DVN-I
Automotive Interior

Thu, 24 October 2019 - **NEWSLETTER #9**

Editorial

Looking Forward To Welcoming You Into The DVN-I Community

As we enjoy summer vacation in many parts of the world, it's worth thinking about migration from cities to holiday resorts, and how our expertise in vehicle interiors can shape and improve it. One of the most common topics under those circumstances is motion sickness, a real drag under any circumstances and especially when traveling by car with the whole family. In this issue of DVN-I, that's the subject of our in-depth story to better understand it and find ways to mitigate it.

We've also got content about user experience, screens, 3D displays, vehicle access, smart doors, new materials, new kinds of cars, new modes of cooperation, EV growth, automated shuttles, the interaction of law enforcement with automated cars...the list of news topics addressed in this newsletter grows lengthy, doesn't it! It really highlights the variety and complexity of our automotive world.

DVN-I is also linking the automotive market, new technology, and new mobility services to the present, and explaining their relevance in the car interior realm. Technology and services are the building blocks of today's and tomorrow's vehicle occupant experience, and that's where interior and mobility overlap. Mobility service providers will of course brand and promote their services, not least by creating a unique customer experience, from ordering with a smartphone tap to relaxing into a mobility tool. Here again, the interior is a major pillar of the experience, so new mobility will drive new interiors, and vice versa.

DVN-I has been up and running for 3 months now. Subscribers, we are gratified you're here. Readers who haven't yet subscribed, we are looking forward to welcoming you into the DVN-I community, and it's time to subscribe! Please contact us today for your personal subscription proposal. The next newsletter will be the first one accessible only to subscribers. We hope our first 9 issues and our first extensive report have helped you to understand the value DVN-I brings. As we grow, we carry on providing fresh and relevant news and analysis in the newsletter—which will be moving to a weekly publication—as well as periodic DVN-I Reports. There'll also be topical DVN-I

Workshops, and we're very excited to announce the first one will be held in early January in Munich, Germany. Watch for details in your DVN-I.

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Automotive Interior

New Car Tech Will Aggravate—and Ameliorate—Motion Sickness

Around half of the population has had a personal experience of nausea when travelling by vehicle, even on straight roads. As any and every one of them will attest, it's not a bit of fun.

In a self-driving car, the person in the driver's seat becomes a passenger, able (and encouraged) to keep busy with activities other than steering and watching the road. That's one of the advantages being promoted of the AV future, but this new freedom is likely to result in a big increase in the incidence of motion sickness (or formally, "kinetosis"). That's because those who pass the journey time by reading, watching movies, playing video games or working on a tablet in the car have a relatively high chance of getting carsick.

Due to the increasing variety of mobility options and constant viewing of smartphone screens, the issue is rapidly growing more relevant. When autonomous vehicles become common, the percentage of passengers will increase because of drivers becoming passengers who no longer need to keep eyes on the road, and vehicle occupancy will likewise increase because of shared mobility.

Motion sickness is caused by repeated motion, as from a vehicle, that agitates the fluid in the inner ear. Then the symptoms of motion sickness appear when the central nervous system receives conflicting messages from the sensory systems, that is, the inner ear, eyes, skin pressure receptors, and the muscle and joint sensory receptors. For example: sitting in a car and paying prolonged attention to something inside—reading or using a smartphone, for example. The inner ears sense movement up and down, left and right, but the eyes see a static view, as if there's no motion at all. The resulting sensory conflict is held responsible for the dizziness, lightheadedness, exhaustion, and nausea of motion sickness. Some people learn early in their lives that they're prone to the condition. One reason for this is that the organ of equilibrium is still growing at that age, and the sensory system is particularly sensitive. With age, susceptibility decreases, but most people never lose it completely.

This summer will see the start of a new research project on motion sickness and autonomous cars at the Charité Hospital in Berlin. They will collaborate with automotive engineering experts from the Technical University Berlin to figure out how autonomous cars could be constructed to not make people sick, which situations are particularly problematic, and what the driving style should be.

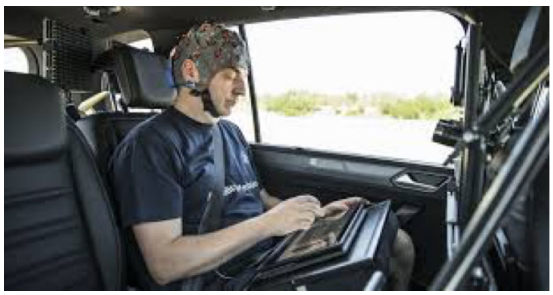
UMTRI, The University of Michigan Transportation Research Institute, has flagged three main factors behind motion sickness: conflict between vestibular (inner ear) and visual inputs, inability to anticipate the direction of motion, and lack of control over the direction of motion.
Meanwhile, a variety of companies and groups are working on it. Here's a look at some of them and their activities:

Daimler is among the companies working on improving the wellbeing of all passengers in vehicles, including reducing motion sickness (which they call by a more formal synonym, kinetosis). The vehicle concepts division of Mercedes-Benz is already taking the prevention of kinetosis into account in the early development phase of its products. As part of a study with 25 test subjects aged 21 to 56 years, they equipped a test vehicle with a special seating system in the back. It allowed participants to sit upright (23-degree incline) or reclined (38-degree incline) while performing certain secondary tasks with varying dynamics and required levels of attentiveness. The

test subjects were asked to complete a quiz on a tablet, watch a movie, read, and play an action game while the test vehicle travelled along a defined test route.

After each round, there was a short break, during which subjects were asked about their personal wellbeing and given a performance test. As expected, the concentration-heavy game caused the highest levels of vertigo and motion sickness in most of the test subjects.

The reclining position resulted in a significant reduction in motion sickness, and was also considered particularly comfortable—and subjective performance was demonstrably increased in this relaxed position, as well. Stop-and-go traffic, on the other hand, was found to be particularly uncomfortable and an aggravating factor in kinetosis. The reclining positing is beneficial for preventing motion sickness, as the need for active, conscious, muscular stabilization of the head is reduced when the backrest is at a flat angle.



ZF, meanwhile, has developed a system that recreates a virtual movement for the brain: an ultrasound emitter panel placed behind the headrest generates vibrations of ambient air perceptible by the passenger. By generating these vibrations at different frequencies and amplitudes between each side, it is possible to rebalance the feeling of accelerations. This system can be completed by two other right/left rebalancing devices, such as LEDs with several vertical LEDs and a frequency difference of the loudspeakers of the audio system.

These solutions are the results of the joint study of ZF and the SNNU (Systems Neuroscience & Neurotechnology Unit) at the University of Saarland in Germany over 10,000 km and bringing together more than 50,000 GB of physiological markers in the central and autonomous nervous system, in the form of thermographic data, imagery, and data on driving dynamics. A set of sensors is also developed so that the driver of the autonomous vehicle can know in advance if a rear passenger begins to feel ill—then the car can be programmed to adapt the driving style accordingly.

At **Faurecia**, a leading idea on the subject is a combination of seated posture to reduce the feeling of motion and allowing the occupant to see more of what is happening outside the vehicle, with a view on many promising concepts from active seat-based systems, to responsive systems that sense symptoms of motion sickness via passengers' vital signs (in partnership with ESP, a French lab that uses cognitive science to optimize human wellbeing and performance in different situations).

A **Visteon** representative hints at that company's work, saying "In an autonomous car, you don't know when it will decide to exit the road or change lanes. The technology we are building in the cockpit, like augmented reality, can prepare the occupants".

Yanfeng Automotive Interiors says the key is in "the behavior of the envelope"—that is, the box in which you will be sitting. They see their target as making movement as smooth, predictable, and linear as possible.

Among other ideas being developed and trialled: "Boarding Glasses" from French startup **Boarding Ring**, which partnered with car-maker Citroën, as previously reported in DVN-I.

The mobility of the future is changing, and so are the needs of passengers. This is why already today new interior concepts are needed to mitigate problems amplified by new mobility scenarios. The prevention of kinetosis is a centrally important part of this future.

INTERIOR NEWS

Mitsubishi Electric Stretches UX Boundaries

User experience (UX) is a central watchword of the vehicle technology revolution. A big display offers credible answers to the questions of what people will do in autonomous vehicles they don't have to actually drive, and how technology can create real human face-to-face interaction.

Corollary questions abound: how big is a big display? Are their practical size limits? How can families interact as a group while driving in an autonomous vehicle? How personalized can connectivity become? Can a departed loved one become the voice of a digital assistant? These questions are explored in Mitsubishi Electric's latest user experience concept.
At the recent CAR Management Briefing Seminar, Mitsubishi Electric showed off a 48-in. interactive screen running sideways through the center console of a full-size SUV, designed to be

accessible to both front- and rear-seat occupants.

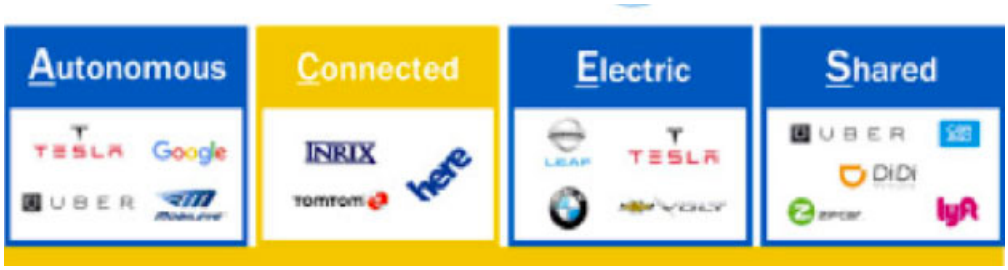
User Experience Manager Jacek Spiewla says the center console touch screen acts like a community iPad where everyone in the car can see information, interact with digital friends, or play games together like families used to do sitting around the dining room table. The vintage electronic memory game "Simon" is embedded in the demo.

In addition to family games, the giant display offers other possible group activities, Spiewla says. For instance, the screen can display a giant route map with points of interest and suggestions for side trips during a journey. Using CV2X technology, the system has the capability to connect with a "geo-friend neighborhood" of social media friends who are nearby or traveling the same route.

Spiewla says the giant screen is not yet production-ready; at this stage it's part of a demonstration of the latest features available on the company's FLEXConnect infotainment platform. But an especially charming feature is the ability to personalize voice commands and notifications with voices of friends and loved ones. With a 5-minute voice recording, the system can synthesize your own Siri or Alexa within your vehicle. For instance, the voices of your kids or your spouse can announce and read their own incoming texts. No word (yet?) on whether it would be possible to choose celebrity voices (Leonardo DiCaprio? Catherine Deneuve? Marlene Dietrich?) for one's in-car assistant.

New Kinds of Cars, Steady Mix of Materials

Automated, connected, electric and shared vehicles (ACES) will have a profound impact on society and how new vehicles are designed and built, but it is unlikely their materials composition and manufacturing techniques will change dramatically in the foreseeable future. That's according to experts at the CAR Management Briefing Seminars.



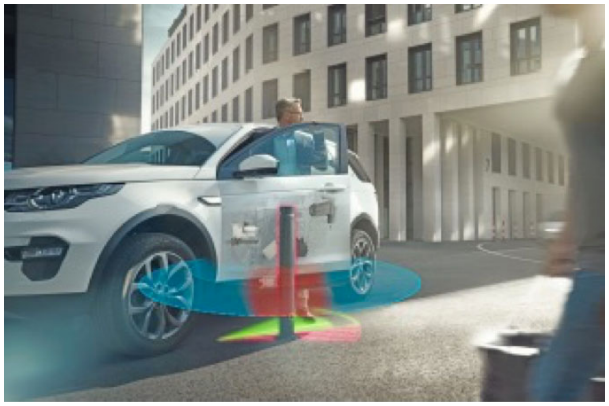
Carbon-fiber composites and additive manufacturing (3D printing) might find their way into the mix in a small way, but today's well-proven mixed-material strategies are likely to continue to rule the day, even though steel, aluminum and plastics will continue to battle each other for every kilogram.

Mario Greco, chairman of the Aluminum Association's Aluminum Transportation Group, says since 2014 many new vehicles have been introduced with aluminum closure panels and other major parts. Jose Chirino, automotive team vice chair of the American Chemistry Council, mentions the newest GMC Sierra Denali full-size pickup was introduced with an optional carbon-fiber bed: "The polymer composite material is lightweight and this benefit cascades throughout the vehicle, improving fuel

efficiency, engine power, braking distance and many other features. This is the chemistry that happens when steel, aluminum and plastics join forces".

Polymers and composites will play a key role in future vehicles in bumpers and other body parts because sensors and radar systems can "see" through these materials. But also interior parts, or at least their structural support, like some seat frame parts, instrument panel cross car beam, floor and trunk parts.

Brose's Automated Vehicle Access



Supplier Brose—they make seats and doors—has developed mechatronic systems to offer vehicle owners an entirely new access experience and pave the way to automated driving and car-sharing. The family-owned supplier claims as their unique selling proposition "perfectly harmonized and connected door and interior products from a single source".

Brose say even from a distance, the equipped car can recognize and welcome the driver with a projection on the ground. With a gesture, the vehicle user signals their desire to enter. The handle-free doors open automatically, while a radar sensor prevents collisions. At the same time, the windows—tinted to protect against heat and prying eyes—become transparent. The steering wheel disappears into the dashboard, and the seat contour adjusts automatically. The second row of seats is also completely electrified for better access to the back and can slide automatically, without any safety compromises: an interior sensor recognizes people, pets, and children's seats in the vehicle and prevents injuries or damages.

Buckling up is also more comfortable as the belt is either easily accessible directly at the seat or is presented to the passenger electrically (Americans may have memories of the motorized shoulder belts of the 1980s). Brose has applied their mechanical, electric, electronic, and sensor technology expertise to further develop their vehicle access system.

Visitors to the 2019 IAA in Frankfurt will be able to experience the latest features live at the Brose exhibition area under the motto "Enabling Future Mobility".

Mobis' Side View Camera

Hyundai Mobis has finished development of a camera monitoring system set to replace side view mirrors on upcoming passenger vehicles.

Mobis, Hyundai group affiliate, says their new camera system helps improve road safety by providing a field of view twice as wide as conventional door-mounted mirrors. More, it requires almost no protruding areas on the car's exterior, increasing vehicle design opportunities and helping to reduce noise, air resistance, and fuel consumption. It also increases driver convenience when parking in narrow spaces.

Cameras mounted in place of the mirrors are said to offer 35° rear views, compared with the 17° of conventional door mounted mirrors (though the latter figure depends on whether local regulations require plain flat driver-side mirrors, as in North America, or allow convex and aspherical ones). This also helps to reduce blind spots, with the wide-angle images displayed in real time on monitors installed on the instrument panel—another safety benefit, because drivers needn't move their eyes as far from the normal road gaze to see the side view.

The company has "put special effort into verifying the system's reliability so that it can function normally under severe conditions such as bad weather", and they say the new system offers drivers a clearer rear view in bad weather conditions, such as heavy rain and snow.

You'll find more information on side-view vision systems in the DVN-I Design Lounge this week.

Lanxess' New Heat-Reflecting Plastic Pigment

LANXESS
Energizing Chemistry

Lanxess has developed a black pigment which reflects 20% more of the sun's near-infrared

radiation (NIR) than conventional products. Plastic roofs and facade elements colored with their new Bayferrox 303 T heat up much less due to solar radiation, meaning the cabin's inside temperature can be reduced.

"The temperature in a polymer matrix coloured with Bayferrox 303 T is as much as 8°C lower than when a conventional black pigment is used," says Stefano Bartolucci, Lanxess' global plastics market segment manager at the company's Inorganic Pigments business unit. This improves the indoor climate and reduces energy consumption for air conditioning. Using the Bayferrox 303 T black pigment can also extend the service life of a plastic component considerably as the thermal decomposition of a polymer matrix is reduced due to lower heat absorption.

In addition, the difference between day- and nighttime temperatures is much lower. Plastic components are therefore less exposed to thermomechanical stresses which can lead to crack formation or breakage. "In addition to outdoor applications, Bayferrox 303 T's characteristics make it suitable for use in the automotive industry, for example, to colour the dashboard, which is exposed to high and sustained solar radiation," says Bartolucci.

"Our pigment makes an effective contribution to reducing heat development in the passenger compartment."

Hyundai i10 Brings New Safety, Connectivity Features

Grand i10, India, as of today model

Times are tough for minicars: Ford is ending European sales of the Ka+, while Opel-Vauxhall is dropping its Karl and Adam minicars. PSA has hinted that the Peugeot 108 and Citroën C1 might be dropped after the current generation. Volkswagen Group is not expected to directly replace its VW Up, Škoda Citigo, and SEAT Mii minicars; instead the group is working on how to sell affordable EVs.

On the other hand, the third-generation Hyundai i10 will debut at the Frankfurt auto show in September, with quite a high-content safety and connectivity package for the segment. Its safety equipment will include forward collision avoidance that uses a radar sensor to detect cars and pedestrians in front of the vehicle and a rear-view camera. Lane keeping assistance and a feature to monitor driver fatigue will be standard. The i10 will also offer connectivity features such as

Hyundai's Bluelink that allows owners to lock or unlock their car remotely via a smartphone, along with Apple CarPlay, Android Auto, and wireless smartphone charging.

European sales of the existing-model i10 fell 12 percent to 38,375 units in the first six months, according to JATO Dynamics market researchers.

New Nissan Versa Boasts High Interior Content


Nissan's Versa is showing there's still a market in North America for basic, affordable small cars. It starts at around $15,000, but its affordability doesn't imply a spartan interior. The entry-level car has as standard a 7" touchscreen on an instrument panel with leather-looking soft pad on front, which—together with door pads—has colored stitching. There's painted matte silver trim decorating portions of the door, along with carbon-fiber-look plastic trim. Black cloth seats have a black-and-orange fabric on cushion edges, with white bolsters echoing the IP. Connectivity? Yes, there are 3 USB ports and Siri and Google voice assistants, both as standard.

There's a hefty safety complement as standard equipment, too. The car has lane departure warning, blind spot detection, automatic emergency braking with pedestrian detection and rear automatic braking, features rarely seen in this segment without stepping up to a higher trim level or opting for an option package.

Bosch Paves Way for 3D Display

Bigger, more visually attractive, and with more and more features, digital displays are becoming a key feature of vehicle cockpits. Neither drivers nor passengers want to be without the display and

control features they now enjoy on devices such as smartphones and televisions. But there is more to it than that: in the cockpits of the future, digital displays will play a key role in the interaction between drivers and their vehicles. With its new 3D display products, Bosch is responding to this trend.

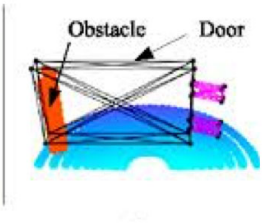
The products use passive 3D technology to generate a realistic three-dimensional effect that allows visual information to be grasped faster than when displayed on conventional screens

3D displays are the latest trend for vehicle cockpits. "The display's depth of field means drivers can grasp important visual information faster, whether from an assistance system or a traffic-jam alert," says Dr. Steffen Berns, president of Bosch Car Multimedia. "Alerts that seem to jump out of the display are much more obvious and urgent."

"We are putting intelligence into the cockpit," Berns says. Fewer control units also means less weight, and vehicle development times are also reduced. Thanks to over-the-air updates, moreover, the infotainment system can be kept up to date just as simply as a smartphone.

And it has to work in any situation. For example, car displays have to work perfectly whether the temperature is 40° below zero or 50° C, and it has to keep doing so over the vehicle's entire service life. Even in the event of partial failure, drivers have to be able to rely on a minimum amount of vital information at all times.

Smart doors, BMW and TUM



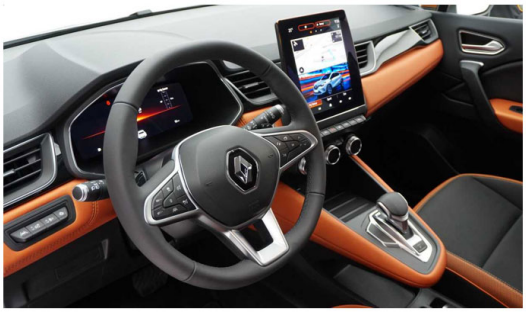
Accidents caused by car doors being opened into the path of oncoming vehicles or cyclists are common in cities. For years there's been a simple mechanical solution common in Japanese taxicabs: the driver has a lever that opens and closes the curbside rear door for passengers to enter or exit. Can this be improved upon? Probably; todays environment is much more complex with a variety of mobility tools around cars (scooters, one-wheelers, bicycles, e-machines, and other suchlike). So the future probably relies on doors that practively avoid potential impacts.

Michael Graf at BMW and Michael Strolz's team at the Technical University of Munich say haptic doors—doors that gives tactile feedback—could cut both road injuries and repair bills. Their current prototype looks like a normal car door, but an extra metal bar runs through its center and connects to the car's frame between the hinges. In normal mode, the bar moves freely and doesn't affect the door's movement. If sensors detect a nearby obstacle at the same time as an accelerometer detects an attempt to open the door, the door's swing is restricted by a linear motor attached to the bar.

To pass on more information to the user, the amount of door resistance is in proportion to the proximity of an object. For example, you might swing a door halfway open without problems before it gets stiffer as it nears a lamp post. The prototype uses ultrasonic sensors to spot dangers, but because they have a limited field of view, the next version will use cameras that can span 180°, says Strolz. "Then we will be able to sense the complete workspace of the door and detect people walking by the car or cycling towards it," he says.

No decision has yet been made by BMW as to whether this kind of safety door will eventually make it onto production vehicles.

New Renault Captur Brings Catchy Cockpit



Competition is now fierce in the small SUV/crossover segment. When the Captur was introduced, it had one rival: the Nissan Juke—now there are more than 20. The Captur passed the Juke for the segment lead in 2014 and has kept that lead until this year, when it was overtaken by the Volkswagen T-Roc. So, the new Renault Captur has become bigger, and has a more sophisticated interior to appeal to customers and keep hold of the top spot in its segment. The Captur also will be the first Renault to offer a plug-in hybrid drivetrain.

The Captur has moved to Renault-Nissan's CMF-B architecture, which also underpins the latest Clio small hatchback and many other Renault and Nissan vehicles. Renault says the platform is 50 kg lighter and improves underbody aerodynamics to reduce emissions.

The new Captur is 110 mm longer than the outgoing model at 4228 mm, with a 20 mm longer wheelbase. Trunk space has been increased by 81 liters to 536. Rear-seat legroom has grown by 17 mm, and the front seat bases are 15 mm longer.

The Captur's interior reflects the model's upscale aspirations. A floating central console is made possible by an electronic shifter, allowing for storage space underneath. A 9.3-inch touchscreen is angled toward the driver—An optional 10-inch digital instrument display has room for navigation graphics.

THE DESIGN LOUNGE

Virtual Mirrors

Side view and rear-view mirrors, at first, do not seem to have an obvious connection to interior design of automobile. New regulations that have been recently approved have opened up an opportunity to simplify the exterior design by elimination the need for side view mirrors in EU and the use of screens for the rear-view mirror in North America.

On a closer inspection and in conjunction with these new camera and display system technologies, the impact is more obvious and will be outlined later.

But first, a bit of history. For quite a while, regional or national regulations required unique side view mirrors. Japan, for example, long required that the sideview mirrors be visible to the driver through a portion of the windshield swept by the wipers—which meant the mirrors were usually mounted on the front fenders, above the front wheels. But during the last 20 years most national standards have given way to global consensus enabling a consistent execution at the base of the A-pillars. There are still differences in the technical requirements and permissions—US and Canadian regulations still require "unit magnification" (a flat, plain mirror) on the driver's side, for example, so expanded-field mirrors cannot be used there—but at least the mirror placement doesn't vary any longer from market to market.

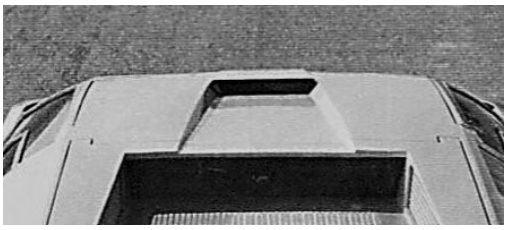
Mazda RX-7 (Japan)

Mazda RX-7 (NA & EU)

And now there's an exciting new change, but it's brought back some disharmony: sideview cameras instead of mirrors are legal in Europe, Japan, and the many other regions that apply UN Regulations, but the US and Canadian regs still require mirrors. Among other advantages, sideview cameras rather than mirrors can make for a very clean exterior design.

Mazda RX Vision concept with cameras

Rear view mirror integration has also been explored, as seen on this 1971 Lamborghini Countach Show car using a ‘periscope’ system:



Lamborghini LP 500 roof

Lamborghini LP 500 interior

Aftermarket solutions have been available for some time, claiming to eliminate blind spots, and now Cadillac has an interior rearview camera/display system available.

5-panel aftermarket inside mirror

Cadillac CT6 rearview display

As the exterior mirrors are replaced with cameras, now interior designers must make available space for their displays, also to be integrated into their specific design and brand language.

Lexus ES

The Lexus ES shown here incorporates the displays at the interior base of the A-pillars but in a non-integrated fashion—much like a portable navigation system. This seems to be an attempt to keep the displays as near as possible to where the previous sideview mirrors were.

Audi e-tron

Audi has chosen to integrate the displays into the door panels while also keeping the trapezoidal shape of their exterior mirrors, as seen on this Audi e-tron. They are located much lower than the current sideview mirrors as to better integrate into the instrument panel horizontal aesthetic.

As you can see in both the Lexus and Audi executions, the interior instrument panel is now hosting not only these new displays but also the current displays used for clusters and center stack UX/HMI. By using this segregated approach, they both retain their current design brand language but this is not the only direction being explored by automakers.

Honda e-prototype

A new design is used by Honda with their new e-prototype. This introduces a long, horizontal wide-screen instrument panel approach that also incorporates the rear-view display like Cadillac's.

When you compare Honda's e-prototype IP with Byton's M-Byte the similarities are obvious even though Byton has not yet incorporated either the side view, or rear-view displays. After years of keeping screens small, they seem to be here to stay and grow.

HByton M-Byte

With the proliferation of so many screens in the interior of a vehicle, the uniqueness and design brand identity will become more challenging for each automaker to differentiate themselves.

NEWS MOBILITY

Preparing Police for a World of Automated Cars

As self-driving car technology advances, so does the need to educate government and law enforcement officials, as well as the public, on how to deal with highly automated vehicles. That's particularly true with regard to the real and perceived chain of liability. Public opinion is roughly along the lines of "If I get hit by a car, I want to be able to sue the person driving it".

In a white paper released this month, the USGHSA (United States Governors Highway Safety Association) offers a series of recommendations for state highway safety offices, police, autonomous vehicle developers and other interested parties.

The paper describes a not-too-distant future wherein vehicles with multiple levels of automation must share the road and interact with one another. Some cars, the report notes, will lack even the most basic technologies, such as cruise control. But others will be equipped with advanced driver-assistance systems and even higher levels of automation where a human will be in control in some circumstances and a robot in others.

So, what's a police officer to do? Among other things, the USGHSA recommends establishing a uniform method by which the police and other road users can easily identify vehicles operating autonomously. The global vehicle lighting community is hard at work on new kinds of exterior lights to do this job.

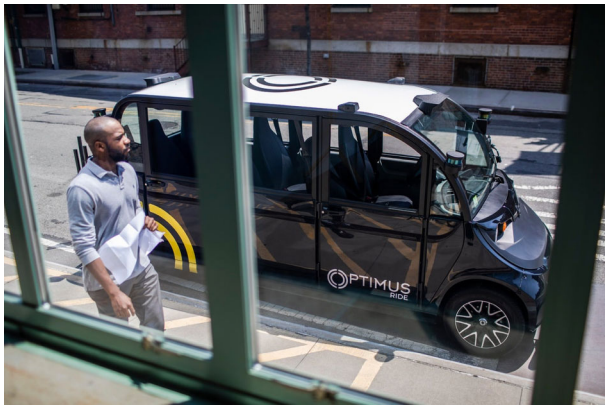
The group also is calling for a uniform way for law enforcement to gain access to information from event data recorders, as well as other data from highly automated vehicles (HAV), after a crash.

• "Assurance that all HAVs will recognize and respond appropriately to direction from law enforcement, temporary traffic controls, and unusual roadway and traffic situations."

• "Agreement from the states, AV developers and providers, and NHTSA on how to reconcile conventional driving practices with HAVs' strict compliance with traffic laws."

The association further suggests creating safety messages to educate the public on AV technologies and capabilities. For one thing, it says, people must understand they are sharing the road with vehicles that, unlike human drivers, are programmed to comply with all traffic rules. The report cites AV crash data from California. It says that in almost all cases, a conventional vehicle struck the automated one, and many of the accidents were rear-end crashes at intersections "where a following driver did not understand that the HAV would come to a complete stop."

Optimus Ride Shuttle in NYC

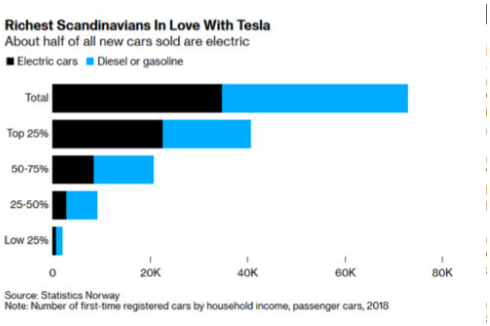


Another AV shuttle test service! Optimus Ride is a startup company founded in 2015 by five graduates and researchers from the Massachusetts Institute of Technology.

They will run autonomous shuttles seven days a week to meet passengers going to and from a recently-opened ferry landing. The cars began shuttling people in mid-August, around a loop that is just over 1.6 km at the yard, a 120-hectare (300-acre) privately operated manufacturing and technology hub.

Passengers on Optimus Ride vehicles are never onboard by themselves. A team of two people—a safety driver and a software operator—goes on every ride to take over the controls if needed, and to collect data to help develop a comprehensive driverless technology system.

Norway's EV Revolution Rides on Riches



In the first half of 2019, 45 percent of all new cars sold in Norway were electric, up from a 31 percent share in 2018, according to recent data released by the Norwegian Information Council for Road Traffic (OFV). Sales of internal-combustion cars declined about 29 percent compared with the same period last year.

EV sales were boosted by the introduction of the Tesla Model 3, which accounted for 14 percent of all new cars registered in the first six months, the OFV said.

45%! That's nearly half the new-car market, and it's driven by the top deciles of population in terms of wealth. That's according to a study released by Statistics Norway, revealing that the likelihood of buying an electric car in Norway is almost double if you belong to the richest section of the population.

Much of the success of electric vehicles in Norway is owed to generous tax incentives and exemptions from various fees. The surge in electric car sales even resulted in a shortfall in automobile taxes of about 3bn Krone ($333m, €300m) in this year's budget.

GENERAL NEWS

Global Auto Market Risk is On the Rise

The entire global vehicle market is facing flat-to-falling sales for the foreseeable future, says Jeff Schuster (photo), president of global forecasting at LMC Automotive.

"Risk to auto sales globally is rising, and uncertainty remains high," Schuster told Automotive News.

The mature markets of Western Europe, the U.S., Japan and Korea will likely contract in volume over the next five to seven years, Schuster said, which means the industry's global growth opportunities will rely on emerging markets.
"This leaves countries that are highly volatile—Brazil, Russia, India, Turkey, China—to drive growth globally," Schuster said. "But right now, many of these countries are in a decline, and that's a risk to the long-term global market." He thinks global light-vehicle sales will decline 2.6 percent in 2019 to around 92.2 million units. Through 2025, he expects sales to muster a compound annual growth rate of just under 2 percent.

Trade friction and tariffs will continue to generate risk in global planning, especially with the European Union. At the same time, more stringent emission regulations, especially in the form of new carbon dioxide requirements in Europe and China, have automakers counting more heavily on sales opportunities in electrification. China accounted for 60 percent of battery-electric vehicles sold in 2018, totaling 770,000 units, Schuster said, and in 2030, China's battery-electric vehicle count is expected to reach 6.4 million.

"The challenge in China and Europe is that these manufacturers need their battery-electric vehicles to hit the emission standards," Schuster said. "There are price and infrastructure challenges that manufacturers will have to face. They also need consumers to buy the vehicles."

IAC still expects to grow in UK

One European Tier 1 automotive supplier, in announcing plans to expand its manufacturing facility, is betting on continuing success of its major client, Jaguar Land Rover, even within the context of a hard Brexit. Luxembourg-based International Automotive Components has said it will expand its Elmdon facility near its longtime customer JLR in the West Midlands of the U.K.

Some might see this as a fairly high-risk move considering the PSA Group's recent comments casting doubt on the future of its Vauxhall plant in Ellesmere, Cheshire, in the event of falling profits brought on by a no-deal exit from Europe's customs union.

Nonetheless, IAC says it has experienced growth by supplying multiple models of JLR's MLA platform, which its expanded facility will be used to produce. The site will be used for

manufacturing, assembly and sequencing, in addition to housing some centralized U.K.-based functions such as engineering, program management, commercial, finance and IT.

The company also plans to invest in highly automated process manufacturing at the site. It currently supplies components and interior trim (including instrument panels, console systems, door panels, headliners and overhead systems.) to Land Rover and Range Rover models and expects full production at the site in 2021, creating an additional 400 jobs.

"We are a customer-centric company, which is why it was an easy decision for us to expand our operations near our customer's production sites," IAC Group CEO said Manfred Gingl says. "IAC views the U.K. as a strategic market, and we look forward to continuing our partnership with JLR long into the future."

Jaguar May Use BMW Platform for Small SUVs

In June, BMW said it will develop a new generation of electric motors, transmissions, and power electronics with Jaguar Land Rover with a joint team of BMW and JLR experts located in Munich. The team is tasked with further developing BMW's fifth-generation eDrive technology that will debut this year on the iX3 battery-powered SUV.

Jaguar may also use a BMW platform to underpin two new small SUVs, British motoring magazine Autocar says, reporting that the models, a traditional-looking SUV and a coupe-styled crossover variant, are in the early stages of development.

The Autocar report speculates that as part of Jaguar Land Rover's expanding cooperation with BMW, the cars could be based on BMW's new FAAR front-wheel-drive platform that debuts with BMW's latest 1-series compact car, and that they would carry the Pace name that Jaguar uses for SUVs and crossovers, and that the FAAR platform could also be used for a new, entry-level Land Rover and for the next-generation Range Rover Evoque and Land Rover Discovery Sport.

Former BMW executives hold key engineering and other top management roles at Jaguar Land Rover, including CEO Ralf Speth.