Thu, 22 February 2024
Weekly Newsletter

DVN-I
Automotive Interior

NEWSLETTER #200

Editorial

Newsletter № 200—A DVN-Interior Milestone

DVN INTERIOR WORKSHOP 2023

This what you're reading right now is the 200th issue of the DVN-Interior newsletter we launched in October 2019. We are humbled and proud of how far we have come, how many innovations we have described and analyzed; probably in the range of 3,000. To celebrate this important anniversary, and in preparation for the Köln Workshop in April, this week's in-depth report spotlights some of the main innovations along DVN-I's existence. We are talking here about the effects on car interiors of electrification, software-defined vehicles, connectivity, sustainability, focus on design, third-space philosophy, UX, HMI, controls and displays, in-cabin safety and sensing, seats, CMF, interior lighting, sustainability, acoustics, and so much more.

We are putting together a survey; in each of the next 8 weeks we'll ask you to please answer one question about trends, best car interior, best innovation, best workshop lecture, and so on. Please vote by hitting **this link**. Results of the survey will be presented at the DVN-I Workshop on 23-24 April at the Pullman Hotel in downtown Köln. The docket is not yet final, but **here**'s a sneak preview of the program in progress.

Sincerely yours,

Philippe Aumont
DVN-Interior General Editor

In Depth Interior Technology

DVN Interior: Five Years of Innovation

POLESTAR BEV CABRIO CONCEPT (POLESTAR IMAGE)

DVN Interior, launched on the successful DVN model, facilitates and platforms communication in the car interior expert and practitioner community. The DVN-I Newsletter, reports, and workshops all are designed and optimized to compile, present, and analyze information that would otherwise be scattered and difficult to access, so community members can access, absorb, and leverage it quickly and efficiently.

Major DVN-I achievements:

- October 2019:DVN-I Newsletter № 1
- October 2020: First DVN Interior Workshop; online due to Covid
- February 2021: DVN-I Newsletter became weekly; previously every 2 weeks
- May 2021: DVN-I also provided in Chinese; previously English-only
- April 2022: Second DVN Interior Workshop; live and in-person
- April 2023: Third DVN Interior Workshop
- February 2024: DVN-I Newsletter № 200

Let’s look into our rear-view mirror at salient interior topics we've addressed along the years—remember, full versions of this and all other DVN-I content can be had on the DVN website.

Newsletter № 1, 23 October 2019

DVN-I
Automotive Interior

Wed, 23 October 2019 - NEWSLETTER #1

Editorial

Get In—Let's Go!

Within the ongoing automotive transport revolution bringing connected, autonomous, shared, and electric vehicle, mobility use cases are changing drastically—and car interiors are becoming a stronger-than-ever product differentiator, facilitating new activities for vehicle occupants: relaxing, working, phoning, watching movies, and other suchlike.

That being so, the interior is one of the fastest-evolving areas of the vehicle, with endless new technologies being launched in interiors with new features, new apps, new configurations, new materials, new designs, and whole new concepts. That's the scope of DVN Interior: we're building a community of car interior experts with DVN-I Reports, DVN-I Workshops, and a twice-monthly DVN-I newsletter, all aimed at consolidating and presenting pertinent news and analysis to help DVN-I members stay efficiently and easily informed and up-to-date without having to chase widely-scattered, difficult-to-find articles in dozens of sources.

CES showed us tomorrow's autonomous mobility, and how to better use occupants' captive time during transport. Geneva was focused on EVs, with no real focus on interiors except the obvious need of different ventilation due to silent motors. Shanghai's auto show showed a strong focus on all kinds of EVs. Whatever the next events bring that's relevant to the vehicle interior community, DVN-I will find out and present it. (Nordautec Interiors Conference Novi, MI, Auto Interiors Expo Stuttgart,)

This edition of DVN-I confirms that luxury remains key to premium auto brands' attractiveness and differentiation, with specific significant examples from Mercedes, Porsche, and Aston Martin. And recognition of the Jaguar I-Pace as the Car of the Year as it combines EV technology with classic elegance confirms that luxury will endure as a strong level, whatever the underlying technology of the car.

Commercial vehicles are not left out, the interiors of new LCVs like the Renault Master range provide plenty to scrutinize and talk about. Meanwhile, safety is another key topic, in this issue we

DVN-I Interior - Wed, 23 October 2019 Page 1/13

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The first in-depth article was about custom scents in interior, and the interior news section included material on Volvo's driver distraction detection, 'zen design' in the Porsche Taycan interior, particulars of the Jaguar I-Pace interior, Car of the Year 2019, new materials like apple leather, and IIHS developments in testing rear seat safety.

All these topics are still at the top of our watchlist, even if apple-based leather isnt' yet on the option sheet and Toyota's odorizer is not (yet?) available to deploy tear gas in the passenger compartment if a break-in is detected.

Innovations face a steep uphill climb on the way to commercialization, and many of them don't get there. Failure is part of the process, and automaker communication mostly deals with ideas already past most of the development hurdles.

Newsletter № 2, 7 November 2019

2019 AUDI AI:ME CONCEPT (AUDI IMAGE)

The second issue looked at how interior design can better respond to consumer demand, such as by enhanced audio and personal-technology integration, easier mobility, and new alliances and services.

As described almost every week in DVN-I, a growing number of electronic systems and functions in the car are constantly adding to the driving experience, under the CASE megatrend umbrella (Connected, Autonomous, Shared, Electric). It is changing the entire automotive world—not just the vehicle itself, but also the driving and passenging experience. With increasing autonomy of the car, the driver will have to focus less on the traffic, and so will have more time to spend on relaxation, work, entertainment, or whatever. We can expect the focus of buyers' attention to shift from the long-dominant engine and powertrain specs towards

the interior as a living space. In recent years, automakers and suppliers have presented a great variety of automotive interior concepts. Now, what are users really expecting from the auto interior of the future?

DVN-I brings the tools and parts needed to imagine a world wherein a car's interior, and the accompanying cabin experience, are the two most important vehicle differentiators. In this world, people aren't waiting for the next new car…

DVN-I Newsletter № 100: The Third Living Space

In our hundredth newsletter, on 24 February 2022, we wrote:

"DVN Interior is almost three years old, and today we celebrate our 100th newsletter. What does it represent? It means more than one thousand innovations introduced to the DVN Interior community. So many things are happening in vehicles becoming ever more automated, more connected, more electrified, and the interior experience is fast becoming the main focal and unique selling point".

The idea of the now is car interior as a third living space, where experience is the signature, where you're able to have multiple activities, beyond driving. A place where emotions play a huge part in how we experience car interiors. With digital, software, and sensing technology, millions of new ideas are made possible to enhance occupant experience through what they see, feel (including feeling safe), touch, hear, and elsewise perceive.

LUCID AIR (LUCID IMAGE)

Controls and displays: physical or touchscreen-centered?

VW GOLF (VW IMAGE)

So maybe we shouldn't hurry to bury all the dashboard buttons yet, when voice-activated systems are not fully ready yet. TRL says further research is necessary to steer the use of spoken instructions as the safest method. They spoke about development of conversational artificial intelligence which enables speech interfaces to operate at a complex level. Voice control systems only understand a set of key commands when

applying conversational AI could widen its capabilities to include all forms of dialogue to enable a versatile, natural, and safe interaction.

We looked at growing evidence that physical controls are better than touchscreens. Industry sometimes refers to whatever is visible and palpable as the first inch, so we went an inch deeper on the constellation of questions about tangible contact between driver and controls.

Los Angeles Auto Show 2022

In our **flagship Los Angeles Auto Show 2022 Report**, we wrote of car interiors as a hot spot, probably the primary main one, for design and style innovation, and the vehicles on display in LA showed that interior designers are stretching their imaginations in new directions.

Meanwhile, new materials; technologies, and techniques are expanding the range of the possible—and, crucially, the affordable and the feasible. At the same time, traditional elements are still acquitting themselves well; despite the demand for display-type virtual instrument panels and touchscreen controls, there's evidently still a role for physical gauges; knobs; buttons; dials, and (saints preserve us!) even the occasional lever or two. Pushbutton shifting is coming on strong, but there's also all manner of sticks and dials and knobs to do the job. Seats and headrests have perhaps never been quite so various as they are now, and we marvelled at the colorful departure (at last!) from years and years of nothing but black-grey-beige upholstery and trim. Lighting is an integral interior design element for function and decoration. Dashboards range from proudly upright to expansively horizontal. There's even some fun whimsy in HVAC air registers. At the other end of the variety scale, almost the whole of the industry seems to have pounced on an astoundingly uniform steering wheel design.

HMI

PORSCHE PANAMERA (PORSCHE IMAGE)

HMI is a perpetually central topic at DVN Interior, along with lighting; materials, and sustainability. They're converging as technology advances, and that's a central theme of the DVN

'Smart' surfaces—for a wide variety of definitions of 'smart'—are a fast-growing trend integrating multiple technologies. Sensors, switches, and other bits of hardware are integrated into surface materials such as PVC.

Voice control of vehicle functions and features is the topic of this week's in-depth article. We hear more and more about voice technology, as the technology is maturing and electrification…

Haptic technology has the potential to create new channels for interaction between vehicles and their operators and occupants; to increase usability, and maybe even to improve safety.

Does the steering wheel have a future?

User Experience

RENAULT MÉGANE E-TECH (RENAULT IMAGE)

Driving is more than just getting from point A to point B. It's about the whole experience, and every detail counts. What you see, touch, and interact with is paramount to the experience, and interior lighting plays a central role. In this week's in-depth article, we look at how interior lighting gives users a better sense of control, with minimal distraction and maximum intuitiveness.

CMF

INTERIOR CMF DESIGN FOR GAC M8 (GAC IMAGE)

CMF—Color; Material, Finish—is a kind of industrial design applicable all over a vehicle, particularly in the interior. CMF designers define materials: the thickness of a leather grain; the touch characteristics of every surface…

Sustainability

COVESTRO DEMONSTRATOR AT K FAIR 2022 (DVN IMAGE)

Sustainability is rapidly pervading every corner of the automotive industry and market—and every corner of the traditionally plastic-laden interior. Every day brings new concepts and applications in sustainable material value chain development.

DVN Interior visited the world's leading trade fair for the plastics and rubber industry: K, in Düsseldorf. Plastics represent about 10 per cent of the weight of today's vehicle.

Safety

FRONT, KNEE, AND SIDE CURTAIN AIRBAGS (HONDA IMAGE)

A vehicle's interior, ideally, is a symphony of design; comfort; convenience; utility, and safety. Active safety is built into the machine that is the car, to limit the likelihood and severity of a crash; very fine. Passive safety, on the other hand, is largely built into the cabin, naturally, as that is the space built around and for the occupants.

IIHS urges automakers to put some of the same safety technologies used for front-seat passengers in the rear of vehicles, such as seat belt pretensioners, which take the slack out of the belt at the start of a collision, and force limiters which allow the belt webbing to unwind slightly as the forward motion of a body pulls against the belt in a collision.

AUDI Q7 (WIKIMEDIA COMMONS IMAGE)

In the late 1950s came a novel idea for driver and passenger seats, aiming to provide individual seating arrangement. Bucket seats eventually liberated a new space, right in the middle, evolved over decades to the most socially engaging part of the vehicle: the center console.

Seats

AUDI'S 'EMPATHETIC' AI:ME INTERIOR

Most innovation centered around understanding occupant preferences—particular music, freedom to move, environmental light-treading, rear seat belt positioning, which cover the whole spectrum of what is expectable. It doesn't mean that core goals like safety and comfort should be abandoned, but they've became a given, and now successful seating product differentiation is derived from understanding customer preferences at an empathetic level.

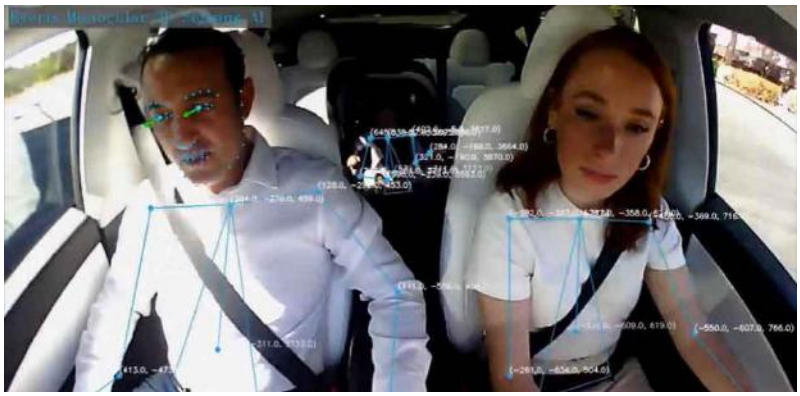
Interior Lighting

PEUGEOT 508 HYBRID (PEUGEOT IMAGE)

Interior lighting is much more than just 'the new chrome'. It enhances the travel experience, facilitates finding and operating vehicle controls, supports infotainment, and visually improves surfaces and materials. Today we have sophisticated, controllable solutions for interiors that also enable dynamic lighting effects. While

these solutions were virtually nonexistent in the past, apart from backlighting functions, they are now becoming de facto standard. These solutions allow the driver to control the cockpit's internal via HMIs with ambient and direct light settings, and dialoguing through light, ie alerts..

In Cabin Sensing



EYERIS IMAGE

In-Cabin Sensing is a must for safer, more functional interiors. It's based on an AI programmed to recognize human behavior by looking at faces; eyes; gaze (are the eyes still on the road?), and emotions, and hands (still on the wheel?), and body posture (indicative of attention or distraction?). The big promise here is to improve safety by making the car alert a driver who is distracted or falling asleep, with a steering wheel or seat vibration or an audible sound.

Acoustics

CONTINENTAL IMAGE

As far as the car interior experience goes, perception is everything. Acoustics is an important part of it, as spurious noises are annoying and distracting. The control of NVH (noise-vibration-harshness) and BSR (buzz-squeak-rattle) is increasingly paramount in car development.

Design

LANCIA PU + RA HPE (DVN IMAGE)

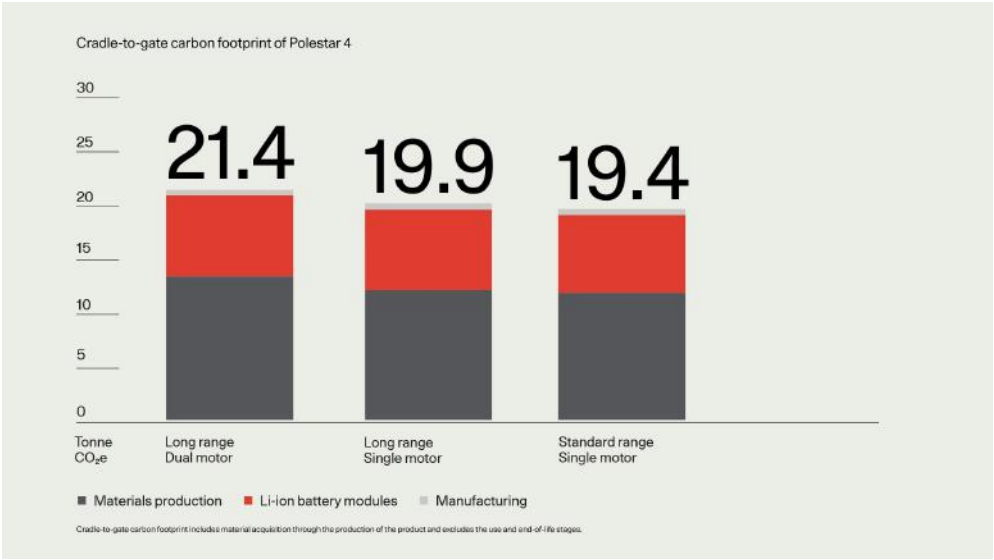
Car design is expressed through volumes, shapes and graphic symbols integrating contents of different origins. At Milano Design Week, automakers show their efforts to express what is technical, industrial, and functional merged with imaginary all in one tail of symbolism and reality. If the epicentral tech show is in Las Vegas, that of design is in Milano.

Interior News

Polestar 4 is Sustainability Champion

INTERIOR NEWS

POLESTAR IMAGES



CRADLE-TO-GRAVE CABON FOOTPRINT, MY25 POLESTAR 4

Based on the Geely Sustainable Experience Architecture platform, the Polestar 4 offers a wide range of sustainable interior solutions.

To reduce carbon footprint with enhanced recyclability, the materials palette includes knit textiles out of recycled PET, MicroTech vinyl replacing crude oil with pine oil; recycled textile backing and Scottish leather from certified sources. Door panels are made of composites reinforced with natural filbers, and carpets are made with recycled fishing nets. These and a wide range of eco-friendly, sustainable solutions throughout the Polestar 4 give it the lowest carbon footprint—19.4 tonnes of CO_2—of any Polestar model built so far.

The car is produced in Chinese plants combining green hydropower with rooftop photovoltaics. Low-carbon and recycled aluminium help further reduce the carbon footprint.

Polestar publishes full lifecycle carbon details of all their models; these cradle-to-grave figures include all factors from supply chain to manufacturing to recycling, ensuring that all data are available to consumers, to aid in their quest for (relatively) sustainable transport.

Polestar Head of Sustainability Fredrika Klarénsays, "To support our net-zero goal, we set carbon budgets for all our cars. Throughout the product development of Polestar 4, its carbon budget has influenced everything from material choices to factory energy sources. Sharing the LCA enables us to show that we can strive for net zero—one tonne of CO_2e at a time".

OnStar to Come in All GM Models

INTERIOR NEWS

GM IMAGE

OnStar is a subsidiary of General Motors that provides subscription-based communications, in-vehicle security, emergency services, turn-by-turn navigation, and remote diagnostics systems. Now, General Motors will expand OnStar access; starting with the 2025 model year, all new Chevrolet, Buick, GMC, and Cadillac vehicles will have Automatic Crash Response, remote vehicle command, and navigation and voice assistance features as standard, with no extra cost beyond the vehicle's purchase price.

Automatic Crash Response provides immediate assistance after a crash, connecting drivers and occupants with OnStar call center staffers who can send help and relay information to first responders. Remote vehicle commands enable users to control their vehicle via smartphone, including locking/unlocking, remote start, and vehicle location. Navigation and voice assistance aim to simplify the driving experience with apps like Alexa Built-in, Google Assistant, Google Maps, Maps+, and Waze.

OnStar services, according to GM, will be included for up to eight years with every new vehicle purchase. The 2025 Chevrolet Trax and 2025 Buick Envista will be among the first to benefit. Cadillac customers will receive additional premium OnStar services for three years.

20 New Renault Comfort & Health Functions

INTERIOR NEWS

RENAULT IMAGE

In 2021, Renault founded Software République together with Atos, Dassault Systèmes, ST Microelectronis, and Thales. It is an incubator to help startups develop their ideas in artificial intelligence, cybersecurity, connectivity, embedded electronics and digital twins for use in the mobility environment.

Now that two cohorts have gone through the Software République startup program, Renault has implemented several of their ideas in a concept vehicle, the H1st Vision (for 'Human First Vision'). It was unveiled at Viva Technology last year in Paris.

The demonstrator shows 20 fully-functional ideas designed to put people at the center. For example, the vehicle is designed to detect a person's posture and face as soon as they approach the driver's door. If the user—having previously created a profile—is recognized, the doors unlock and the seat they're approaching automatically moves into whatever position the person previously set. Renault says profile data will be encrypted and stored in the vehicle's systems.

Inside the car, passengers can enjoy the sound of an immersive audio system with 16 loudspeakers. It was developed in collaboration with musician and music producer Jean-Michel Jarre. The audio system provides a spatial sound experience with a new type of microphone. To prevent the driver from missing an approaching emergency vehicle, a tweeter in the headrest warns the driver acoustically.

The occupant monitoring system watches for fatigue and bad posture, and also keeps track of the driver's physical condition. Sensors in the steering wheel monitor their heartbeat, and a sensor in the seatbelt analyzes their breathing rate. The system compares the data with the driver's 'usual' profile and informs them of their state of health. A camera in the vehicle and the microphone under the rearview mirror detect the driver's mood by analyzing their voice and facial expressions. If the technology detects that the driver is irritable or stressed, it suggests a breathing exercise or pause (no word on a contingency plan for if such a suggestion inflames the driver's annoyance into rage). While the vehicle is parked, the health data can be sent to a medical assistance service, if the driver agrees, and a video conference with a doctor can be set up.

There is also a virtual twin for the car. It can communicate with infrastructure, public services, and various other entities. The Software République roadmap envisages launching ten new digital services and products on the market by 2025, supporting at least 50 startups and offering digital services in more than 50 regions around the world.

L&T Technology Uses Marelli Digital Twin

INTERIOR NEWS

MARELLI IMAGE

L&T Technology Services (LTTS), a provider of digital engineering and R&D services, is using Marelli's digital twin solutions to improve automotive software development processes and reduce prototype costs for software-defined vehicles.

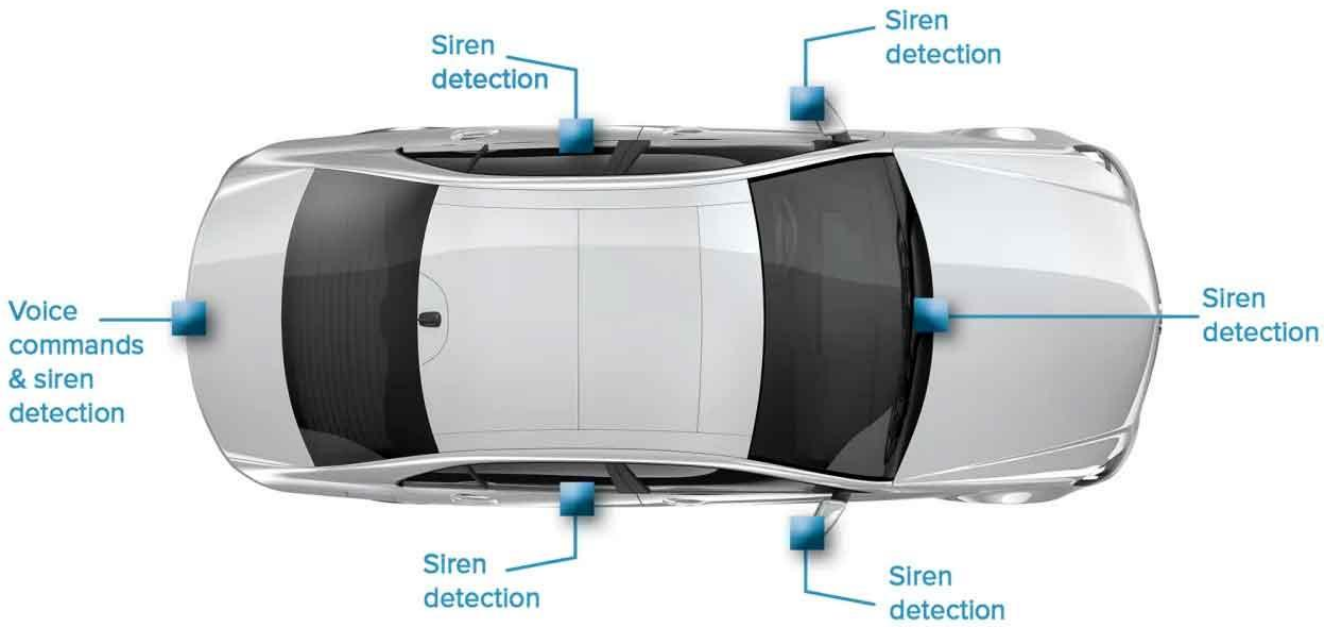
Marelli's digital twin, developed with support from LTTS and using Amazon Web Services (AWS), acts as a virtual replica of the car's entire electric-electronic architecture. The replica includes information clusters, infotainment systems, zone control units and body components.

Powered by the Snapdragon Cockpit Platform from Qualcomm Technologies and LTTS's cloud-based virtualization solutions, the digital twin is claimed to reduce software development time by up to 70 per cent, and prototype costs by up to 30 per cent.

Abhishek Sinha, COO and board member at LTTS, said: "This partnership is not only catalyzing unparalleled efficiencies in automotive software development but also spearheading the future of automotive infotainment through our digital twin offerings".

Knowles V2S Vibration Sensing: The Future of Sound Detection?

INTERIOR NEWS



KNOWLES ELECTRONICS IMAGE

Knowles, a global provider of advanced microacoustic microphones, speakers, aand high performance capacitors and RF products, has developed what they call their Digital Vibration Sensor, or V2s. They say its small size, good signal-to-noise ratio, large bandwidth, and low power consumption make it ideal for automakers looking to add high-quality audio pickup for emergency vehicle detection and voice command.

New ideas for increasing safety and comfort rely on detecting sounds outside the vehicle for context awareness and external voice pickup. Context awareness includes, for example, detecting an approaching emergency vehicle to help the driver or the autonomous driving system react as early as possible. And external voice pickup would allow voice commands issued outside the vehicle to replace gestures like kicking under the car body to open the hatchgate, or other hands/body movements.

Traditional audio sensing, with microphones, has been so far less implemented because subject to failure when exposed to outdoor elements. Alternative methods, such as vibration sensing, offer immunity to harsh elements such as water and dust. Traditional microphones need to be shielded with membranes adding cost and complexity, but existing car parts like windshields, side mirrors, and bumper panels can be turned into vibration sensors.

Vibration sensing requires lower integration costs and is more robust to environmental agents. Tests conducted at various vehicle speed with sensors at different locations on the car have shown results comparable to traditional microphones.

ZF's Intelligent Seat Restraint Systems

INTERIOR NEWS

ZF IMAGE

Euro NCAP intends to retire their current protocol and replace it with a new one in 2026, which will group tests as applicable to safe driving, crash avoidance, crash protection, and postcrash safety.

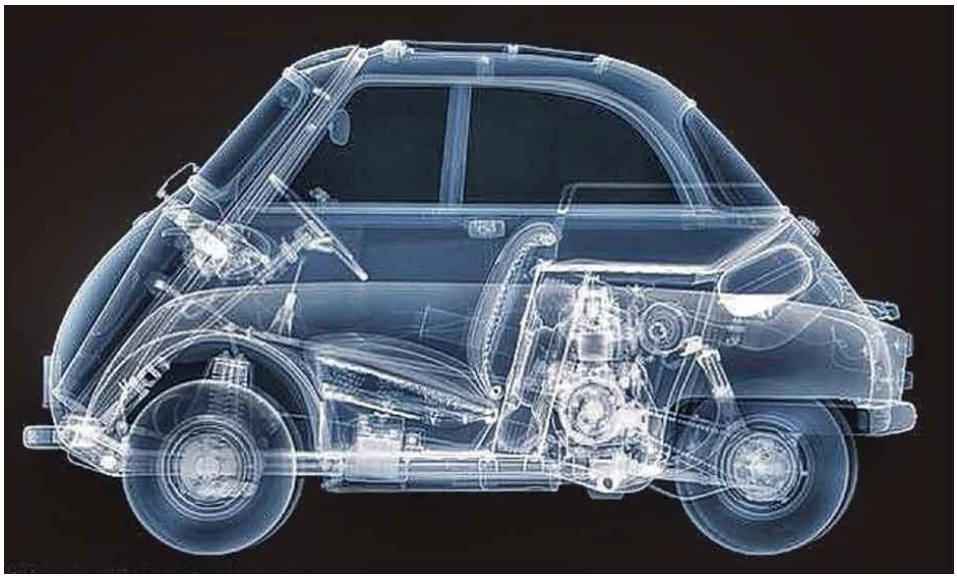
The updates will be implemented over three years, to make time for development of protocols and test equipment. These changes are driven both by the continuous improvements of driver support systems and the need to make tests better reflect real-life situations. Moreover, a greater focus on gender equality and the aging population from passive safety systems is needed, facilitated by DMS technology. ADAS will help make for smarter restraint deployment.

So, ZF has developed an improved seatbelt tensioner called MSLL (Multiple Switchable Load Limiter), which reduces forces during the crash to respond individually to people of different shape and size. Sensory recording of the interior will allow in the future to recognize even better which people are sitting where and which belt forces are to be applied individually in the event of a crash. Primary devices in use to achieve better monitoring are interior cameras, but also the seat belt system itself can provide valuable information, as the sensors can elaborate data to get information about body circumference, stature, and weight. In addition, outside sensors can help understanding from which direction an impact is coming, to allow MSLL even more precision in adapting individual protection in the event of crashes with impact speeds up to 35 km/h. This is particularly valuable for children or elderly people in the rear seat. The system could also improve occupant safety for heavy people in crashes with impact speeds above 56 km/h.

The Design Lounge

The X-Ray Isetta: Top Secret Space Allocation

THE DESIGN LOUNGE



Unexpected design projects may lead to out-of-the-box solutions. Among the design studio's prospect confidential projects a decade ago, there was an unfamiliar design-brief stating that following the latest technology trends, any enclosed volume on public space could theoretically have its own postal address. Intriguing! So, anything could be a post box, and while that statement is quite irrelevant in any automotive context, when that enclosed envelop can be both static and itinerant, then everything becomes more interesting. It is like saying the postal-bus and the post-box could now merge thanks to available tracking technology. But why that scenario would interest an automaker's advanced design studio? I definitely had to read further…

Back in the early '90s, I remember an interior design project based on the upcoming technology of run-flat tires. I had faced a similar dilemma: what a run flat tire had to do with the future vision of car interiors? Indeed, projecting on the idea that this tech would be widely adopted, spare-tire trunk space could be used otherwise. While that space was often embedded in the deep engineering parameters of the platform, the project was suggesting a midterm stage, addressing the existing and still active, to that day, platforms and a longer-term vision that would bring along new silhouettes as derivate of the architecture changes in the rear compartment. While the first generation of products had a bit of an aftermarket flair through diverse, smart, cargo applications, the idea took grip and an entire portfolio of tier-one supplier products would be showcased at the upcoming motor shows. That included third row seats at all possible resolutions from pop-up all the way to pivoting 'tailgating' bench seats according to vehicle type and segment. Smart storage solutions would apply to three-box sedans, while hatchbacks and SUVs would clearly integrate the system as part of the interior space with often amusing features or even premium options. And this became the car as we know it today from Opel Zafira with its additional 'trunk' seats (a seven-seater at about the length of a VW golf) to the most spacious and premium BMW X7's third row.

Fast forward to 2014. The secret project-brief talked equally about 3D envelopes but in a much more abstract way. This was referring to any enclosed envelop within a car. It was not about replacing an old technology with a new-one, nor an existing component with a better upcoming application. It was really just about, thin air; anything that was empty and enclosed within a car body(!). Driven by curiosity I signed up for the project

and started a tactical research with platform engineers. We essentially X-rayed any available car silhouette starting obviously from the greater SUVs with generous volumes, where chances were, indeed, greater to detect empty spaces. It felt a bit like designing a car for smuggling. The basic idea was similar but luckily the context very different. In product development terms, it was like addressing a healthy remedy for car obesity. With cars growing in volume, many exterior car features could now easily become 'doors' to access a specific part of interior or cargo compartments, without necessarily accessing the rest of the car. This hint of partial accessibility would enable a multiple 'partial' ownership of enclosed itinerant spaces used as delivery boxes. Cars could now have their own ZIP code. A great horizon of partnerships was envisioned in this hypothetical scenario, including market leaders such as Amazon. The thing about cars is obviously that they can travel in places but in this particular project brief, the car was seen as an asset even when stationed. The car was the destination itself. Through a specific app people could access ‘the box’, recuperate or place a package, knowing the place, the timing and the destination beforehand.

Besides the greater business vision, from a design and product development standpoint, I remained very aware and equally intrigued of all possibilities that intricate 3D spaces, like car interiors could enhance. Great ideas often happen when looking something though a different lens. At the final presentation, some of the most amazing usage scenarios, rendered in the flashiest of all CG imaging, were so convincing that we thought we were already living the dream. Some of the ideas revealed appealing enough to make it into the upcoming car shows. The top-secret project was indeed, as often top-secrets do, aiming at something else. It was the design director’s way to sponsor space-optimization and 3D envelopes in car interiors. The director was Jean-Pierre Ploué and he succeeded without a doubt. Furthermore, he placed a bug in every designer’s mind, to the point that 'x-ray vision' became an asset and common superpower among his designers for every future design project.

Recently I read an article about the BMW Isetta, a rather unlikely reference for this article since the object reaches the limits of 3D space efficiency at any possible definition of automotive architecture and certainly not the place where you would look to find important empty 3D envelopes. Yet, Klaus-Gunter Jacobi in the 1960s had his Isetta inspected by one of the most severe authorities (other than a design directors committee): East German (GDR) Customs. The process consisted on opening all doors and flaps, looking underneath the car, and removing panels as well as dog sniffing. The Isetta’s design passed the test, along with Jacobi’s hidden friend who made it undetected into West German territory! Indeed, during the previous months he had reengineered his Isetta with the goal to steal a centimeter out of every single component between the seat back and the engine compartment—creating a place for an additional, hidden, passenger. A bit like a second row, though not quite at the standards of an X7.

We all know—including the GDR guards—that creating space for an extra passenger in the Isetta without expanding the car body is impossible. Klaus didn’t see it that way, and most likely that’s why he made it. How? It will remain a top secret!

News Mobility

Ford Pulls Auto-Parking, Cites Low Usage

NEWS MOBILITY

FORD IMAGE

Ford COO Kumar Galhotra says Ford is yanking autonomous parking functionality to save money. The maker's Active Park Assist, first offered about a decade ago, comprises several autonomous parking features

With numerous generations arriving along the way, the tech aimed to take the stress out of parallel parking, with the vehicle first sensing a suitable space using onboard cameras and sensors, and then taking over driving duties, including accelerating and braking, to autonomously guide the car in.

"Connected vehicle data here is very important because it helps us see what we're providing, whether the customers are using it or not," Galhotra said during a conference call last week, according to a Bloomberg report. "So, one example is an auto-park feature that lets the customer parallel park automatically. Very, very few people are using it so we can remove that feature. It's about $60 per vehicle," he added, referring to the money Ford can save on each car by deleting the auto-park system.

Galhotra said the cumulative savings will total around $10m a year, although the figure could reach $2bn if broader manufacturing, freight, and material costs involved with producing and offering a technology such as this are factored in.

Mira Push TeleDriving

NEWS MOBILITY

MIRA IMAGE

Automated and autonomous driving still has problems. Among these: At L^3, the transfer of responsibility from the driving system to the driver has not yet been resolved. At L^4 and L^5, the driving functions reach their limits in edge cases such as bad weather, unforeseen obstacles on the road, or emergency vehicles that suddenly appear and break the traffic rules.

Experts therefore see teleoperated driving as a realistic intermediate step. This involves a person taking over remote control of the vehicle from a control station, either as a regular application or when the automated driving system requests assistance in edge cases.

Mira—not to be confused with MIRA, the UK Motor Industry Research Association—is a German startup and subsidiary of Rheinmetall. They plan to control fleet vehicles with L^2 and L^3 assistance systems using a teleoperator (tele-driving). This could alleviate the need for an in-car driver, for example, when vehicles are transferred to and from customers or directed in restricted areas (e.g. depots, factory premises or airports).

Mira is developing L^4 and L^5 vans and trucks intended to drive autonomously in short-distance freight transport or as passenger shuttles. A 'tele-assist' could take over vehicle guidance in the event of disruptions and in the proverbial last mile, and temporarily guide vehicles through traffic by remote control.

The technology portfolio for teleoperated driving is available and already in trial operation, according to Mira Managing Director Heinrich Dismon, who described comprehensive environmental sensors in automated or autonomous vehicles, a 5G mobile radio connection and a control center with several teleoperator workstations, the 'Control Stations'. These include a realistic cockpit with driver's seat, steering wheel, accelerator, and brakes as well as large screens on which the teleoperator can view the road environment of a controlled vehicle.

The test vehicles are equipped with brake and steer-by-wire systems that can be accessed by the teleoperation kit developed by Mira and used to pass on commands from the teleoperator. In return, an additional vehicle control unit provides the teleoperator with near-real-time video data. According to Heinrich Dismon, the vehicles are already on the roads in Düsseldorf, Cologne, and other cities with special test licenses.

Mira says they see 'sufficient' potential for teleoperation-as-a-Service, estimating that up to six million L^4- or L^5-capable vehicles are expected in Germany by 2030. By 2035, the number of L^5 vehicles is expected to grow to around 750,000.

General News

Japanese AI Can Detect Driver Cognitive Capacity

GENERAL NEWS

Japanese information technology company NTT Data will develop a system that uses AI to detect the cognitive ability of elderly drivers, to reduce the risk of accidents involving them in the rapidly aging country.

The AI system will analyze driving speed, acceleration and deceleration, and other driving data to inform drivers of a decline in cognitive functions of their brain, such as the ability to make snap judgments and pay attention.

In January, NTT will begin an experiment with Tokyo-based cab company Kokusai Motorcars to develop AI. The company will collect a large amount of driving data from dozens of cabs whose drivers are 65 or older, develop AI algorithms and verify the accuracy of driver judgments. The experiment is scheduled to run until the end of June.

Data will be collected by attaching measurement devices equipped with global positioning systems, sensors, and communication functions to the vehicles. The data will be sent to AI to measure driving behaviors such as sudden braking and acceleration.

The data will be analyzed in conjunction with the driver's original cognitive function status and age to determine whether the driver's cognitive abilities are normal or declining.

Taxi companies are expected to use the system to monitor driving behavior over a period of several days and provide regular feedback on cognitive decline. The aim is to decrease the number of accidents while detecting and treating dementia at an early stage.

Later, the system will be made available to general drivers. The company is considering several ways to provide the system, including offering it to insurance companies so that it can be incorporated as a function of their insurance products.

Harman Joins Eclipse Foundation SDV Group

GENERAL NEWS

HARMAN IMAGE

Harman has joined the Software-Defined Vehicle (SDV) working group of the Eclipse Foundation. The SDV group presents itself as a vendor-neutral forum for collaboration between individuals and organizations. The members work on open source software for use in vehicles.

Initially, Harman will contribute to various Eclipse SDV projects. One example is Eclipse Ibeji, which provides the ability to express a digital representation of vehicle state through an extensible and dynamic architecture. This allows vehicle hardware, sensors and capabilities to be modeled and accessed. The company is also working on topics such as container runtimes for the automotive industry and cloud services for connected experiences.

Harman brings both automotive and consumer electronics experience to the SDV Group collaboration. The introduction of cloud-native technology in vehicles is an important milestone in improving the user experience. Another area is the intelligent cockpit, for which the Harman employees want to exchange best practices within the Eclipse SDV.