;
- 55 percent of respondents noted more free time and lower stress levels as a benefit.
- New car buyers are apprehensive about the reliability of automated vehicles. When asked about their greatest concerns relating to self-driving vehicles, 72 percent of respondents indicated lack of control is one of the biggest considerations; 65 percent of those surveyed also noted that the unproven technology is an issue.
- Attitudes toward automated and traditional vehicles varies among new car buyers when it comes to which option is better. Results of the survey reveal that respondents trend toward traditional vehicles as the most financially feasible. For example, Nearly 59 percent of respondents believe a traditional car is better when it comes to the purchase price; Additionally, more than 47 percent of those surveyed believe repair and maintenance costs would be more manageable in a traditional vehicle compared to a self-driving one.
- In terms of prestige, sustainability and comfort, however, automated vehicles are the popular choice. Specifically, more than 52 percent of respondents believe self driving cars will be the next status symbol; Another 52 percent of respondents indicate self-driving cars will have the best fuel economy; Nearly 50 percent of respondents believe self-driving cars will offer the best in passenger comfort.

Toyota Kirloskar Motor launches Toyota Connect India, a smartphone application

Toyota Kirloskar Motor has launched a smartphone application-Toyota Connect India. The app is cloud-based connected service platform supported by call centre, Toyota's dealer networks and service providers.

Highlights of Toyota Connect:

- Assisted Navigation with 24×7 dedicated Operator Service: A unique Assisted Navigation service with personalized search support to find any destination of choice, anytime.
- Immersive Navigation experience: Detailed 3D downloadable maps with Live Traffic updates, Enlarged views of Junction & Intersection, Lane guidance, Voice guidance, Speed limit display, upcoming Toll booth voice announcements & more.
- Vehicle Maintenance: Comprehensive ownership support with Timely vehicle Service Reminders, Online Service Appointment & Convenient e-Payments.
- Emergency Service: Enjoy Peace of mind with 24X7 Location (GPS) based Road side Assistance support & simple DIY contents. ▪▪■

JSW Energy to foray into electric car manufacturing

JSW Energy is to foray into electric car manufacturing. The company aims to roll out its first such vehicle by 2020 and has earmarked Rs 3,500-4,000 Crore as capital expenditure to be spread over three years, as per reports.

The group will also manufacture electrical batteries and energy storage systems along with electric vehicles and setting up charging infrastructure. JSW Energy at present exploring technology partner in the electric vehicle space, including a supplier for the electric power train. The company had so far kept itself confined to power, steel, and mining industry only and this is the first time it is entering into consumer business. ▪▪■

Infosys developed a 'driverless' cart

Infosys has developed a 'driverless' cart at its Mysore center. The purpose of developing the autonomous vehicles is training the employees on new emerging technologies like artificial intelligence. It will use it as a test bed to train thousands of engineers on autonomous driving technology as it renews its existing services on the basis of these dual forces of automation and innovation. ▪▪■

Maruti Suzuki updates its smartplay infotainment system

Maruti Suzuki updated its smartplay infotainment system. The update includes Android Auto and some new maps. The company had introduced Smartplay touchscreen infotainment system with the Baleno, which later on was extended to Ciaz, Ertiga, Vitara Brezza and the S-Cross, but it supported only Apple CarPlay. The company has decided to do away with this limitation and for this, it will update its infotainment system to add Android Auto to its cars. Maruti Suzuki will not be charging anything for this. In India, Android based phones have a larger popularity than iPhones and thus this update would enable potential buyers to also think about Maruti Suzuki cars also. Other cars in India like Hyundai already offer Android Auto, Apple CarPlay, and Mirrorlink. After this update along with Android Auto, the existing features like Bluetooth, AM-FM, Aux-in, 'intuitive'playback management, navigation with saved destination, route customisation will remain. The new Android Auto update will enable users to connect their smartphones to the infotainment system via USB to access a range of apps. ▪▪■

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TELEMATICS WIRE

CONNECTED VEHICLES 2018

14-15 March, Park Plaza, Bengaluru, India

Welcome to Connected Vehicles 2018

The event where you connect with dynamic leadership to get inspired and insight into the Future Mobility

As we move closer to connected world, we also find ourselves in midst of transition in mobility with questions wherein we need to pick the top brains from industry experts to market research professionals:

- What are sustainable services in connected vehicles?
- What is new mobility concept in connected world?
- Who all will define and lead the connected vehicles market in India?

For an answer to these and for further discussions on topics mentioned below, join us at "Connected Vehicles 2018":

- Connected Cars: Innovation Driven by Data
- In-Vehicle Infotainment for a Hyper-Personalized User Experience
- Sync the Smart Car with the Smart Mobility
- IoT's impact on Automotive and Mobility
- Building Cybersecurity Standards & Best Practice
- Mapping Technologies & Traffic Data for Transportation
- Connected Fleet Telematics
- Enhancing the Customer Relationship through Telematics
- Consumer Electronics for Connected Vehicles
- Sustainable Business Model

Get inspired by Visionary Speakers

Meet 500+ key stakeholders in Connected car

- The event brings together automakers, tier 1 suppliers, insurers and technology providers to unite the expanding ecosystem for 2 days of learning and discussion

Get an opportunity to display your solutions

- Huge exhibition (40+): innovative technologies will be showcased
- Improve your brand awareness

12+ Sessions & Panel Discussions

- In-depth your knowledge from interactive sessions

Be a part of exclusive networking opportunities

- Informal and structured networking to facilitate collaboration and partnership

Video Demonstration

Companies with limited budget can demonstrate thier solutions for **5 minutes** to the connected the car industry

Where the Auto Tech industry comes to do Business in India

600+	60+	12+	40+
SeniorAttendees	Speeker & Panelists	Sessions & Panels	Innovative Exhibitors

Panel Discussion Topics

- Connected Vehicles: Driven by Innovation
- Connected Fleet Telematics
- Adas & Autonomous: Reality in India?
- Smart Mobility through Connected Vehicles

Who Should Attend?

Stakeholders from across the connected & autonomous car development value chain·

- Automakers
- Automotive OEMs
- Mobility Service Providers
- Tier 1 Suppliers
- Tier 2 & 3 Suppliers
- Semiconductors
- System Integrators
- Software Providers
- Content Providers
- Application Developers
- Wireless Carriers
- Insurers
- Cloud Service Providers
- Component Manufacturers
- Goverment
- Car Sharing Companies
- Taxi Aggregators
- Psu / STC
- Financial Services
- Association
- TSP's
- ChipManufacturers
- Big Data Analytics
- Telcom
- Policy Makers

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