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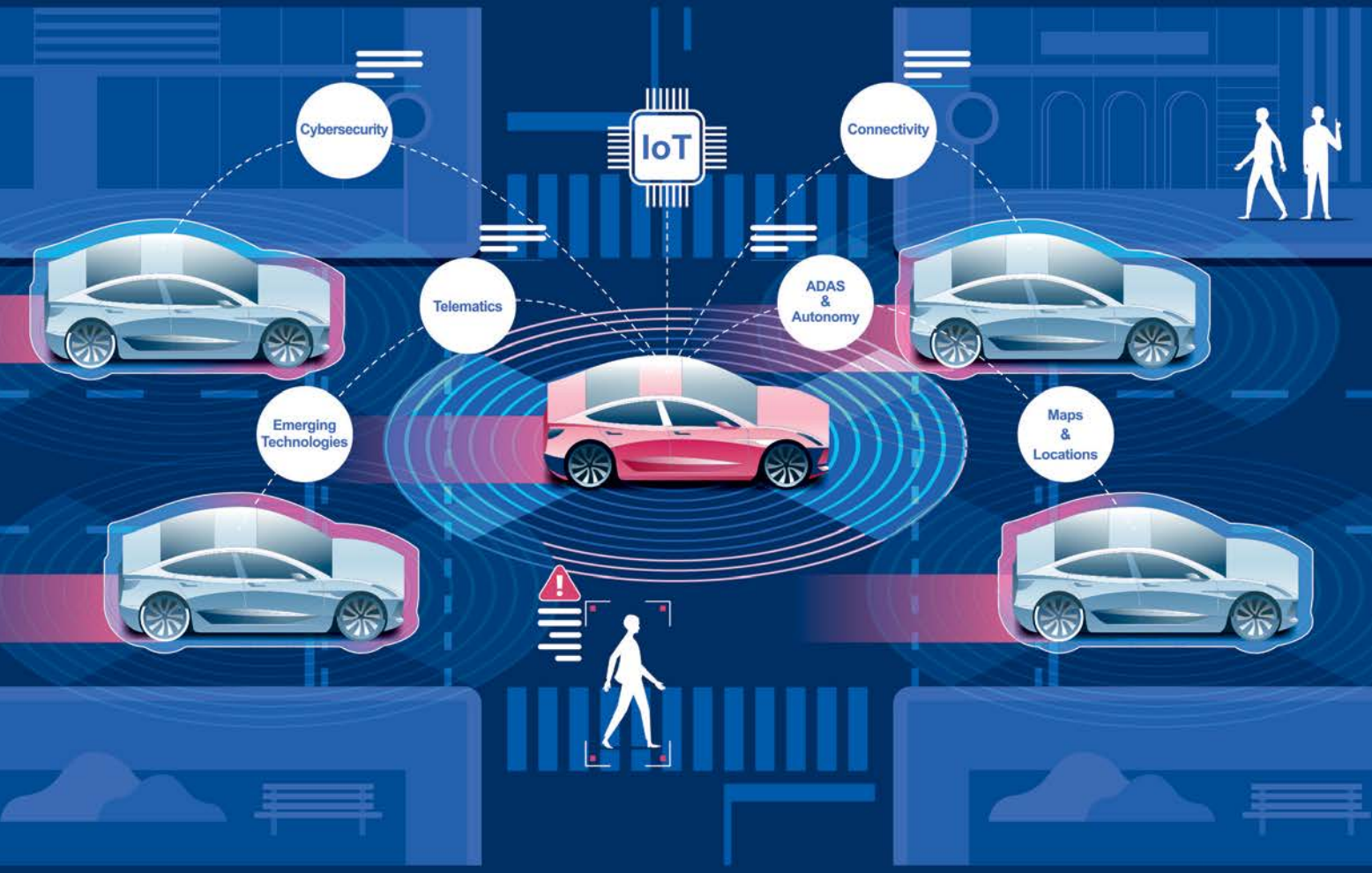

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Editorial

The Prime Minister recently at an event said that India is going to become a Five Trillion Dollar economy in coming years. India's gross domestic product (GDP) stood at $2.597 trillion at the end of last year and considering this, it is a very ambitious goal that would require the country's GDP to grow at a rate around 10-15% to achieve this in next 5-6 years.

India will need to make exceptional structural changes in all sectors of the economy be it Agriculture, Manufacturing or Services. But Manufacturing that accounts for 15% of GDP has the most scope of improvement. A complete overhaul is required in the manufacturing ecosystem.

Automotive sector is a significant part of the Manufacturing sector and contributes 7% to the GDP; AMP 2026 visualizes its increased contribution to 12% in the future. The sector has the potential to become the fulcrum of growth for the manufacturing sector.

The demographic dividend the country enjoys at present and shifts taking place in the global market with MNCs looking for alternate manufacturing locations in wake of a trade war coming into play between US and China has brought India to a juncture where it can become the leader in this field.

Some domestic factors like rapid urbanization, rising income and more people joining the workforce are also expected to contribute to the rise in the demand for mobility propelling growth of Indian automotive industry.

Along with this the global automotive industry is also undergoing through a disruptive phase where it's very fundamentals are getting altered by trends like autonomy, electrification, connectivity, and shared mobility. The entire value chain is undergoing transformation, business models are being redefined, new players are entering the market and incumbents are reinventing their roles.

The emergence of Automation, Big Data, IoT, AI, present the industry with a unique opportunity. These are the technologies that hold the key to high growth. The Industry is in a position from where it can grow manifold by making investments in technologies like Connected Cars, Telematics, AI, Analytics etc.

The Indian automobile industry in past few years has significantly increased its presence in international markets and it must now take advantage of these factors to get more aligned with global value chains thus contributing significantly to exports, generating more revenue, employment and play its role in propelling growth, putting India to its rightful place on global map.

This would require efforts to be made by all stakeholders with regulating authorities creating a congenial environment for innovation and development; policymakers drafting inventive policies and establishing skill imparting institutions; and Industry making efforts in research and development, bringing in right talent and developing innovative business models.

Telematics Wire

Connected Car Data, an Overview

Connectivity features are now becoming a standard in modern cars as every brand is now introducing these features in their cars. This has improved the driving experience and made traveling much easier and enjoyable.

Along with this the connected car presents huge opportunities with the amount of data it gathers, processes and generates. Experts predict that in coming years the data generated by the cars is only going to increase creating entirely new services and business models. According to Intel, each autonomous vehicle will be generating approximately 4,000 GB – or 4 terabytes – of data a day. By 2020, the number of Connected Vehicles is expected to reach a Quarter Billion according to a report by Gartner. Therefore the amount of data generated by cars is going to increase exponentially in the future.

This 'explosion' of data is expected to further increase the pace of innovation and totally transform our world. This data being generated is valuable and through the application of technology like analytics can give way to insights that can be utilized by automotive manufacturers and other members of the automotive ecosystem to not only hugely enhance end-user experience but also generate revenue for themselves. But there are also complex challenges in this path as there are issues like user privacy, data management processes, built-in data security mechanisms, are involved which have not been the forte of the incumbent players and will be a challenge for them to change themselves on how they operate.

Opportunities

Application of analytics to data can be used by the companies to provide an array of innovative services which will, on one hand, increase the revenue pool and on the other improve customer service enhancing brand loyalty for the companies.

Predictive maintenance is one such application that identifies vehicle maintenance issues before they occur. It leverages data from warranty repairs and vehicle sensors to finds a meaningful correlation. Data from different vehicles can be collected and analyzed by the companies to find anomalies in their product and help them to correct them. The analysis of data can also help in the development of new business models.

Predictive collision avoidance system is another application of vehicle data. By the use of data from sensors, car-to-car connectivity, and analytics the situations that may lead to accidents can be predicted and hence avoided. Some companies have already started implementing this technology. Nissan has introduced a Predictive Forward Collision Warning feature that utilizes sensors on the front of the vehicle, the system is able to analyze the speed and distance to the vehicle traveling ahead

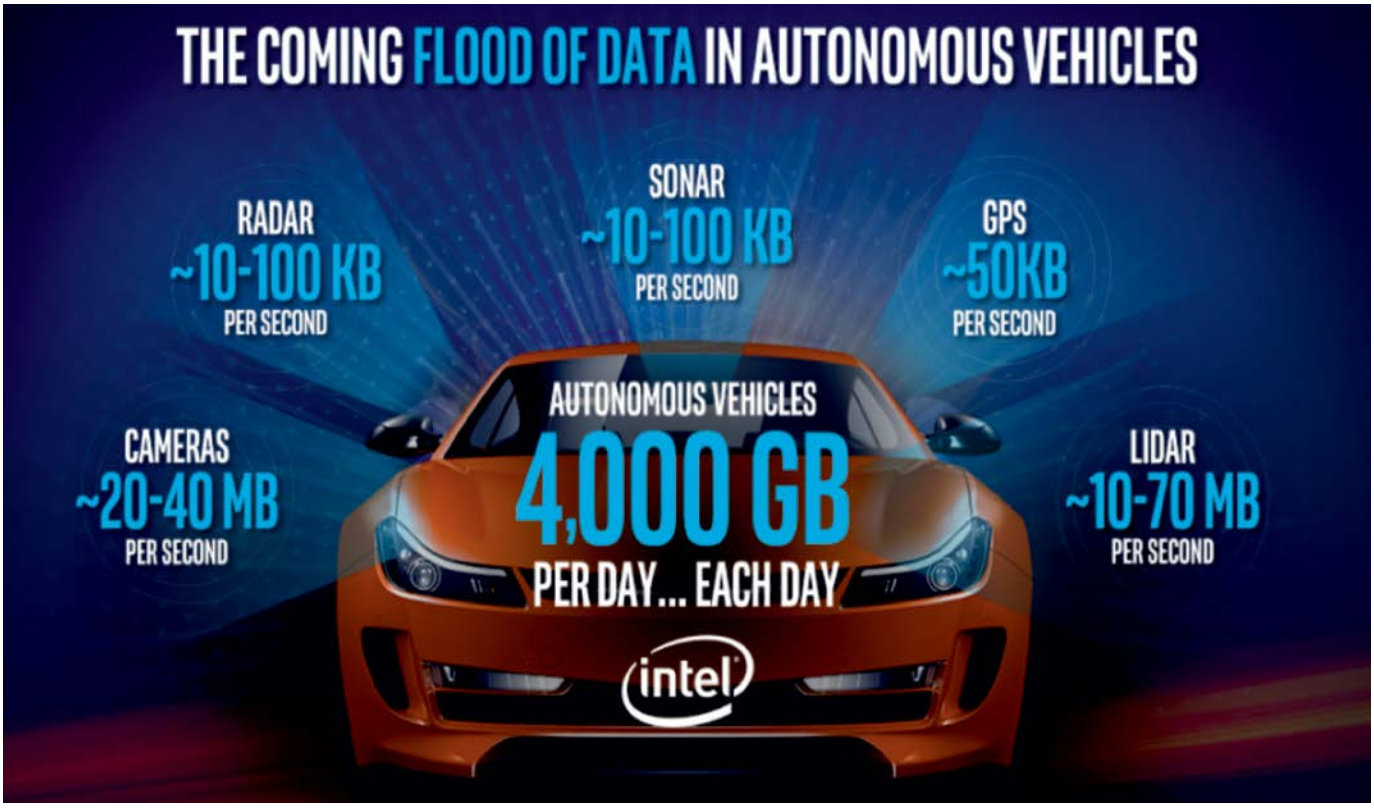

Image Courtesy: Intel

of the vehicle, as well as that of the next preceding vehicle. In case of any of the proceeding two vehicles behaving in a manner that can be regarded as dangerous is alerted to the driver in form of a visual alert and audible signal. A signal is also sent to temporarily lock the seat belts in case of impact. Mercedes too has **COLLISION PREVENTION ASSIST** uses data from radar to constantly monitor closing speeds between the car and the moving vehicles around it. If the system determines that a collision is likely, it can help you apply the ideal level of braking.

The car data can also be utilized to develop services that combine advanced location analytics, leading software technology, and a driver's personal preferences to make driving more informed, safer and enjoyable. Companies are using location-based intelligence to direct the customers to the nearest store location. The data can also be utilized to provide roadside assistance companies provide an app that allows them to track your exact location without the need in case of any accidents. Utilizing the location data the companies or authorities can deliver real-time information, such as traffic updates or weather reports. The data can also be utilized for proximity-based marketing allowing the companies to push ads only to individuals within the same geographic location.

Autonomous vehicles require demand richer, more up-to-date, more accurate map. The connected car data can be used to achieve this, data from onboard sensors in different cars can help generate real-time information on road condition that can be used to develop maps that other drivers or autonomous vehicles can use.

Connected vehicles are vulnerable to cyber attacks and that can be very catastrophic in this case as the lives of the passengers are directly involved. In this context, predictive analytics can play a big role in preventing cyber attacks by predicting its occurrence by warning the users of it. Using analytics the intruder's behavior is read and if it differs from that of the recorded pattern of the original user, they can be warned to take action.

Recent Initiatives:

- J.D. Power with HARMAN plans to go beyond measuring consumer insights to help automakers around the world better measure and understand how their evolving products are satisfying customer needs. Both the companies will provide functional-level insights into how consumers are interacting with the systems and what they may want from the in-car experience.
- Toyota Motor Corporation (Toyota), with Toyota City, is to start Japan's verification testing for road maintenance inspections using vehicle data obtained from connected cars. The verification testing will enable assessment of whether the degree of road deterioration index values computed from the car's behavior data and actual road conditions are consistent, and validate these findings on more typical regional roads. Toyota also aims to further advance its technology toward supporting administrative services that implement road maintenance and inspection work in Toyota City more accurately and appropriately.
- Dash and VINchain have entered into a partnership, to leverage their joint interest in using data to improve vehicle ownership and maintenance. Dash Dash is a Vehicle Intelligence Platform which offers smart driving products and VINchain is a tamper-proof and decentralized vehicle data platform that offers a decentralized blockchain-based vehicle history report, to authenticate vehicle maintenance, repair and ownership. The partnership aims to integrate VINchain's technology into the core Dash products, thereby enabling users to add their real-time driving data into Vinchain's infrastructure – this will create a ledger of how the car has performed and been maintained.
- Otonomo has announced the Consent Management Hub, a new capability within its neutral automotive data services platform, which provides simple, secure data access and transforms data into actionable insights for services such as predictive maintenance, emergency services, on-demand fueling, in-vehicle delivery, insurance, and smart cities. The Consent Management Hub provides an efficient way for connected car drivers to take control over the sharing of their personal automotive data.
- Waycare has announced a data-sharing partnership with Waze, the free, real-time crowdsourced traffic and navigation app. The partnership is designed as a two-way data share of municipal and road traffic data, Waycare traffic insights, and aggregated road traffic data from Waze. The partnership will enable cities to communicate back with drivers and warn of dangerous roads, hazards, and incidents ahead.
- Moovit, transit data and mobility analytics company and transit app Moovit has receiced investmenst from Intel, BMW etc. The Israeli startup combines information from public transit operators and authorities with live information from its user community and offers transit riders a real-time picture, including the best route for the journey.
- INRIX is working on new offering by that combines real-time traffic, incident, and parking data with machine learning and predictive analytics, to efficiently guide the drivers to open parking spots. When drivers are approaching their destination INRIX pulls real-time data to calculate the best path to take to find parking that minimizes both drive time, walk time and the cost of parking. Drivers will also have a more accurate estimated time of arrival (ETA) that incorporates parking search time.
- Volvo Cars and Volvo Trucks will share real-time data to expand coverage of the companies' connected safety technology, a cloud-based system that allows vehicles to communicate with each other and alert drivers of nearby hazards.

Challenges:

Although the connected car data presents us with many opportunities but there are challenges as well in which data privacy, data quality and security are at the forefront. This has never been the forte of the traditional incumbent players therefore as the industry changes the companies will have to adopt and change according to these.

creates scenarios for unwanted third-party access to that data, increasing the risk of a cyberthreat. A hacked vehicle could not only have fatal consequences for the driver and passengers but for anyone or anything physically present around the self-driving car.

In 2015, some ethical hackers to show the vulnerability of these vehicles they infiltrated into cellular connectivity of a

sensitive personal information. Absence of such regulation impedes the usage of connected car data. Another hurdle to the development of an overarching regulation covering connected vehicles is that the technologies are still in development. In such a scenario the industry would prefer self-regulation but still some form of federal pre-emption will be necessary in order to avoid the patchwork of laws. There are

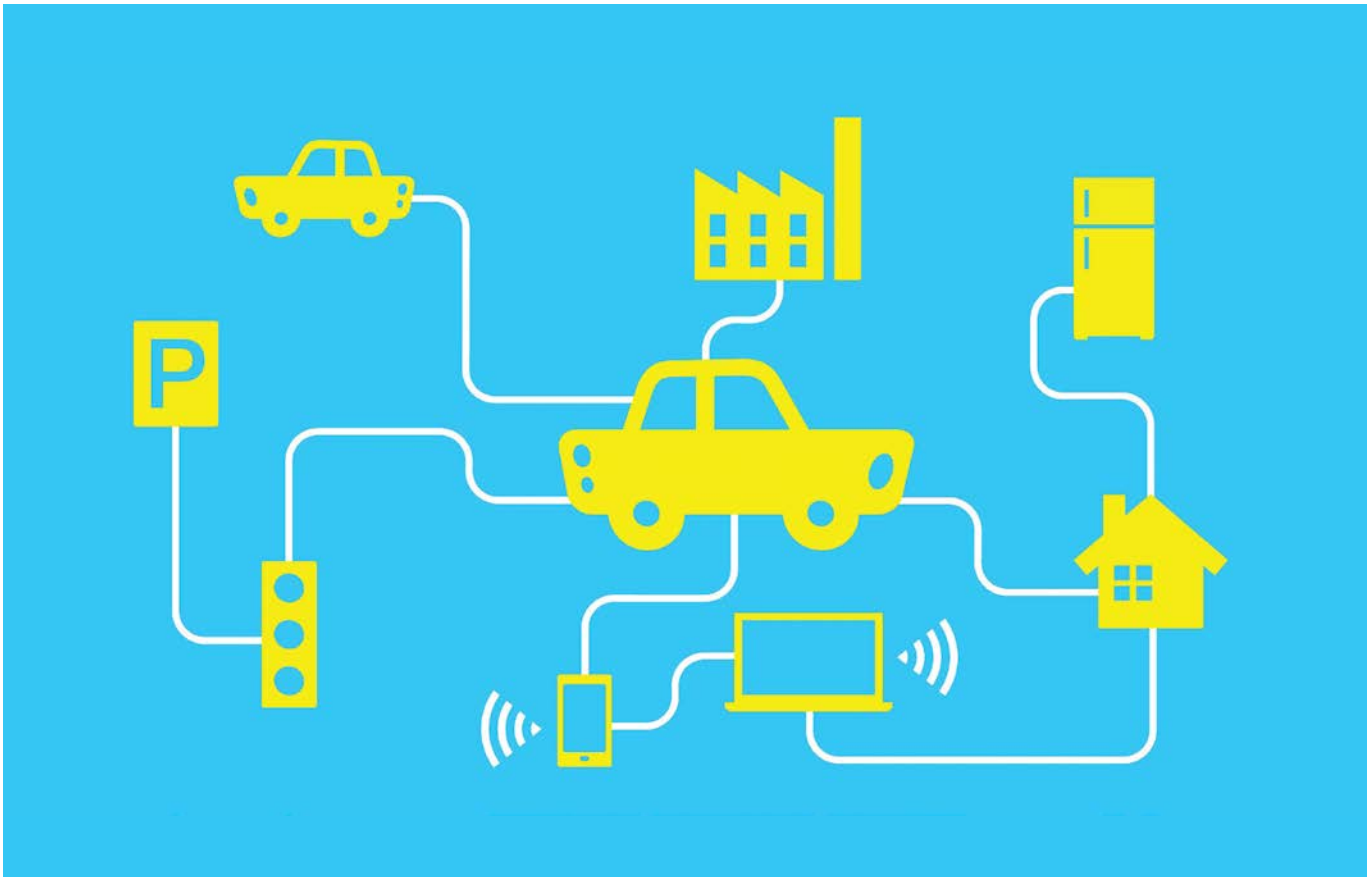

Image Courtesy: SAS Blogs

There has been a demand for connectivity features in the cars but at the same time a significant portion of the consumers have expressed their anxiety about the digital safety and data privacy issues through different polls and surveys.

If data is stored in the vehicle for some period personal privacy as well as the privacy of the other parties connected to the users can be compromised in case of any breach. Recording of data related to the trips of the customers can also lead to compromise in their security. Moreover, connected vehicles also

Fiat Jeep and were able to compromise the backbone of the car's electronics, CANBus, through it they were able to control starting, stopping, accelerating, and steering, taking complete control over the car.

Therefore with each degree of connectivity a variety of legal regimes, ranging from expectations of privacy and security emanating from common law and numerous other regulations are implicated.

Taking this into consideration there will be a need of single regulation that governs the handling and securing of all types of

also question involving the ownership of the data that needs to be addressed. There was an initiative taken in this direction by NHTSA that published a paper entitled "Cybersecurity Best Practices for Modern Vehicles." in which it laid down some "best practices" that need to be followed by the companies to ensure cybersecurity. It talked about five principles namely, identify, protect, detect, respond and recover. It also recommended stricter implementation of standards like ISO 27000. However, these practices were "non-binding guidance" but gave a direction in which the industry needs to work.

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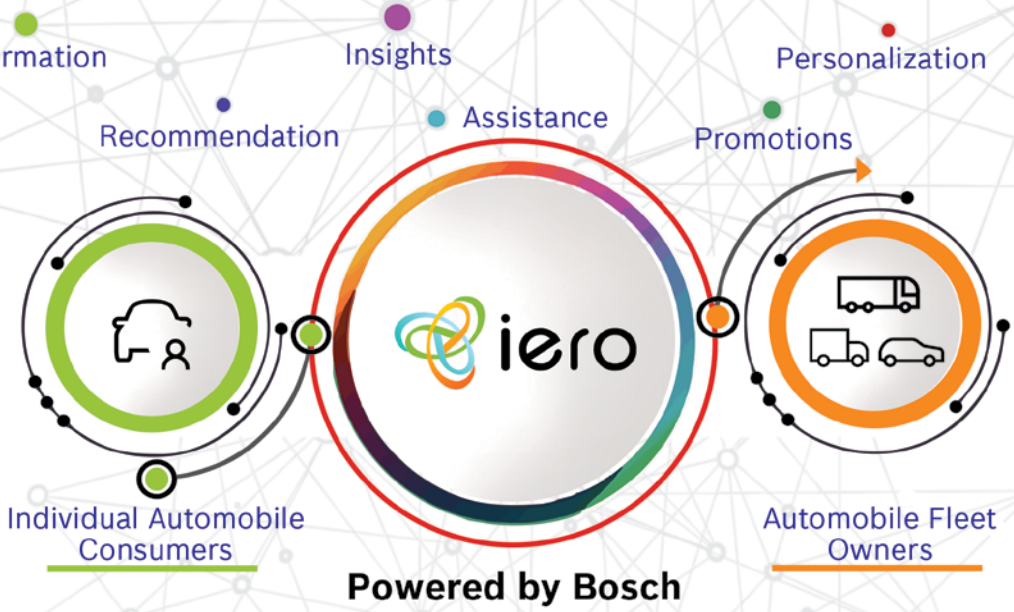

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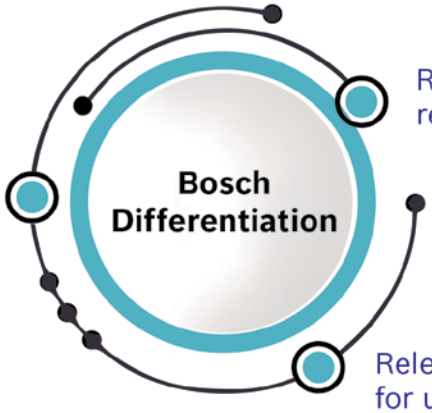

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Ahead of Olympics, Surge in Japanese Car Sharing Market

Japanese car-sharing market is witnessing some observable changes in the last few months. The sector is rapidly expanding and major players of the automotive ecosystem are gearing up to grab their share. Japan is the world's third largest taxi market having worth around some $17 billion along with advanced mobile internet infrastructure. The country also has a growing population of senior citizens. By virtue of these factors the country has a great potential as a market for online taxi-hailing. 2020 Olympics to be held in the country which is expected to bring 40 million foreign visitors in the country is also one of the reasons for this sudden spurt in ride-hailing companies operating. Chinese ride-hailing firm Didi Chuxing has announced the official launch DiDi Japan, a joint-venture with SoftBank, to offer on-demand taxi-hailing services and smart transportation solutions for citizens and tourists. DiDi aims to roll out its ride-matching app for riders, drivers and taxi operators in Osaka, Kyoto, Fukuoka, Tokyo and other major cities starting from autumn this year.apanese automaker Toyota and Park24 have also announced their decision to start a business tie-up for a trial car-sharing service in parts of central Tokyo. Toyota has signed an agreement for trial operation with the aim of developing a new service that leverages its Mobility Services Platform (MSPF). Uber Technologies is also to launch its first taxi-hailing pilot service in Japan that will connect passengers to other taxi providers, as it seeks to expand in the country. Toyota and Uber recently announced partnership aimed to bring an on-demand autonomous ride-hailing service to market a deal that includes a $500 million investment from the Japanese automaker leading to speculations of its further expansion in the country. JapanTaxi, an Uber-like service in the country has also recently raised $69 million from Toyota Japanese multinational conglomerate corporation Sony with Daiwa Motor Transportation and five other local taxi companies in Japan have come together to build a new taxi-hailing system to match drivers with riders via a mobile app. Sony plans to use AI to better predict demand to dispatch taxis more efficiently. US startup company ViaVia is also knocking doors of the ride-hailing sector in the country. It recently entered into a partnership with Mori Building, an urban developer based in Tokyo to enable employees of Mori Building to book a ride in high-end V-Class vans provided by Mercedes-Benz using the Via-powered mobile app. There were reports that suggest that Lyft also harbors an interest in Japan. Toyota and JapanTaxi jointly with KDDI Corporation and Accenture, have developed a taxi dispatch support

Image Courtesy: Nissan

system that predicts demand for taxi services, combining data from taxi service logs with predictions of demographics made by location-based big data from smartphones as well as event information. The companies have started to deploy the system in Metropolitan Tokyo on a trial basis. The system uses artificial intelligence (AI) to predict the number of occupied taxis in Tokyo using 500-meter, mesh-based parameters every 30 minutes. The companies collect taxi service log data and demographic predictions as well as other factors that affect taxi demand such as weather, public transport service availability, and events at large facilities, and apply learning models through an AI-based system to predict the size of demand. In a test run in Tokyo, the system demonstrated a high accuracy rate of 94.1 percent.Japanese government is also planning on a self-driving car service in the country. It is also being expected self-driving cars may be seen on Tokyo's public roads during 2020 Olympics. The government for the purpose also may allow testing of driverless car system on public roads sometime this fiscal year, according to some reports. Japanese multinational automobile manufacturer, Nissan has announced it is expanding its e-share mobi car-sharing service to 100 new locations in Japan through a partnership with retailer Kohnan Shoji Co., Ltd. The service lets users across Japan experience Nissan's autonomous driving technologies and the excitement of its electric drive systems. The short period rental lets the customers use the new Nissan LEAF electric car or the Nissan Note e-POWER for periods of as little as 15 minutes. As part of the agreement, it will be available at about a third of Kohnan's home center stores in the country by the end of March 2019. Each of the new stations will also have an electric car charger. The company aims to expand the e-share mobi service to 500 locations in Japan by the end of the current fiscal year. Nissan is also working with DeNA, a provider of mobile portal and e-commerce websites, on development of robo-vehicle mobility service -Easy Ride. Easy Ride is envisioned as a mobility service for anyone who wants to travel freely to their destination of choice in a robo-vehicle. The companies conducted field tests earlier this year in Yokohama. Baidu and SB Drive, a subsidiary of Softbank dedicated to self-driving technology research, and King Long, have announced recently a strategic partnership to jointly develop and deploy a version of the Apolong self-driving mini bus for the Japanese market. Apolong is a fully autonomous mini bus co-developed by Baidu and King Long. The mini bus is powered by the Under the agreement, ten Apolong mini buses will be exported to Japan from China in early 2019. ZMP, a developer of autonomous driving technology, and the taxi company Hinomaru Kotsu, have also begun the testing of driverless taxis on streets of Tokyo. Therefore it can be concluded that if the efforts of the companies continue and keep on getting the support of Japan's government the world may witness self-driving taxis plying on the streets of the country.

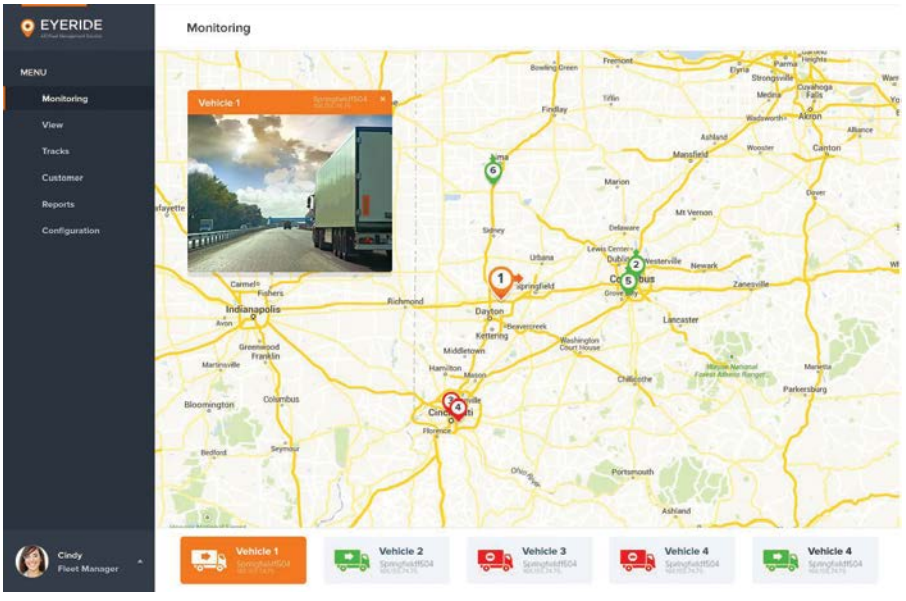
Image Courtesy: Pan Daily

Telematics Wire Editorial Team

How Fleet Management Will Transform the Future of the Transport Industry

The fleet management industry contributes heavily towards the growth of the global economy by creating job opportunities and also through tax remittance. Additionally, with technology enhancement, fleet management is expected to change now and in the future.

Some of the jaw dropping technologies that have already been implemented include bus and motor coach TV systems, remote braking systems, and GPS tacking monitors. EyeRide, for instance, has been one of the leading players in developing efficient all-in-one fleet management systems.



Most fleet managers are keen to improve the game within the industry by focusing their energies on how to protect the environment by going green, promoting safe driving among their drivers and minimizing operation costs so as to increase their profits. On the other hand, the systems are tailored to cut down the time drivers spend writing reports, which takes up most of their time.

However, according to research, most fleet operators and drivers have yet to embrace the new technology. Additionally, drivers feel that the on-board camera monitoring systems will infringe on their privacy.

Analyzing arising fleet trends within 2018 and beyond will help investors and business people currently within the industry and those anticipating investing in the future. They will be equipped to prepare for any threats and opportunities so that their business can be a lot more successful. Here are some of the fleet management changes expected.

Safety Improvement

With the aim of bringing down the number of accidents within the industry by promoting the safety of the vehicles, passengers and the drivers, most fleet companies are purchasing new automobiles. The vehicles are equipped with driver assistance technology, telematics and fleet tracking systems. Furthermore, vehicle manufacturers are looking forward to introducing automatic braking systems and monitoring systems, which will assist fleet managers in detecting mechanical faults within each vehicle and taking the action of servicing the vehicle before it breaks down.

Telematics and Tracking Devices

Although telematic systems have been around for a while, they have undergone significant improvements because of technology. More user-friendly features will be added to collect and send reliable data, which help fleet managers formulate beneficial policies.

Cost reduction can be achieved by designing short and efficient routes, which minimize fuel usage. Monitoring driver behavior will curb the number of crashes. Maintenance costs can be reduced by frequently servicing your vehicles.

Promoting better driving habits among your drivers will make the roads safer and also guarantee premium discounts from your insurance provider. Facilitating optimal fleet performance will expand your business and make it more profitable.

Autonomous Vehicles

According to research self-driving vehicles will reduce the number of road accidents, making roads safer. In addition, the fleet industry is expected to adopt this technology because of its benefits, which include increased driver productivity, reduced cost, improved safety and efficiency of fleet drivers and cargo, and minimized road accidents. Self-driving cars will have features such as blind spot sensors and forward and rear sensors, which will reduce the potential for human error.

Handling Big Data

Fleet management apps will provide fleets owners with a deeper capacity into their day to day operations. The

future looks promising for fleet owners who are looking to improve their service delivery and business operation procedures.

Due to the telematics systems there is now large quantity of data which was not available back then that is now readily available. Presently, the data may be difficult to access fully. However, fleet owners are now starting to the data into action and using it to optimize and better their operations.

According to one fleet management expert, it is high time that fleet managers start organizing and analyzing data collected to help improve their business operations. Nonetheless, the data collected currently comes in a variety of formats and as such it can be tricky to handle.

Accounting Made Easy

Currently there are new reforms on accounting standards and lease transactions which will take effect come 2019. What this means is that fleet owners will need to start collecting data similar financial statements and reports. It is vital that fleet owners hire qualified financial and accounting experts to ensure they are well prepared for the changeover.

New Generation Taking Over the Workforce.

Another huge trasition in the coming years is that millenials will be taking over from generation X who will now be exiting. This generation shift will without doubt create a more tech savvy realm in the fleet business. Additionally, the new generation workforce will easily learn and understand how to use fleet managemnt apps to perform tasks such as route planning, expense reporting and tracking alongside telecommuting.

What this translates to is that, fleet opwners with fleet management systems already in place will be able to offer more advanced to their drivers and clients.

Mobility as a Service

In recent times car rental and sharing services and apps have gained popularity. On the other hand, there are suggestions that this technology could be adopted in the fleet industry very soon. Fleet owners will have the ability to provide Mobility as a Service or even help manage for firms with a smaller fleet.

This of couse is a huge commission and as such it would require a substantial expansion plans in to get all businesses across the industry on the same page. Additionally, the MaaS technology requires fine tuning in order to meet the set targets.

Still on the same, fleet owners are seeing the need for smart ticket and transport app solutions. Moreover, fleet owners are at the best position to manage the logistics of several vehicles based on the transportation requirements.

An Opportunity Not a Threat

The transport industry is at the fore front in matters adopting new technologies. However, some proffesionals, for instance, drivers are still hesitant to adopt the new techs, there are claims that it is biting into their private life. Nonetheless, fleet management apps should be viewed as opportunities to optmize the procedures and make the processes smooth sailing. ▪▪■

Image Courtesy: IoT Do

Author Jack Botsford

Jack is an experienced writer and content manager who has contributed to various publications in Data Science and IT. He has researched and written many publications for big data and technology blogs for the last 5 years.

Haptic Technology Can Be the Next Disruptor in The Automotive Industry

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Avimanyu is market research/management consulting professional with electrical Engineering background. He is experienced in statistical & quantitative analysis, data-driven decision making and data mining.

Haptic technology mimics the sense of touch and is presently prevalent across a number of consumer products, the Apple Watch being one of the recent examples. The usability of feeling an object without touching it, just by moving hands across a virtual, 3D space promises a plethora of opportunities across industries like entertainment (particularly gaming applications), education (to provide the visually challenged with a more intuitive learning experience) and healthcare (for sensitive functions such as surgeries). Haptic technology is gradually making its way into the automotive industry. Making drivers more informed about the road and associated systems (recreated with sound waves, 3D holographic technology combined with haptic forces) can be one of the uses of the haptic sensors which can be expected to bring down road accidents. Furthermore, haptic technologies can be used in automotive retail applications such as showcasing the revs of an engine and car interiors.

From an enterprise strategy perspective, the haptics in the automotive domain is expected to witness a considerable level of M&A activities. The M&As can be influenced by directly or indirectly by several factors such as the evolving market of electric vehicles and connected cars. Consistently, Teijin Frontier (a subsidiary of China-based Teijin Group specialized in fiber) is set to acquire J.H. Ziegler (Ziegler), a Germany-based supplier of automotive interior materials. Ziegler specializes in nonwoven seat wadding materials and sound-absorbing composite solutions which is gaining significance with rising sales of electric vehicles. With the widespread adoption of EVs lead to an increasing demand of acoustic insulation. Ziegler products reportedly fulfil OEM requirements for appearance, haptic feedback and usability of seat surface materials and hence, has influenced the M&A.

Some of the subsegments of the automotive industry where haptic technology is influencing or can be expected to make an impact are the following:

- Retail: as mentioned, haptic technologies can influence automotive retail in a number of ways. Interiors of the vehicles are highly customizable in most of the cases and haptics can be used by the retailer to enable the customer experience the exact feel of the interiors i.e. the touch and feel of the seat covers, ease of equipment usability etc. without waiting for the vehicle delivery.
- Maintenance functions: Haptic technologies can create cost-effective options for automotive maintenance functions. High-end automobiles, which necessitate specialized expertise for fault identification, parts replacement and other maintenance functions often require engineers and technicians flying down to the owner location. Haptic technologies can enable swift and effective maintenance operations by creating a virtual 3D environment for the technician at his workshop, without physically being present at the owner's garage. Furthermore, haptic technologies can lead to more cost-effective training programs for technicians where the trainees can have hands-on experience on an automotive part sitting at different

Image Courtesy: Alexo

corners of the world while the trainer conducts the sessions in real-time.

- Learning modules: Replicating kinaesthetic senses i.e. the ability to sense position, orientation, force (for example: the gravitational pull) can enable haptic technologies to contribute further to the automotive vertical. Since driving a car involves gathering and processing huge amount of information engaging the human auditory and visual senses, it is usually difficult during the initial phases of learning. Haptics can enable intuitive driving learning modules which can help the learners learn in a safer environment than behind the wheels on the road.

Image Courtesy: Bosch

- Lane keep assist: In the Tesla Model 3, the haptic feedback from steering wheel warns the driver about driving out of a lane analyzing the speed of the vehicle. From an analyst perspective, the application will be more helpful and further improve the safety feature of the vehicle when the sensors will track and analyse the presence and speed of other vehicles in the same or adjacent lanes and intimate the driver about a potential collision or a smooth drift to another lane.
- Infotainment systems: Automotive market stakeholders Bosch and Harman have already started implementing haptic technologies in concept car prototypes in collaboration with touchless haptics technology developer Ultrahaptics. Consistently, Harman has integrated haptic technology from Ultrahaptics to develop an intuitive system which can seamlessly control infotainment and several other in-vehicle functions. The Ultrahaptics technology uses ultrasound to present physical sensations onto the user's hands i.e. the users can receive haptic feedback for gestures without gloves or any special equipment. The technologies dedicated for haptic sensations and gestural interfaces works seamlessly with HARMAN's custom visual interactive graphical user interface (GUI) enabling the driver to control the embedded infotainment system with hand gestures. Bosch, on the other hand, uses Ultrahaptics' touchless haptic technology for enhancing the human–machine interface (HMI) of the Bosch infotainment system (in-car audio or connected-car applications). The technology provides a feedback, assuring the driver that his hands are in the right position to engage the gesture recognition. This avoids the accidental cancellation of the command as well as the requirement of taking eyes off the road for providing inputs to the infotainment system.

The "so-what?" factor

Haptic technologies are expected to impact the segments of the automotive industry where remote accessibility of systems is necessary. Like most of the disruptive technologies, the use of haptics is also expected to influence the outsourcing market. Companies offering engineering services are expected to venture into the haptics subsegment initially through establishment of CoEs, publishing thought leadership whitepapers (individually or in partnership with academic or research institutes) and development of POCs. The engineering service providers having a strong portfolio of automotive-related services with experience in connected cars, EV projects are expected to have a competitive advantage over the others. These firms may also consider acquiring smaller technology developers/system integrators to enhance their competitive edge. With most of the developments happening across the US and Europe, it can be expected that the Japanese automotive market will soon join the technology bandwagon. Service providers with a presence in these regions will thus, have an upper hand.

Autonomous Vehicle not a Threat to Truck Drivers, Finds Study

According to a new report commissioned by the American Center for Mobility, led by Michigan State University and supported by Texas A&M Transportation Institute:

- Automated vehicles will displace only a modest number of truck driver jobs, if any, in the United States,
- The report suggests that significant numbers of AVs will be deployed only by the latter half of the 2020s and at that point, some displacement of passenger car-based driving jobs could occur, mainly among taxicab drivers.
- Due to existing truck driver worker shortages, and the belief that automated technology will largely support truck drivers instead of replacing them, truck drivers are not likely to be displaced in large numbers.
- Limousine and bus/transit drivers who are executing services that necessitate face-to-face interaction or passenger assistance, such as luxury services and paratransit, are less likely to be displaced by automated vehicles in the foreseeable future. These drivers will likely undergo training to learn how to use the new supportive technology.
- Based on the report's findings, ACM and the study authors recommend the following steps be taken:
- Conduct additional research that captures the input of the vehicle operators in different workforce sectors on what training they would be interested in pursuing.
- Identify, in greater detail, the specific skillsets needed by the automotive and technology industries to facilitate the creation and adoption of AVs.
- Establish rapid coursework and training that meets those specific needs.
- Conduct additional research to quantify the overall positive financial impact of automated vehicle technology on the economy as a whole, and the potential for job creation.

Finally, the report suggests a substantial change to the way workers in many industries do their jobs, in some instances radically. The research indicates motor vehicle manufacturers and technology firms working in the automated vehicle arena are already finding it difficult to hire enough workers with certain technology skillsets; and as automated vehicles begin to proliferate, maintenance and certain adjacent occupations will need to evolve and expand.

The research was funded by ACM, Waymo, AARP and the Toyota Research Institute.

Cox Automotive Mobility Study

According to findings from the 2018 Cox Automotive Evolution of Mobility Study:

- Autonomous Vehicles, consumer awareness of driverless vehicles has skyrocketed and the desire for autonomous features is high.
- The study finds 84 percent want to have the option to drive themselves even in a self-driving vehicle, compared to 16 percent who would feel comfortable letting an autonomous vehicle drive them without the option of being able to take control.
- The number of respondents that believe roadways would be safer if all vehicles were fully autonomous versus operated by people has decreased 18 percentage points in just two years.
- Self-driving vehicles are seen as less safe by consumers compared to two years ago, with most notably, the vehicle autonomy preference shifting from Level 4 to Level 2 – the level currently available in most new vehicles.
- In a similar 2016 study1 from Kelley Blue Book, when survey respondents were asked to make a choice between the different levels, Level 4 autonomy hit the "sweet spot" by providing all the benefits of full vehicle autonomy without stripping away the option of driver control. Now attitudes around self-driving technology have reversed with nearly half of consumers responding they would never buy a Level 5 vehicle (49 percent, up from 30 percent in 2016).
- Generation Z, 12-22-year-olds, and Millennials, 23-36-year-olds, are less hesitant, with less than half of respondents saying they would never purchase a Level 5 (Generation Z at 48 percent and Millennials at 39 percent).
- Recent high-profile accidents involving autonomous vehicles have cast a shadow on driverless appeal and software, but the accidents may only be slightly to blame for a change in consumer sentiment.
- Three-fourths of consumers say fully autonomous vehicles need real world testing to be perfected, but 54 percent prefer this testing take place in a different town or city from where they live.
- Despite some negative media coverage, consumers want, and expect, semi-autonomous features, particularly those centered around safety, signaling a disconnect between consumer perception of safety tech features versus fully autonomous vehicles.
- In fact, 54 percent of respondents agree that semi-autonomous features make people better drivers. Collision warning alert system and collision avoidance system are top-ranked features considered a must-have in the next vehicle purchase/lease.

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Virtualization Technology in Automotive

It is a well-accepted fact that in the future of the automotive industry — autonomous driving, connectivity, and mobility — the role of software is going to increase exponentially. We are also witnessing an increase in the software complexity and the number of components in automotive.

At present, the approach of vehicle system designing is towards modularized vehicle control system where the software subsystems are distributed across multiple control units but it is widely believed that the future of the automotive industry will be more towards centralized vehicle architecture.

The centralized architecture has advantages like it can save development cost as well as enable faster communication and computation power but it requires integration of hardware and software components of different automotive safety integrity levels.

There are standards like AUTOSAR available that provide flexibility in integrating different software components but they also have disadvantages as they compromise on isolation from software interference.

In this line, Virtualization has emerged as a technique which can handle the upcoming innovations, increasing complexity and the requirement of computation power in automotive.

Virtualization is not a new concept and it is being used for several decades in server domains, ensuring integration of heterogeneous subsystems without interference. With the increased usage of faster multicore chips in the automotive industry, the scope of implementation of virtualization has increased.

Virtualization is achieved through an introduction of a software layer termed as Hypervisor or Virtual Machine Monitor into the system that creates and runs virtual machines that can host operating systems like Linux and Android, and also real-time operating systems such as AUTOSAR etc. It makes it possible to run functions with different requirements regarding real-time behavior and functional safety simultaneously on a single SoC.

Image Courtesy: Avnet

It also creates virtual software containers, such that any hiccup or breach in a single car functional domain can be isolated and does not impact or create vulnerabilities in other domains of the car. With Hypervisor each of these two systems is isolated and kept safe, so that for example if the infotainment system were to crash, it would not take the safety-critical systems down with it.

There are a number of companies that have launched such products for the automotive industry. BlackBerry has launched QNX Hypervisor 2.0 based on its SDP 7.0. It enables developers to partition and isolate safety-critical environments from non-safety critical environments, ensuring that no critical systems are put at risk.

Another company Mentor Graphics Corporation also has a product named Mentor® Embedded Hypervisor for in-vehicle infotainment (IVI) systems, telematics, advanced driver assistance systems (ADAS) and instrumentation.

Renesas Electronics Corporation, a supplier of advanced semiconductor solutions, has also announced software packages for the R-Car automotive computing platform implement embedded optimized virtualization technology.

Green Hills software also has a product INTEGRITY Multivisor which the company claims to be the most powerful, reliable, and flexible embedded virtualization solution.

The Automotive Grade Linux project has also unveiled a virtualization framework for its Linux-based automotive distribution that aims to provide a flexible, mixed criticality bus architecture to plug in multiple existing hypervisors and partitioners.

There are also other companies that have launched products that revolve around this technology and many are in the process of launching.

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Conference Report: TI Automotive 2018

TI Automotive 2018, a conference cum exhibition was held on 5-6 September at Westin, Pune. This was the 8th edition of the annual conference which is held every year since 2011. Many leaders across the automotive industry took to stage to share their experience, expertise and vision.

Sanjeev Malhotra, CEO, NASSCOM CoE-IoT, said that the now the conversation has changed from "whether" the autonomous car is coming to "when" it is coming. He said Automotive sector is undergoing a rapid change and there has to be a collaborative effort in order to take advantage of this change. He said newly formed Drift Alliance will play a major role to meet this goal.

Vadiraj Katti, Managing Director, iTriangle Infotech, said that it is a very exciting period and telematics sector is poised for high growth and India will be leading from the front. An interesting change, he said that now the customer is now willing to pay for services like driver behavior, vehicle Diagnostics, Vehicle health monitoring etc. Another trend he cited was that the Invisible electronics in the automotive is rising fast. He pointed out that in future industry will be more organized. He also discussed challenges like price sensitivity security interoperability etc which will require industry to collaborate. He pointed out the need for collaboration among the players of the industry which has become more imperative after AIS 140 fiasco in which governmrnt abruptly ended the proposal. He announced the formation of Drift Alliance that will fill the vacuum for a platform for the industry. The alliance will put forward the views of the industry and also guide the government in various related matters.

Saurabh Chandre, Director - Mobility & IOT, Tata Communications, said evolving technology is not only a challenge for developers but also for policy makers. He said the sector has huge growth potential and in coming years commercial vehicles will dominate. Right now connected vehicles are only one percent in India but in future it is expected to rise. According to him infotainment and navigation will be more popular services. He also said that he expects that number of vehicles with esims to go up. The companies should focus on development of products that are pervasive, reliable, secure, scalable and affordable.

Gopalakrishnan S., IAS, Joint Secretary, MeitY, Govt. of India, said will take time for people to realize the potential of this technology there are also issues like standards that has to be resolved. Data privacy he said is also an issue and customer consent has to be clearly written so that customer can understand how his data is going to be used and whether he approves it or not. Anonymization of data in this context, he said, is a challenge also the questions on localization of data and storage of data in cloud that has to be resolved. He opined that slowly people are getting accustomed to new technologies but they need to be made more aware and educated on this. Despite challenges he said nothing can stop an idea whose time has come.

Rafiq Somani, Area VP, South APAC and Middle East, ANSYS, explained the role of simulation is increasing with the rise of autonomous vehicles.

For testing of an autonomous vehicle it has to be driven millions of miles in which simulation play a crucial role. The software in car price is rising which necessitates safety check, there are also issues of reliability of electronic products, cybersecurity etc for which simulation is necessary.

Dr. Luca Castignani, Head - Autonomous Mobility Strategy, MSC Software, introduced his company MSC Software which is a NASA spin off. He said, the company works on simulation technology and develops digital twins for cars as well as roads. Pegasus is a product of the company that can create 3D environment at a faster rate than other such products in market.

Frederic Silva, Director ITS, OROLIA, said from telematics products to autonomous vehicles all rely on GPS and GNSS therefore cybersecurity is critical. There can be issues like Jaming, Disruption of signals or signal weakening. Due to spoofing location can be deceived which can bring location services etc into question therefore extra caution is needed. He said Orilia enables control

and identification of these problems and suppresses jaming, blocking and spoofing.

SJR Kutty, Head - Vehicle Attribute & Technical Services, ERC, Tata Motors, said that safety is the major concern for us today. He said in every 4 minute an accident occurs and 70% people killed are young people. He also pointed out the economic losses that take place. Human error is responsible for 36 % of accidents and therefore by the use of advanced vehicle technology the situation can be improved. He said, even simpler technologies like automatic emergency braking can reduce the affect of accident. Mr. Kutty said system complexity, cost sensitive market, indiscipline on road is some of the challenges. . He also talked about 4E philosophy i.e. Engineer, Educate Environment conducive for development and Enforcement to meet these challenges.

Shivalik Prasad, Executive Director, MapmyIndia, said that the technology is changing but mobility which is basically the desire to move has remained same. He pointed out how complex a country is India, with huge number of roads around 6M, with varied addressing systems and mostly being unnamed. He said that these factors make mapping in India very challenging. There is a need of indigenous solutions to work in the country and therefore International companies have to collaborate with local companies to understand better the Indian conditions.

S K Patra, Vice President, Delhi Integrated Multi Model Transit

Systems (DIMTS), pointed out the difficulties and challenges faced by public transport corporations. He said there are 20 lakh registered buses in India and among them 50% are public transport buses and 15% of those are owned by STRUs. These buses carry around 70M passengers everyday so there is immense possibility to generate data but still very less data is being collected. Also the data collected is not real time therefore the whole picture of the situation cannot be mapped. The use of telematics and real time collection and analysis of data can help generating insights that can improve efficiency of these organizations. For this Mr. Patra called for a change in mindset and consideration of perspectives of customers as well.

Tsjerk-Friso Roelfzema, Vice President Automotive Europe & Asia, TomTom, introduced his company TomTom to the audience and said it is working with major players in the automotive ecosystem. He talked about the trends in the automotive industry like connected cars, automatic driving, shared mobility and electric vehicles. He said that in future car ownership will go down. In Europe there is faster adoption of these technologies and more number of people are connecting their cars to smart phones. He pointed out the need of legislation to help this industry grow as India has only one percent connected cars. He said products from TomTom can help in meeting the challenges like "range anxiety" for electric vehicles and help in finding EV charging stations and thus can help in accelerating the adoption rate.

Vishal Bajpai, Co-Founder and CEO, SecureThings, talked about cyber security challenges in emerging connected vehicle industry. He said Automotive transformation which we are witnessing is part of the bigger trend called digital transformation. Many new areas are being created due to AI and ML that have added a whole new paradigm, there also technologies like blockchain that has further extended the extent of this ecosystem. But with these advancements many new attack vectors have come up and with increased software in the car, it has become more hackable. He said that this threat is very real and the motivation for hackers will it increase with adoption of these technologies. Developed countries like US have taken some initiatives in this regard but other countries like India should also mull upon this. To meet cyber security challenges the customers need to be made more aware. He also underlined the criticality of OTA updates and need of multiple layers of security in meeting this challenge.

Sukriti Jalali, Head – Blockchain & IoT, HiTech Business, TCS, talked about blockchain that has become a buzzword. She explained that Bitcoin cryptocurrency is only one of the many potential applications of blockchain. She discussed about the basics of blockchain and various advantages it can offer to the automotive industry. Blockchain can help in creating trust, improving compliance, removing intermediaries, increasing supply chain visibility and upfront resolution of conflicts. Blockchain is still very far away from its adoption but with formation of MOBI consortium a silent Revolution

is underway and in future it will be more visible, she said. In applications such as digital identity, car sharing, targeted recalls, EV charging, P2P transaction, automated payments, blockchain can play a major role.

Dr. Sharmila H. Amin, MD - South Asia India, Bertling Logistics, talked about India's road network which is second largest in the world and automotive industry which the fourth largest in the world and contributes 3.4 % to the GDP. She said, vehicle telematics has number of smart features that logistics domain can use to empower their business. Features like accurate information about location, can give organizations more control over their business. It also reduces operation cost, increases safety of vehicle and goods, improves driving habit, enables better customer service and bridges operational gaps, she said.

R R Dasgupta, Chief Digital Advisor, Microsoft Corporation, said that mobility is not just about connected vehicle but it is more about experience as the consumer wants to be valued in a different way now. He also talked about the challenges like right to anonymity, privacy and designing of customized products. He also discussed that marketing has marketing has changed from "marketing to many" to "marketing to one" and evolution of a new type of marketing known as "algorithm marketing" which is more centered towards the customer. He informed that around 40% of revenue for Microsoft comes from Automotive, of which many are not aware.

Madhusudan Shekar, Principal Technical Evangelist, Amazon Web Services. said vehicles are transitioning from an electromechanical product to a software product but there exist separate software silos acting independently but not interacting, which needs to change. The concept of mobility is being redefined and new Business models are being developed. He said, building backend software is a more difficult task, he also talked about how Amazon Web Services is playing its role in this regard and gave an overview of the reference architecture developed by the company.

Diwakar Bedekar, Director of Engineering, Ridecell | TI Automotive 2018, introduced his SaaS Company Ridecell to the audience. He said India is the prime market for mobility services as by 2030 it will have huge population residing in cities and most of them will be in job sector requiring frequent commutation. He said there is huge headroom for growth in shared mobility space and OEMs, Tier1s, Energy companies, Dealers etc are also now looking to take advantage of the growth potential this sector has. He talked about autonomous ride-hailing and said its path will go through car sharing and ride hailing services which will lead to insights on the business.

Anup Patil, CEO, Intangles Lab, talked about "digital twin" that allows analysis from multiple perspectives. The data is collected from the car and transferred to the cloud where it is monitored and analysed. Diagnostics and prognostics are two different type analyses that are done that leverages data to get insights that can help in taking corrective measures, he informed.

Vivek Tyagi, Director Business Development & Sales, Western Digital, talked about data explosion that is taking place in Automotive sector. He said, by 2030 zettabytes of data will be produced and every data cannot be pushed into the cloud due to issues like cybersecurity challenges, bandwidth limitation, latency etc. Due to these challenges data needs also to be stored in the car leading storage companies will come into play.

Vijay Kumar, CEO & Principal Officer, Go Digit General Insurance, said that trust is a factor in insurance and telematics can bridge this gap. He said that real headway has not been made till now and the industry is still expecting some bold steps. The premium has dropped over years, which is affecting the profitability of industry, telematics can thus play a big role in meeting this challenge. He also pointed out that there are regulation issues and need of collaboration between OEMs, insurance companies and telematics providers.

Swaminathan K, Vice President, Robert Bosch, discussed the trends in automotive sector ie connectivity, autonomy, electric vehicles and shared mobility. He said the vehicle ownership is coming down and new business models are being created revolving around this trend. He also said services like roadside assistance, fleet management, IT sector are gaining popularity.

Panel Discussion:Vehicle Telematics: Creating New Business Experience

Moderator: Farhaan Mukadam, VP, Alvarez & Marsal

Panelists:

- Ranganayaki Rajagopal, IT & Enterprise Architect, Volvo Group Connected Solutions
- Mohit Mehrotra, Managing Director, Omnicomm India
- Mandeepsingh Khangura, Executive Director, Pointer India
- Anay Shukla, Head Supply chain solutions, Apollo LogiSolutions
- Abhijeet Konduskar, CEO, Konduskar Travels

Key points that came up during the discussion:

- Telematics is no more just a location based technology and features like travel monitoring, vehicle health monitoring, preventive maintenance etc are being added.
- Telematics is now seen as an empowering device not only a monitoring device. The expectations of the consumers are also rising which is leading to introduction of these new features.
- There are still customers who are still not aware of the benefits of telematics they need to be made more aware.
- Business models are changing, therefore the players need to align their strategy according to them.

Panel discussion Securing Data Driven and Software Defined Mobility

Moderator: Gowtham Kumar Sampath, Head – ICT Research and Consulting, Infoholic

Panelists:

- Akshay Tiku, Director Cybersecurity (Africa, India, Middle East), E&Y
- Mubin Shaikh, Partner, Risk Consulting - IT Advisory, KPMG
- Bhaskar Ghose, Head, BD (India) – Mobility & IOT, Tata Communications

Key points that came up during the discussion:

- A lot of sensors are coming up that has also increased the potential risk along with opportunities.
- Cloud has to be secured as it has become synonymous with connected car.
- Automotive cyber security has to be part of the strategy of the companies.
- Issues can come up on any level of the chain like, application, analytics, storage etc therefore the whole Chain needs to be secured.
- There is a need for a synchronized policy on cyber security.
- In future car security will be a business enabler and product differentiator.
- There is a lack of cyber security skills in Automotive sector therefore there is need to develop these skills. In this context India can emerge as innovation hub in cybersecurity.
- One size fits all cannot work but there is need of standardization, set of protocols and getting rid of silos.
- Responsibility regulation mechanism should also come into play, there is also a concept of digital trust emerging that needs to be addressed.
- Blockchain can be a technology along with supervised machine learning that will be playing a main role in cyber security ecosystem in future.

Panel Discussion: Smart and Shared Vision for Road transport.

Moderator: Roland Haas, Founder & CEO, QSO Technologies

Panelists:

- Dr. Kamal Soi, Member-National Road Safety Council, MORTH, Govt. of India
- Bhuvan Anandakrishnan, Director, Caterpillar India
- Kiran AR, Technical Director, iTriangle Infotech
- Saurabh Pushkarna, Deputy General Manager, Mahindra (Truck and Bus Division)
- Sanjay Krishnan, Founder, Lithium Urban Technologies

Key points that came up during the discussion:

- The future of mobility will be shared connected clean and distributed.
- Data is one of the reasons for the rising popularity of shared mobility.
- Products to be designed keeping in mind the end users.
- Market intelligence will be very important for proper asset utilization.
- Fully autonomous vehicles remain a distant dream for India, level 1 or level 2 autonomous vehicles may be possible in future.
- Now shared mobility companies are sharing data for better development of products. Consortium are also coming up for sharing of data.
- Data is being made available to youth through which will give rise to new insights

Panel Discussion AI /ML for Automotive Applications

Moderator: Jeffry Jacob, Partner, Roland Berger

Panelists:

- Pankaj Rabha, Platform Solution Architect, INTEL
- Pravin Samuel, Senior Manager, Technical Sales, Harman International
- Srinath Manda, Associate Director-Automotive & Transportation, MarketsandMarkets
- Ishan Sinha, Vice President, Amber Connect

Key points that came up during the discussion:

- Application of AI and ml in automotive is going to increase massively in next 10 years. This phenomenon is part of fourth wave of digital transformation.
- In US 22 % of startups are in AI, China is also catching up.
- OEMs are at the top of a chain of this evolving connected ecosystem so they need to take charge.
- In future repetition and fault tolerance etc would be taken care of by using ML and AI that can analyse data and can predict how the vehicle will travel.
- These technologies ensure better traffic by redirection and optimum use of road infrastructure.
- Technologies like digital twin are also evolving and based on digital twin in cloud, problems can be predicted and solved.
- There is also need of regulation and development of guidance models that are still to evolve.
- AI has the potential to increase GDP by 1.5 percent, therefore there are a lot of economic benefits of adoption of these technologies. AI can cause some drop in manual jobs but there will also be creation of skill based jobs.
- Cost is a challenge for emerging market economies and there is a need based adoption as focus is on security but in developed markets, there is value based and user experience based adoption.

The conference ended with Vote of Thanks by Col Rahul, who thanked the attendees, sponsors and organizers. ▪▪■

Solid state batteries gaining ground

With increasing innovation and environmental awareness, EVs are gradually gaining popularity. Some automakers have already launched electric vehicles and every automaker plans to have electric vehicles in its portfolio sooner or later.

EVs have benefits like immediate torque, silent ride, and premium performance, they also have lower fuel and maintenance costs with the overall cost of EV ownership being lower than gasoline-powered cars.

Image Courtesy: Nikkel

The most of the electric car manufacturers are depending on the Lithium based batteries. They're generally lighter, have very high energy density and can handle hundreds of charge/discharge cycles. But they start degrading as soon as they are produced, are extremely sensitive to high temperatures, they are also very expensive.

The battery performance of lithium-ion batteries at present is sufficient to be used in EVs to be used in future there is a need to allow vehicles sufficient range and autonomy which requires an increase in energy and power density along with meeting concerns on durability, safety and cost.

This is where Solid-state batteries come into the picture. It is a technology that uses both solid electrodes and solid electrolytes, instead of the liquid or polymer electrolytes.

It has several advantages as it has the higher energy density, has tolerance to higher temperatures, and is safer as it avoids the use of liquid electrolytes which are considered to be flammable. Solid-state batteries are also believed to allow for faster recharging and have a longer cycle life.

Many automakers are working on solid-state batteries, the list includes BMW, Honda, Hyundai, Toyota, Nissan, Volkswagen etc.

BMW recently announced a partnership with Solid Power, a company which has been researching this tech since 2012. The company is also performing its own R&D at a newly built center focused solely on batteries, located near Munich.

Toyota, Nissan, Honda, and Panasonic have also teamed up for a new research and development program to develop solid-state batteries. The Consortium for Lithium Ion Battery Technology and Evaluation Center, or "Libtec," is also being supported by a $14 million support grant from Japan's Ministry of Economy, Trade, and Industry.

Last month Volkswagen became the latest automaker to invest in solid-state batteries for electric cars as it took a stake in a startup that hopes to bring the tech to market. The German automaker announced a $100 million investment in QuantumScape, a solid-state battery startup that spun out of Stanford.

Hyundai Cradle, the automakers' corporate venturing and open innovation business arm, is investing in Ionic Materials to develop the solid-state battery. Automobile supplier Continental is also looking for partners to possibly enter into solid state battery production starting around 2025.

NGK Spark Plug, a Japanese company also plans to develop solid-state batteries. Fisker Inc is also working on the solid-state battery which it claims will have 2.5X the energy density of today's lithium-ion batteries.

To their disadvantage, solid-state batteries are traditionally expensive to make and the cost is one factor that impedes the adoption of solid-state batteries. In addition, its operation at lower temperatures may be challenging. For solid-state batteries for their wide-scale adoption need to be manufactured at scale and at low enough cost. Also,there are chances that in the meantime, another battery technology could emerge and change the dynamics totally.

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John Cameron is general manager of Trimble Field Service Management (FSM), where he is responsible for worldwide operations and development. Prior to joining FSM, Mr. Cameron was general manager of Trimble's Spectra Precision Division and before that general manager of Pacific Crest Corp., a company he co-founded in 1994 that was acquired by Trimble in 2005. Mr. Cameron holds a bachelor's degree with highest honors in mechanical engineering from UC-Berkeley and a master's degree in mechanical engineering from Stanford University.

Telematics has long been regarded as being the basis for tracking the location of vehicles. However, telematics technology is advancing quickly and more and more organisations are looking to extend solutions to track their workforce and more importantly their assets. Telematics deployments are becoming much more cost-effective and the entire service workflow increasingly connected. Indeed, telematics today can share real-time information and connect mobile workers in the field with the back office, customers and equipment.

Businesses that invest in telematics driven connected workflows see many benefits; especially when combined with deeper analytics systems. One such benefit is switching the service model from a reactive, break-fix workflow to a preventative and, ultimately, predictive model. These advanced workflows require a tight connection from the asset to the service management system and telematics is often a good candidate for providing this connection.

Telematics Powering Service Workflows

The advantages of moving to more advanced service models are significant. In many situations, the downtime of the asset poses a significant cost to the business. The ability to perform maintenance at more opportune times i.e. when the equipment is not needed operationally can have dramatic results. Consider, for example, construction equipment. Construction jobs run on tight margins and have a lot of cross dependencies between tasks. A broken piece of equipment can bring the entire project to a halt; impacting much more than the task it was designed to perform.

Connecting assets in a service workflow requires more than just reading data from the asset; it requires a rethinking of the service workflow and often of the business model. In a break-fix model; most service requests originate from the customer directly and there is a tight link between the problem and the resolution. In more advanced service models, such as preventative and predictive, these links are less apparent. Service providers need to be able to communicate and share data with their customers in new ways to ensure that each party understands what is driving the maintenance activities.

Image Courtesy: Telematics

This is often a much more difficult task than implementing the technology and needs to be considered carefully.

As an example, many assets and equipment today are equipped with sensors, connected to cloud software, that can monitor telematics data. This data can include machine operating

Image Courtesy: Analytics

hours, the state of the motorised parts and health information such as faults and diagnostic codes. Any unexpected behavior is visible remotely to the service provider, including its exact location. The equipment sensors can automatically trigger a service call when it needs something repaired or is due for maintenance.

There are still many advantages to deploying telematics to connect assets even with break-fix workflows. Understanding the condition of the asset before deploying a technician will improve first time fix rates; which will drive higher customer satisfaction. This is often the first step in changing the service model.

Connecting Assets from Multiple Suppliers

A challenge many service organisations need to consider is how to connect to assets from multiple suppliers. Each supplier often has their own proprietary systems that have different data formats which make integration difficult and time consuming.

Some industries are starting to incorporate data standards that help alleviate much of the effort required to establish connections to the assets. One example is the Association of Equipment Management Professionals (AEMP). A standard protocol was recently adopted that allows for fault code and other information to be shared in a standard way. This standardisation helps create more interoperability in the market and will surely be a boost to connected workflows in this market.

The future of Telematics

The future for telematics is certainly bright. With businesses increasingly looking toextend their telematics capabilities to track their vehicles, workforce and assets, investing in telematics driven connected workflows, combined with deeper analytics systems, is certainly desirable. We will see businesses switching the service model from a reactive, break-fix workflow to a preventative and, ultimately, predictive model. These advanced workflows require a tight connection from the asset to the service management system and telematics is integral to providing this connection. ▪▪■

The urban mobility landscape being reshaped, says report

ABI Research, a market-foresight advisory firm has published a report– Smart Cities and Transportation Electrification. The important points put forward by the report are as follows:

- Consumer adoption of Electric Vehicles (EVs) continues to disappoint with only 2% of all vehicles shipping in 2018.
- The widespread introduction of urban emission zones, initially aimed at banning older diesel vehicles, will culminate in zero emission zones and city centers restricted to EVs only.
- Vehicle electrification adoption drivers will increasingly shift from consumer-ownership to shared urban mobility, initially ridesharing followed by driverless EV car sharing in the longer term.
- This shift to electric mobility services has important consequences for both charging station and grid infrastructure requirements. The business imperative of continuous operation and availability from both a profitability and customer experience perspective will drive the need for a granular network of both DC fast charging and future wireless public charging stations.
- With accelerating EV penetration, increasing stress on public grids will have to be mitigated by advanced demand-response and load balancing software solutions, EV charging management and Vehicle-to-Grid systems, widespread adoption of microgrids, and a more holistic, cross-vertical approach to energy management.
- Suppliers active in this space include Hevo Power, eMotorWerks, Greenlots, Nuvve, Jedlix, MOEV, and FleetCarma, recently acquired by Geotab. Ultimately, the transportation electrification revolution will require a fundamental redesign of the grid itself, tailored to accommodate distributed and decentralized modes of renewable energy consumption and generation in urban contexts.
- Finally, smart cities transportation electrification will be multimodal, with EVs complemented by electric 2-wheel vehicles (bikes, scooters, and motorbikes), shuttles, boats, and future passenger carrying drones. Clearly, the dominance of car-based mobility is not sustainable.
- Uber's recent investment in and partnership with Lime on electric scooter sharing and Lyft's strategy to integrate bike and scooter sharing shows the urban mobility landscape is yet again being reshaped. ▪▪■

Alliances

Volkswagen Group of America (VWGoA), Aquantia, Bosch, Continental and NVIDIA form Networking for Autonomous Vehicles (NAV) Alliance

Volkswagen Group of America (VWGoA), Aquantia, Bosch, Continental and NVIDIA have announced the formation of the Networking for Autonomous Vehicles (NAV) Alliance.

The alliance aims to develop the ecosystem that is required for next generation Multi-Gig Automotive Ethernet network in the vehicle. **It will** provide a platform for the automotive industry to develop the next generation of in-vehicle network infrastructure for autonomous vehicles and facilitate wide deployment of networking technologies and products.

NAV Alliance's Founding Objectives

- Promote development of new specifications, as well as build consensus for new technologies related to Multi-Gig Ethernet automotive networking
- Create procedures and testing requirements to endeavor to ensure interoperability, security, and reliability of the in-vehicle network
- Promote products and solutions that adhere to the new specifications
- Liaise with standards bodies to build consensus, create IEEE proposals, and promote standardization
- Build awareness and educate the market place and users on the requirements for autonomous vehicle networks
- Founding members have announced that they will focus on these core objectives and expand the NAV Alliance membership roster in the coming months to include additional automotive suppliers and manufacturers.

Image Courtesy: NAVe Allianc

JASPAR

Electronic control system software and in-vehicle network are advancing and also with it are also getting complex. This has led to the need of standardization of in-vehicle software and networks. Japan Automotive Software Platform and Architecture (JASPAR) is an organization dedicated to this cause along with increasing development efficiency and ensuring reliability.

Under the umbrella of the organization engineers from various industries such

Image Courtesy: Jaspar

as car manufacturers, tier-1 suppliers, semiconductor manufacturers and software developers are working for standardization in technology area of in-vehicle network, software, microcontroller and multimedia.

The mission of the institute is to identify the common issues to be faced in the future by the car electronics sector and undertake standardization initiatives aimed at resolving those issues to encourage the following objectives across the entire automotive industry.

To undertake standardization of car electronics technology the organization collects the views of member companies venturing into new areas of cooperative activity in a timely manner and reaching prompt decisions. In addition it maintaining and builds on the outcomes of past activities.

It has many working groups dedicated to, Functional Safety WG, AUTOSAR Standardization, In-Vehicle LAN, Bluetooth Conformance, Mobile Device Interface, Next Generation High-Speed Network, Dynamic Vehicle Information Sharing, Cybersecurity, OTA etc.

Toyota, Nissan, Honda, Denso,etc are some of the prominent members Along with these companies there are also around two hundred companies that are the members of the organization. Recently, Airbiquity, known to be a business-to-business software development and engineering company operating in the automotive telematics industry, has also joined the organization.

JASPAR seeks to be an organization that can lead the automotive industry by promulgating and encouraging the broad-based adoption of new ideas and technologies developed in Japan by utilizing the proven technical capabilities of its members.

The organization is also collaborating with other standardizing organizations in Japan and overseas.

Denso joins HD BaseT Alliance

The HDBaseT Alliance is a not-for-profit organization tasked with promoting and advancing HDBaseT technology as the global standard for ultra-high-definition, digital connectivity.

HDBaseT is the global standard for the transmission of ultra-high-definition (such as STP, HSD, coaxial and fiber).

Since its introduction in 2010, HDBaseT has revolutionized the video distribution sector. It brings a rich feature set, increased reach, and better performance than existing solutions. The cornerstone of the technology is

Image Courtesy: HDBT

video & audio, Ethernet, controls, USB and up to 100W of power over a single, long-distance, cable.

For automotive, HDBaseT can be transmitted over a single unshielded twisted pair (UTP), for up to 15m/50ft, or any other commonly used media 5Play, the converged and simultaneous delivery of uncompressed ultra-high-definition digital video and audio, Ethernet, USB, control signals and power over a single cable.

The Alliance was established in 2010 by LG Electronics, Samsung Electronics, Sony Pictures Entertainment and Valens, and it has since brought together the leading names in the consumer electronics, professional AV, industrial and automotive sectors.

With more than 200 company members, the Alliance is active in educating the market on the benefits of the technology. The HDBaseT community consists of vendors, installers, integrators and professionals in these sectors, and end users, who are looking for a better solution for high-quality video transmission. The Alliance caters to all of these audiences with dedicated content, webinars, participation in conferences and tradeshows, and more.

Recently, DENSO, a supplier of advanced automotive technology has joined HDBaseT Alliance, as a Contributor member. The company has also joined Automotive Work Group, which is responsible for leading the standardization of HDBaseT Automotive technology. The Work Group is tasked with the development and establishment of the standard – from identification and mapping of infotainment, ADAS, cybersecurity, and networking requirements to drafting and publishing the specifications.

Advanced Technology & Growth of the Automotive Industry to Drive the Global Telematics Market

Amey Amanaji
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Amey Amanaji is associated with MarketsandMarkets for more than 6 years, sharing his skills in the Market & Business Research in Automotive & Transportation domain. He has worked in projects related to emerging technologies for industry analysis, go-to-market strategy, growth strategy, competitive landscape, and industry valuation.

The term 'telematics' is defined as a system used for remote communication between vehicle and vehicle (V2V) or vehicle and infrastructure (V2I) through a wireless network medium. Over the years, the increasing stringency of safety norms by several regulatory authorities has compelled automotive OEMs and Tier-1 companies to make considerable enhancements in the safety and security of vehicles as well as passengers.

The rising demand for raw vehicular data, enhanced comfort and entertainment features, stringent safety regulations, growing smartphone and vehicle integration, and the need for improved operational efficiency and profitability have resulted in the growth of the **Telematics Market** for on-highway & off-highway vehicles. The Telematics Market for on & off-highway vehicles is estimated to grow at a CAGR of 14.37% during the forecast period, to reach a market size of USD 40.84 billion by 2022.

With technological advancements in connectivity solutions for the automotive industry, the fast exchange of data will become a reality in the coming years. Several companies are collaborating to develop the 4G LTE and 5G technology to support the developments in the area of connected vehicle solutions. For instance, in May 2017, **Continental AG** (Germany) partnered with **NTT DoCoMo, Inc.** (Japan) to develop advanced 5G networks to enhance the cellular based vehicle-to-everything (V2X) technology. In 2016, **LG Electronics** (South Korea) partnered with **Intel Corporation** (U.S.) to develop the 5G telematics technology for vehicle communication. The emergence of advanced telematics solutions would require faster 4G LTE or 5G connectivity to provide reliable vehicle communication, which is expected to fuel the demand for the Telematics Market in the coming years.

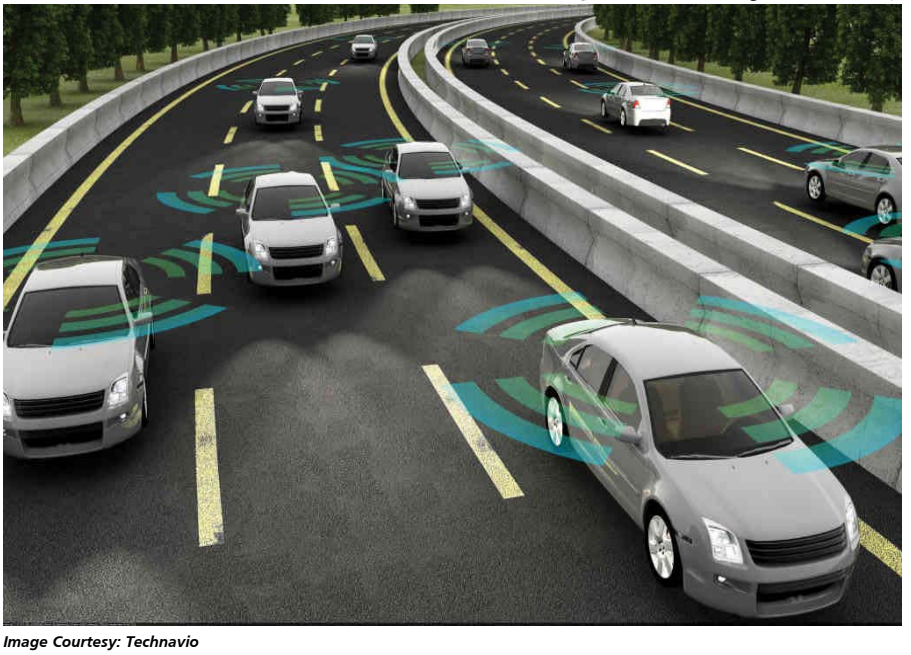

Image Courtesy: Technavio

With increased focus on passenger and vehicle safety, the safety and security regulations are continuously studied and updated by various governments. Some of these updated regulations will also mandate the embedded telematics solutions indirectly. For instance, the European Union (EU) has announced the eCall service mandate for all new passenger cars that will be produced after April 2018 in Europe. The Russian government mandated the emergency call service called 'ERA-GLONASS' for passenger cars in 2015. The eCall service requires an embedded telematics control unit, which can connect the car to the nearest emergency service provider automatically in case of a crash. While these regulations are initially proposed for passenger cars, they may also be implemented in light and heavy commercial vehicles in the near future.

With respect to vehicle type the telematics industry is divided into passenger cars, commercial vehicles, off-highway vehicles.

The passenger car OE telematics market is anticipated to grow to USD 33.69 billion by 2022 whereas telematics aftermarket for this vehicle

segment would reach USD 3.64 billion during the same period. For instance, the European Union (EU) has mandated the implementation of e-Call services for all passenger cars from April 2018. These regulations have led to tremendous growth in telematics adoption rate for passenger cars segment with a wide offering of safety and leisure features including automatic crash notifications, vehicle tracking, vehicle health alerts, e-call services, navigation, roadside assistance, infotainment services, remote diagnostics, and so on. Leading global OEMs such as General Motors, Mercedes-Benz, BMW, Subaru, Audi, Toyota, Lexus, and Hyundai among others are now offering factory-fitted telematics systems in selected models.

Commercial vehicles plays an important Telematics system in fleet management in the segment. With the help of a wide range of services such as fuel management, vehicle tracking and monitoring, route optimization, vehicle health alerts, maintenance checks and reminders, etc., fleet owners can bring down the operational cost and improve business efficiency. Additionally, the Federal Motor Carrier Safety Administration (FMCSA) has implemented the final rule for the adoption and use of Electronic Logging Devices (ELDs) in three phases. This rule requires the adoption and use of compliance ELDs within 2 years from the date of publishing. However, it allows fleets and drivers to use devices that meet the current standards for Automatic On-Board Recording Devices (AOBRD) (49 CFR 395.15) until December 2019. There is a 2-year clause from the final deadline for the adoption of ELD. FMCSA estimates that 3 million vehicles and 3.4 million drivers fall under this ruling, which can be a major revenue contributor for telematics systems market.

Off-Highway Vehicles - Construction activities are expected to increase across the globe in the coming years owing to increased infrastructure spending, particularly by the governments of developing countries. Increasing investments in infrastructure result in higher demand for construction equipment. As per analysis, the global construction equipment rental market is projected to reach USD 103.6 billion by 2025, growing at a CAGR of 3.11% from 2018 to 2025. The use of telematics system in construction equipment helps to support asset management, location tracking, engine health monitoring, fuel management, maintenance & repair scheduling, and diagnostics among others. Increased equipment usage makes its regular maintenance vital. With the help of telematics, minimal maintenance at regular intervals can prevent expensive equipment breakdown, thereby saving time and cost.

Automotive Telematics Trends, ByServices is segmented into automatic crash notification (ACN), emergency calling, navigation & infotainment, on-road assistance, remote diagnostics, and vehicle tracking. Telematics offers a perfect combination of safety & security and convenience features. Features such as ACN, e-Call, on-road assistance, remote diagnostics, and vehicle tracking help to meet the increasing demand for safety & security. On the other hand, navigation and infotainment services enhance the convenience for the user.

Another importance telematics service-remote diagnostics would grow at the fastest rate during the review period. The remote diagnostics service allows the users to proactively monitor the condition of the engine and other critical parts and sends a maintenance alert in advance, if required, to prevent a major breakdown. Additionally, predictive maintenance helps to check the vehicle operation and reliability to ensure smooth functioning and operational efficiency. Remote diagnostics also helps OEMs to diagnose a problem related to vehicle systems and try to fix it in the next version of the product. The need to minimize maintenance & repairing costs and achieve optimum operational output would drive the growth of remote diagnostics services

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The North American region leads the telematics market with the US at the leading position in 2017. The factors that drive the North American market are the higher adoption rate of advanced technology, the presence of prominent OEMs such as General Motors & Ford, rising and exceptional network coverage, and increasing demand for premium vehicles equipped with advanced safety and comfort features. Alternatively, the North American market is driven by the presence of commercial vehicle manufacturers such as Daimler, Volvo, Paccar, Navistar, and Hino that provide standard telematics unit in most of their vehicle models. Increasing demand for cargo lifting capability, compatibility with multiple applications, increasing wear and tear of the engine & other components, and rising demand for comfort and safety by the user have prompted OEMs to provide pre-installed telematics units in the vehicle to improve the productivity and efficiency of the vehicle.

How is geolocation helping businesses run more effectively?

Lauren George
Markintig Codinoter
ABAX

Lauren George has been working at ABAX for 3 years as Marketing Coordinator. Based in the Peterborough office. She had graduated in Marketing at Nottingham Trent University.

There are a number of definitions explaining what exactly geolocation is - most sources describing the term as location-based technology thatenables you to identify geographical coordinates of a computer, networking device or equipment. Geolocation can be used in a number of different ways such as marketing purposes, performance management, online fraud detection, analysing driving routes, real-time tracking of location, worker timings, and so on.

"Geolocation technology is changing the way companies work, and is being used more and more by businesses. The technology enables companies to manage their fleet of vehicles more effectively with more savings on operating costs", says Chris Miller, Country Manager at ABAX UK.

Management control system

"Geolocation with tracking in real time is invaluable support for fleet managers. Geolocation using GPS can be seen as a management control system since it provides useful information such as when the vehicles are being used, by who and where they are located. All this data is available using any device that is connected to the Internet", says Chris Miller, Country Manager at ABAX UK. This is a significant benefit of geolocation. For example, dispatchers in the logistics industry can keep a close eye on the transit, track the status of driver's tasks, analyse the traffic conditions in real time and assign jobs and breaks accordingly.

Improving the customer experience

GPS systems using the geolocation feature are often used by the field service industry, and delivery companies.

Fleet management

If service technicians require specific equipment, then the system using real time tracking is able to find the nearest located worker who have the required tools, and finish the job. Similarly, when delivering the goods, and in case of a broken down vehicle, the administrator has the possibility to identify the closest located vehicle in order to replace the driver, resulting in the order being delivered on time.

Geolocation makes the customer journey more pleasant, as the company has the possibility to inform the client about the specific location of their order, or service on the way. The fleet manager can check the geographical coordinates of the vehicles and send the accurate updates to the client. Accurate reporting with telematic solutions

As a result of digitisation and the increased use of telematics and technology in vehicles, geolocation is becoming more and more popular. This in turn brings 'big data' with it. The amount of data surrounding vehicles that can be accessed is endless and the need for reports is of utmost importance in order to be able to manage the data accordingly. Depending upon the individual accessing the data and the depth of data that is wanted to be seen, having scheduled reports sent directly to your mailbox is an effective way of keeping up to date with your vehicles and their whereabouts, without the need to login to a system to find out yourself.

Geo-location brings many advantages to other industries, such as the construction industry. Not only does the technology help those with vehicles, but also those with equipment. The increase in equipment and tools being lost is affecting tradesmen and their businesses. With geolocation, tradesmen can monitor where their equipment is, and ensure that it remains in the location that it was left in.

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Audi and Huawei conduct joint research in the area of Intelligent Connected Vehicles

Audi has signed a memorandum of understanding for a strategic cooperation with the Chinese information and telecommunications corporation Huawei. The companies will intensify their joint research in the area of Intelligent Connected Vehicles in order to improve safety and optimize traffic flows and create intelligent cities. The companies will also conduct joint research on high-quality, stable data connection, advancement of automated driving and the digitalization of services in the vehicle environment. To this end, the parties will additionally develop training programs in order to strengthen the skills of technology experts in both of these areas. The concepts will initially be concentrated on the Chinese market.

Image Courtesy: Audi

UPS and Thor Trucks to develop electric truck

UPS is collaborating with Thor Trucks to develop and test a fully-electric class 6 delivery truck in Los Angeles. Thor is a Los Angeles-based startup that recently came out of stealth mode by unveiling an electric semi truck prototype. UPS is a leader in logistics which offers a broad range of solutions. It is also working with a range of companies to test and deploy promising alternative fuel and advanced technology vehicles that will help it meet its sustainability goals. The truck is expected to be ready for deployment later this year. It will have a driving range of approximately 100 miles and will be powered by a Thor-designed and built battery that will be lightweight, durable and allow long-range driving distances.

Image Courtesy: Hardworkingtrucks

Honda launches Smart Charge beta program

Honda is introducing a new Honda SmartChargeTM beta program that allows Fit EV customers to charge when electricity demand is low and when the availability of renewable energy is high. It uses the vehicle telematics system and Enel X subsidiary eMotorWerks' JuiceNet software platform to compute the best time to charge a vehicle from the electric grid, dynamically taking into account the driver's daily schedule, the amount of renewable energy being generated, and the amount of CO2 emitted from power plants on the grid. By recording the customer's desired charging times, the system enables the vehicle to be fully charged when the customer needs it next without impacting their use of the vehicle.

Baidu and SB Drive to jointly develop and deploy self-driving mini bus for the Japanese market

Baidu and SB Drive, a subsidiary of Softbank dedicated to self-driving technology research, and King Long, have announced a strategic partnership to jointly develop and deploy a version of the Apolong self-driving mini bus for the Japanese market. Apolong is a fully autonomous mini bus co-developed by Baidu and King Long. The mini bus is powered by the Apollo open source autonomous driving technologies created by Baidu and is China's first fully self-driving electric bus to enter the volume production phase. Under the agreement, ten Apolong mini buses will be exported to Japan from China in early 2019.

Image Courtesy: Baidu

Volvo's new brand 'M' will expand its global mobility operations

Volvo Cars has launched M, a new brand that will expand the company's global mobility operations by providing dependable, on-demand access to cars and services through an intuitive app.Moreover, M will learn about its user's needs, preferences and habits, personalising the customer relationship. It will debut in Sweden and the US in the spring of 2019. M is developing proprietary learning technology that asks users about their specific needs instead of merely informing them where they can pick up a car. In addition to a team of experienced and digital software engineers and leading talent, M draws on 20 years of learnings and data from Sunfleet, Volvo Car Group's car-sharing pioneer.Sunfleet is the leading car sharing company in Sweden with 500,000 annual transactions and a fleet of 1,700 cars. It will be fully integrated into M in 2019, making the service available to all existing Sunfleet members. Further information about the M service will be released later this year.


Image Courtesy: Volvo

Siemens Travel Sense

Siemens Intelligent Traffic Systems has launched a new cloud application called Siemens Travel Sense. Time and traffic congestion gathering capability available on its popular ESCoS Roadside Unit (RSU) will now be available through this app. The company claims this application would give agencies a pathway for investing in Connected Vehicle technology without sacrificing current data collection capabilities.

Volkswagen plans "zero-emission" car sharing services

The Volkswagen brand has announced that it will be offering its customers car sharing services in future. The WE customer platform is to begin rolling out various vehicle-on-demand services, in particular car sharing, in Germany in 2019. These services are to be extended to major cities in Europe, North America and Asia as early as 2020.

Drive.ai's autonomous vehicle pilot program launched

Drive. Ai has launched an autonomous vehicle pilot in Frisco, Texas. The company has been collaborating with Frisco TMA to design a program that serves the community and brings them to and from the places they want to go.

The company has been driving its cars on the streets of its geo-fenced route in Frisco, which crosses six lanes of traffic, takes through parking lots, and involves pulling over to pick up and drop off passengers on-demand. The company in addition to "real world" logged miles, the company has racked up over one million simulated miles on our Frisco route.

Groupe PSA and Inria create an OpenLab dedicated to artificial intelligence

Groupe PSA and Inria have announced the creation of an OpenLab dedicated to artificial intelligence. The studied areas will include autonomous and intelligent vehicles, mobility services, manufacturing, design development tools, the design itslelf and digital marketing as well as quality and finance. This OpenLab ensures the synergy of PRAIRIE Institute. The results of the fundamental research led by the Institute will stimulate research into topics that are applicable to the automotive industry. The AI OpenLab adds to a global network of 18 existing facilities for Groupe PSA, with 12 in France, four in China, one in Brazil and one in Morocco. As research facilities, OpenLabs pool together teams and experimental resources from Groupe PSA and its partner laboratories, in line with Groupe PSA's Open Innovation policy and its StelLab network, created in 2010 to encourage scientific discussion. ▪▪■

Image Courtesy: Inria

ZF Spins off Car eWallet as a Start-up

ZF has announced a spinoff Car eWallet GmbH in which the company will outsource the current activities of the transaction service Car eWallet. The objective is to further develop and market the services like payments for refueling, re-charging, tolls, parking fees, car sharing etc. The first pilot projects of Car eWallet are expected to be launched as early as the second half of 2018.

Image Courtesy: IBM

The company first presented the Car eWallet service in January 2017. This provided an open automotive transaction platform for mobility-related services that will simplify technical services, digital trade and cashless payments between manufacturers, suppliers, service providers and customers. In spring, the temporary cooperation between ZF and the previous collaboration partners, the technology company IBM and the global bank UBS, had ended after successfully concluding the project phase. ZF will equip the start-up with seed capital; for ongoing funding, the start-up will advertise for investors. ▪▪■

Titan M1, Neuvition's high resolution LiDAR with video fusion

Neuvition has announced the first version of its 480 lines HD video LiDAR, Titan M1. The semi solid state LiDAR has a resolution of 480 vertical lines and 1280 pixels max for each line (resolution of 1280 x 480). It has up to 1.5 million points/sec data rate with multiple returns and distance up to 200 meters. It uses a 1550nm wavelength laser which is eye safe and works better in certain weather conditions compared to the 905nm laser. It is the dynamically adjustable so can be adjusted to use different resolution, power, scan density, distribution pattern, etc. Another important feature of the Neuvition LiDAR is the video fusion. ▪▪■

Baraja unveils Spectrum Scan LiDAR for autonomous vehicles

Baraja has unveiled Spectrum-Scan LiDAR that uses prism-like optics and shifting wavelengths of light to create powerful eyes for autonomous vehicles. Spectrum-Scan LiDAR represents an entirely new category of LiDAR that allows autonomous vehicles to smartly control and adjust scan patterns in real-time to adapt to complex, dynamic road conditions. It uses off-the-shelf components—like optical-grade silica-glass found that maximize automotive reliability and the ability to mass produce the technology for fleets while enabling long-term cost benefits. It also has a flexible, modular design that simplifies integration into the vehicle.

Image Courtesy: Baraja

Elektrobit launches EB cadian Sync

Elektrobit (EB) together with ARGUS Cyber Security has launched a modular solution, EB cadian Sync. The solution allows car makers to safely and securely keep their fleets up to date, regardless of size. It opens the door to offering software as a product (SaaP) or service (SaaS) over a vehicle's entire life cycle. With these new business models, car makers can offer "upgradeable" vehicles equipped with the hardware needed for a variety of exclusive features. Consumers are able to activate software functionalities after the car is purchased or for a special occasion.

Image Courtesy: Electrobit

The company claims EB cadian Sync offers car makers a non-intrusive method for maintaining their fleets, to have the latest software version installed. The solution also establishes an end-to-end, secure communication channel to enable OTA updates within the car. The scalable, hardware-agnostic software toolchain supports the OTA updates of software in all Electronic Control Units (ECUs) used in the vehicle and is not limited to head units and in-vehicle infotainment (IVI) systems. EB cadian Sync features a modular user interface (UI) portal for seamless vehicle, campaign, and software management. EB provides the backend required for such updates as well as all the required services to operate EB cadian Sync on the customer's infrastructure of choice.

DiDi and Continental collaborate on purpose-built electric cars

DiDi Chuxing has signed an agreement with Continental AG to cooperate in developing internet-connected, electric cars tailor-made for DiDi's ride hailing services. The Chinese ride hailing firm aims to develop dedicated "purpose-built" vehicles for congested cities like Beijing and Shanghai. The company wants to build a fleet of connected, environment-friendly cars with more comfortable seats and luggage space ▪▪■

Image Courtesy: DiDi Chuxing

Dual-Mode Electronic Steering System optimized for Autonomous Driving developed by Hyundai Mobis

Hyundai Mobis has developed an electric power steering system which uses the redundant control mode that takes advantage of two electronic circuits during autonomous driving to maintain normal steering capabilities under any circumstances. The company for this has redundantly designed all core electronic components (sensors, ECUs, motors, etc.) of the steering system so that normal steering is possible in any situation. For this two independent electronic circuits are applied to one steering system, twin systems that watch over each other, even if one circuit breaks down, the other circuit will work normally and maintain stable driving.

To implement this new technology, the company has focused on reducing the size of electronic components (HW) and developing software (SW). The company at presesnt is conducting reliability evaluations including road tests. ▪▪■

Continental Strengthens AI Research with Collaboration

Continental has entered into a research partnership with UC Berkeley DeepDrive and has signed a five-year agreement to be the member of the center. The collaboration between the parties will focus on optimizing the speed of neural networks, as well as protecting AI systems in safety-critical applications. In the first year of the program membership, Continental and BDD will focus on the testability of AI algorithms in safety-relevant systems then on how to operate AI applications in a memory-efficient way to accelerate and optimize neural networks. ▪▪■

Schaeffler acquires Drive-by-Wire technology

The Schaeffler Group in cooperation with Roland Arnold and Paravan GmbH has signed a master agreement for the formation of a joint venture company. The company named Schaeffler Paravan Technologie will acquire Paravan's SPACE DRIVE drive-by-wire technology and will work on its further development along with the sale of mobility systems. SPACE DRIVE features steer-by-wire functionality, which enables safe and reliable vehicle steering by purely electronic means, thereby eliminating the need for a steering wheel, steering column, and associated mechanical linkages. Steer-by-wire is a key enabling technology for self-driving cars, for which safe and highly reliable steering is a fundamental requirement. SPACE DRIVE drive-by-wire technology was developed by Paravan GmbH to help drivers with physical disabilities by replacing cumbersome mechanical vehicle control systems with 100%-reliable, fully electronic systems.

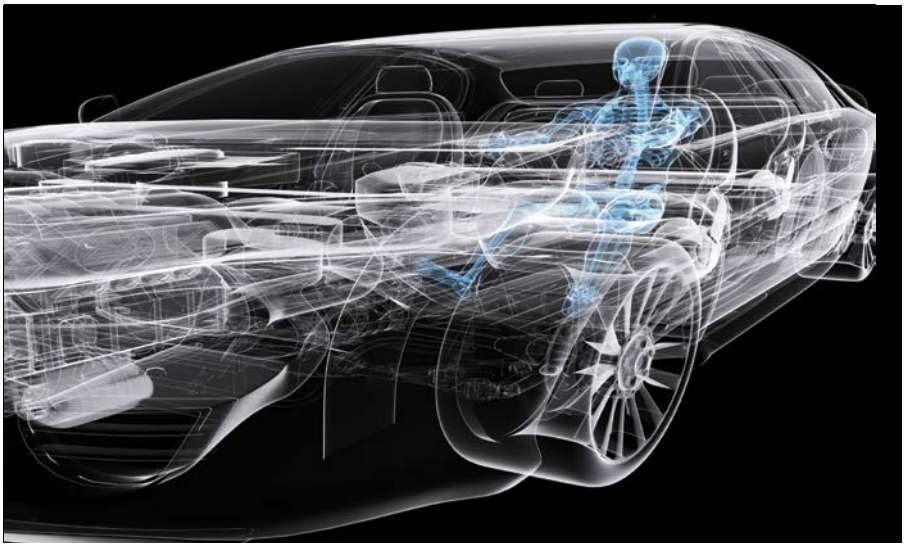

Image Courtesy: Schaeffler

C-V2X technology superior to DSRC: NGMN Alliance

The Next Generation Mobile Networks Alliance has published its V2X (cellular vehicle to everything) White Paper containing the findings of two years of work by a task force of best in class industry specialists from across the world.

Key conclusions from the NGMN include:

- C-V2X technology is superior to IEEE 802.11p standards from a technical, economical and eco-system perspective and can easily satisfy basic yet critical safety applications
- Its technical advantages include communication range, latency and scalability
- It has a natural evolution path to future advanced applications by updating current networks to 5G
- It not only covers safety features for vehicles but also supports use cases for other traffic participants, such as pedestrians and cyclists
- Tests are already ongoing, and the technology can be deployed by 2020

The White Paper follows the creation of a V2X task force in June 2016 to study and evaluate V2X technologies and requirements. The NGMN Alliance founded by leading international network operators in 2006, drives and guides the development of all future mobile broadband technology with a focus on 5G.

Renovo and HERE partner

Renovo and HERE have entered into a partnership to deploy open interfaces for highly and fully automated vehicles. HERE, the Open Location Platform company that enables people, businesses and cities to harness the power of location. Renovo builds AWare, an Operating System for Automated Mobility. AWare merges software, data analytics, and automotive-grade safety systems into a unified platform that enables a growing range of technologies and services to be combined in Automated Mobility fleet deployments.

The companies believe an open-standards approach will fuel greater interoperability and data exchange across the transportation ecosystem, boosting safety, efficiency and comfort for passengers.

In the first phase of their collaboration, the companies will be working on a new technology interface to maximize the utility of sensor data generated by fleets of automated vehicles in the 'self-healing' of highly precise maps.

The companies intend to make the interface available for fleets of highly automated vehicles powered by Renovo's AWare operating system, enabling them to provide data that can be used to update a service such as HD Live Map, the mapping service for automated vehicles from HERE.

This service uses different types of sensor data to identify change in the real world and provide a highly-precise, continuously-updating map across the road network. An automated vehicle equipped with HERE HD Live Map knows exactly where it is and has a better understanding of what lies ahead and what it should do in different scenarios.

Alexa Auto SDK for Automotive Infotainment

Amazon has announced Alexa Auto SDK to help simplify the integration of Alexa into in-vehicle infotainment systems, so that the customers can take Alexa on the road. It includes source code and function libraries in C++ and Java that enable vehicle to process audio inputs and triggers, establish a connection with Alexa, and handle all Alexa interactions. It also includes sample applications, build scripts, sequence diagrams and documentation – supporting both Android and QNX operating systems on ARM and x86 processor architectures.

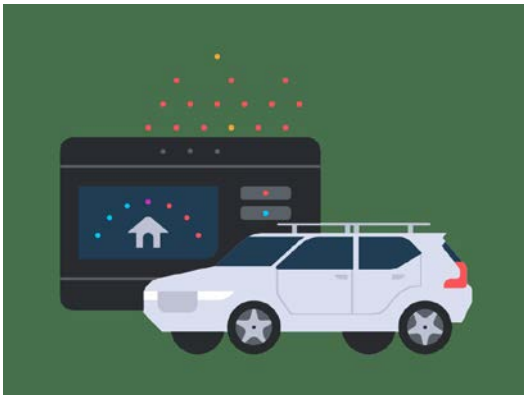

Image Courtesy: Amazon

The Alexa Auto SDK includes core Alexa functionality, such as speech recognition and synthesis, and other capabilities such as streaming media, controlling smart home devices, notifications, weather reports, and tens of thousands of custom skills. Additionally, the SDK provides the hooks required to connect to a wake word engine, local media player, local phone, and local navigation system. ▪▪■

Kia Motors unveils Separated Sound Zone Technology

Kia Motors has revealed its next-generation Separated Sound Zone (SSZ) technology.

SSZ allows each passenger of a vehicle to experience an audio stream tailored to their individual needs, including music, hands-free phone calls, and vehicle alerts, whilst maintaining a headphone-free social space where passengers can converse freely. SSZ technology creates and controls the acoustic fields of the car, allowing the driver and each passenger to hear isolated sounds. The many speakers installed in the vehicle feature technology that uses scientific principles to reduce or increase audio levels of sound waves. This negates the overlap of sounds being heard in each seat, creating the same effect as current noise cancellation systems, but without the need for headphones. ▪▪■

Image Courtesy: Kia Motros

Autonomic and Alibaba partner

IIHS has been conducting on-road and track tests to craft a consumer ratings program for advanced driver assistance systems. The Insurance Institute for Highway Safety (IIHS) is an independent, nonprofit scientific and educational organization dedicated to reducing the losses from motor vehicle crashes.

The institute has found from the evaluations of adaptive cruise control and active lane-keeping that they show variable performance in typical driving situations, such as approaching stopped vehicles and negotiating hills and curves. The early results underscore the fact that today's systems aren't robust substitutes for human drivers. ▪▪■

Image Courtesy: Ford

The human driver in charge must stay on task: IIHS Study

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IOCL launches EV charging stations at its outlets in Hyderabad

Indian Oil Corporation Limited (IOCL) has launched two electric vehicle (EV) charging stations at its outlets in Hyderabad, in association with Finnish company Fortum India. Fortum India is a subsidiary of Fortum Oyj, a state-owned company of Finland providing clean energy solutions. The charging stations now set up at two retail outlets on pilot basis would later be expanded to 50 stations in two years. The stations will have two DC charge points each of 10 KW or 15 KW capacity. IOCL had also last year launched an EV charging station in Nagpur. ▪▪■

Image Courtesy: IOCL

UNO MINDA set to acquire iSYS RTS GmbH Germany

Minda Industries Limited, flagship company of UNO MINDA Group has announced acquisition of iSYS RTS GmbH. Headquartered in Munich, Germany, iSYS RTS develops embedded systems as well as hardware and software components for Global OEM's. The company offers Engineering Services and also manufacturers Automotive Electronic Control Units ('ECU's).

For Minda Industries this acquisition provides it access to iSYS RTS's Technology and Global Customers. While for iSYS RTS it provides the necessary capital infusion to fuel its growth and a solid manufacturing footprint of Minda Industries Ltd. in an emerging country like India and also have access to Minda's Engineering centre's globally. ▪▪■

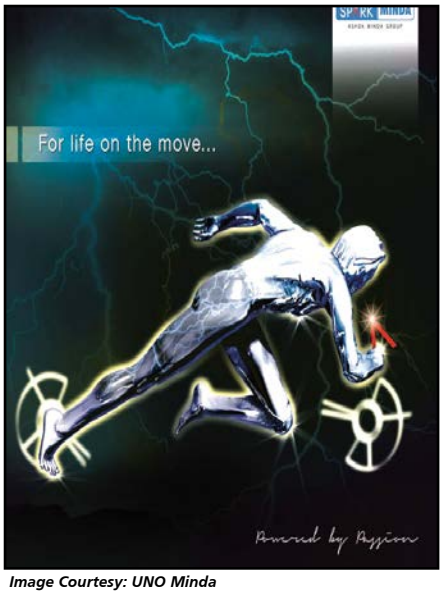

Image Courtesy: UNO Minda

Hyundai Motor makes strategic investment into Revv

Hyundai has announced a partnership with Revv, one of India's fastest growing self-drive car sharing company. The companies will work together to develop an innovative car sharing service and conduct creative marketing activities in India. The strategic partnership including Hyundai Motor's investment to Revv sees innovative future mobility services gain the company's first foothold in the Indian mobility market.

The strategic investment and partnership will enable both Hyundai Motor and Revv to build competency and the technology necessary for leading the future mobility market in India; an evolving market showing exponential growth, expanding from USD 900 million in 2016 to USD 1.5 billion in 2018, and projected to expand to USD 2 billion by 2020. India's 15,000 car sharing vehicles are expected to grow to 50,000 by 2020, and 150,000 by 2022.

Furthermore, millennials, who are heavy users of car sharing services, comprise 35 percent of the total population of India. The market growth potential for mobility services is stronger than that of any other global market. Hyundai Motor, which is the only automotive company among Revv's investors, will explore ways to support Revv's car sharing service, including the supply of car sharing products, the development of new mobility service platforms, and product marketing. This will allow Indian consumers to experience Hyundai Motor's vehicles in diverse ways.

Hyundai Motor has been enhancing its mobility services in major locations worldwide. The company said in a release that it is committed to offering smarter value to customers to cope with the rapidly-shifting paradigm in the automotive industry. ▪▪■

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Genesys signs MoU with Wipro for Self-Driving Cars

Genesys International Corporation has signed a Memorandum of Understanding (MoU) with Wipro to jointly tap the opportunity in the autonomous car sector. As per the MoU, autonomous system and smart mobility companies.

The first activity under this MoU was to create an HD map of the Wipro campus in Bengaluru. This has now enabled the pilot vehicle, developed by Wipro, to drive around the campus autonomously. Genesys, an Indian Company, has been at the forefront in advanced maps for car navigation and now has extended its capability for creating HD Mapping content for the autonomous vehicles be it indoors or on the roads. The company has built the capacity to develop HD Maps and Content across countries for being used on roads, in communities, inside campuses, factories, mines, et al as demanded by the Autonomous Driving industry.

Image Courtesy: Autoserviceworld

Genesys will use its core strength and the expertise to develop HD Maps and Content while Wipro will develop the navigational and control technology for

Magenta Power to set up EV charging corridor

Magenta Power has announced that it will set up India's first electric vehicles (EVs) charging corridor at Lonavala on the Mumbai-Pune Expressway.

The corridor 'chargeIn' will be an open platform for all EV charging stations for 2/3/4 wheelers as well as for bus fleets. It will be a fully integrated network of charging points including AC and DC chargers and all the ChargeIn points will be connected via network for central monitoring and control, the company said.

Regarding the payment option, it has been informed that initially some of the charging stations will have a fully-automated payment system enabling the users to charge the vehicles using an online OTP based payment system via the ChargeIn app. This payment system will be extended to all the charging stations in a phased manner

Magenta Power is primarily into installing solar rooftop power that had last month installed India's first solar based EV charging station in Navi Mumbai. The company plans to extend its network to Bangalore and Mysore. Magenta is also in talks with potential investors to support its growth plans.

Image Courtesy: Fortune

Nissan to establish Digital Hub in India

Nissan has signed a memorandum of understanding (MoU) with the Government of Kerala to establish a new global center for digital operations in India. The Nissan Digital Hub is aimed at comprehensively transforming the company's business by placing digital technology at the heart of key operations and services. The first center will initially be in Technopark – a technology park owned by the government of Kerala in Trivandrum – before moving to a permanent location in the city. Once fully operational, it will provide a range of in-house services to strengthen Nissan's digital capabilities in India and other global markets.

TMF and WRI are working on solutions for congestion alleviation and enhanced first- and last-mile connectivity in Bangalore

The Toyota Mobility Foundation (TMF) and the World Resources Institute (WRI) have initiated a project to deploy two- and four-wheeler rental and ride sharing solutions for congestion alleviation and enhanced first- and last-mile connectivity at six metro stations in Bengaluru, India.

The six metro stations identified will be characterized under distinct typologies based on the land-use and development around the station area. Products made available will include electric scooters with keyless entry, electric cycles, electrified car and micro transit options for ride sharing, with different business models, to better understand what the citizens of the city want. After a 1 year period, findings from these six metro station use cases will be shared with the Government and other interested stakeholders.

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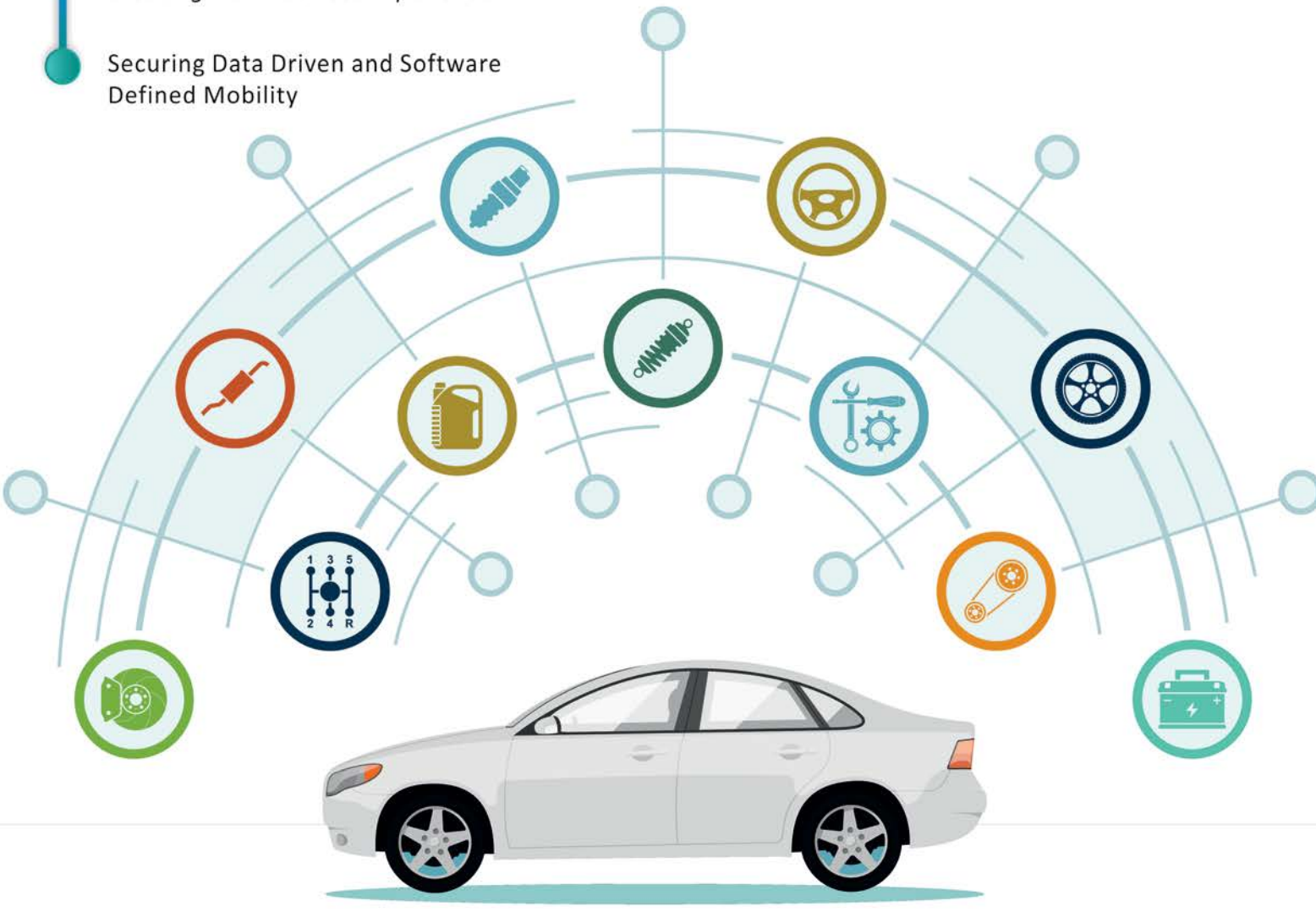

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