Telematics Wire

Technology Driven | Futuristic Vehicle

VISION EQXX

CES 2022 Special

www.securethings.ai

The Preferred Partner of Automotive Manufacturers in India for Cyber Security

SECURE THINGS

Standard & Regulatory Compliance

Vulnerability Assessment and Penetration Testing

Remote Feature Activation

Connected Vehicle

Stolen Vehicle Tracking

Fleet Management

Vehicle Tracking

Mobility Services

Telematics Services

Electric Mobility

Multilayered Automotive Cyber Security Solution

ECU Protection

Network and In-Vehicle Network Protection

Connected Services Cloud Security and Security Incident Analytics

PRODUCTS AND SERVICES

- Advanced Network Protection for Connected Vehicles (IP, Cellular)
- AI based Comprehensive Vehicle Network Intrusion Detection & Prevention System (CAN, Ethernet)
- Advanced ECU Protection (Telematics, Infotainment, Gateway etc.)

- Highly Secure OTA update for efficient and cost effective deployment
- Security Assessment & Penetration Testing for entire Vehicle and Ecosystem
- ISO 26262 (Cyber Security Provisions) & ISO 21434 Compliance

Recognized as one of the 20 Most Promising AUTOMOTIVE TECH Solutions Provider 2019 by CIOReviewIndia

CONTENTS

Volume : Yr 22 Issue : 1

M. Vision POP

CV2022
APAC'S Biggest Conference & Exhibition

SECURE THINGS

presents

8, 9, 10 March
Bengaluru, India

CONNECTED VEHICLE 2022

Physical Conference & Exhibition is BACK!

Title & Cybersecurity Sponsor	Diamond Sponsor
SECURE THINGS	TATA COMMUNICATIONS

Data Innovation Sponsor	Gold Sponsor	Silver Sponsors	
tcs TATA CONSULTANCY SERVICES	DANLAW	Western Digital	HEXAGON

Badge Sponsor	Associate Sponsors			Breakfast Sponsor
CAVLI wireless	TRAK TELL	Continental The Future in Motion	ITALON · SIBROS	LIGHT METRICS motion insights

Exhibitors

DANLAW | TATA COMMUNICATIONS | ITALON | Streamax | tcs TATA CONSULTANCY SERVICES

Supporting Partner
ARAI Progress through Research

TAISYS | LIGHT METRICS motion insights | SIBROS Powering the Connected Vehicle Ecosystem | ARAI Progress through Research | Transight | ESCORT

Association Partner
SMEV SOCIETY of MANUFACTURERS of ELECTRIC VEHICLES

OMNICOMM FUELLING YOUR BUSINESS | TELTONIKA | QUECTEL | Western Digital | Anritsu Advancing beyond

Media Partner
MOTORINDIA

CAVLI wireless | MAXEYE TECHNOLOGIES | uffizio | ROHDE & SCHWARZ | SECURE THINGS

Knowledge Partner
Counterpoint Technology Market Research

SerVision Your Safety. Your Security. Our Mission. | TRAK TELL | IntrepidCS | AdvanTRAK Technologies Pvt Ltd, India | ZEN MICROSYSTEMS | ELEKTRONIKA

organised by
Telematics Wire

Explore the future of Connected, Autonomous, Shared & Electric Mobility

Join as Sponsor, Speaker, Exhibitor or Delegate | **REGISTER TODAY!**

Team Telematics Wire wishes you a very Happy New Year!

Autonomous Vehicle

✎ **M A AJAY VELAPPAN**
Mahindra and Mahindra

An autonomous car is a vehicle capable of sensing its environment and operating without human involvement. A human passenger is not required to take control of the vehicle at any time, nor is a human passenger required to be present in the vehicle at all. An autonomous car can go anywhere a traditional car goes and do everything that an experienced human driver does. The Society of Automotive Engineers (SAE) currently defines 6 levels of driving automation ranging from Level 0 (fully manual) to Level 5 (fully autonomous). These levels have been adopted by the U.S. Department of Transportation

Level of autonomous vehicles:

Level 0- No driving automation:

Most vehicles on the road today are Level 0: manually controlled. The human provides the "dynamic driving task" although there may be systems in place to help the driver. An example would be the emergency braking system - since it technically doesn't "drive" the vehicle, it does not qualify as automation

Level 1- Driver Assistance:

This is the lowest level of automation. The vehicle features a single automated system for driver assistance, such as steering or accelerating (cruise control). Adaptive cruise control, where the vehicle can be kept at a safe distance behind the next car, qualifies as Level 1 because the human driver monitors the other aspects of driving such as steering and braking.

Level 2- Partial Driving Automation:

This means advanced driver assistance systems or ADAS. The vehicle can control both steering and accelerating/decelerating. Here the automation falls short of self-driving because a human sits in the driver's seat and can take control of the car at any time.

Level 3- Conditional driving automation:

Level 3 vehicles have "environmental detection" capabilities and can make informed decisions for themselves, such as accelerating past a slow-moving vehicle. But - they still require human override. The driver must remain alert and ready to take control if the system is unable to execute the task. features Traffic Jam Pilot, which combines a lidar scanner with advanced sensor fusion and processing power

Level 4- High Driving Automation:

Level 4 vehicles can operate in self-driving mode. But until legislation and infrastructure evolves, they can only do so within a limited area (usually an urban environment where top speeds reach an average of 30mph). This is known as geofencing. As such, most Level 4 vehicles in existence are geared toward ridesharing

Level 5 -Full Driving Automation:

Level 5 vehicles do not require human attention - the "dynamic driving task" is eliminated. Level 5 cars won't even have steering wheels or acceleration/braking pedals. They will be free from geofencing, able to go anywhere and do anything that an experienced human driver can do. Fully autonomous cars are undergoing testing in several pockets of the world, but none are yet available to the general public.

Components required to build an autonomous vehicle:

Challenges

Fully autonomous (Level 5) cars are undergoing testing in several pockets of the world, but none are yet available to the general public. We're still years away

No automation:
Manual intervention, humans perform all manual tasks

Partial Automation:
The vehicle can perform & acceleration steering, human can intervene anytime. Ex. Parking assistance

High Automation:
The vehicle can perform & all driving task under certain conditions, geo-fencing is required. Human can intervene

Level 0 | Level 1 | Level 2 | Level 3 | Level 4 | Level 5

Assisted:
Vehicle possess automated system-Lane keep Assist -LKA, Adaptive cruise control- ACC

Conditional Automation:
Environmental detection capabilities, vehicle can perform most driving task-Traffic jam Chauffeur

Full Automation:
The vehicle can perform all driving task under all condition, zero human attention Ex. Parking assistance

Exterior Camera
Interior Camera
LiDAR
Short/Medium Range Radar
Long Range Radar

from that. The challenges range from the technological and legislative to the environmental and philosophical. Here are just some of the unknowns.

Lidar and Radar

Lidar is expensive and is still trying to strike the right balance between range and resolution. If multiple autonomous cars were to drive on the same road, would their lidar signals interfere with one another? And if multiple radio frequencies are available, will the frequency range be enough to support mass production of autonomous cars?

Weather Conditions

What happens when an autonomous car drives in heavy precipitation? If there's a layer of snow on the road, lane dividers disappear. How will the cameras and sensors track lane markings if the markings are obscured by water, oil, ice, or debris?

Traffic Conditions and Laws

Will autonomous cars have trouble in tunnels or on bridges? How will they do in bumper-to-bumper traffic? Will autonomous cars be relegated to a specific lane? Will they be granted carpool lane access? And what about the fleet of legacy cars still sharing the roadways for the next 20 or 30 years?

State vs. Federal Regulation

The regulatory process in the U.S. has recently shifted from federal guidance to state-by-state mandates for autonomous cars. Some states have even proposed a per-mile tax on autonomous vehicles to prevent the rise of "zombie cars" driving around without passengers. Lawmakers have also written bills proposing that all autonomous cars must be zero-emission vehicles and have a panic button installed. But are the laws going to be different from state to state? Will you be able to cross state lines with an autonomous car?

Accident Liability

Who is liable for accidents caused by an autonomous car? The manufacturer? The human passenger? The latest blueprints suggest that a fully autonomous Level 5 car will not have a dashboard or a steering wheel, so a human passenger would not even have the option to take control of the vehicle in an emergency.

Artificial vs. Emotional Intelligence

Human drivers rely on subtle cues and non-verbal communication—like making eye contact with pedestrians or reading the facial expressions and body language of other drivers—to make split-second judgment calls and predict behaviors. Will autonomous cars be able to replicate this connection? Will they have the same life-saving instincts as human drivers?

Connected Autonomous vehicle threat:

### Remotely control a vehicle

Researchers have successfully demonstrated that it is possible to hack production vehicles from remote locations2 - allowing the attacker to take control of radio, windows and even brakes, acceleration and steering. There are many variations on this but the attack follows a similar pattern: an attacker exploits a vulnerability in a cellular system and lands on the vehicle's infotainment system. As the infotainment systems in most vehicles provide the driver with information such as service schedules, tyre pressure and oil levels, there is a necessary connection between the infotainment system and the Controller Area Network (CAN) within the main vehicle network that connects all the ECUs together. It is therefore possible in many vehicles to pivot from the infotainment system to the CAN bus and inject commands, spoofing signals that would appear to be coming from, for example, the braking system ECU or the steering system.

As security researchers found in the widely-discussed Jeep Cherokee research2, a Renesas V850ES/FJ3 chip sits between the CAN bus and the head unit. It is configured to be read-only, receiving vehicle data from the CAN in order to inform the driver of current maintenance status, diagnostics and faults. The researchers studied and reverse engineered the V850 firmware, re-configured it to allow read/write permissions, to learn the CAN message sets and then successfully performed a firmware update. Like with most vulnerabilities, it took a few security researchers several weeks' worth of effort to
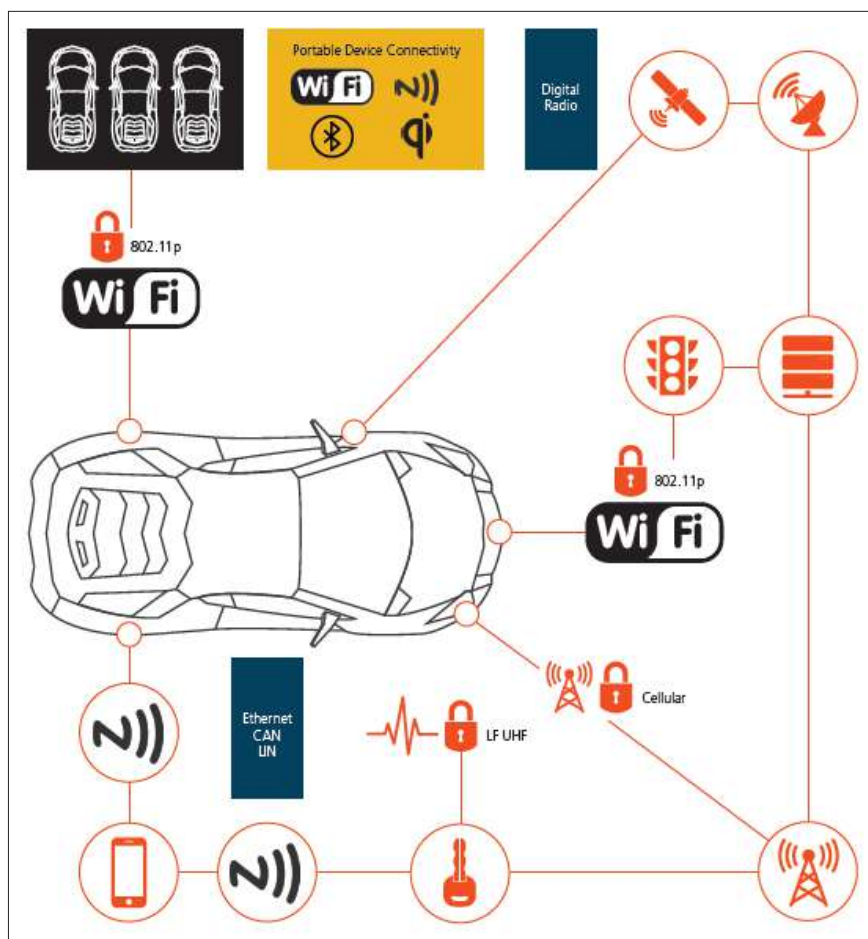
develop this capability, but once discovered, it could be weaponised and packaged into penetration testing tools.

There is of course variation in implementation and configuration between vehicle manufacturers, but there are three common weaknesses to all designs that are relevant to this attack objective. These are:

- No method for verifying integrity and authenticity of firmware and software
- A lack of boundary control/filtering of data flows
- No device or message authentication20.

There are several ways an attacker could successfully disable the vehicle. One option would be to exploit smart device/convenience applications that tend to provide functions such as turning on lights, opening and closing windows and turning on Air Conditioning, each of which would allow an attacker to drain the car's battery. Vulnerabilities have been found in a number of these applications, particularly with the authentication process. For example, Nissan launched a convenience app allowing access to the vehicle to access data such as current charge level and range, as well as to enable climate control in advance of the journey and other features. When pairing the smart device to the vehicle, the only authentication details required was the Vehicle Identification Number (VIN). The VIN is generally located at the bottom corner of the windshield, visible from the exterior21.

Track or monitor the vehicle

The modern vehicle holds and has an increasing potential to hold a great deal of personal data. Already, location, destinations/journeys, travel times, driving style/behaviour, contacts, messages, music preferences and even web-browsing activity is often captured. Increasing use of cameras for monitoring inside and outside the vehicle, as well as microphones for voice control and hands-free, creates opportunities for attackers to spy on the occupants to extract rich pattern-of-life data.

Use the vehicle as a weapon

The most sinister attackers may look to remotely control a vehicle to drive into a crowd of people, in a similar fashion to terrorist attacks already seen in Nice, Berlin, and other cities28. Autonomous Vehicles could potentially enable this style of attack to be executed remotely and at scale.

Malware

In addition to a ransomware attack described above, other forms of malware could be used to create botnets for cryptojacking or for launching Distributed Denial-of-Service (DDoS) attacks, leveraging the vast amount of computing power held within the 100+ ECUs. At its peak in September 2016, the IoT botnet 'Mirai' temporarily crippled several high-profile services such as OVH (one of the largest web hosting providers in the world) and Dyn (a popular DNS provider) via a large scale DDoS attack. OVH reported that these attacks exceeded 1 Tbps—the largest on public record. The Dyn attack took down a number of high profile web services including AirBnB, Amazon, Github, HBO, Netflix, Paypal, Reddit, and Twitter. These attacks were carried out via small, innocuous Internet-of-Things (IoT) devices like home

What are the top security risks for connected cars?

- Persona data theft
- Vehicle theft
- Connection risks
- Manipulation safety critical systems
- Mobile application security vulnerabilities
- Lack of designed in security
- Failure to keep up the security patch update
- IVI vulnerabilities

AUTHOR

M A AJAY VELAPPAN
Lead Engineer
Mahindra and Mahindra
He is an enthusiastic Electronics Engineer with a career span of 9 years on automotive industry. Rich experience in the areas of Connected Car, IOT, Infotainment. He has experience of working with global TIER-1s and global OEM. His hobby is to go for plantation over weekend with NGO, and a vivid cricket enthusiast.

The future of transportation will be all about connectivity, safety, efficiency...

Telematics Wire in discussion with
Randeep Singh Khokar, explores how the automotive
industry is expected to evolve in the coming years.
Here are the excerpts of the discussion

RANDEEP SINGH KHOKAR
Head of Electrical and Electronics Engineering,
Passenger Vehicle Business Unit
Tata Motors Ltd.

How do you see the year ahead 2022 in terms of growth of vehicle telematics?

The telematics market is expected to register a CAGR of 20.7% from 2021 to 2026. Telematics will offer one of the biggest opportunities to cut inefficiencies and hence, the cost of operation. This will benefit the whole transport industry and the entire economy by bringing down the logistics costs. The logistics costs in India are still high. Going forward Telematics will play a very important role in shaping the future of the Indian trucking and logistics industry. Perhaps telematics management system is one of the most crucial innovations that help commercial vehicles improve utilisation and hence TCO of their fleet. The data available through the telematics system helps improve the efficiency of the driver, ensures the safety of the truck and the driver, and also helps enhance the vehicle's life by monitoring vehicle health and hence timely maintenance.

The Indian government has announced its vision to make the whole nation free from toll plazas by 2023 and this is also likely to boost the telematics industry in India. On the commercial vehicle front, Tata Motors has been the pioneer in introducing company-fitted connected vehicle solutions in the Indian domestic market and with the recently launched Fleet Edge, has further enhanced the connected mobility experience. On the passenger vehicle and electric vehicle front also, Tata Motors has launched iRA/Zconnect connectivity applications comprising important features related to Safety/Security/Comfort/Covenience. Tata Motors is further gearing up for the deployment of the next level of fleet telematics technology with advanced trip/journey management features that would cater to complex requirements across sectors.

Do you see the govt push for semiconductor manufacturing in India benefiting the automotive industry here?

The usage of semiconductors in the auto industry has gone up globally in recent times with technological advancements and new models coming with more and more electronic features such as Bluetooth connectivity and driver-assist, navigation, and hybrid-electric systems, besides the powertrain control unit. We do see government support towards enhancing and supporting the auto industry to overcome semiconductor challenges. The government has even lined up attractive incentive support for companies engaged in silicon semiconductor fabs, display fabs, compound semiconductors, silicon photonics, sensors fabs, semiconductor packaging, and semiconductor design. The semiconductor consumption in India is growing at the rate of 15 percent and with the Government's package of Rs 76,000 crore, India is all set to become self-reliant and help in reducing imports in the future. As per an estimate, the domestic electronics industry has the potential of unlocking $1 trillion in GDP and parallelly generating millions of jobs.

What is the future of transportation?

The Indian auto industry is adhering to comparable global norms of emission after the transition to BS6. The future of transportation will be all about functionality, productivity, comfort, performance, and connectivity. Safety, fuel efficiency and connectivity are likely to be the growth drivers for the automobile industry in India. Manufacturing robust vehicles contribute immensely towards building a strong nation. The Indian car buyer is also increasingly paying keen attention to the importance of safety in their cars and is slowly drifting towards products, which provide them a holistic package as they are now looking for cars that provide an unprecedented mix of safety, practicality, and entertainment. Last year, the Ministry of Road Transport and Highways emphasized that by the year 2022 most of the vehicle safety will be at par with global standards and some safety features may even surpass International standards. At Tata Motors, we are also constantly undertaking R&D work on advanced driver assistance systems (ADAS) as well as full vehicle autonomy to be future-ready. The next decade will be a watershed period for the Indian automobile industry, with respect to critical and futuristic aspects such as electrification, safety, emissions, connected mobility, etc.

Vehicle Telematics industry in coming years

Tawfeeq Ahmad at iWave Systems, shares with Telematics Wire his thoughts on how the telematics industry will do in 2022 and eventually how the vehicle telematics industry he thinks will evolve over the coming years.

TAWFEEQ AHMAD
Product Marketer, Telematics Solutions
at iWave Systems Technologies Pvt. Ltd

What is your view about the Vehicle Telematics market in India?

With a population of 1.38 billion, India is one of the fastest growing economies in the world. The vehicle telematics market in India is an emerging industry and is poised to grow at a rapid pace. A survey from Tech Mahindra showed that 90% of four-wheeler consumers prefer buying a vehicle with telematics capabilities. More data driven use cases such as predictive maintenance and workshop appointment scheduling, asset productivity and fleet utilisation. Consumers and fleet owners are looking for more powerful insights on the edge, providing vehicle health and performance intelligence through the data.

Through the challenges faced due to the pandemic, automotive market in India have registered negative growth in sales of all vehicle categories in FY21. However, at present, there has been increased. Also, telematics market in more focused commercial vehicle applications such as forklifts, tractors and heavy-duty trucks promises to be an interesting proposition for TSPs in India.

Will the coming year be commercially exciting for TSPs?

A connected ecosystem is key to driving growth in the telematics market. The coming together of various stakeholders such as OEMs, cloud infrastructure providers, telecom operators and fleet owners is the foundation for a successful telematics program. In India, there is a growing focus on building the ecosystem which makes it commercially promising for the TSP.

Various government regulations such as AIS-140 and the need for tracking vehicles, is a bright path ahead for TSPs. With increased awareness and adoption rates, the Indian telematics market is full of growth. According to "Indian Connected Trucks Telematics Market", telematics market in India is expected to grow at 25% rate over the years. The scope of commercial fleets ranges from transport and logistics, oil and gas, construction, utilities, service and maintenance, and retail and delivery, with transport, logistics, oil and gas segments offering highest growth. Mandates such as the ELD Mandate by the governments in North America and Canada, where the driving hours of commercial vehicles are regulated by a set of rules is an example of how government mandates increase the value for TSPs in the market.

A growth in the adoption of electric vehicles is an interesting opportunity for TSPs. Telematics is important in the EV industry, since there are key requirements:

1. *Charging Analytics and EV Energy Usage:* Telematics can help monitoring the charge level, battery health and provide valuable data required to improve the vehicle algorithms. Continuous updates and advancements on charging time, battery size and weight are being taken up by EV manufacturers.

2. *Fleet Management and route mapping:* A lot of last mile delivery trucks are now powered through batteries. Field service managers can work through an effective route management, benchmark vehicle utilization and measure whether their plans of reducing costs and emissions.

3. *Firmware Update:* With continuous advancements on the charging algorithms and software of an electric vehicle, TSPs can provision for firmware updates of the EV Software .

In addition to legacy GPS Tracking, there are more attractive opportunities such as more data driven usage-based insurance (UBI), fleet maintenance, route scheduling of fleet and driver insights. This allows the TSPs to increase value of their offerings, thereby increasing their total market cap.

How long do you see the business for TSPs in vehicle telematics aftermarket?

Ever evolving use cases do not offer a stiff business timeline for the TSPs. However, it is important for TSPs to make a modular and agnostic platform which can be used in applications ranging from passenger vehicles tracking through monitoring efficiency of electric tractors.

TSP also need to work with various OEM on their telematics roadmap and build their value proposition. TSPs need to work with tandem in OEM on building their telematics product. Every OEM has their individual requirements based on the car architecture, privacy requirements, analytics, regional go-to-market strategies. Vehicles are also transitioning more to a Software Defined Car, where new connectivity, automation, and personalization features will be increasingly implemented with software in the future. Therefore, our belief is that there is significant potential and value for the TSPs in the long term, provided TSPs are willing to rapidly evolve and adapt to new business models and opportunities.

Can you share something about your TCU?

TSPs focus on building analytics and dashboards, and iWave supports TSPs with rugged and reliable telematics hardware. We design and manufacture telematics control units, telematics gateway and V2X Connectivity Solutions to cater to the growing telematics applications.

The telematic gateway and telematics control unit is fit with 4 CAN Interfaces and a plethora of wired interfaces such as RS485, RS232 and analog inputs, finding a fit into different telematics and connected vehicle applications. With multiple wireless connectivity options such as 4G, Wi-Fi and Bluetooth, the gateway can power advanced telematics applications while bringing intelligence to the edge.

The V2X Hub is designed to enable the connect between Smart Cities and Connected Mobility. Integrated with C-V2X and DSRC technologies, the hybrid V2X Connectivity hub can be positioned as an On-Board Unit within the vehicles, as well as a Road-Side Unit to fit into external infrastructure.

What's the way forward for TSP?

Soon, we can expect car manufacturers to continue advancing vehicle connectivity by further integrating smart features into telematics systems and adding functions that improve safety like emergency services, location tracking and vehicle diagnostics.

As we become accustomed to using these services and place a high value on them, it may not be long before vehicle telematics becomes a major point of consideration when we are shopping for a new vehicle or monitoring an older one. All these applications require fast data transmission, analysis, and implementation which stretches the opportunities for telematics service providers (TSPs).

Though there has been a change in vehicle architecture, the telematics value and ecosystem is poised to play an important role in the software defined vehicle. Therefore, it is equally important for TSPs to play a prominent role in building the ecosystem, upgrade their offerings to evolving data driven use cases and adapt to the different business models. ❑

" **VE Commercial Vehicles Limited spokesperson**

The year began with a positive yet cautious outlook with strong volumes for the period Jan-Mar 2021. Due to a state-wise approach to the lockdown imposed to contain the devastating wave 2 COVID pandemic, the impact on truck transportation was mitigated to some extent. We have since July seen a month-on-month recovery in the Indian economy mirrored in the commercial vehicle industry. The growth in HD segment is being driven by the investment in the infrastructure and construction. Likewise, the LMD sales gained traction on the back of demand from rural economy, festive season and boom the e-commerce industry. Bus operations have been the slowest to begin recovery as work-from-home, travel restrictions and school closures have continued in response to the pandemic. VECV witnessed 64.2% overall growth over last year(till Nov'21). In LMD, we have a market share of 30.2%, in HD 7.4% and in buses 17.2%.

While the industry is gaining traction the sector had to face a lot of headwinds such sas hortage of chips which impacted multiple industries, including the automotive industry globally. We expect this to gradually ease as supplies of semiconductors improves. In addition, the industry has also been facing challenges owing to higher prices of commodities such as steel, aluminum, copper and precious metals. The industry is also wary of the looming threat of the third wave. However, with 150 crores vaccines already administered under the nation-wide vaccination drive, we are hopeful.

"

There is absolute need for TCU in electric vehicle

Ashwin Ramachandra from Tata Elxsi shares his thoughts
with Telematics Wire about the need for TCU in electric vehicles.

ASHWIN RAMACHANDRA
Global Head – Digital & Connected Technologies
Tata Elxsi

What is your view about the vehicle telematics market in India?

The Indian telematics market is estimated to grow by a CAGR of 18 to 20% from 2021 to 2027 and has a promising future. The market growth is seen from OEMs increasingly adopting telematics to provide their customers with remote control and diagnostic services and from increasing adoption by business such as the logistics sector and insurance sector for improving fleet management and providing pay as you use insurance respectively.

With industry leading OEMs providing subscription ownerships of their cars and growth of car rental companies and cab aggregators the need to relay information about the location of the car, health of the car and driving behavior is ever increasing. Further, increasing prices of fuel is nudging the Indian logistics sector to look towards telematics for fleet management. Thus, we predict that the telematics market in India will see a spectacular growth in the coming years.

Do you see the vehicle telematics aftermarket transition into OEM/'factory fitted' in the coming few years?

Yes, we believe that an increasing variants/models of cars will have the TCU unit factory fitted in them by OEMs. The transition has already begun with a few Industry-leading OEMs in India providing telematics services to their customers either as an add-on or as an in-built feature of the car model.

Further all EVs need to be connected to enable monitoring of battery state of charge, state of health etc. Increased focus on EVs provide a further fillip to the Telematics market.

How long before TCUs become default fitment in vehicles?

We have seen the telematics technology trickle down from SUV segments to hatchbacks in the latest models. As with all technologies we believe that we will soon see telematics technology and the associated features it enables, being used as a differentiator in the lower segments of the Indian automobile market before it becomes a default fitment.

If viewed conservatively, we believe TCUs would be a default fitment in vehicles before 2030 considering the absolute need for TCU units in electric vehicle and taking into account NITI Aayog's

projection that by 2030, 70% of taxis and 30% of private cars would be electric vehicles.

With ADAS featuring in mid-range vehicles in India now, what will push for its presence in entry level vehicles?

We are seeing significant growth in the advanced driver-assistance systems (ADAS) market, particularly in Asia Pacific, with a 20 percent growth rate due to faster customer adoption. By 2022, the government will have implemented newer plans to improve safety, including making mandatory safety systems integrated for all passenger vehicles.

Due to increased regulatory pressure and rising pro-safety sentiments among the car-buying public, technologies such as turn-assist, blind-spot detection, and collision avoidance can percolate down from mid-range to entry-level vehicles. Customers have demanded similar safety attention for entry-level vehicles as a result of carmakers' increased focus on safety in the mid-range segment. Electronic Stability Control (ESC) or traction control, Anti-lock Braking Systems (ABS), Lane Assist, and Adaptive Cruise Control (ACC) are examples of such features.

Considering the wide range of ADAS, how can regulatory push cover them?

The regulatory authorities in India would require to have a phased manner to cover the spectrum of ADAS features, starting with entry level features. Policies like the Bharat New Vehicle Safety Assessment Programme (BNVSAP) will change the Indian automotive market dynamics by mandating time-bound passive and active safety systems in new and existing vehicles. With applications of ADAS ranging from human transportation to logistics, last-mile connectivity, and more, carefully crafted regulatory policies can ensure effective adoption of ADAS. With the rollout of 5G and a highly connected transport system, stricter cybersecurity policies should be initiated and can aid in the faster adoption of driver assistance technologies that require support from the cloud.

22 YEARS OF IoT EXPERTISE

2 YEARS WARRANTY

<0.1% FAILURE RATE

13 MILLION IOT DEVICES DEPLOYED!

- **VIDEO** RECORDING
- **DRIVER NOTIFICATION** ON EVENTS
- **CONTACTLESS CAN BUS** CONNECTIVITY
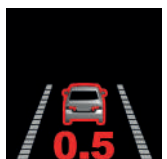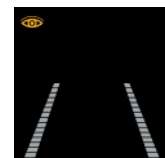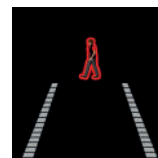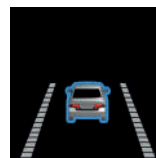- **EVENTS TRANSFER** TO THE SERVER

POPULAR 2G CHOICES

TELTONIKA FMB125

TELTONIKA FMB920

TELTONIKA FMB003

POPULAR 4G CHOICES

TELTONIKA FMC001

TELTONIKA FMC130

TELTONIKA FMC640

ADAS

ADVANCED DRIVER ASSISTANCE SYSTEM

Indigo Introduces EVs for Rideshare and Delivery

Indigo Technologies introduced two new vehicle designs aimed at the rideshare and delivery market – Indigo FLOW™ and FLOW PLUS™– at the CES 2022. Indigo's robotic wheels enable new types of EVs that ride significantly smoother, are more spacious and operate at lower cost than any other vehicles in their class. Both FLOW and FLOW PLUS will provide more than 250 miles of range with only a 40kWh battery.

With explosive growth for on-demand deliveries and rideshare, and with companies like Uber and Amazon joining the Climate Pledge, providing efficient and capable EVs that drivers can afford is an imperative. Today's heavy EVs are too inefficient and expensive for gig drivers, but reducing mass to save costs has meant sacrificing space and comfort due to conventional propulsion and suspension technologies.

E-LIFT Pop-Up Charging Station

E-LIFT introduced their new customizable GS Pop-Up Station during the CES® event. The company will branch out into North America with their retractable charging station, which is unique of its kind. It is available with up to four plugs for simultaneous EV charging and several personalization options. Additionally, it can be equipped with sensors that link to E-LIFT's Sustainable and Smart Energy Management System (SENSE).

The SENSE platform functions as the adaptive and modular management system for users' mobility and energy needs in times of transition. Consumers can log into the system to remotely monitor and manage their mobility and energy consumption data, resulting in a cost-effective energy transformation that is beneficial for governments and companies looking to reshape their future with the use of renewable energy resources. The SENSE platform connects to the GS Pop-Up Station and the entire range of products in E-LIFT's portfolio, which includes a variety of charging stations suitable to any setting, such as power generators, solar panels and batteries for energy storage.

This year E-LIFT will deliver solar panels and batteries to create a future-proof smart grid to meet the needs of local, regional and national communities. These products will dually function as a power source and power storage point, supporting a sustainable and smart energy ecosystem. Additionally, they will enable users to store excess energy for later consumption or sharing across homes, buildings and businesses.

With its smart grid, E-LIFT will leverage proven and new technology to help generate solutions for global environmental challenges. The company will facilitate the integration of renewable energy and mobility networks with greater intelligence to support international environmental goals and the transition towards a low-carbon economy.

Chrysler Airflow Concept

Chrysler revealed the Chrysler Airflow Concept at CES 2022, giving a glimpse at the leading-edge drive-system technology, fully connected customer experiences and advanced mobility features, wrapped in inspiring, dynamic design, which will fuel the Chrysler brand's future.

The Chrysler Airflow Concept reinvents the customer experience by integrating the STLA Brain platform and STLA SmartCockpit to deliver seamless connectivity to transform the experience for driver and passengers. The concept creates a connected hub that brings a consumer's digital lifestyle into the vehicle, using advanced technology to create a customized space for each occupant.

Dynamic Design Language

The sculptural, expressive design of the Chrysler Airflow Concept envisions the next generation of premium transportation and user experience. The concept reimagines how the driver and passengers interact with advanced technologies while delivering a first-class travel experience that balances technological needs within a serene environment.

The Airflow Concept features a dynamic design proportion, with a low ride height and streamlined, two-tone roof line that achieves an elegant yet athletic profile while increasing EV range. A long wheelbase and wide track, along with large 22-inch wheels and tires, are enhanced visually with Celestial Blue accent color cladding. The design elements work together to enable a dramatic stance and deliver excellent handling and performance dynamics.

The Airflow's silent electric ride harmoniously supports the sleek design aesthetic, with the concept's dramatic expression completed by an Arctic White body color that conveys a sense of calm and serenity. Up front, the Airflow announces its electric aesthetic with the Chrysler wing logo tied into a cross-car grille/light blade illuminated with crystal LED lighting. A crystal LED taillight runs the full width of the vehicle, accentuating the wide stance. The Airflow Concept features welcome, departure and animated lighting, including a unique aqua that signifies the vehicle is charging. The diffuser shape of the lower rear fascia highlights the aerodynamic, smooth underbody, a key to achieving optimum driving range.

The modern and spacious interior is also accented by a light and calming color palette, evoking an open, airy lounge area that delivers a comfortable space between home and work. The interior design is made to sooth and relax occupants, surrounding those inside with flowing lines that move throughout the space, creating a greater feeling of spaciousness and comfort. Technology is integrated seamlessly into the interior in the form of dark glass sculptures. The central control area integrates individualized climate controls near the C-shaped air slots. Crystalized textures throughout the vehicle add a sense of precision, providing an intricate transition from the exterior and aligning with the advanced interior design highlighted by premium refinement.

Redefined interior touchpoints support ideas of tranquil, serene comforting spaces and combine illusionary weightlessness and grounding metals to give the Airflow Concept a dynamic, dreamy design. Soft leather-wrapped seats help achieve a lighter, smoother atmosphere. Materials, including vegetable-tanned leather, as well as floor mats, fabric and carpeting made of recycled materials, imagine a future of sustainable design.

Seamless Connectivity Optimizing Customer Experiences

The Chrysler Airflow Concept is designed as a space to bring people together, both physically and virtually.

Enabled by STLA Brain and STLA SmartCockpit, the user experience in the Airflow Concept is agile, intuitive and always fresh. The interior showcases ideas for giving every passenger a personalized experience that seamlessly connects them with their digital lives, as well as the other passengers. Each screen is a personalized space to access the digital world via connected entertainment, apps and downloads. Each seat also features a built-in camera, enabling occupants to participate in a group video conference call from the comfort of the Airflow cabin.

Over-the-air (OTA) updates keep Airflow Concept services current and let passengers quickly and easily add new and innovative features. That functionally keeps the vehicle fresh, exciting and capable, enhancing the overall ownership experience.

The backbone of the Airflow Concept user experience is the new electrical/electronic (E/E) and software architecture, STLA Brain. This architecture is highly flexible, breaking today's bond between hardware and software generations. It enables software developers to create and update features and services quickly, taking advantage of capabilities built into the cockpit without waiting for a new hardware launch.

The STLA SmartCockpit, demonstrated in the Airflow Concept and built on top of STLA Brain architecture, seamlessly integrates with the digital lives of vehicle occupants to deliver AI-based applications, such as navigation, voice assistance, e-commerce marketplace and payment services.

VinFast announces its electric vehicle lineup

VinFast officially launched a range of fully-electric vehicles: three models debuted in the A-B-C segments, VF 5 (segment A), VF 6 (segment B) and VF 7 (segment C); and two models VF e35 and VF e36 in the D and E segments now renamed as VF 8 and VF 9. The removal of the "e" (electric) prefix in the names affirms the company's consistent all-electric orientation.

All five electric vehicles, with impressive and modern exteriors, were designed by world-renowned Italian design firms, Pininfarina and Torino Design.

The VF 8 and VF 9 models will be equipped with level 2+ Autonomous Driving features for the Eco and Plus versions and levels 3 - 4 for Premium versions. These models will also have smart features, including Smart Home, Mobile Office, In-car Shopping, In-car Entertainment, and many other convenient, advanced features that create an exhilarating experience for every journey and everyday life.

Visteon battery management system and electrification technology

Visteon showcased its suite of electrification electronics designed to support the global growth of electric vehicles and the electrification trends of OEM customers at CES® 2022.

Wireless BMS technology replaces traditional wired connections with a highly secure and reliable wireless communication technology. Visteon builds its wireless cell monitoring/supervising units with a wireless network control unit and a battery control and interface unit, eliminating the need for OEMs to assemble battery packs with a low-voltage wiring harness. This can reduce overall vehicle weight and offer scalability across brands and vehicle segments. The smartBMS system platform delivers highly accurate battery cell measurement and maximizes energy use per cell required for better vehicle range.

Visteon's wireless smartBMS can help automakers drive EVs to market faster, as time will not be needed to develop specific communication systems or redesign complex wiring schemes for each new vehicle. Instead, the wireless system will help to ensure the scalability of batteries across future EV lineups encompassing different brands and vehicle segments, from heavy duty trucks to performance vehicles.

The wireless smartBMS keeps a constant eye on battery health and operation, helping au-tomakers enhance vehicle and passenger safety and improve overall quality and reliability. Vis-teon's smart cell sensing controller adds extra processing capability to the battery-monitoring network that enables advanced diagnostics and more flexibility for future applications and algo-rithms.
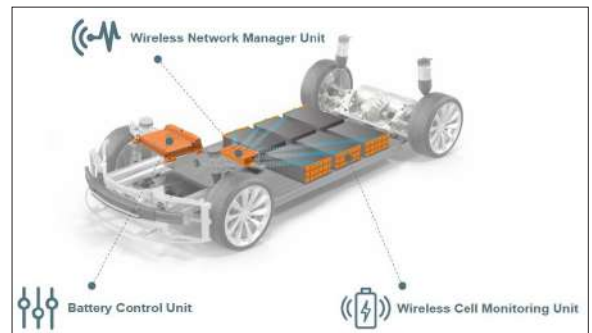
Intelligent Electrification Electronics Beyond smartBMS

The company's CES 2022 display demonstrated innovations that can be used to optimize EV de-sign and performance of EVs, including:

- Smart junction box, a more cost effective and safer alternative to traditional battery disconnect units (BDUs). The smart junction box combines the traditional BDU with the battery management controller (BMC) to help lower cost, increase safety and create higher volumetric efficiency. The single unit performs all the functions of standalone BDUs and BMCs, including fusing, pre-charging, external charging, voltage sensing, tem-perature control, diagnostic, terminal interfacing and more.

- The integrated solution is compatible with 400V and 800V systems, reduces high-voltage harnesses and connectors, and meets the highest Automotive Safety Integrity Levels for electric current and voltage measurement.

- By combining a traditional BDU with a range of other electronics into a single integrated unit, Visteon's customers reduce complexity, decrease mass and weight, and offer add-ed protection for electrical connections.

- Integrated power electronics that combine key components into a single integrated unit through power stage integration to help reduce cost and size, and increase reliabil-ity and efficiency. Visteon's multi-component design brings several key components used in EVs including the junction box, DC/DC converter and on-board charger into a single unit. Visteon's single package design helps reduce EV architecture complexity by minimizing electrical connections, wire harnesses, and other connectors while also in-tegrating system communication and a simplified cooling mechanism.

REE commences trials of all-new electric P7 modular platform for delivery fleets

REE Automotive Ltd. announced it is commencing trials of its all-new P7 platform designed for commercial delivery vehicles and walk-in vans. The P7 platform, targeted to a U.S. based delivery van program, was designed based on functional and operational specifications from one of the world's largest delivery companies. Fully flat from end-to-end, P7 offers greatest interior space and volumetric efficiency for vehicles in classes 3-5.

Supporting up to 8,800 lbs. max payload, the P7 platform packs up to 35% more packages than comparable commercial vehicles or the equivalent and can comfortably carry up to 30 passen-gers, making it the optimal platform for target markets such as delivery and logistic fleet own-ers, transit authorities, school buses and mobility operators. REEcorner and X-by-Wire technolo-gy allows each wheel to move independently for enhanced driving dynamics and safety with all-wheel steer, drive and brake options.

The P7 modular platform is designed to radically simplify development times of electric com-mercial models and is optimized for fleet owners looking to create their own commercial vehi-cle brand, unique design and market differentiation utilizing the REE configuration and lowest TCO due to Battery-as-a-Service, Data-as-a-Service and fast REEcorner swap.

Electric and autonomous vehicles built on top of REE's P7 platforms will be able to achieve driv-ing ranges of up to 370 miles with max speeds of 80 mph and supporting gross vehicle weight ratings (GVWR) of up to 16,500 lbs.

REE's P7 platform offers unparalleled benefits in terms of virtually unlimited design freedom to meet customers' exact business needs, highest driving and range performance, enhanced safety and stability and disruptive X-by-Wire technology that affords fail-safe and independent wheel control.

P7 Platform Highlights

- Greatest interior space on smallest footprint due to end-to-end fully-flat chassis & low floor design
- Higher volumetric efficiency yields higher operational margins
- P7 provides minimal turning radiuses and enhanced driving reliability and stability due to REEcorner™ X-by-Wire tech
- P7 platforms will support Data-as-a-Service – affording fleet managers with complete visibility and actionable insights over their fleet operations
- The platform shown is 7.6m in length and 2.4m in width

BlackBerry IVY on auto-grade hardware

BlackBerry Limited unveiled how it is laying the groundwork for the software-defined vehicles of the future with an automotive-grade hardware demonstration of BlackBerry IVY™, the company's Intelligent Vehicle Data Platform, co-developed with Amazon Web Services (AWS).

Leveraging Electra's EVE-Ai™ 360 Adaptive Controls for battery pack optimization, the demo provides an accurate battery state of charge (SoC) and range prediction based on driver detec-tion and personalization, while actively working to extend range and preserve battery lifetime. Additionally, the demo ingests preloaded HERE Technologies' data to provide tailored guidance, pricing and availability of vehicle charge stop locations, more efficient routes with carbon foot-print estimates, and individual driver customizations. A third integration via Car IQ creates a "digital fingerprint" for the vehicle, allowing it to securely connect to a bank, card payment networks and in-vehicle marketplaces that allow the car to validate and autonomously pay for a wide range of frequently used services, including EV charging, tolls, parking, insurance, mainte-nance, and other payment and wallet capabilities. The multi-OS, distributed architecture demonstration features BlackBerry IVY running on both Linux and QNX across gateway and digi-tal instrument cluster domains, in collaboration with KPIT Technologies.
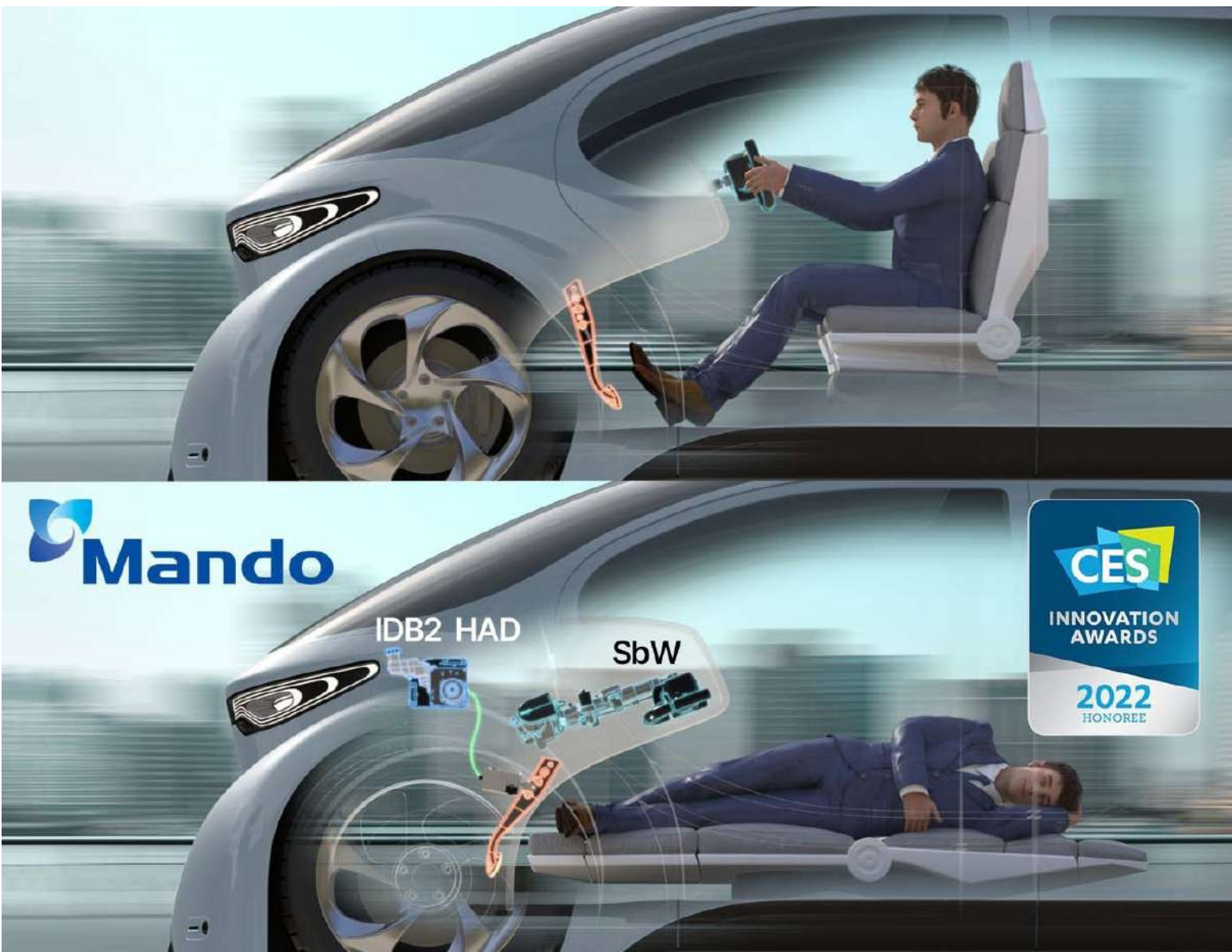
Conceptual picture of the IDB2 HAD & SbW applied in a full self-driving vehicle

Mando wins CES 2022 Innovation Award for its Cutting-Edge Brake System (IDB2 HAD)

Mando Corporation was awarded Innovation Award at the CES 2022. Mando's latest entry, which won the Innovation Award in the VIT (vehicle intelligence & transportation) category for the second year in a row following last year, is the IDB2 HAD (integrated dynamic brake for highly autonomous driving).

The Mando IDB2 HAD, commercially available integrated (1-box) electronic brake with dual safety design, operates normally even in situations where single point failure occurs due to its full redundancy concept while driving. IDB2 HAD is perfect complement to e-brake pedal, enabling 'auto stow' functionality, which folds or unfolds the pedal when needed, in highly autonomous driving conditions. From maximizing vehicle space and design flexibility perspective, IDB2 HAD very much resembles the Mando's 'steer-by-wire (SbW)' technology, the company's CES Innovation Award winner last year. Electrical hyper-connection is the key theme here, as IDB2 HAD is another product of Mando's by-wire solution, which removes mechanical connections, and together with the SbW, Mando's complete by-wire solution will allow users of full self-driving vehicles to engage in many other activities while moving.

The IDB2 HAD is an eco-friendly product. Most brake systems available in the market are composed of ESC (electronic stability control), master booster, vacuum pump, etc., while being mechanically connected to the brake pedal. The braking kicks in only by a driver's input and the braking force gets generated through the hydraulic line. This design requires a large space in the engine room while needing longer time for assembly. Mando achieved weight reduction and manufacturing optimization by integrating these individual components into one single-box design.

Sony VISION-S

At CES 2020, Sony Group Corporation announced "VISION-S," an initiative aimed at contributing to the evolution of mobility, and exhibited a prototype vehicle. To demonstrate this concept in the real world, Sony started public road testing in Europe in December of the same year, and started verification tests of the safety and user experience of the imaging and sensing technology installed inside and outside the vehicle, and the human-machine interface (HMI) system. Sony began 5G driving tests in April 2021, and will continue to apply its cutting-edge technologies to provide new experiences in the realm of mobility, which is undergoing a shift to electric vehicles.

Sony plans to further develop the above efforts as it enters a new phase of VISION-S development, and announced the following at CES 2022:

VISION-S continues its aim of evolving mobility to be even closer to people, while developing technologies centered on safety and security, adaptability, and entertainment. At CES 2022, Sony announced and exhibited an SUV-type prototype vehicle (VISION-S 02) as a new form factor. This vehicle uses the same EV/cloud platform as the prototype (VISION-S 01), which is being tested on public roads. By offering entertainment experiences utilizing the large interior space and variations of a 7-seater, this new prototype will, together with VISION-S 01, promote the accommodation of a large variety of lifestyles within a society where values are becoming increasingly diversified.

Safety: Safe and secure mobility

The system supports safe driving by recognizing and analyzing the surrounding environment in real time, with sensors installed 360 degrees around the vehicle. These sensors include high-sensitivity, high-resolution, wide dynamic range CMOS image sensors and LiDAR sensors that accurately sense three-dimensional space. In addition, the system provides intuitive driver interaction in conjunction with the vehicle's sound system and HMI system, so that the driver can accurately judge the status of the surrounding environment, such as the presence of emergency vehicles, even from inside the vehicle. Sony aims to provide greater safety and comfort to all through its sensor and communication technologies, and is currently conducting functional verification tests in Europe toward the release of Level 2+ advanced driver assistance systems (ADAS) on public roads.

Adaptability: Getting closer to people and growing together

Time-of-Flight (ToF) sensors are used to provide monitoring functions for driver authentication and to watch over passengers. They also support intuitive gesture and voice commands that are intended to enhance usability of the car interface. Additionally, in order to deliver an environment that suits each user's preferences, the vehicle will include a new function that allows users to customize the display theme and the acceleration and deceleration sounds of the vehicle.

Vehicle settings, key locks, and user settings can be synchronized by linking the vehicle to the cloud using mobile communication, including 5G communication, which features low-latency, high-capacity, and high-speed capabilities. In addition, since updates are reflected in the vehicle via over the air (OTA), it is possible to provide security and evolve service functions and value-added offerings continuously.

Remote operation: Utilizing Sony's in-house technologies and knowledge of communication technology and security cultivated through the development of smartphones, Sony has positioned remote operation as an important technology in anticipation of the arrival of the autonomous driving era. To achieve this, Sony conducted driving experiments connecting Japan and Germany with 5G, and is working with its partners to achieve low-latency transmission (video and control signals) and communication control (monitoring and prediction) using the telematics system installed in VISION-S 01.

Entertainment: Enriching the mobility entertainment space

The seat speakers, which create a three-dimensional sound field, and the streaming service compatible with "360 Reality Audio" provide an immersive music experience as if passengers are surrounded by the live performance of a favorite artist.

In addition, to provide a high-quality movie experience, VISION-S includes the fully integrated digital video service "BRAVIA CORE for VISION-S." The service enables shared or individual video playback on the front panoramic screen and individual rear-seat displays.

Further extending the possibilities of in-vehicle entertainment, gaming capabilities have expanded to being able to play PlayStation® games through a remote connection to a console at home, in addition to the ability to play streaming games through the cloud.

Business objectives of the new company

The new company will aim to make the best use of AI and robotics technologies, help realize a world where everyone can live in harmony with robots on a daily basis, fill people with emotion, and contribute to society. With VISION-S, which contributes to the evolution of mobility, together with the autonomous entertainment robot aibo, and the drone Airpeak, Sony will seek to continue to create new value in a variety of fields.

Mercedes Benz concept- Vision EQXX

Mercedes Benz has kicked off the virtual CES 2022 proceedings with its stunning new Vision EQXX concept car which it claims delivers 1,000 kilometers of range on a single charge. Amazingly, it manages this with approximately the same size battery as the EQS packaged in a smaller futuristic sedan that looks extremely aerodynamic. It doesn't only look very aerodynamic, it becomes the most aerodynamic car in the world, beating out the EQS with a drag coefficient of 0.17 which is one of the key secrets behind its range.

And while only a concept, it is close to being production-ready and Mercedes will even have a road-legal version of the car run for 1,000 km to prove its claims around the range. It heralds a new design language for Mercedes Benz vehicles in the age of electric cars with its losing the iconic Mercedes grille. This car just sips energy at a rate of 10kWh per 100 km which means that in terms of petrol cars an efficiency of 100 km per litre.

It also acts as a showcase of new-age technologies and materials that Mercedes will start to introduce in its cars displacing its carbon footprint and impact on nature. It leverages a new modular Ev architecture that Mercedes has developed which can even be used in an A-Class. And one of the things that makes it so efficient is the weight - 1,750 kg which makes it very light for an EV thanks to a new battery which is now 50 percent less in volume and has 30 percent less mass than on the EQS while retaining the same capacity. The EQXX will even get solar panels on its roof which further add to its range by 25 km. But as far as performance goes, then this isn't the fastest EV we have seen — it can only do 201 bhp which makes it slower than even the EQS.

It gets a new hyper screen - a horizontal single piece 47.5-inch 8K affair leveraging OLED technology which also gets high-end smart TV technologies like local area dimming which turns the screen off when blacks have to visualised. In fact, the user interface is also mindful of this technology which means it's darker and more power-efficient. There are new UI elements like a 3D mapping system which has been developed in partnership with NAVIS Automotive systems.

Building on top of its Vision AVATR concept from CES 2020, sustainable materials like cactus-based leather, bamboo carpets, and synthetic silk have been integrated into the car as substitutes for the real world alternatives which involve killing animals.

The most striking and poignant thing about the Vision EQXX is that despite being a concept it is a road-legal car where everything actually works. This is truly closer to a production car that will show up as a production model sooner than later in some form or the other, but most definitely, the technology showcased will immediately start trickling in.

Amazon and Stellantis collaborate to introduce customer-centric connected experiences

Amazon and Stellantis N.V. announced a series of global, multi-year agreements that will trans-form the in-vehicle experience for Stellantis customers.

Stellantis will accelerate its shift to becoming a sustainable mobility tech company through this relationship, which involves Amazon Devices, Amazon Web Services (AWS), and Amazon Last Mile. Stellantis and Amazon will collaborate to deploy Amazon's technology and software expertise across Stellantis' organization, including vehicle development, building connected invehicle experiences, and training the next generation of automotive software engineers. To-gether, the two companies will create a suite of software-based products and services that seamlessly integrate with customers' digital lives and add value over time through regular over-the-air (OTA) software updates.

The collaboration brings together Amazon's leadership and innovation in digital experiences, cloud computing, artificial intelligence (AI), and machine learning with Stellantis' automotive engineering excellence and portfolio of 14 iconic vehicle brands.

The collaboration will focus on several areas.

STLA SmartCockpit

Amazon and Stellantis will collaborate to deliver software for STLA SmartCockpit, which will run in millions of Stellantis vehicles globally starting in 2024. The software-defined platform will seamlessly integrate with customers' digital lives to create personalized, intuitive in-vehicle experiences through AI-enhanced applications for entertainment, Alexa-enabled voice assis-tance, navigation, vehicle maintenance, ecommerce marketplaces, and payment services.

The STLA SmartCockpit platform will use Amazon products and solutions that are purpose-built for vehicles, and Stellantis will have the flexibility to create custom, brand- and vehicle-specific capabilities. The software will offer curated services and experiences through an app store—all displayed through an intelligent, adaptive user interface design that presents timely, relevant information and features suited to each occupant's individual needs and preferences.

Collaborative Engineering and Innovation

Stellantis has selected AWS as its preferred cloud provider for vehicle platforms. Together, Stel-lantis and Amazon plan to build the next generation of cloud-enabled infrastructure for vehicle platforms, including for STLA SmartCockpit.

Both companies are creating a cloud-based product development environment called the "Vir-tual Engineering Workbench," which provides automated workflows to manage software devel-opment and testing, high-performance simulations, machine learning model training, and data collection and analysis.

Expanding Amazon's Sustainable Delivery Network

In support of The Climate Pledge and its commitment to be net-zero carbon by 2040, Amazon is transforming its last-mile operations with new sustainable solutions. As part of a separate agreement with Stellantis, Amazon will be the first commercial customer for Stellantis' new Ram ProMaster Battery Electric Vehicle (BEV) launching in 2023. Stellantis, with input from Am-azon, designed the vehicle with unique last mile delivery features and Amazon will deploy the vehicles to routes across the United States. Building on the current relationship and as part of the long-term agreement, Stellantis and Amazon will be putting thousands of BEV ProMasters on the road every year.

LG Vehicle Infotainment

LG Electronics introduced a new in-vehicle infotainment concept tailored to autonomous vehicles at CES 2022, indicating that its car cabins can turn into a space where passengers work, watch TV, exercise or experience camping virtually.

Called LG Omnipod, the new mobility concept solution gives a glimpse of an on-the-road extension of one's personal living space which is designed to function as a home office, entertainment center or lounge, LG Electronics said in a statement. The concept was developed solely by LG, without forging a partnership with an automaker.

The concept also shows that the in-car infotainment systems can be controlled via smartphone or voice command through the LG ThinQ app, a smart home solution service. This compatibility blurs the distinction between home and car, LG Electronics added.

The in-vehicle concept comes a year after LG Electronics teamed up with Hyundai Motor Group to unveil the Ioniq Concept Cabin, mounted on Hyundai's Ioniq 5 electric vehicles.

The Ioniq Concept Cabin was meant to optimize customers' in-vehicle experience. It had home appliances with 77-inch flexible organic light emitting diode screens and indoor care solutions such as shoe butlers, ultraviolet lights and cleaning robots to keep the cabin disinfected.

Cinemo infotainment system

A range of Cinemo solutions demonstrated just how Cinemo is changing the face of cockpit enrichment with systematic super aggregation of online and offline services and media content. VOD (Video on demand) premium content can be brought into the car whilst Dolby Atmos integration allows access to immersive audio galvanizing the listening experience.

Cinemo's recent collaboration with VOXX Automotive and Jeep® boasts Multi-Seat sharing in the new Wagoneer, which brings an array of features to add adaptability and mobilize front and rear seat connectivity to create an individualized holistic platform.

Cinemo's next generation technologies have also taken use cases such as Jukebox, Multi-user gaming, Karaoke with Stingray, and given them a cohesive foundation in the car.

Visteon unveils SmartCore™ domain controller for enhanced safety and connected mobility

Visteon debuted its fourth-generation SmartCore™ cockpit domain controller at CES® 2022, showcasing a solution designed to enable global automakers to deliver a more connected, per-sonalized and safe driving experience.

The modern intelligent cockpit experience includes traditional cluster information display, safety inputs (internal and external camera feeds), as well as Android Automotive infotainment ranging from maps and parking to charging locations along with enjoyable entertainment experiences for passenger displays.

Visteon's fourth-generation SmartCore™ cockpit domain controller brings all of this information together seamlessly across multiple displays in the cockpit, and can deliver feature upgrades wirelessly over-the-air, eliminating the need to replace hardware to further extend the plat-form's lifecycle.

Visteon's SmartCore™ offers seamless support of multiple displays and AI-based speech recogni-tion. It also brings state-of-the-art safety and security technology and advanced driver-assistance system (ADAS) features to create advanced in-vehicle entertainment experiences along with reliable instrument cluster and infotainment integration.

Visteon cockpit display technology

Visteon's advanced display technology brings to vehicles the same kind of image quality consumers enjoy on their smartphones, televisions and other electronic devices. The company's proprietary and patent-pending technology delivers screens in all shapes and sizes to provide occupants with exceptional optical performance while meeting challenging automotive requirements.

Among the in-house developed display technologies featured at CES are:

- TrueColor image enhancement provides optimal visibility of HMI for all ambient light conditions, thereby improving legibility and safety. Harsh sunlight conditions in an automotive environment can make it difficult for drivers and passengers to see what is being displayed in the cockpit. Visteon's TrueColor, however, uses in-house developed technology to preserve image quality in no matter what kind of external lighting conditions a vehicle might encounter.

- Active privacy display technology: As the industry works to extend the digital cockpit experiences to vehicle passengers, the need to guard against driver distraction increases. Visteon's patent-pending in-house active privacy technology automatically activates a privacy mode through a switchable viewing angle of content being displayed on passenger information systems to restrict what drivers can see. These features are actively controlled so the content visible to the driver is situationally based.

- Full-array local dimming improves contrast ratio at a more affordable price than premium solutions, and provides significant reductions in power consumption. This technology leads to high perceptual quality in affordable displays that use less power. Visteon's expertise in both optics and algorithms enables it to excel in this technology category.

- AI-powered low light enhancement improves the image quality of camera feeds at dusk and at night. Traditional methods of low-light enhancement such as gamma correction and white balance distort color and image quality. Visteon uses an AI-based neural net-work to optimize color and brightness of camera feeds and ensure objects being displayed can be easily seen by the driver and reacted to if necessary.

- MicroZone™ is the first-of-its-kind display solution to address industry demand for a high-quality display that delivers a premium experience, while meeting stringent auto-motive environmental reliability requirements. MicroZone™ is an innovative choice beyond OLED for automotive applications. It provides automakers a high-dynamic range display solution with a longer lifespan and low-power consumption and lower cost than OLED systems. Based on mature LCD technology, microZone™ is considered the first au-tomotive display to achieve superior optical performance without sacrificing vehicle reliability, having passed rigorous automotive qualification requirements.

- A unique avatar display concept based on in-house design will be shown as an example of how digital holography can serve as a virtual assistant and improve safety by reducing driver distraction. As digital assistants become more standard and accepted in the con-sumer electronics market, Visteon is exploring innovations that can bring that same level of functionality to the cockpit to help improve safety and engagement between the driver and a vehicle's information system.

All of these advanced display technologies employ power consumption significantly lower than any other automotive display technology currently available to help support the growth of the EV market.

JBL Wind 3 (for bikes and scooters)

The JBL Wind 3 and Wind 3S are meant for scooters, bikes, and any other form of commuter transit that isn't a car or public transport. These speakers are IP67 waterproof and dustproof.

The speakers can be used independently of a phone. While you can just use it as a Bluetooth speaker, the speakers have microSD card slots, for playing music directly. The JBL Wind 3 also exclusively offers an FM radio and an LED display panel for controls.

Both devices are also capable of up to 5 hours of playtime on one charge, two EQ modes, and a hands-free calling option. They also use JBL's Signature Sound processing for high-quality audio.

Visteon unveils automotive AppStore for the Connected Car

Visteon unveiled its AllGo App Store at CES® 2022 as one of the latest solutions in its growing portfolio of connected car technologies for the mobility industry.

The AllGo App Store is designed to meet the growing global demand for safe and convenient ways to access app-based content in a smart, connected cockpit. It features automotive-optimized versions of the most sought-after mobility, navigation, parking and infotainment apps around the world and leverages Visteon's pioneering work in in-vehicle infotainment, providing next-level integration based on Android Automotive.

Visteon's AllGo App Store provides automakers with leading-edge connected car experiences that can be customized for their customers by brand, model, trim level or even geolocation. A dedicated portal for automakers includes certified apps that are pre-filtered to the countries where the car company operates and gives them full control over which applications they wish to offer through their own customizable app store platforms.

Samsung Showcased the Future of In-Vehicle Experiences

Samsung Electronics introduced a new vision for in-vehicle experiences. This new concept was made possible by combining the company's latest consumer electronics and IT innovations with HARMAN's automotive expertise.

The company showcased a scenario in which information on road conditions and other factors is presented to the driver of a vehicle in real time.

In the scenario, the vehicle uses cameras and sensors to analyze its surroundings, then harnesses augmented reality to present road conditions and other information to the driver within their field of view. The driver is then able to make use of that overlaid information to ensure they enjoy a drive that is both convenient and safe.

In the enactment, the driver not only gets details on the vehicle's speed and status, but is also provided with an arrow-based navigation service, forward collision warning icons and blind spot alerts when switching lanes. Directions, icons and insights are projected directly onto the road, as well as onto surrounding vehicles and lanes, to allow the driver to clearly and conveniently view the important information.

The vehicle in the scenario also analyzes information on the surrounding area and connects to a range of services to make the driving experience both straightforward and enjoyable. For example, if passengers want to grab a coffee, the vehicle utilizes map information and AR to in-form them of where there are cafés nearby. The passenger is then given the option to navigate through the menu and place their order from the comfort of their car. The vehicle in the en-actment also adds a realistic element to virtual calls by allowing users to manage their meetings with AR.

Ibeo presents solid-state sensor solutions

Ibeo Automotive Systems presented a range of innovative technology solutions related to autonomous mobility at CES 2022.

As a full system provider, Ibeo offers lidar sensor hardware as well as perception and validation software components from one source, with full control over both product development and manufacturing.

Innoviz Technologies Introduces Innoviz360

Innoviz Technologies Ltd. introduced a next-generation sensor to its product line - the Innoviz360.

The new Innoviz360 HDLiDAR sensor represents that leapfrogs traditional, standardresolution spinner solutions that are performance limited, expensive, big and unreliable. Unlike traditional spinner solutions that are performance limited with only up to 128 scanning lines, the new, lightweight, Innoviz360 LiDAR allows multiple scanning software configurations with up to 1280 scanning lines (10x) at a costeffective and durable solution than traditional 360 LiDARs.

Innoviz360's HD, wide FoV (360 ° x64 °) and reduced cost will help overcome major challenges in achieving full automation in scale for L4-L5 automotive applications, such as robotaxis, shuttles and trucks, and opens new market opportunities for Innoviz beyond the automotive space.

The new Innoviz360 LiDAR can serve platforms such as the NVIDIA DRIVE, an end-to-end development platform and reference architecture for designing and safely deploying autonomous vehicles.

Innoviz360 for full automation in scale for L4-L5 automotive applications as well as beyond the automotive space

Hesai Technology showcase hybrid solid-state Lidar AT128

Hesai Technology Co., Ltd. showcased its new automotive-grade lidar sensor at CES 2022. AT128 is a long-range hybrid solid-state lidar for ADAS applications.

Hesai's AT128 is a directional long-range hybrid solid-state lidar designed for ADAS applications in mass production passenger and commercial vehicles. It combines high performance, compact design, and high reliability. With its consistent resolution over the full field of view (FOV), AT128 is also algorithm-friendly. It has a small form factor, which enables seamless integration onto the vehicle. AT128 provides the essential perception capabilities that L3+ autonomous vehicles require.

Additional highlights about AT128 include:

- Image-level Resolution: AT128 features an ultra-high measurement frequency of over 1.53 million points per second (single return), resulting in image-level resolution. Each AT128 incorporates 128 high-power multi-junction VCSEL arrays, enabling genuine 128-channel e-scanning. Such design avoids the reliability and limited lifetime issues caused by high-speed two-dimensional mechanical scanning. It also provides an unstitched ultra-wide 120° horizontal FOV and image-like structured data, bringing more convenience to autonomous vehicle algorithms.

- Superior Ranging Capability: AT128 has a ranging capability of 200 meters at 10% reflectivity, with effective ground detection as far as 70 meters. It is one of the few hybrid solid-state lidars on the market that can detect objects at such long range, while also reaching such a high measurement frequency.

- Automotive Grade and High Reliability: Designed for mass production, AT128 is an automotive-grade lidar with high reliability. All key components meet AEC-Q and other relevant standards. AT128 has undergone more than 50 design validation (DV) tests, conducted according to internationally recognized OEM standards such as electrical, mechanical, environmental, sealing, material, and EMC tests.

- Low Cost Enabled by Proprietary ASICs: AT128 is developed based on Hesai's new-generation proprietary lidar ASICs, which greatly simplify the traditional complex assembly process. This increases manufacturing efficiency and consistency for mass production needs. More importantly, it significantly reduces cost while maintaining high performance and reliability.

Hesai's AT128 has already been nominated by multiple ADAS programs, totaling several million units in lifetime, such as Li Auto, JiDU, HiPhi, and Lotus. The sensor will begin mass production in 2022.

At CES 2022, Hesai also unveiled a new sensor, QT128 - a short-range lidar with 105° ultra-wide vertical field of view (VFOV). QT128 is an ideal blind spot solution for L4 applications such as robotaxis and robotrucks. It features an ultra-wide VFOV, allowing it to see more of its surroundings than other available lidar sensors. QT128 also has an automotive-grade design; its manufacturing process is guided by automotive product lifecycle standards, giving it ultra-high reliability and a long operating lifetime.

Lumotive and ZKW Group jointly demonstrate vehicle headlight with integrated functional Lidar

Lumotive and the ZKW Group unveiled a functional demonstration of Lumotive's lidar technology integrated with a ZKW vehicle headlight. The demonstration couples Lumotive's Meta-Lidar™ Platform with ZKW's advanced vehicle lighting technology to produce a headlight with superior road illumination capabilities, while also providing 3D sensing for advanced safety and autonomy features.

Compared with previous generation lidar systems that use mechanical spinning assemblies and are known for being bulky and expensive, Lumotive's solid-state solution is tiny and scalable for seamless integration into many essential mobility products such as vehicle lighting systems. The ZKW integration features a prototype of the Lumotive M30 module, the workhorse of the Meta-Lidar™ platform, which uses pulsed laser beams to measure distances between objects and the sensors around the vehicle. The Meta-Lidar platform generates extremely accurate and precise spatial data that can be used by a driver to avoid collisions or to further automate driving scenarios.

The scalability of Lumotive's products is enabled by the company's disruptive Light Control Metasurface (LCM™) solid-state beam steering chips, which significantly reduce the complexity, cost and size of lidar systems while improving performance and reliably operating in the challenging headlamp environment. Manufactured in proven and scalable CMOS semiconductor processes, LCM chips eliminate the need for bulky mechanical moving parts that challenge the cost and reliability of traditional lidar devices while delivering new levels of perception, detection and navigation in autonomous systems.

RoboSense showcases smart LiDAR

RoboSense LiDAR exhibited its leading portfolio of smart LiDAR sensor solutions at CES 2022. Its star solution RS-LiDAR-M1 (M1) took the spotlight as the mass-produced automotive grade MEMS solid-state LiDAR, while Ruby Plus, which is a new 128-beam mechanical LiDAR made its international debut.

RoboSense has also made the world premiere of its 128-beam mechanical LiDAR called Ruby Plus to the public at CES. After advancements in performance and design, The diameter has also been reduced from 166 mm to 125 mm, and the height has been reduced from 148.5 mm to 125 mm. Ruby Plus not only has a longer detection range and higher detection accuracy, but has also reduced its overall weight and volume by more than 50% and power consumption by 40% reduced from 45W to 27W, technical achievements that have drawn great interest from CES attendees.

RoboSense also showcased RS-Helios-5515 at CES stand, a new 32-beam LiDAR customized for Alibaba's logistics robot Xiaomanlv, marking its debut at an international exhibition outside China. With an all-new technical structure, the new generation Helios LiDAR boasts a customized field of view (FoV) and achieves both long-range perception and near-field blind spot elimination, features that traditional mechanical LiDARs have yet to achieve. Its design arranges lasers more densely in the center of its FoV, further enhancing perception and blind spot reduction.

High Performance
Automotive Test Solutions

Anritsu

Test and Measurement
Solutions for the Connected Car

Ensuring Connectivity...

WIRELESS CONNECTIVITY
5G, LTE, 2G, 3G, Bluetooth, Wi-FI

SAFETY AND DRIVER AIDS
RADAR, GNSS, e Call, ERA-GLONASS,TPMS,RKE, NG-eCall

IN-VEHICLE NETWORKS
Antennas, Connectors, RF Cables, Ethernet, Optical Fibre

INTELLIGENT TRANSPORT SYSTEMS
V2X, DSRC, 802. I I p

ELECTROMAGNETIC INTERFERENCE
OTA, EMC, EMI, Interference Hunting

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

Glasses-Free 3D Technology

IQH3D premiered their glasses-free 3D products at CES 2022. IQH3D has pioneered a new generation of 3D devices through research and development of Glasses-Free 3D products and advanced software applications that will be on display. Experience the highest quality 3D optics ever produced on a consumer device with the featured product SKYY 10.8" Streaming 3D tablet. All IQH3D's devices can be used for viewing 3D content and extraordinary NFT Stereoscopic Digital Art.

New Products Premiering at CES 2022:

- SKYY 10.8 Glasses-Free 3D Streaming Android Tablet

- SEAA Glasses-Free 3D Smartphone with the first-ever Artificial Intelligence Enabled 3D Camera

- IQH3D - Screens and Monitors - 28"-100" Glasses-Free 3D Multi-Viewer Screens

- IQH3D CMS, Media Player & 2D - 3D Conversion Software Applications

- The 65" Ultra D Monitor will also be on display at CES 2022.

IQH3D Skyy Tablet

LG flexible OLED

LG Display showcased two new product concepts to the world – "Virtual Ride" and "Media Chair" in CES 2022. By introducing these two innovative products featuring flexible OLED screens, the company aims to highlight the strong potential and wide versatility of OLED to create new markets.

The Virtual Ride is a futuristic indoor stationary bicycle with three vertical 55-inch OLED displays in front of and above it. The advanced displays come together to form one large, curved, r-shaped display that gives users an immersive view both forward and above. The display that bends to create the ceiling above the rider has a curvature radius that reaches 500R, or a radius of 500mm, the most among existing large displays, which illustrates its superior flexibility.

LG Display's Virtual Ride

LG Display's Media Chair

In addition, its futuristic, sleek design takes home exercise to a whole new immersive level, greatly improving the mood and ambiance in whatever room of your home you put it in. The OLED displays provide unparalleled lifelike colors with their vivid picture quality to make you really feel like you are cycling outside in a forest or down the street of a European village.

Another new concept showcased by LG Display at CES 2022 is the Media Chair, a modern relaxation device seamlessly combining a 55-inch OLED TV display with an extremely comfortable recliner. The screen boasts a curvature radius of 1,500R, the optimal angle for the user, as well as the company's built-in sound technology Cinematic Sound OLED (CSO), which enables the display to vibrate to make its own sound without the use of external speakers, offering a vivid sense of reality.

The chair display's pivot function allows the screen to rotate between vertical and horizontal orientations at the touch of a button on the display of the armrest. This gives the user the unique opportunity to customize their immersive viewing experience thanks to the OLED technology to perfectly fit whatever content they want to watch.

The OLED display boasts tens of millions of self-emitting pixels to eliminate the need for a separate backlight, not only permitting it to deliver excellent picture quality but also come in various form factors such as Bendable, Foldable, and Rollable. Thanks to this groundbreaking design characteristic, OLED displays are now being integrated into various areas outside the home including the furniture, construction, shopping, and interior industries.

LG Display also introduced various cutting-edge products during CES 2022 such as new OLED displays, OLED solutions fused with various fields, and high-end LCD displays designed for the IT industry.

BLUETTI sodium-ion solar generator

BLUETTI highlighted its thinking-forward solar energy facility collections at CES 2022, including the sodium-ion solar generator -- NA300 and much-anticipated AC & EB series of power stations. Here's a dive into them:

1. The Next Generation of Energy Storage: Sodium-ion Battery

BLUETTI NA300 is gonna start the revolution of energy storage systems. Begin with its 3,000W pure sine wave inverter and 3,000Wh capacity, it can juice up most electric appliances in the market. And it feels similar to the superstar BLUETTI EP500 Pro, supporting connection with another NA300 by a fusion box—Output voltage and power double to 240V and 6,000W—and App remote control.

Besides, it's able to charge at an incredible rate of 6,000W (3,000W Max. for both AC and PV); and work with two B480 battery modules (4,800Wh each) for a whopping 12,600Wh. Such unit severs a family's electricity needs for DAYS or even ONE WEEK during grid failures or natural disasters with constant solar input.

Back to the Na-ion, BLUETTI first-gen Na+ batteries are comparable with lithium-ion ones. They could charge to 80% SOC in 30 minutes at room temperature. Moreover, they will keep over 85% capacity retention and over 80% system integration efficiency in sub-zero temperature (-20°C). Finally, the below demonstrates a throughout comparison between this sodium-ion battery and LiFePO4 battery.

2. The Long-waited APEX: BLUETTI AC500

The BLUETTI AC series have hit the market quite a few times. This time AC500 holds a 5,000W pure sine wave inverter, maybe the most powerful in today's market. It is also 100% modular same as AC300, and can work with six B301 battery modules (3072Wh each) for a groundbreaking 18,432Wh. Also, it supports capacity expansion with AC300's companion—B300.

More than that, AC500 manages 8,000W Max. AC + PV dual charging (5,000W and 3,000W for AC and PV, respectively). And two AC500s can build a 240V, 10000W output power system with a fusion box.

3. The Tiny yet Mighty Assassin: BLUETTI EB3A

Finally comes the BLUETTI EB3A. Out of BLUETTI naming custom, "EB3A" is quite distinct from other lineups. BLUETTI staff said the "A" is for "Advanced". EB3A has the 600W pure sine wave inverter and 288Wh LiFePO4 battery pack under the hood and supports 600W Max. AC input and 200W Max. solar input, absolutely a big catfish for the entry-level power station market.

Plus, EB3A is the first BLUETTI compact model needn't charge with a bulky power brick (among the sub-3000Wh range). And it only takes EB3A 20 minutes, a coffee break to get 80% fully charged.

BLUETTI is seeing the energy storage's future forward. However, it needs more time to improve and iterate the capability of sodium-ion battery technology, and diversified technologies are expected to assure the industry's development for a green and pleasant world in the future.

Hyundai Motor Shares Vision of New Metamobility Concept

Hyundai Motor Company shared its vision for pioneering the use of robotics in both the real world and metaverse at CES 2022.

Under the main theme of 'Expanding Human Reach', Hyundai Motor's presentations reflected how the company's robotics business will drive the paradigm shift towards future mobility, going beyond the traditional means of transportation to fulfill unlimited freedom of movement for humankind.

In support of its future vision for robotics and mobility, the company revealed its new concept of 'Metamobility', with the goal of pioneering a smart device-metaverse connection that will expand the role of mobility to virtual reality (VR), ultimately allowing people to overcome the physical limitations of movement in time and space. Hyundai Motor also shared its vision of how robots will act as a medium between the real world and virtual spaces, enabling users to make changes in the metaverse to be reflected in reality.

Connecting real-world movement with the metaverse via robots and 'Metamobility'

With the metaverse set to become a daily space for people in the future, the company expects the possible emergence of a new type of metaverse platform in which the distinction from reality could disappear, breaking away from the concept of VR as the world knows it today.

What only used to be a virtual experience due to technological limitations can now be reflected in the real world through the connection of smart devices, enabling users to have unlimited freedom of movement between the two worlds. Hyundai Motor defines the concept of such experiences as Metamobility.

Hyundai Motor expects that mobilities, such as automobiles and UAM, will serve as smart devices to access virtual spaces, while robotics will act as a medium to connect the virtual and real worlds. For example, an automobile that connects to virtual spaces can allow users to enjoy various in-car VR experiences. Depending on the user's needs, a car can be transformed into an entertainment space, a meeting room for work or even a 3D video game platform.

Through Metamobility, robots will help people overcome the physical limitations of time and space, providing a means for connecting and interacting in the metaverse. Hyundai Motor envisions a metaverse using robots as a medium between the real and virtual worlds, enabling people to actually change and transform things in the real world through a metaverse and robot connection.

This metaverse-robot connection will allow the user to guide a robot in the real world, such as in a smart factory. This will enable a next-generation digital model for plant management and manufacturing by enabling remote specialists to connect to all machines and assets within the factory, and perform remote tasks through a direct physical connection using robots and VR. For example, a worker would interact with a robotic avatar in the metaverse via VR interface and hand controls to manipulate things in the real world using a proxy robot at the remote work site.

Robots that move people and things beyond imagination and limitation

Hyundai Motor also revealed its Plug & Drive (PnD) and Drive & Lift (DnL) modular platforms as all-in-one solutions for its unlimited Mobility of Things (MoT) ecosystem, wherein traditionally inanimate things, from small objects to community spaces, will gain mobility using the company's robotics technologies.

With infinite flexibility and scalability, the PnD module can provide mobility to normally inanimate things, from small objects to community spaces. Its applications seem limitless, providing freedom of movement for people with disabilities, automated logistics, reconfigurable interior space and public transportation with individual compartments for social distancing and last mile mobility.

Hyundai Motor also exhibited the MobED (Mobile Eccentric Droid) small mobility platform that uses the DnL module, an eccentric wheel mechanism, combining the drive, steering and braking systems in one structure. With DnL mounted on each wheel, MobED can lift the platform up and down, so the body can stay level as MobED traverses uneven terrain or low barriers such as steps or speed bumps.

For example, Hyundai's wearable robots, the Vest Exoskeleton (VEX) and Chairless Exoskeleton (CEX) as well as Boston Dynamics' quadruped Spot® are supporting industrial work, and hold promise for other applications, even search-and-rescue missions.

NCM9 Battery by SK Innovation

This battery will power Ford's flagship electric truck, the F-150, which will launch in early 2022. SK Innovation's manufacturing techniques have allowed a high proportion of nickel in the battery, which improves power and ranges while keeping the production process safe. According to the company, the Hyundai Ioniq 5 can charge up to 80% in 18 minutes thanks to the high-performance batteries.

Thunderbolt 4 by Intel Corporation

This cable delivers 40 Gb per second speeds for data and video while delivering power over a single connection. It is the most comprehensive Thunderbolt specification yet, according to Intel, with compliance across a large set of industry specifications, including USB4, DisplayPort and PCI Express. The cable is fully compatible with prior Thunderbolt generations and USB products and won a 2022 Best of Innovation award.

HDMI 2.1a debuts at CES 2022

The HDMI Forum showcased a new standard called HDMI 2.1a at the CES 2022.

The main new feature with HDMI 2.1a will be Source-Based Tone Mapping, or SBTM for short, which offloads some HDR tone mapping to the content source instead of the TV or monitor doing all the work on its own.

The feature will also allow better mixing of HDR and SDR content on the same device.

High Definition Multimedia Interface or HDMI is a medium for transmitting both audio and video data together between digital devices. For a transfer to take place, both the source and the receiver or data shall be HDMI-compliant.

Magna ICON Digital Radar by Magna International

This software-defined digital imaging radar scans the environment around the vehicle with 16 times better resolution and 30 times better contrast than analog, according to the company. Each digital radar signal has its own unique signature, which reduces interference with other radar systems. The product won a 2022 Best of Innovation award and will be used in the Fisker Ocean, an electric SUV that will go on the market in 2023.

Microsoft, Qualcomm to collaborate on custom augmented-reality chips

Qualcomm Technologies, Inc. announced their collaboration with Microsoft to expand and accelerate the adoption of augmented reality (AR) in both the consumer and enterprise sector. Both companies are believers in the metaverse, and Qualcomm Technologies is working with Microsoft across several initiatives to drive the ecosystem, including developing custom AR chips to enable a new wave of power efficient, lightweight AR glasses to deliver rich and immersive experiences, and plans to integrate software like Microsoft Mesh and Snapdragon Spaces™ XR Developer Platform.

This collaboration recognizes Qualcomm Technologies' proven spatial computing expertise, technology leadership and the desire to create transformative experiences for the next generation of headworn AR devices as we head into the metaverse.

The Motorola MA1 wireless car adapter for Android Auto™

SGW Global, a Motorola Strategic Brand Partner, debuted the Motorola MA1, a wireless car adapter for Android Auto. The Motorola MA1 licenses technology from Google that makes it simple for users to connect to existing USB-enabled Android Auto vehicles wirelessly, making it even easier to access preferred maps, media, and messaging apps on the car's display.

The Motorola MA1 is a plug and play adapter that integrates with Android Auto. With wireless access to Android Auto, users can get things done with their voice to keep their focus on driv-ing. Easily send messages, get directions, control media and more. Just say "Hey Google" to get started.

Android Auto is available on more than 100 million cars today - many of which require connect-ing a mobile device to the vehicle infotainment system using a USB cable. The Motorola MA1 is an ideal solution for drivers who want to experience a seamless wireless connection but do not have the factory-supplied technology that allows them to do so.

Motorola MA1 features include:

- Fast media transmission (5 GHz WiFi for wireless Android Auto)
- Direct USB plug-in to existing Android Auto-enabled vehicles
- Fast automatic connection using Bluetooth
- Lightweight, sleek design

M.Vision POP

Hyundai Mobis demonstrates future vehicle concepts and metaverse practicality

Hyundai Mobis showcased the M.Vision POP EV, and the M.Vision 2GO Hydrogen Fuel Cell shared mobility concept vehicles. Hyundai Mobis is affiliated with Hyundai Motor Group and partners with many OEMs – are making great strides to harness its power.

A major draw to the Hyundai Mobis exhibit is its metaverse experience, named JOYTOWN, which gives visitors an interactive "test drive" experience with the M.Vision POP and M.Vision 2GO concepts vehicles in real-life situations.

Metaverse has become a popular buzzword at CES 2022. That said, the metaverse and its application is still difficult to understand by many. CES exhibitors including Hyundai Mobis are helping bridge the gap of understanding of the metaverse in an interactive, practical and fun way – leveraging mobile technology familiar to society.

Hyundai Motor and Unity Partner to build Meta-Factory Accelerating Intelligent Manufacturing Innovation

Hyundai Motor Company and Unity announced at CES 2022 a partnership to jointly design and build a new metaverse roadmap and platform for Meta-Factory.

The companies held a virtual MOU signing ceremony with Youngcho Chi, President and Chief Innovation Officer of Hyundai Motor Group, Hong Bum Jung, Senior Vice President and CEO of Hyundai Motor Global Innovation Center in Singapore (HMGICS), Jules Shumaker, Senior Vice President, Revenue, Create Solutions, Unity and Dave Rhodes, Senior Vice President of Digital Twin, Unity, participating.

Through this MOU, Unity becomes a strategic partner to Hyundai, supporting its vision of becoming the leader in future mobility solutions. The MOU pertains to the fields of smart manufacturing, AI training and study as well as autonomous driving simulation.

Doosan Mobility Innovation and 42air signs MOU for hydrogen powered fuel cell drone delivery service

Doosan Mobility Innovation (DMI) and 42air signed a memorandum of understanding (MoU) at CES 2022 for a partnership to co-develop delivery services using hydrogen fuel cell unmanned aerial vehicles (UAV). This agreement formalizes their mutual commitment, and strengthens the future engagement of both parties in expanding hydrogen fuel cell drone operations in maritime drone delivery.

DMI and 42air plan to collaborate to create new business models and develop a service model including specifying and integrating fuel cell power systems, automation software, logistics software, cargo handling systems, and other technologies and processes to enable the new aerial delivery ecosystem.

DMI, a market leader of hydrogen fuel cell drones, delivers commercial drone platforms with fuel cell powerpacks to maximize drone performance. The hydrogen-powered fuel cell drones can stay airborne for over two hours of flight time, as fuel cells have approximately 4 to 5 times higher energy density when compared to lithium-ion batteries. This makes hydrogen powered drones Beyond Visual Line of Sight (BVLOS) capable and well suited for delivery purposes.

HERE and leading Swiss retailer Migros offer CO - Insights for shippers and fleet operators

HERE Technologies announced a new commercial fleet analytics tool that predicts the amount of Carbon dioxide (CO_2) emissions per route, considering factors such as vehicle and fuel type, traffic conditions and the road networks' physical attributes, including topography, curvature, slope and elevation. CO_2 Insights also recommends the most appropriate commercial vehicle with the most appropriate engine (diesel, electric, bio-gas or hydrogen) to produce the least CO_2 for any given route. By doing so, CO_2 Insights supports the transition to CO_2 neutral com-mercial fleet and contributes to reducing pollution.

CO_2 Insights – under the name of M Opex Tower – was developed by leading Swiss retailer Mi-gros and its strategic partner Empa, a research institute for materials science and technology within the ETH (Swiss Federal Institute of Technology in Zürich), relying on HERE location data and services. Migros has used the tool to investigate the environmental impact of its own fleet and drive the transition from diesel vehicles to alternative fuel options such as biogas, electric and hydrogen. The retailer built its CO_2 analytical tool with the HERE Routing API, which enables fleet managers to deliver optimized navigation routes incorporating the attributes of the roadway, legal and physical restrictions and adjusted road hierarchy and topology via HERE Map Attributes API.

CO_2 Insights is certified by myclimate, an organization that helps calculate and offset emis-sions. For this offset, the CO_2 calculation takes into account the energy consumed for transpor-tation (tank-to-wheel) and emissions from fuel production (well-to-tank). Indirect emissions from vehicle manufacturing, maintenance and disposal, as well as the emissions produced to build the infrastructure used by the vehicle are also considered. The CO_2 calculation is certi-fied according to DIN EN 16258 and ISO 14040.

HERE partners with Ericsson to bring custom map making and location services to the mining industry

HERE Technologies and Ericsson have teamed up to provide the global mining industry with custom mapping capabilities. HERE is now a member of Ericsson's industry 4.0 partner ecosystem.

The mining industry is in rapid modernization phase, with smart mining operations projected to increase threefold until 2025. A key driver of this transformation is the access to private cellu-lar networks, enabling safer, more productive, and more sustainable mining operations, through reliable and low latency connectivity. Ericsson's high-performance 5G private networks are pur-pose-built for mining operations. A business can deploy an on-premise cellular network for its exclusive use. For mining this includes facilities in very remote areas and underground tunnels, both of which are not typically within public cellular range.

The combination of Ericsson connectivity and HERE location services deliver true smart mining capabilities, from mapping private terrain, to pinpointing and navigating assets in real-time. By using location data to build continuously updated private maps on the HERE location platform, mining companies can create a canvas to improve operational efficiency and safety. The living map can then be used to search or track, and deploy routing powered by HERE, as well as cus-tom-built applications and services.

HERE: Location intelligence for future of driving

HERE Technologies demonstrated this year at CES 2022 its cross-industry collaboration to accelerate road safety and the steps toward a fully connected, electric and automated vehicle experience.

Prior CES hype cycles and timelines for fully autonomous vehicles have given way to readily deployable connected car and ADAS technologies.

Mercedes-Benz utilizes HERE HD Map in automated DRIVE PILOT system

HERE is among the world's first companies to provide an HD map for commercial production vehicles with Level 3 automated driving capabilities. HERE recently celebrated the regulatory approval of Mercedes-Benz's DRIVE PILOT system with the HERE HD Live Map onboard for use on public roads in Germany.

The cloud-based HERE HD Live Map enables an automated vehicle to effectively "see around corners" by delivering the vehicle system, in advance, with precise information about the road network and rules of the road (including detailed lane level data, road and intersection geometry, signage and driving restrictions). In combination with the input from the vehicle sensors the HD map data is used by the DRIVE PILOT to maneuver a vehicle on the public road network.

HERE has built one of the world's largest enterprise-grade location data platforms. The company has captured and indexed the world's road networks and urban environments, creating highly accurate, two-and-three dimensional maps from thousands of data sources. The HERE location platform offers software developers and the global automotive industry a one-stop shop for all location data, services and software.

HERE and vast majority of global automakers working to implement Intelligence Speed Assistance mandate from European Union

Starting in July 2022, all new-model passenger and commercial vehicles introduced in the EU need to be equipped with Intelligence Speed Assistance (ISA). ISA is an in-vehicle feature helping drivers acknowledge and comply with legal speed limits on any given road.

The recently introduced HERE ISA Map provides fresh and accurate speed limit information, with comprehensive coverage across the globe. HERE has agreements with all but one of the major nine global automotive brands on the EU market for the provision of ISA information to their vehicles. These agreements will see HERE deliver speed limit information to an estimated 20 million vehicles across the EU by 2024 and forecasted at 50 million vehicles by 2027. This provides the company with unique access to data sources and the base to maintain speed limit information at very high quality and freshness, allowing customers to comply with regulatory quality requirements.

HERE supplies next-generation navigation software to multiple global auto OEMs

At CES 2022, HERE is showcasing HERE Navigation, a complete, next-generation and cloud-centric embedded navigation solution for passenger cars, electrical vehicles, commercial vehicles and trucks. HERE Navigation delivers a premium navigation feature set with an easy to customize user experience (UX), utilizing cloud technology to deliver always-fresh maps and the flexible deployment of new features, including 3rd party services, into the car.

Since these products were announced, seven OEMs have chosen HERE Navigation or HERE SDK as the navigation solution for their new platform. At CES this week, the company will announce the utilization of HERE Navigation by global electric vehicle (EV) manufacturers.

The HERE Navigation application is built on top of the HERE SDK Navigate Edition, which can also be used by OEMs who choose to build their own user experience.

In 2022, HERE platform to ingest data points from 30+ million connected vehicles to power its ADAS, connected and automated vehicle services

Across the globe today, more than 150 million vehicles and 50 OEM brands use technology from HERE. In 2022, though its multiple automotive, telematics and fleet partners, the HERE platform is set to ingest data points from 30+ million connected vehicles to power its ADAS, connected and automated vehicle services.

Path planning for automated vehicles, delivering as much "foresight" to a vehicle in advance, is critical to overall safety and passenger comfort. HERE Lanes enhances ADAS features with precise lane topology, geometry and attribute data, such as the rules of the road, vehicle height restrictions, lane count and centerline, direction of travel, and more.

Live tests conducted by VSI Labs show how HERE lane-level data and vehicle sensors work in tandem to increase the performance and safety of ADAS features. For example, HERE Lanes improves the functioning of ADAS Lane Keep Assist when lane lines merge onto highways or intersections, or when optical sensors onboard have limited visibility due to fog, rain or snow.

HERE partners with Vexcel Imaging to keep the HERE Map fresh

HERE has struck a data acquisition partnership with Vexcel Imaging, the industry leader in aerial data, to provide highly accurate aerial imagery for the U.S. and Western Europe. By extracting upwards of 390 different map attributes (POIs, landmarks, traffic furniture, etc.) from Vexcel's aerial data mosaics, HERE continues to make advancements in mapmaking and automation to keep the industry's leading HERE platform fresh.

HERE and Goodyear enable predictive tire maintenance

HERE Technologies announced that its location services are being integrated into the Goodyear Total Mobility one-stop fleet management solution. The solution offers a suite of vehicle-to-fleet operation management tools that are fully customizable.

The one-stop fleet management solution combines data from Goodyear's Tire Pressure Monitoring System (TPMS) with HERE location services. Goodyear TPMS is an advanced sensor and predictive algorithm solution that helps fleets avoid up to 90% of tire-related breakdowns. With HERE location services, fleet operators and Goodyear service providers in Europe can localize a vehicle in need of service or road assistance within a few meters and navigate them to the nearest maintenance station. In addition, Goodyear has been using the HERE SDK (Software Development Kit) to provide a mobile application for commercial drivers.

The HERE SDK is a set of programming interfaces that gives access to the rich portfolio of HERE services, such as in-vehicle navigation, traffic alerts, transit information and fleet management features. The HERE SDK provides vector maps in over 190 countries and in 60 languages with optimized map data size for minimized download latency, fast response times, while scaling to a high degree of fidelity. Map customization tools enable various adjustments, such as highlighting of important objects on a map by changing colors and icons, as well as editing dynamic properties of cartography objects including buildings, roads and land use.

The HERE SDK mapping, routing and search functions incorporate truck specific road information, vehicle regulations and points of interest. HERE Routing also enables fleet managers to deliver optimized navigation routes incorporating the attributes of the roadway, legal and physical restrictions and adjusted road hierarchy and topology.

Yojee teams up with HERE Technologies on warehouse operations and management

HERE Technologies and Yojee Limited has teamed up to create a unique operations intelligence solution to transform warehouse operations and management for global companies.

Combining the expertise of Yojee's logistics software with HERE's location intelligence, this joint initiative will uncover and generate crucial data from the warehouse floor. This will enable businesses to make better informed decisions on how they can streamline operations and utilize the maximum capacity of the facility through infrastructure planning, asset tracking, and workforce management. These operational intelligence data points will help to establish a warehouse health pulse system that will measure key metrics based on various location parameters pertaining to workforce productivity, material handling equipment, inventory statuses and more.

With HERE Asset Tracking, businesses can enjoy improved real-time visibility that tracks the location, status, and condition of their warehouse assets anywhere, anytime. Warehouse Operators are now able to remotely monitor manpower productivity levels within warehouses, and track movements of assets and material handling equipment both outdoors and indoors via already available networks. The HERE Map Making platform also allows businesses to customize and maintain warehouse digital layouts (virtual representations) that will help them improve overall logistics planning and reduce operational costs.

By feeding the real-time and historical data provided by the collaboration into an artificial intelligence (AI) powered data analytics dashboard, businesses will be presented with a central, customizable visualization of its warehouse operations.

OMNIVISION announces new solutions for automotive

OX05B: 5MP RGB-IR Global Shutter Sensor for In-Cabin Monitoring Systems

The new OX05B1S is the 5 megapixel (MP) RGB-IR BSI global shutter sensor for in-cabin driver monitoring systems (DMS). With a pixel size of just 2.2 µm, it offers 940 nm NIR sensitivity for the best performance in extremely low light conditions; it has a wide field of view and enough pixels to view both the driver and occupants. Additionally, it is the first RGB-IR sensor for in-cabin monitoring to feature integrated cybersecurity.

Based on OMNIVISION's revolutionary Nyxel® NIR technology, the new OX05B1S brings dramati-cally improved resolution as well as overall enhanced efficiency and design flexibility to automotive OEMs. Nyxel® technology uses novel silicon semiconductor architectures and processes to achieve the world's best quantum efficiency (QE) at the 940 nm NIR wavelength. The OX05B1S has the industry's highest NIR QE at 35% (a 4x boost from 12% in the previous generation). This enables the OX05B1S to detect and recognize objects that other image sensors would miss under extremely low lighting conditions, enabling higherperformance incabin camera capabilities for improved occupant and driver monitoring, security, selfies, videoconferencing and more.

OX03D: 3MP Resolution SoC for Automotive Cameras

OMNIVISION's new OX03D4C is a 3 megapixel (MP) resolution systemonchip (SoC) for automotive surround-view systems (SVS), rearview systems (RVS) and e-mirrors. The new SoC provides a seamless path for automotive OEMs to upgrade from 1MP to 3MP while retaining high perfor-mance, low power and the smallest 2.1 µm pixel size in a 1/4-inch optical format. The OX03D4C has a fully integrated image signal processor (ISP), is capable of 140 dB high dynamic range (HDR), and includes the next-generation tone-mapping algorithm along with the LED flicker mit-igation (LFM) performance in the industry.

OMNIVISION's OX03D4C includes both the pixel array and ISP within a single package; it is opti-mized to deliver ideal performance over the complete automotive temperature range. It fea-tures 105 dB motion-free HDR with a total range of 140 dB, and provides HDR and LFM simulta-neously. It includes the next-generation tone-mapping algorithm for high contrast images, sup-ports a number of CFA patterns, and can output both YUV and RAW process streams at the same time. The OX03D4C provides four on-screen display overlay layers for driver guidelines, as well as distortion correction to straighten any curved edges from lenses with a wide viewing angle. The OX03D4C consumes less than 500 mW power, enabling the use of a plastic case for lighter weight and lower cost.

All of these features are built into the smallest possible camera module available for automo-tive viewing applications. The a-CSP™ package size allows smaller cameras that can fit in much tighter spaces. The image sensor is built on OMNIVISION's PureCel®PlusS stacked die technolo-gy.

OX08B40: 8-Megapixel LFM Image Sensor System for Forward Looking Automotive Camera Systems

OMNIVISION's OX08B40 is a front-view, 8.3MP image sensor that features the automotive indus-try's best HDR of 140 dB and adds a new benchmark in LED flicker mitigation (LFM) perfor-mance, enabled by the sensor's on-chip HALE (HDR and LFM engine) combination algorithm. The optimal clarity and range offered by this sensor, in combination with integrated ASIL-C features, is vital for front-view automotive applications, such as ADAS and level 3+ autonomous vehicles, where the ability to accurately detect people and objects from far away in all lighting condi-tions is safety-critical.

The OX08B40 utilizes OMNIVISION's dual conversion gain (DCG) technology to achieve 82 dB dy-namic range on the first exposure, whereas competitors' image sensors only provide a dynamic range of 60 dB or less. Unlike DCG, the competing method, known as staggered HDR, relies on additional passes that introduce motion artifacts and diminish range, especially in low light. Ad-ditionally, our 3D stacking technology allowed us to integrate our unique HALE combination algorithm into the OX08B40.

The OX08B40 offers 4-capture, 3840 x 2160 resolution at 36 fps and a 16:9 display aspect ratio. It will be available in different color-filter

patterns to match the leading machine vision applica-tions in the industry, and is planned to be AEC-Q100 Grade 2 certified.

OMNIVISION and Seeing Machines Develop ASIC with integrated ISP and Occula® NPU Optimized for Driver and Occupant Driver Monitoring Systems

OMNIVISION together with Seeing Machines announced the automotive industry's first dedicated driver monitoring system (DMS) and occupant monitoring system (OMS) application-specific integrated circuit (ASIC) that combines an image signal processor (ISP) and is powered by Seeing Machines' Occula® Neural Processing Unit (NPU).

OMNIVISION announced the DMS ASIC with an integrated AI NPU, ISP and DDR3 memory in January 2021 (OAX8000). The new OAX4600 integrates the Occula® NPU. It will feature a higher level of processing and performance, comply with ASIL B advanced safety standards, and is based on a much deeper level of partnership with ecosystem vendors. It will include an optimal HW RGB-IR ISP, cybersecurity and deliver the most power efficient solution.

Additional announcements by OMNIVISION at CES:

· OVB0B: OMNIVISION Announces the First 200MP Resolution Image Sensor in the World's Smallest 0.61-micron Pixel Size for High End Smartphones

· TD4377: OMNIVISION Launches New Full High Definition 144Hz Touch and Display Driver for Next-generation Smartphones

· Dell Selects OMNIVISION's OV02C for the Most Superior Webcam 1080p Performance in Next-generation Latitude Laptops

· Ajax Systems and OMNIVISION Collaborate to Create Wireless Outdoor Intrusion Detector with a Photo Camera to Verify Alarms

· OMNIVISION and Tobii Join Forces on Eye Tracking to Drive the Vision of Metaverse

ZF premieres Vehicle Motion Control high-performance computing platform

ZF introduces its next high-performance computing platform – the Vehicle Motion Domain (VMD) Controller. The VMD Controller is a central computer adaptable for all types of chassis platforms, vehicle motion and body functions, next generation software defined cars and future domain and zone E/E architectures.

A car's ride and handling characteristics are largely defined by its chassis. Wheel guidance, damping, suspension, steering and brakes help determine the character of a vehicle and the trend toward the electrification and software control of these systems continues to accelerate.

The high-performance controller is designed to integrate vehicle functions across domains including body and power management and supports standalone functionality while reducing complexity by using a single controller for intelligent vehicle motion control. The VMD Control-ler serves the software defined vehicle trend with real time functions and applications with a high-performance threshold of 55,000 DMIPS (draystone million instructions per second).

ZF also places great emphasis on open systems that allow mobility customers to adjust components according to their needs. For a higher level of automation, the VMD high-performance controller can be connected to ZF ProAI, ZF's high performance computing platform for ADAS/AD applications, in an integrated system approach.

Asensing Technology demonstrates HD-MapBox

Guangzhou Asensing Technology Co., Ltd. demonstrated HD-MapBox, a mapping application that integrates high-precision map data based on high-precision positioning. The application can achieve lane-level positioning and 1+ mile (2km) Predictive Cruise Control (PCC), providing a decision basis for advanced assisted driving to better meet the demanding positioning requirements of autonomous driving vehicles.

Based on data fusion of the GNSS, IMU, ADAS camera, vehicle dynamics and HD-map, the new HD-MapBox launched by Asensing Technology is a solution for lane-level position. With this robust collection of data on hand, the HD-MapBox can achieve a lateral error of less than 8 inches (0.2 meters) and a longitudinal error of less than 6.5 feet (2 meters) with a 95 percent confidence interval, providing an accurate reference for highway pilot (HWP) and automated valet parking (AVP). Even if both GNSS and lane line detection are not available, the HD-MapBox can still enable vehicles to keep in lane for at least a quarter mile (400 meters).

WirelessCar Announces Global Launch of Smart EV Routing

WirelessCar launched the Smart EV Routing, a dynamic digital product that enables drivers of electric vehicles (EVs) to optimize their long-distance journeys. WirelessCar's Smart EV Routing uses real-time dynamic vehicle data combined with intelligent routing algorithms to offer one of the most sophisticated connected route planners available.

Smart EV Routing

Fueled by connected car data, WirelessCar's Smart EV Routing reduces range anxiety by providing specifically tailored navigation tools that match the EV driver's needs. Optimized routing during long distance trips delivers accurate charging guidance such as when, where and for how long to charge.

WirelessCar's Smart EV Routing utilizes an array of input parameters, such as real-time vehicle telemetry data plus environmental data, which is combined with intelligent routing algorithms in order to plan and optimize the best possible route for an EV journey.

EV drivers need to consider multiple energy consumption factors while driving—many of which are non-intuitive—to be able to reach the destination most efficiently. These factors include outside temperature and weather conditions, road conditions and elevation, driving style, ve-hicle weight, and more. WirelessCar's Smart EV Routing provides continuously updated dynamic car data, so drivers can make the most informed decisions in real time.

Features and Benefits of Smart EV Routing for both OEMs and Consumers

- **Accurate routing guidance**

  Based on state-of-the-art algorithms and continuously updated dynamic vehicle data, drivers know when they need to charge and for how long.

- **Content provider-agnostic**

  OEMs can use the content providers of their choice when it comes to Visual Maps and Charging Points.

- **Unified experience in-car and on smartphone app**

  Deliver a seamless and intuitive experience in the car's head-unit and on the customer's mobile device.

- **Cloud-based and scalable**

  Ensure consistent top performance regardless of the number of active vehicles.

- **Includes the most relevant parameters**

  Eliminate potential frustrations during longer journeys; drivers can optimize their trip based on total time or other preferences.

- **Data-agnostic and flexible design**

  OEMs enjoy multiple integration options and can use existing data providers to meet specific customer demand.

- **Configurable for both the car maker and the driver**

  Drivers can choose between quickest arrival, short or long stops in combination with preferred charging level (SOC%) for each stop and arrival at destination; OEMs can use their preferred networks and set recommended default parame-ters.

BRINGING VALUE THROUGH APPROACH, FOCUS & EXPERTISE TRUST US TO BRING MORE CONVENIENCE TO OUR CUSTOMERS

VEHICLE ECU UPDATES

- ECU Updates over CAN
- Software and Calibration updates over the air, without the hassles of recalling the vehicles to Service station
- Scalable Architecture to accommodate increase in vehicle ECUs
- Single and Dual bank updates

INTRODUCING TELEMATICS FEATURES THAT WILL BE GAME CHANGERS FOR AUTO MANFACTURERS

4G TCU

UX 101

- Built on powerful chipset
- Linux based Architecture
- AIS140 Certified
- EMI/ EMC as per CISPR 25 Class 3
- Low Sleep current
- Binary protocol to reduce SIM data consumption
- Encrypted data communication between server and device
- Multiple CAN, Analog, Digital etc. interfaces to support Sensor integrations and Data acquisition

- Scalable, Elastic, Portable & Secure cloud platform
- Device Life cycle management
- SIM lifecycle management
- AIS140 Common layer Workflow management
- Vehicle Management cloud software for managing OTA Campaigns, Workflows etc
- Customizable Cloud to Cloud integrations
- End of Line testing

CONNECTED MOBILITY PLATFORM

EMPANELLED ACROSS ALL THE AIS 140 ACTIVE STATES

VEHICLE ECU DIAGNOSTICS

- ECU Diagnostics over CAN
- Secured Online Access to 100 % vehicle ECUs
- Live and Remote Diagnostics of the vehicle ECUs with standardized J2534 interface
- Diagnostics capability on BLE

FILL OUT - CUT OFF - MAIL

Name: ....

Street: .... Town: .... State: ....

Seeing Machines and Ambarella collaborate on integrated forward-facing ADAS and in-cabin occupant and driver monitoring system solutions

Seeing Machines Limited announced a collaboration with Ambarella, Inc. to bring integrated Advanced Driver Assistance System and occupant and driver monitoring system solutions to the market.

This unique technology combination will bring Seeing Machines' industry leading OMS and DMS technology solutions to Ambarella's CV2x CVflow® family of edge AI perception systems on chip (SoCs). Ambarella's CV2x-based reference design platform performs the vision processing and fusion of Seeing Machines' driver monitoring software with forward-facing ADAS features to provide a complete, integrated DMS and ADAS solution.

Ambarella's SoCs target both standalone and integrated DMS, OMS and forward-facing ADAS cameras. As part of this collaboration, Seeing Machines will enable its embedded Driver Monitoring Engine (e-DME) software to provide a highly optimized, accelerated "back end." This e-DME back end will utilize the CVflow acceleration engine inside Ambarella's SoCs, allowing forward-facing ADAS camera designers to seamlessly integrate Seeing Machines' proven OMS and DMS technology.

Seeing Machines OMS integrated into Qualcomm Snapdragon Cockpit Platform

Seeing Machines Limited announced that its industry leading Occupant Monitoring System (OMS) technology, utilising a wide field of view camera, has now been integrated onto the Snapdragon™ Cockpit Platform to expand the safety and convenience features now available to automakers.

Using the wide field of view camera to monitor both driver and front-seat passenger with Seeing Machines' DMS/OMS technology, the demonstration will introduce a host of new features, including seat occupancy detection, body pose tracking and cell phone detection. These features will be available, supported by the Company's industry leading measurement of driver attention state, engagement level, impairment level and system diagnostics, in line with the protocols recently introduced by Euro NCAP to achieve safety ratings.

The work between Seeing Machines and Qualcomm Technologies continues to grow as Seeing Machines expects to integrate these and a range of new features into the Snapdragon ADP, as well as the Snapdragon Ride™ Platform by mid-2022.

Green Hills Software with Apex.AI offers automated drive software platform solutions

Green Hills Software in collaboration with Apex.AI announced the availability of their production-ready ROS 2-compatible development framework for safety and security-critical transporta-tion solutions. This highly optimized solution is a software platform that combines the safety and security of the INTEGRITY® RTOS with Apex.AI's Apex.OS, a fork of ROS 2, made real-time, reliable, deterministic, and certified for safety-critical applications. The combined solution gives OEMs and Tier 1s a faster and lower cost path to production for their ROS / ROS 2 prototypes in vehicle domains such as ADAS and autonomous driving that require the highest levels of auto-motive safety, including up to ISO 26262 ASIL D.

Developers of safety-critical transportation systems face a gap for successfully migrating the prototypes they developed with ROS / ROS 2 to a production-focused real-time and safety-certified computing platform and into production. Moving from high-powered engineering mule test vehicles to production vehicles is challenging. The computing platforms of production vehicles are composed of a complex mix of heterogeneous multicore processors, limited memory, mixed-criticality services, and multiple asynchronous communication networks. Moreover, production vehicles require high reliability, real-time determinism, safety and security as defined by the ISO 26262 automotive safety standard and ISO 21434 automotive cybersecurity standard. The products and expertise from Green Hills Software and Apex.AI provide this purpose-built path to production.

The INTEGRITY RTOS separation kernel is pre-certified to ISO 26262 ASIL D and has adopted the automotive cybersecurity standard ISO 21434. It provides the safe, secure, and deterministic run-time foundation to run, separate, and protect complex software that performs critical func-tions, such as the Apex.OS and Apex.Middleware, from less critical aspects of the platform. IN-TEGRITY securely separates critical and non-critical software components and guarantees that system-critical applications receive the necessary hardware and software resources, even when faced with malicious or unintended events. In addition, the advanced ROS-aware MULTI® inte-grated development environment (IDE) helps developers find and fix the most difficult software bugs faster, reducing development time and cost while raising code quality. The MULTI IDE, with its ISO 26262 ASIL D safety-qualified compilers and safety-certified C/C++ run time librar-ies, provides developers with the proper tools for creating system critical application code that requires safety certification.

INFINIQ reveals AI-based autonomous driving data and next-generation retail tech

INFINIQ unveiled its autonomous driving and retail innovation technology at CES 2022.

INFINIQ's innovations at CES 2022 include:

- A data collection vehicle equipped with multi-sensors, including vision cameras, lidar and infrared/thermal imaging to collect high-quality data for autonomous driving, using sensor fusion technology to process the data and increase accuracy.

- AI Data service platform "MyCrowd," which builds high quality datasets for AI training. My Crowd guarantees high speed and accuracy by applying AI technology to data processes, providing one-stop services for 2D/3D data mapping, personal information anon-ymization, 3D annotation, and data quality verification.

- Data anonymization service "Wellid," which processes visual data so it cannot be recognized. Sensitive personal information such as faces and number plates can be anonymized, crucial to comply with global privacy regulations such as GDPR, the AI Act, CCPA, and CPRA.

- Self-checkout solution and CES 2022 Innovation Award winner AI Counter, which scans products without barcodes or consistent shapes (such as bread, fruits and vegetables) and even completes calculations through its own app. AI

Counter is optimized for retail services and is attracting attention from global retail companies for its possibilities, in-cluding 24-hour stores, unmanned stores and self-checkout counters. AI Counter was named a CES 2022 Innovation Awards Honoree in both the Software & Mobile Apps and Smart Cities categories.

- AI store "Mealy," a retail concept that can be operated unmanned, 24/7, using vision AI technology. This interactive concept allowed CES 2022 attendees to walk through a real store with groceries while AI Counter tallied up their purchases and an abnormal behav-ior detection system monitored the behavior of shoppers.

LILEE Systems autonomous vehicle and fleet management software

LILEE Systems showcased its new autonomous vehicle and fleet management software at CES 2022.

The complete solution includes an ADA-compliant shuttle, LILEE's self-driving system, and a cloud-based platform enabled by LILEE SafeRide for remote monitoring and management.

Headquartered in Silicon Valley, LILEE Systems is the trusted partner of North American Class I railroads for Positive Train Control (PTC) implementations. With the same safety-first principle learned from the railroads, LILEE's autonomous vehicles operate fixed route and on-demand services that are monitored and controlled by LILEE SafeRide from the operations control center (OCC) for greater operational awareness, efficiency and safety.

Asensing Technology exhibits navigation system P-BOX

Asensing Technology Co., Ltd displayed its mass-produced high-performance integrated navigation system P-BOX, a unit that fully meets functional safety requirements. The system is mainly designed for autonomous driving above the L2 level, especially in passenger cars, and can be applied in multiple scenarios, including highway pilot (HWP) and automated valet parking (AVP).

Asensing Technology launched their high-precision integrated positioning system P-BOX that can truly meet the automotive functional safety requirements of ASIL-B after many years of experience in potential fault and positioning error analysis of mass-produced parts. The system has been incorporated into over 150,000 mass-produced L2+ autonomous driving vehicles across many models. To date, accumulated safe driving mileage has exceeded 10 million kilometers.

Asensing Technology's P-BOX is a high-performance integrated positioning system based on the integration of satellite navigation information (supporting RTK) and vehicle data (wheel speed, gear position, etc.) to meet the requirements of vehicle design and mass production. The system can accurately provide information including altitude, heading, position, speed, and time synchronization to the DCU (domain control unit) through the data bus in various scenarios, in-cluding driving along a highway, on a city street or through a tunnel, or navigating a complex on- or off-ramp, an underground parking garage. In addition, the layout of the error proofing hardware interface facilitates production, scientific research and debugging.

Qualcomm- Snapdragon Digital Chassis

The Snapdragon Digital Chassis is a set of cloud-connected platforms for telematics and connectivity, the digital cockpit, and driver assistance and autonomy — it's what automakers need to create the vehicles of the future. As vehicles trend toward electrification and increased use of technology in their digital architecture, the future of transportation becomes clear — it is going to be connected and increasingly autonomous. Connected to the cloud nearly 100 percent of the time and continually sensing and processing information from their surroundings, the modern vehicle is becoming more immersive and entertaining, as well as safer and more convenient.

Qualcomm's Snapdragon is also enabling other companies building automotive infotainment centers to innovate. At CES, the company announced a partnership with Alps Alpine to develop a "Digital Cabin," which is powered by the Snapdragon cockpit. The cabin includes technologies such as an e-mirror that helps ameliorate blind spots by providing a peripheral view, a large ceiling display and sound zones that project noise individually to each passenger.

Fuel
Tracking

Decrease fuel thefts
by up to

90%

Reduce fuel
costs by up to

15%

Discover where your fuel goes

Optimize fleet
efficiency by up to

30%

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.

Bluetooth 4.0

www.callcomm.org

Callcomm
TRACK | ANALYZE | OPTIMIZE

9700022206, 9989094607

Udelv unveils autonomous Transporter

Udelv unveiled the first cab-less autonomous electric delivery vehicle for multi-stop delivery, the Transporter, driven by Mobileye, at the CES.

The multi-stop electric delivery vehicle features a proprietary, self-contained, hot swappable modular cargo pod called the uPod. It can carry up to 2,000 pounds of goods, make up to 80 stops per cycle at highway speeds, cover ranges between 160 and 300 miles per run depending on the battery pack option and be operated by Udelv's mobile apps to seamlessly schedule, deliver, track and retrieve packages.

Udelv's third-generation vehicle is the result of years of experimentation, client testing and hardcore mechanical, electrical and software engineering. In 2018, Udelv made its debut in California with the first-ever autonomous delivery on public roads. Since then, Udelv has completed over 20,000 deliveries for multiple merchants in California, Arizona and Texas. Udelv aims at having 50,000 units of the Transporter, driven by Mobileye, on public roads by 2028, with the first Transporters being commercially deployed in 2023.

Laury highlighted the Transporter's main characteristics:

- The Transporter features a patented secure, automated, hot-swappable and modular cargo space specifically designed for autonomous delivery, the uPod, with adaptive shelving and an IRIS aperture mechanism.
- The uPod can carry up to 2,000 lbs. of cargo and make up to 80 stops per run.
- The uPod is connected to a proprietary cloud-based software with intelligent loading and unloading, as well as a function to return items.
- It can deliver nearly anything from convenience goods, e-commerce packages and groceries to auto parts, electronics, and medical supplies for B2B and B2C applications.
- The Transporter is driven by the Mobileye Drive™ self-driving system with a robust suite of cameras, LiDARs, radars and the fifth generation of EyeQ®, Mobileye's System-on-Chip for automotive applications. To rapidly deploy at scale, the Transporter will integrate Mobileye's AV maps based on Road Experience Management (REM™), a crowdsourced, continuously updated map of the world that digitizes what autonomous vehicles need to navigate.
- The vehicle features Udelv's 24/7 proprietary ultra-low latency camera-based teleoperation system for remote maneuvers and assistance and Udelv's proprietary uECU (Electronic Control Unit) acting as the vehicle's central compute unit to integrate and optimize all functions.
- Battery capacity is between 90 and 160 kWh with a 160-300mile range.
- DC fast charging will take 45 minutes to add up to 220 miles of range.
- Top speed is 70 mph.
- The fleet of Transporters is operated by a proprietary Fleet Intelligence and Management System for route optimization and fleet planning algorithms.
- The Transporter is designed to maximize delivery efficiency and customer satisfaction while minimizing the total cost of operation.

The company has already garnered more than 1,000 reservations, including from US-based Donlen and Europe-based Planzer and Ziegler Group. The company was also awarded a prestigious contract from the US Air Force for a pilot program on Edwards Air Force Base in California.

The autonomous Udelv Transporter's uPod can carry up to 2,000 lbs. of cargo and make up to 80 stops per run.

John Deere Autonomous Tractor

John Deere revealed a fully autonomous tractor that's ready for large-scale production. The machine combines Deere's 8R tractor, TruSet-enabled chisel plow, GPS guidance system, and new advanced technologies. The autonomous tractor will be available to farmers later this year.

The autonomous tractor serves a specific purpose: feeding the world. The global population is expected to grow from about 8 billion to nearly 10 billion people by 2050, increasing the global food demand by 50 percent. Furthermore, farmers must feed this growing population with less available land and skilled labor, and work through the variables inherent in farming like changing weather conditions and climate, variations in soil quality and the presence of weeds and pests. All of these factors impact a farmer's ability to farm during the most critical times of the year.

- The autonomous tractor has six pairs of stereo cameras, which enables 360-degree obstacle detection and the calculation of distance.

- Images captured by the cameras are passed through a deep neural network that classifies each pixel in approximately 100 milliseconds and determines if the machine continues to move or stops, depending on if an obstacle is detected.

- The autonomous tractor is also continuously checking its position

relative to a geofence, ensuring it is operating where it is supposed to, and is within less than an inch of accuracy.

To use the autonomous tractor, farmers only need to transport the machine to a field and configure it for autonomous operation. Using John Deere Operations Center Mobile, they can swipe from left to right to start the machine. While the machine is working the farmer can leave the field to focus on other tasks, while monitoring the machine's status from their mobile device.

John Deere Operations Center Mobile provides access to live video, images, data and metrics, and allows a farmer to adjust speed, depth and more. In the event of any job quality anomalies or machine health issues, farmers will be notified remotely and can make adjustments to optimize the performance of the machine.

Mobileye EyeQ6L

Intel demonstrated advancements and momentum with Mobileye, progress toward discrete graphics leadership and the launch of the newest members of the 12th Gen Intel® Core™ family. With these milestones, Intel furthers its commitment to enable the industry and its customers and partners to harness the technology superpowers – ubiquitous computing, cloud-to-edge infrastructure, pervasive connectivity and artificial intelligence – at the heart of the digital transformation.

Mobileye introduces the next-generation EyeQ system-on-chip for advanced driver-assistance systems. Unveiled at CES 2022, the EyeQ6L will be the successor to the EyeQ4 SoC in a package that is just 55 percent the size of the EyeQ4.

Mobileye Shows Progress on Multiple Fronts

Mobileye announced a new system-on-chip (SoC) that is purpose-built for autonomous vehicles (AVs). Built on Mobileye's industry-leading EyeQ® technology, EyeQ® Ultra does the work of 10 EyeQ5 SoCs in a single package and was designed to deliver the optimum power performance of a fully self-driving vehicle.

Mobileye also announced two firsts with Geely's Zeekr brand – a level 4 consumer AV expected to begin production in 2023 and the launch and shipment to customers of the industry's first fully capable level 2+ vehicle equipped with a 360-degree surround view sensing system and driving policy for the industry's most advanced longitudinal and lateral control in the market today.

Performance Hybrid Architecture Advances World's Fastest Mobile Processor

Intel announced the 12th Gen Intel Core H-series processors – setting the standard as the highest performance laptop processors

on the planet. Built on the Intel 7 process node with Intel's first-ever performance hybrid design, the H-series, led by the flagship Intel Core i9-12900HK, delivers up to 40% higher performance2 for unparalleled gaming experiences and up to 28% faster game play3 than the previous mobile gaming leader in the market, the i9-11980HK.

Intel showcased more than 20 new devices powered by the 12th Gen Intel Core H-series, with more than 100 devices in total expected to launch with partners including Acer, Asus, Dell, HP, Lenovo, MSI and Razer. In addition, Intel unveiled a new ultraportable mobile processor – the P-series product line – to bring enthusiast levels of performance to thin-and-light laptops.

Arc Set to Transform the Discrete Graphics Industry

Intel marked a new era in the discrete graphics market by announcing shipment of Intel® Arc™ graphics (code-named "Alchemist") to original equipment manufacturer customers. Intel Arc graphics is the brand for Intel's upcoming consumer high-performance graphics product. It delivers new choice to the industry, including many all-Intel discrete graphics platforms.

Intel Arc graphics will offer industry-leading advanced features such as hardware-accelerated Ray Tracing, Xe Super Sampling (XeSS) AI-driven upscaling technology and Intel® Deep Link technology.

Intel announced ISV partner momentum with its XeSS AI-driven upscaling technology, which is currently being integrated into many game titles across a range of publishers, including exclusive integration into Kojima Production's Death Stranding Director's Cut, which also includes core optimizations for 12th Gen Intel Core processors.

Intel Deep Link technology harnesses the full power of the platform to further accelerate a range of key workloads when matched with a compatible Intel Core processor.

Toposens launched ECHO ONE DK, Ultrasonic Echolocation Sensor for 3D Collision Avoidance

Toposens GmbH released its new Ultrasonic Echolocation Sensor for 3D Collision Avoidance.

The industrial-grade sensor development kit, called ECHO ONE DK, is the next level development based on the company's proven 3D ultrasonic technology, which mimics a bat's echolocation techniques.

Toposens' ECHO ONE DK uses echolocation to generate robust, real-time 3D echolocation data to guide autonomous systems across a variety of applications. The performance of this 3D ultrasonic sensor is particularly robust in harsh environments (featuring the IP67 protection rating), as it is dirt tolerant and not affected by dust, smoke, and mist.

The ECHO ONE DK features 3D multi-object detection of complex and transparent objects in an ultra-short operating range from 20cm up to 3m. It offers an ultra-wide Field-of-View of up to 180° in ultra-short range and up to 110° at 3m. Its low power consumption of 2.2 W supports a longer robot uptime, and it is fully certified according to CE, FCC and IP67 regulations. For easy integration, this DK comes with a CAN and USB interface and the following software packages: Toposens Sensor Library (C++-Library), ROS Implementation Package, Cross-Platform Toposens 3D Visualizer.
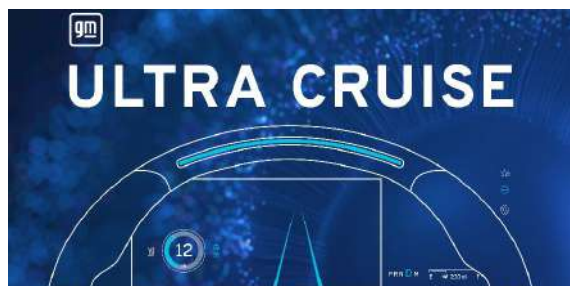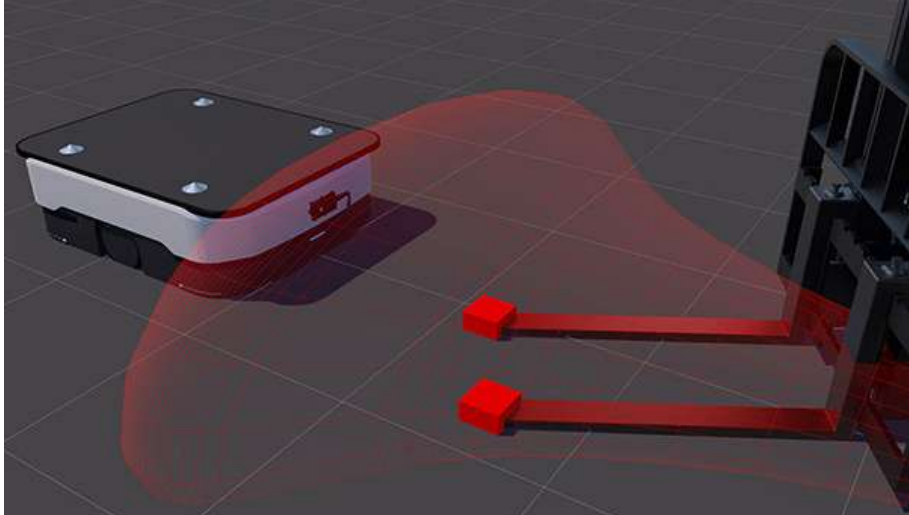
GM announces Ultra Cruise, enabling true hands-free driving across 95% of driving scenarios

General Motors unveiled Ultra Cruise, an all-new, advanced driver-assistance technology and significant next step in the company's journey to enable its goal of zero crashes, zero emissions, and zero congestion. Designed to ultimately enable hands-free driving in 95 percent of all driving scenarios, Ultra Cruise eventually can be used on every paved road in the U.S. and Canada.

Ultra Cruise will cover more than 2 million miles of roads at launch in the United States and Canada, with the capacity to grow up to more than 3.4 million miles. Customers will be able to travel truly hands-free with Ultra Cruise across nearly every road including city streets, subdivision streets, and paved rural roads, in addition to highways.

Ultra Cruise is powered by a 5-nanometer, scalable compute architecture future-proofed through the Ultifi software platform and Vehicle Intelligence Platform. Ultra Cruise can add features, functions, and services over time through frequent over-the-air updates.

Brigade Electronics launches vehicle turning indicator alarm to alert vulnerable road users

Brigade Electronics has launched a new indicator warning alarm to alert vulnerable road users when a vehicle is turning. The bbs-TI, which is installed on the nearside of the vehicle, will synchronize an audible warning alarm with the indicator lights when activated, alerting vulnerable road users to a vehicle's intention to turn.

The new vehicle safety system will harness Brigade's existing White Sound® broadband technology, which will enable vulnerable road users to instantly locate which direction the sound is coming from. Gentler on the ear compared to traditional tonal alarms, White Sound® dissipates quickly and can only be heard in the danger zone, helping to reduce unnecessary noise disturbances.

bbs-TI's features include:
- Visual and audible vehicle turning warning to alert vulnerable road users
- Suitable for use in multiple countries – no language barrier
- Optional muting of the alarm for night-time hours
- Option to activate the alarm below a designated speed only
- Synchronizes bbs White Sound® technology with the vehicle's indicator flash
- Suitable for left turn or right turn installations
- Complies with regulations and legislations that require an 'audible vehicle maneuvering warning for vulnerable road users' when a vehicle is turning

ADAS.ai

In June 2021, 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.

Real-to-Real transformation: reduces the cost and time of ADAS system validation. Rapidly tests thousands of real world L2+ scenarios for a defined sensor set prior to vehicle launch. **Source:** ZF

Full L2+ scenarios based on real-world-driving

ADAS.ai is cloud-based and is designed to provide significant cost and quality advantages compared to traditional engineering and validation based on physical test drives and existing simulation technology. Full L2+ scenarios based on real-world-driving derived data are injected at multiple points in the engineering and validation phases, either in "virtual" or "full sensor" modes providing dramatic acceleration and efficiency of the engineering and validation processes.

ZF and Cognata bring real and virtual world together

ZF's ADAS.ai integrates exclusive algorithms from Cognata, a leader in application of AI to AD and ADAS. "Cognata's AI enables ZF's validation suite to transfer real driving data to all existing and new vehicles with ADAS technology up to Level 2+ and validate it in the virtual space. We call this real-to-real transformation," explains Danny Atsmon, CEO of Cognata.

As the world largest manufacturer of front cameras, ZF has vast experience in ADAS hardware and software technology, OEM-specific validation, and developing the necessary documentation to comply with international regulations. This experience and competence combined with full backend capability and advanced AI creates an efficient and fast process which will change the way ADAS systems are brought to market.

Driver sentiment on ADAS

In August 2021, CCC Intelligent Solutions Inc. announces the release of its 2021 Crash Course Midyear Report. This edition of Crash Course examines how permanent changes to consumer expectations and the desire for personalized experiences continue to accelerate the deployment of AI, IoT, and mobile technology in the auto claim and repair process. The report also explores changing driving behavior and features research on consumer attitudes towards Advanced Driver Assistance Systems (ADAS) technology in newer vehicles.

Data in Crash Course suggests a shift back to personal vehicle ownership and away from a trend towards shared mobility over recent years with more than 35 percent of new vehicles sold between March 2020 and March 2021 purchased by first-time vehicle buyers – a trend that also points to an increase in first-time auto insurance customers. Crash Course also reports that when accidents occur, the percent of appraisals generated via photo estimating and advanced AI continues to grow, continuing its rise since the start of the pandemic. The report also looks at miles driven, road congestion, claims frequency, and repair costs.

Original research from CCC on ADAS technology is also included in the report and reveals consumers have a positive if the complicated relationship with the technology. The research found more than 84 percent of drivers believe ADAS features promote safe driving. Despite this belief, more than 54 percent of those who own a vehicle with ADAS believe that certain features can increase the chance of an accident and 70 percent have actually turned ADAS features off.

The 2021 Crash Course Midyear Report draws from various sources, including data processed by CCC on behalf of customers, which includes 30,000 companies spanning auto manufacturers, insurers, repair facilities, parts suppliers and auto lenders interacting with CCC's platform.

HEADLINES RECAP

- Hammerhead 3D vision platform for autonomous vehicle
- Brigade Electronics launches vehicle turning indicator alarm to alert vulnerable road users
- asTech acquires adasThink
- Hunter introduces ADASLink diagnostic scan tool
- GM announces Ultra Cruise, enabling true hands-free driving across 95% of driving scenarios
- DreamDrive: Lucid's proprietary advanced driver assistance platform that's user-friendly and future-ready
- Brigade Electronics launches new predictive collision detection system

Mercedes me Eco Coach app

On 12 January 2021, Mercedes launched Eco Coach app, a new entry to the Mercedes 'me ecosystem' which was debuted last August 2020. The Eco Coach app has been specially developed to help customers a take advantage of their electrified cars.

By following the suggestions of the app, customers can improve their driving style coming to fully use all the potential of electric traction. In addition, through a points program, they can earn exclusive rewards and services. The app puts available to people for "challenges". For example, covering the highest possible percentage of a trip using electric traction, recharging in different places, recharging several consecutive days and obtaining the lowest possible fuel consumption.

Mercedes me Eco Coach: A personal trainer for eco-friendly driving

By completing each challenge, you get points. The app also allows users to enter into competition with the Eco Coach community. The points earned can then be redeemed for rewards as part of an integrated bonus program. At launch in Germany, top-up vouchers for the Mercedes me Charge service and vouchers for the Mercedes Collection stores are available.

Furthermore, following the suggestions of the app you will be able to drive more efficiently, to the benefit of the environment. As mentioned, the app was initially launched in Germany for Apple and Android platforms. Mercedes says it will soon be available in many other European countries as well.

IGM Maps+

In April 2021, General Motors launched Maps+, an in-vehicle, app-based navigation system, upgrading capabilities for select model year 2018 and newer Chevrolet, Buick, GMC, and Cadillac vehicles by the end of 2021. Maps+, powered by Mapbox, is expected to begin its rollout to approximately 900,000 vehicles on April 30, as part of select Connected Services plans.

MAPS+ FEATURES INCLUDE:

Cross-App Integration

- Voice command activation for new destinations and directions with Alexa Built-In
- One simple interface for vehicle navigation and music and podcast selection

Personalization

- Management of favourite locations and points of interest
- Predictive keyboard entry when searching for locations
- Modern map designs with day and night modes
- Shortcuts for search categories, such as coffee, food, fuel, parking, recent spots, and favorites

Contextually Relevant Services

- Routing based on real-time traffic and daily updating map data
- Speed limit and road hazard alerts
- Routing to nearby stations if vehicle is low on fuel
- Notifications and alerts about faster routes

Maps+ will be available on select vehicles through Connected Vehicle, Premium, and App Access subscription plans.

Driver monitoring system ASIC, image signal processor and DDR3 memory

In January 2021, OmniVision Technologies, Inc. announced the OAX8000 AI-enabled, automotive application-specific integrated circuit (ASIC), which is optimized for entry-level, stand-alone driver monitoring systems (DMS). The OAX8000 uses a stacked-die architecture to provide the industry's only DMS processor with on-chip DDR3 SDRAM memory (1GB). This is also the only dedicated DMS processor to integrate a neural processing unit (NPU) and image signal processor (ISP), which provides dedicated processing speeds up to 1.1 trillion operations per second for eye gaze and eye tracking algorithms. These fast processing speeds with 1K MAC of convolutional neural network (CNN) acceleration, along with integrated SDRAM, enable the lowest power consumption available for DMS systems—the OAX8000 and OmniVision automotive image sensor consume just 1 watt in typical conditions, combined. Further optimizing DMS systems, this integration also reduces the board area for the engine control unit (ECU).

The OAX8000's on-chip NPU is supported by the popular TensorFlow, Caffe, MXNet and ONNX tool chains. Additionally, this ASIC embeds quad Arm® Cortex® A5 CPU cores with Neon™ technology for accelerated video encoding/decoding and on-chip video analytics algorithms, along with hardware for image processing, video encoding and RGB/IR processing. Its high dynamic range (HDR) processing capability allows the ASIC to accept input from RBG/IR image sensors and support high quality output, for videos taken during the day or at night, in conditions with widely contrasting bright and dark images. The integrated video encoder accepts up to 5 megapixel captures from OmniVision's automotive image sensors, and outputs up to 2K resolution video at 30 frames per second (fps).

Boot-up time for the OAX8000 is significantly faster than its nearest competitor. This rapid startup eliminates any delay between ignition and activation of the DMS camera. Additionally, it supports secure boot features to provide cybersecurity.

Video telematics for driver behaviour monitoring

On 10 May 2021, MiX Telematics launched MiX Vision AI – an extensive update to their video telematics offering. With this new solution, MiX Telematics further enhances its ability to help customers around the world improve driver safety and reduce operating costs.

MiX Vision AI leverages machine vision technology to detect and alert drivers and managers to unsafe or risky driving behavior that impacts road safety. Driver monitoring events include fatigue, phone use, distraction, smoking and seat-belt use, while passive ADAS events include forward collision and lane departure warnings. In-cab, audible alerts warn drivers in real-time so that immediate corrective action can be taken, while video footage is made available to managers via MiX's extensive online software and mobile apps for driver coaching.

Integrated tyre and fleet management solutions

In June 2021, ZF announced that it has entered a long-term agreement with Goodyear bringing together ZF's advanced Transics-branded, Fleet Management Solutions (FMS) and Goodyear's high performing tyre portfolio and mobility solutions. Initially, ZF and Goodyear will offer European commercial vehicle fleets an integrated suite of fleet and tyre management applications supporting mixed and multi-brand fleets. Through an interoperable and flexible solution, based on a single telematics box, TX-TRAILERPULSETM, fleets can access the services and support of both companies, including Goodyear tyre data and full access to ZF's Transics FMS solutions, TX-TRAILERFITTM and TX-CONNECTTM.

To provide fleets with an integrated Fleet and Tyre Management Solution, ZF and Goodyear will leverage real-time data generated from all makes of Trailer Braking Systems (T-EBS) and tyre sensors. This will equip fleet operators and drivers with a wide range of actionable insights and smart functions. These are designed to optimize vehicle park usage while also helping to avoid road accidents and mitigate unscheduled vehicle downtime. Addressing market demand for more open and seamlessly integrated FMS, the collaboration will provide fleets with the combined benefits of both ZF's fleet management services and Goodyear's high performing commercial vehicle tyre portfolio.

With a clear focus on vehicle safety, the interoperable solution will enable fleets and trailer builders to comply with the EU General Safety Regulation mandated advanced safety functions which, come into effect from July 2022. Providing advanced tyre and trailer operating health insights, as well as enhanced driver safety monitoring, the collaboration will also help significantly reduce the 200,000 roadside incidents reported each year in the EU.

Supporting greener mobility, the rich, real-time data obtained from the trailer's onboard systems and tyres, will enable fleets to optimize vehicle usage, reduce fuel consumption and lower emissions. The partners estimate that the collaboration could realize an emissions reduction of up to 2 tons of CO_2 per connected trailer.

In addition to customers being free to select either company as their supplier, the modular and extendable total mobility offer means they only need to buy the functionalities required and can upgrade, if additional services are required later. Simplifying the implementation of operational management systems for fleets, it will provide a rich, integrated data set without the complexity of operating multi-vendor systems as well as significantly reducing installation times. Supporting this comprehensive range of services, ZF and Goodyear will offer strong pan-European support for fleets.

Mode optimization to reimagine sustainable shipping

In April 2021, Loadsmart launched a new mode optimization capability that gives multiple instantly bookable rates for a single full truckload (FTL) shipment. Backed by data and analytics, the update provides the required information for shippers to select the most cost-effective and environmentally sustainable modes for FTL shipments.

The new offering is a major step in reimagining the dynamics between shipper and broker to enhance logistics execution. Loadsmart's feature identify which shipments are best suited for rail and which rail routes are flexible enough to permit shipments to reach the ultimate destination.

Loadmart's algorithms recognized 30% of all FTL shipments qualified as suitable for rail. Rather than having to seek multiple quotes for FTL and rail options, Loadsmart saves time by providing the data and intelligence necessary to instantly compare options and make the best decision with no additional rate discovery. This has the potential to reduce both costs and carbon emissions as one intermodal train is capable of hauling approximately 280 truckloads of freight.

- AEV introduces Traumahawk Telematics
- Konexial announces GoFind™ advanced trailer tracking service
- OverDryve Pro II with 7-inch screen released
- Farnek launches in-house smart fleet management solution
- CalAmp launches fleet management solution
- Teletrac Navman announces AI Dual Dashboard Camera
- MiX Telematics launches MyMiX Tracking app
- Spireon FL360, vehicle tracking device with optional dashcam
- Iteris unveils software-enabled managed service for smart mobility infrastructures
- Klas unveils TRX D8, a new data-logging hardware
- AirBox introduces AirBox Smart Fleet Management
- Goodyear Sightline, a tire solution for fleets
- CalAmp's Tracker launches iOn™ fleet management software to accelerate the speed of smart decision-making for fleets
- Hub International launches Hub Drive Safe App
- Carnomaly- car buying and ownership powered by blockchain technology
- Smart Eye and OmniVision launch new in-cabin monitoring solution
- DPL Telematics launches AssetCommand Base, hardwired telematics for affordable vehicle tracking and driver ID logging
- Rafay introduces Kubernetes fleet management automation
- Carbar launches intelligent car health app with RACV's Intelematics
- Loadsmart launches Data Insights for logistics and fleet operations
- Evergrande Auto launches automated valet parking system
- Fleet Complete launches Vision 2.0, dash cam & video telematics solution

Trailer Brake Performance Monitoring

In April 2021, Microlise has launched Trailer Brake Performance Monitoring capabilities. Microlise Trailer Brake Performance Monitoring will help fleet operators reduce Vehicle Off Road (VOR) time and improve ROI by reducing the cost of quarterly brake testing.

The solution connects directly to a trailer's electronic braking system (EBS) and relays valuable information on status and performance. A simple scale of red, amber, or green is displayed in the Microlise portal, providing operators with visibility of brake performance across the trailer fleet.

The product meets Driver and Vehicle Standards Agency (DVSA) industry-standard specification. In addition, the solution is also offering capabilities such as temperature monitoring, along with load-facing cameras to enhance load safety and security.

Gen4 Snapdragon Automotive Cockpit Platform

On 30 January 2021, Qualcomm Technologies, Inc. introduced its digital cockpit solutions with the 4th Generation Qualcomm® Snapdragon™ Automotive Cockpit Platforms. The latest version of the platform bundles advanced computing, machine learning, computer vision, and a suite of sensors into a chip no bigger than a silver dollar.

Utilizing 5nm processing technology, the new digital cockpit platforms provide automakers with the one of the highest performance system-on-chip, allowing the end-consumer to have the latest features and capabilities through over-the-air updates post-deployment and throughout the lifecycle of the vehicle.

The platform supports a variety of technologies, including the typical alphabet soup of acronyms: The Blackberry QNX real-time OS, Linux, and C-V2X technology, the latest iteration of a long-running dream in the connected car world.

Qualcomm said the platform will begin production in 2022. The broad automotive ecosystem can evaluate, demonstrate and develop solutions with the 4th Generation Qualcomm® Snapdragon™ Automotive Development Platform (ADP), which is expected to be available in the second quarter of 2021 (Q2'21).

Leddar Sight solid-state flash LiDAR

On 27 April 2021, LeddarTech® launches Leddar™ Sight, a robust, cost-effective 2D solid-state LiDAR sensor. This LiDAR is housed in a weatherproof casing (IP67/IP69 rated) that resists dust ingress, immersion, and pressurized water streams. It uses flash illumination to deliver continuous, accurate detection and range of objects and obstacles in its entire field of view, without any moving parts. Leddar Sight has been developed to answer the stringent needs of mobility, ITS, and industrial system developers for reliable, durable LiDAR sensing within the most challenging environments.

The Leddar Sight 2D flash LiDAR provides precise detection and measurement capabilities for indoor applications like industrial automation and various outdoor applications like autonomous navigation, obstacle detection, collision avoidance, precision maneuvering, speed enforcement, and automated tolling. With its robust enclosure, M12 connector, and various FoV options, the sensor can be rapidly integrated into prototypes and used to collect field data for software development.

The Leddar Sight is a LiDAR solution for shuttles, robotaxis, ADVs, commercial trucks, buses, industrial vehicles, mobile robotics, and intelligent transportation systems.

Leddar Sight 2D Solid-State LiDAR Key Features

- 100% solid-state
- 400,000 hours MTBF, up to 26X longer than mechanical LiDARs
- Meets stringent shock and vibration standards
- IP67/IP69 rated, impact-resistant enclosure
- High EMC standards
- Wide operating temperature range

Radar sensors for 360-degree coverage with a longer range

In April 2021, Continental announced that it will showcase its sixth generation of long-range radar and surround radar sensors at Auto Shanghai.

The company says it has already launched more than 100 million radar sensors in the market worldwide and the development continues. The production of the new range of radar sensors is scheduled in 2023. Both radar sensors share a software and hardware platform. The radars cover a range of applications: from Euro NCAP requirements in an entry-level variant to the implementation of functions for higher levels of automation, such as automated lane change, in a premium variant. The sensors can also be used to cover the requirements of the General Safety Regulation (GSR). Moreover, the radars also support a range of vehicle architectures and types through their availability as smart radar, with data processing in the sensor and as satellite radar, with the processing of data in a central control unit.

Additionally, the development of long-range radar with a range of around 250 meters, the designs also focus on 360 degrees environmental detection. With a range of around 200 meters, these future surround radars have a significantly greater range than previous short-range radars, thereby laying the foundations for excellent results in future NCAP assessments of assistance systems.

Long-range radar and surround radar share a software and hardware platform..
Source: Continental

Vella Development Kit for autonomous solutions

In July 2021, Velodyne Lidar, Inc. announced a new software development kit that allows customers to utilize the advanced capabilities of Velodyne's Vella lidar perception software in their autonomous solutions. The Vella Development Kit (VDK) enables companies to accelerate time to market for bringing cutting-edge lidar capabilities to autonomous vehicles, advanced driver assistance systems (ADAS), mobile delivery devices, industrial robotics, drones and more.

VDK helps companies use their development resources more efficiently by reducing the time and effort required to integrate 3D lidar sensors into applications. The Vella processing features included in VDK translate raw point cloud data into richer, more descriptive information in real time. These higher-level perception outputs, such as object classification, velocity measurement, semantic scene segmentation and obstacle detection, can be directly used by autonomous system developers without deep knowledge or expertise in lidar processing.

Backed by machine learning algorithms trained on the massive datasets built by Velodyne, Vella's perception capabilities enable autonomous mobility today in a wide range of operational design domains, such as urban roadways, highways, sidewalks and warehouses. VDK was developed with input from automakers, application developers and the Automated with Velodyne ecosystem.

VDK is designed to leverage the unique, powerful capabilities of Velodyne's latest solid state Velarray H800 and Velarray M1600 lidar sensors, with support for additional sensors being added with each release. Customers with an active maintenance subscription will gain access to every future release of VDK, which will continue to be updated with the latest hardware support and processing features that Vella has to offer.

Velodyne plans to expand the Vella Development Kit offering in the near future with two additional versions. VDK Lite will offer a smaller set of the most essential processing features at a lower price point. VDK Enterprise will provide a full range of design customization, new feature development and support services for the most demanding customer applications.

The Vella Development Kit currently includes one year of support and software updates. There is also the option of ongoing maintenance, with access to additional software releases and services.

Next-generation Velabit Sensor

On 14 June 2021, Velodyne Lidar, Inc. introduced the next generation of its Velabit™ sensor, which addresses the cost, safety, and design challenges of autonomous solutions while delivering state-of-the-art performance. Equipped with Velodyne's breakthrough proprietary micro-lidar array architecture (MLA), the Velabit delivers on what Velodyne customers asked for – an ultra-wide field of view (FoV) and higher resolution.

The solid-state Velabit sensor now has a simultaneously achievable maximum horizontal FoV of 90° and maximum vertical FOV of 70°, approximately three times more points per second than the previous model. The next generation Velabit takes all of Velodyne's learnings to offer a configurable and dynamic field of view and delivers a high-resolution zoom capability, all within a compact and lightweight sensor.

Versatile Performance

This lightweight and versatile Velabit sensor features a small form factor and low power consumption to maximize battery life and vehicle range. The small size and low cost allow the sensor the unique ability to be utilized in multiple industries and for critical safety applications, such as:

- Automotive and new mobility
- Autonomous mobile robots
- Industrial forklift and warehouse
- Infrastructure and smart city
- Sidewalk and last-mile delivery
- UAV mapping and navigation

Engineered to be an optimal automotive-grade lidar solution for Advanced Driver Assistance Systems (ADAS) and autonomous vehicles, Velabit can fill sensing gaps, helping automakers achieve full coverage around a vehicle. The sensor enables robust perception coverage for ADAS features including Blind-Spot Monitoring, Cross-Traffic Detection, and Pedestrian Automatic Emergency Braking (PAEB). Additionally, the wide vertical field of view makes this an ideal technology for near-field sensing and robotics applications.

Software + Hardware Integration

Velabit will be combined with Velodyne's lidar-based perception software, Vella™, to streamline customers' projects and advance a broad spectrum of vehicle safety functions. The software translates Velabit's high-quality point cloud data into valuable perception outputs, including object classification and tracking, obstacle detection, scene segmentation, and object velocity, that can be readily utilized by vehicle systems. When combined with vehicle odometry data, Vella provides time and distance to collision measurements, enabling safer vehicle response.

The sensor can also be combined with other Velodyne lidar technologies, such as the Velarray H800™, for high-speed operation or function as a standalone lidar solution in low-speed applications.

Designed for Mass Production

In combination with MLA, Velodyne's fully automated manufacturing process and global manufacturing partnerships enable cost optimization and high-quality mass production, as early as Q4 2022.

Since its launch, Velabit has received widespread industry acclaim, including being named a winner in the 2020 Best of What's New awards by Popular Science. The sensor also was named the winner of the 2020 Innovation Award by Silicon Valley Robotics.

Key Velodyne customers and other top global innovators in automotive and robotics technology are scheduled to attend Velodyne's upcoming Velabit Demo Days to witness the Velabit in action, and will have an opportunity to reserve future capacity.

Source: Velodyne Lidar

HEADLINES

- **ON Semiconductor launches world's first automotive qualified SiPM array product for LiDAR applications**
- **Sense Photonics demonstrates the 940nm global Shutter Flash LiDAR**
- **LeddarTech launches PixSet, full-waveform flash LiDAR dataset**
- **RoboSense launches automotive-grade solid-state LiDAR production line**
- **Velodyne demonstrates LiDAR technology for improving pedestrian safety**
- **The Antenna Company launches ultra-wideband (UWB) antennas**
- **LightWare gives machines EYES with the world's smallest scanning microLiDAR™**
- **ZF launches mid-range radar enhancing AD and advanced safety**
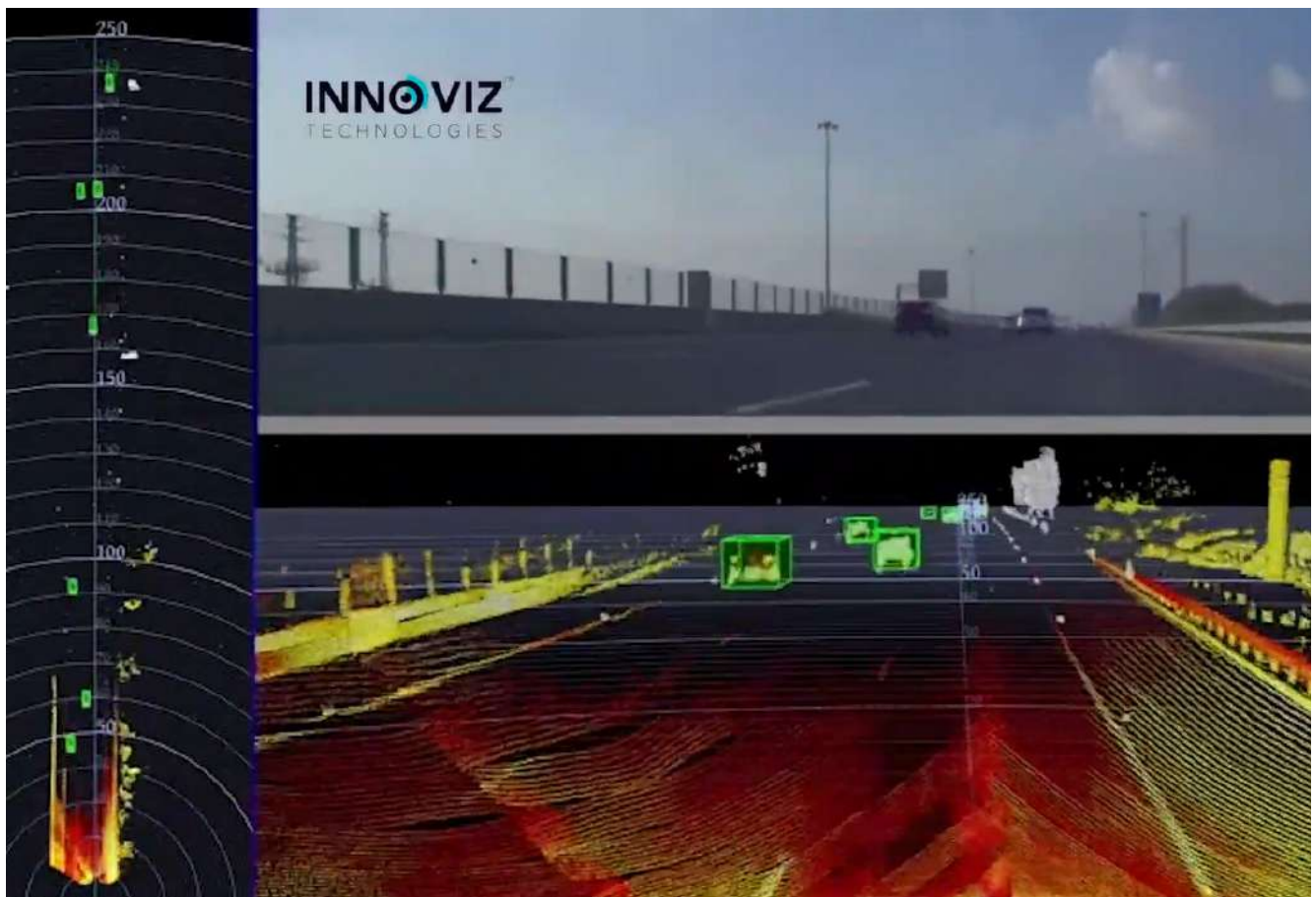
Based on Innoviz's advanced Perception Software, InnovizAPP enables a safe autonomous driving experience as it identifies, detects and classifies objects. *Source:* Continental

InnovizAPP

In March 2021, Innoviz Technologies, Ltd. has released its Automotive Perception Platform – InnovizAPP for the automotive industry. InnovizAPP is a perception platform, which includes automotive-grade hardware and software that enable autonomous vehicles to identify and classify objects.

InnovizAPP is based on Innoviz's advanced Perception Software, which leverages the rich data derived from Innoviz's LiDAR sensors, coupled with proprietary AI algorithms, to analyze the point cloud and estimate an object's speed with high precision. The software can accurately detect and classify objects in any 3D driving scene up to 250 meters away, including cars, trucks, motorcycles, pedestrians, and more. It also executes perception algorithms in real time, detecting and classifying pixels as collision relevant or non-collision relevant.

The InnovizAPP hardware provides an automotive-grade reference design based on low-cost automotive-grade components. It connects to existing vehicle systems and enables real-time perception in a simple plug-and-play manner, allowing automakers to test and learn how to build their own autonomous driving systems.

HEADLINES

DISPLAY SYSTEMS
- Raythink's AR HUD system
- OmniVision Technologies announced the new OAX4000, an image signal processor

CONNECTED VEHICLE
- HAAS Alert builds out connected vehicle business unit
- EDPB issues guidelines on Connected Cars
- Apple's Project Titan: sophisticated V2V communications for autonomous vehicles
- Wejo launches Wejo Studio, for connected vehicle data

MISC
- Goodyear airless tire first on autonomous shuttles
- Lytx launches the Lytx Integration Network
- Paragon Software announces availability of Paragon File System SDK for embedded developers
- Anritsu launches new 5G RF Regulatory Test System ME7803NR
- Anritsu develops base station simulator for Korean eCall
- Volkswagen plans to use 3D printing process in vehicle production
- Evonik presents new photopolymers for industrial 3D printing

The introduction of ADAS applications, digital cockpits and connected in-vehicle infotainment has generated a need for more in-vehicle displays.
Source: MIPI Alliance

MIPI Alliance releases in-vehicle "display stack" interface specifications

In May 2021, the MIPI Alliance announced the completion of its MIPI Automotive SerDes Solutions (MASS) "display stack," a set of interface specifications designed to streamline display integration and support the growing bandwidth and functional safety demands required by the increasing number of high-performance displays used in next-generation vehicles.

The new specifications build upon MIPI A-PHY, the first industry-standard, high-performance, highly reliable, asymmetric SerDes interface, as well as industry-leading display protocols MIPI Display Serial Interface 2 (MIPI DSI-2) and VESA Embedded DisplayPort and DisplayPort (VESA eDP/DP), to create long-reach source-to-sink connectivity between automotive displays and their associated electronic control units (ECUs).

The new specifications that complete the display stack are:
● MIPI Protocol Adaptation Layers (PALs) for MIPI DSI-2 and VESA eDP/DP, to allow display components based on these protocols to map their video, audio and control data to A-PHY's A-Packet format for transmission over long-reach MIPI A-PHY networks
● MIPI Display Service Extensions (DSE) v1.0, providing functional safety enablers and support for High-Bandwidth Digital Content Protection (HDCP)
● MIPI Display Command Set (DCS) v1.5, an update to the standard command set for MIPI DSI-2

The completion of the display stack is a major step in the creation of the overarching MASS framework, which will provide a standardized, reliable, long-reach connectivity framework for automotive image sensor and display integration with built-in functional safety and security enablers. For displays, it supports point-to-point and daisy-chained topologies, as well as heterogeneous displays, and its use cases include lane-keep assist displays, "virtual" side-view mirror and backup camera displays, as well as co-pilot infotainment displays and others.

MIPI DSE v1.0 standardizes functional safety enablers within display solutions to help designs meet ISO 26262 requirements from ASIL B to ASIL D. These enablers include link failure detection, timeout monitoring, cyclic redundancy check (CRC) to detect data transmission failures, and a message counter for replay protection. HDCP is also enabled by DSE v1.0, and additional security features will be added through future DSE releases and upcoming MIPI security specifications.

NVIDIA acquires DeepMap

In June 2021, NVIDIA has agreed to acquire DeepMap, a startup dedicated to building high-definition maps for autonomous vehicles to navigate the world safely.

Maps that are accurate to within a few meters are good enough when providing turn-by-turn directions for humans. AVs, however, require much greater precision. They must operate with centimeter-level precision for accurate localization, the ability of an AV to locate itself in the world.

Proper localization also requires constantly updated maps. These maps must also reflect current road conditions, such as a work zone or a lane closure. These maps need to efficiently scale across AV fleets, with fast processing and minimal data storage. Finally, they must be able to function worldwide.

Experienced Mapmakers

DeepMap was founded five years ago by Wu and Mark Wheeler, veterans of Google, Apple and Baidu, among other companies. The U.S.-based company has developed a high-definition mapping solution that meets these requirements and has already been validated by the AV industry with a wide array of potential customers around the world.

The team, primarily located in the San Francisco Bay Area, has many decades of collective experience in mapping technology and developed a solution that considers autonomous vehicles both map creators and map consumers. Using crowdsourced data from vehicle sensors lets DeepMap build a high-definition map that's continuously updated as the car drives.

Ongoing Partner Support

NVIDIA will continue working with DeepMap's ecosystem to meet their needs, investing in new capabilities and services for new and existing partners.

NVIDIA DRIVE is a software-defined, end-to-end platform — from deep neural network training and validation in the data center to high-performance compute in the vehicle — that enables continuous improvement and deployment via over-the-air updates.

DeepMap's technology will bolster the mapping and localization capabilities available on NVIDIA DRIVE, ensuring autonomous vehicles always know precisely where they are and where they're going.

A DeepMap map in San Jose, Calif., depicting highly detailed features of the road and surrounding city block environment, including a reliable semantic layer of information with key attributes such as navigable boundaries, lane boundaries, crosswalks, traffic signs and traffic signals, explicit and implicit yield lines, and lane connectivity.

SINANODE, a new EV battery technology

In June 2021, OneD Battery Sciences announced SINANODE, a breakthrough technology to power the next generation of EV batteries. To build a battery with more silicon, a long time 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.

Over the last three years, leading graphite suppliers, cell makers, and EV makers in the U.S., Europe, and Asia, have tested SINANODE by applying the technology to commercial EV-grade graphite used in the anodes of EV batteries. Key findings and benefits include:

- **Increased Range and Battery Life** – SINANODE successfully fuses silicon nanowires to commercial graphite powders from multiple suppliers and tripled the anode specific capacity (Capacity > 1000 mAh/g, a measure of energy stored per unit weight). The SINANODE anode material can then be blended with graphite, to achieve high Initial Coulombic Efficiency (to > 92%, a key metric used in matching anodes and cathodes) and an higher anode specific capacity over more than 1000 full charge/discharge cycles than any state-of-the-art EV cells in production today.

- **Reduced Cost** – SINANODE was developed with commercial manufacturing CVD equipment available from multiple vendors, using only silane and nitrogen gases available in very large quantities at attractive costs. This reduces the investments and time necessary to scale up the SINANODE step to EV quantities, while decreasing the cost of EV anodes (measured in $ per kWh) by almost 50%, when compared to the cost of most competitive anodes used in EV batteries today.

- **Seamless Integration with Increased Performance** – SINANODE offers a fully differentiated, globally patented technology that can be deployed with multiple existing suppliers in multiple continents, to leverage their large investments and the supply chain strategies of the leading participants in the fast-evolving EV industry. Rather than trying to replace existing suppliers, adding SINANODE replaces inefficient steps in the current processing of silicon additives with a scalable technology that increases performance and decreases costs of the materials and cells used in EVs.

To deploy SINANODE, 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.

Panasonic introduces wireless charging for every vehicle

In January 2021, Panasonic Automotive Systems Company of America (Panasonic Automotive) announced two variants of in-vehicle wireless charging technology (moving coil and static coil.) Both of these variants will provide efficient in-vehicle charging that meet or exceed most current in-vehicle charging systems. The average American owns ten connected devices per household and many of those devices travel with us in the vehicle on short or long trips. As a result, the need for fast, efficient charging must also be readily accessible in a vehicle. With customers utilizing apps, navigation and music that require constant power, the demand is high for having reliable in-vehicle sources for efficient charging of devices. However, the majority of vehicle charging systems remain wired or tethered. Panasonic Automotive's wireless charging system aims to be a more accurate and more efficient way to charge – to be accessible in any vehicle without the hassle of first plugging in.

Panasonic's wireless charging technology highlights include:

Exclusive Detection Technology (Moving coil charge variant)

- Synchronizes – Panasonic patent pending tracking technology targets one's device. The wireless charging coil moves into the optimum position to align with the mobile device's charging coil and quickly begins to charge wirelessly. In addition, this moving coil technology has better coupling capability vs. other wireless charging systems. (Note: devices must be wirelessly charging compatible)

Charging Performance Rivals Wired Systems (Moving coil charge variant)

- Efficient Power Delivery – With 15W of charging power, Panasonic's wireless technology has one of the fastest charging times in the industry and rivals that of wired / tethered systems

Features:

- Charging Performance – At 15W, one of the highest rates of charge in the industry for a wireless charging system

- Detection Accuracy – Technology to more accurately align with your device (moving coil variant only)

- Smart Alignment – Patent pending tracking technology as the moving coil will optimize position for charging (moving coil variant only)

- Thermal Management – Better thermal trajectory range across longer periods of charging time vs. other systems (moving coil variant only)

- NFC BT / Wi-Fi Connected – While device is charging, the ability to make/ receive a phone call and app use continue run as normal (both static / moving coil variants)

- Charge Standard To follow Qi 1.3 charging standard (both static / moving coil variants)

This unique charging technology proves to be convenient, efficient, and much needed technology that integrates with any in-vehicle platform.

- Texas Instruments introduces automotive battery monitor and balancer

- GM launches BrightDrop, a new business that will electrify and improve the delivery of goods and services

- Magna unveils new PHEV and BEV drive systems

- Natrion develops Lithium Solid Ionic Composite 'plug and play' technology for EV battery manufacturers

- CATL unveils its first generation of Sodium-ion Batteries

- Sakuu Corporation develops 3Ah lit

Autoscape™ solution suite

In January 2021, Tata Consultancy Services (TCS) has launched the Autoscape™ solution suite to enable connected and autonomous vehicle ecosystem players, such as automotive OEMs, suppliers, fleet owners, and start-ups, to pursue new business models, launch new services quickly and deliver differentiated experiences and value to end-customers.

The Autoscape Autonomous Vehicle (AV) solution suite covers the whole end-to-end AV development value chain and consists of AV Data Services, a Data Annotation Studio and AV validation services. Through AV Data Services, TCS offers comprehensive compute infrastructure architecture, a data management solution, AI workbench, and toolkits to accelerate AV development. TCS SIMPLE is a simulation-led autonomous vehicle validation platform that is coverage-driven and generates AI-enhanced scenarios and test cases, particularly focusing on identifying test cases which will cause a failure – the edge cases.

The Autoscape Connected Vehicle solution suite consists of Vehicle in the Cloud, Connected Vehicle Experience, Connected Insights, and a Data Monetization Toolkit. Vehicle in the Cloud provides the foundational capabilities required to manage a connected vehicle, and its digital twin in the cloud. The Connected Vehicle Experience solution, built on top of the Azure-based Microsoft Connected Vehicle Platform, enables personalized customer experiences inside and outside the vehicle during a scalable and secure manner.

Govt liberalises survey and mapping of Indian territory

In February 2021, India has liberalized regulations applying to the acquisition and production of geospatial data and services. The liberalizations also include surveying and mapping. It has enabled Indian private firms to work without prior approvals. The new mapping policy is expected to spur innovation across sectors. Firms can now acquire, collect, generate, disseminate, store, share, distribute and create geospatial data. This will be within the Indian territory, including underwater by using geospatial technologies. But there's a value for mapping and sensitive and restricted areas will be regulated.

Here are the guidelines issued by the government:

1) Indian entities, whether in government or outside, will be free to acquire, collect, generate, prepare, disseminate, store, share, publish, distribute, update, digitise and/or create geospatial data, including maps, of any spatial accuracy within the territory of India including underwater within its territorial waters by using any geospatial technology. The permission will be subjected to regulations on attributes in the negative lists.

2) There will no requirement for prior approval, security clearance, license or any other restrictions on the collection, generation, preparation, dissemination, storage of geospatial data and maps within the Indian territory.

3) Individuals, companies, organisations, and Government agencies are also free to process the acquired Geospatial Data, build applications and develop solutions in relation to such data and use such data products, applications, solutions, etc by way of selling, distributing, sharing, swapping, disseminating, publishing, deprecating and destructing. However, self-certification will be used to convey adherence to these guidelines.

4) There will not be any negative list of prohibited areas.

5) Foreign companies and foreign-owned or controlled Indian companies can acquire a license from Indian entities digital Maps/ Geospatial Data of spatial accuracy/value finer than the threshold value. It will only be given only for the purpose of serving its customers in India. Re-use or resale of such map data by licensees has been prohibited.

6) Digital maps or geospatial data of spatial accuracy/value up to the threshold value can be uploaded to the cloud but those with accuracy finer than the threshold value, mentioned in the government order, shall only be stored and processed on a domestic cloud or on servers that are physically located within the territory of India.

7) For political maps of India of any scale including national, state and other boundaries, Survey of India (SoI) published maps or SoI digital boundary data are the standard to be used, which shall be made easily downloadable for free and their digital display and printing shall be permissible. Others can publish such maps but that adherence to these standards is mandatory.

8) Entities which produce geospatial data using public funds are required to make data easily accessible for scientific, economic and developmental purposes to all Indian Entities and without any restrictions on their use. Security and enforcement agencies are exempted from this.

9) The entities are required to provide such data free of cost to government agencies and at fair and transparent pricing to others.

Smart
WASTE

A GREENER, MORE SUSTAINABLE TELEMATICS SOLUTION

BENEFITS

| More transparent operations | Cut excessive costs | QR code/ RFID integration | Alerts for missed collection points | Monitor geofences and POIs |

SCOPE

Domestic Waste
Handle daily household waste collection trips

Pharmaceutical Waste
Manage medical waste and dispose them aptly

Industrial Waste
Collect huge quantities of waste responsibly

info@uffizio.in
www.uffizio.com

uffizio

SECURE THINGS™

presents

CV2022
APAC'S Biggest Conference & Exhibition

8, 9, 10 March 2022
Radisson Blu, Bengaluru, India

| **1200+** Delegates | **80+** Exhibitors | **60+** Speakers | **10+** Sessions |

6th edition

CONNECTED VEHICLE 2022

Who Should Attend?

- Automakers
- Automotive OEMs
- Mobility Service Providers
- IT Companies
- Tier 1, Tier 2 & Tier 3 Suppliers
- TSP's
- Chip Manufacturers
- Semiconductors

- System Integrators
- Software/Hardware Providers
- Insurance Companies
- Lighting Companies
- Map Providers
- Content Providers
- Application Developers
- Big Data Analytics

- Telecom / Wireless carriers
- Cloud Service Providers
- Component Manufacturers
- Electric Vehicle Manufacturers
- Government Bodies
- State Transport Corporations
- Policy Makers
- Academia/Institutions

- Car Sharing Companies
- Taxi Aggregators
- PSU / STC
- Financial Services
- Associations
- Consultants
- Investors
- Logistics & Transport

For Speaking/Panel Slot
Yashi Mittal
M: +91 9810340678
mgr_corpcomm@telematicswire.net

For Delegate Registration
Poonam Mahajan
M: +91 9810341272
mgr_corpsales@telematicswire.net

For Sponsorship/Exhibition
Anuj Sinha
M: +91 8744088838
anuj.sinha@telematicswire.net

https://cv2022.in/