DVN-I
Automotive Interior

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Editorial

Driver Monitoring: Key To ADAS

CITROËN E-C4 WITH HIGHWAY DRIVER ASSIST

ADAS (advanced driver assistance systems) are a core focus area for DVN—lighting is key to driving vision, and can be considered the very first "driver assistant". Most driver assistants are vision-based, but blind to a crucial variable in the equation: the driver. That's why DVN Interior keeps a focus on DMS, Driver Monitoring System, as safety will require keeping track of the driver's state and position at every moment for the foreseeable future, at least up to L^3. This week's in-depth and HMI and Safety Interior News looks at navigation combining automotive grade systems with gaming-level performance, interior safety from every angle, and driver reaction time in case of unexpected events, or to transition automated vehicles

Mercedes-Benz finally took the wraps off their EQS electric sedan. With the "Hyperscreen" spanning the width of the dash, the EQS is meant to comfort and dazzle. We take a look from a

designer perspective in this week's Design Lounge.

Next week, we'll report on the Shanghai DVN Workshop's interior sessions, which took place earlier this week. Stay tuned! Not a DVN-I member yet? Subscribe **here**.

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Emotion 3D: Portrait of an In-Cabin Monitoring System

Sensors are basic to ADAS, vehicle automation, vehicle connectivity, and new mobility services. While exterior assistance was the first focus, vehicle interiors are being reshaped and rethought to provide a holistic in-vehicle experience. In-Cabin Monitoring System (ICMS) can include several subsystems like: Driver Monitoring System (DMS) Occupant Monitoring System (OMS). Deepening on the system architecture, these subsystems might be standalone systems with independent sensors and processing units or have a centralized processing unit.

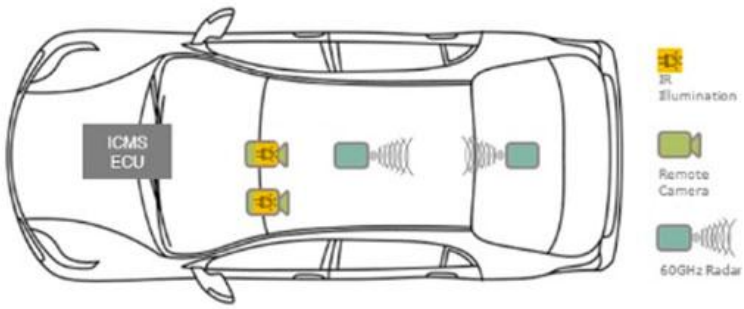


IMAGE: INFINEON

First, let's have a look at why companies like Emotion3D think future interiors need ICMS.

IMAGE: EMOTION3D

Almost all of today's new cars have some form of ADAS on board, enhancing both safety and driving experience. All of these systems are very well aware of their surroundings, but many of them are blind to a crucial variable in the equation: the driver. Why does the driver play such a crucial role for safety even in higher autonomy levels? Why it is important to know their state at every moment?

	LEVEL 0 no automation	LEVEL 1 driver assistance	LEVEL 2 advanced driver assistance	LEVEL 3 partial automation	LEVEL 4 full automation in restricted areas	LEVEL 5 full automation
THE DRIVER'S ROLE	The driver is in control of the vehicle and must constantly supervise the support features if activated.			The driver must take over control if the system requests.	All occupants become passengers. No driver necessary anymore.	
AUTOMATIC DRIVING FEATURES	– Provides warnings – Momentary assistance	– Steering support OR – Acceleration and braking support	– Steering support AND – Acceleration and braking support	– All driving tasks are covered by the system, but ONLY if all required conditions are met	– All driving tasks are covered by the system but ONLY within restricted areas	– All driving tasks are covered by the system
FEATURE EXAMPLES	– Emergency brake – Park assist (warning beeps)	– Lane keeping system OR – Cruise control	– Lane keeping system AND – Cruise control	– Automated driving on highways – Automated driving in traffic jams	– Automated shuttles operating in restricted areas	– Fully automated vehicle

SAE AUTOMATED DRIVING LEVELS (IMAGE: EMOTION3D)

Levels 0 and 1

With L^0 and L^1 cars, meaning most of today's cars, ICMS (in-cabin monitoring systems) have the potential to save hundreds of thousands of lives each year simply by warning drivers in case they get distracted, drowsy, or are driving dangerously. Around 94 per cent of accidents happen due to human error (according to NHTSA) which results in around 1.3 million deaths every single year (per the WHO). Many of these accidents can be avoided with appropriate warning systems in place, which is why many governments and automotive institutions are creating new regulations making driver monitoring systems mandatory in new vehicles.

Level 2

OMS OBJECT DETECTION (IMAGE: EMOTION3D)

Driving an L^2 vehicle actually goes more into automation. When automatic steering and braking/accelerating work together, they remove a lot of cognitive load; the driver becomes a supervisor, mostly not having to do anything more than tracking whether the car is "behaving" in a manner the human driver considers safe. Over time, if the system performs well, the driver will gain trust and their vigilance can (and probably will) slip: *It can't hurt for me to check my phone*, or even *I'll watch a movie while the system drives*. This kind of overtrust in the system can be deadly; there have been crashes, some fatal, with vehicles in L^2 mode while the driver was goofing off (doing things other than supervising the system).

It is clearly stated and widely warned that the driver's attention is required at all times, but—much like the early days of airbags, when people thought they no longer needed to use their seatbelts despite the bags being promoted as "supplemental"—people are wowed by the perceived autonomous capabilities of their car, and over-rely on it. The problem is aggravated by overly-loud technology influencers making claims not based in reality, or even naming their ADAS in a manner that misleads drivers (e.g., "Autopilot"). There have been attempts to defeat hands-on-wheel detection systems to cheat an L^2 into an L^3 vehicle—look and see the recklessness.

Industry is becoming increasingly aware of this problem, looking for solutions which cannot be cheated so easily. Camera-based approaches focusing on the eye gaze direction of the driver are probably harder to cheat than capacitive or torque-based hands-on-wheel detection, but they aren't the one-and-only solution because still missing is the knowledge of whether the driver and their hands are ready to quickly and accurately take control in case of emergency. Neither is the combination of gaze tracking and hands-on-wheel detection the answer to all problems—after all, the driving experience should be improved, not worsened.

Even on a regulatory level, first proposals for a multi-factor approach have been made, as for example in a new proposal for an UN Regulation on lanekeeping systems. These suggestions are highly important for a uniform standard; however, more work has to be done on how to optimize safety while creating an outstanding driving experience.

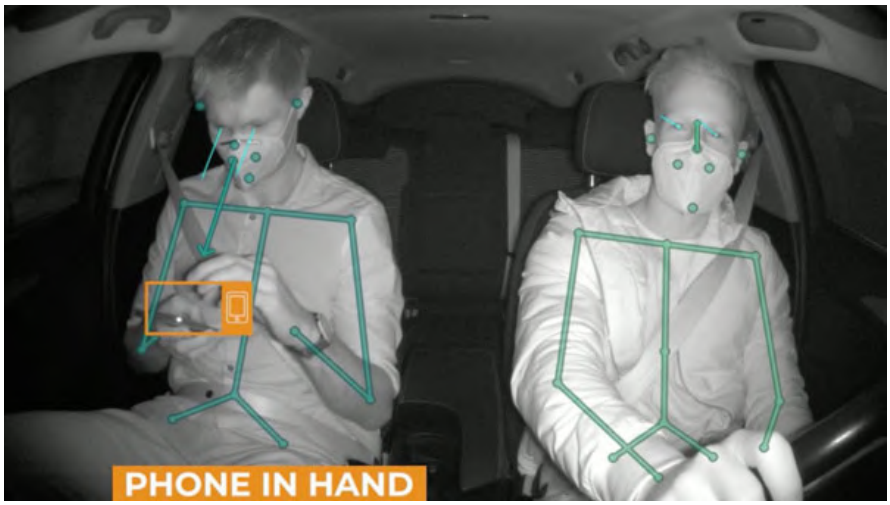
Level 3

L^3 vehicles "know" there is a situation coming up that they cannot handle—an improvement over L^2 vehicles without much clue about their limitations. Hence, L^3 is a big leap forward: it allows the driver to be disengaged from the driving and supervising tasks until the vehicle tells them to get their eyes back on the road and their hands back on the steering wheel.

ICMS, are still needed in L^3, but perhaps they might not need to be active continuously—only before the handover from system control to driver control, and during driver control to monitor distraction and drowsiness.

Although the technology might already exist, regulatory and liability issues have so far prevented true L^3 vehicles to drive on our roads. Many experts say that we might be stuck at L^2 for a while. As Richard Matsu from Autoliv said, "I'm a fan of pushing L^2 to be $L^{2.99}$". Until regulators will find a solution for the liability issues, carmakers will naturally be inclined to place the driver at the top

of the control hierarchy. For the time being, that means L^{2+}, with commercialized L^3 being in the future for awhile yet.



OMS PBJECT DETECTION (IMAGE: EMOTION3D)

Levels 4 and 5

At L^4 and L^5 there won't be drivers anymore, only passengers. However, this does not mean that ICMS is unnecessary. As passengers will be able to move more freely inside the vehicle, it is crucial to know where they are, how they are positioned and what they do. In case of an inevitable impact, the vehicle's safety systems have to optimally respond to the given situation inside the vehicle. They have to deploy airbags accordingly and might catch/fix objects inside the cabin before they become projectiles. And ICMS will have to automatically detect weapons, fights, or medical emergencies.

Emotion3D—Company Overview

Emotion3D, based in Vienna, Austria, provides in-cabin analysis software to the automotive industry for all applications from L^0 to L^5. Combining expertise in computer vision, machine learning and embedded software, they are a partner for developing advanced in-cabin analysis solutions. Their work covers all stages from research and predevelopment to series production. They've built a strong track record of successful automotive projects; their business model is to license software to mainly tier-1 suppliers, even as automakers grow increasingly interested in in-house software development for better understanding of what they get into their cars, and for quicker updates when needed.

OMS (IMAGE: EMOTION3D)

Their system is camera-based, and they worked on in-cabin monitoring software for automotive interior application since 2015.

BASIC PROCESS FLOWCHART (IMAGE: EMOTION3D)

Emotion3D develops AI-powered software "middleware" for image-based analysis to recognize and analyze human action and objects inside vehicles. This software generates relevant signals that enables suppliers and automakers to integrate innovative safety features and improved user experience into vehicles. Overall, it enables a comprehensive understanding of humans and objects inside a vehicle. It is the basic building block for intelligent safety and user experience functions.

Their product offering includes discrete driver- and occupant-monitoring systems, as well as a combined version of driver and occupant monitoring in one camera. The Emotion3D team can work with various camera technologies (2D as well as 3D) and their software is available for a wide range of CPU and DSP based automotive embedded platforms.

See DMS and OMS demonstration video.

Emotion3D CEO Florian Seitner tells us "Profound understanding as well as application experience of newest computer vision methods and state of the art deep learning techniques are the cores of our projects. All our in-cabin monitoring algorithms are optimized for running on low-power embedded architectures in real-time with minimal memory use and energy consumption. We believe, in-cabin monitoring will play a vital role in semi and fully autonomous environments. As you can imagine, we are not at all worried that our market vanishes with a rising level of autonomy—quite the opposite is about to happen".

Interior News

AI Safety System Seven Seconds' Warning

INTERIOR NEWS

A team of researchers in Germany have come up with a safety system that could warn drivers of (partly) autonomous cars that they will have to take control up to seven seconds in advance. That's would be a key performance to manage L^2/L^{2+} transitions (handover of control from self-driving to human-driving), or potentially any critical situations that the car cannot handle alone.

A team of researchers at the Technical University of Munich (TUM) have developed a new early warning system for autonomous vehicles that uses artificial intelligence to learn from thousands of real traffic situations. The study of the system was carried out in cooperation with the BMW Group. They claim an over 85 per cent accuracy.

To make self-driving cars safe in the future, development efforts often rely on models aimed at giving cars the ability to analyze the behavior of other traffic. But there's still one issue: what happens if the cars come across a complex situation, they have never seen before and cannot handle alone?

A team working with Prof. Eckehard Steinbach, who holds the Chair of Media Technology and is a member of the Board of Directors of the Munich School of Robotics and Machine Intelligence (MSRM) at TUM, took a new approach. Thanks to AI, based on recurrent neural network (RNN), the system can learn from past situations where self-driving test vehicles were pushed to their limits in real-world road traffic. Those are situations where a human driver takes over—either because the car signals the need for intervention or because the driver decides to intervene for safety reasons.

This technology uses sensors and cameras to capture surrounding conditions and records status data for the vehicle such as the steering wheel angle, road conditions, weather, visibility and speed. If the AI spots a pattern in an unknown driving situation, the driver will be warned in advance of a possible critical situation.

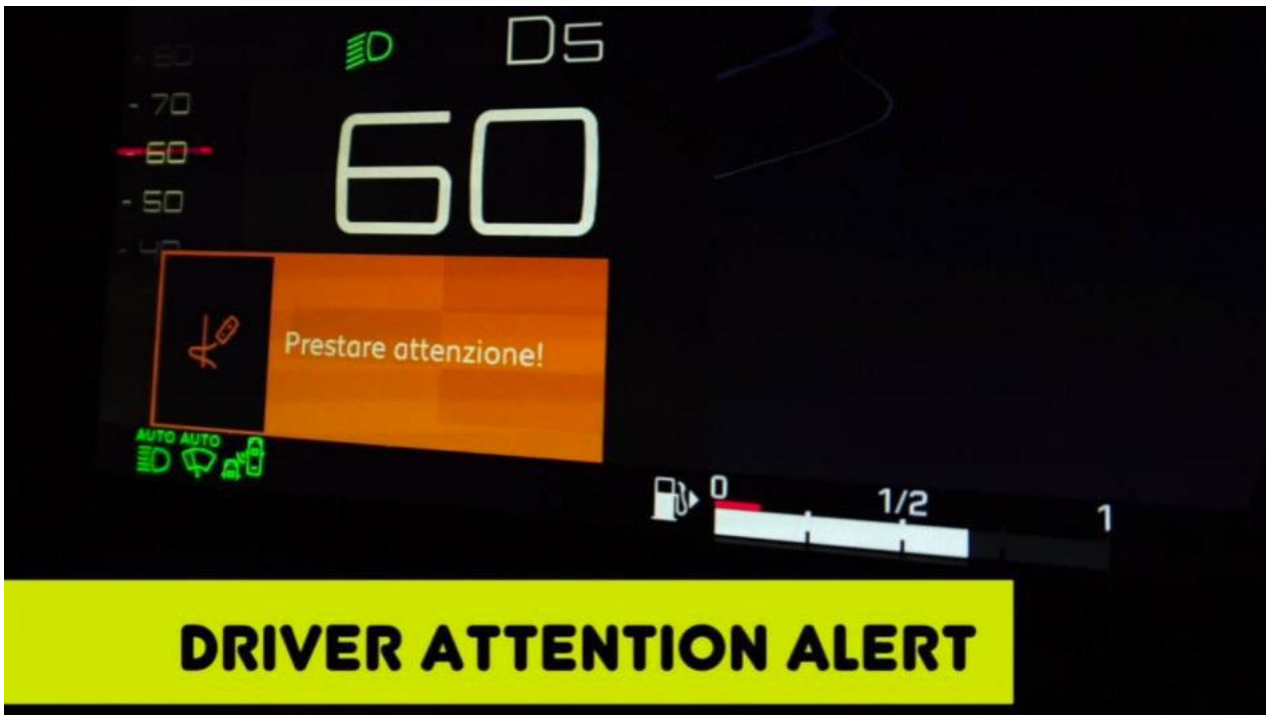
"The big advantage of our technology is that we completely ignore what the car thinks. Instead, we limit ourselves to the data based on what actually happens and look for patterns," says Steinbach.

On tests in around 2500 situations with driver intervention, the study showed that the AI is already capable of predicting potentially critical situations with better than 85 per cent accuracy,up to seven seconds before they occur.

This "7" time slot" is a good starting point, but several studies, recommendation or regulation drafts mention some time in between 1.5 seconds (Kölner-Modell still today legal basis for the German legal practice for traffic jurisdiction for passenger cars), or CLEPA's opinion to give the driver a realistic 2-second chance, to react to a warning; e.g., emergency braking.

Automotive Safety From Every Angle

INTERIOR NEWS



CITROËN GRAND PICASSO SIGNAL (IMAGE: MOTORBOX)

In a recent webinar sponsored by Vayyar, "Inside Out: Reassessing Automotive Safety from Every Angle", panelists discussed the biggest challenges automakers and suppliers face in complying with rising safety standards, focusing on in-cabin sensing and autonomous driving Moderated by Andrew Miller, Former President and Chairman of the Board at Euro NCAP, BMW, SEAT, MIRA, Vayyar and kidsandcars.org contributed to the discussion.

The panel explained how perceptions of automotive safety have changed over the past decade due to progressive automation, and why automakers are putting driver and passenger protection at the heart of vehicle development. Safety relies now on sensors, electronic and software architecture, and on large amounts of data required in image processing and machine learning engines.

With an ultimate goal of zero fatalities, the industry needs a streamlined, platform-driven approach to this safety chain, to reverse the rising complexity and costs automakers are facing in and out of the cabin. It has also to take into account that in an automated scenario, no machine error will ever be accepted, even if today human error is more or less accepted.

It's interesting to notice that ADAS and Driver Monitoring are part of the same safety system, from detection on the road to driver and machine reactions, through a chain of camera, lidar, sensors, software, and alarms.

Vayyar, a sensor company from Israel, develops scalable platforms, exceeding current specifications, to be able to comply with yet-unknown future regulations; in-cabin monitoring with 180° field of view for the whole cabin, for example, and limited surveillance. This wider field of view is likely to cover in the future new specs such child presence in the rear, rear seat belt reminders, intrusion warning, and gesture control. These new features comply with new recommended practices, like those driven by non-regulatory organizations such as kidsandcars.org, to make child life on board safer: anti-pinch windows, pull-up/push-down window switches, child presence detection, rear view camera, and other suchlike.

Unity, Here Show Real-Time 3D Experiences

INTERIOR NEWS

In a webinar, Here and Unity presented what's next for the in-car navigation experience, combining their respective navigation and real time (RT) 3D gaming capabilities.

Here is a Netherlands-based mapping and location platform services company with roots in US Navteq and Finland-based Nokia, and owned by global brands: Mercedes-Benz, BMW, Audi, Mitsubishi, NTT, Intel Capital, Bosch, Continental, and Pioneer. Unity is an American video game software development company based in San Francisco, with roots in Denmark as Over the Edge Entertainment.

Automakers are under increasing pressure to creatively differentiate, as HMI displays increasingly become a large part of vehicle UX, map A□B guidance must include situational awareness, contextual maps, and shared control dialog. On the development side, current HMI costs money and time, and workflows have their pain points.

The two companies' partnership aims on developing embedded automotive HMIs with state-of-the-art, RT3D rendering capabilities. The collaboration will also extend to work on next-generation location technology for autonomous driving, simulations, city planning and digital twins. It also helps designers with a toolset where they can explore, experiment, and iterate on their own, to be able to generate new designs and solutions more rapidly.

The partners have developed a proof-of-concept application of an embedded infotainment system. Created on Unity's platform and featuring Here's 3D city data, it presents a futuristic, wide-screen navigation experience of a 3D map of San Francisco and demonstrates what can be achieved with the addition of HMI workflow design improvements, with functionalities such as drag-and-droppable pre-defined elements.

Here Technologies Senior Manager and Principal Designer Michael Limber says "Unity's robust 3D rendering engine makes Here's 3D city data, route guidance and navigation look impressive, providing a rich and immersive in-dash experience to the driver".

The Here-Unity application runs on Qualcomm Snapdragon. Last year, Unity announced collaborations with multiple companies across the HMI ecosystem, including Continental's Elektrobit and NXP Semiconductors.

Covestro: Digital Material Selection via CMF-Design

INTERIOR NEWS

IMAGE: COVESTRO

Interior material selection is more and more a challenge, as new challenges are popping up on the development side (differentiation, environment, texture and touch, light…). Covestro has developed tools to inspire designers and CMF (Color, Material and Finish) experts. The CMF Sample Library went digital as part of the launch of Covestro's Virtual Sample Library to showcase the different aesthetics with the extensive portfolio of materials.

With the WeChat mini-program and CMF Trend Worlds, Covestro enables a digital customer experience for designers and CMF experts. CMF Trend Worlds provide a fun visual and digital approach to showcase the CMF expertise and the inspiring material options across the portfolio of products and services. And beyond that, the digital CMF Trend Worlds laid the foundation to create a comprehensive customer experience focused on virtual materials.

The Materials Library focuses on the visual and tactile design—the aesthetics—of products. It highlights the contents available through the Covestro Solution Center, such as key benefits of materials as well as case studies, and features CMF Trend Worlds. Designers and material experts can search for specific materials or draw inspiration from the whole product range. The combination with CMF opens up a wide range of design possibilities. The material library will continuously expand with new samples, features and services.

The virtual Sample Library will also be integrated into digital trade shows and be part of Covestro's virtual showroom, where designers can discover how innovative and functional materials are changing the way people live, work and communicate. For example, at the Fakuma trade show last October, the slogan was "Rethink Materials"—with the focus on discovering new applications for the products and developing new solutions to meet today's design, technology, process and materials challenges.

In the virtual showroom of Covestro, visitors can find out about future design developments with thermoplastic composites or advanced 3D printing technologies. This virtual showroom will be more and more important in the future, because the design processes and the development of digital prototypes will increasingly take place in virtual environments.

Although the virtual sample library has only recently gone live, it has already been explored by visitors from all over the world. Covestro will continue to develop it and add additional features and content, and will install the physical version of the Sample Library in showrooms and Color & Design Centers at specific locations worldwide to provide customers with a haptic experience. Many design and engineering tasks are increasingly being done digitally. This trend will continue as data, data transfer rates and processing power evolve in conjunction with artificial intelligence and machine learning.

With the ever-growing number of consumers focusing on interior aesthetics and overall comfort, the choice of materials, haptics and lighting are playing an important role for the customer's

purchasing decisions. In collaboration with GAC Design's Advanced Design team, Covestro's global Color & Design team in the Polycarbonates segment has developed a set of specially tailored design themes and solutions such as thermoplastic composites for lightweight seatbacks for concept electric cars.

Hyundai Staria: Minivan Revival?

INTERIOR NEWS

IMAGE: HYUNDAI

Hyundai has revealed interior details of their latest vehicle, the 2022 Staria minivan. Designers developed it from the interior out; the results of this "in-out" design process is large panoramic windows to give the cabin a spacious feeling, and low beltlines—a nod to the traditional Hanok style of Korean housing architecture.

IMAGE: HYUNDAI

The interior includes a10.25" infotainment screen in the center of the dashboard, and a digital gauge cluster above the steering wheel providing the driver with a range of information. Ambient lighting amplifies the floating design of the interior components.

It's a big vehicle: 5.3 m long, 1.99 m wide, and 1.99 tall. Seating arrangements are customizable, ranging from a two-seater configuration all the way up to an 11-seater layout with a third row for multiple-occupancy travel. The 7-seater arrangement can comprise seven premium relaxation seats, while the 9-seater can still accommodate nine individual seats. There are not only electric comfort seats in the front, but also multifunctional seats in the second row, which can be adjusted electronically, moved longitudinally and optionally rotated 180°. The backrests can be adjusted to a fully reclining position. A one-touch comfort function also allows the driver and front passenger seats to be adjusted automatically.

A wide-angle camera keeps an eye on the rear passengers at all times, even during the journey—ideal for small children in the rear seats. An intercom system allows passengers in the front to communicate comfortably with those in the rear. A Bose sound system provides an all-around high-quality sound experience. A 64-color ambient mood lamp, provides a lush interior atmosphere. Direct and indirect interior light can illuminate selectively cockpit, console, door and the different cargo zones.

IMAGE: HYUNDAI

Under the term "Hyundai SmartSense", safety technology package, the carmaker combines points such as six airbags with assistance systems, an autonomous emergency braking assistant, an active blind spot assistant and a globally unique and wireless seat belt warning system. An exit assistant sounds an alarm if a rear-seat passenger will try to open one of the two sliding doors while a vehicle is approaching from behind. The occupant alarm sounds an acoustic warning signal if the driver has left and locked the Staria and there are still occupants or other creatures on the rear seats.

Stahl Lightweight Leather

INTERIOR NEWS

Leather interior is still the preferred premium solution for most brands, at least in some major markets. One of its drawbacks is weight. That's why many lightweight leather initiatives have been recently taken, to improve performance and benefit the environment.

Every gram matters. As weight of a leather hide varies, depending on how thick it is, its natural structure and how many processing materials it contains, opportunity of weight saving per car is significant—up to several kilograms!

Stahl, from the Netherlands, with roots in the US in the 30s, is a world leader in the specialty chemistry of coatings, processing and treatments, provides functionality, durability and comfort to many different materials used in everyday life. Leather is one of their main materials. They've developed Stahlite® to reduce weight, while maintaining the luxurious feel and the inviting appearance that consumers expect. Stahlite maintains the leather's normal stability, high strength and quality properties.

The magic works by replacing a large portion of weight increasing retanning agents and natural-based softening agents, also called fatliquors. It enables tanners to re-tan leather without over-filling or over-plumping the leather and it softens without adding much weight. All whilst enhancing the quality of the leathers and maintaining its valuable cutting area.

Compared with traditional leather, lightweight automotive leather delivers weight savings of 7 to 8 kg, or up to 30 per cent, in something like a very large or luxurious car or perhaps a mini-bus with a leather-trimmed interior. That is a potential saving of 0.4 to 0.5 g/km of CO_2 from the vehicle and a very useful gain.

Switching to the Stahlite range also benefits tanners and the environment, as it can be produced quickly—re-tanning running time can be shorted by up to 40 per cent, while using less electrical energy, less water and processing products, and reduction of up 40-50 per cent in COD (Chemical Oxygen Demand) and 60-70 per cent BOD5 (**Biochemical Oxygen Demand**) in tannery effluents.

The Design Lounge

Mercedes EQS Premium S-Class BEV

THE DESIGN LOUNGE

MERCEDES-EQ, EQS, INTERIEUR // MERCEDES-EQ, EQS, INTERIOR

Purposely creating a direct competitor to their own S-Class sedan, Mercedes has just officially introduced the long awaited EQS BEV premium luxury sedan. More aerodynamic and modern than the recently updated S-Class, they are very similar in size, but with vastly different proportions due to the short overhangs and hatchback used in the EQS.

Mercedes EQS

4,761 MM LONG • 1,884 MM WIDE • 1,624 MM TALL • 2,873 MM WHEELBASE • 2,425 KG

Mercedes S-Class

5,179 MM LONG • 1,954 MM WIDE • 1,503 MM TALL • 3,106 MM WHEELBASE • 2,070 KG

Looking at the rear door openings, the S-Class is a K-type door following the rear wheel opening like most vehicles. With its long wheelbase, the EQS rear door has a simple opening line that recalls the classic Citroën CX and DS cars, adding to its unique BEV proportion.

MERCEDES EQS COCKPIT AND ENTRY

This wonderful image from Mercedes captures the design image perfectly for this new premium vehicle. The bridge like floating center/floor console while using contrasting materials such as: soft stitched white leather, natural open-pore wood, real metal accents, light piping and the deep gloss black "Hyperscreen" add contrast and a high premium perceived build quality to the interior.

The doors automatic ally open when the user approaches and close when they tap the brake pedal, to compliment the car's prestige image.

Mercedes EQS driver interaction has a decidedly high-tech, premium feel to it

A key factor toward this is the optional full-width "Hyperscreen". It integrates three massive displays for the driver and passenger, with oversized HVAC ducts on each end, into one display unit that floats over the instrument panel. The Center HVAC ducting is integrated as a slim opening that introduces a flowing element into each door panel and IP extending and visually wrapping the front comparting area.

The wide, multi-depth augmented-reality HUD unit adds another layer of interaction and technology to the interior, which…

…in combination with the drivers display and capacitive sensors integrated into the steering wheel finalize this as a modern take on a traditional ambiance for Mercedes without resorting to a tablet-type display.

The use of floating elements is strong in this design theme and can be seen throughout the interior, yet it is the detailing that impresses such as the metal inlays within the open pore wood trim and French seam stitching on the floating center console.

The overall seat and trim cover design presents a handmade-level perceived quality with perforated material in between flowing stitch shapes…

…deliberately contrasting with the high-tech elements of the interior best shown in the rear seating area. With the center armrest and seat controls integrated into the door panels, these technology interface zones are highlighted using metal and gloss black materials surrounded with a slash of ambient lighting to highlight or float them from their surroundings.

EQS models without the optional "Hyperscreen" use tablet-style cluster and center displays as introduced in the S-Class and updated C-Class models. Instead of the large, glossy "Hyperscreen" panel, there's either an open-pore wood inlay with metal trim, or a metal textured surface that creates still another layered surface treatment.

Next week in part 2 of the EQS overview, we will focus on how lighting is used to enhance ambiance and materials of the interior design.

News Mobility

_ Car interiors Unplugged.

NEWS MOBILITY

ROLLS-ROYCE 103EX CONCEPT (IMAGE: ROLLS-ROYCE)

15. Long hoods _

(this story is part of an ongoing series introducing automotive interiors as an evolution of our habitat)

Real estate is about location while cars about proportions, and whichever way we interact with our mobile habitat, the 'status' is carried within, no matter the location. It is as if humans have invented the magic formula to take the 'location' along for the ride as a part of an identity and that is highly emotional stuff.

The number of horses pulling a carriage represented (horse-) power and prestigious mobile rank. Later on, an analog translation through upcoming mechanical culture converted horses into 'cylinders'. With V16 and V12 engine-blocks the pioneers of automobile depicted mobility prominence into stunning motorized coaches of analogous proportions to 16-horse kings-team of horses and its 12-horse nobility version, designating equivalent prestige and putting in place the first distinction between Luxury and Premium. Ever since the early 20's, long hoods stand for high mobility grade. In post war America, motion took a thousand expressions of styling and anything that defined and enriched mobility heritage into a multitude of shapes, formally ranking mobility as a social status. Post oil-crisis energy consciousness, efficiency and aerodynamics dialed previously accumulated practices into elaborate aesthetic codes. Designer debates on proportions and styling-cues converted inches to millimeters. With mechanical parts turning 'smart', freeing more space as well as perceptions of automotive morphology, it is only now, that getting away from the long hood mind-set, a new start of aesthetic expressions augmented by technology, outlines upcoming mobile styles. Cumbersome, hard components, reminiscent of previous architectural perceptions 'diluted' into new optimal arrangements between interior and exterior minimizing all 'grey' volumes and so is often mentioned that the future of mobility is about interiors. Separation between engine and habitat is not really a subject since electric engines and

peripheral components can be divided and placed elsewhere, even in the wheel hubs. This novel relation between people and their surroundings while in motion, remains though unstructured and shapeless.

The only room in house typology designed and setup for creation and production is the kitchen. Equally, car interiors are a place specifically conceived to fabricate original motion. Thus, car-bodies can be seen as protective shells of a 'mobility lab'; a short of headquarters of motion and feelings in direct relation to the moving landscape.

Today an ever-growing touchscreen activity tends to dissociate emotions from any physical proximity. The unprecedented excitement for anything digital brings humans into car interiors traveling through a smartphone, away from driving emotions, disconnected from 'the mode of use' as well as the legacy of car interiors. The new status of mobility is open to interpretation.

In interior architecture, there is no space too small or too big, there is space itself and volume measured in specific terms. There is also design and coherence with usage scenarios that are put in place as a holistic integrated experience. If any interior morphology reveals itself through our experiential relation to the surrounding habitat, constituted by time and practice, how does that change while 'connected'? Experiencing car interiors through a screen/an image, digitally created by someone else through his own journey into another space, there is certainly a different type of emotional game that takes place.

_to be continued…

_____INDUSTRIOUS__

'Software République' Open Mobility Ecosystem

NEWS MOBILITY

Atos, Dassault Systèmes, Renault, STMicroelectronics and Thales teamed up to create the 'Software République' aimed at innovation in intelligent mobility. By pooling expertise, the partners plan to develop and market together systems and software to provide a sustainable mobility offer for cities, regions, businesses and consumers. In short, from an automotive perspective, it can be seen as Renault joining with a group of software and digital provider specialists in creating a software ecosystem hoping to power its future mobility offerings.

The project has identified three main areas of cooperation:

• Intelligent systems to facilitate secure connectivity between the vehicle and its digital and physical environment;

• Simulation and data management systems to optimize flows for territories and companies;

• Energy ecosystem to simplify the charging experience, with technology for compatible charging point, automatic recognition, and charge with no user action.

It will help consumers, cities, regions, urban planners, industry, and operators to select, operate and maintain the best means of mobility according to time, comfort, location energy management and emergency, to get best mobility services.

To foster innovation, the Software République will also seek to create an investment fund to finance the most promising start-ups and an incubator to host start-ups in the field of smart mobility technologies.

These five leaders in their domains will help recover European sovereignty in mobility, and this new ecosystem will welcome new members and develop open collaborations.

General News

Grammer, Fawsn in JV Talks

GENERAL NEWS

Grammer says they are in advanced negotiations to establish a joint venture with Changchun Fawsn Group for automotive interior components. Each partner would hold a 50 per cent stake in the joint venture, which would produce a range of automotive interior components. These would primarily be used in vehicles produced by FAW Group.

Located in Amberg, Germany, Grammer specializes in the development and production of components and systems for automotive interiors as well as suspended driver and passenger seats for commercial vehicles. Grammer supplies headrests, armrests, center console systems, high-quality interior components, operating systems and innovative thermo-plastic solutions to premium automakers and automotive system suppliers.

Changchun Fawsn is a FAW affiliated company. With 9,500 employees, they produce brake modules, steering modules, electronic electric appliance modules, and other related products mainly for the FAW Group for the Chinese and export markets.

Grammer will be contributing their development and manufacturing expertise for all products, while using strengths of a leading Chinese manufacturer.

Will SsangYong Motor Survive?

GENERAL NEWS

2021 SSANGYONG REXTON

SsangYong Motor Company is the № 4 South Korea-based automaker by size. They're owned by Indian multinational automotive company Mahindra & Mahindra.

In 1991, SsangYong started a technology partnership with Daimler-Benz, then Daewoo (now GM) took a controlling stake, and in 2004 SAIC took a majority stake, and finally Mahindra & Mahindra came progressively in. The current SsangYong model range includes the Rexton, Tivoli, XLV and Korando, plus Musso pick-up and Rodius Van. In 2019, they produced 133,000 vehicles.

Last December, SsangYong Motor filed for bankruptcy. SsangYong Motor spokesperson stated that the company owes a total of ₩315.3bn (~€240m) in overdue debt to financial institutions.

"As securing new investment is taking longer than expected, and as the restructuring process is imminent, more complications and struggles are expected to lie ahead," CEO Yea Byung-tae said in a resignation letter cited by Korean media couple of weeks ago. The letter was sent to employees and executives at the automaker. "Coming up with resolutions together with you could be an option, but as I deeply feel the shock and let down you would have felt, I think it is right to take responsibility as the president who took care of management so far," the letter continued.

Are we about to see another MG Rover or Saab…?