DVN-I
Automotive Interior

Thu, 24 October 2019 - **NEWSLETTER #10**

Editorial

DVN-I Now Fully Live And Here For Subscribers

Here we are; we've reached September, and the DVN-I free trial period is over. From this edition on, full access to the Newsletter is reserved for DVN-I subscribers, who are also offered a presentation time slot at our DVN-I Workshop next January in Munich, and may look forward to privileged access to the DVN-I website being prepared to go live next month. We're very grateful to all who have placed faith in DVN-I by subscribing; thank you again—we're glad you're here! For those who have not yet subscribed, you'll continue to receive the headlines from the Newsletter. If you'd like to carry on receiving the whole Newsletter as well as the growing list of other benefits of DVN-I membership, please contact us today.

Today's edition of the Newsletter arrives in parallel to the opening of the Frankfurt Motor Show, so in The Design Lounge we'll take a look at the highlights; watch for a more detailed report in the next Newsletter.

DVN-I is heralding new interior and mobility technology popping up all around. And most of the time we present the engineering or marketing perspective on it. But what about the consumer perspective? Deloitte recently presented an encouraging study on consumer acceptability of ACES (autonomous, connected, electric, shared) mobility technology. Have a look at our analysis of the Deloitte report, which is food for thought on how to get the car-using public onside.

It's amazing to see how the new ACES mobility paradigm is already influencing today's cars; we've got a report this week on new side airbags which can protect even swiveled occupants, new clean coatings and interior air cleaning techniques to cater for constant usage and multiple occupants, and a wide array of technologies for 3D display, child safety, interior lighting, and more—all to move toward a safer and more comfortable experience today and in the future.

Enjoy your reading! Sincerely yours,

In Depth Automotive Interior

Buyers Still Skittish About New Techs

Auto shows around the world are prominently displaying the industry's progress toward EVs, AVs, and connected cars. But are buyers ready to get onside with this fundamental technology shift?

From September to October 2018, Deloitte surveyed more than 25,000 consumers in 20 countries to explore opinions regarding a variety of critical issues impacting the automotive sector, including the development of advanced technologies.

Traffic safety is a major concern everywhere, as more than a million people die of traffic violence every year. It is hoped and predicted that autonomous driving will cut down on that grim statistic, but fear of new technology is slowing down public acceptance despite the tragic status quo. And overheated mass-media reports over normal, predictable bumps in the developmental road are probably aggravating public skepticism and depressing consumer confidence and interest in AVs. Excepting China, about 50% of respondents think AVs are unsafe. Even though that percentage has dropped—it was around 70% in 2017—it has increased a few points since last year. The situation is different in China, though, where only 25% have a negative opinion of AVs. That's drastically reduced from 2017 when the Chinese sentient was also at around 70% against. Clearly, emotions and fears still have a lot of power to slow down the deployment of autonomous vehicles.

The Deloitte survey reveals that consumers say media reports of incidents and accidents involving automated driving have made them more cautious of the technology. Just shortly ago on 27 August, for example, the Wall Street Journal reported that apparently automated cars sometimes auto-brake even when there is no risk present. It notes the National Highway Traffic Safety Administration has

received over 400 individual complaints over the past three years about this kind of behaviour from Nissan, Honda, Volkswagen, and other cars equipped with some form of automatic braking. That's an example of why a majority of consumers want their governments to exert stringent oversight with regulations on the development and use of AVs. In another divergence, outside Japan about a third of respondents trust traditional automakers to bring these technologies safely and effectively to market. In Japan, that figure is 70%.

Connectivity already exists in many vehicles, for example via services offered in real time by navigation that interacts dynamically with traffic situations, or by emergency calls. It is being expanded by the upgrading of voice interaction or additional services such as access to parking or fuel prices displayed according to service station proximity. It will be extended by entertainment services such as video-on-demand or car-office work. But consumers may not be willing to pay for these kinds of connectivity. Consumer opinions are mixed; interest in time-saving (alternative route) and safety-related implementations (collision avoidance, safer route) is high, but significant concerns remain over privacy and data security. Automakers have a tough time getting people to pay for it; in Germany 43% say they'd take it at no cost and 40% say they might be willing to pay a little. It's different in China and India, with around 50% ready to pay more than a little.

So the mobility revolution faces some fairly stiff headwinds, as consumer behavior, deeply ingrained by long habit, is proving resistant to change. Shared mobility may attract people, especially younger ones, but overall about half the surveyed population said they expect not to change how they interact with vehicular transport over the next three years. In that context, are Lyft and Uber and other such services sustainable, or will they prove to be just a fad? The answer isn't necessarily obvious; surprisingly, regular use of ride-hailing services has decreased in the last two years all over the world. Use of multimodal mobility remains occasional, except in Asia where it accounts for 30% of trips taken.

At the same time, EVs have captured worldwide consumer interest. While 29 percent of US survey respondents would prefer a hybrid, battery, or other alternative to traditional fuel-burning drivetrains for their next vehicle—up from 20 percent last year—low fuel prices, relaxed emissions standards, fewer rebates, and higher prices due to the ongoing US trade war with China could slow EV adoption.

Overall, then, there is a major opportunity and a real need for automakers, suppliers, mobility providers, and regulatory authorities to help educate consumers and further develop acceptability of these technologies.

INTERIOR NEWS

Inova's LED Interior Lights at ISAL 2019

Later this month at the International Symposium on Automotive Lighting in Germany, Inova Semiconductors—a member of the ISELED Alliance—will present their innovative car interior lighting solutions.

Inova will exhibit the first available products and applications based on ISELED technology. A "Carbox" demonstrator illustrates the interaction between dynamic light and image content, opening up new possibilities for driver assistance and infotainment systems. A matrix light demo based on the digital ISELED LEDs will be presented as well as "digital LEDs" from various manufacturers, and standalone drivers and development kits (ADK) for a simple, flexible and rapid ISELED design implementation.

The ISELED concept integrates a dedicated microcontroller together with LEDs in a very small package. The ILaS (ISELED Light and Sensor) network will expand the capabilities of the current ISELED protocol so that not only LEDs, but also sensors and actuators in almost any number and combination can be controlled in the future.

The controller contains the correction data for the individual color LEDs, doing away with time-consuming color binning. This aspect is becoming ever more important with the increasing number of LEDs in vehicles that require the use of uniform LED components.
ISELED can also be used to readjust the LEDs, taking into account the temperature variation and

age effects on operation. The corrections are determined by the manufacturer during the final test of the RGB LED and stored directly on the controller chip. The digital RGB LEDs can then be operated with an optimized protocol without the previous overhead.

The ISELED Alliance is an open industrial cooperation with the objective of developing a comprehensive ecosystem based on ISELED technology. As of August 2019, there are 23 companies/institutions supporting ISELED technology within the alliance.

Stahl's Coating for Cleaner, Longer-Lasting Interior Surfaces

As DV-I has previously reported, new car usage scenarios will influence interior material specifications. With multiple users touching every interior service in round-the-clock vehicle operation, surface material performance and durability requirements will become much steeper—more in line with what is expected on public transport vehicles wherein long durability, fast and easy maintainability, and hygienicity are key.

Earlier this year, Stahl presented their Stay Clean® technology. Headquartered in Waalwijk, Netherlands, Stahl provide leather-related chemicals and high-performance coatings. Their Stay Clean is a dirt-repelling, anti-soiling, anti-stain and anti-scratch coating that adds a protective layer to leather and synthetics, preventing migration of stains and dyes into the material's substrate. It also makes cleaning easier, and prevents the scuffs and scars regular use can inflict on seats, sofas, tables...and car interior surfaces.

But even in today's old reality of single-owner, single-occupant vehicles, the Stahl Stay Clean coating has nice benefits: it helps reduce squeaks and rattles!

Governments Mull Mandate for Child-In-Car Detectors

Every summer, small children die when left unintentionally in cars parked in the hot sun. Pets do, too. Now, American and European regulators are requiring child presence detection systems in cars. In 2022 EuroNCAP will begin awarding points toward vehicle star ratings for systems which can detect a child left alone in a car and alert the vehicle owner.

Vayyar , already introduced in Newsletter N°6, are among the vehicle technology suppliers working on child presence systems, as well as other forms of driver and occupant monitoring. Such features were already attracting interest from consumers as vehicles take on more autonomy, but the prospect of new regulations requiring this kind of technology is speeding up detection system development.

In the mushrooming Israeli auto technology sector, even more sophisticated systems are now in development. Instead of relying on door sensors, newer approaches incorporate visual or radar-type sensors, located in the vehicle headliner, that can discern the presence of a person in the back seat by detecting a heartbeat.

Honda's New Passenger Airbags

Next year Honda will bring out a new kind of passenger-side airbag designed to reduce the probability of injuries in a wider variety of frontal crashes. The automaker previewed the technology for the press at their US R&D campus in Torrance, California.

Ordinary passenger-side airbags are one-chamber designs. The new bag, which Honda co-developed with Autoliv, has four: a center chamber, two outward-projecting side chambers that create a wide base across the dashboard, and a "sail panel" that stretches between the two side chambers at their outermost edge. Honda describes it as a "catcher's mitt" that catches and decelerates the occupant's head while also engaging the side chambers, pulling them inward to cradle and protect the head, mitigating the potential for injury.

Honda said the airbag is particularly beneficial in angled frontal impacts, in which lateral collision forces can cause an occupant's head to rotate severely or slide off a regular airbag, increasing the chance of serious injury.

"This airbag system is really looking at load cases where it's at an off-axis, let's say, 20° to 30°, where now the occupant isn't coming straight into the restraint system", said project lead Eric Heitkamp, a Honda R&D crashworthiness engineer. This off-axis protection could be even more beneficial in case of automated vehicles, wherein the passenger is likely to be out of a traditional seated position—with seats swiveled into a conversation mode, for example.

JLR's 3D AR HUDs

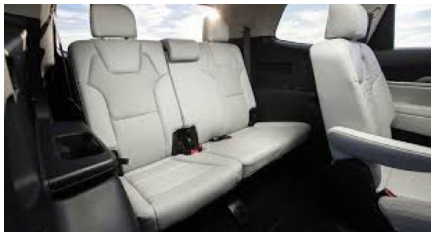
Jaguar Land Rover's engineers are working on a new generation of head-up display technology that could project safety-related and assistive information in front of the driver, and allow passengers to stream 3D movies direct to their seats in the ACES mobility context of tomorrow. The research, undertaken in partnership with CAPE (the Centre for Advanced Photonics and Electronics) at University of Cambridge, is focused on developing an immersive head-up display, which will help drivers to react more promptly.

Research in Germany has demonstrated that stereoscopic 3D displays can improve drivers' depth judgements and reaction speeds. 3D alerts could include lane-departure warnings, hazard point-outs, navigation directions, and lane line highlighting in bad weather and poorly-lit conditions. Augmented reality would add the perception of depth to the image by mapping the messages directly onto the road ahead.

The same kind of technology could perhaps one day be used by passengers to watch 3D movies. Head and eye-tracking technology would follow the viewer's position to ensure they can see 3D pictures without the need for individual screens or special glasses.

JLR say the project is a part of their "Destination Zero" ambition towards a world of zero emissions, zero accidents and zero congestion.

Oops, That's the Wrong Seat Belt



30,000 Telluride SUVs made between January and August 2019 are being recalled in the United States to replace incorrectly-selected seat belt assemblies in the second- and third-row seats. U.S. Federal Motor Vehicle Safety Standard № 208 requires an ALR (automatic locking retractor) in the seat belt assemblies, but Middle Eastern-spec seat belts without the ALRs were installed by mistake in Tellurides destined for the American market. NHTSA says seat belts without an ALR could fail to tightly secure a child seat, so Kia will inspect all recalled Tellurides and install U.S.-model seat belts in vehicles that don't already have them.

ALRs are one of the two types of retractor mechanisms used in seat belts. An ALR, typically activated by pulling the belt out to its maximum length, involves a ratchet: the retractor takes all the slack out of the belt, and then does not allow the belt to be pulled out any further until it has been unbuckled and fully retracted. This function is used to secure child safety seats that don't require the full extended length of the belt. The other type is called an ELR, for emergency-locking retractor. It locks in response to the rapid deceleration of a vehicle or rapid spooling out of the seat belt webbing from the retractor. The seat belt webbing moves freely in and out of the retractor once the seat belt is fastened, but locks instantly in the event of a crash. Some ELRs are sensitive to the webbing withdrawal speed; others to vehicle deceleration. Most modern belts, at least in the U.S. and markets with similar regulations, have both ALR and ELR.

Manufacturing excellence through poka-yoke (mistake-proof design) should avoid this type of problem, but component diversity is often so high in the automotive industry that uniform safety rules would naturally be the best way to avoid issues like this. Of course, the devil is in the details; a uniform standard can be "lowest common denominator" (lowest level of safety performance) across all commonized standards—usually this idea is rejected by agencies presiding over markets that have more protective standards—or "greatest common multiple" with a single standard with stringent requirements, justified to industry by cost savings when one seat belt, headlamp, windshield, or whatever other part can be used all over the world rather than engineering, designing, tooling, producing, procuring, stocking, distributing and correctly selecting a variety of parts for a variety of regulations.

Even Tesla's Steering Wheel is Now Leather-Free

Tesla's Model 3 now has an interior completely free of leather, fulfilling a promise made by CEO Elon Musk at this year's annual shareholder meeting.

Tesla has been getting the leather out of their interiors for a couple of years now, but the steering

wheel was proving difficult to de-skin satisfactorily. "I believe we were close to having a non-heated steering wheel, that's not leather", Musk said awhile back. "There are some challenges when heating the non-leather material and also how well it wears over time". Musk said the Tesla Models Y and 3 will be "vegan" by 2020, but wasn't sure if the company would be able to meet that same goal for the Models S and X.

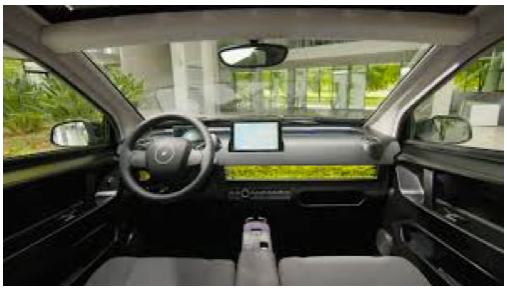
Territory is Ford's First China EV

Ford has just begun sales of its first electric vehicle in China, the battery-powered Territory. With young urban commuters as target customers, the electric Territory offers a range of 360 kilometers on one charge. It has a starting price of RMB ¥199,000 (about €25,000 or $28,000), and buyers can apply for a government subsidy of ¥17,000 (about €2,160 or $2,400).

Like the gasoline version, the electric crossover is produced at Jiangling Motors, Ford's truck joint venture where other Ford models in production include the Everest, Tourneo, and Transit.

The 5-seater interior with premium-appearance materials looks modern and dynamic, though lots of lines, curves, and multiple colors might look busy to some. The complete feature list is yet to be made available, but we see a fully digital instrument cluster and a 10" touchscreen LCD infotainment system housed inside a glossy panel. The center console design with toggle-like switches might remind of premium German cars. The car's HVAC system can be controlled remotely with the FordPass smartphone app.

Sion: Solar Power, Clean Interior Air



The Sion—not to be confused with Toyota's short-lived marque Scion—is a solar electric car under development by Munich-based German startup Sono Motors.

Its battery can be charged in daylight by 248 solar cells seamlessly integrated into the body. own onboard solar cells. It can also be charged by plugging into the regular power grid. Sono says in typical German daylight conditions, for example, up to 34 kilometers of additional range per day can be generated purely by solar energy. Preliminarily, the battery has a capacity of 35-45 kWh, good for a 250-km range.

The car seats five and includes such niceties as heated seats and height-adjustable seat belts. Sharing is integral; the goSono app allows owners to share their energy, their ride, and the car itself. Sono says they already have 10,000 pre-orders in hand, and the plan is for production to start in the middle of next year by NEVS (National Electric Vehicle Sweden) in the former SAAB plant in Trollhättan.

The Sion's interior is clearly structured with a very understated design opening to intuitive usability. Innovative design highlights an infotainment system with connectivity and mobility services to be controlled centrally via the 10-inch touch display.

The vegetal material—bryophyte—added on the IP and center console can increase the indoor air quality by filtering out up to 20 percent of air particulates. Named BreSono, it does not require special care (no watering, fertilizing, sun, etc). BreSono has sponge properties that control humidity where it either extracts it from the air or adds it to the air, according the air humidity level. In dry air, this material provides extra moisture and its consistency becomes harder. Like today's cabin air filters, this humidistatic air scrubber could be replaced as a scheduled-maintenance item.

THE DESIGN LOUNGE

DVN-I's Frankfurt Motor Show: IAA 2019 Preview

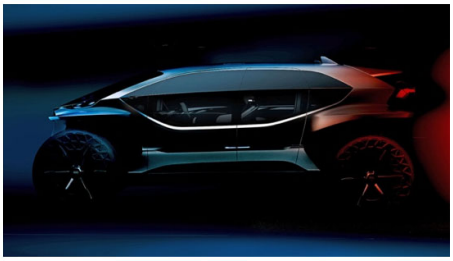
On 10 September the IAA Frankfurt Auto Show officially opened to the press, and you can count on DVN-I to attend the event in your stead. We'll be compiling and presenting a look at new design trends, features, and innovations in the interiors of the concept, prototype, newly-released and newly-redesigned vehicles on display. Watch for our interior-centric coverage of the Frankfurt motor show in the next issue of DVN-I. As an appetizer, today we've got a preview of some of what we'll be looking at in concept vehicles, newly-launched production vehicles, and refreshed vehicles.

Concept Vehicles

All of the German automakers are among those showing off their latest design studies. BMW, Audi, and Daimler have their latest generations of concept cars focusing on autonomous driving—and the enormous changes AD could mean for vehicle interior configuration and equipment.

BMW Vision M Next

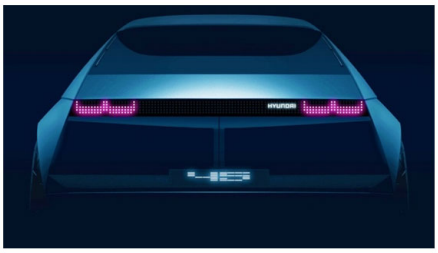
Daimler EQ



Audi AI Trail Quattro

SEAT will introduce a new sub-brand, Cupra, and Hyundai is exploring new design ideas.

Cupra Travascan



Hyundai 45

New Vehicle Launches

The most anticipated new vehicle launches with traditional powertrains will come from Land Rover and their new Discovery and BMW's new 1 Series. Nissan's new Juke and Ford's new Puma will also be introduced, although already previously released.

Land Rover Discovery

BMW 1 Series

Nissan Juke

Ford Puma

As for electric vehicles, Porsche is introducing the Taycan, VW their long-awaited ID series, Honda's got their E, and there's a production model of the Byton M-Byte after several years of concepts and prototypes.

Porsche Taycan

VW ID3

Byton M-Byte

Honda E

Model Refreshes There will also be an abundance of model refreshes first shown at the IAA with Renault updating their successful Captur, Opel/Vauxhall with their Corsa, and Audi's A1.

Renault Captur

Opel/Vauxhall Corsa

Audi A1

As shown here, much of their focus has been on the integration of new screens and UX/HMI to the interior.
Watch for more comprehensive coverage in the next issue of DVN-I, when we'll show how bridges are being made from each automaker's current model line to their future visions, and how that's shaping every aspect of vehicle interior.

NEWS MOBILITY

Olli 2.0: A 3D-Printed Autonomous Shuttle

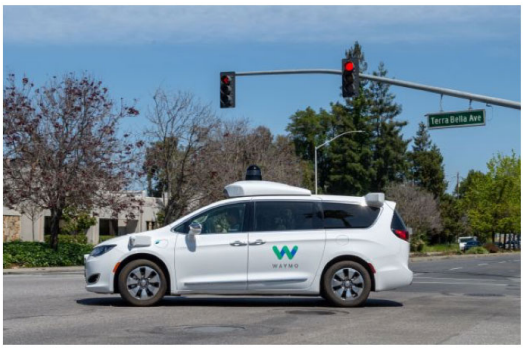
Local Motors was founded in 2007. Their Olli 1.0 shuttle is a tall rectangular pod, with wide-set headlamps and expansive windows nestled in a rounded frame. Its design gives the shuttle a friendly countenance that puts on a friendly face and politely beckons people: "come along, take a ride!". It was designed for low-speed, controlled-access, campus-type environments like hospitals, military bases, and universities. Though are Olli 1s on nine campuses, it has been overshadowed by city-capable robo-taxi developments from the likes of Continental, Bosch, Uber, Waymo, and Easymile.

But Olli 2.0 is different—not least in how it's produced. It's a 3D-printed, connected, electric, autonomous shuttle (all at once!). The manufacturing process has been improved, and Olli 2.0 is now 80% 3D-printed, with crash tests confirming the safety performance and crashworthiness of the 3D-printed parts that make up the shuttle.

Local Motors has two micro-factories. 3D printing sidesteps the need for the tool and die and stamping equipment found in a traditional automaker's factory (which itself must be large enough to house this enormous equipment). For the same micro size reasons, Local Motors doesn't have a big R&D force, but they boast the ability to tap into their community and leverage its partnerships with research labs, to go from design to mobile prototype in just weeks. Local's 3D printing technology comes from Oak Ridge National Laboratory.

Carmakers Should Make Cars: Waymo Exec

Waymo, the former self-driving unit of Google, impressed the world and frightened the automakers a couple years ago when it deployed a bubble-shaped driverless car on the public roads of San Francisco. But in 2017, Waymo discontinued this prototype toy-like vehicle and shifted the company strategy altogether away from making cars.



That's because manufacturing automobiles is "really hard" and could be a distraction to a company that doesn't rise from a manufacturing background, says Patrick Cadariu. He's Waymo's head of vehicle supply chain, and he was speaking to UK newspaper The Telegraph:

> "*Our goal is not to build cars. It's to build the world's most experienced driver. That is our core business,*" *Cadariu said. "There's other people that are very, very good at making cars, and they should do that, and we'd love to work with them. My worry with some players is what are their core competencies, what are their strengths, and are they focusing on solving the right problems, or are they being distracted? We've been doing this for 10 years, and the industry itself is still in the very early days,*" *he added. "We've been laser-focused on very specific problems, and it's hard. So, trying to do everything is probably not going to help you get there faster [or] safer.*"

Since then, Waymo has been focusing on developing autonomous driving software and sensors to be fitted on cars made by others. This past April, the company announced a plan to open an assembly line in Detroit at the former American Axle & Manufacturing plant to retrofit its latest self-driving system to the Jaguar I-Pace and Chrysler Pacifica.

Zenuity Works With CERN to Speed AV Processing

Autonomous driving software specialist Zenuity will team up with CERN (the European Organization for Nuclear Research) to develop autonomous vehicles that can make predictions and decisions faster to help improved safety and minimize their power

consumption.

This is crucial to Zenuity as its long-term goal is to help automakers create AVs that have zero collisions and cause no injuries and fatalities. The safety of AVs has been questioned following a non-fatal accident last month in Vienna, Austria, involving a driverless bus and a pedestrian, and a fatal crash in 2018 in which an Uber-modified self-driving car that had its automatic braking system disabled and alert warnings suppressed killed a pedestrian in Arizona while the Uber "safety driver" was watching television on the phone.

CEO Dennis Nobelius says of his company, "Safety is in our bones. That's how we operate". He says whenever an AV is involved in an accident it is a reminder of how high the stakes are in this sector. "It's imperative for the entire industry to be very cautious." Zenuity, a joint venture between Volvo Cars and Veoneer, who came to exist last year as a spin-off of Autoliv's electronics and automated driving divisions.

Zenuity knows a major challenge for AVs is giving them the power to accurately interpret the huge quantity of data generated by the vehicle's cameras and sensors during normal driving conditions. Scientists at CERN face a similar challenge because when the center's Large Hadron Collider smashes subatomic particles this also generates a huge amount of data to assess. "CERN wants to analyze their particle collisions in real time and we want to analyze our data coming from cameras, lidars and radar in real time," Zenuity Deep Learning Engineer Christoffer Peterssen told Automotive News Europe. To address this challenge CERN uses FGPAs: Field-Programmable Gate Arrays, a hardware solution that executes complex decision-taking algorithms in microseconds.

FPGAs will now be used in connection with autonomous driving. In addition, Zenuity and CERN will collaborate on "deep learning", a class of machine learning algorithms. In recent years such algorithms, commonly referred to as artificial intelligence (AI), have been applied to a multitude of fields with great success, even exceeding human performance on certain tasks.

Zenuity hopes the collaboration with CERN will reduce the runtime and memory footprint of the relevant deep learning algorithms without reducing accuracy, while simultaneously minimizing energy consumption and cost. Nobelius has an additional goal: "My hopes and expectations are that part of this [research] actually will go into production for the lead customer that we have for unsupervised driving, which is Volvo Cars." When asked how quickly he wants to see that happen, Nobelius said: "A couple of years. No longer than that."

Toyota, Pony Team Up

Guangzhou, China-based self-driving car startup Pony.ai announced a partnership with Toyota in a boost explore "safe mobility services" involving driverless technology across a range of segments and industries.

The companies will start the pilot in September on public roads in Beijing and Shanghai, using 5- or

7-seat Lexus RX vehicles and Pony's autonomous driving system, a Toyota representative has revealed.

"Autonomous driving technology is the key to creating a better transportation system and delivering value to the lives of many", the companies said in a press release. "Toyota and Pony.ai are accelerating the arrival of a safer, more efficient, and more enjoyable mobility for all".

Pony's PonyPilot, a test project for "product-ready" self-driving cars within a geofenced area in Guangzhou will be used for validation. It's currently available to employees and "select affiliates" by invitation only, and it covers roughly 50 square kilometers of central Nansha, including commercial plazas, office buildings, landmark hotels, libraries, and residential complexes.

From Toyota's perspective, the goal is to become "a mobility company firmly rooted in China" via acceleration of its business in China via collaboration with local companies—for example, its partnerships with Didi and Baidu. It also includes variety of self-delivery solutions with Softbank, Amazon, Didi Chuxing, and Pizza Hut for food delivery, offering onboard medical examinations, doubling as hotel rooms, and more.

GENERAL NEWS

Volkswagen to Show New Logo at IAA

Volkswagen will present their new brand design and logo at IAA. The presentation of the brand is to become "significantly younger, more digital, and generally more modern".

The brand relaunch coincides with the launch of the all-electric ID.3, which VW says will "usher in a new era for Volkswagen". The relaunch also addresses the need for an update that works better with digital media and will also include a "sound logo".

"New Volkswagen" will become visible and perceptible in the design of the vehicles, in customer contacts, and in the corporate presentation as a whole. The objective is to "create a new 360° customer experience that is modern and fascinating throughout the world and across all channels", says Volkswagen's Chief Designer Klaus Bischoff, who played a key role in the development of the new graphic identity. "The new brand design reflects a type of mobility that forms a natural part of people's lives. Volkswagen has always been a key element in these efforts. In the new age of mobility, the motto is 'digital first', without any filters".

The new logo will be more modern, clearer and simpler, reduced to its essential elements and presented with a new design that is two-dimensional. It will allow more flexible use and, VW says, will be "outstandingly recognizable in digital media". We're watching for new design in other brand signals, too, such as pictograms, typography, colors, and layouts.

The international rollout of the new brand design will begin at the IAA Frankfurt International Motor Show this week. The starting signal will be given by the unveiling of the new logo on the high-rise building at company headquarters in Wolfsburg. The changeover is to be implemented in several waves using a cost-optimized, resource-conserving approach. Initially, the brand's locations and dealers in Europe will be changed over, followed by China in October. The changeover will then be implemented step-by-step in North and South America as well as the rest of the world from the beginning of 2020. All in all, 171 markets will be affected. At the more than 10,000 facilities of dealers and service partners throughout the world, about 70,000 logos will be replaced. Volkswagen's rebranding will therefore be one of the largest operations of this type in the industry worldwide.

Chinese Investing in R&D Operations in Europe

Attempting to gain prestige, improve competitiveness and open new sales channels abroad, Chinese automakers are investing in new design and engineering operations in Europe that could bolster their long-term prospects in the region and at home. Local R&D operations help manufacturers better understand market requirements, learn the vagaries of foreign regulations and compliance procedures, and establish ties with new suppliers.

Stefan Bratzel

"These development centres could certainly contribute to driving technological advances in China," says Stefan Bratzel, director of the Center of Automotive Management at the University of Applied Sciences in Bergisch Gladbach, Germany. "They are, however, much more likely making ground preparations to launch in the European market, since they realize their products wouldn't stand a chance if they cannot be developed to meet European needs".

An R&D centre or design studio is not necessarily a precursor to a market launch, nor a requirement; some brands have quietly operated in Europe for years without trying to introduce a model in the region. Volkswagen Group's largest JV partner, SAIC Motor, established a small engineering operation in Europe in 2005, as did VW's newest JV partner, JAC Motors.

But the slowdown in China's auto market over the past few years, culminating in the recent slump, has underscored the need for automakers there to expand their reach to survive. China's domestic brands have been hurt the most, with Geely dropping from second to fifth place in sales in one year. The early adoption of stricter "C6" emissions standards in many parts of China, as well as trade tensions with the United States, prompted forecaster LMC Automotive to revise their estimates for China's light-vehicle market through 2025; the analyst firm now expects a second straight year of contraction with only a gradual recovery.