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Shared Mobility

emories of public transport of yesteryear is often a mixed bag of excitement, adventure, pain and also frustration for many of us. Till early 1990s, using public transport bus, sometimes meant being prepared for excitement on account of- seating beyond capacity, seat allocation, last minute seat swapping etc. Some travel operators, both in public and private space managed things better, but this enhanced service was generally for long distance travel. Today you can pick your seat and vehicle you wish to travel. Car sharing, online ticket reservation platform, ride hailing are all making difference. But, this difference in public transport is confined for residents of urban centres. We are yet to see shared mobility impacting transition of public transport from just 'bare minimum facility transport' to a more safer and comfortable transport means at affordable cost for the people at bottom of the pyramid, even in urban centres. Or, to put the question in other words- Is there more than applied science which is needed to improve the travel experience for larger section of society?



With the future shared mobility which will be electric, autonomous and personalised; are we going to further increase the divide amongst those who belong to opposite ends of pyramid; when it comes to access and comfort of public transport?

Last month Indian shared mobility company- Ola, gave a sneak peek of their electric scooter, which showed its founder taking the scooter for ride in Bengaluru. For an Indian shared mobility company, which was launched just a decade ago in Dec'2010 this surely is a big leap. If we see this in context of "atmanirbhar bharat", or an initiative to make India self-reliant, it is beginning of a journey of continued process of unshackling and encouraging innovations and entrepreneurship, creating an enabling ecosystem and a supportive domestic market. Though this electric scooter is being rated highly, is it in line with backward integration for a shared mobility company?

Namuch.

Maneesh Prasad



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Smart & Connected Mobility

A HARIKRISHNA KHANDAVILLI

.....

Continental Automotive India

he automotive industry is embracing a significant amount of digital transformation, which will change both the in-vehicle technologies and how the vehicle interacts with the passenger, environment, infrastructure, and other vehicles on the road. Today, vehicles are much more than a mode to get from one place to another. They are 'Mobile Living Spaces'. And a critical aspect of this transformation is connectivity and smart mobility.

Connected and smart mobility technologies like navigation, GPS, and smart access have already become standard features in a modern car. But this is just the beginning of the transformation. We will see more growth in these areas in the coming years. As per a recent Markets and Markets report, even post-pandemic, the connected vehicle market is projected to reach USD 166.0 billion by 2025, at a CAGR of 25.2 percent from 2020 to 2025. Talking specifically about the Indian market, 80 percent of Indian customers think they will benefit from the increased vehicle connectivity, according to a report by Deloitte. These numbers just reiterate the fact that the automotive industry is at the cusp of transformation.

Changing mobility technologies

Today, consumers want intuitive and on-demand information that makes their driving experience convenient, safer, and informed. For this to happen, cars need to be connected and perform complex tasks. For instance, smartphone integration has become a must-have feature for consumers today. The phone syncs with the car's dashboard and navigation system the moment the driver enters the car. Taking one step ahead, a smartphone can also become a secure key for a car.

CoSmA makes the smartphone a digital vehicle key, effectively replacing conventional key fobs. It allows the user to access, unlock and start the car using his or her smartphone. The onboard architecture of the CoSmA solution also features a central electronic computer unit with a state-ofthe-art secure element as certified secure storage for any digital vehicle key application. The vehicle owner can generate and manage multiple digital keys, and share them with friends or family.

As soon as the position of the authorized smartphone is precisely determined, the system allows the vehicle to be unlocked and the engine to be started without having to interact with the smartphone. As soon as authentication is provided by the backend key management system in the cloud, access to the vehicle is granted. Thus, ensuring secure access.

Apart from enhancing the in-vehicle experience and smart access, connected cars also contribute to the industry's shared Vision Zero (Zero Fatalities, Zero Injuries, Zero Crashes) by exchanging safety-critical information between the infrastructure and nearby cars which eventually helps in reducing the number of accidents and casualties. One such example is ehorizon. It assists the vehicle to see around the corner and beyond sensor vision which ultimately makes driving more efficient, comfortable,



and safe. Also in the cloud, eHorizon processes the data collected from the entire vehicle fleet with the aid of artificial intelligence and other technologies, which again increases the reliability of the predictions.

In the world of fleet management, connectivity opens up whole new possibilities and enables remote and anticipatory diagnostics. For instance, vAnalytics, is a cloud-based service platform that gathers data from various sources, analyzes, and creates services to solve pain points. Our platform is agnostic to the collection method, whether it be directly from a vehicle's TCU, from an OBD dongle, or some other device.

With the increase in connected technologies like CoSmA, vAnalytics, and ehorizon in the vehicle, software in the vehicle is also bound to increase.

The connected car uses big data to continually evolve the software-defined car, enabling them to deliver premium connectivity services and over-the-air (OTA) upgrades to the car throughout its lifecycle. This allows add-ons such as new features, but also essential updates to firmware and cybersecurity, to be rolled out. The requirement for OTA for real-time updates and security patch management will become more crucial as the vehicle starts interacting with other components in the ecosystem like other vehicles, smart infrastructure, etc., through V2X communication.

However, consumers are still apprehensive of the use of connectivity-enabled technologies in remote locations where high-speed network connections are not available. In such cases, Cellular-V2X allows an exchange of time-sensitive and safety-critical information, for example - about warnings of potentially hazardous situations, even in areas without mobile network coverage. Designed to enhance device-to-device communications, C-V2X technologies complement and extend existing cellular capabilities, enabling direct communications without requiring the involvement of the network.

As the quantum of communication among different components of the ecosystem increases, the amount of data produced also multiplies exponentially. Naturally, this requires high computing power to ensure optimal and seamless performance. High Performance Computers (HPCs) can single-handedly do the work of multiple independent control systems, which otherwise required several processing units and added complexities, thus paving the way for the future of vehicle connectivity.

How can India facilitate this transition?

While the market for connected vehicles in India is on the rise, the infrastructure and ecosystem need to go hand-in-hand. Auto component suppliers would play a very important role in enabling this move. There is a need to upgrade the manufacturing systems in the auto components sector and to be ready to adapt to new technologies by improving design capabilities. There is also a huge requirement for sensor and clean energy solutions to be able to fund the upcoming vehicle connectivity concepts.

Telecommunications and informatics service providers will also play a major role as they need to collaborate with specific solutions for automotive applications. Telecom service providers in the country will also need to up their game and offer seamless data services and networks. A reliable source of 5G connectivity can dramatically impact the capabilities of connected vehicles. The same will play a significant role in enabling vehicle-to-vehicle and vehicle-to-infrastructure communication at a pace and capacity that was not possible with previous networks.

Such high-speed connectivity solutions facilitate global market players to provide the domestic market with advanced driver assistance technologies that can be paired with V2V communications. For instance, the camera that detects new roads, new traffic signs, potholes, diversions, and blockades, etc., feeds the new map data to a solution like eHorizon, which provides a preview of the road ahead to other control units in the vehicle enabling fuel-saving in form of predictive cruise and transmission control, safety improvements such as lane departure warning and Predictive ESC (electronic stability control). Acting as a virtual sensor, eHorizon provides a friction map based on estimated friction values as well as on predicted road surface conditions and warns the driver and intervene before a vehicle velocity is likely to cause a stability critical situation. eHorizon calculates the route preview based on highly accurate map data and dynamic information for the current vehicle position. The data is made available for other vehicles on the network too.

A move towards 'Holistic Connectivity' is required, where embedded systems inside the vehicle (e.g. High-performance computing, gateways, or sensors) and systems outside the vehicle (e.g. edge computing, cloud) interact more efficiently to achieve advanced levels of autonomous driving capabilities.

Conclusion

Tomorrow's vehicles will be an integral part of the internet. In B2B logistics, in particular, 100 percent of all commercial vehicles will be connected in the future. The digital value chain will make fleets more efficient, more customer-focused, and safer. Organizing traffic in the future will also require smart mobility solutions such as sharing or multimodal transport services. Smart mobility has the potential to reduce accidents, traffic congestion, and emissions.

Further, smart mobility will also improve the overall driving experience, and contribute to technologies that Connect, Inform, and Integrate. In India, connected vehicles are already on the rise. With 5G technologies and smart cities coming into the picture, we will move towards holistic connectivity enabling smarter mobility.

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Reimagining the future of food delivery with smart mobility

▲ ABHIJIT SENGUPTA

HERE Technologies

arlier this year, to their surprise, select customers of a well-known pizza delivery company in Houston had their order delivered via robot delivery cars. Customers were invited to choose this unique delivery option backed by text updates and a numeric code which was provided to retrieve their order. Once the robot delivery car arrived, the customers simply entered the numeric code using the bot's touchscreen and were 'handed over' their delivery fresh from the oven. Talk about re-imagining the future!

As we slowly move to stay-at-home and work-from-anywhere set-ups, one of the first industries to undergo a complete transformation is the food delivery service. Globally, the online food delivery market is worth over USD 107 billion according to Statista and is expected to keep growing at a fast pace. Worldwide, Asia stands out, holding 50% of the global market with India as the second largest region driving its growth. With social distancing norms well in place during the pandemic, more and more Indian food delivery firms are now focusing on ramping up their offerings with contactless orders and on-road delivery vehicles in an endeavour to protect their employees while also delivering on their customer promise.

Unfortunately, one of the key business determinants for food delivery companies will be to find customers that are looking for such services. For online food delivery apps and services, timely food delivery (simple as it may sound) involves complex algorithms with many factors such as the number of couriers, courier safety and access to vehicles - all factors outside the customers' influence.

This is where smart mobility solutions, embedded location services and digital maps can support these organizations to gain a competitive edge. Let us put things in perspective and understand how food delivery owners could leverage these nextgen technological advancements promising to redefine customer service:

Optimal route planning and faster delivery

Faster deliveries mean more deliveries and a wider delivery area opens restaurants to new customers. Dedicated bike lanes and routing apps can empower delivery drivers, ensuring they do not take extra time to navigate or risk delays weaving through dense traffic. Additionally, having more docks and bike racks can let them lock up their bikes during deliveries so that they can feel safer leaving their modes of transport unattended in less familiar neighbourhoods.

Furthermore, artificial learning and geo-fencing can be leveraged to study trends across cities to assess high-demand pockets and peak-time slots for planning. Such data can be used by delivery and mobility companies to strategically place transport options with utmost efficiency. Technology-powered food kitchens and delivery services can leverage huge amounts of data to assess demand, supply and road closures and offer customised



AUTHOR

Abhijit Sengupta

Director and Head of Business, India SAARC Region & Southeast Asia HERE Technologies routing to better minimise time and travel between locations, thus ensuring faster and efficient customer services with effective cost controls for food delivery businesses.

Better business efficiency

Due to the pandemic, cloud kitchens have taken the industry by storm in terms of customer demand, potential market size and innovation. Real-time geofencing, real-time traffic monitoring, native apps, and in-vehicle dashboards, all built with location-centric software development kits (SDKs) can provide drivers with precise map data, turn-by-turn navigation, and the ability to alter plans on the fly. Alternatively, these solutions can also help food delivery fleets to predict on many parameters such as customer buying patterns, cancellation rates, demand ratios, food supply and availability of delivery drivers. This can also help restaurants and food delivery services save money by eliminating their need for front-of-house staff and amenities. In an industry that is fiercely competitive, smart mobility can help reduce overhead costs and increase profits.

Tackle food wastage

Another important challenge that smart mobility can help the food delivery industry address is the challenge of food wastage. For example, last year, in the UK alone, more than 16,000 litres of milk were dumped due to blockages in the supply chain and a lack of consumer access. Location-embedded apps and in-vehicle dashboards with advanced algorithms can enable new delivery models by helping companies mobilize employees on the ground, plan the most efficient multi-stop deliveries and therefore by extension, help reduce food wastage by facilitating customers' access to cooked meals, wholesale food items and groceries.

Smart mobility is already playing a huge role in people's lives: with apps for ridesharing, one-click travel book-and-pay, and real-time public transport data. In the future, smart mobility will enable seamless integration of all food delivery as well, including on-demand, connected vehicle options and ancillary services which were traditionally not a part of the food delivery experience. Now, the only question remains: What are you planning to have for dinner?



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THE FUTURE OF MOBILITY Transforming it to 'Smart' & 'Shared'

∕▲ JUDE NASH

eMatrixmile India Pvt. Ltd.

n recent years, several studies and research reports have uncovered how younger generations have the power to shape and influence the future of transportation. Gen Z, born between the mid-1990s and 2010, make up about 32% of our current global population. This is a generation that knows life with technology, relying heavily on apps and services to get their work done and the way they travel. However, it's not just their ease with connected technology that is changing the way they view transportation. In comparison to previous generations, Gen Z and Millennials are more socially and environmentally aware. There's a shift from 'Me' to 'We' culture, according to the 'The Birth of Mobility Culture' study by Allison+Partners.

Closer to home, 51% of Millennial Indians are questioning their need to own a car. This can be attributed to one reason revealed by a Deloitte study – trust in digital solutions for their commutes.

Over the years, there has been a gradual move to shared mobility as a sustainable form of transportation, especially in urban areas. This evolution highlights how it's a revolutionary concept, empowering people to travel efficiently and safely and the transition was possible because of Smart Apps.

With a smart app, a user can plan their end-to-end journey, book vehicles and trips in real time with gateway payment services, either as a monthly subscription or a payas-you-go feature. It's this flexibility that's drawing users in and prompting them to make the switch to shared mobility.

When a user decides to choose this experience, they're accessing a plethora of features to make it as seamless and efficient as possible. Integrated technology like IoT, geo tagging, geo fencing, tracking software, GPS, secure payment gateways coupled with smart locks, reward points, real-time tracking, push notifications, super apps, promo codes, discounts, reward points make this almost irresistible to the end user.

This convergence of smart mobility and technology is creating disruptions in transportation with several partnerships and schemes in the public-private arena. It's led to public bike sharing schemes, smart mobility projects for electric mobility, battery swapping stations, docking stations, and shared mobility pick-up zones.

Adoption of smart and shared mobility goes beyond the efficacy of the technology. What makes it desirable to users is access and ability to surpass liabilities with owning a vehicle. For instance, driving your own vehicle has reduced economic benefits when you consider surging fuel costs, insurance, and maintenance costs. It comes with other challenges like lack of parking spaces, traffic congestion, and pollution.

These collective challenges, whether economic or environmental, have acted as a catalyst for the shared mobility industry, making it a much more enticing alterative. A recent Shared Mobility Market research report revealed that is expected to grow at a CAGR of 15.42% and is anticipated to reach around USD 238.03 Billion by 2026.

For a user, the options offered by shared mobility transport systems are extraordinary:

- Autonomous vehicles
- Bus shuttle
- Car sharing
- Bicycle sharing (also known as PBS or public bicycle sharing)
- P2P bike sharing
- P2P vehicle sharing
- High-tech company shuttles
- e-Scooter sharing
- e-Auto sharing
- Micro transit
- Vanpools
- Community buses and vans

In addition to this, technologies like RM-

Personal Rapid Transport, GRT- Group Rapid Transport, ATN- Automated Transit Networks and APM- Automated People Networks are being implemented at software parks, corporate campuses, SEZs, and airports for increased convenience.

This adoption has also led to ride sharing companies, who use MaaS or mobility as a service. It's deployed through an app, allowing users to plan, book, and pay for multiple mobility services. MaaS was intended to customize and offer travelers services based on their travel needs, where physical trips are now substituted with virtual trips.

In India, shared mobility platforms through apps started in early 2013, marking its presence first in Bengaluru and slowly moving towards other cities. While the initial phase wasn't promising, there was a change in consumer behavior because of the city's unreliable and unpredictable modes of transportation. This also paved the path for bike sharing, with Bangalore grabbing the largest market share in this space. Slowly, we're witnessing electric bikes replacing fuel-run bikes, due to increasing fuel costs, fuel siphoning, and misuse of these vehicles. IoT/ GPS based electric bike sharing is gradually coming in the arena which will overtake the regular transportation models. Due to the high usage of bike share, India is considered the "Bike Capital" of the world. Two wheeler shared mobility is gaining traction because of affordability, availability and convenience. Shared mobility as per NITI Aayog is 'Any mode of transportation that is shared by users on a as-needed basis, from bikes to 4-wheelers to mass transit can constitute shared mobility.'

Another area within this industry is mobility on demand, which has been incredibly useful for travelers to move from city to city. It combines traditional transportation with private enterprises to create a single mobility service. This has been picking up pace with various government agencies collaborating with mobility players to launch innovation solutions, both public and private, to reduce the distance between the origin/destination to transit station/stop, also known as the first or last mile connectivity. It's a viable alternative for travelers who frequent suburban or metro transportation modes like MRT, public buses, metro rail, and suburban rail.

On-demand mobility allows ease in transportation to business districts, tech parks, corporate offices by improving and optimizing linkage to mass transit systems/ services with a dedicated pick up and drop zone as designated by authorities.

However, it's crucial to point out the challenges faced by this ecosystem and the solutions it pumps out. While most Gen Z and Millennials are quick to adapt to change, there will be those who are reluctant to the rapid pace of smart mobility. It's important to also factor in infrastructure enforcement and various economic factors that could possibly hamper this growth.

The reason smart and shared mobility continues to make leaps in the market is because it's a revolutionized business model. Its function has evolved through the years, and even more so with technology. With the dawn of 4G, we moved from physical hailing of transportation to twiddling our thumbs on an app, which is efficient, safe, and comfortable.

This growth is expected to be exponential with 5G technology, which will create a solid foundation for faster connectivity, improved navigation, and smarter innovation with cloud and edge computing. The deployment of this technology increases and supports augmented of interconnections and uninterrupted data exchanges with rapid digitalization of smart mobility.

The next new thing to look out for is Hybrid-electric vertical takeoff and landing eVTOL aircraft, which has been deemed the mobility of tomorrow. The probable integration of take-off and landing areas is gaining importance in cities across and capitalizing on this will transform the air taxi segment and pilot projects, which are already underway for HNIs/ UHNIs.

Intelligent Transport Systems (ITS) provides transport solutions by utilizing state-of-the-art information and telecommunication technologies for a smooth transition of vehicles and transportation. Smart mobility is to achieve traffic efficiency by minimizing traffic problems, also it is an intelligent system of connected roads and vehicles in which we see that smart mobility

includes real time information services, smart vehicle charging, sophisticated intelligent corridors, electronic toll collection, computerized and digital signaling. Safe, efficient and environmentally sound mobility will change and improve vehicle and infrastructure safety, enabling smooth and comfortable transportation. Smart mobility encompasses high-tech upgrading of infrastructure which could help bypass existing situations in road networks, providing safer and faster mobility.

Micro transit is another shared mobility system which means real time routing/ flexible routing and a tech enabled shared mobility, on demand transport serving low density population areas. Virtual bus stops are created for pick up and drop facility

for the users. Micro transit is moving towards changing cities in a positive direction and transporters have offered services to urban and rural areas with a high tech touch to it. Due to their compact and small sized transportation vehicles it costs less to maintain and quicker to transport people. Online booking, pre-booking, monthly or weekly booking makes micro transit effective in particular areas where other transportation models doesn't. It also allows public private partnerships to collaborate their expertise. Dedicated micro transit systems can assist in school/ college commute, office pick/ drop. Micro transit systems also allows decongestion of busy corridors and saving commute time, feasibility and economical for the passengers.

This growth

with 5G

technology,

create a solid

which will

foundation

connectivity,

for faster

improved

navigation

is expected to

be exponential



National Mission on Electric Mobility is an ambitious programme by Government of India with greater emphasis on providing affordable & environment friendly transportation for the masses which in turn assists in the shared mobility space. In India alone, the shared mobility market was valued at \$1,025.8 million in 2019 and is expected to grow at a CAGR of 56.8% during the forecast period (2020–2025).

The world is changing and so is the way we view transportation, and only way to keep up is with 'Smart and Shared Mobility'.

AUTHOR

Jude Nash

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Jude Nash is the Founder/ Director of QYK Bike based out of Mumbai, India. QYK bike is an Electric Scooter Rental company with focus areas on the Public bike sharing scheme, Point to point docking stations and other shared mobility options in India. Jude leads the Technical/ IT/ IoT/ APP space of QYK bike.



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MOVENS Eye

PROS: Device-agnostic software developed in accordance with Open Standard Protocols for secure interoperability and vertical developments.

CONS: Requires reverse engineering of protocols in case of undocumented devices. Up to 100mA of additional device consumption onboard for standard box supplied. Not suitable for aerospace applications.

The energy sector is undergoing profound changes on a global scale and is growing fast. Firstly, renewable energy sources and digitalization are contributing to a relevant shift from the traditional model of centralized power generation to one more distributed where the "prosumers" may generate, self-consume, store, and even give electricity back to the grid. Secondly, the request for powerful car batteries capable of storing and sharing energy with private and public infrastructures is set to increase as the global electric vehicle market is expected to annually growth around 40.7% by 2027. Thirdly, the rising adoption of IoT-based technologies for smart grid applications in multiple industries, from automotive, bus, truck to battery manufacturing, buildings, and overall, in the field of services is predicted to reach nearly \$85 billion by 2026.

The great challenge is to integrate the highly detailed data, generated from energy ecosystem components, into one-single platform, easy to use, designed for both managers and engineers in Mobility, Finance and Energy Companies.

MOVENS Eye handles the complexity behind the whole process, so the customers can focus on analyzing data, troubleshooting, and tuning their assets for optimal performance.

OVERALL *****

We recently tested MOVENS Eye, a technical remote "entity" supervision platform for energy systems developed by Henshin Group which, compared to other IoT platform architectures currently available on the market, has been designed for easy integration with a large variety of battery, and energy related, applications, highly scalable, well-tailored to meet customers' needs, and focused on ensuring evolving maximum interoperability as evolving in accordance with international standards set by MOBI (Mobility Open Blockchain Initiative).

Primary benefits

- Remote and real-time monitoring of energy systems (HEV, EV, wall boxes, energy-high-consuming devices, etc.) using external sensors and digital bus connections.
- Designed to help engineers to optimize and troubleshoot their systems, improve end-user support and keep track of costs/values of assets.
- Aimed to energy consumption reduction, energy performance improvement and cost optimization.
- Predictive diagnosis of any energy system based on both anomaly detection and user errors, using heuristic rules or AI models.
- Energy System technical history and advanced statistics for highly efficient management.
- Predictive models of network loads for energy balancing.
- Multiple applications in energy and mobility ecosystems, i.e., buildings, vehicle to grid (V2G), car sharing.
- Simple and full featured web frontend
- Complete set of API for integrations and customization.
- Based on cutting edge technologies (Kubernetes, Kafka, time series distributed databases, blockchain, ...)

Main features

- Mission Critical Environment Technology
- Alerts & Notifications
- Data Analytics Based On Ai Technologies
- Api Driven Architecture
- Custom User Management

MOVENS Eye enables to unlock the business value of connected batteries: it supervises battery management system (BMS) across entire vehicle fleets directly from your own cloud server. In addition to telemetry functions – such as real-time vehicle tracking and monitoring – MOVENS Eye includes the remote supervisory control system for electric powertrain and the collection of a massive amount and variety



of vehicle data (sensors and CANBUS) to evaluate in-depth battery state of charge (SOC) and battery state of health (SOH).

MOVENS Eye is based on Open Standard Protocols like MQTT, is already compliant with OBD2 Standard and supporting various devices including Owasys, Mobility on Cloud, Teltonika, TTcontrol. The Energy IoT platform can be easily connected by means of onboard AVL (i.e., BCU) or a AVL box already installed. This device can be installed in aftermarket or can be already setup by the OEM, no special requirements are needed to be compliant with it.



used for remote BMS: Owasys

An example of AVL device

VERDICT:

Finally, available on the market today, a reliable, flexible, secure, and scalable IoT platform oriented to energy systems management, with qualified performance for multipurpose solutions. Highly tailored to meet customers' needs. It is totally worth the money and the hype.

QUICK REVIEW:

Performance: 5* Features: 5* Support/Installation: 5* Price: 3*



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New Frontiers of a Visionary Smart City Platform

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Henshin Group

Smart City, the response to urbanization challenges

According to the United Nations (UN), although cities occupy only 3% of the earth's surface, they are home to more than half of the world's population, they are responsible for 70% of energy consumption and 75% of carbon emissions. These impressive and concerning data are a clear consequence of the massive urbanization of the 1950s. Such process is expected to continue in the coming decades: by 2030, the number of "megacities" with more than 10 million inhabitants could rise to 41, consuming 81% of the world's resources. These statistical projections imply that by 2050, the urban population will reach 60% of the global

one. Currently, 54% of all people live in cities, it follows that the cities are the cause of most of our carbon emissions and energy use. They generate more than 70% of all carbon emissions, mainly from buildings, energy, and transport. Finally, they consume 78% of the world's primary energy.

Cities today are the main locations of physical capital as well as human capital concentration. This attracts business activities and transform cities to centres of global competitiveness. Cities are becoming the hubs of the services-based world economy. The rising urban population, the growing necessity to efficiently manage the limited natural resources and carry out environmental sustainability, the emerging economic competitiveness, and the rising citizen's expectations make evident a top commandment: a new urban model is needed.

Smart City is synonym with a complex ecosystem of people, processes, policies, technology, and other stakeholders capable of cooperating and working together to deliver a set of outcomes, i.e., services. This theoretical framework requires the integration of each functional area: Governance, Education, Energy, Infrastructure, Mobility, Healthcare, Buildings, Technology. Its ultimate purpose is increasing the quality of life of city-dwellers making cities more efficient, sustainable, and liveable. The process of change towards a more liveable future and a more inclusive society for generations to come therefore begins in our cities. Smart City, hence, means sustainable development.

Smart Cities call for Smart and Shared Mobility

In a world where the propensity to move is always growing, where people commute to work every day and move for leisure, where goods and products of all kinds travel enormous distances, it is increasingly necessary to create a new, more sustainable mobility.

Mobility, understood in a broader sense, is also an expression of a certain culture: the idea of vehicle ownership as well as the mobility models, for instance, are basically the result of cultural conditioning that vary from country to country. In general, traditional models of vehicle ownership still play a central role in the commuting patterns integrated by partially electrified public transport networks.

Overall, the urban mobility patterns are significantly changing due to several factors, such as the development of a new mobility paradigm more user-centered and focused on seamless intermodal travel – known as MaaS –, the staggering increase in shared-use vehicle systems and the progressive the number of autonomous vehicles. All these mobility models ensure a chance to reduce transport costs, travel time and pollution, improve traffic congestion and road safety, readjust urban spaces currently used for parking, hence, to make our cities a more liveable and greener where to live.

Like all other traditional on-demand mobility services such as taxis, rental with and without driver, all Sharing Mobility services are characterized by being available upon users' request, according to routes and times established for each specific case. However, the aspect that distinguishes Sharing Mobility services is that they are enabled by new digital technologies, mostly by the applications available on mobile devices. Technological innovation allows Sharing Mobility services to ensure performance comparable to those offered by traditional on-demand services, but at more accessible costs and often with higher performances.

The Converging of Mobility and Energy

The electrification of the transport sector – through the substitution of internal combustion engines (ICEs) with electric vehicles (EVs) – is currently the main goal of national and local policies for cleaner mobility and strategic shift to make cities a smarter environment.

To have a greater and immediate impact in terms of CO_2 emissions reduction, the priority is electrifying public transport, mobility-as-a-service vehicles, taxis, fleets, and private cars as all these means of transportation represent a higher volume of daily miles travelled.

In this framework, E-Mobility results to be a main asset of Smart Mobility as key element to boost the change of paradigm in line with the international standards of greater sustainability, safety, and innovation.

The convergence of Mobility and Energy is hence evident, but somehow critical.

The increased uptake of electric vehicles (EVs) must be accompanied by a "smart" use and management of the electricity system. As highlighted in a McKinsey's report (2018), electric vehicles do not create a power-demand crisis, but they can reasonably contribute to hourly peak demand and then, reshape the electricity load curve.

This implies that – if EV charging is not managed smartly – the current energy system is not able to support the expectable additional burden caused by the hourly peak demand in congested zones. On contrary, if charging is performed in smart way, the impact of a growing EV market could be not only neutral but also a benefit to the energy system.

Mobility is the lifeblood of our smart cities

Mobility is source of socio-economic and environmental development

Mobility is the hub of smart citizenship



SOURCE: McKinsey Global Institute Analysis

In this context, the electric vehicles take on a role further than being tool of reducing greenhouse-gas and pollutants emissions from the transport sector. In a broader view, an e-vehicle is essentially a battery on wheels: a massive EVs deployment might even lead to an overall positive impact on the energy system if vehicles operate bidirectional charging (V2G) to enable extensive interaction with the grid.

This means going beyond the traditional concept of e-vehicles as simple means of transportation; they can have a broader role in the energy system as they represent a potentially huge additional demand for more electricity. Seen as a part of the electricity network, e-vehicle batteries are "moving storage" can greatly contribute to integrate renewable energy into the system, storing power when demand is low, and give it back into the grid system when demand is particularly high, and the primary resource is not available.

TODAY'S GREAT CHALLENGE FOR SMART CITIES IS DEVELOPING AN ORGANIC META-PLATFORM CAPABLE OF INTEGRATING DEVICES, CONNECTIVITY, DATA, APPS PROVIDING CORE AND VALUE-ADDED SERVICES

11

Vehicle-to-grid technology, known as V2G, would allow cars charging during the day to take on surplus power from renewable energy sources.

Thanks to cutting-edge energy platforms capable of aggregating and managing the distributed energy resources, E-Mobility can be considered a grid flexibility solution for the power sector encouraging the decentralization of electricity production. The new frontier in this scenario of profound global change that the energy system is undergoing is embodied by "prosumers" able to generate, self-consume, store, and even give electricity back to the grid. This specific example leads us to hint at how the emergence of new business models across different industries will be encouraged, in the medium term, by the introduction of smart contracts capable of allowing commercial transactions without the need for a trusted intermediary thanks to Blockchain technology.

E-Mobility can therefore help to energy balance in the Smart Cities as it helps to promote the development of integrated local energy communities relying on renewable resources, totally autonomous and independent entities, and pioneers in new economic models and social innovation.

E-Mobility is also stimulating relevant investment in building new charging infrastructure and leading to take account of Energy and Buildings as crucial component of a single ecosystem.

Finally, E-Mobility contributes to fostering sharing and circular economy. Firstly, car sharing vehicles are usually used as "second car" for mainly urban trip, thus making the electric motor vehicle means of transportation extremely suitable for the distribution of shared transport services. Secondly, the rising issue of second life car batteries, that is batteries that are no longer highly performant for e-vehicles, but still have residual capacity between 70 and 80%, can be used for different application such as fuelling other type of vehicles, or as domestic batteries, stationary storage for electrical networks or short-circuit green energy distribution. This seconduse application of lithium-ion batteries in fully line with circular economy principles.

In light of the above, the concept of SHARING emerges as one of the founding principles of the Smart City. Sharing is also caring for the ecosystem overall, for next generations, and commitment to build a better environment promoting the effective realization of a smart citizenship.

Core Tech Principles for Smart City platforms

From technological view, a Smart City grounding principle is INTEGRATION.

Smart City is synonymous with integrated management of public and private services offered to citizens in smart mode. Cities, hence, are becoming the hubs of the services-based world economy; thus, cities around the world have mostly to cope with the same challenges including quality of life, mobility, environment, energy, sustainability, health and safety, security, and economic growth.

As it clearly emerges in McKinsey's graphic representation (2018), the Smart City ecosystem involves three main layers: physical devices, connectivity, services.

Emerging technologies and technology innovation play a key role to integrate these three founding layers and produce systemic outcomes.

Market availability of Smart City Internet of Things (IoT) platforms is growing rapidly, and their architecture is becoming more sophisticated and modular. Cloud is probably the most disruptive driver of this radically new data-architecture approach, as it offers companies a way to quickly implement AI technologies for competitive advantage. Thus, todays' platforms are mainly cloud-hosted solutions that connect devices, collect, match, and manage data from different city domains and microservices' providers to provide a holistic view of a city. In addition to these main functionalities, such platforms are designed to swiftly deploy horizontal new solutions (i.e., core and value-added services), both developed in-house and via an ecosystem of providers such as vertical specialists and local suppliers.

From a technological perspective, to create a connected Smart City ecosystem it is necessary to develop cross-sectoral platforms designed for services' integration. Realizing a connected Smart City ecosystem comes through the development of comprehensive and integrated solutions both at foundational infrastructure and IoT software level.

The combined development of different emerging technologies - Smart IoT sensors, Artificial Intelligence and Blockchain – can help to integrate the above three layers, that is, physical, digital, and operational infrastructure and to unlock the huge unexpressed potential deriving from the huge number of single apps and platforms focused on a better quality of life. Everything revolves around real-time data, nowadays. Extracting, processing, refining, and storing data in proper and secure way is doubtlessly a top commandment. Starting from a more accurate and automated collection of environmental data through smart sensors, passing through the definition of complex algorithms up to ensuring transparency, inalterability, and data security thanks to Blockchain technologies.

In light of the above, the adoption of a platform-based approach, therefore, appears to be essential.

It is clear how the success of Smart City platforms mostly depends on the platforms' ability to attract and nurture developers, SaaS companies, systems integrators, and other IT vendors to build value-added and customized solutions on the top of the platform.

In this collaborative platform-based model, where each ecosystem component is strictly interwoven and, hence, interdependent on the other one, OPE-NESS emerges as the second founding principle of Smart City framework. Smart City platforms that expose data via open and fully documented APIs released under open-source license and extensible tools can ensure direct and secure access to these one and provide the most value to users. Some vendors also make available libraries and full software development kits (SDKs).

Open-source cloud infrastructure platform supports building a more inclusive, and sustainable digital society and promoting a smart citizenship.

However, this cooperative approach does not always translate quickly into a concrete and tangible progress due to open platform are not able to ensure full interoperability to support third-party innovation.

From one hand, if the implementation of interoperability mechanism such as standard-based open APIs is essential to successfully replicate solutions and outcomes to more efficient management of municipal services (for instance, Mobility, Energy, Healthcare, Infrastructure, Buildings industry) and private services; from another hand, this is not enough to ensure complete interoperability.

Interoperability, thus, depends on open and shared standards.

GLOBAL TECHNOLOGY STAN-DARDS, therefore, result to be the third founding principle of Smart City tech ecosystem, as essential requirements to deal with the heterogeneous sensors and IoT platforms.

The achievement of a full technical

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IN THIS FRAMEWORK, SUCH "VISIONARY" SMART CITY PLATFORM IS OUTLINED AS THE HUB OF AN ECOSYSTEM OF TECHNOLOGICAL SUB-ECOSYSTEMS - I.E., AN ORGANIC META-PLATFORM - WHERE APPLICATIONS, PRODUCTS, AND SERVICES, VERTICALIZED BY INDUSTRIES, MIGHT BE READILY AVAILABLE TO END USERS

interoperability capable of allowing connectivity and the exchange of interpretable data between all conceivable Smart City players, services, and devices on a global scale, emerges, therefore, as the roadmap to follow in the field of technological development and innovation.

In the meantime, given this medium to long-term tech horizon, successful Smart City platforms must be open source, cross-industries and, thus, focused on overcoming the traditional siloed approach based on customized and proprietary solutions that still exists in the management of urban services.

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Emergency services for everyone. How connected cars can save lives and fuel profitability

KENNY HAWK

Mojio



hen a crash occurs, every second that passes can mean the difference between a quick recovery and serious injury, or even life and death.

With automatic crash detection and eCall services in place, a connected vehicle will instantly transmit location information, travel direction, and severity data to eCall service centers. This enables precise dispatch of local first responders to deliver rapid emergency care. Without eCall, drivers (and their passengers) might be stuck for hours before they are found, unable to call for help themselves.

In Europe, eCall has been mandated since 2018 on all new production vehicles. The European GNSS Agency estimates that by speeding up emergency responses by 40% in urban areas, and 50% in rural areas, eCall helps to avert 2,500 vehicle deaths per year and save around \notin 26 billion annually (US \$31 billion).

Unfortunately, in North America and

many other regions around the world, no such mandate exists, and the availability of such services varies from brand to brand, and across model lineups. Many newer model luxury vehicles include emergency response services (or, are at least offered as an optional upgrade), but as you head into the lower price points, further back in the model years, or into the secondary markets of OEMs, the availability of these features becomes increasingly sparse, leaving the vast majority of drivers without this life-saving technology.

The lagging deployment of eCall services globally isn't just a missed business opportunity—it also comes at a direct cost to human lives. With distracted driving on the rise, now is the time to implement these life-saving services at scale.

Distracted Driving Raises Crash Risks

According to the CDC, motor vehicle crashes are a leading cause of death in the US—in fact, more than 100 people die every day on US roads. We can safely assume that this isn't just an American issue.

Interestingly, in a year when a global health crisis kept many people at home and off the roads, preliminary data for 2020 from the National Highway Traffic Safety Administration (NHTSA) showed that despite major decreases in miles driven, the traffic fatality rate per 100 vehicle miles traveled (VMT) is projected to increase to 1.25 in the first half of 2020, up from 1.06 in the same period in 2019. Risky driving behaviors, such as speeding, failing to wear seat belts, and driving under the influence of drugs or alcohol, are some of the reasons cited for this latest rise in numbers. But what about distracted driving? Unfortunately, the NHTSA is reliant on an outdated, manual data collection policy that varies by state, by agency, and in many cases, does not even offer phone-based distraction as a possible response for crash reporting.

The ubiquity of smartphones has become a major threat to road safety. According to Arity, 1 in 4 drivers are using their phones nearly 5 times an hour, making them 70% more likely to be in a crash than an average driver. A recent study by CMT analyzed billions of miles driven in the United States and showed that the average number of distractions per 100 miles has increased by 15% over the past three years, with 41% of daytime trips involving at least 20 seconds of cumulative phone distraction. The report suggests that at least 19% of analyzed crashes were attributable to phone-based distraction and that by 2025, 4,000 people per year will lose their lives from smartphone-distraction-related crashes.

While advanced driver assistance systems (ADAS) are key to decreasing avoidable crashes in the long run, drivers are only beginning to adjust to having this technology as part of their driving experience, with mass adoption happening in a multi-phased approach. Furthermore, these technologies are only offered in a limited subset of newer model vehicles.

As this trend continues, the justification for deploying emergency response services is clear. Especially when you consider that there are a billion or so vehicles on our roads without this safety advantage.

Easing Deployment Will Drive Change

Without regulations to mandate emergency services at scale, the onus falls on automotive OEMs and the broader telematics industry to work together to do the right thing for drivers around the world.

What's needed is a solution that meets the exacting quality standards of OEMs, yet can be easily (and cost-effectively) deployed at scale in a matter of months (not years). For ultimate ease of deployment, retrofit solutions leveraging OBD-II devices provide the best combination of quality, cost-effectiveness, and scalability. They are plug-and-play, inexpensive, and can be shipped directly to customers for self-install. For in-market vehicles with embedded telematics control units (TCUs), an over-the-air (OTA) update combined with a cloud-based platform integration can enable a cost-effective emergency services upgrade, further enhancing existing connected services and giving customers a reason to sign up and stay enrolled in an OEM's subscription program. However, the hardware is just the first piece of the puzzle. Seamless deployment requires an end-to-end solution that includes (at least) four integrated components:

- Telematics Devices: A 4G LTE-enabled OBD-II device, or an embedded TCU, serves as the telematics hardware and primary source of identifying a crash event. The hardware must be fully validated to accurately and reliably recognize crash events, providing a rich data package that includes severity and contextual information to inform the appropriate emergency response. Leveraging devices that are already validated and/or certified with OEM-grade crash detection, not only reduces risk, but also shortens time to market.
- **Connected Mobility Platform:** The cloud platform is at the core of any emergency services program. It's the gateway to ingesting the crash data and also the pathway to activating the appropriate response via an eCall service provider like Bosch—a process that must occur in near real-time with enterprise reliability.
- eCall Service Integration: There are justifiably strict regulations associated

Retrofit telematics solutions, such as those enabled by OBD-II devices, can democratize life-saving connected vehicle services on a global basis, allowing drivers to bypass lapses in government regulation and avoid waiting for lengthy OEM development cycles to finish. Drivers can get the safety features they want now, on the cars they already drive, with fairly priced subscriptions



Unfortunately, as highlighted by Gartner's 2021 Guide to Connected Car Profitability, many OEMs find themselves in a vicious circle of connected car unprofitability underscored by limited value recognition, both on an internal basis and also externally to customers

with deploying emergency response services. In the USA, for example, there are non-negotiable requirements to support the 6,000-plus public safety answering points (PSAPs) that make 911 possible on a nationwide basis. There are also stipulations on how quickly emergency calls need to be answered, as well as language requirements, data protection, and buffers for accidental calls. ■ User Experience: A seamless user experience should include both an in-car voice service, which can be enabled with VoLTE calls and Bluetooth technologies, as well as an in-app user interface for manual eCall activation. Ideally, the eCall service isn't standalone, but is instead at the core of a robust connected car service that includes other sought-after safety, security and convenience features, integrated 3rd party services, and a roadmap towards the future.

Monetization Matters, and Safety (Still) Sells

From Detroit to Wall Street, Stuttgart to Seoul, Tokyo to Silicon Valley, the promise of vehicle data and connected service monetization remains at the core of nearly every OEMs mobility strategy. In fact, there's more pressure than ever for incumbent OEMs to shift their connected services division from a heavily burdened cost center to a growth-minded profit center that drives customer engagement and brand loyalty.

Unfortunately, as highlighted by Gartner's 2021 Guide to Connected Car Profitability (accessible to Gartner clients, subject to subscription), many OEMs find themselves in a vicious circle of connected car unprofitability, underscored by limited value recognition, both on an internal basis (e.g., demonstrating value to internal OEM processes) and also externally to customers (e.g., very few connected features deliver userrecognized value).

Despite being in a world of constant and rapid change, some value propositions have truly stood the test of time. Case in point, safety consistently ranks as the most desired feature category by consumers. With the increasing impact



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Growth CEO and board member. Raised over \$200 Million building 4 successful software and hardware startups from concept through successful IPO and acquisition. Completed multiple company turnarounds with successful exits. Scaled businesses from scratch to \$50M ARR with 250 employees. of distracted driving, this trend is likely to intensify in the coming years.

A recent mass-market consumer survey by one of Mojio's customers highlighted the top five most desirable connected car features, with safety-focused services occupying the top two slots:

- App-based roadside assistance
- Crash detection and emergency eCall services
- Predictive maintenance alerts
- Exclusive discounts on vehicle-related services
- Vehicle telematics, diagnostic codes, and alerts

Correspondingly, a 2021 consumer survey from Urgently reinforced the strong demand for connected safety services, with 72% and 62% of consumers respectively rating Early Collision Detection and Emergency services as either "Desirable" or "Very Desirable", with Early Collision Detection being identified as the #1 most desirable connected-assistance feature.

Retrofit Connected Car Solutions for the Win-Win-Win

Despite clear and well-established purchase intent for emergency services, many OEMs have yet to deploy emergency solutions at scale. As such, the vast majority of vehicles remain without critical safety features, such as automatic crash detection and eCall services.

Retrofit telematics solutions, such as those enabled by OBD-II devices, can democratize life-saving connected vehicle services on a global basis, allowing drivers to bypass lapses in government regulation and avoid waiting for lengthy OEM development cycles to finish. Drivers can get the safety features they want now, on the cars they already drive, with fairly priced subscriptions.

By offering highly-valued crash detection and eCall services on a retrofit basis, OEMs, as well as a growing pool of connected mobility service providers, can aggressively challenge the vicious circle of connected car unprofitability and set the stage for further investment, innovation, and growth. It's clear that doing the right thing also happens to be very good for business. Together, as an industry, we can harness the power of telematics to save lives.



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Smart and Shared Mobility: Overview, definition and future

⁄ RAVI SAINI

OYE! Rickshaw

mart Mobility can be indicated as smart movement or transportation from a place to another that optimises the time, Cost and Environmental effect. So any mode like Car sharing is a means of saving all the 3 times as it will help in reducing traffic on roads, Cost as it will help in optimal vehicle travel and in turn the environmental impact also . Any technology enabled mode of ride like ride through any mobile application will help you to get vehicles at doorstep within limited time and budget as well you can select the pickup and drop as per your requirements and can find the pool of vehicles to select the vehicle as per your need is also a means of smart mobility. In Simple words Smart mobility is a new and revolutionary way of thinking about how we get around - one that is cleaner, safer, and more efficient medium. It indicates - Zero Emissions, Zero Accidents, Zero Ownership.

Future of Smart Mobility

Smart mobility has grown exponentially in the last few decades and it will continue in the near future as AI will play its part in upcoming decades. If we compare the public transport system of a few decades earlier to our latest public transport system we will find it has improved in aspects like real-time timetabling and route optimisation, digital tracking, cashless travel etc that was missing some decades ago. With the aid of AI the future of flying cars and public transport has been added to - to do list that will create milestones in the smart mobility sector. Recently, Hyundai talked about their aim and seriousness about flying cars and said the flying car efforts have been increased and the air taxi will land in the market by the end of 2025.

The Problems related to traffic signals



Traffic Signal Surveillance



Smart Parking Guide operated by sensors

breach and Parking solutions also have been solved without any man power use and in some cases the research is still going on to automate the vehicle to a central corresponder tower to get each and every solution against which problem is raised to it, Two such most common solutions have been predicted by below images. The first image predicts the signal surveillance and second predicts about the parking space that is integrated to a mobile device and central tower and step by step working has been explained in the images only how technology is going to play a vital role to make the mobility smarter.

Shared Mobility

Shared Mobility is the term used to define the vehicles without ownership to whom the public can use for short term drives on hourly or day basis rental. Shared Mobility is also becoming smart in various aspects. This sector has increased by multiplier in the past 2-3 decades. With the development of technology a lot of startups and Market players are coming to market with their own cab or motor bike sharing model. Investors even invest megabucks in such setups seeing the future of the concept. Uber is a well known international brand of this category. But in recent years this shared





mobility has taken a turn to become more smarter as Electric vehicles are entering the pool making the ride experience less costlier, more comfortable, less environmental impacts. App Working on one such mobility solution is shown below in which user can book a ride as per his requirement of route, type of vehicle without owning the vehicle but renting it for some time slot only.

Shared Mobility as a public sector even getting smart as we are focused on routing of the public buses and concerned about the timings as shown by the tracking of different public vehicles at a bus stop.

Types of Smart Mobility

Smart mobility services include all of these public transport with real time tracking, Sharing mobility, Mobility as a service - means these tech enabled vehicles to serve customers as per their needs, Smart logistics movements with real time tracking or the mobility via aerial drones. But this is not all where smart mobility is limited. The feature of auto driving and Parking mode of Tesla is also one of the cases of smart mobility.

Scope and Target Areas of Smart Mobility

The major scope and target are of Smart Mobility is to control the harm to environment. Even the European Green Deal is a set of policy initiatives by the European Commission with the overarching aim of making Europe climate neutral in 2050. The major

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Uber is a well known international brand of this category. But in recent years this shared mobility has taken a turn to become more smarter as Electric vehicles are entering the pool making the ride experience less costlier, more comfortable, less environmental impacts

component to control the climate change is taken as the change in mobility sector to adopt a way of transport that is cleaner. Clean Energy future is highly concerned from Commision side.

Overall, the Smart and Shared mobilities are the future of mobility sector and going to disrupt market in upcoming 10-20 Years single handly.

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E-SCOOTER & **E-RICKSHAW TRACKER**



Features

One of the main TFT 100 values is its applicability to a variety of electric vehicles, including bikes, scooters, rickshaws, forklifts, and heavy machinery.

This is enabled by the exceptional functionality of a wide power supply voltage range (10-97 V DC with overvoltage protection). Another important feature that has been waited for a long time in the market is protocol adaptability to a certain vehicle. For example, an already installed Manual CAN feature provides data on battery health, fuel consumption, odometer values and other key parameters. With regard to interfaces, Teltonika made a step forward by establishing adaptability to different communication protocols CAN, RS232, RS485, UART, allowing to monitor battery health and performance by reading state of charge, temperature and cells voltage from BMS. Besides smart data reading, much of the thought has been put into safety devices. Over speeding, jamming, excessive idling, towing and crash detections are among key scenarios TFT100 can offer when it comes to fleet monitoring peculiarities.

The device is also suited for big city environments in almost any weather conditions. TFT100's operating and storage temperature ranges from -40°C to +85 °C, while the device also adapts to the humidity between 5% and 95%. Also, IP65 classifies a commendable degree of protection against solid objects and water. Gediminas Mikalainis, Chief Marketing Officer at Teltonika Mobility said: "Since the electric mobility market has started booming in the last decade, the first solutions for businesses were not sufficient enough to fulfil the wide array of needs. We decided to create a multifunctional tracker that does not only accurately monitor the performance of a vehicle, but also identifies malfunctions in advance and contains various scenarios that help the owners to seamlessly monitor their fleets. To our knowledge, no similar device has been released in the market, and we are proud

> **POSSIBLE INTEGRATION: E-RICKSHAW PASSENGER,** E-RICKHAW CARGO, EV BIKE, EV SCOOTER

Recent incentives from Indian central and state governments to use electric vehicles in the country are expected to boost the growth of the related markets in upcoming years. For this reason, Teltonika prepared a dynamic TFT100 tracker, suited to meet various business needs. The device ticks all the boxes when we discuss proper and accurate monitoring, wide integration, and safe maintenance.

of the features and applicability our tracker can provide".

Verdict

Equipped with a wide array of smart features, TFT100 proves to be a reliable and exciting tracking device for a number of use cases. Considering its convenient applicability, the tracker can take the Indian market by storm.

Use Cases

TFT100 FULL

As previously mentioned, TFT100's boasts versatility in terms of use cases available. Firstly, it is highly applicable to e-scooter or e-rickshaw sharing that continues to evolve in the majjor Indian cities. Similarly, the device can be used by food deliveries businesses to keep track and optimize the workflow of their fleets. Moreover, it may also serve as a solution for manufacturing and logistics businesses, ensuring performance monitoring and timely system reporting for e-forklifts fleets.

TFT100 can be also employed in battery swap stations, particularly for 3-wheeler vehicles. Finally, the tracker can be used by EV OEMs that seek to exploit smoother B2B service with an already installed and fully functional IoT mechanism. Other relevant use cases include scissor lifts management or airport electric transport monitoring. 🔲





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Making Shared Mobility Smarter

A BHARATH DEVANATHAN

INVERS GmbH

hink of a destination and ask yourself how you'll get there. Until fairly recently, the answer would broadly fall into two camps – using privately owned methods of transport such as one's own car, scooter or bike - or taking public transport. But recent years have seen the hybrid model of shared mobility emerge as an increasingly viable choice. The arrival in the world's cities of fleets of shared mopeds, e-scooters and fleets of free-floating cars available for spontaneous rental has seemingly occurred overnight.

Analysts watching this trend are certainly describing growing momentum. McKinsey notes that the shared mobility market "exceeds \$60 billion in value across the three largest markets: China, Europe, and the United States", anticipating annual growth exceeding 20 percent through 2030. As to India, P&S Intelligence expects the shared mobility market to even witness a massive annual growth of 56.8 percent between 2020 and 2025. In terms of form factors Berg Insight projects for car sharing that membership of such schemes will grow at 21.5 percent from 71.9 million members at the end of 2020 to 190.3 million by 2025. Meanwhile, the nascent moped - or scooter - sharing industry saw even faster growth - with analyst Enrico Howe from mopedsharing.com recording a 58 percent growth in the global fleet of shared vehicles last year - albeit that the overall number of 104,000 mopeds reflects the relative youth of this sector.

At Invers, we see this growth accelerating but with the knowledge that this is a story that's decades in the making. Invers pioneered automated vehicle sharing in the early 1990s in Germany. Inspired by the idea that young people averse to car ownership could buy a car together and share it for their occasional trips, our founder Uwe Latsch applied an engineering solution and created a system to simplify the process of sharing cars. With a telematics unit installed in the car, Invers made developments like digital handover possible. However, these first services predated the real breakthrough - the ubiquity of mobile technologies that would make car sharing a truly seamless, convenient and easy experience. Over two decades, we helped make this possible - for example by enabling the first free-floating car sharing services. Today, with reliable telematics and customisable software solutions for fleet data and telematics management the company has worked with customers in more than 50 countries to power more than 350 shared mobility projects. We are enabling everything from cars and campers, to mopeds, kick-scooters, and e-bikes to be shared.

Shared mobility is yet to hit the mainstream

Despite our own successes and the global ramp up of adoption of shared mobility services in general, we must concede that these services are still far from reaching mass adoption. In much of the world, the majority of trips are still made by a private vehicle: In some markets, car ownership is still cheap enough to reduce consideration for alternatives like shared mobility services. Elsewhere, like here in India, private mopeds/scooters are also still the preferred choice.

The world over, many of the shared mobility services that have launched or expanded into new markets have struggled to sustain growth or profitability – in some cases rolling back services or retreating to core markets. Following a particularly torrid 2019, Strategy Analytics' Roger Lanctot noted in a scathing blog that in many cases these were self-inflicted wounds, caused by services that were "crappy and unreliable" with unpredictable and poor customer service, and business models that at times piled "high operating costs onto lousy execution". Ouch. Even so, Lanctot concluded that one would be completely wrong to write off the sector, pointing to efforts to right these wrongs by established operators that were resetting their businesses and by new entrants bringing new perspectives. Indeed, despite the uncertainties of COVID 19, the past year has seen shared mobility continuing to attract attention, investment and - most importantly - experimentation. A key trend has been to offer more services that better reflect customer needs, with services increasingly offering improved choice through mixed fleets that combine multiple vehicle brands and different form factors too

Major automotive OEMs such as Citroen and Renault launched purposebuilt electric vehicles developed specifically with shared mobility in mind, with Renault anticipating similar demand with the EVs developed for its Mobilize brand. These are important steps - offering the right choice of vehicles for the rigors of sharing makes sense: the utilitarian, rugged design of models like the Citroen Ami and Dacia Spring better reflects the often-tough life of shared vehicles. Additionally, vehicles that are purpose built for sharing will often come with specific features required for sharing that consumer offerings may lack. However, vehicle choices can also be about catering to diverse tastes: For example, BMW and Daimler joint venture SHARE NOW recently added Fiat 500 to its fleet to provide style-forward city cars alongside its existing range of premium cars.

New form factors can be an important way for shared fleets to provide the right type of vehicles for different types of journeys. Operators are expanding their offerings with EVs, but also providing



mopeds, kick-scooters and bikes as well. Today, the likes of Lime, Revel and Tier are all now offering multiple vehicle types. Indeed, shared mobility is becoming more broadly understood in terms of offering the right vehicle at the right time – and even the best combination of vehicles to allow for "multi-modal" journeys.

While it's critical to have an attractive mix of vehicles, there remains a need to integrate, maintain and guarantee the reliability of services. Herein lies the challenge: Adding more brands and form factors adds further complexity, from initially in-fleeting new vehicles to managing the fleet and offering a consistent and consistently reliable service. To stay profitable, all this must be achieved while keeping costs in check.

The role of the shared mobility technology stack in ensuring reliability

When considering reliability, vehicles are only one of several key components of a shared mobility business that must be considered. Just as critical is the technology stack comprising telematics and connectivity, software for fleet data management, and the apps for sharing and booking.

At Invers, we think that the technology stack is where the real opportunities lie for enabling new business models and optimising existing ones. We like to say that "the money is in the code". As well as reliable service, both revenue streams and costs are ultimately downstream of the data - and the developers able to analyse that data, generate actionable insights and optimise the services accordingly. This is the key to rapidly piloting and testing new customer offers or for designing safer services. A great example of this potential is in driving analysis where customers could be offered bonuses for good driving practices or have service limits imposed for reckless behaviour.

Indeed, this level of analysis is possible today. imove, Norway's EV subscription service and an Invers customer, conducts more than 200 analyses to evaluate key fleet indicators such as utilisation, financial performance and customer fluctuation to optimise its service. imove also conducts vehicle lifecycle analysis to determine when a vehicle should be used, for what type of rental, and when it should be removed from the fleet. Hans Kristian Aas, CEO and Co-Founder of imove explains that "the data-centric approach is the secret to our success,", noting that the ability to use Invers' technology to reliably deliver a wide range of vehicle data allows imove to offer "the most holistic and forward-looking solution on the market today."

In the age of mixed fleets, it is also increasingly important that operators have a flexible platform that is vehicleand telematics-agnostic to simplify the integration of new vehicle types and form factors. This provides the flexibility to select the best vehicles for a great physical experience and a high level of cost efficiency irrespective of technical restrictions. This is especially important as operators expand into new markets and need to adapt their fleets to local preferences, laws - or even geography. For example, operators have discovered that a hilly location like Barcelona will require more powerful mopeds than Berlin or Hamburg.

With a more sophisticated understanding of the strategic importance of technology, operators have increasingly shed the startup mentality that everything must be built from scratch in house. Today, the drive towards greater reliability, sustainability and profitability is seeing operators take a strategic view on where best to focus in-house development resources to enhance their services, differentiate from competition and grow the business, and which areas can be outsourced to specialists able to deliver proven solutions costeffectively.

The key recommendation in this build or buy decision is for operators to identify core areas that let them differentiate themselves through unique customer experiences and those that are 'hygiene' factors that must be done well but don't need to be proprietary. Core areas include developing a strong vehicle and trip experience, making it easy and simple to use the booking app, and setting up custom pricing and offers tailored to the customer.



By contrast, basics such as driver's license verification, payment processes, and telematics connectivity are missioncritical factors that don't differentiate one service from another on a large scale. As a result, it may make sense to choose a proven third-party provider to outsource these components to while focusing in-house developer resources to innovating the core business differentiators.

Let's take a quick look at three examples of this build vs. buy decision in action from our own customer experiences:

- MILES, a German-based carsharing service, offers a unique pricing structure to their customers. Instead of the standard per minute billing, they offer pricing by the mile. In addition to this unique pricing model, MILES also wanted to go the extra mile and further differentiate themselves from the market through a better user experience. They opted to develop their sharing software and booking app in-house. For vehicle telematics and connectivity details they rely on Invers. With this approach, MILES was able to provide an enhanced customer experience, achieve breakeven in 2020, and add EVs to their fleet.
- Cooltra, is one of the leading scooter sharing operator in Europe with over 8,500 electric scooters in six countries. To operate more efficiently and scale faster, Cooltra decided to to use Invers' technology. With shared electric scooters, uptime largely depends on battery levels and usability. One of Cooltra's key processes is battery swapping and any time saving for this process is a must. With Invers the swapping process can be done with no need to shut down and reboot the telematics unit, something that could otherwise take up to 5 minutes per scooter. Improving the efficiency

on a process that is being repeated thousands of times per day has a direct impact on productivity, something that Cooltra considered a key factor when choosing Invers as a partner.

As mentioned earlier in this piece, SHARE NOW, a carsharing joint venture between Daimler and BMW, chose to integrate Fiat 500s into their fleet to grow their customer base by offering a wider range of vehicles at different price points. SHARE NOW chose to integrate the Fiats using INVERS' CloudBoxx telematics and connectivity solution. Describing the decision to partner with Invers, Slavko Bevanda, CPO and CTO of SHARE NOW explained that "since Cloudboxx is already integrated in so many vehicle types, we knew it could work with other vehicles we would want to add to our fleet as well in the future".

Managing the mixed fleet challenge

The SHARE NOW case study also illustrates a challenge that is becoming increasingly pertinent. When operators' fleets were more homogenous, with only a few brands and one form factor - the process of integrating OEM's telematics systems was less complex. With the move towards fleets encompassing multiple brands and form factors and with the move towards more and more cars with IoT exfactory, operators now need to integrate each and every individual OEM API into their systems. This is made challenging as APIs from different OEMs are very different when it comes to data structures and protocols. This is manageable with a limited number of vehicles, but as the number of vehicles increase, the complexity of integrating and maintaining them quickly escalates. Operators must react to every update to every one of these different APIs,



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Bharath joined INVERS in June 2021. He is responsible for business development, customer success and business partnerships. As a computer science graduate, Bharath brings relevant industry experience and a keen sense of developments in the international market, particularly from his previous work. thereby introducing higher levels of risk and potential points of failure.

At the same time, vehicles themselves are growing more complex. OEMs are improving the scope and quality of data from telematics that are integrated exfactory, for example data on driving behaviour or detection of signposts by integrated cameras. Here too is another area where operators can draw on external expertise from Invers. We just recently developed a solution called CloudConnect to help remove this complexity. At its core, it is an API aggregator that connects various telematics models, translates them into the format of a generic interface and thus makes them easily usable for fleet management and mobility services - instead of having to implement a separate connection for each interface.

Whether cars, mopeds or e-bikes, this uniform standard allows operators to communicate with vehicles via the same API - INVERS OneAPI - which facilitates vehicle interaction and data exchange. All connected telematics models can be directly addressed and used, providing operators with the freedom to choose any vehicle without worrying about integration efforts. A further advantage of CloudConnect is the ability to access OEM's professional APIs that make it possible to send vehicle commands and execute vehicle data analysis (a capability lacked by competing solutions that can only access consumer APIs). Ultimately, what this capability delivers is greater simplicity, reliability and flexibility - allowing operators to create more agile business models and more attractive fleets and services.

Looking ahead

Based on all these insights, trends and developments, technological we are expecting exciting times ahead. As the supply of purpose-built vehicles increases, the demand for new mobility options grows and fleets become more and more diverse, there will be promising business opportunities for all kinds of mobility services, including shared mobility. As a technology provider we are looking forward to ensuring these services will be more convenient and reliabe. no matter what vehicle or business model. Ultimately, this will mean that the use of shared vehicles becomes more attractive and affordable than ownership. 🔲



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MaaS: The Future of Urban Mobility

⁄ TUSHAR BHAGAT

Uffizio India Pvt. Ltd.

Understanding MaaS

The concept of mobility as a service is relatively new. It promises a paradigm shift-or rather a sense of flexibility-to the existing framework of ride-sharing. MaaS is an innovative transport strategy that coerces users to make the switch from fleet ownership to shared mobility-while still providing the comfort of private transportation. MaaS encourages its users to consume mobility on an "as-needed" basis, which not only frees one from fleet ownership, operational, and maintenance costs but also puts forth a more enduring, more convenient, choice of transport.

How does MaaS work?

MaaS deploys application programs to provide users with an uncomplicated ride-sharing experience. To put things into perspective, MaaS invokes GPS technology and internet connectivity to deliver a world-class transportation experience to its users. MaaS enables users to find transportation services near them or inversely, helps transportation services, like taxis, cabs, locate users. What MaaS really does is simplify the process of shared mobility. It eliminates all the anxiety and hesitation associated with ride-sharing by supplementing users with real-time data.

MaaS, interchangeable with TaaS (transport as a service), in its essence, is an "on-demand" transport service that streamlines everything for you from the very first step to the last. It identifies your location, connects you with a nearby vehicle, efficiently re-routes to pick people/ peers along the route, generates invoices, and sets up payment gateways. Users payper-use, and will experience fluidity in transportation infrastructure.



Is mobility as a service a sustainable option?

One of the biggest pain points for urban mobility is congested roads. Roads flooding with fleets is more than a mere inconvenience for some. For businesses dealing in last-mile delivery, fleet rentals, or (emergency) transport services, these congested roads become a make-orbreak aspect. The Urban Mobility Report (2019) published by the Texas A&M Transportation Institute confirms that commuters, on average, spend 54 hours a year stalling in traffic. Rush hour is dead. Traffic is forever. You live in your car now.

Besides, the ever-increasing fleets on our roads pose a threat to the health of our global environment. Vehicular carbon footprints adversely affect our natural habitats and drain our energy resources. In such a scenario, inculcating shared mobility into our transport routines is more than an advantage-it's about sustainability. Carpooling with office peers or cab-sharing to an airport are prudent examples. MaaS does exactly this! It reduces dependency on public transport (which is reputed for delays and inaccurate ETAS) and gigantic fleet ownership costs. What's more, is that it provides the convenience and comfort of private transportation at affordable costs.

What's Next for MaaS?

The Global mobility as a service market is expected to reach \$1.76 trillion by the end of the year 2028-that is in less than 7 years! MaaS is expected to take over onefourth of the total transportation industry. Clearly. MaaS is on its way to adaptability and scalability! This means it will be facing challenges like handling massive user traffic, managing a large number of fleets, and constantly monitoring drivers. Luckily, the telematics and IoT industry can help with this. With in-fleet cameras and driver monitoring systems, reckless or distracted driving can be checked. Fleet utilization (or rather fuel economy) can be enhanced by planning optimized routes and training better drivers. With live tracking, accurate ETAs can be shared with all involved parties. If MaaS delivers all that it promises, it is certainly going to make urban transportation affordable, flexible, and more reliable!

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He is the Technical Director for Uffizio India Software Consulatants Pvt. Ltd. In this role he leads the company's technical development, overseeing a team of software developer and sales professionals and managing the annual spend.

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MERCEDES BENZ AMG E 63

Mercedes Benz India on 15th July launched the E-class performance sedans, AMG E 63 S and E 53 priced at INR 1.70 cr and INR 1.02 cr (ex-showroom) respectively. Now the automaker has 11 AMG products for the country, comprising the 35, 43, 53, 63 and GT series









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Safety Features

NCAP Rating - 5 Star (Euro NCAP)

- Airbags 7 Airbags (Driver, Front Passenger, 2 Curtain, Driver Knee, Driver Side, Front Passenger Side)
- Middle rear three-point seatbelt
- Middle Rear Head Rest
- Tyre Pressure Monitoring System (TPMS)
- Child Seat Anchor Points
- Seat Belt Warning

Braking & Traction

Anti-Lock Braking System (ABS)

- Electronic Brake-force Distribution (EBD)
- Brake Assist (BA)
- Electronic Stability Program (ESP)
- Four-Wheel-Drive Torque-On-Demand
- Hill Hold Control
- Traction Control System (TC/TCS)
- Ride Height Adjustment
- Differential Lock Electronic

Locks & Security Features

- Engine immobilizer
- Central Locking Remote with Boot Opener
- Speed Sensing Door Lock
- ✤ Child Safety Lock

Telematics Features

- Check Vehicle Status Via App
- Alexa Compatibility
- Remote Car Lock/Unlock Via app
- Emergency Call
- Find My Car
- Remote AC On/Off Via app
- Geo-Fence

Entertainment, Information & Communication Features

- Smart Connectivity Android Auto (Wired), Apple Car Play (Wired)
- Integrated (in-dash) Music System
- Touch-screen Display
- GPS Navigation System
- 6+ Speakers
- USB Compatibility
- MP3 Playback
- AM/FM Radio
- iPod Compatibility
- Steering mounted controls
- Voice Command

Instrumentation

- Digital Instrument Cluster
- Electronic 2 Trips Meter
- Average Fuel Consumption
- Average Speed
- Distance to Empty
- Digital Clock
- Low Fuel Level Warning
- Door Ajar Warning
- Adjustable Cluster Brightness
- Gear Indicator
- Shift Indicator
- Heads Up Display (HUD)
- Digital Tachometer
- Instantaneous Consumption

TATA MOTORS 'XPRES-T'

THE ELECTRIC SEDAN WILL BE AVAILABLE WITH TWO BATTERY OPTIONS - 16.5kWh AND 21.5KWH ata Motors announced the launch of a new brand called 'XPRES,' for fleet customers. The first vehicle under the new brand to be launched shortly, will be an electric sedan, called the 'XPRES-T' EV. The Xpres-T EV will be offered through a select set of dealerships in two variants – XM+ and XT+. The electric sedan will be available with two battery options – 16.5kWh and 21.5kWh.

Performance

✤ 21.5 kWh battery

Single Speed Transmission

Next-Gen technology

- Fast-charging socket that charges from 0 to 80% in 110 minutes
- Infotainment System
- Driver Information System
- Easy home charging from any 220 V 15 A AC socket.
- Automatic AC

Safety Features

- Dual Front Airbags
- ✤ ABS with Electronic Brake-force



Distribution

Energy-Absorbing Body Structure

Performance & Battery

- ✤ Vehicle Type M1 Category
- ☞ 72 V 3-Phase AC Induction Motor
- Zero Tailpipe Emission
- Max. Power (kW @ r/min) 30 kW
 @ 4500 r/min
- Max. Torque (Nm @ r/min) 105 Nm @ 2500 r/min
- ✤ Battery Capacity (kWh) 21.5
- Transmission Single Speed, Automatic

- Gradeability 9.8 Deg
- Regenerative Braking
- AC Charging Standard BEVC-AC001
- DC Fast Charging Standard BEVC-DC001
- Normal Charging Time (0%-100%) -11.5 hrs
- Fast Charging Time (0%-80% with 15 kW charger) - 110 min
- Certified Full Charge Range (as per MIDC Cycle) (km) - 213 km

Brakes

- ✤ Front Brakes Disc
- Rear Brakes Drum

Suspension

- Front Suspension Independent, Lower Wishbone, McPherson Strut with Coil Spring
- Rear Suspension Semi-Independent; Twist Beam with Dual Path Strut

Tyres

R14 175/65 Tubeless

PREDOMINANT TRENDS TO MODIFY THE FORTHCOMING TECHNOLOGY & STRATEGIES FOR AUTONOMOUS VEHICLES

\land AKSHITA PACHOLI

Allied Market Research

ompetition among the automotive industry has been described over acquisition and maintenance costs, fuel economy, and engine power for a long. However, the conventional norms can be seen to change with the advancements in technologies, the advent of the utilization of IoT, software-based services, and others.

The tech giants all across the globe are initiating technological advancements and innovations to lead the industry to the next level. The advent of new concepts such as autonomous vehicles, connected features and services, vehicle design, and internal user interface and their successful execution is influencing consumer outlook towards automobiles. In addition, all these dimensions are majorly attributing to growth in competitiveness among the market players.

Autonomous driving is one of these major dimensions, which is highly grabbing the attention in terms of both competitions as well as advancements. Autonomous automobiles have the potential that can enormously modify the way we travel. In addition, the undergoing major developments are further promising a safe, secured, and progressive way of traveling. For a fact, the technology of autonomous vehicles has already entered the period of development and has started presenting an array of benefits including reduced CO2 emissions, relieving traffic congestion, lowering travel costs, and probably the end of searching for a parking space. Furthermore, the technology is also experiencing various alterations and modifications for more implementation.

The market players, on the other hand, are following different strategies to remain competitive along with expanding the market growth. A number of trends, moreover, are leading the global market of autonomous vehicles. And this article aims to present a few of the most followed trends.

The trend of new launches is rising high-

Robotaxis is another emerging concept under autonomous automobiles. Though still in its infancy, however, several market players have even initiated the test drives of driverless vehicles on the public road. A start-up company that operates in China and the United States, Pony.ai, has recently announced one such plan and expects to roll out its services by 2022. The company stated that the testing of driverless vehicles is still getting operated on public roads in California and China.



AUTHOR

Akshita Pacholi Allied Market Research

Akshita Pacholi is a content writer and researcher at Allied Market Research. She holds a Masters Degree in English Literature and has a passion for new and developing technologies. Followed by the same trend, another firm, a subsidiary of GM Motors, Cruise, as well has announced securing a \$5 billion line of credit for its autonomous ridehailing business. The credit, furthermore, is getting provided by the automotive financing arm of GM motors. Moreover, the ride-hailing services were expected to be launched in 2019, however, it has been suspended. Also, further testing of service is being operated.

Partnerships and merging is another major trend getting highlighted among the market players-

Apart from new launches, the companies are also initiating partnerships and mergers. Recently, an American autonomous start-up vehicle company, Aurora, has announced the deal to be merged with Reinvent technology partners, a special purpose acquisition company. Though the company is yet to close the deal, however, the deal is expected to be announced earlier, stated in an article.

Apart from this, a US-based leading advanced AI software for radar perception providing firm Oculii has announced its partnership with China-based Great Wall Motors. The partnership aims for the joint commitment of both companies for massmarket autonomous vehicle production.

Autonomous vehicles, surely promise a completely advanced and slightly different world of automobiles. The different levels associated with the concept including driver assistance, partial automation, conditional automation, high-level automation, and complete automation are expected to provide surprising and advantaging opportunities. At the same time, autonomous driving would also be helpful for reducing human

US-BASED LEADING ADVANCED AI SOFTWARE FOR RADAR PERCEPTION PROVIDING FIRM OCULII HAS ANNOUNCED ITS PARTNERSHIP WITH CHINA-BASED GREAT WALL MOTORS. THE PARTNERSHIP AIMS FOR THE JOINT COMMITMENT OF BOTH COMPANIES FOR MASS-MARKET AUTONOMOUS VEHICLE PRODUCTION

errors, accidents, and traffic deaths. The industry, however also faces certain challenges including high manufacturing costs and challenges related to data management. Additionally, the arrival of pandemics also had hampered the complete automobile sector. Conversely, the industry has started flourishing and is expected to ride the elevation in the approaching time.

According to a report published by Allied Marker Research, the global autonomous vehicle market is estimated to reach \$556.7 billion by 2026. The requirement of decreasing traffic congestion and safety improvement are the major factors that augment the demand for autonomous vehicles. In addition, the growth in the trend of connected infrastructure and transition from ownership to mobility-as-a-service (MaaS) such as Uber, transit, and more are other important aspects that are boosting the growth of autonomous vehicles. On the other hand, the factors such as emerging concepts of smart cities and related developments and support and initiatives by the government bodies are further helping to expand the opportunities for the market players. Moreover, with the growing market trends, the advent of new technologies, and strategies followed by market players, the industry is expected to gather wide prospects in the coming time.

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Intelligent Automotive Digital Cockpits

Elektrobit (EB) announced new offering providing car makers with solutions for intelligent automotive digital cockpits. EB Cockpit System Solutions Support Car Makers in Developing Next-Gen User Experiences – First Used by Sony to Support Development of Advanced Cockpit in VISION-S Prototype

26 -

KEY FEATURES

- Create a customer specific blueprint and execute the development and production.
- Provide customized features, HMI and application development and integration of third-party apps.
- Provide advanced display module development and integration.
- Transition from hardware based to software-defined platforms.
- Software reusability, interoperability, and scalability.
- EB combines hardware, software, and UX design.

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VELABITTM SENSOR

he Velabit, Velodyne's smallest sensor, brings new levels of versatility and affordability to 3D lidar perception. This compact, mid-range lidar sensor offers a dramatic improvement in field of view: 90 degrees horizontal by 70 degrees vertical. It is highly configurable for specialized use cases and can be embedded within vehicles, robots, UAVs, infrastructure, and more.

Elodyne Starter

Features

- Expanded, simultaneously achievable horizontal (90°) and vertical (70°) field of view
- Delivers high-resolution for customer perception needs with configurable and dynamic field of view
- Small form factor for sleek, embeddable design: lightweight (125g) and compact (2.4" x 2.4" x 1.38") with integrated processing for a wide range of solutions
- Range of up to 100 meters
- Low power consumption (3-6W) maximizes battery life and vehicle range
- Proven Class 1 eye-safe 903 nanometer technology



- Bottom connector with cable length options
- Built to easily scale: multiple manufacturing sources available for qualified production projects

ADA S Features

- Blind-Spot Monitoring
- Cross-Traffic Detection
- Pedestrian Automatic Emergency Braking (PAEB)

Performance

- Sidewalk and last-mile delivery
- Industrial forklift and warehouse
- ADAS and autonomous vehicles
- Drone/UAV mapping and navigation
- Infrastructure and smart city
- Autonomous Mobile Robots (AMR)
- Augmented Reality (AR) / Virtual Reality (VR)





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渝 Advanced Telematics Devices



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Rajasthan Government makes Vehicle Tracking mandatory for Ambulances-Are TSPs & Users Ready?



he Rajasthan government issued an order making it mandatory for all ambulances to have a vehicle tracking system or GPS device installed. According to the officials, this is the first such order issued in the country that mandates for an ambulance, older than three years, to have a GPS tracker installed. This will help to curb cases of overcharging, ambulance operators taking longer routes, ill-treatment of patients and criminal activities, the state transport department said.

How much is it beneficial for telematics service providers? Will it increase their sales? What is the implementation process? To know the answers to these questions, Telematics Wire took reviews from some of the service providers.

Shyam Sundar Sharma, Director, Sarthi Systems, Jaipur said the policy has a good impact on TSPs. It will increase sales. People were using this technology earlier, but now the demand for vehicle tracking devices for ambulances is increasing.

However, there are still some flaws in that policy. **Rajiv Sharma, Director, K S Technosoft Pvt Ltd (Tracking Genie), Jaipur** said that this is a good move as during the COVID crisis there was no control on the movement and charges of the emergency vehicle. But before implementing the policy the authorities should have ensured that all the parameters related to the policy were clearly laid down and explained to all stakeholders.

One-month time to implement this policy was very short due to nonavailability of AIS 140 devices at short notice. AIS 140 devices are expensive and are not available off the shelf. They are generally manufactured on an order basis and there are other requirements like validity of COP of the device etc.

The implementation of the policy was kicked started without even getting all its parameters, SOP's ready and explained to the stakeholders. The ambulance drivers / the owners were not made aware of the complexities of the system. They did not get to know the benefits of the new system. Most of the stakeholders got the new devices installed as they were informed that their permits will not be issued or renewed if they do not have this system installed in their ambulances. Proper training was not provided to the stakeholders as to how the new system works, where the data will be available to see, will they have facility to track their vehicle/asset on a real-time basis if required, and more.

Sumit Garg, Business Head, Esszie Telematics, Jaipur said, "The service of GPS devices is not upto the mark. The devices approved by the government are totally useless. They have service issues. The components of these devices don't work. If you compare between normal devices and government approved devices, they have huge differences. Normal devices are cheap and work much better than AIS 140 certified devices and other government approved devices. The reason being that the Indian technology is still not that good. The Indian companies have to spend a big amount to get their devices approved by the government. It impacts the actual product and subsequently companies start using cheap components to make the devices in order to recover their money.

Location accuracy of government approved devices is very poor. Cheap and Chinese devices have much better accuracy and their service part is also good."

On the sales part, he said that the government approved devices are very costly and they have less margin on these devices. Their service is also not good. Without these devices RTOs don't provide fitness certificates for the vehicles and that is why it becomes a compulsion for the users. The government approved devices don't give location accuracy and their server is also not ready yet. As a result, the impact on sales is negligible.

Navneet Choudhary, Founder & CEO, LAMROD GPS, Jodhpur said, "I think this is a great step taken by the Rajasthan government, recently people have faced so many issues especially in COVID second wave in terms of unreasonable fare charges by few ambulance owners. Using this technology, the government would be able to take control of this issue and would give more power to hospital management to manage their ambulances and for a bettercentralized system. The general public is getting aware of the benefits of GPS systems by government cognizance and media coverage. We are getting more queries and enquiries about AIS140 certified devices and its benefits for general purpose use as most of the people are interested in other portable GPS Trackers to ensure their children's safety.'

Further on the sales part, he added that they are getting unprecedented exposure as most of the ambulances and other vehicles were using non-AIS 140 certified devices and now they have to comply with the AIS140 certified devices so market opportunities seem bright. Apart from owners of the ambulances, the general public is now interested in portable devices to assure the safety of their vehicle, advanced features like Engine Lock and Anti-Theft are getting more attention.

The Rajasthan government had in April formulated guidelines to regulate the fees charged by ambulance operators during the second wave of the pandemic. As per this, for the first 10 kilometres, Rs 500 is to be charged. After that, operators can charge twice the fare calculated at the rate of Rs 12.5-15 per km based on the size of the ambulance. An extra Rs350 can be charged for transporting a Covid patient or body and for the required PPE kit and sanitization.

On the basis of the reviews, we have found that it is a good thing to have such policies for better monitoring and management of emergency medical transport service. We are ready to implement these policies considering the focus of the government to ensure safety of people on roads. However, the technology is still at its nascent stage in India and it requires adequate infrastructure along with proper training for quicker and effective implementation. 🔲

ZF introduces new ADAS virtual engineering and digital validation

ZF Group is introducing a new scalable suite of Data and AI based services for ADAS Virtual Engineering and Digital Validation called ADAS.ai. ADAS.ai is designed to help OEMs accelerate the development of advanced driver assist systems (ADAS) for passenger cars and commercial vehicles. ZF ADAS.ai can be applied to ADAS systems developed by ZF as well as other Tier I suppliers.

ADAS.ai is based on two breakthroughs: (1) a super-high resolution multi-sensor synchronized data set collected by driving all scenarios and mileage required to validate



L2+ ADAS systems globally, and (2) proprietary AI technology developed with Cognata of Rehovot, Israel, that transforms the super-high-resolution data set to sensor inputs "as seen" by new sensors in new vehicle applications.

MINIEYE In-Cabin Sensing solution Wins 'Best Automotive Solution'



Edge AI and Vision Alliance announced the Best Visual Product Award of 2021. MINIEYE In-Cabin Sensing Solution won in the category of "Best Automotive Solution," which is also its first appearance in the international industry alliance.

As an auto tech developer, MINIEYE is devoted to leveraging embedded computer vision technology and artificial intelligence to provide a comprehensive perception technology for intelligent cockpit and selfdriving vehicles. By tracking the visual attributes of drivers and passengers in the cockpit, such as head direction, facial expression, gaze, gesture, body action, etc., it can perceive and judge their identity, behavior, emotion and intention, provide them with security and enhance the intelligent interaction experience. At the same time, it can also detect personal items such as mobile phones, wallets and pets to prevent them from being left in the car. The highlight of MINIEYE In-Cabin Sensing Solution is the humancomputer interaction system, based on vision technology, such as gaze interaction, gesture interaction and head action interaction.

Brodmann17 adds advanced driver assistance software to Peachtree Corners' Level 3 autonomous vehicle

Peachtree Corners announced that Brodmann17 is the first company to add its technology to Curiosity Lab's Level 3 autonomous test vehicle. Brodmann17 will further develop and prove out its state-ofthe-art software-only perception technology for assisted driving in real-world conditions.

The company's proprietary technology is based on deep learning neural networks, utilizing commodity automotive-grade, low-power processors for edge computing to provide extremely accurate detection and alerts from forward collisions, Time-to-Collision (TTC) distance from other vehicles, pedestrians, cyclists and lane departures.



PoliMOVE wins the Ansys Indy autonomous challenge simulation race

Ansys, working in collaboration with IAC organizers Energy Systems Network (ESN) and the Indianapolis Motor Speedway (IMS), simulated autonomous races that culminated in a seven-team final on a digital replica of the IMS. Ansys awarded winner PoliMOVE from Politecnico di Milano (POLIMI), Milan, Lombardy, Italy \$100,000 and runnerup TUM Autonomous Motorsport from Technische Universität München (TUM), Munich, Bavaria, Germany \$50,000 in cash prizes.

Seventeen competing teams faced four phases: time trials, validation runs,



semi-final heats and the final race, composed of 10 laps with the seven remaining vehicles. The event was conducted in the same virtual Ansys simulation environment where teams developed the location, perception, prediction, planning and control algorithms that collectively serve as the racecar controller. This allowed teams to examine their controllers' ability to navigate the track, avoid collisions and execute strategic racing maneuvers.

Vodafone and AWS technology tie-up delivers 'autonomous' boost for Aurrigo Autonomous vehicle developer Aurrigo says it



Autonomous vehicle developer Aurrigo says it has become one of the first companies in the UK to benefit from a new technology partnership between Vodafone and Amazon Web Services (AWS).

The developer has been powering its three Auto-Shuttles – used in the recent trials on roads in Cambridge – with AWS Wavelength and Distributed Edge Computing from Vodafone, in order to deliver ultra-low latency and expansive bandwidth.

Paired with Vodafone's 5G network, the company says this is an important breakthrough in the driverless vehicle arena and moves it a step closer to removing the human safety supervisor from its pods and shuttles, which are being tested and operated in more than five countries across the world.

LeddarTech and Cognata join forces to accelerate the \$20B agriculture autonomous vehicle market

LeddarTech and Cognata are to integrate Cognata's simulation authoring software with LeddarTech's sensor fusion and perception technology, LeddarVision, to accelerate the testing and validation of self-driving agricultural vehicles.

The companies state that the combined solution will deliver a new level of realism in training and validating ADAS and AV performance, along with highly accurate sensor simulation, bringing novel AI-powered traffic agents, based on realworld behavior, and highly realistic virtual worlds together on a cloud-based platform. The companies note that largescale simulation is a time-to-market accelerator for AV and ADAS developers, as they continue to harness its capabilities in more phases of development to provide better product quality and safety and reduce testing time and costs.

The Cognata platform leverages artificial intelligence, deep learning and computer vision to create a realistic automotive simulation environment where virtual cars travel virtual roads in virtual cities – all remarkably accurate to real-world conditions, including weather conditions and an AI-based traffic model.



Decrease fuel thefts by up to

90%

Reduce fuel costs by up to

efficiency by up to

30%

Dptimize fleet

Discover where your fuel goes

Fuel is typically one of the largest fleet expenses. Finding ways to minimize fuel spent can substantially improve the bottom line.

Callcomm Ble fuel level sensors (Escort) provides intelligent tools to keep track of fuel consumption and easily detect fuel thefts.



Callcomm

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Car Dr.Com launches new OBD app for automotive dealers

CarDr.com announces the launch of its smartphone Vehicle Appraisal Application. The new automotive technology delivers original equipment manufacturer (OEM) accuracy appraisal data via a smartphone and pocket-sized Bluetooth On-board diagnostics (OBD) scanner. Within minutes, the new proprietary app generates vehicle inspection reports, reliability ratings, fair market valuations and is available by subscription.

The patent-pending app was created for car dealers, appraisers, wholesalers and inspectors to: 1) Detect VIN fraud with 100% accuracy and OBD trouble codes with 90+% accuracy, 2) Deliver more than the OBD standard generic level code report so the fair value of a used vehicle can be estimated immediately, 3) Reveal hidden OBD faults from the chassis and body modules that can lead to significant sales margin erosion in used car purchases, 4) Create dynamic reports for each vehicle appraised, take photos, add appraisal notes and view previous appraisals, 5) Integrate with real-time vehicle industry information sources.

Fleet Complete launches Vision 2.0, dash cam & video telematics solution



Fleet Complete has launched Vision 2.0, the latest fleet dash camera solution. Vision 2.0 features a dual-facing camera with advanced driver-assistance systems (ADAS) and on-the-edge artificial intelligence processing. It includes on-board LTE connectivity and a driver monitoring system for optimal in-cabin safety coverage. With live playback of events, the solution helps to elevate commercial fleet safety and driver training programs. Vision 2.0 works as a plug-andplay installation with any vehicle that has an OBDII, 6-pin or 9-pin port and integrates seamlessly with Fleet Complete's platform.

Clients can access all vehicle data, driving analytics, route analysis, and video in a single interface, without the need to switch between systems. All businesscritical elements are available to a fleet manager to best manage logistics, operations, compliance, and driver training.

Loadsmart launches Data Insights for logistics and fleet operations

Loadsmart announced the release of its Data Insights offering, which strengthens shipper operations with a robust data infrastructure specific to each company. By building the digital pipes linking supply and demand in the freight marketplace, Loadsmart is uniquely positioned to offer a macro- and micro-level perspective, as illustrated in the first-ever Freight Data Insights Report. Only Loadsmart can bridge the gap between available industry information and what shippers really need to optimize freight management and maintain positive carrier relationships. With Loadsmart's Data Insights, shippers gain access to custom-built dashboards tailored to their specific needs and offering visibility into key logistics performance indicators, including:

- Target lead times that avoid detention and other accessorials (charges for additional services)
- Estimated additional costs resulting from shorter lead times
- Scheduling insights including in-facility waiting times
- Repeat offenders for accessorials, including cancellations and Truck Ordered, Not Used fees, evaluated by facility or accessorial
- Comparison of accessorials to benchmarks of other shippers of the same size or industry
- Mode optimization options to reduce cost, time and emissions
- Analysis of past shipment costs that could have been reduced and by how much to establish better mode selection

Luokung announces approval of eMapGo's HD map standards

Luokung Technology Corp. announced that the Intelligent and Connected Vehicles—Highly Automated Driving Map—Acquisition Element Model and Exchange Format standard, sponsored by Luokung's wholly-owned subsidiary eMapgo Technologies Co., Ltd. has passed the project approval and review process by the China Society of Automotive Engineering Standards (CSAE) and was approved for official release.

This is the first published industry standard for the Highly Automated Driving Map production industry in China. It provides a unified set of standards for the development of the Highly Automated Driving Map and defines and standardizes Highly Automated Driving Map acquisition elements. It also sets the foundation for future intelligent and connected vehicles Highly Automated Driving Map exchange formats and for mapping- and positioning-related standard systems for a cohesive and intelligent network.

LEVC launches new telematics service

LEVC (London Electric Vehicle Company) announces the launch of LEVC Telematics, Connected by Geotab^[], a new service which offers access to vehicle insights to help businesses of all sizes increase productivity and cost savings of their electric vehicles.

On both TX electric taxis and VN5 electric vans, customers will benefit from having a telematics solution installed directly into the vehicle, helping to optimise the way vehicles are used by delivering near real-time data to monitor vehicles as smartly and efficiently as possible.

LEVC Telematics, Connected by Geotab, is centred around a simple online dashboard for 'at-a-glance' vehicle management. Maximising the cost-saving represented by LEVC's unique eCity powertrain,



the new offering also includes tools dedicated to electric vehicle reporting.

 by Geotab, can also be fitted retrospectively to LEVC vehicles
 already on the road.

orders, LEVC Telematics, Connected

Available for all new TX and VN5

IMS announces fully-managed vehicle security solution for commercial fleets

IMS has launched IMS Vehicle Security Solution, the industry's only fully-managed, end-to-end vehicle security monitoring and recovery solution for fleet-based organisations, such as vehicle rental, car sharing, and leasing. The product combines IMS's expert security services with the all-new, ultra-covert IMS Sleeper device to significantly increase the chances of recovering stolen commercial vehicles.

The IMS Vehicle Security Solution



is a fully-managed offering which comes complete with 24/7 monitoring and alerts, recovery and repatriation services, access to a security monitoring portal, the ability to upgrade to other proven IMS telemetry solutions, including IMS Connected Claims and IMS Driver Behavior Analysis, and two hardware options:

- 1. All-new IMS Sleeper mini-GPS tracker: Low-cost, batterypowered, self-installable option for dedicated security monitoring and vehicle recovery.
- 2. IMS T7 Hardwired black box: Professionally-installed hardware option intended for organisations with business requirements beyond vehicle security, such as driver behaviour and advanced vehicle usage monitoring.

Spireon relaunches the LoJack brand with improved technology and connected-car functionality

Spireon completed a technology platform update and rebranding of its franchise dealer solution from Kahu, to LoJack[™]. The relaunch significantly expands the LoJack offering, bringing proven lot management and service retention tools to dealerships, and connected car features to consumers. In addition, LoJack stolen vehicle recovery coverage is now nationwide, utilizing Spireon's strong GPS and cellular networks.

The newly expanded LoJack solution also helps dealers find cars quickly for test drives with visibility

into battery level and inventory age and to better fill service bays and grow long-term relationships with consumers via the MyDealer feature in LoJack connected-car app. LoJack consumers can now use connected car technology to maintain car health as well as locate their car and receive driving behavior alerts. Through MyDealer in the consumer app, dealers can take advantage of automated service reminders to grow service retention.



CalAmp launches LoJack España to provide connected intelligence and enhanced vehicle theft protection for local fleets

CalAmp announced the launch of Lo-Jack[®] España, a wholly owned subsidiary in Spain. LoJack España brings to market CalAmp's cloud-based connected car services and LoJack[®] Stolen Vehicle Recovery (SVR) solutions to help automotive and motorbike dealers, insurers, rental companies, construction OEMs and enterprises proactively monitor and manage their fleets, and protect against losses due to theft.

In addition to SVR, LoJack España will offer car dealers SmartDealer[™], a CRM application that helps drive after-sales revenue and build stronger customer relationships via the LoJack Connect[™] Mobile App. Using the CalAmp Telematics Cloud and edge computing technology, the app provides visibility into vehicle location, battery status and other diagnostic data.



Goodyear Sightline, a tire solution for fleets

The Goodyear Tire & Rubber Company announced a tire intelligence solution for cargo van fleets, Goodyear SightLine. Goodyear SightLine will help enable seamless, safe and reliable mobility for all vehicles starting with cargo vans serving the field service, construction and last-mile delivery industries.

Later this year, Goodyear SightLine will also be available to Goodyear's original equipment customers and emerging fleet and mobility providers. Initially available in North America and Europe, Goodyear SightLine uses sensors with cloud-based algorithms to communicate with fleet operators in real-time.

In the future, Goodyear SightLine technology will not only provide feedback on the tire, but provide feedback on road conditions, enabling connected, autonomous mobility. Initial testing has shown integrating Goodyear SightLine technology into a vehicle's control's system can reduce stopping distance loss by 30%.

Evaluating New IEEE 802.11ax 6-GHz Band WLAN Performance using Network Mode

Anritsu Corporation announced the introduction of an IEEE 802.11ax option that extends the functions of its Wireless Connectivity Test Set MT8862A to support evaluation of IEEE 802.11ax 6 GHz band WLAN performance. With the option, RF TRX characteristics of smartphones, smart home electronics, automobiles and IoT devices with WLAN functionality can be accurately and efficiently tested to ensure compliance with industry standards. Engineers can use the MT8862A with the option installed to evaluate the RF characteristics of IEEE 802.11ax 6 GHz devices using either the Direct Mode, for shorter evaluation times, or Network Mode, which facilitates real-world evaluation using signaling messages. Additionally, Network Mode does not require complex operations, such as device control using special commands, eliminating the need for a control line.

The new MT8862A option also supports 160 MHz wide channels. Since the 6 GHz band covers a 1200 MHz wide operation band, use of 160 MHz wide channels is practical. It is expected that the 160 MHz wide channels will facilitate streaming of higher-definition video and larger-capacity data than previously possible. By

supporting measurement and testing of 6 GHz band WLAN devices and 160 MHz wide channels, Anritsu expects its MT8862A to play a key role in development of next-generation communications devices.

The Wireless Connectivity Test Set MT8862A is designed to evaluate the RF characteristics of WLAN devices. It uses patented Anritsu technology to evaluate RF performance at all main WLAN IEEE 802.11ac/ax data rates currently in use, as well as OTA performance tests defined by CTIA® and the Wi-Fi Alliance®.

With Network and Direct modes, the MT8862A supports flexible testing of WLAN device RF TRX characteristics (TX power, modulation accuracy, RX sensitivity, and more) matching the measurement environment. The test set is operated by connecting a PC controller over Ethernet cable. Operation via the PC controller web-browser GUI eliminates the need to configure a measurement environment requiring installation of software and drivers in the instrument.



General Motors expands access to OnStar Guardian app



General Motors announced its OnStar Guardian mobile app is now available to all customers in the United States and Canada with a compatible Apple or Android device. Now, customers without a GM vehicle can stay protected and connected from anywhere and in any vehicle through the OnStar Guardian app. The expansion of OnStar Guardian is part of GM's commitment to focus on opportunities beyond vehicle sales to make the road and the world a safer place. With OnStar Guardian, customers can access key OnStar safety and security services on their mobile device and get help when they need it from an OnStar Advisor. OnStar Guardian offers Mobile Crash Response, which uses smartphone sensors to detect crashes and alert an Emergency-Certified OnStar Advisor.

KIT researchers developing autonomous platooning for electric buses

Autonomous electric buses could make short-range transit safer and more efficient; however, articulated buses or those with passenger trailers require too much energy and are not flexible enough to accommodate the highly fluctuating passenger numbers. The solution could be platooning, in which several vehicles follow each other at short distances, the vehicles being controlled electronically. These platoons can be adapted as required to meet specific traffic needs. Researchers from Karlsruhe Institute of Technology (KIT) are working on a city bus platoon for Munich. In Munich, all buses will be replaced by electrically powered vehicles in the long term. In order to respond to fluctuations in demand for public transport



on different days or at different times of day, passenger trailers have been used to date. These algorithms are then to be used in a bus prototype that KIT researchers will realize together with SWM and the Dutch electric bus manufacturer EBUSCO by mid-2022. It will be tested on the new test field for electrified and autonomous vehicles in short-range transit located in the north of the Bavarian capital.

The TEMPUS project (short for Munich test field—urban autonomous road traffic pilot experiment) with the project partners KIT, SWM, and EBUSCO, among others, started at the beginning of 2021 and is funded by the Federal Ministry of Transport and Digital Infrastructure (BMVI) with around €12 million for the duration of two and a half years. The Mobility unit of the City of Munich is in charge of the project.

For real-life testing of autonomous, connected vehicles in real traffic situations, the City of Munich and the Free State of Bavaria are building and operating an urban test field for autonomous and connected vehicles in the north of Munich.

Global usage-based insurance market for ICE & electric vehicles (2021 to 2026) – Developing automotive usage-based insurance ecosystem presents opportunities

The "Usage-Based Insurance Market for ICE & Electric Vehicle by Package (PAYD, PHYD, MHYD), Technology (OBD-II, Black box, Smartphone, Embedded), Vehicle Age (New, Old), Device Offering (BYOD, Company Provided) and Region – Global Forecast to 2026" report has been added to ResearchAndMarkets.com's offering.

The usage-based insurance market is projected to reach USD 66.8 billion by 2026 from an estimated USD 19.6 billion in 2021, at a CAGR of 27.7% during the forecast period.

adoption of telematics The increasing and advancements in safety technology have helped reduce claims. The European Union has mandated e-assistance systems in case of an accident. The eCall system, mandatory for all new EU vehicles since March 2018, speeds up emergency-response times by 40-50%. Also, Russia mandated a similar system for new cars at the end of 2017, while Mexico has mandated radio-frequencyidentification (RFID) tags to bolster vehicle-antitheft systems. Many other countries, including China, Germany, Singapore, and South Africa, have voluntary systems that provide UBI incentives. However, the ambiguity over regulations and legislation and the lack of standardized systems can hinder market growth.

According to OICA, the sales of passenger car sales dropped from 63.7 million in 2019 to 53.6 million in 2020, witnessing a decline of 15.9% due to the pandemic. However, the decline in sales statistics did not impact the usage-based insurance market at all. For instance, according to Insurance Information Institute (III) and other secondary sources (insurancenewnet.com, blogs, articles, etc.), UBI got a boost during the COVID-19 pandemic. People were comfortable with having their insurance premiums based on the number of miles driven. Thus, in the coming years, the UBI market is likely to get a significant boost.

PAYD segment is expected to be the largest market by package type

Pay-As-You-Drive (PAYD) is estimated to be the largest segment during the forecast period. The key advantages of PAYD are ease of deployment, no complex algorithms for working, and cost-effectiveness for the insurer as well as consumers. Secondly, PAYD insurance encourages consumers to drive less and drive green. This reduces vehicle emissions and contributes to the worldwide efforts for environmental betterment. As people drive less, the accidental risks associated with drivers reduce. Additionally, PHYD and MHYD gather multiple data points about driver behavior, which the driver may not be comfortable sharing. This makes PAYD the preferred choice. In addition, PHYD and MHYD record rash driving or speeding that attract higher premiums. Hence, many users stick to PAYD insurance plans.

Citroën introduces ë-Jumpy Hydrogen van

Citroën introduces its own version of hydrogen medium van - the Citroën ë-Jumpy Hydrogen. Citroën is supplementing its range of electric LCVs with hydrogen technology to meet the needs of the 8% of companies required to make journeys of more than 300 km (186 miles) or lacking the time to recharge their vehicle during the day. The practical new model has a range of more than 400 km (249 miles) (WLTP) and its three 700 bar carbon-fiber hydrogen tanks, which sit next to the battery under the front seats, can be filled in just three minutes.

ë-Jumpy Hydrogen is fully electric and benefits from two



energy sources: a 45 kW fuel cell and a 10.5 kWh battery that acts as a 50 km reserve and takes over automatically when the hydrogen tank is empty. The hydrogen fuel cell ensures the vehicle's range, the battery being required in transition phases such as strong acceleration and gradients calling for extra power.

OneD Battery Sciences unveils SINANODE, a new EV battery technology

OneD Battery Sciences announced SINANODE, a technology to power the next generation of EV batteries. To build a battery with more silicon, a longtime challenge for the EV industry, SINANODE seamlessly integrates into existing manufacturing processes to fuse silicon nanowires onto commercial graphite powders, tripling the energy density of the anode while halving its cost per kWh. The higher energy density increases battery range while nanowires shorten charging time, enabling OEMs to design and produce electric vehicles that answer the booming market demand for better batteries.

To deploy SINANODE today, the company also announced its pilot programs, providing EV OEMs with their own dedicated plant to deploy the SINANODE step,



creating differentiated nanosilicon configurations for their high-performance Li-ion batteries vision and their 2024 EV production cycle ambitions. SINANODE's technical achievements, patent portfolio and business model enable EV makers to dramatically increase the use of nanosilicon in the anodes of lithium-ion batteries, and meet near-term consumer demand for longer range, faster charging, and more affordable EVs.

Elektrobit adds V2G communications to EB tresos product line

To support carmakers and suppliers in their efforts, EB has added EB tresos V2G ChargeIn, a new, invehicle, AUTOSAR-compatible software module that-in combination with an ISO 15118-compliant communication stack, enables ECUs to manage the communication between the charging system inside the vehicle and the charging station. In addition, through a partnership with SEVENSTAX, EB tresos AutoCore now integrates the fully ISO 15118-compliant SEVENSTAX application stack, supporting the latest V2G communication features. The communication and security requirements for these features are provided using standardized AUTOSAR components such as the Internet Protocol stack and security extension modules.

To make the development and integration process easier, EB has brought together all the elements required for AUTOSAR- and V2G standards-compliant charging into a single development environment.



Goodyear completes acquisition of Cooper

Goodyear Tire & Rubber Company has completed its acquisition of Cooper Tire & Rubber Company, finalising the merger agreement made public on February 22, 2021. The combination unites two leading tyre companies with complementary product portfolios, services and capabilities to create a stronger US-based leader in the global tyre industry. Bringing Goodyear and Cooper together is expected to strengthen Goodyear's leading position in the global tyre industry, especially in the US and China. It will combine two complementary brand portfolios



with a comprehensive offering across the value spectrum, and provide significant, immediate and long-term financial benefits. The combination is expected to generate a net present value of USD450 million or more by utilising Goodyear's available US tax attributes.

Renault Group & Plug Power Inc. are launching their joint venture HYVIA

Renault Group and Plug Power Inc. have officially launch their joint venture called HYVIA. The joint venture will build and roll-out a complete ecosystem of fuel cell powered LCVs, green hydrogen and refuelling stations across Europe.

It is equally owned by the two partners and is chaired by David Holderbach, with over 20 years of experience in strategic, product and international sales at the Renault Group. The head office, as well as

eSync alliance welcomes Aptiv as new member

The eSync Alliance announces that Aptiv has become its latest member, joining existing Alliance members to build an industrywide bi-directional pipeline to electronic devices in the automotive market.

Aptiv's software and vehicle architecture expertise enables the advanced safety, automated driving, user experience, and connected services that are making the future of mobility work.

The eSync Alliance is an industry initiative established to build a highconfidence, multi-vendor path for end-toend secure over-the-air (OTA) and data services for the connected car, through a global network of co-operating suppliers. Members of the eSync Alliance include AlpsAlpine, Excelfore, HELLA, Molex and ZF, among others.



the R&D teams, will be located at Villiers-Saint-Frédéric, in France, with the light commercial vehicle engineering and development centre for Renault Group. The process, manufacturing and logistics teams will be based in Flins, as part of the Re-Factory project, and plan to begin the assembly of fuel cells and recharging stations by end of 2021.

The first three fuel cell vehicles brought to market by HYVIA will be based on the Renault Master platform and should be available in Europe by end of 2021 and accompanied with the deployment of charging stations and the supply of green hydrogen.

Ford acquires Electriphi, a charging management and fleet monitoring software for EV

Ford Motor Company has acquired Electriphi as part of the development of its Ford Pro commercial business. The California-based company will be integrated into Ford Pro to provide customers with EV fleet and charging management software for businesses. The



acquisition specifically targets fleet customers who will adopt electrified and fully electric vehicles over the next several years. Ford will capitalize on growing demand for EVs over the next year with the launch of its 2022 E-Transit and all-new F-150 Lightning Pro.

Part of the plan with Ford Pro will be to capitalize on the increased need for depot charging. The automaker estimates that 600,000 commercial vehicles will need depot charging by 2030. Ford Pro looks to grab \$1 billion in revenue by helping meet that need.

🔒 IDA Ireland

Why Ireland for Connected and Autonomous Vehicles

Ireland has become a global technology hub of choice when it comes to next generation of business and technology for connected mobility.

Transport is changing and Ireland is in the driving seat. Global companies that innovate are most likely to succeed, particularly in the fast-changing automotive and mobility space.

IDA Ireland, your partner on your investment journey

Ireland's inward investment promotion agency, IDA Ireland, is a non-commercial, semi-state body promoting Foreign Direct Investment into Ireland through a wide range of services and supports. We partner with potential and existing investors to help them establish or expand their operations in Ireland.



For further information contact IDA Ireland

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Hyundai Motor Group announces partnership with Grab

Hyundai Motor Group announced an extension of its partnership with Grab to promote electric vehicles adoption in the Southeast Asia. The Group, including Hyundai Motor Company and Kia Corporation will work to explore the launch of new EV business models including battery-as-a-service and EV financing to drive EV adoption. The partnership aims to lower total cost of ownership and reduce range anxiety key to greater EV adoption.

In line with Hyundai's latest future strategy, both parties will explore collaboration in new business opportunities and technologies such as smart city solutions. The pilot programs to develop a joint EV are claimed to start in 2021, beginning in Singapore, and expand to Indonesia nd Vietnam.

- EasyPark Group completes acquisition of ParkMobile
- Apple in talks with China's BYD, CATL for electric vehicle batteries
- Wejo and Waycare to offer integrated connected vehicle data solution
- ZF and Goodyear to provide integrated tyre and fleet management solutions
- Volkswagen invests a further €500 million in sustainable battery activities with Northvolt AB
- AutoBrains AI tech is part of Continental's ADAS
- Wabtec and GM to develop advanced Ultium Battery and HYDROTEC hydrogen fuel cell solutions for rail industry
- Elektrobit integrates Alexa Custom Assistant in Continental's digital cockpit
- LDRA and OpenSynergy partnership promotes a defense-in-depth strategy for embedded automotive applications
- Ibeo partners with AAC to strengthen its LiDAR systems for automotive
- Bridgestone invests in Kodiak Robotics, a self-driving trucking company
- Woven Capital invests in Ridecell to accelerate global growth in IoTdriven automation for mobility and fleet businesses
- Bosch to supply fuel-cell components to cellcentric
- Fisker and Magna sign long-term manufacturing agreement
- Korean automotive GIGA testing labs

choose Cybellum for automated risk assessment

- Mitsubishi to use CYFIRMA cybersecurity platform
- Etisalat and Ericsson partner to commercially deploy 5G high-band
- LoJack Italia and Koelliker Group partner to bring connected intelligence and security to SERES 3 electric C-SUV in Italy
- Greenland Technologies and Shandong Heavy Industry announce partnership
- HERE location platform to power TCS DigiFleet
- Tekion DMS and Dealertrack F&I launch new Digital Contracting integration
- Toyota Mobility Foundation, Energy Systems Network and May Mobility inaugurate free autonomous shuttle service in Indianapolis
- InterDigital and Anritsu showcase smart factory use case for 5G network slicing and multi-access edge computing
- CalAmp's Tracker and cap hpi partner to help car dealers uncover hidden revenue opportunities
- Vehicle Tracking Solutions secures \$70 million investment from LLR Partners
- General Motors and Shell offer renewable energy solutions to U.S. homeowners, EV owners and suppliers
- Urban Air Mobility and ANRA Technologies launch partnership to develop advanced air mobility air traffic operating environment
- Anritsu and dSPACE to accelerate Simulation and Testing of 5G Automotive Applications – Joint Showcase at MWC 2021
- DENSO deploys Siemens' Software Portfolio for digital transformation of automotive product design
- Crowd sourced dash cam footage to improve road maintenance
- Foxconn and Gogoro to jointly work on battery swapping system
- Karl Malone Auto Group acquires Teague Toyota, Ford & Chevrolet in El Dorado, AR.
- GCF and 5GAA partner on C-V2X certification
- Core Development Group signs contracts to design, develop 15,000+ electric vehicle charging stations throughout the U.S.
- UL Joins the World Economic Forum's Safe Drive Initiative focusing on the safety of autonomous vehicles

- Volta Charging and Bloomberg Media team up for first-of-its-kind, "Air Pollution Scoreboard" digital place based integration
- FleetPride announces new partnership with TRW remanufactured steering gears from ZF
- Anritsu secures two contracts with Tier-1 operators for 5G SA service assurance
- HERE, Vodafone and Porsche partner on real-time warning system
- GasBuddy to use Arity's data analytics to improve driving behavior
- State Farm®, Ford come together to improve the safety and overall cost of vehicle ownership
- Arrival EVs to have Ambarella's technology for ADAS and autonomous driving
- TUTK and OTUS announce partnership for Telematics Video Solution
- Wejo to use Microsoft Azure for connected vehicle data applications
- ParkMobile announces partnership with The Car Park offering contactless parking payments in Raleigh, Asheville, and Boone, NC
- Heavy hitter: Hyzon Motors to supply world's heaviest hydrogen-powered truck to transport company
- TRATON GROUP successfully completes Navistar merger and ushers in a new era
- Verra Mobility partners with Eurowag to enable delivery of Interoperable toll payment solutions in Europe
- AWS and Otonomo accelerate vehicle data-based innovation with connected car data collaboration
- Hyzon Motors signs agreement to participate in 1,000 vehicle HyTrucks program
- Yandex Self-Driving Group and Grubhub partner for robot delivery on US college campuses
- Huawei reaches license agreement with Volkswagen's supplier
- Audi selects Mobileum for connected car testing and monitoring
- Getaround launches strategic collaboration with TotalEnergies to accelerate carsharing adoption and reduce carbon emissions globally
- Parkopedia partners with ThinxNet to provide seamless in-car fuelling payments across Europe
- Nexyad and HERE to improve vehicle safety with cognitive AI

Telematics for car rental and leasing to grow at CAGR 15.7% over next 5 years

The installed base of telematics devices in the car rental and leasing market reached 5.0 million in 2020 according to a new market research report from the IoT analyst firm Berg Insight. The COVID-19 pandemic and its effects on the world economy lately are believed to drive demand for digital business models, which is good news for the uptake of telematics in both the rental and leasing industries. The total active installed base is forecasted to reach 10.5 million by 2025 across the car rental and leasing fleets in Europe and North America.

Several categories of telematics applications are today used in the context of car rental and leasing. Fleet managers have an obvious interest in tracking the location of their vehicles and monitoring their status in order to prevent fraud, theft and mistreatment. In the long run, this leads to reduced operational costs and also potentially lower insurance premiums.

The telematics value chain spans multiple industries including a large ecosystem of companies. Telematics players active on the car rental and leasing market can on a high level be categorised into two broad categories. One is telematics specialists which are only or mainly active in the rental and leasing space, offering solutions for digital access or vehicle fleet management. Examples of companies present on this market include the fleet management solution vendors Webfleet Solutions. Power-Fleet, Masternaut and Geotab. Additional notable telematics service providers in the rental and leasing telematics market include IMS, Octo Telematics, Targa Telematics and Zubie as well as specialized companies such as RentalMatics and Liberkee. Telematics data integration between automotive OEMs and car rental companies have become increasingly common and it is anticipated that the involvement of automotive OEMs will increase in the rental and leasing telematics industry in the coming years.

Global survey of automotive technology professionals reveals nearly 50% of them are developing electric, autonomous and connected vehicle

Perforce Software released the results of a global survey of automotive technology professionals. Key findings suggest ongoing concerns with software safety, security, and quality; the growing effects of electric and autonomous/connected vehicles on development, and the continuing focus on standards compliance. The survey found that automotive software developers' top three leading concerns are safety (43%), security (22%), and quality (21%). For those most concerned with safety, 40% said their biggest concern is meeting customer expectations of compliance with safe coding standards, such as MISRA.

Electric, autonomous, and connected vehicle development is also impacting development teams. Most teams are working on some electric components (48%), connectivity components (49%), and autonomous components (44%) to some degree. The survey found that 88% use a coding standard to ensure safe, secure, and reliable code — with 86% using MISRA and AUTOSAR. In addition, 39% of those surveyed use a static code analysis tool to aid in compliance and 44% use a SAST tool to ensure secure software. As more software is being added to vehicles, roughly 70% of teams are leveraging game development technology. The most common uses of game development technology are product testing (34%), digital twins (29%), and prototyping (19%). Global automotive cyber security market report 2021-2027 featuring Airbiquity, Aptiv, Arilou, Autocrypt, Autotalks AVL Software and Functions, Blackberry Certicom, C2A Security, Combitech, Continental

The "Automotive Cyber Security – Global Market Trajectory & Analytics" report has been added to ResearchAndMarkets. com's offering.

Amid the COVID-19 crisis, the global market for Automotive Cyber Security estimated at US\$1.9 Billion in the year 2020, is projected to reach a revised size of US\$5 Billion by 2027, growing at a CAGR of 15.3% over the period 2020-2027.

Software, one of the segments analyzed in the report, is projected to record 15.8% CAGR and reach US\$3.8 Billion by the end of the analysis period. After an early analysis of the business implications of the pandemic and its induced economic crisis, growth in the Hardware segment is readjusted to a revised 14% CAGR for the next 7-year period.

The Automotive Cyber Security market in the U.S. is estimated at US\$498.4 Million in the year 2020. China, the world's second largest economy, is forecast to reach a projected market size of US\$1.2 Billion by the year 2027 trailing a CAGR of 19.9% over the analysis period 2020 to 2027.

Among the other noteworthy geographic markets are Japan and Canada, each forecast to grow at 10.9% and 13.5% respectively over the 2020-2027 period. Within Europe, Germany is forecast to grow at approximately 12.1% CAGR.

Hydrogen fuel cell truck market poised for rapid growth: Information Trends

Well over 800 thousand hydrogen fuel cell commercial trucks will be sold by 2035, according to a study by Information Trends. These include both heavy duty as well as light and medium duty trucks.

The study, Global Market for Hydrogen Fuel Cell Commercial Trucks, 2021 says that hydrogen fuel cell technology gives trucks much higher range than battery-electric trucks, while offering rapid fueling. Because of this, heavy-duty fuel cell trucks are already outcompeting heavy-duty battery-electric trucks, particular for long-haul routes. The biggest impediment to the adoption of hydrogen fuel cell trucks so far has been the cost of these vehicles, the Information Trends study said. However, several factors have converged to bring the prices of these trucks down. According to the study, two factors give these trucks a significant advantage over batteryelectric trucks. Firstly, these vehicles are lighter than battery-electric vehicles, making them better suited to carry heavy cargo. Secondly, these trucks travel much longer distances than battery-electric vehicles, making them well equipped for long-haul transportation.

Stricter emission norms & incentive programs boost the global electric bus market

Frost & Sullivan's recent analysis finds that the growing adoption of electric transit buses, driven by pro-green government policies, has enabled global sourcing and supply chain for alternate powertrain buses. The total electric bus market, which comprises hybrid electric vehicles (HEVs), plug-in hybrid electric vehicles (PHEVs), battery electric vehicles (BEVs), and fuel cell electric vehicles (FCEVs), is projected to exceed 211,000 units by 2030 at a compound annual growth rate (CAGR) of 13.9%. India, China, Europe, and Latin America are expected to constitute more than 89% of the market by 2030. Key regional insights and growth opportunities include:

- North America: BEVs will gain considerable market share by 2030 due to a combination of lower battery prices, attractive leasing models, and zero-emission bus deployment mandates.
- Latin America: The Zero Emission Bus Rapid-Deployment Accelerator (ZEBRA) project will increase the uptake of battery electric powertrains

in the transit bus market as older diesel buses are replaced across various cities.

- **Europe:** A clean vehicle directive and the Joint Initiative for hydrogen Vehicles across Europe (JIVE) projects will propel the adoption of electric and fuel cell buses in the European Union. The entry of utility and energy major companies into electric charging infrastructure will boost the growth of fueling infrastructure for electric vehicles.
- China: BEV buses are expected to see moderate growth between 2022 and 2025 due to reduced subsidies and purchase incentives. Lower battery prices and fast-charging infrastructure will drive the growth toward 2030.
- India: Battery electric buses will increase penetration in India due to Faster Adoption and Manufacturing of Hybrid and Electric Vehicles (FAME) incentives, competitive original equipment manufacturer products, and the drop in acquisition prices while battery prices decrease.

Piloted driving features in L2 and L2+ vehicles to grow exponentially by 2025

Frost & Sullivan's recent analysis of the global autonomous driving industry finds that original equipment manufacturers (OEMs) and value chain partners are streamlining their strategies, capital investments, and product roadmap to develop and deploy region- and segment-specific partial and highly automated vehicles. By 2025, one in five cars in developed regions will offer one or more Level 2 (L2) features due to stiff competition, while OEMs in emerging countries will offer Level 1 (L1) safety-related features. Global regulations favoring testing and deployment will determine the adoption timeline for consumer

markets. China will lead the usership model of Level 4 robotaxis by operating paid services for public use within predefined geographies. This study highlights the critical market, business, and technology trends expected to drive the global autonomous driving industry.

Market participants should focus on the following:

L2 and L3 piloted driving market: Regulations for adaptive cruise control (ACC) plus lane change assist (LCA) operation are being proposed in Europe and the UK. Upon approval, this is expected to speed up adoption in the mass market segment in the region. Light detection and ranging (LiDAR) sensor in the environment perception market: LiDAR developers are looking to license their technology and collaborate with Tier I and Tier II suppliers or contract manufacturers to bring down the price of LiDARs through mass production and to cater to the rising demand in Level 2 and Level 3 market segments.

Autonomous software stack: OEMs are strategizing the autonomous driving software stack development through collaboration or acquisition of a software firm or developing capabilities to create the OS software stack in-house.

Maharashtra CM directs formulation of the revised policy to promote electric vehicles

Chief Minister Uddhav Thackeray asked the government-appointed committee to present a revised policy to promote electric vehicles in Maharashtra. The state government aims for 10% electric vehicles of all new vehicle registrations by 2025. The government proposes to substitute government vehicles in major cities with EVs from April 2022 onwards. The government plans to convert about 25% of the existing public transport infrastructure in Mumbai Metropolitan Region (MMR), Aurangabad, Pune, Nagpur, and Nashik to electric mod by 2025. Thackeray has directed that while formulating a revised policy, consideration should be given to how the policy can be effectively implemented in urban-rural areas. CM asked the administration to



prepare a road map for the infrastructure development for setting up charging stations. Besides, he insisted that the policy should be crafted after a thorough study for incentives based on demand and supply, investment potential in the electric vehicle sector and measures to increase the use of electric vehicles.

Daimler Trucks in India sets new benchmark with the opening of a Virtual Reality Centre



Daimler India Commercial Vehicles (DICV), Daimler Trucks' commercial vehicle subsidiary in India, continues to push innovative digitalization initiatives as it recently opened the first Virtual Reality Centre (VRC) at its Chennai plant. By doing so, DICV sets a new benchmark in the Indian commercial vehicle industry revolutionizing Customer Service operations and R&D. The VRC allows operators to virtually perform serviceability and accessibility checks using a digital model accessed via 3D goggles and navigational joysticks. This has the potential to transform both R&D and vehicle servicing procedures, as it reduces the need for custom-built tools, prototype vehicles, and service bays. This new capability significantly reduces time and costs required for commercial vehicle testing and development.

Another benefit of using virtual reality is the opportunity it offers for remote collaboration. Daimler Truck teams from around the world can access the same model simultaneously to exchange ideas and opinions. In today's world of travel restrictions and social distancing guidelines, the benefits this offers are incalculable.

Omega Seiki Mobility and Valeo join hands to accelerate two and three wheelers electrification in India

Omega Seiki Mobility (OSM) and Valeo have signed a Memorandum of Understanding (MoU), through which Valeo will provide the electric powertrains for OSM Vehicle Range.

Valeo will provide its 48V electric powertrain system (reducer, integrated Motor and Inverter) along with the Powertrain Control Unit for Omega Seiki Mobility cargo three-wheelers "Rage+ and Rage+ Frost". In addition, Valeo's engineers will provide the technology integration support to help Omega Seiki Mobility to go to the market quickly. Valeo and Omega Seiki Mobility will further collaborate for the upcoming vehicle models to be manufactured by the company in India.



Velodyne launches its India Design Center in Bengaluru

Velodyne Lidar, Inc. announced the launch of its new India Design Center in Bengaluru. The center furthers Velodyne's growth strategy to drive continuous innovation in lidar sensor and software solutions that transform lives by advancing safe mobility and smart communities in global markets.

The India Design Center will closely collaborate with Velodyne's San Jose, Calif.-based engineering team in leading-edge research and development to build customerfocused solutions. The India Design Center is actively focused on growing its engineering talent

Triton Electric Vehicle to invest INR 2,100 Cr in Telangana

The Triton Electric Vehicle Pvt Ltd will set up a manufacturing unit in Telangana State with an investment of Rs. 2,100 Crores (~US \$ 285 million). In the presence of IT and Industries Minister K. Tarakarama Rao, the Department of Industries & Commerce, Govt. of Telangana and Triton Electric Vehicle Pvt. Ltd entered into a Memorandum of Understanding (MoU) for the establishment of a manufacturing unit for electric buses at NIMZ, Zaheerabad. Principal Secretary Jayesh Ranjan and Triton Electric Vehicle Pvt. Ltd CEO & Founder Mr. Himanshu B. Patel signed the MoU.

With an investment of Rs 2100 Crores Triton Electric Vehicle Pvt. Ltd will establish an ultra-modern electric vehicle manufacturing unit in Telangana. The project will employ more than 25,000 persons and produce 50,000 vehicles over the first five years, including semi-trucks, sedans, luxury SUVs, and rickshaws.

The Government of Telangana will provide the required land to the firm through TSIIC at NIMZ Zaheerabad. Minister KTR thanked the heads of Triton for coming forward to invest in Telangana.

team in hardware, FPGA, embedded software, board design, systems engineering, ASIC, perception software, functional safety, cyber security and other adjacent areas. In addition to research and development, the center will foster customer and partner opportunities in India for lidar-based solutions in automotive and new mobility.

Fleet electrification provides long-term solution for last-mile delivery

Following the news that Hero Motors Company's electric vehicle (EV) arm Hero Lectro has partnered with logistics firms Fast Despatch Logistics (FDL) and Turtle Mobility to deploy e-cargo bikes for last-mile delivery; Bakar Sadik Agwan, Senior Automotive Consulting Analyst at GlobalData, offers his view: "India has been lately witnessing a significant increase in partnerships and collaborations among e-commerce, logistics and vehicle leasing companies, and vehicle manufacturers for the electrification of delivery fleet. The latest partnership suggests that the commercial fleet electrification is now a key trend in the Indian market. The tie-up is a positive development and makes a complete strategic sense, especially at a time when the fuel prices and operational costs for ICE two and threewheelers are on a constant spur.

"The significant growth in e-commerce and delivery businesses in India due to COVID-19 warrants expansion of vehicle fleet for delivery purpose. New companies entering delivery businesses such as food, retail and others need small and cost-effective fleet for last-mile delivery. This has compelled the businesses to closely monitor the cost optimization, fleet utilization and the total ownership cost of the fleet vehicles.

"EVs come out as a strong solution to the concerns of growing ICE vehicle operational costs and the related environmental concerns. EV fleet will ensure a low total cost of ownership, low cost per shipments and increased per day delivery capacity, which also converts into a better bottom-line growth. E-commerce giants Amazon and Flipkart have indicated their commitment towards 100% electric mobility in their logistics fleet and new start-ups such as eBikeGo, Oye! Rickshaw and moEVing are also focusing on complete electric mobility. The growing inclination towards electric cycles, two & three-wheelers indicates that electrification offers a longterm solution for the e-commerce, logistics and related industries, and holds significant potential in India."



How Nisarg Pandya is targeting the future of autonomy through drivebuddyAl

assionate about embedded systems and technology, Nisarg has always liked to be ahead of time and to delve into the technology with development and knowledge of the latest things coming in multiple domains. He was always curious about innovative products and used to explore a variety of products in the market starting with the Kickstarter and IndieGoGo campaigns. Entrepreneurship for him was always about calculated risks. It was always people, ecosystem, growing opportunities that motivated him to go for the entrepreneur's way. He is a strong believer in a simple mantra that if you want to go for entrepreneurship, make sure you have three things in your characteristics- Passion, Patience & Perseverance. Following this mantra not only motivated him to get into it but also to keep going for years till he tasted a small drop of success.

> NISARG PANDYA Founder & CEO, drivebuddyAl

Inception & early phase

Nisarg Pandya (Founder & CEO) completed his schooling in 2008 in Ahmedabad, Gujarat, and finished his Bachelors in Electronics & Communication Engineer in 2012 & Master in Embedded Systems in 2014. Later on, he launched drivebuddyAI in 2018 intending to provide a technology platform in the existing vehicles which are lagging. Making something retrofit and building up the base for next-level technology. In 2016, with Google, Tesla, Intel & Uber were trying hard to beat each other in the self-driving car market in the US & also in other parts of the world, many technology startups started solving driving problems for humans and tried to make it autonomous. India was far behind the global curve but where there's a gap, there's also an opportunity to leapfrog and create the market.

Nisarg was that time building the camera-based driving safety hardware with computer vision & Al-based techniques and a few of his friends suggested he keep it moving as the product was the backbone of building the autonomous car platform. This triggered the journey to build the platform to learn from humans driving to cater to multiple verticals like fleet management, insurance & OEMs who're trying to get to semi-autonomous and autonomous vehicles in the coming future. The year 2017 was a gamechanger when Nisarg was shutting the shops for drivebuddy for the first attempt, Intel acquired Mobileye at a whopping \$13bn, and that triggered the market. Nisarg was trying to accomplish a very small part of the market that Mobileye was operating in but still in the startup world, deals make deals. That came as the ray of hope for Nisarg & drivebuddyAl to start again and so he started again that time with more confidence.

Fundraising

Nisarg and the team managed to raise funding in 2019. The funding was led by Roadzen Inc, an insuretech company based in the US & presence across Europe, China, Japan & India building the technology stack for digitizing the insurance and bring the power of computer vision and Al into it. The match was perfect for both as both were having the same vision.

Talking about the journey so far, Nisarg says, "It has been quite exciting and quite challenging. The journey with lots of struggles risks while gaining confidence with the small wins and learnings from the small failures. It started with dating co-founders to divorcing them for frequency mismatch and marching ahead with the same vision and same energy."

Nisarg used to handle the complete product involving multiple technology verticals like Hardware, Firmware, AI, cloud frontend, backend & analytics. With the help of founding and core team members, he has successfully launched the fourth version of the hardware device, third version of the cloud platform with global standard features. It was just before the COVID lockdown when Nisarg & Team closed few critical hires after the fundraising was completed and now they were getting ready to kick-off with the product in the market.

Business during COVID-19 outbreak

Sharing his experience during the pandemic lockdown period, Nisarg says "COVID lockdown thankfully earned a quite amount of time for the team who was building the one of its kind product. At the time when the world was halted to its feet, the drivebuddyAI team utilized the time to rightfully use for building the technology and take two steps to jump in a small amount of time to launch in the market early."

Team management during the pandemic was challenging for Nisarg as it was all remote, people were at different psychological levels with COVID situations in surrounding and it was the time when everyone was identified with their unique voice. DBAI also had quiet experiences where new people joined, worked, and then left and the only thing the team knew about them was their voice.

COVID had made everyone learn the importance of technology adoption and accelerated it 10x and that helped Nisarg and his team to capitalize on the situation as freight movement was the only economic activity happening at the time and it was proving the importance and position of the product into the market.

Nisarg is a strong believer that you can only lead if you know how to follow. He has working experience with three companies in the past in the Embedded Systems domain and that built the base for building the hardware, the market of vehicle tracking systems (VTS), and startup life and struggles of it. These helped Nisarg in building the team, product and taking it ahead.

Future plans

DRIVEBUDDYAI has now reached a stage of scale-up and expansion. After working for years on the technology, building a high-performance team. The company is now aiming for more than 1K deployments of their AI & CV-based hardware in the next 6-8 months and targeting to have a video analysis of 1M KMs in a month by 2022. The company has completed many pilots successfully with the indigenous hardware and AI and gaining traction in the Indian market for higher adoption for improving driving safety, driving behavior, and reducing risks for fleet management companies.

Furthermore, the company is aiming to target global markets in the latter part of 2021 and planning to mark its presence in the developed markets like the US, EU & China. drivebuddyAI is all set to learn human capabilities of fleet management, insurance underwriting & risk assessment, and driving to augment them with the world-class AI to assist humans doing the job and help the industry with more data-driven & informed decision-making to save on losses and moving towards a safer future.



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