DVN-I
Automotive Interior

Thu, 30 September 2021 Weekly Newsletter NEWSLETTER #80

Editorial

What's Next For Driving Monitoring Systems?

GRUPO ANTOLIN'S DMS (GRUPO ANTOLIN IMAGE)

The DVN Workshop was a great success last week in Novi, Michigan. With 300 attendees of whom 210 were live and in person, it was a festival of innovation and technology with 30 lectures as well as Q&A sessions, panel discussions, and expo booths. An entire lecture and discussion session was dedicated to interior and driver monitoring systems. A variety of suppliers described their innovations and R&D work and showed off a wide array of technologies and techniques for the systems and components themselves, and the validation tools for DMS. Pulled by forthcoming regulations, automakers and tier-1s are all putting serious work into DMS, supported

by technology providers. This week's in-depth article gives you an extended review of all presented lectures.

Multiple technologies are under development, even if right now it looks like IR light is the preferred one. That tech choice is only one element of the system, even it is the centerpiece. Like any system in an automobile, the challenge is now to integrate it in the vehicle so it works dependably in every relevant use case, it is seamlessly designed into the interior, it fits with the cost equation of the vehicle, and so on.

We're very thankful to all who attended, presented, and exhibited at the DVN Workshop. If you want to make sure you'll attend the next ones (including DVN Interior Workshop on 26-27 April 2022 – more information to come), make sure you're a member of the DVN community. **Subscribe here**.

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

DVV Workshop DMS Session: Fireworks Of Technology

“How to Save Lives in Nighttime Driving” was the rubric of last week's DVN US Workshop. Lighting technology was the focus, and driver monitoring systems (DMS) had a specific session.

Even best driver can be distracted or fatigued, so DMS has an important role in safety improvement.

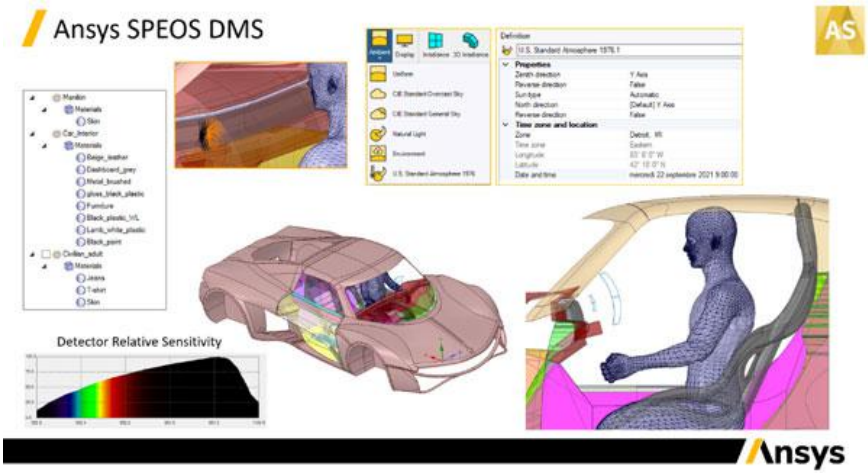
Cars are getting more and more automated, and distractions are rapidly multiplying for the driver—touch screens, portable devices, and other activities. Driving at night increases the risk of drowsiness as well as other risks; in the US 46 per cent of traffic fatalities happen at night, despite only 22 per cent of vehicle-miles travelled occurring after dark. That's a central reason why the industry is considering DMS to monitor driver attention and vigilance.

In parallel, regulatory and safety bodies in the US and Europe are acknowledging its importance. EU General Safety Regulation will require DMS in new vehicles as of 2022, with full implementation in 2026, and in the US the SAFE (Stay Aware for Everyone) Act of 2020 is similarly aimed at installing DMS in future vehicles in the USA.

DMS technologies will also follow the lead of ADAS and support the fusion of various technologies to provide an even richer understanding of the environment within the vehicle cabin.

That’s was the focus of DVN Workshop session № 4, with lectures from Ansys, Radiant, Grupo Antolin, Xperi, and Eyeris presenting their technologies. Here's an overview:

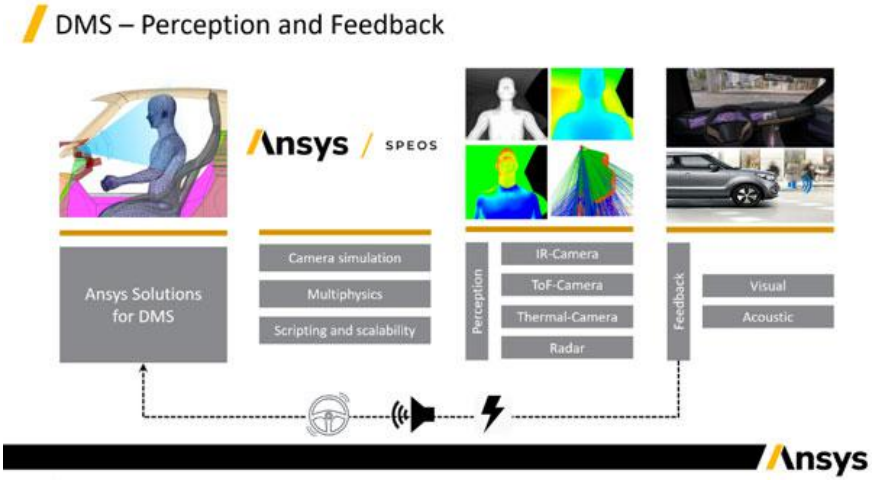
Ansys



ANSYS IMAGE

Ansys application engineer Sen Zhang presented *In-Cabin Sensing Systems and Simulation with Ansys*. Ansys, based in Canonsburg, Pennsylvania, develops and markets CAE/multiphysics engineering simulation software for product design, testing and operation.

Ansys addresses through simulation the challenges of DMS/OMS physical testing, which is development time-consuming and brings safety risks, where all possible driving conditions are complex to replicate, and where any new regulatory step would need to re-test the whole process.



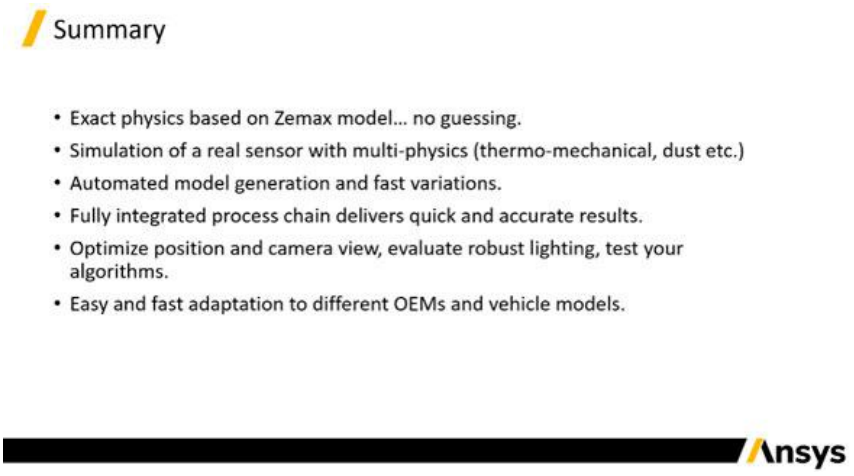
Optical sensors are their preferred choice to fulfill the system needs, such as good 3D models, whatever CAD system, light conditions, light interaction, pixel grid projection, and image processing interface.

Their Speos software has the flexibility to import any lens optical design. Camera positioning and projected grid helps evaluate any driver sizes, and how many pixels correspond to the eye to detect blinking.

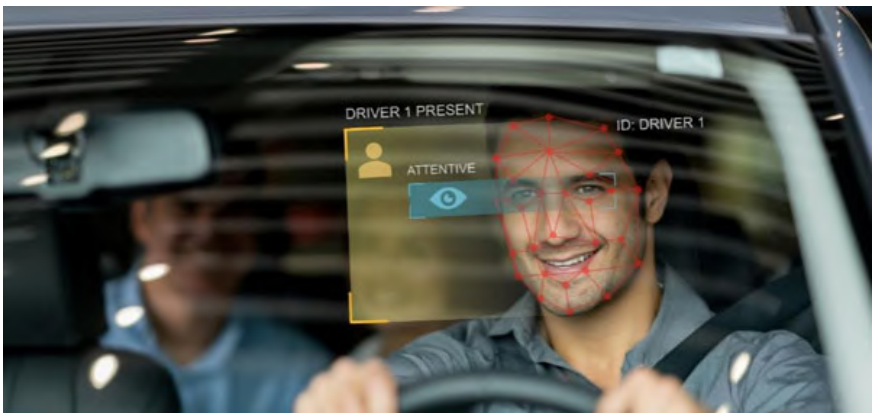
Even if IR light is today's state-of-the-art solution, evaluation of other technology is possible, like thermal cameras and radar. Then, simulation supports facial recognition and detection, and is able to monitor driver attentiveness, measure eye blinks, and measure head movements. If the driver is not paying attention to the road (detected via eye tracking) or a dangerous situation is detected (via PCS, Pre-Collision System), the system can warn the driver audiovisually and with tactile alerts (steering wheel or seat vibrations, etc).

Fully-autonomous cars are a long way off, and with partially automated vehicles there will always be a requirement for the vehicle to initiate handover back to the driver, who

must be alert and in position to take control quickly and efficiently. Hence: DMS!



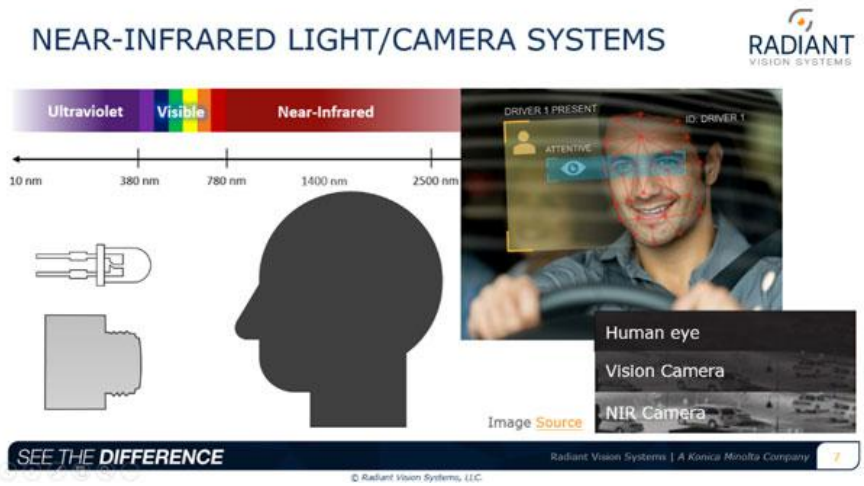
Radiant



Matt Scholz, Automotive Business Leader at Radiant Vision Systems, presented *Measuring Near-Infrared Light Sources for Driver Monitoring Systems*, which focused on the next step after simulation. Radiant, a Konica Minolta company based in Redmond, Washington, has proven production experience with thousands of cameras testing millions of devices worldwide.

Among several technologies, near infrared (NIR) light is coming to predominate in-vehicle sensing, with many applications where, in most cases, NIR light sources and cameras are used to provide information related to the driver, including eye and gaze tracking, as well as head rotation and position.

NIR has wide beam angle, it is reliable, and it is low cost, compared to Laser (VCSEL) with more coherent light, precision, temperature stability, but much more costly.



NIR wavelengths are above the visible spectrum, ranging from 780 to around 1,400 nm, sometimes extended to 2,500 nm. Since these wavelengths are invisible to the human eye, they are not distracting when cast into driver visual field, which is especially important at night. It works in any ambient light conditions, and can also detect eyes through glasses and most sunglasses.

NIR light is cast into the cabin of a vehicle or onto a driver's face. This light illuminates an area for an IR-sensitive camera to "see" the environment. When pulsed or cast in dot patterns, NIR light can also be used to determine object depth, curvature, shape, and size.

To create the wide beam angle necessary to cover a driver's face, diffractive optical elements (DOE) can be used to diffract a single laser beam into multiple points of light. A DOE has tiny apertures that split the laser into multiple emission points when the light is cast through it.

Because they cast a wide distribution of light, near-infrared emitting diodes (NIREDs) provide the illumination necessary for IR cameras to "see" the scenes inside the vehicle. These cameras capture 2D images of a scene much like a visible camera would.

2D illumination is the application we see in the vast majority of DMS in today's vehicles. Stereo vision can enable software to determine basic object depth and position in a limited 3D space. The more sensors we use to detect the light reflection, the more dimensional information we get.

What we are referring to is the concept of signal-to-noise ratio, or SNR. NIR light sources must have sufficient intensity to optimize SNR for the receiving camera.

Radiant intensity is the power of the light at a given angle, measured in Watts/ Steradians. Radiant intensity is literally the radiant flux (the total light emitted in space) divided by a solid angle or section of the 3D distribution.

While radiant flux can give us the source's total output power, radiant intensity can give us the power at a specific directional point in angular space. The performance of a source also has to do with the integrity of its distribution.

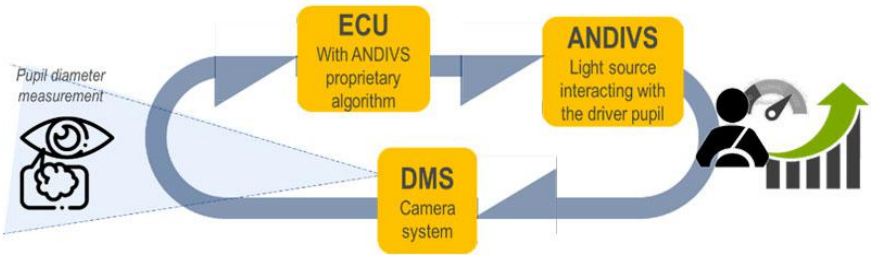
Each measurement solution has its strengths, and many can be applied in a range of scenarios. Ultimately what's needed is a broad solution portfolio from a knowledgeable provider. At Radiant, they help manufacturers of these systems define equipment and software for each unique scenario.

The ultimate goal is to ensure the performance of NIR light sources to enable DMS to function seamlessly.

Grupo Antolin

Grupo Antolin's North American Innovation Manager Benjamin Chevallier and Electronics Business Development Manager Enrique Jiménez presented *Assisting Nighttime Driving with Driver and Occupant Monitoring Systems.*

Grupo Antolin has developed a DMS with their strategic partner, Cipia, formerly Eyesight Technologies, a leader in computer vision AI for driver and cabin sensing. This DMS is camera-based recognize a person, to allow detection of physical driver condition (drowsiness, anxiety), even with partial occlusions (sun glasses, face mask), and performing in any situation (night, day). It used a sophisticated algorithm to monitor physiological and cognitive states of the driver, where camera positioning and system integration is key.



ANDIVS (Adaptive Night Driving Improved Vision System) is proactively actuating visual conditions. DMS, plus control unit, and interior light control algorithm, pending real context (low light, glare, lack of perception, misinterpretation). This technology is monitoring interior light sources to stimulate driver's pupil response for optimum vision.

Developed with the Institute of Applied Ophthalmo-biologics at Valladolid University (Spain), it covers large statistical population (age, gender, laser surgery, intraocular lenses…), and provides real time adaptation through continuous pupil monitoring, tested in real visual scenarios.

Results show overall average improvement in any group, significant decrease in pupil diameter sustained over time achieved, very significant distortion improvement in 47 per cent of the population, significant shape appreciation improvement in 32 per cent of the population

Xperi

HOLISTIC IN-CABIN MONITORING (XPERI IMAGE)

Xperi product CTO Petronel Bigioi and Engineering Director Szabolcs Fulop presented *The Next Generation Interior Sensing*.

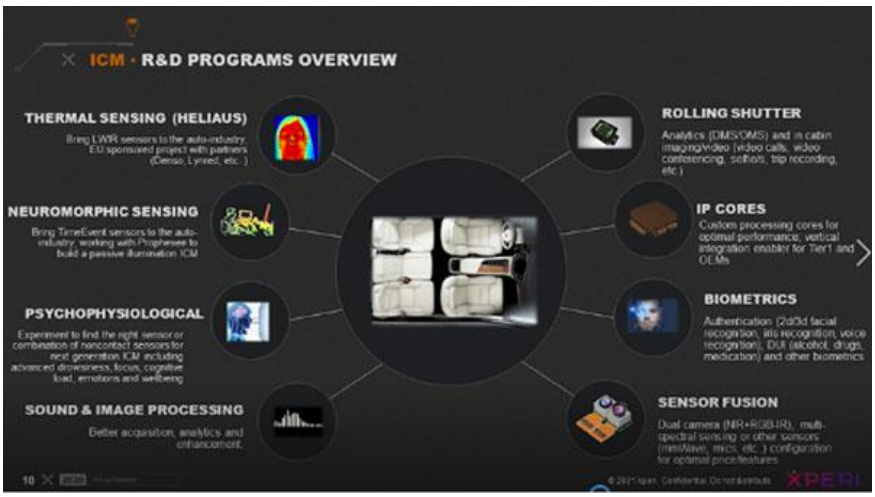
Xperi is a company in San Jose, California making entertainment and smart devices for markets including automotive. Their product range includes HD radio, sound enhancement, entertainment, and now DMS. Xperi started DMS development eight years ago, as a key safety features in the progressive transition to autonomous driving. Their system uses NIR cameras to detect drowsiness and wellbeing, and is already applied in around 20 different vehicle programs.

Strategically, Xperi wants to do more than “just” knowing who and what’s doing the occupants of a car, they target to enhance the whole occupant environment with better sound, better seat entertainment, with the ultimate goal to develop “cinema-on-wheels”. They are talking about safety *and* personalized experience. DMS is what’s on the market today; Xperi think the future embraces a more holistic perspective, ICM has a broader scope, using alternative sensing methods, and monitoring driver and all others occupants and objects. Anyway, as car are getting more automated, the driver's tasks are being pared down (“passenging” – see DVN Interior August 27, 2020), therefore this extended perimeter makes good sense.

IMS is a network of DMSs, basically. Many sensing possibilities and combinations are possible, like time-event sensors, (neuro) morphic sensors, thermal sensors, audio analytics, 3D sensing (to enhance biometrics).

Whenever ICM knows more about occupants and position, new potential applications come in the road map, such as airbags deployed according actual persons and conditions, authentication for service payment, entertainment program selection.

The next improvement step is to define what is the best minimum set of sensing technology to get a reliable status information for a given feature. That’s what’s done through sensors combination (sensor fusion), to avoid any false positive (false alert) or false negative (missed alert).



XPERI IMAGE

Xperi presented many R&D project supporting this roadmap, extending ICM scope and capabilities. Limitation will most likely come from privacy perspective, as system could even go beyond what human is able to sense!

Eyeris

Eyeris CEO Modar Alaoui presented *Sensor Fusion AI Enabled by Interior Scene Analysis & Modern Automotive AI Chip.*

Founded in 2013 and headquartered in Palo Alto, California, with an R&D lab in nearby Mountain View, Eyeris' expertise is in vision-based Artificial Intelligence (AI) software for in-cabin sensing, and pioneer of the world's first in-cabin sensor fusion AI. For efficient inference, Eyeris uses a wide range of automotive-grade AI-enabled processors, as well as modern AI chips. Eyeris is a winner of several automotive awards at the AutoSens Awards and TU Automotive Awards for the last six years, including "Most Innovative In-Cabin Perception Application," "Best Automotive Safety System," and "Best Product for Commercial Market for driver and occupants monitoring AI." Eyeris holds the world's largest in-cabin dataset for vehicle interior monitoring solutions (300+ million data points).

Eyeris holds a portfolio of deep neural networks, providing a list of features to interpret the entire interior scene through cameras, in 3D, with unbiased AI models. Their system is designed for functional safety (ISO 26262 compliant, ASIL-B level), and flexible in cabin camera locations (for any customer specifics, such as rear-view mirror, instrument cluster, overhead, back of a front seat for second row, A/B pillars, wherever it's convenient.

Image sensor gives a good understanding of the cabin space, to be complemented to cover like occlusion cases (face mask, sun glasses, baby under a blanket, etc)

In case of radar detection, micro movements (as fidget in a seat, as an advance drowsiness sign) could be unsettled by the vibrating environment of the car.

Thermal sensor could be necessary to sort accurately between human, pets, objects, and for functional safety redundancy.

Sensor fusion is therefore the best solution to overcome these scenarios.

Interior News

DVN US Workshop Summary

INTERIOR NEWS

Six months after the Shanghai DVN Workshop, the 23rd DVN Workshop took place live and in-person in Novi, Michigan, on 21-22 September at the Hyatt Place Hotel.

Conference and exhibition spaces were safely laid out for hundreds of in-person attendees and a full onsite agenda. Registered attendees who were not be able to travel to Detroit benefited from an online live broadcast and replay of the complete event.

The rubric of the workshop was: "**How to Save Lives in Nighttime Driving"**

Elsewhere in this week's Newsletter is a detailed summary of session 4, which dealt with vehicle-interior technology for safety. Now, here's a summary of the other topics including ADB, LED, MicroLED, lighting performance assessment, simulation, testing, measurements, and regulation in six sessions, each with its own Q&A session.

Session 1 · Status of Safety Situation had the focus on general information concerning safety, understanding how darkness affects crash risk, and how to improve the figures, with the top experts Michael Flannagan from UMTRI, John Bullough from RPI-LRC, and Matthew Brumbelow from IIHS.

Session 2 · Automakers' Contribution to Safety Improvement, was dedicated to automakers. Audi, Ford, JLR, Volvo, and GM and Stellantis presented their achievements and ideas to improve safety in nighttime driving.

Session 3 · Setmakers' Technology Achievements Concerning Safety covered technologies to improve safety, including HR-ADB and many more. Presentations were given by speakers from Koito, Magna, Marelli AL, Valeo, and Varroc.

Session 5 · Regulatory Matters, was dedicated to the harmonization of technical requirements for adaptive lighting systems, how to meet the needs of type approval, self-certification, and other mandatory standards, **adoptable** by all nations. Former GTB President and current DVN Senior Regulatory Advisor Geoff Draper (remotely from England), assisted by Bart Terburg live and on scene, chaired this interesting session with Davide Puglisi from GTB, speakers from automakers and testing facilities, Professors John Bullough and Michael Flannagan; Rainer Neumann, Wolfgang Huhn, and Michael Larsen.

Sessions 6 and 7 · Light Source innovations and Technology Enablers for Safety at Night saw lectures on topics including status and trends of LED, OLED, matrix, and µLEDs from AMS Osram, Kyocera SLD Laser, Lumileds, Everlight, Samsung, AML Systems, Docter Optics, Covestro, LMT, and ISOQA.

The event brought together around 300 worldwide participants involved in smart car interior, lighting and ADAS. Among 30 lectures highlighted the recent safety-oriented trends in lighting and sensorics. This US DVN Workshop, discussion panels with international experts and exhibition booths allowed fruitful exchanges and networking with international and US stakeholders, to promote lighting products or service offer towards the international and US markets, and to orient company strategic decisions concerning product and service roadmaps.

Volvo's Leather Substitutes

INTERIOR NEWS

VOLVO C40 RECHARGE (XCC IMAGE)

The shift to leather-free vehicle at Volvo will begin next year with the C40 Recharge, a plug-in hybrid crossover with a 320-km driving range. Volvo says they will not offer leather at all, even as an option, in any of their vehicles, on a phase-out basis from now until 2030 when their all-EV vehicle range will no longer involve any leather.

“We see our customer’s expectations are changing,” says Robin Page, the head of design for Volvo Cars in an interview with Bloomberg. “They are changing their habits in fashion and products they are buying. They want to know more about the materials and where they are sourced from and where they come from, and people are much more aware of climate change and the effects on the planet.”

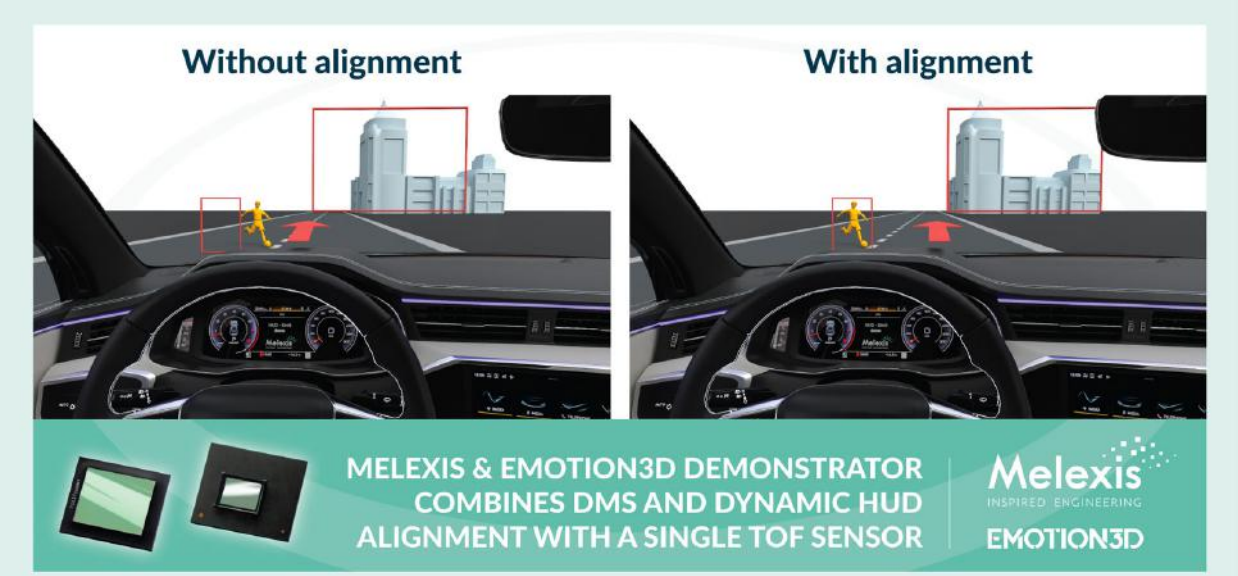
Volvo will introduce a variety of sustainable interior material surfaces, such as a new wool-blend option, a suede-like textile made from recycled polyester (Microtech), as well as components made from sustainably sourced flax and linen.

Nordico, another new, non-leather material Volvo will be using, consists of textiles made from recycled material such as plastic bottles, wood remnants from sustainable forests in Sweden and Finland, and corks recycled from the wine industry.

So far, Rivian currently offers only vegan “leather” seats in its R1T pickup, when Audi, BMW, Land Rover, and Tesla offer leather-free and sustainable interiors as options. Infinium Global Research expects vegan leather market to reach USD $85bn by 2025.

Melexis, Emotion3D DMS + HUD With One Camera

INTERIOR NEWS



Melexis, from Belgium (see company profile in DVN Interior April 1, 2021) a global supplier in automotive microelectronics, and Emotion3D, an Austrian analysis software provider (see DVN Interior April 22, 2021) have partnered to offer a unique 3D Time-of-Flight (ToF) demonstrator. The solution combines a driver monitoring system (DMS) with high-precision 3D driver localization, to dynamically align augmented reality head-up displays (AR HUD) objects.

Melexis and emotion3D's DMS covers all basic functions such as driver drowsiness and attention warning. The demonstrator provides, on top, 3D locations of the driver's facial landmarks. These are relevant for an optimal augmented reality head-up display (AR HUD) user experience. The objects projected by the HUD require precise alignment with real-world objects, following the dynamic position changes of the driver.

It uses a camera system, built around Melexis' MLX75027 3D ToF sensor and emotion3D's advanced in-cabin analysis software (E3D ICMS).

Combination of DMS and HUD offers a highly precise and cost-efficient solution for automotive. Use of ToF technology is key. It is very easy to get accurate depth data from the 3D ToF sensor with low processing effort.

Toyota Tundra Full Size Truck Interior

INTERIOR NEWS

丰田TUNDRA内饰 – 来源：丰田

The Toyota Tundra is new this year, and its interior has been completely renewed this off-road-oriented truck with technology, modern touches, and overall design.

The first thing you notice in the cabin is the huge landscape-tablet just laid on the instrument panel. It’s a 14" touchscreen which works like a tablet, where you can touch, swipe, and pinch in or out for several functions.

It includes a fresh infotainment system developed in house by Toyota Connected Services. It has icons, well-spaced out and is compatible with wireless Apple CarPlay and Android Auto. It uses Google Maps for navigation. The Toyota App allows link to your streaming account. Toyota gives way to fashion with voice commands, where you say "Hey, Toyota.", to get your direction or to set you cabin temperature among other commands.

TOYOTA TUNDRA (TOYOTA IMAGE)

There's an optional 12.3” digital instrument cluster, which definitely modernizes the cabin. The massive display provides a clear layout of information and features multiple high-resolution graphics and readouts.

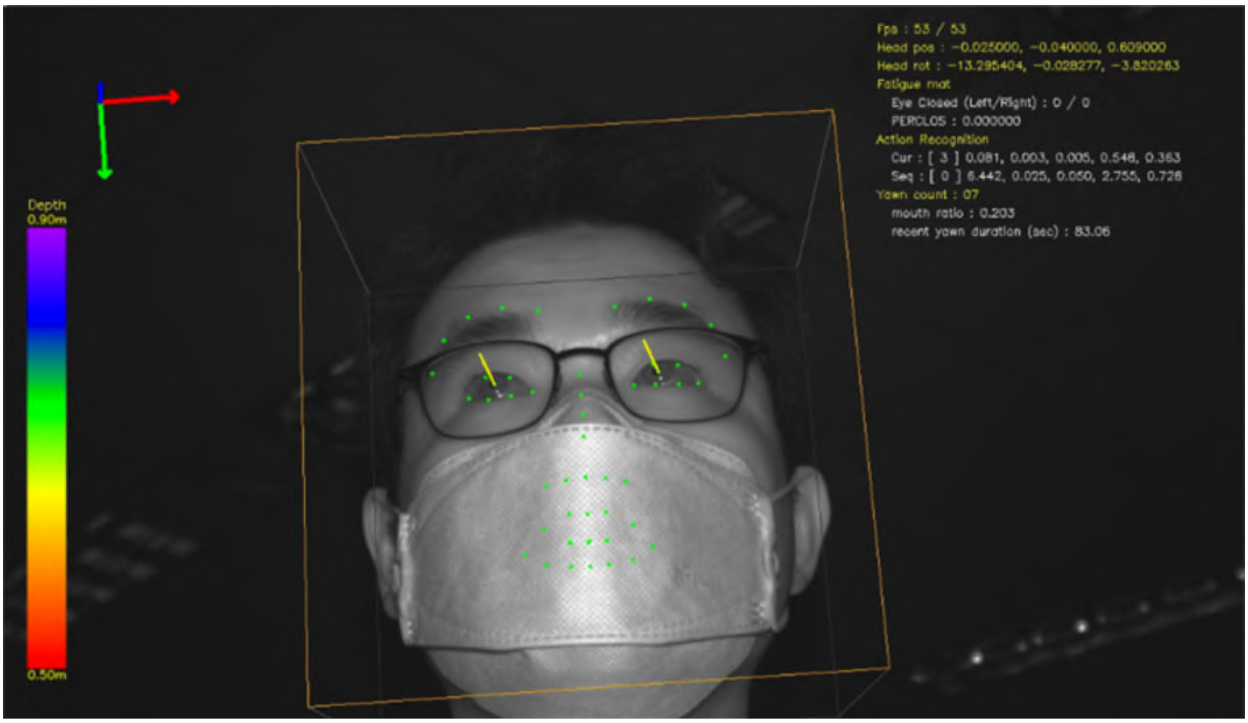
TOYOTA TUNDRA CLAY MODEL (TOYOTA IMAGE)

There are two body options: with rear half-doors, or with four full doors. With full door, rear space is very roomy, and folding seats and big storage underneath, unless you have a hybrid model where your battery pack is there.

There’s many different versions and trim levels. The classier one is the 1794 Edition, which pays homage to the oldest working cattle ranch in Texas, located in San Antonio and established in 1794, and where Toyota now builds these vehicles.

LG DMS, Safety And Advanced UX Support

INTERIOR NEWS



LG CABIN CAMERA (LG IMAGE)

LG Electronics, part of South Korean multinational electronics giant LG, is dedicated to developing infotainment innovations including AVN (AudioVisual Navigator), display systems, telematics and monitoring systems that account for more than 50 per cent of the company's total sales.

LG CABIN CAMERA ARCHITECTURE (LG IMAGE)

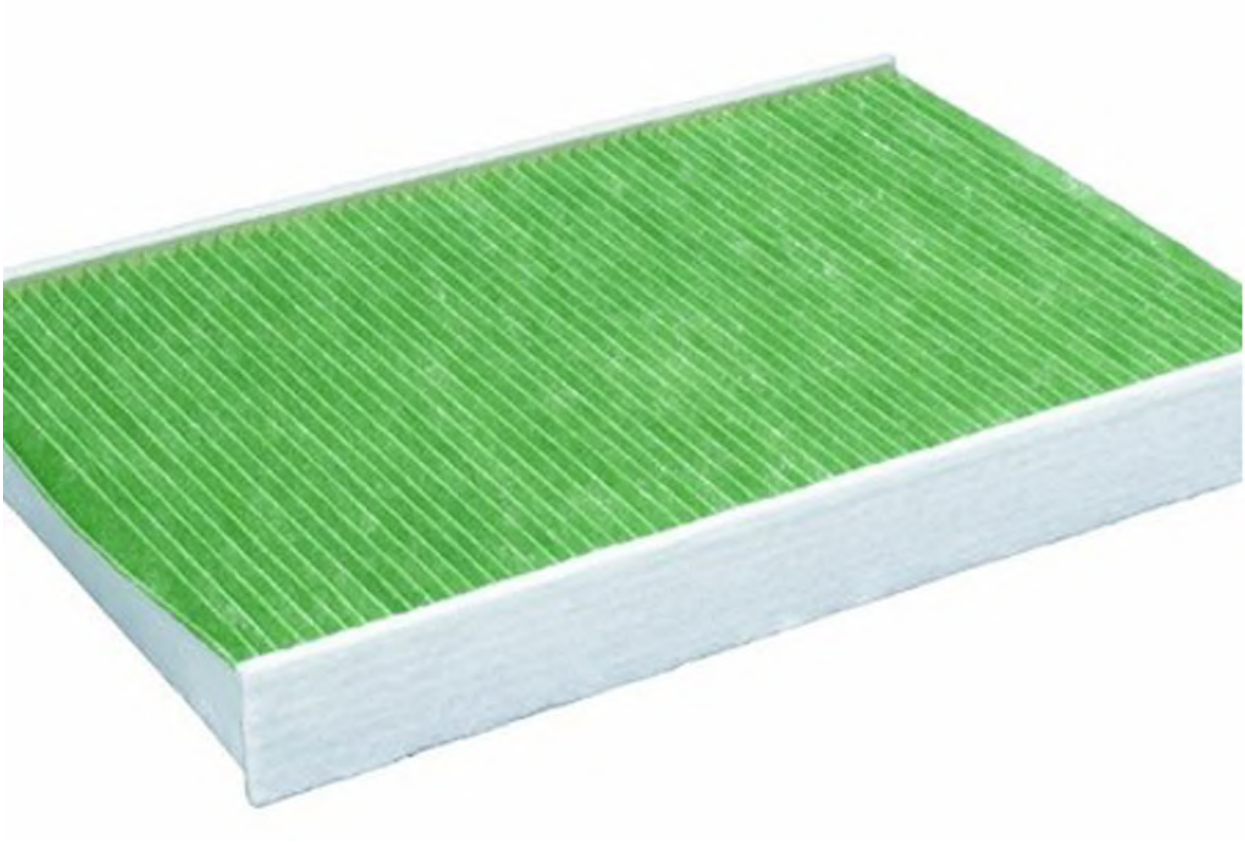
Their Conniro™ DMS monitors the state of a driver using sensors and cameras installed in a car and provides optimized information for safe driving. It detects movement of the eyes, face, and head of the driver, refines the detected data through its core algorithm, and generates informative data about fatigue and distraction and even about what the driver may need. To improve the driving environment, the data is classified and provided in four basic categories—personalization, safety, convenience, and special functions for vehicle—and can be used in various formats.

The system is available in different packages: basic (essential safety functions such as drownsiness / distraction detection); standard (+ driver ID, anti-spoofing, camera obstacle detection); and advanced (behavior detection, advanced UX support).

UX support will help personalize infotainement system and in-vehicle communication features and technologies. As a valuable example safety solution could be adapted, pending weather forecast.

Sogefi Cabin Filter To Halt Virus

INTERIOR NEWS



CABINHEPA ANTI-VIRUS CABIN FILTER (SOGEFI IMAGE)

Sogefi, listed on the Milan Stock Exchange, designs, develops and produces filtration systems and flexible suspension components as well as air management and engine cooling systems. At Automechanika Frankfurt, they unveiled their CabinHepa+, a cabin air filter 50 times more protective than a traditional filter.

It uses HEPA (High Efficiency Particulate Air) media to mechanically filter and retain up to 99.97 per cent of 0.3-micron particles. So it protects the occupants of the vehicle from dust, pollens, particles and like in ambient air. With this new level of filtration, it retains particles of the size of a virus. This unprecedented level of filtration is achieved without limiting the efficiency of the vehicle's ventilation system or the air flow of the air conditioning.

The entire CabinHepa + range is manufactured in Sogefi's European plant in Medvode (Slovenia).

The Design Lounge

Sustainability as Design Theme?

THE DESIGN LOUNGE

VW ID.LIFE CONCEPT

BMW CIRCULAR CONCEPT

Sustainability was a clear topic at the IAA Mobility Show this Year. Two concept vehicles from VW and BMW really highlighted the salient points—CO_2 balance, end-of-life recycling, design for disassembly, and sustainable materials—but does this create a strong design theme, or is sustainability a way to execute a specific theme/vehicle?

Both are small/city vehicles. Sustainability can be applied to both basic-transport cars like the VW ID.Life and to premium luxury cars like BMW's CirCular, so an overall vehicle theme must first be applied.

In this issue of the Design Lounge, we will look at the VW ID Life and how they created a sustainable application of the fun and affordable small car. Not a city vehicle as such, but a reduced low-cost mobility vehicle with the technology advantages a connected car and BEV architecture.

Also with the ID Life, I see inspiration of another basic-transport vehicle introduced in the 1980s that transformed the marketplace, the original Fiat Panda.

VW ID.LIFE CONCEPT

ORIGINAL FIAT PANDA

Both vehicles have a rugged yet straightforward appearance.

The Fiat used a flat glass panel, a single wiper blade and shallow steel pressings for the exterior to keep costs down; VW are using composite and unpainted exterior panels along with soft, zippered openings to do the same.

VW ID.LIFE CONCEPT

ORIGINAL FIAT PANDA

The Panda introduced a two-part canvas roof opening the occupants' environment to the elements and adding a bit of flair to this 'basic' transportation vehicle.

VW does the same with its' canvas roof by using an 'air-sandwiched' construction. A modern technology seen in camping matrasses.

VW ID.LIFE CONCEPT

ORIGINAL FIAT PANDA

Although similar in their strong horizontal layout, it is the instrument panel that has evolved the most from the 1980s to today. Fiat applied only the minimum equipment required by regulation, which was not very much in the 1980s (no airbags, etc). VW contrasts this by eliminating the UX/HMI display completely—instead, the owner/driver's smartphone is used for this interface.

VW ID.LIFE CONCEPT UX/HMI INTERFACE AND LOCATION FLEXIBILITY

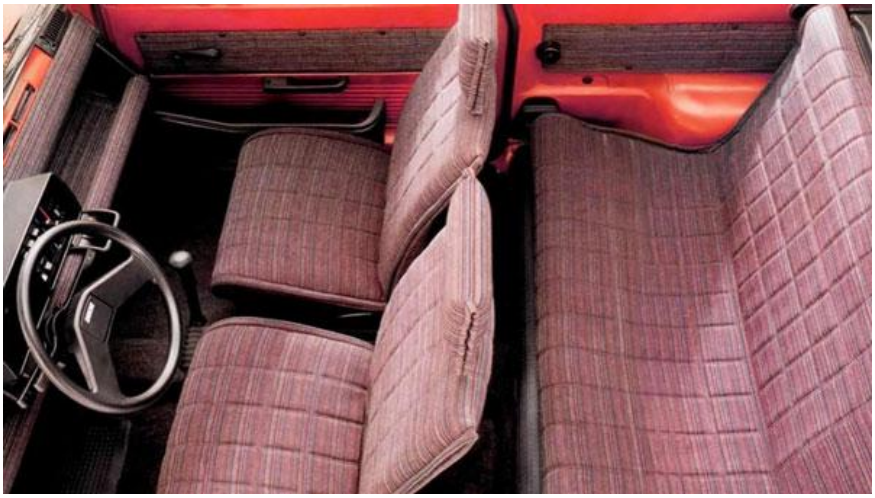
The need for connectivity is critical in modern vehicles but by eliminating the display from the ID Life and using the owner/driver smartphone, another consumer need can be addressed.

Also, the vehicle controls, like the PRNDL are located onto the steering yoke, eliminating the traditional use of stalks, buttons and levers.

Finally, by creating a bedlike seating arrangement, the Fiat Panda allowed its usage to be expanded to other non-driving functions, like short rests at the beach and camping sites. With a removable, zippered seat cover, the Panda allowed its users to not only rest but also easily clean their vehicles.

In our modern world, the ability to clean and camp is a given but without losing any of the connectivity and services that we are accustomed too. The ID.Life also has a mode accessible when parked, with a large cinema type screen that rolls up from the instrument panel.

The seating configuration and adjustability allows for the front seatbacks to be laid flat on their cushions, thus creating a chaise-lounge seating arrangement for two: perfect for viewing the screen or using the BEV advantage as a mobile power source.




Although more than 40 years separate the introduction of the Panda from that of the ID.Life, its inspiration can be seen throughout the vehicles design and execution. By applying technologies, such as HUD, capacitive switches and ambient lighting, the ID.Life is a reincarnation of the Panda, from that perspective.



So, is sustainability a design theme? Well, no. Though sustainable materials and end of life processes are used through the ID.Life, the theme much stronger than that.

Next week we will look at how the BMW CirCular Concept compares.

News Mobility

_Car interiors Unplugged

NEWS MOBILITY

CADILLAC HALO CONCEPT PRESENTATION BY MICHAEL SIMCOE, GLOBAL DESIGN CHIEF AT VIRTUAL CES 2021

30. Space makers

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

The word ‘nomad’ refers to a member of a community without fixed residence who regularly moves to and from specific areas. It also refers to a lifestyle adapted to infertile regions such as steppe, tundra, or ice and sand, where mobility is the most efficient strategy for exploiting scarce resources. Also described as "nomadic" are the various itinerant populations who move within urban areas living not on natural resources, but by offering services to the resident population.

Humans, nomads by nature, began settling the most recent 30,000 years due to crops, in other words, permanent local resources. However, the more the necessity to settle, the more the desire to expand annexing new fertile territories, conquering, exploring eventually migrating again. Industrial revolution, the absolute definition of settlement, contrary to its nature, gave birth to travel and immigration; thinking always bigger and farther than own convenience.

One more definition of mobility is the sense of belonging to a territory. A momentary ownership of the land we cross and a sense of safety which is precisely ‘motion inhabited’. Nomads are the ones that transform the relation of any interior mobile space into a sense of home, coziness, security and comfort that could not be found in a higher tier space (like for example a train station). Mobility is only the part between

the destinations, where important events take place and the reason to travel. Destination is a real place and maybe the antidote to our addiction to movement.

The illusion of seeing the potential into a future commitment makes us physically move towards a destination. In today's mobility-oriented society, the perception of progress is movement. A machine that does not move is not a symbol of growth, nor a static person unless, holding a smart device. We are maybe ready now to indulge into something new and this is not about sedentary lifestyle taking over but rather the set in 'still' into whatever we conquered through a majestic mobile century.

In self-driving car interiors, driving (and co-driving) is dissociated by its participatory societal aspect creating a new type of nomadism that is gathering around something different. What is true about the Mongolian nomads is that the neighbor could be 40 km apart, and yet the sense of belonging overcomes physical distance. Isn't it exactly the same when self-driving cars are embedded into a vast 'digital neighborhood'? Perhaps, but in the attempt to create the 'new nomad', the infinitely big and systemic is about to match the infinitely small, local and personal. Car interiors assure the balance between the known (home) and the unknown journey.

It is difficult to find a verbal form to address this stage of mobility through technology. In a car interior we are relatively static, seated, whether the car moves or not and it is not about design, architecture or the latest app, but about moments that matter; just like 'home' that is not just a location, but a circumstance. This is the art of creating memorable experiences that are potentially transformative. This is the 'sense of place'.

Nomad also means downsizing, making things compatible with whatever we can carry along, a balance between what we lose and what we gain. With no need of cables, there are no more ties to a location. What is physically mobile along with its digital twin merge in the attempt to create a feeling, "a place" where a human could flourish into its greatest potential.

There are a lot of projections to be made if we want to match future 'place-making' to a hippy minivan or a surfers' wagon, a musicians' motorhome or a photographers' camper, a digital travelers' hammock or a yurt of an authentic, still to these days, Mongol nomad. Passionate motorbike and automobile people ride, drive and stay to the next big festival of speed, becoming part of a digital community. However, their itinerant adventure is an attempt to create 'Home' across the state, the continent, the entire world.

It might be that the latest generation of self-driving cars is not a direct compromise to mobility but rather an innate attempt to regain a 'sense of place' but this time embedded within our ever-evolving mobile culture.

_to be continued…

Autonomous Driving Possible From 2022 In Germany

NEWS MOBILITY

VOLVO IMAGE

Driverless cars will be authorized to participate in road traffic in Germany as early as next year. On certain defined routes, L^4 AVs will be allowed to drive on public roads in regular operation. This is stated in a law passed by the German government last May, which is intended to make Germany a pioneer in autonomous driving.

In an L^4 AV, the computer can take complete control of the car in certain applications without being monitored by a human driver. In emergencies, the system will pull the vehicle over to the side of the road and stop it. According to the German Ministry of Transport, this technology could be used for shuttle connections or in the transport of goods, for example.

"With the adoption of the law on autonomous driving, Germany has the chance to become the first and so far only nation to have created a framework for a technology of the future," said Hildegard Müller, President of the German Association of the Automotive Industry (VDA). "Customers, industry and Germany as a business location will benefit enormously from this." The German automotive industry could become the "world market leader" in this field.

In addition to the legal framework, the technical prerequisites must now be created very soon. To this end, it is necessary to bring into force "as quickly as possible" the licensing and operating regulations necessary for autonomous driving.

General News

Is Apple's On-Again/Off-Again iCar Coming Soon?

GENERAL NEWS

Since the beginning of 2021, there have been increasing rumors that the Apple iCar will be developed in cooperation with another car company. The focus is particularly on Hyundai/Kia, though that Korean automaker has denied current talks with Apple.

The newly developed E-GMP platform, on which the future Hyundai Ioniq 5 is built, could also form the ideal basis for the Apple car, because of driving range and recharge time.

The iCar (Titan Project) has the claim to bring a superior counter-design to the freshly established all-electric car world onto the road. Insiders report a striking, function-driven "morphing design" throughout that can change soft contours by over- and under-pressurizing the component. When parking, the bumpers could pneumatically reduce volume in a targeted manner. At higher speeds, a longer rear end would optimize aerodynamics while mitigating rear-end collisions.

In addition, Apple is reportedly toying with the idea of completely reinventing the greenhouse - that is, the attached passenger pulpit with the pillars, the windows and the roof. Here, opaque windows on the outside and transparent windows with variable tinting on the inside are on the agenda. In a second step, the glass would be completely eliminated and the visual connection to the outside world would be provided by virtual. Let see if regulation would like it!

The iCar should rather convince through the sum of its characteristics: "unique design, piloted driving in perfection, universal interface of all digital worlds, outstanding efficiency, 'personal mobility as a service' in its purest form". The US company wants to keep the core competences in-house, but enter into cooperation’s for the implementation.

Peter Salzberger, Delivery Manager at SQS Software Quality Systems AG, is an automotive expert for infotainment systems expects full connectivity, large displays on a iTablet, possibly AuLED or OLED technologies, perfected touch, gesture and voice input (Siri Advanced).

As Tesla is currently doing: only two switches for the hazard lights and glove compartment. In addition, Apple Maps could be perfected with augmented reality functions and the evaluation of map-based altitude profiles for energy-reduced sailing. Or driver-related advertising pop-ups in the large head-up display in the windscreen (e.g. depending on the configured user request) for price offers from fast food chains, clothing, etc. But also extended social media functions such as WhoAmI, WhereIAm, and motivational information on driving efficiency (Efficiency Contest), as well as CarSharing Live (who is currently driving near me and where and will give me a lift?).