Editorial

Merry Christmas - DVN-I Workshop Next Spring—Save The Date!

All of us at DVN Interior wish you the best of all the holidays you celebrate, and an enjoyable slide into 2023 (as they say in German). As you start to take a look at your 2023, save the date for the DVN Interior Workshop on 25-26 April at the Pullman Hotel in Köln, Germany. The rubric of the event is **Human Centered Interior Technology**, andsessions will include Human-Machine Interaction; Smart Surfaces; Safety and Driver Monitoring Systems; Interior Lighting; Comfort and Wellbeing, and Materials and Sustainability. It is a golden opportunity for your company to exhibit your innovations and expertise. We'll bring you more details before long; in the meantime, **contact us** if you'd like more information, or for early registration.

This week's news includes an in-depth article about the creeping spread of smartphone-like automotive interior features and capabilities, with examples from a variety of automakers.

DVN Interior will take a week's break over year's end, and we'll be back on 5 January. Thank you for having spent this past year with us! Let's do it again in '23.

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Smart Devices, Functions Grow in Automotive Interiors

PEUGEOT 3008 (STELLANTIS IMAGE)

The introductory lecture at the DVN Interior Think Tank seminar in Köln included the topic of BYOD (Bring Your Own Device)—that is, mirroring your personal smartphone onto your car's screen.

Accustomed to the smartphone experience on their phones and pads (and, increasingly, other devices at home and work), people are looking for similar experiences in the car. It starts with the obvious visual elements: bigger, more interactive displays now reaching from pillar to pillar on the dashboard, or implemented as head-up displays on the vehicle glass for better safety and convenience.

In 2011, Toyota President Akio Toyoda said his company would produce cars that were smartphones on wheels. Since then, this analogy has been repeated by other auto executives, including former Daimler board chairman Dieter Zetsche and Volkswagen brand chief Martin Winterkorn, who said in 2015 that Volkswagens would be "smartphones on wheels" by 2020.

Meanwhile, digital-realm giants are fighting for leadership in the cockpit HMI; we see that daily with nonstop updates to Google's Android Auto; Apple Carplay, and Amazon Alexa. In-car applications are a very real part of their business models, and connectivity—now improving to 5G—is the technological flight path fostering OTA updates.

It's still much too early to tell how many and who will be the winner(s) in this space. In contrast to some automakers' in-car systems, Apple Carplay and Google Android Automotive seem as though they haven't evolved much since their introductions. However, smartphone-native auto ecosystems are open to more innovative functionalities and apps from third-party developers. While Apple and Google benefit from the data collected from users, and consumers benefit from the integration of personalized apps and services, automakers can offer unique driving experiences; in-cabin enhancements; connected services, and OTA updates that act as completely new value and revenue streams independent of brought-in infotainment.

According to Alex Oyler, head of car IT at consultancy SBD Automotive, "Most drivers are simple: they don't want to have to completely relearn how to use a system whenever they get a new device, whether it be a phone or a car. Ease of access to their most-use applications, and predictable, simple interfaces are attractive to

people who often use the same small number of features in the car. As the saying goes: 'if it ain't broke, don't fix it'."

FISKER IMAGE

Every few months a new phone is released with faster processors; more storage; better screens and batteries and cameras…and mobile apps evolve to leverage these improvements, thanks to their quick development cycles. You can write an app; test it, and push it into the app store anytime. Any change to an automobile, on the other hand, takes years of planning. Automakers' own in-car systems are developed several years ahead, though some of them are starting to update on an ongoing, over-the-air basis.

The Smartphone duopoly is extended into the vehicle, with Apple CarPlay and Android Auto connecting phone to ride, allowing Waze navigation or podcasts and music, and providing easy access to numerous apps. From a user experience perspective, bringing your own device means bringing your already existing complex and (alarmingly?) intimate consumer-producer relationship. The digital giants know whom we call and text, when and where—and probably what we say. We take our phone to the toilet and to the lunch table. We sleep next to it. Increasing amounts of data prove what most of us already know: we're addicted to our smartphones. It's difficult to imagine an automaker ever getting that level of constant, intimate proximity to the end user.

Another advantage CarPlay and Android enjoy is that they offer relatively easy integration of already-connected infotainment solution for automakers, especially for entry-level models. Instead of reinventing the wheel and designing a new phone interface, the automaker need only make room for the Apple and Google systems, then go spend their resources on developing and improving their own functionalities.

And integration isn't the only seamless element here; it is also a seamless transition for the user: the same interface and functionalities already used all day every day, now also in the car. Continuity between the three space we are living in—home, mobility, office—at its best, removes a whole category of potential annoyances and frustrations from life.

From another perspective: to what extent will (and should) automakers use the smartphone as a template for the in-car experience they create? And how much can or should they differentiate their product and brand, if all brands work from the same Android or CarPlay templates?

Grape Up is a software development and consultancy firm serving automakers and tier-1 suppliers as they work to build software-defined vehicles. The company's head of automotive R&D, Adam Kozłowski, says, "As long as the infotainment stays driver-centric and does not feel overcomplicated to use while driving, the 'smartfication' of infotainment, or even the whole car through the [software-defined vehicle] concept, is the way to go". He pointed at in-vehicle navigation systems with pinch-to-zoom features as an example, saying, "It is intuitive because we are used to it on our smartphones. If [automakers] will try to differentiate and try to make the infotainment more 'modern' just to differentiate, without focusing on user experience, it will be a failure".

And Harman Automotive's vice president of Epic UX, Chris Ludwig, says "Today, consumers expect their vehicles to mirror their technology habits outside the car, which means bringing consumer electronics-level connectivity; content, and features into the car, optimized for the car".

As the car has a different environment than a hold-in-the-hand phone, it requires a different kind of interaction. The driver must stay safely focused on the road, while passengers might want a more immersive, individualized experience. Individualized sound zones are becoming a must-have in that context.

TEXAS INSTRUMENTS IMAGE

UX is the focus, mixing the best of the automotive world mixed with the best of smartphones technologies. Top infotainment systems currently offer a touchscreen experience like that of smartphones, the app store, customization, and the personal assistant with voice control. Participants at the DVN Interior Think Tank seminar concluded UX should include some fixed and universal elements: the position of the navigation; seat heating, and audio volume, for example, just as the position of controls for the lights, blinkers, and wipers are more or less standardized on most vehicles.

Having similar UX and an ability to customize the look and feel by adding new applications, or changing colors, might be the solution. The driver should feel that the infotainment is designed for intuitive interaction, to ease transition between home, vehicle and office.

In fact, the in-vehicle experience is becoming an important selling point as more consumers who grew up on smartphones enter the car market and purchase an automobile based on the features of its infotainment system in the same way they choose a phone.

The only remaining problem is brand differentiation via the infotainment system. If Android or CarPlay are designed to fit any vehicle, automakers must find solutions to differentiate in that context. Building their own infotainment OS is certainly possible, but probably very challenging in the shadow of the Googles and Apples and Amazons of the world.

So, through their design and software teams, automakers must customize their infotainment system and create helpful tools unique to their system and brand; otherwise, they will miss out on a significant opportunity to generate brand loyalty. Here are some examples of what various automakers are doing:

Tesla

TESLA IMAGE

Tesla has started to push a new "holiday" software update with Apple Music, Mahjong, and more features. This year, the new feature is an Apple Music app being integrated inside Tesla vehicles—joining other music streaming apps already in the cars, like Spotify and Tidal.

Tesla wrote about the addition in the release notes:

The relaxing tile match game has been elevated with a clean modern design, smooth animations, and calming sounds. Match identical tiles. A tile is playable if it is open on the left or right and isn't covered by another tile. Continue pairing tiles to clear the board and your mind!

The update also brings an update to Dog Mode, which enables owners to safely leave their dogs in their vehicles with climate control on.

Ford

FORD IMAGE

At the Hannover IAA Transportation event, Ford revealed new features and specifications of their new E Transit Custom, a fully electric commercial van which the automaker calls a 'smartphone on wheels'. It may even be more important for commecrcial vehicles because of multiple drivers, which have only in common to be smart phone user. Ford is saying customers who switch to Ford's new electric van can save up to an hour a day with its new capabilities.

These application examples show that the automotive world is trying to integrate Apple and Google systems, and trying to adapt it to their brand and customers. It will also push the digital giants to develop more adaptable systems to leverage their strength into the automotive interior world.

Find more examples in other articles in this week's DVN-I Newsletter.

Interior News

Renault First to Embed Waze

WAZE + RENAULT IMAGE

Renault is the first global automaker to embed the crowd-sourcing navigation application Waze into forthcoming vehicles. The popular smartphone navigation app will be directly integrated into the vehicle's multimedia system. The integration into Renault's OpenR Link infotainment, which also hosts Google, promises to offer drivers greater comfort and safety.
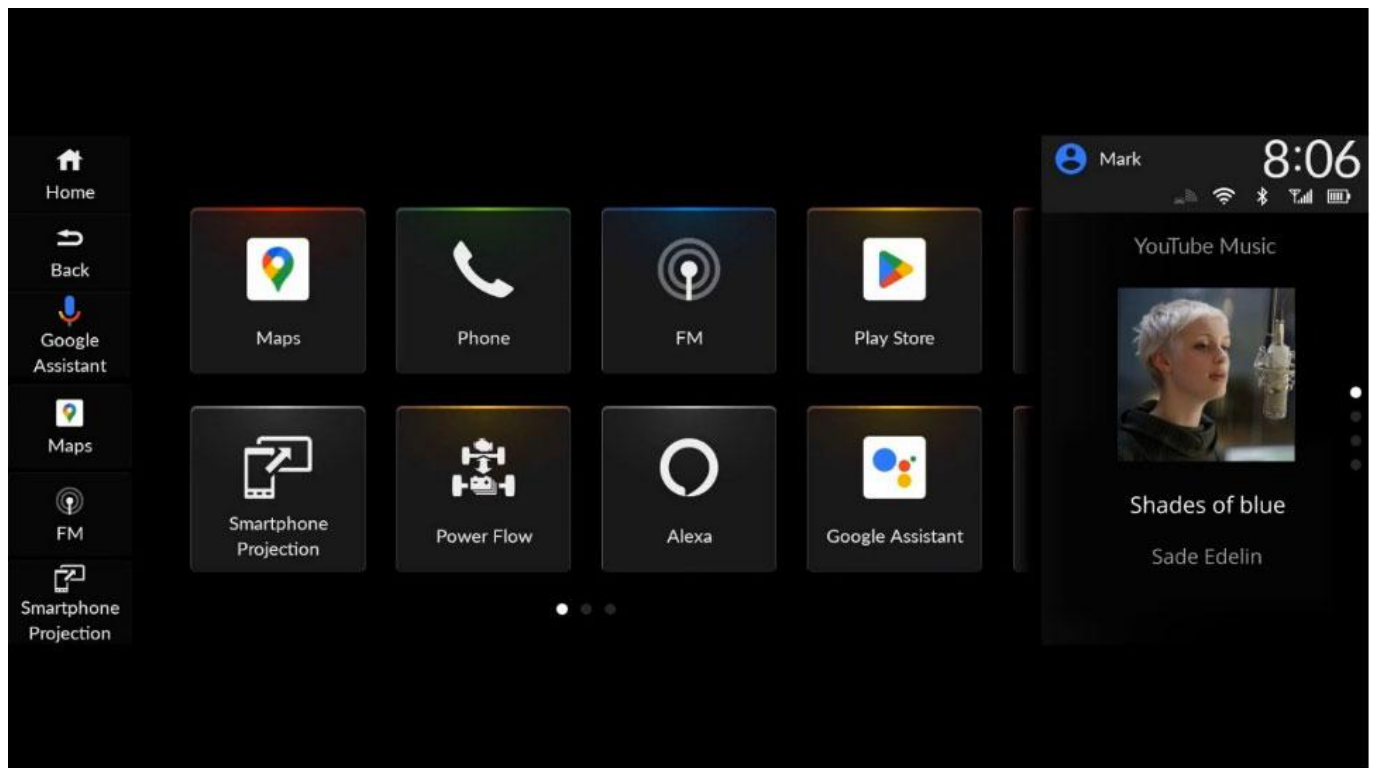
Without reaching for the smartphone, the driver has access to real-time traffic information; favorite routes, and saved destinations on the eye-level screen. Other vehicle features and music remain accessible, even if Waze is activated. This new experience with Waze is available in European countries for all Nouvel Austral and Mégane E-Tech electric vehicles equipped with the OpenR screen and the OpenR Link interface with integrated Google.

Customers can download and install the Waze app either directly from Google Play via their OpenR Link interface in their vehicle, or from their My Renault mobile app. They can then create a Waze account or use an existing one, always free of charge.

Jérôme Seror, director of digital customer experience at Renault, says, "We are convinced that the large number of Waze users will appreciate this new feature when they drive the New Austral or the Mégane E-Tech electric. This is clearly in line with our strategy to offer our customers an intuitive, immersive, and connected driving experience".
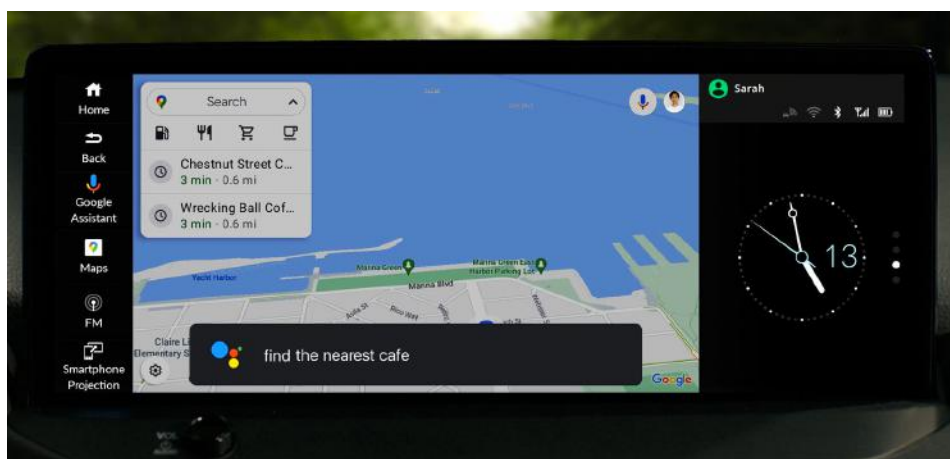
Integral Google in New Honda Accord

HONDA IMAGE

The new Accord features Honda's first integration of Google to enable seamless on-the-go connectivity. The technology will come as standard on the top specification Accord Touring, and will feature Google apps such as Assistant; Maps, and many more, all available for download from Google Play.
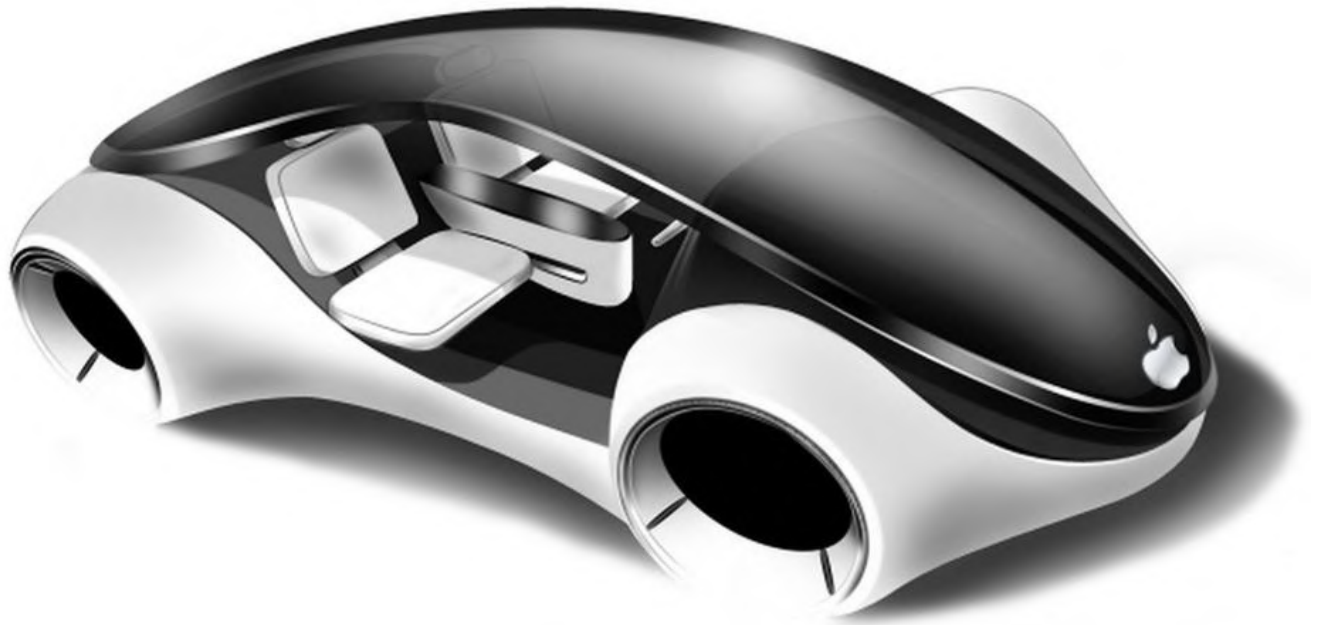
Other related standard features on the Accord Touring include a 10.2" digital instrument display, and Honda's largest ever 12.3-inch center touchscreen with Apple CarPlay and Android Auto compatibility. There's a 6" HUD, Qi-compatible 15W wireless smartphone charging, and a premium Bose audio system with 12 speakers. All Honda Accords are capable of undergoing OTA updates to ensure vehicle modules stay up to date while improving functionality for customers over the vehicle's lifetime.

Google Assistant lets users keep at least their eyes (though still not their mind) on the road while calling or texting. Reminders can also be set; destinations can be chosen within Google Maps; media can be selected, and the HVAC can be adjusted, all using voice commands.

Apple Car Turns into Apple in-Car

APPLE SKETCH FROM 2015

Since its beginning, the Apple Car has been publicly defined and described mostly by guess; inference; assumption, and rumor. Now Apple and their associates have reportedly decided their plans for a vehicle without steering wheel or pedals is not currently feasible. So they've pushed back the planned launch date to 2026, and now are planning a new vehicle concept with those components.

Apple indicated strong ambitions in the automotive sector at the WWDC developer conference in June. They have big plans for their CarPlay car software, which up to now has brought content from an iPhone to an in-car screen. The new version could also provide access to car functions such as controlling the HVAC, and operate the complete instrument cluster with the speed display, for example.

Apple says the first vehicles using the new CarPlay will be unveiled at the end of next year; auto brands joining the project include Mercedes; Audi, and Porsche; Ford; Renault; Nissan, and Volvo.

UltraSense's New Smart Surface HMI Toolkit

BORÉAS TECHNOLOGIES IMAGE

UltraSense Systems' new UltraStudio 2.0 is a smart surface HMI design software beta toolkit meant to help accelerate HMI design by putting the control of touch, illumination, audio, and haptics in one place to define and set an integrated user experience (UX).

UltraSense has positioned themselves as HMI experts, providing a suite of sensors, subsystem modules, full products and software focused on smart surfaces, with rapid product integration capabilities. The Company's modules integrate functions including touch; haptics, and lighting with extensive associated software algorithms. The core silicon supplies sensor fusion capabilities through novel multi-physics detection and feedback for hard and soft surfaces including metals; glass; plastics; wood, and leather for interior and exterior applications.

Tuning of the user experience for many users can be a frustrating, time-consuming process. UltraStudio 2.0 allows designers to custom-craft their UX settings and save custom profile settings. It facilitates human-factors testing and evaluation preferences by storing multiple user profiles to organize user opinions; rankings and rating experiences; and storing data to be mined and analyzed. It works with the family of TouchPoint HMI Controllers and is open and extensible with the ability to interface with third-party sensors and feedback technology, and is open to interface with other UX software tools.

BlackBerry QNX for Human Horizons HiPhiZ UX

HUMAN HORIZONS IMAGES

BlackBerry's QNX digital technology has been chosen by Chinese automaker Human Horizons for their HiPhi Z model.

The QNX platform will power the car's autonomous driving controller and intelligent digital cockpit controller using the Neutrino Realtime Operating System (RTOS), QNX OS for Safety and QNX Hypervisor. The car has a tabletlike digital cockpit and is equipped with a voice assistant, the HiPhi Bot, which the automaker says enhances multiple aspects of the driving and passenger experience.

For example, by listening to the driver's voice and identifying their position in the vehicle, the HiPhi Bot claims to be able to turn the central control screen to present the most ergonomic angle and to nod and greet the driver. It can also make refined movements in time with the beat of the in-car music for drivers who want to show off their car's gimmickry.

BlackBerry's QNX Hypervisor allows for multiple systems with mixed criticality and different operating system environments to be consolidated onto a single hardware platform, reducing both the initial development time and long-term costs of ownership while ensuring top-notch safety and security. Human Horizons CTO Mark Stanton says, "Human Horizons is focused on bringing futuristic cars to life with connected, intelligent, safe and advanced technology. BlackBerry is a trusted partner and collaborating with them allows us to achieve our '3-Smart' strategic blueprint, supporting the development of smart cars, smart transportation, and smart cities. Together we are helping to underpin a smarter and more technologically sophisticated future, without sacrificing safety, security, or reliability".

Lucid Details Gravity Electric SUV

LUCID GROUP IMAGE

The Lucid Gravity concept can serve different lifestyles and needs, offering flexible seating configurations for five; six, or seven adults in two- and three-row seating configurations. The SUV's cabin will continue the automaker's Lucid Space design approach first seen on the Air, promising even more flexible cabin and cargo space than the sedan. Front passengers will be treated to the Lucid UX software interface, presumably with the new SiriusXM streaming and Apple CarPlay functions that are also coming soon to the Air, displayed on a version of Lucid's organically curved Glass Cockpit high-resolution screens.

According to the company, the Gravity will continue Lucid's focus on luxury; spaciousness; performance, and efficiency, setting itself apart from the competition with a combination of supercar performance and seating for up to seven adults.

Lucid CEO and CTO Peter Rawlinson says the Gravity "builds upon everything we have achieved thus far, driving further advancements of our in-house technology to create a luxury performance SUV like none other. Just as [the Lucid Air] redefined the sedan category, so too will [the Gravity] impact the world of luxury SUVs, setting new benchmarks across the board". Market launch of the Gravity is planned for 2024.

The Design Lounge

The Osborne 1 Computer

WIKIPEDIA COMMONS IMAGE

What do a Douglas DC3 and a World War II field radio have in common with the 2022 Mercedes EQS luxury EV? Very little, at first glance. However, a historical object in between the two periods relates equally to both and constitutes the pivot point from one era to the other.

The Osborne 1 was the first portable computer and likewise the first tech novelty of the day. It was designed to be portable, with a rugged ABS case and a handle, and was advertised as the only computer that would fit underneath an airline seat—a 'luggable' computer, at 11.1 kg. It didn't have huge amounts of disk storage space or RAM, and was not very expandable. It had a 5-inch (13 cm) 52- (later 80-) character display screen, and used single-sided, single-density floppy diskettes that stored 90 kB per disk. Peripherals included an external monochrome display, parallel dot-matrix printer, and 300-baud modem that fit into the left diskette storage pocket. It was described as '*a cross between a World War II field radio and a shrunken instrument panel of a DC3*', and the new trend of portable computers was launched under this narrative on 3 April 1981.

Many journalists at the time repetitively described it as a portable instrument panel—an accessible analogy to a familiar tech object. The association of portable computer technology to car interiors was modernizing and domesticating WW2 tech trends into everyday commuting. In addition, the idea of controlling complex operations through a cockpit dominated the new era of itinerant work. The Osbourne 1's credibility related to its physical aspect, dimension and size. All our future projections to upcoming novelty products remained always within the constraints of making sense.

The storyline stretched on the preconceived idea of a big-performing machine that we could peer into, like a crystal ball, via a mystically small screen. Similarly, we would look into a cockpit gauge to see what happens in the engine compartment or further back at the beginning of the industrial era, through a glazed glass loop inside a steam engine boiler. The screen was there as a see-through telltale to the soul of the machine, and the only way to visualize and comprehend engine behavior. What happened from then on is a completely different story. Digital technology, unrelated to any mechanical logic and with exponentially greater capacity, multiplied data outputs in purely visual terms. Schemes of pure graphic nature gradually gained ground and the messages they conveyed became far more interesting than the mechanical motion itself. How the engine worked became secondary, and so screens grew bigger and 'engines' smaller until screens were pretty much the most visible part of the product, enabling evermore itinerant operations (e.g., laptops and touchpads).

Now, what does the latest Mercedes have to do with all this? As long as everything's working perfectly, the display of any information about the vehicle itself is irrelevant. What is interesting, though, is the circumstance within which the vehicle operates: location, traffic, channels, and so on. A multitude of new symbols appeared on IPs, asking for more display area. From a computer at the size of an instrument panel with a tiny screen to an instrument panel size screen (Mercedes EQS) there is something cognitive about this analogy and it had always to do with our perception of novelty at the actual context.

News Mobility

Parkopedia Powers Parking Payment in BMW

BMW IMAGE

Drivers of BMW vehicles in Germany and Austria can now use a new parking payment feature which uses Parkopedia in-vehicle payment platform integrated into BMW's Operating Systems 7 and 8. The new service means drivers can now locate and pay for parking while staying in their car by using the vehicle's infotainment system or the MyBMW App.

BMW's in-vehicle parking feature will be activated overnight via an OTA update. Once a driver arrives at their chosen parking location, Parkopedia's payment platform enables interactions between payable locations and the vehicle's sensors to automatically show payment functions before suggesting the driver should pay at certain locations. If parking by the minute is an option, the platform ends the parking transaction as soon as the BMW vehicle leaves the location.

The Parking Payments service from BMW and Parkopedia delivers Single Sign-On capabilities that enable a driver to log in to their respective BMW ConnectedDrive account or BMW ID to activate the Park Payments service. Payment methods can then be saved using a QR code displayed on the vehicle's infotainment system.

Parkopedia's granular data and technology enables accurate geofences to be created, resulting in automated payment requests or triggers for BMW customers within specified areas. This negates the need for smartphone apps or parking machines.

The service will be expanded in Europe, starting next year. A gradual rollout was chosen by BMW so they can collect customer feedback from Germany and Austria to ensure the software benefits from improvements before reaching other markets.

Is 5G Really Paving the Road to Autonomy?

SIEMENS IMAGE

Lukas Neckermann, a global expert on mobility and co-initiator of PAVE Europe, believes that 5G is very important, but not essential as an enabler for automated vehicle deployment. He finds that congestion is not caused by the volume of traffic, but by acceleration and deceleration within traffic—which also increases exhaust emissions and worsens road safety. He believes autonomous and connected vehicles can bring about smoother traffic flows through anticipatory and collaborative driving: "Vehicles that are able to 'talk' to each other have greater vision. They, effectively, can 'see' what a human can't, such as over the crest of a hill, or behind a large truck. This means they have better ability to anticipate and can potentially avoid sharp braking that causes crashes and traffic jams".

5G offers benefits by permitting fast provisioning of map updates, or remote driving. A representative for Audi UK says lower latencies, higher data rates, and new and improved technology mean 5G provides the capabilities to match the requirements by automated driving functions. Audi already has various functions and services in their series vehicles in China.

Audi UK says 5G C-V2X cars get 'automated', but it doesn't make them autonomous. They are, however, connected: "Connected vehicles are the prerequisite to interact with its environment and other road users and therefore a basic ingredient of autonomous driving"—this requires interconnectivity with each and every single participant.

So, Audi is right to say there are also other aspect that are required to make the vision of the road to full autonomy a reality. They include rules, regulations, legislation, agreements on standards and network frequencies.

General News

Is a Europe-Built Chinese Car Local?

WULING HONGGUANG MINI EV (WULING IMAGE)

Small city cars are beginning to gain traction, like the Citroën AMI and the Microlino. The automotive world is not like textiles or consumer electronics, though, and products travel more readily within a region than across the planet. For this reason, the Chinese question, as it might be called, will quickly cease to involve imports and their possible constraint, to focus instead on the assembly of Chinese vehicles in Europe. What attitude will Europe then develop? Everything is converging today so that we doubt Europe will develop a Chinese policy other than that which is taking shape in the case of the entry of the Wuling Hongguang Mini into Europe through the Estonian door.

It is a miniature pure-electric vehicle manufactured by SGMW Wuling, offered in 14 variants with range of 120km/170 (NEDC), 200/300km (CLTC).

The aesthetics of Wuling Hongguang Mini EV are customizable, and there are special versions including the Game Boy Edition inspired by the universe of video games of the '90s and '00s. Trunk space is almost nonexistent with four seats in place (and as for crash safety…er…well…are there any other questions?). However, a trunk of 741 liters appears if the seats are removed. The interior is spartan, with no infotainment screens. Alongside the manual air conditioning controls there is a very simple audio interface, with Bluetooth connectivity and radio as standard.

WULING IMAGE

The car has already arrived in Europe, as since 2021 the Mini EV has been assembled under license in Vilnius, Lithuania, by local company Nikrob UAB. The FreZe Nikrob EV is offered on the Lithuanian market for €9,999.

Meanwhile, in the US, Wuling and KFC recently launched a KFC-branded version of the car, customized as a fast food-delivery trucklet. Another entry point to become local? Time will tell!

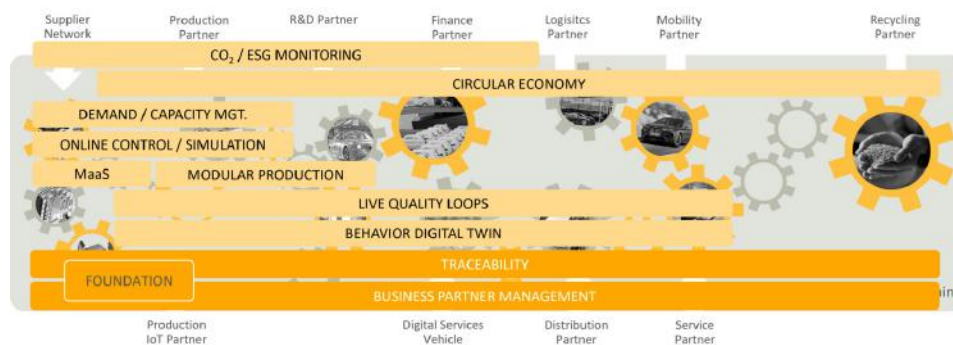# Catena-X: The Automotive Industry on the Way to the Digital Future

PIXABAY IMAGE

With unstable supply chains stretched to breaking point, initiatives for greater stability, flexibility, traceability and security are more in demand than ever. In the European automotive industry, this means that the pressure to digitalize is even greater than it already was. But some obstacles stand in the way.

For example, data exchange along the supply chain is currently dominated by isolated solutions, which makes end-to-end networking more difficult. Without a solution acceptable to all involved—a clearly defined standard —new approaches are in danger of becoming isolated or even bilateral systems. Furthermore, the supplier network in the automotive industry is highly branched and sometimes includes a large number of small- and medium-sized companies. These in particular find it difficult to implement changes in IT requirements flexibly, also due to resource-related restrictions.

To pave a way through the obstacles and challenges, Catena-X was founded in May 2021. It is a network for the automotive industry that enables the standardized exchange of data along the entire value chain. The project represents a move away from bilateral data use toward a generally accessible data space in which each participant retains sovereignty over the accessibility and use of the data.

USE CASES (CATENA-X IMAGE)

The EU initiative Gaia-X, running since 2019, is meant to lay the foundation for this data infrastructure and eliminate dependence on the established tech giants such as Google and Amazon. A central component of the Gaia-X architecture is the International Data Spaces Standard (IDS), which provides the possibility for open and self-determined data exchange.

Catena-X makes use of the IDS and is thus a concrete use case of Gaia-X, which also means the fate and success of Catena-X are firmly linked to Gaia-X. If all goes to plan, 2023 should be a big year for Catena-X, with the achievement of usable use case MVPs and the integration of about 1,000 partners.