Thu, 19 January 2023
Weekly Newsletter

DVN-I
Automotive Interior

NEWSLETTER #144

Editorial

Even More CES Tech!

CES WEST HALL: 140,000 M2 OF VEHICLE TECHNOLOGY (DVN IMAGE)

CES is now known as the most important auto show in the world. But it doesn't look like a traditional auto show with halls full of vehicles all in a row. It is a vehicle *technology* show, where probably 90 per cent of the exhibition space dedicated to transport is occupied by suppliers focused on technology for vehicles. The Bosch–ZF–Magna–Mobis–Forvia–Marelli–Continentals of the world invested big money and resources to showcase numerous technologies and innovations in their biggest booths of the year. That's the focus of our in-depth article this week, following on from last week's focus on automakers.

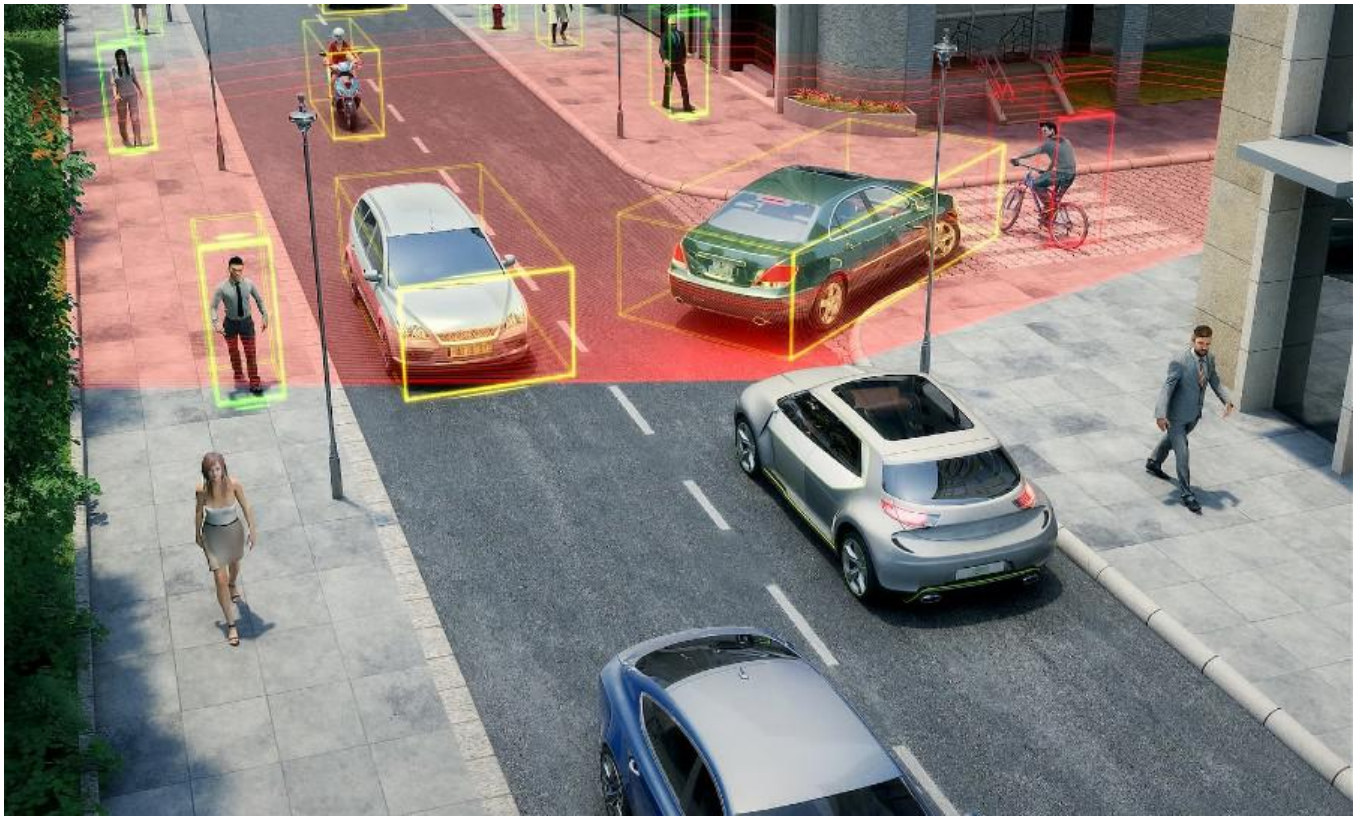
CES includes technology for most all consumer-facing domains, including healthcare; gaming; home appliances, and so many more. There is technology to really make life genuinely better, but also a lot of silly fluff nobody actually needs (internet-enabled fly swatters…) and startups hoping to get rich quick on hype and consumer frenzy. The noise:signal ratio—or chaff:wheat, if you prefer, is…a challenge. That is the topic of this week's Coffee Corner.

Enjoy and Keep the Good Stuff!

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Tier-1s at CES



Now we bring you DVN Interior's in-depth overview of major-name tier-1 suppliers. Let's jump right in!

Forvia: Technologies That Matter to People

FORVIA BOOTH (DVN IMAGE)

Forvia, the 7th-largest global automotive supplier, revealed several world premieres at CES including, for the first time, the combined portfolios of constituent companies Faurecia and Hella.

At their press conference, CEO Patrick Koller said, "Forvia is focused on tackling climate change, leading the way as the first automotive company to gain SBTi validation for our net-zero ambition for 2045. We also have to make the freedom of mobility affordable to all. A key challenge is making smaller and affordable electric vehicles. And we'll need solutions to customize, upgrade and extend vehicle life". And École Polytechnique professor Thierry Rayna gave an inspiring keynote on how to reinvent mobility to bring positive social and economic impact as well as tackle climate change.

Key technologies and interactive interior experiences showcased by Forvia include:

FORVIA IMAGES IN THIS ARTICLE SEGMENT

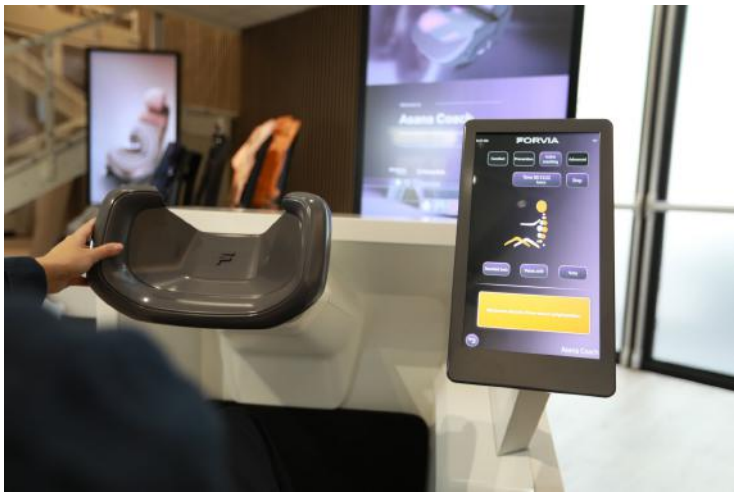
Cabin Centerpiece 'Lumières' demonstrating highly versatile third-space cockpit design. It offers an innovative and customized mobility experience between front and rear seats that creates a homelike environment through configurable seating and an integrated bookshelf; reading lamps, and individualized-sound headrests. The cabin centerpiece achieves 45-per-cent CO_2 emissions reductions through lightweight architectures; sustainable materials, and energy-optimized electronics. It features the world premieres of groundbreaking exterior lighting techniques; gaze-based intuitive HMI on multiple driving displays, and brake-by-wire integration.

Forvia showed a lot of innovations related to seating. Their Vibe technology is a new haptic solution that offers an immersive and safe experience, where tactile sensations are embedded in the car seat, stimulating the user's sense of touch. This technology helps reduce cognitive overload and increase biomechanical benefits. It provides three services: **music and entertainment:** 4D sound automatically creates vibratory accompaniment of any sound—music or video or game soundtracks; **wellness:** an immersive experience providing relaxation; recovery, and energy-enhancing programs; **safety:** ADAS with haptic alerts for blind spots; lane changes; speed limits, and drowsiness.

Through their Seat For Me innovation program, Forvia delivers solutions that cater to people during their driving experience. The Asana Coach solution will drastically reduce back pain and in the meantime the Vibe and Smart

Massage Mat will act for wellness and comfort. All has been done with an advanced ecosystem of partners and experts —Human Fab, Aurasens, AGR—and validated through end-user tests under medical control.

Next steps involve a system that records and processes the driver's current health status, using sensors that measure pulse and breathing rhythms. It will detect alertness, impending drowsiness and/or stress levels. Based on the information received, the system can immediately play music, spread refreshing fragrance, or change the interior lighting to help rectify a potentially risky situation.



The Seat For the Planet innovation project to use less-better-longer spurred this modular design with embedded sustainable materials while addressing benchmark manufacturing and engineering efficiency. These products are circular economy-compatible, as for example Forvia proposes the first seat with fully-recyclable trim.

And the Smart Massage Cover is a seat cover which adapts to almost any car seat. With its slim, ergonomic design and massage programs specifically designed for long car journeys, it is certified by the AGR (Healthy Back Association).

Advanced and Sustainable Interiors as part of Forvia's new Materi'act brand focused on developing and producing sustainable materials at scale to reduce CO_2 85 per cent by 2030. Combined within interior technologies such lens displays and active surface integration, they deliver a 30-per-cent power draw reduction to boost electrical vehicles range extension.

Forvia presented their **digital mobility experience and connected services**, highlighting digital continuity from home to car with the supplier's market-leading Aptoide combination app store and game and news center, with OTA upgrade capability with a wide set of Forvia services. Reactive dimming and immersive display offer a safe new digital experience to the driver.

In the **electrification and energy management** domain, items on display included zero-emission multiple powertrain platform flexibility; hydrogen storage systems; high-voltage EV energy and thermal management systems, and a high dynamic range zonal module for state-of-the-art E/E architecture. **Automated driving** was well catered-for with sensors; perception software; and data fusion, and with fail-operational electronics for steering and braking. There was also intriguing reactive dimming as a combination of gaze monitoring with smart dimming applied on an e-mirror to reduce cognitive load; driver distraction, and fatigue.

Forvia's Hella division flexed its muscles by showing off new **dynamic lighting** with superior styling, up to 80-per-cent lower power consumption versus conventional taillights, and digital, flexible integration options configurable for automaker-specific design needs. **Smart presence detection** builds on Forvia's ultra-wideband car access system with advanced functionality for child and intrusion detection.

Valeo: 100 Years of Innovation

DVN IMAGES IN THIS ARTICLE SEGMENT, EXCEPT AS NOTED

At their press conference, Valeo emphasized their 100-year anniversary in innovation, and presented their latest innovations for cleaner; safer, smarter mobility. As a technological and industrial leader in vehicle electrification; driver

assistance; lighting, and reinventing the interior experience, Valeo technologies now go far beyond the car to equip all new forms of mobility—and even urban infrastructures—to enable solutions such as enhanced data center cooling.

Valeo also showcased their "eXtended Reality Experience": wearing a virtual-reality headset, passengers can completely immerse themselves in a universe of their choosing and enjoy an intuitive and interactive experience while on their journey. Interaction with the virtual world is facilitated by an array of Valeo sensors throughout the cabin. Sensors located on the vehicle exterior combine elements of the real world with the virtual one. Valeo is banking on these advances in connectivity and VR to enable users to make the most of their time while their vehicle battery is charging—by working; catching up with friends and family, or just relaxing.

Driver Monitoring

DVN IMAGE

Valeo's DMS is camera-based, and tracks driver alertness by identifying the driver and monitoring their attentiveness. The system alerts the driver when it detects signs of drowsiness or distraction. It also ensures that the driver has their eyes on the road when they need to resume driving in manual mode, in an L^{2+} AV. Future features to come include driver authentication and emotion recognition.

Future features to come include driver authentication and emotion recognition.

Immersive interior experience

Another immersive experience Valeo is offering visitors is to climb aboard a vehicle with **transformative lighting**. Interior lighting is being reinvented and extended across surfaces to create a more immersive experience for passengers. It can be used for a variety of purposes such as delivering navigation information, visualizing music, creating personalized, relaxing atmospheres, etc. Immersion is made possible by engaging multiple senses such as sight, sound and touch.

Immersive Cabin Fascia—award-winning technology

Interactivity and safety are central to this unique system, which looks like a crystal and integrates HMI; dynamic lighting, and backlighting solutions. When the system is activated, its surface goes transparent and the interactive interface is displayed. The system's lighting can be used to change the ambiance, and includes enhanced safety features such as driver alerts. It has a metallic appearance when switched off, and a sparkly-diamond design when activated.

Valeo presented as well their takeon exterior front grilleboards—new real estate for lighting as there's no need for a radiator grille on an EV.

DVN IMAGE

Lidar

Valeo is the only global supplier to series-produce automotive lidar. More than 170,000 units have already been produced, and the technology is protected by more than 500 patents. Valeo's third-generation Scals-3 lidar recreates a 3D image of the vehicle's surroundings using a point cloud, with resolution unmatched in the automotive realm. It sees everything, even objects that are invisible to the human eye. It can also identify objects such as a tire left on an unlit black asphalt road more than 150 meters ahead that the driver, cameras and radars can't discern. Stellantis has already chosen Scala-3 for multiple models from 2024.

VALEO'S BENOIST FLEURY DESCRIBES THE SENSOR SUITE ON THE CLEAR PLASTIC DEMO-CAR TO DVN-I'S PHILIPPE AUMONT (DVN IMAGE)

Cooling Systems for Data Centers

Drawing on their expertise in battery cooling systems, Valeo has entered into an agreement with ZutaCore to research and manufacture a new cooling method for data centers aimed at boosting their performance and reducing their environmental impact.

Valeo's New Pantomime VRU-Safety Tech

Valeo's new Pantomime technology is to help vehicles better anticipate the actions that pedestrians; cyclists, and other vulnerable road users take on roadways.

The system uses an algorithm to help vehicles 'understand' the movements of other road users and anticipate potential actions they might make. Valeo say it can also follow instructions from police officers or other authorities on roadways.

Hyundai Mobis concept vehicles

MOBIS PRESIDENT CHO SUNG-HWAN (MOBIS IMAGE)

Hyundai Mobis had a large display, with concept vehicles showing their innovations. HM is the № 6 global automotive supplier, with expertise in sensors; sensor fusion, and software development for safety control. The company's products also include components for electrification; brakes; lighting; chassis and suspension; steering; airbags, and automotive electronics.

The company's growth strategy was embodied in their M.Vision TO concept car, an autonomous electric vehicle with an integrated solution of combining its drive module battery system to pillar modules centered on an 'e-corner' system of autonomous driving sensors and communication lighting. The car is envisioned as a mobility solution with scalable shapes and sizes to meet different purposes. It also extends freedom of movement by performing tricks like 'crab driving' and zero-radius turns by dint of wheels which pivot 90°. The idea is to meet a wide range of needs, like maneuvering in narrow downtown streets and transporting cargo for minimum load-unload hassle.

Cheon Jae-seung, head of the FTCI (Future Technology Convergence Institute), also took the stage as a presenter at the media showcase, where he emphasized software and semiconductors as the core competitiveness of integrated solutions. "Reliable software and semiconductor technologies are the key to the future mobility solutions that we provide", he said.

Mobis is developing a software platform around their autonomous driving controller as the key component for implementing L^3 and higher autonomous driving; development is slated to be finished in the first half of this year.

Bosch Sensor Tech

BOSCH IMAGE

Bosch presented their company as a pioneer and market leader in microelectromechanical (MEMS) sensors—one of the most important and widely used sensor types today. Bosch has produced over 18 billion MEMS sensors since they began manufacturing them 27 years ago.

DVN IMAGE

As an example, the off-zone crash detection system, an Innovation Award winner this year, is an example of how they're using software to get more value out of existing hardware: By combining airbag sensors with a new software algorithm, they can reliably detect the exact angle of impact in case of a side collision and trigger the airbag in time, for better protection of the occupants.

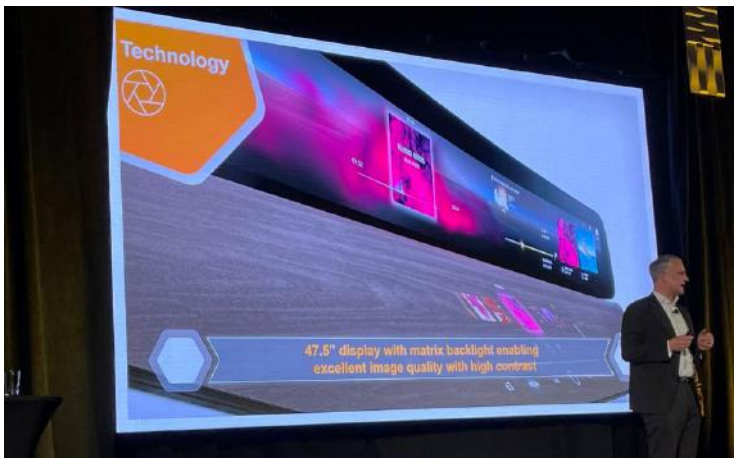
To manage the complexity of in-car systems, Bosch is moving towards a sole vehicle computer for driver assist functions and infotainment. Their philosophy is that a central E/E architecture setup is the right way, and they're saying their next-generation information domain computer will incorporate things such as surround-view cameras and infotainment features.

For interior monitoring, they've got cabin sensing radar. This detect driver drowsiness and distraction, and can also sense whether a small child has been left in the vehicle. This sounds similar to Toyota's Cabin Awareness system, which uses high-resolution 4D imaging radar to detect occupants or pets left behind.

BOSCH IMAGE

And Bosch picked up a Best Innovation award this year with their RideCare companion, a platform which provides an enhanced safety experience for rideshare drivers and passengers through its ability to monitor and respond with a system of two cameras; communications with smartphones or via an SOS button, and sensors.

Continental



DVN IMAGE

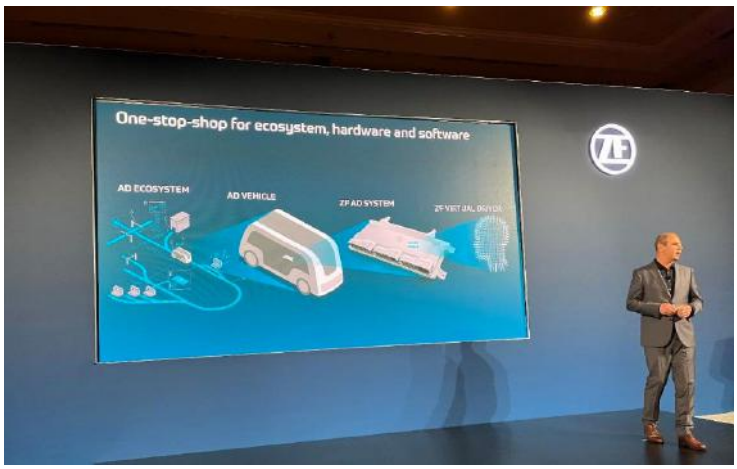
CONTINENTAL IMAGE

Continental's Curved Ultrawide Display goes across the entire width of the cockpit. The avant-garde display design creates a new dimension of user experience while the innovative operating concept based on an invisible control panel ensures greater safety and comfort.

Innovations are all about improving the driving experience. Continental is focused on making driving safer and more intuitive and immersive for drivers and passengers. As UX is becoming a key factor for car buyers, Continental's display technology will show how the interior equipment race is today's and tomorrow's version of the horsepower wars of yore. In the case of this display, 'Ultrawide' means a width of more than 1.2 meters (nearly 4 feet), which arches from one A-pillar to the other. The display design creates a new dimension of user experience while the innovative operating concept based on a 'shy' control panel is designed to ensure greater safety and comfort.

Safety for Tomorrow's Mobility was the primary main direction in Continental's CES presence, including lidar; domain zone control units, and software for window lifters; radios; motion and maneuvering packages for automated driving and remote parking, and much more. Continental has also expanded their portfolio for assisted driving with Ambarella's scalable and powerful system-on-chip family for faster processing of increased sensor data in the vehicle, paving the way towards autonomous mobility.

ZF



ZF PRESS CONFERENCE (DVN IMAGE)

In addition to the 'Heatbelt' heated seatbelt we described last week, ZF made a world premiere of a L^4 shuttle delivering a highly modular solution for mixed operating environments, capable to maneuver in mixed traffic without a safety steward. With this, ZF is enabling the operation of autonomous transport systems in densely populated areas with no need for segregated or dedicated shuttle lanes.

Integrated into ZF's autonomous driving system with the ZF ProAI at its core is the Virtual Driver software stack. It comprises two major parts: the performance path and the safety path. Together, both enable safe, dependable L^4 shuttles and transport carriers. The safety path monitors comprehensive situations under safety aspects; defines virtual guardrails for the performance path, and intervenes if necessary to help mitigate critical situations. Meanwhile, the performance path enables smooth driving in complex scenarios. ZF developed this in partnership with Oxbotica, a leader in autonomous vehicle software for businesses.

As a leader in the provision of complete autonomous transport systems, ZF has signed an agreement with U.S. mobility services provider Beep to develop and deploy L^4 automated transport systems for customer projects. The agreement includes planning volumes of several thousand L^4 shuttle vehicles for deployment in the United States.

Marelli

Visitors to Marelli's hospitality suite experienced the company's latest technology portfolio that drives vehicle personality and performance. An enormous range of vehicle interior technologies, techniques, materials and wow-factor surprises were on display, including innovative controls and displays—a no-goggles-needed 3D video manifestation of a digital personal assistant, for just one example.

DVN IMAGES IN THIS ARTICLE SEGMENT

The Marelli showcase highlighted the material collection display shown here. Their 'Interactive Smart Surfaces' provide a seamless and optimal solution for HMI integration into the vehicle's interior, providing two-way interaction between the vehicle and its occupants, enhancing in-cabin safety, providing voice recognition and eliminating mechanical buttons, replacing them with haptic-feedback, shy-tech surface-touch zones. The material collection display comprised an enormous range of surface finishes—woods, leathers, stones, metallics, and more.

The Diorama Display technology provides high-quality reflections on the bottom edge of the windshield, depicting images for navigation, indicators, telltales, and warnings from a TFT source. It ensures clear visibility and legibility no matter what time of day or road environment. The solution offers a much larger viewing angle compared to most HUDs, with the ability to span and display information to all vehicle occupants. Alternative to a single display, the pillar-to-pillar modular configuration allows a driver to easily recognize objects in their blind spot.

Other presentations included OTA software and data management solutions on Marelli's next-generation Cockpit Domain Controller (CDC) Unit, by Sibros. Marelli's MInD-Xp provides a single platform and domain control unitto run multiple guest operating systems and in-cabin functions including infotainment; clusters; driver assistance systems, and head-up displays to enhance driver and passenger experiences in a coherent HMI, underpinned by a BlackBerry QNX Hypervisor with cloud-connectivity to AWS. It also includes near-field ground projections that expand communication and safety features beyond the vehicle itself. Static, semi-dynamic, and dynamic projections provide opportunities for various welcome, safety, and communication scenarios.

Toyota Boshoku

Toyota Boshoku positioned themselves as 'Interior Space Creators' by providing comfort; fun, and convenience solutions based on the premise of safety and the environment. At CES, they featured vehicle interior space solutions for the MaaS market mated for autonomous technology in the future.

Their MaaS rideshare space concept MX221 is a vehicle interior space for ride-hailing mobility with L^4 automated driving based on the concept of 'diversatility', **diver**se passenger needs and usage scenarios met through ver**satile** space layout and interior modules that can be easily interchanged. The vehicle has six advanced systems that can be optimally controlled according to each passenger's conditions and needs, to provide a permanently clean and comfortable moving interior and an entertaining user experience for passengers including wheelchair users.

DVN IMAGES IN THIS ARTICLE SEGMENT

And their MaaS service space concept "MOOX" responds to various service needs in the era of L^5 automated driving. It has the Tailored Space system of removable and interchangeable seats and interior items, and exhibits a wellness space that estimates the degree of fatigue and stress from the seat and contributes to relaxation and refreshment by catering for the five senses—no word on how those with chemical/fragrance allergies or aversions will be catered for on the olfactory front.

Naturally, it includes a UV sanitization system, as any MaaS vehicle should.

Toyota Boshoku also showcased their Mobility Interactive Experience zone, an open innovation zone exhibiting new solutions developed with various collaboration partners including SmartGlidr, a new rehabilitation and wellness product providing affordable, portable, versatile therapeutic exercise from a seated position. The company's VP of business development Dan Koester said he tries to "*find a balance between business success, and doing work that benefits society. I'm happiest working on products that have an impact on people who are in need—underserved populations [such as the elderly]*".

Interior News

Harman Augmented Reality for HUDs

INTERIOR NEWS

HARMAN IMAGE

At CES, Harman announced their Ready Vision product, a set of augmented-reality and HUD hardware and software products designed to enhance driver safety and awareness.

Ready Vision bridges the physical and digital worlds by displaying intuitive turn-by-turn directions on the windshield to help enhance driver cognition. It also uses computer vision for 3D object detection to deliver non-intrusive warnings for collision risk; blind spot, and lane departure, as well as lane change assist and speed zone notifications to the driver, with high precision.

Ready Vision is part of Harman's range of new products introduced during CES that are road-ready and have demonstrated they deliver compelling in-cabin experiences. Each product is designed to work independently to deliver specific vehicle safety, well-being, and connectivity benefits, while also integrating seamlessly with other Harman Ready products for an even more enhanced experience. For example, Ready Vision is compatible with Ready Care, which offers extended situational awareness through enhanced audiovisual alerts when driver distraction is detected.

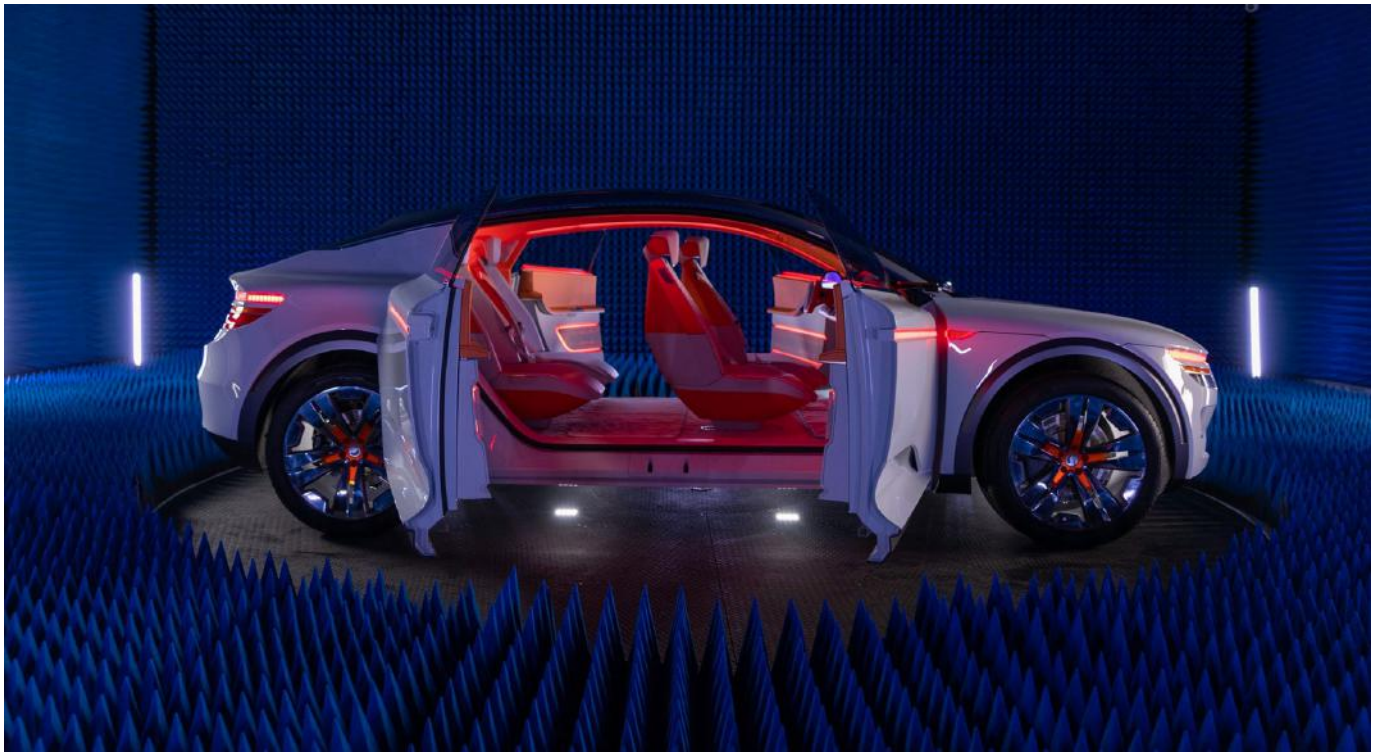
Key features of Harman Ready Vision include:

- AR HUD hardware: An innovative design enables a large field of view, long virtual depth, optimal eye box and high brightness with a compact package volume and wedge less windshield design, providing major cost savings for automakers. Ready Vision initially provides two options: large with 12° × 4° view field, or extra-large with 15° × 5°.
- AR software: 'Artificial intelligence' and 'machine learning'-based software frameworks integrate with computer vision to display the right information at the right time, with low latency for real-time 3D object detection. Ready Vision prioritizes the display of relevant objects without obstructing the driver's view. The software effortlessly integrates multiple sensors such as navigation; ADAS, and microphones to create smart and timely audiovisual alerts. The system includes Harman's flagship directional and spatial audio into its software platform to help enhance driver perception and support their ability to respond to threats faster, while enabling them to keep their eyes on the road with intuitive and clear prompts.

Harman Ready Vision uses these technological components to display key information on the windshield, augmented by directional immersive audio alerts, assisting drivers in keeping their eyes on the road. It also provides real-time, contextual points of interest, including street names and addresses, along with accurate and timely updates to the driver based on their profile, interests and preferences. Ready Vision's integration of ultra-low latency visual and audio alerts also supports driver ability to respond to various traffic prompts and conditions.

Qualcomm Snapdragon Digital Chassis for Software-Defined Vehicles

INTERIOR NEWS



QUALCOMM IMAGE

At CES, Qualcomm introduced a new concept vehicle showcasing how their Snapdragon Digital Chassis solutions integrate technologies from a diverse ecosystem of companies to deliver experiences that are highly personalized and intuitive, including immersive infotainment, driver assistance, and enhanced safety. With the Snapdragon Digital Chassis and Qualcomm's horizontal connected services platform, Car-to-Cloud, automakers can scale these premium experiences across a wide range of vehicle tiers and personalize them for each occupant. They can also deliver feature upgrades and connected services on-demand throughout the vehicle's life cycle, allowing for an extended consumer relationship with ongoing revenue opportunities. This includes services packages, including device configuration, data insights, and beyond all driven through APIs.

The Snapdragon Digital Chassis concept vehicle brings the software-defined vehicle to life, showcasing an array of applications and services that allow consumers to extend their digital life into their vehicle. Qualcomm is collaborating with the following industry leading technology and service providers to demonstrate the possibilities for automakers looking to innovate next generation user experiences.

Integrated with a suite of automotive services and powered by artificial intelligence, software-defined cockpits provide a natural and intuitive experience for occupants that improves over time. With the ability to quickly recognize each person, vehicles automatically adjust to their individual settings, such as seat position and climate, while also displaying recently used applications and preferred content on their respective screens.

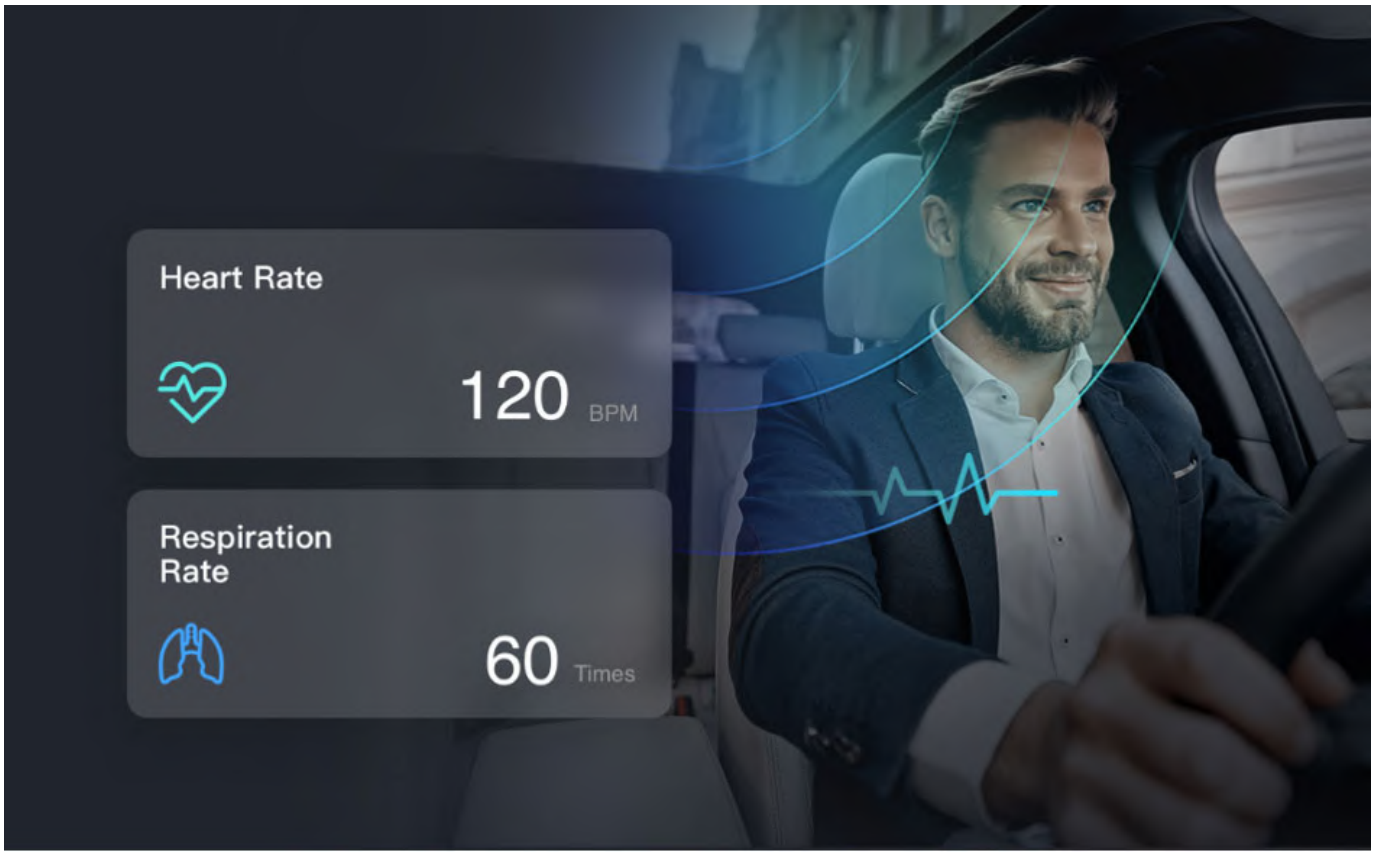
Software is creating more room for innovation, making traditional hand-controlled dashboard and menus an increasingly inadequate user interface. Intuitive voice control will be essential for assisting users when interacting with the vehicle, whether it's to adjust the seat, turn up the music, or make a purchase. All passengers benefit from having a conversational virtual assistant that's tuned into their specific audio-zone. Individual Immersive audio is also managed through the platform

AUO IMAGE

AUO FIDM Plus integrates a 55" Large-size curved display, AmLED with built-in camera and sensors to realize diversity of applications of future cockpit, bringing unlimited visual and immersive experience.

Pontosense Vital Signs Detection for Safety, Comfort

INTERIOR NEWS



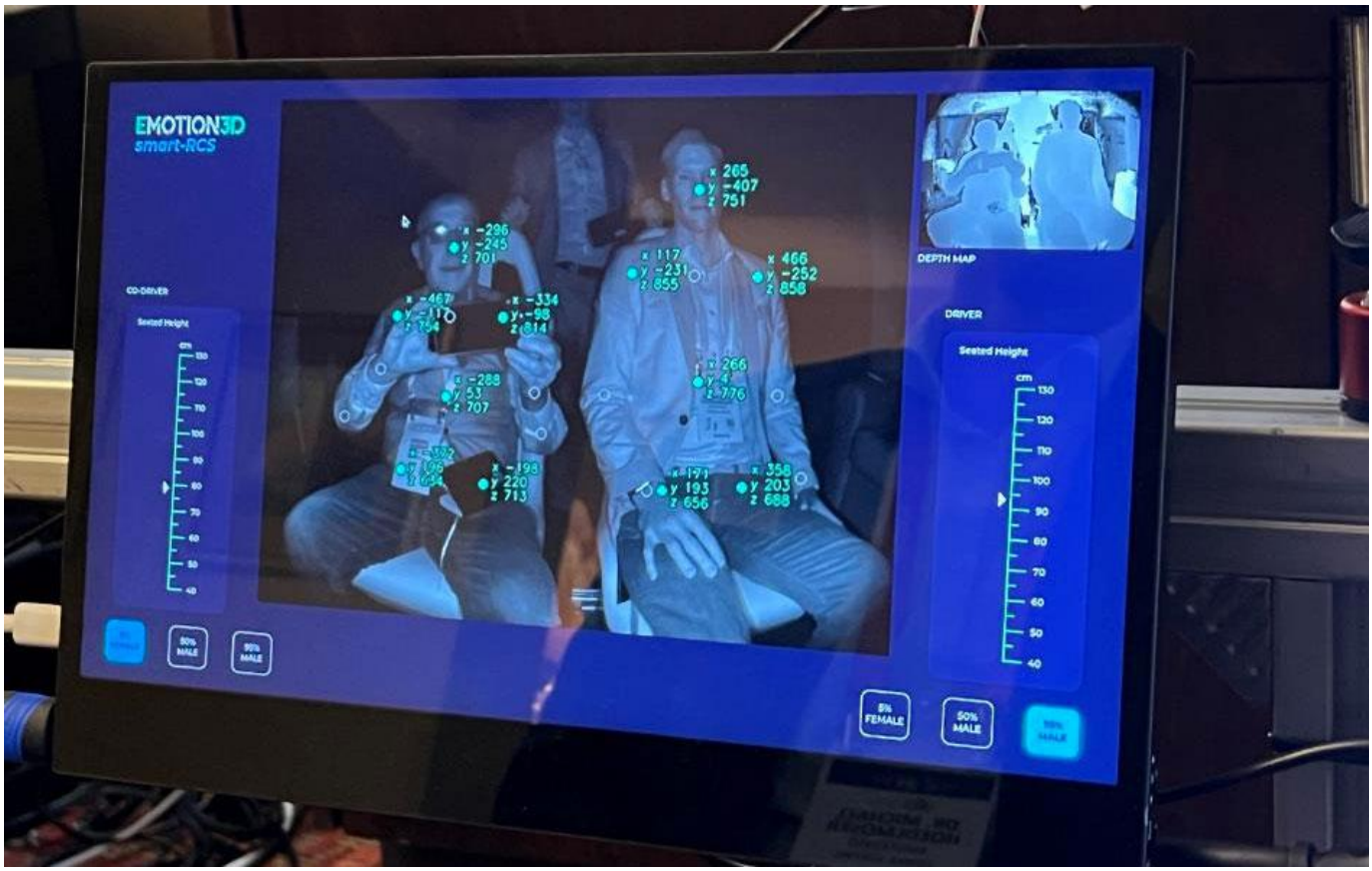
Founded in 2021 in Toronto, Canada, Pontosense has a vision to change everyday technology by extending the relationship between humans and machines. This passion has led to global partnerships and applications in several industries, including automotive, smart home, and healthcare spaces.

Pontosense presented at CES their patented sensor, which measures micromovements of occupants to measure real-time respiration and heart rate Vitals measurements can discern stress and anxiety; drowsiness and fatigue; motion sickness; intoxication, and comfort levels. The generated data can work with in-cabin control systems to enhance the car ride experience and work with ADAS to actively ensure safe operation of the vehicle. The system is said to measure vital signs with medical-grade accuracy, using millimeter-wave radar (around 60 GHz) to capture micro-movements as small as a heartbeat.

Patented innovations include 'AI'-powered millimeter-wave sensors, and 'machine learning' with noise filtering algorithms measuring vital signs in a vehicle in motion.

Emotion 3D: New DMS, Sensor Fusion with Vital Signs

INTERIOR NEWS



EMOTION 3D DEMO (DVN IMAGE)

Emotion 3D has been developing computer vision and 'machine learning' solutions since 2011, as we reported in 2021 The Vienna-based startup exhibited their latest developments at CES.

Driver monitoring systems that detect driver drowsiness and distraction to warn accordingly are crucial for reducing road accidents. With the new General Safety Regulation for motor vehicles adopted by the EU parliament in 2019 and new test protocols by Euro NCAP, such systems must be installed in new vehicles in the coming years.

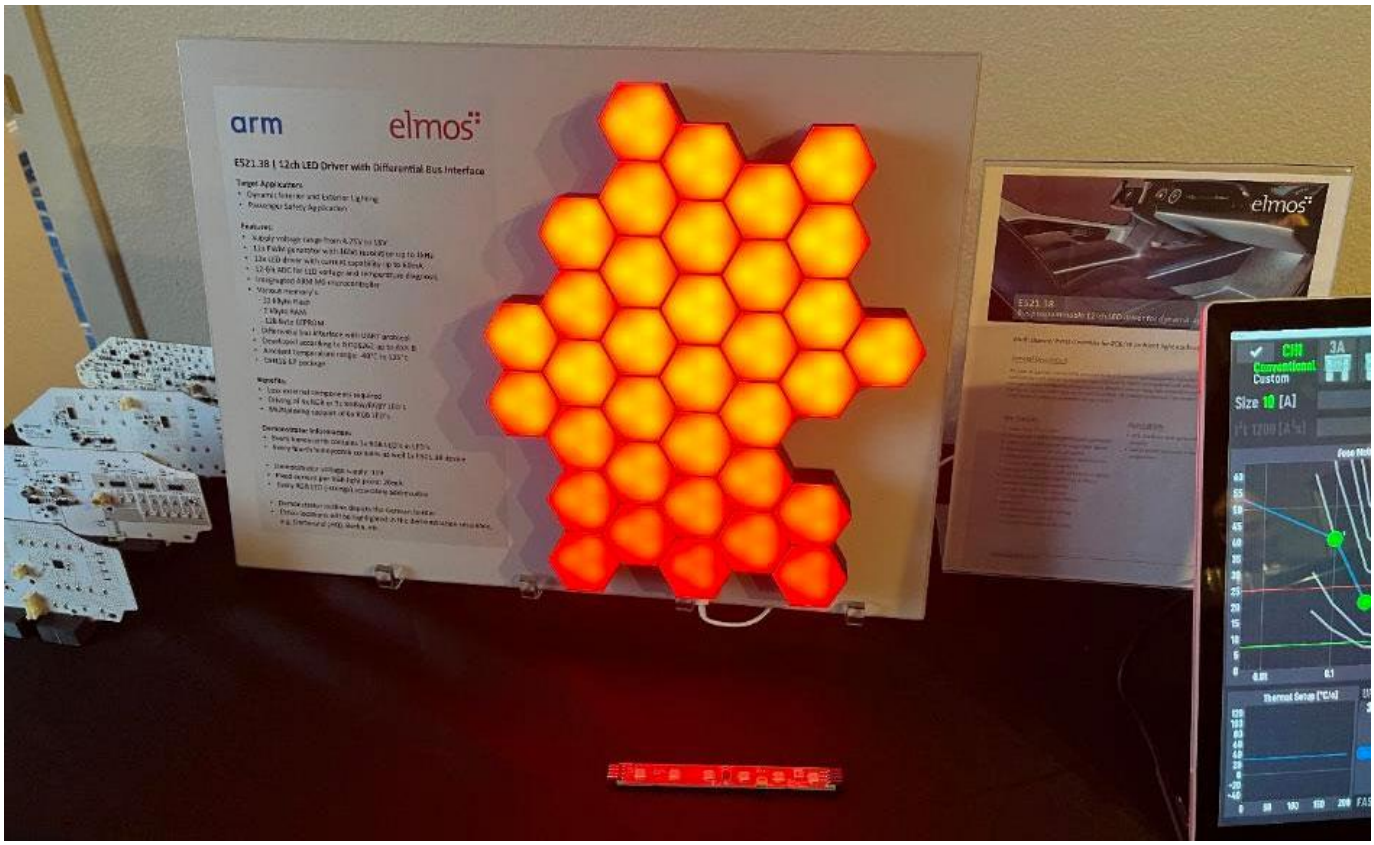
So far, driver drowsiness monitoring has been implemented by using only one sensing modality such as camera-based analysis of the driver's face or steering input. I fact, drowsiness is far more complex, and there's a need to include more parameters. Same need to go beyond responsiveness, distraction, and fatigue to manage UX functions (need vital signs). Data fusion is the answer, becoming the standard in in-cabin sensing.

Smart RCS (Restraint Control System) is able to personalize passive safety systems in event of a crash. Using a 3D sensor for understanding the vehicle interior, the system considers a wide range of relevant, personal and situational factors such as body physique, position and pose, weight and gender. Emotion 3D already announced a partnership last year with Veoneer and AVL in that direction.

At CES, Emotion 3D announced a novel system for enhanced road safety by combining camera- and vital-sign based drowsiness detection, system developed with SAT, with support of Garmin.

Elmos' Chip for Interior Lighting, Gesture, Thermics

INTERIOR NEWS



DVN IMAGES

At CES, Elmos showcased new concepts for 'smart' switches for the next generation of gesture control, and high-performance ICs for controlling LED ambient lighting in cars.

An HVAC demonstrator with low-noise fan and active air flap control was presented, using Elmos motor controllers for water- and coolant-based as well as air-based applications.

Automotive interior lighting with freely definable colors arouses emotions so that passengers feel more comfortable and well-being. Elmos LED controllers were presented as enablers of efficient, homogeneous ambient lighting. Beside indirect lighting in the footwell or via light strips, cutting-edge future lighting concepts included animated surface illumination, e.g. on the dashboard and inside the doors. Elmos also provides versatile design and safety options, including flowing dynamic taillight animations using Elmos' LED controller solutions.

Elmos' Halios® ICs enable optical gesture detection via infrared technology for displays. Even novel operating concepts with invisible surface switches, which become visible only when approached, can be easily incorporated.

Visteon's Complete Digital Cockpit

INTERIOR NEWS

VISTEON IMAGE

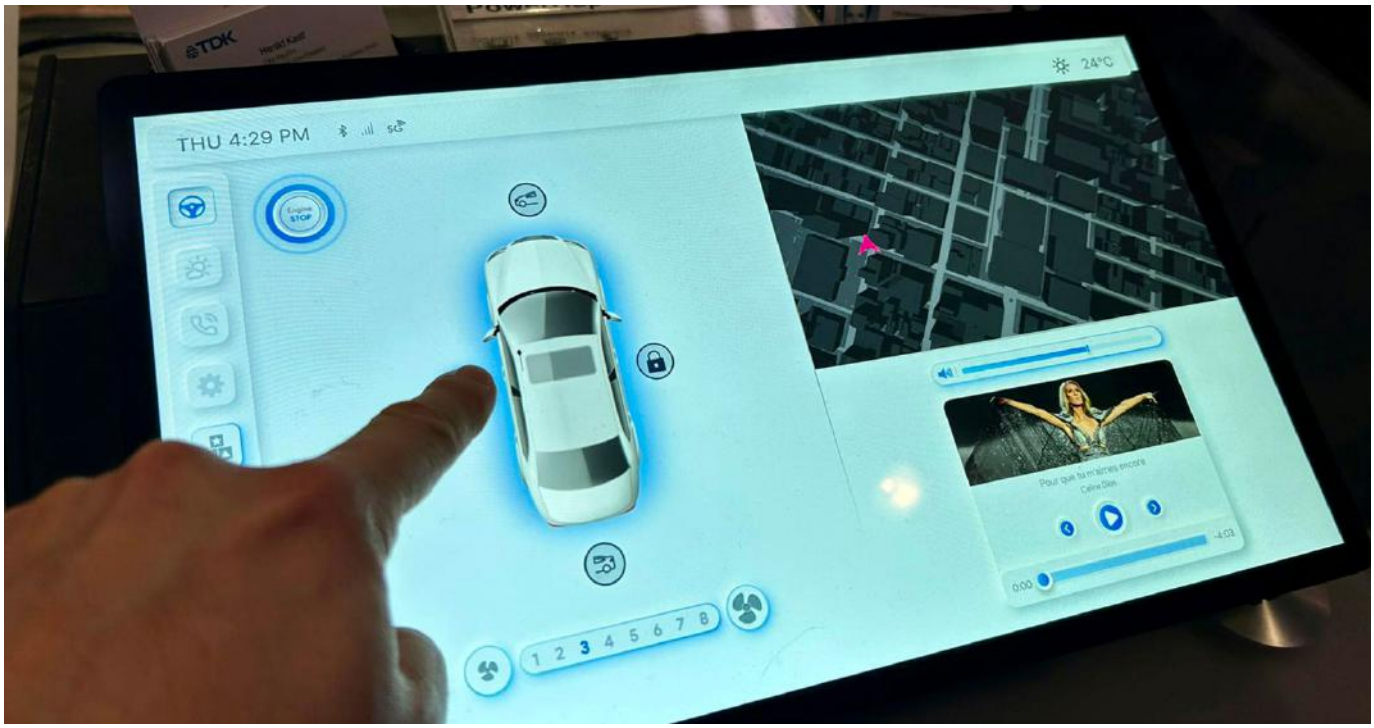
Visteon displayed a wide range of digital cockpit technologies during CES, whichenable automakers to create safer, connected and more convenient driving experiences. Visteon's efforts go toward creating an immersive user experience incorporating consumer technologies, active privacy and sunlight readability, all while drawing very low power. These features were prominent in two Visteon digital cockpit platforms: the Lightscape® Panorama Display and the Command & Control Display, which each captured a 2023 CES Innovation Award.

Visteon's digital cockpit solutions on display at CES included:

- **Lightscape® Panorama Display**, an advanced pillar-to-pillar, multi-display which includes numerous Visteon technology solutions that enable superior image quality and interaction
- **Command & Control Display**, a driver-centric, technology-forward dash display that blends the lower display into the surrounding materials when the display is inactive. It wakes into a fully reconfigurable surface on the approach of a user's hand
- **One Watt Display** delivers enhanced perceptual quality of displays with dramatic power savings
- **Active Privacy** limits driver distractions from passenger cockpit content, is compatible for system-level approaches for managing content and is scalable to any size, aspect ratio or resolution
- **TrueColor Image Enhancement** dynamically adjusts screen images to improve image quality, overcoming brightness and glare to improve the legibility of safety information
- **SmartCore** cockpit platform architecture represents a shift in electric vehicle architecture to a computing platform, with applications from entry-level to high-end cockpit design with multiple silicon choices
- **SmartCore Gen 4** cockpit comes with driver and surround view monitoring for increased safety, adaptive and personalized user interface, multi-display entertainment and gaming, AI based voice assistant, augmented reality navigation and many more compelling features
- **AllGo Connected Services** offer a suite of cloud based software services including over the air update, subscription management and Automotive App Store

Innovobot Labs' New Haptic Display

INTERIOR NEWS



INNOVOBOT LABS IMAGE

Through a collaboration with three technology companies, Montreal-based Innovobot Labs developed a new design for automotive displays, and presented it at CES.

TDK supplied their PowerHap actuators for sharper-feeling haptics; BOE Varitronix delivered a screen and the related controllers, and Microchip Technology brought their haptics electronics system which includes an amplifier and a microcontroller. Innovobot Labs was responsible for designing and integrating the overall system.

The project was started as a response to the automotive industry requiring more cost-effective haptic technology. At present, certain larger screens lack good tactile feedback making them harder for consumers to use. By enhancing and improving this haptics and displays in vehicles, automakers and designers can create feel-and-texture innovations for invisible sliders for touchscreen components. This makes it safer for users when they interact with the displays.

The Design Lounge

Great Gotta-Haves; Gimmicky Gadgets at CES 2023

THE DESIGN LOUNGE

DVN IMAGE

After playing with lots of new, often strange and surprising gadgets, seeing some truly overpowered drones and colorful cars, experiencing new style laptop updates, shaking hands with robots, rollerblading with electric skates, looking at monitors and many more next-gen TV screens, coming out of CES euphoria, we are left though with one question: Can we still afford to judge products just based on their quality and performance, or should we rather evaluate on how society changed within the last few years? Entire product segments, for instance camera-enabled smart devices like smart TVs, that are not considered cybermature yet, are launched on low-quality, vulnerable software—making our homes; cars, and businesses easy hacks. Business cases that are based only on number of followers have marked this year's CES as a giant ground of the best and worst tech ideas.

Meanwhile, the world of business shifted away from older sector-specific, long-established shows (automotive had its fair share since 2020) leading CES, the № 1 tech event, to embrace automakers and suppliers. But why that is? A short answer might be that here, there is space for dialog and debate on new tech since presented on early stages. It is the place and the reason why we can thoroughly ask questions: Who needs this product? What is the global impact if the technology is widely adopted? How much worse is it since its previous version? Do the negatives overweight the positives? And are the characteristics of this product innovatively bad? CES is a massive real-time brainstorming session, bringing about the new era of trade shows. While world problems increase, we often have the feeling that gimmicky gadgets do too. These are objects that are not solving any problem, they are just aimed at making more money, raising the need to hold terrible ideas accountable. Thus, it is the place where marketing communications face a reality check. As often stated, CES is where you can promote anything, from 'more is better' to 'more is worst'.

An increasing number of phrenological products claim to read our feelings or psychology status by scanning our face features and expressions. A Neutrogena SkinStacks gummy-printer asks for a scan of our face in order to supply a specific 3D-printed regime for our skin care. A notoriously sketchy product that stands for widening the gap between its premise and what is really happening: as soon as wireless products connect to your phone, there is a fine line between buying the product or selling yourself (personal data) to a third party. Some inverse design-thinking principles apply here suggesting that audience must be educated on how to look at the show. Over the past five years, more than half a million people joined internet *every day*! How unsustainable is today uploading to the cloud, how unrepairable and how unrecyclable can it be for every single gadget that incorporates additional screens, batteries, and magnets more than we already have in our smartphones.

EMBER MUG 2 DESIGN WITH SIMPLE LED (EMBER IMAGE)

And if you thought that coffee mugs today have progressed so much to keep your coffee hot, Coffee Corner's CES 23 pick is the Ember mug 2 (2, as in the second version of it): a $200 mug with integrated heating and temperature control. Flawless design incorporates all electronics invisibly. Once the battery is dead, though, it cannot be replaced; the mug goes to the bin. It has been reported that if you contact the company for a new battery, you get a discount coupon for a new mug—another business strategy contributing to the 'batteryfication' of the world.

Oh, and the 2+ version is proposed with a wireless connection to your smartphone just so your mug knows more about you.

CES after all gave a good opportunity to point out the good ones from the bad ones. It might be that its success is the fact that it is the only event where we can pick on the manufacturers and do so with a lot of fun and laughs!

News Mobility

Mobileye's 3-Axis AD Worldview

NEWS MOBILITY

Mobileye's portfolio of innovations includes their True Redundancy™ sensing, REM™ crowdsourced mapping, and Responsibility Sensitive Safety technologies that are driving the ADAS and AV fields towards the future of mobility. Mobileye founder and CEO Amnon Shashua made some interesting points, in his annual speech, about Mobileye's strategic, technological, and business thinking.

First, SAE Levels 1-2-3-4-5 are too technical to form a basis for a product description. Instead, we thought to simplify the language and define three axes: **eyes** on/off the road; **hands** on/off the wheel, and (human) **driver** or none.

A hands-off/eyes-on system is a driver assistance function where the driver can have hands off the steering wheel while the system takes control of driving, during which the driver supervises the system (eyes-on). With a proper DMS (driving monitoring system) one can create a very useful human-machine synergetic interaction, analogous to pilots supervising the auto-pilot system in a plane, and increase the overall safety of driving.

In a hands-off/eyes-off system, an ODD (operation design domain) is specified—say, highways with on/off ramp transitions—and within the ODD the system controls the driving function without the need for the human driver to supervise the driving. Once the ODD comes to an end, and if the driver does not take back control, the system can stop safely at the shoulder of the road. The ODD, starting from highways, progressively adds arterial roads; signalized junctions; unprotected turns, and so on until a 'full' ODD is obtained. Mobileye calls these ODDs 'autonomous blades'. Therefore, hands-off/eyes-off defines a range of products depending on the ODD.

When there is no driver present—in a robotaxi, for example—the role of the driver is replaced by a tele-operator who can intervene to resolve non-safety issues like communicating with a police officer, etc. Mobileye's press conference may be **viewed online**.

Vegas Loop Moving CES Visitors

NEWS MOBILITY

VEGAS LOOP IMAGE

Tesla vehicles—mostly X and Y models—moved almost 100,000 people inside the Boring Company tunnels under Las Vegas in only a few days during CES.

It goes under the huge Convention Center, form West (Vehicle Technology) to Central Plaza to East, for a total of 1.5 miles.

The Boring Company, Elon Musk's tunneling startup, completed the USD $50m project in just over a year. The showy system consists of tunnels in which chauffeur-driven Tesla EVs travel between stations to transport people within a city. The Boring Company has now released what they describe as data about the performance, saying over 94,000 passengers travelled in the loop. The company also said they moved over 10,000 passengers to and from Resorts World, and that the rides were, on average, less than 2 minutes, with the average wait time being measured in minutes as well.

Of course, a free ride costs less than the monorail system existing along the Las Vegas strip, but that was promotional showmanship by Musk & Co; it still looks complex to set up, when existing bus systems would do a perfectly good job. Perhaps once the vehicles don't have to have a human driver, the business model would look more attractive…but then, wouldn't that also apply to buses, as well?

General News

OP'n Soft: Plastic Omnium's New Software Biz

GENERAL NEWS

At CES last week, Plastic Omnium announced OP'n Soft, a new activity dedicated to the development of software for the supplier's own products and services. 120 employees are predicted this year; 250+ by 2025, to focus on mobility solutions as the CASE megatrends carry on gaining traction—connected; autonomous; shared, and electric.

Plastic Omnium CEO Laurent Favre said at the CES demo that OP'n Soft "will enable Plastic Omnium to offer [our] customers a unique range of integrated solutions and services, such as merging radar data processing software with lighting technologies. This is an exciting new adventure for Plastic Omnium, and a wonderful opportunity for our teams to unleash their tech creativity".

The new business activity will implement Aspice certification and Autosar platforms that make it easier for PO customers to access plug-and-play applications. PO also will leverage the latest AGILE methodologies and the benefits of DevSecOps3 in developing and supporting these future products and services.

All these initiatives prepare the PO Group effectively for making great strides towards developing the software-defined vehicle; meeting the constantly-evolving challenges of vehicle cybersecurity, and anticipating future global certification standards for embedded software and its periodic updates.

Qualcomm, Salesforce to Track Consumers in Cars

GENERAL NEWS

QUALCOMM IMAGE

Qualcomm, senior VP and automotive general manager Nakul Duggal said the company is collaborating with Salesforce to create new tools to understand what customers are doing in their cars—what features they use, what media they consume, and how they drive.

Qualcomm is coöperating with Flex to develop a chip that can control both cockpit displays and driver-assistance technology on a single processor. Duggal says commercial samples of the chip will be available in early 2024, with production starting in mid-2024, and that connected cars offer "a huge opportunity to unlock commercial potential in the life cycle of the vehicle". The revenue streams available from the car market, in other words, will expand far beyond vehicle sales and service.

"There's a need for auto makers to understand how consumers actually use their products," Duggal said. "They need to understand what is going on at the edge. Who are the customers? How can you advertise to them? What features do they use? Do they stream music, or listen to the radio? Where do they travel? Where do they buy gas?".

At CES, Qualcomm showed a concept car intended to demonstrate the full capabilities of the company's Flex platform. Partners in the demo aside from Salesforce included Amazon; Amazon Music; Zoom Video Communications, and iHeartMedia.

Duggal said the concept car was intended to showcase the notion of a car as a platform that supports many independent applications. Automakers, he said, "have to figure out how to monetize these technologies" and build out new business models.