DVN-I
Automotive Interior

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Editorial

Happy Holidays

At the end of this long year's worth of pandemic ups and downs, we take a positive view on the whole, thanks to the multiple interior innovations which have been revealed along the year. Cockpit and HMI are at the center of the interior revolution, where, among others, software is the key enabler.

This week's In-depth looks at how automakers and tier-1s are expanding their capabilities in the interior domain, mainly through partnership with giant digital tech companies. Lots of interior areas are involved—sustainable materials, functional surfaces, seating systems, design color and materials, lighting, air quality, plastic and materials in general—really, all the domains that DVN Interior covers every week.

This edition marks the last episode of our mobility philosophy series, Car Interiors Unplugged, confirming that the interior is the literal and figurative seat of our mobile lives.

The Design Lounge will come back next year, though we'll still miss Nick who contributed to it so much.

We'll be on a brief hiatus next week and come back on 6 January with news from CES which has become the leading venue for showing off relevant innovation, with more and more automotive tech.

May your 2022 be full of joy, peace, health, happy surprises, and success. We’re hard at work to ensure a steady supply of enjoyable, informative reading in the DVN Interior Newsletter. We’re glad you’re here, and we thank you for your support. Stay safe!

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Automakers and Tier-1s + Digital Tech Companies

BOSCH IMAGE

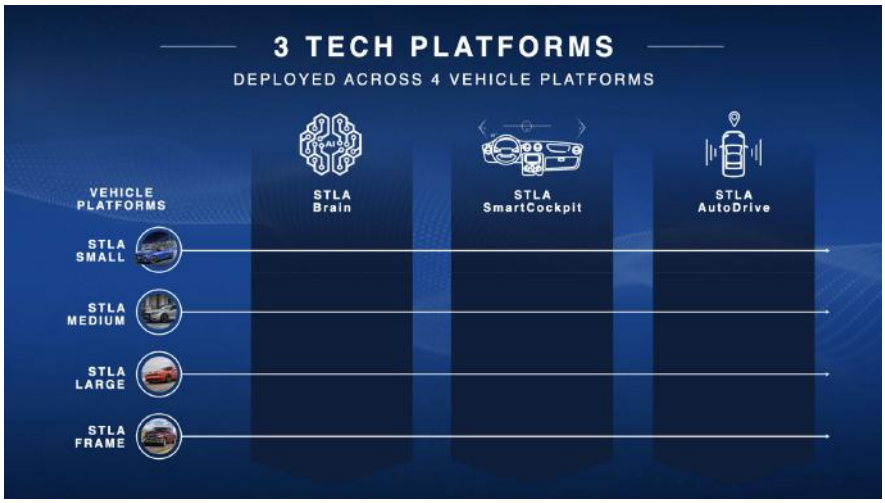
The recent announcement by Stellantis is striking; they plan to generate around €4bn in additional annual revenues by 2026 and around €20bn by 2030 from software-enabled product offerings and subscriptions. As automotive interior functionality will make up a big chunk of that—cockpit controllers; navigation; multimedia infotainment; e-calling; OTA upgrades, and streaming services, among others.

Interiors will increasingly play a central role, with buyers focusing on the cabin experience as cars become less of a driving tool, and more of a mobility and transport tool. In that context, the in-car experience will be the most important differentiator. Increasingly, car magazines will discuss HMI, new OTA updates, comfort levels, and that sort of thing rather than focusing on acceleration and horsepower.

The rapidly evolving CASE megatrends—connected, autonomous, electric, and shared vehicles—will change the configuration of cars and allow vehicle occupants to enjoy new experiences during trips. Here we are talking about innovations in connectivity, HMI, voice activation, gesture control, automated assistants, smart surfaces, automatic climate-control systems, automatic payment…the list is endless.

This means automakers and tier-1 suppliers will have to build up their software capability internally, which they've already started doing, while also partnering with the big digital tech companies to speed up this software revolution, and probably also to strengthen their credibility to the consumer market, and even more to the financial market. So, let’s have a deeper look into the cooperative efforts between the automotive industry and the tech giants.

Stellantis + Foxconn



Stellantis says they expect to have 34 million connected vehicles in service by 2030, up from 12 million now, and to deploy three new technological platforms powered by artificial intelligence: STLA Brain, STLA SmartCockpit, and STLA AutoDrive. Stellantis is extending existing partnerships with Apple's assembly partner Foxconn and Alphabet's Waymo self-driving unit to build the three new tech platforms by 2024.

They also plan to boost their number of software engineers to 4,500, not counting partnerships, with a hiring push and a dedicated academy to retrain staff members. By 2030, more than 20 per cent of automotive revenue will be software-derived, according to consultancy Capgemini.

Stellantis CEO Carlos Tavares says "Software is one of the major pillars of our future at Stellantis". Vehicles already are an integral part of the customer's lifestyle, of course, and Stellantis wants to make them even more appealing and life-integral with the three new software platforms. STLA Brain will include connectivity and over-the-area updates; consumer experience, and autonomous driving. It will help transform the vehicle's cockpit into a "personalized living space" with Foxconn, which is emerging as a principal supplier for Stellantis.

VW + Microsoft

VW RESEARCH CAR (VW IMAGE)

Since this past February, Volkswagen and Microsoft have been co-developing the Volkswagen Automotive Cloud together. VW's ambition is to create a seamless, full-time experience for drivers as they enter, use, and leave a vehicles. The VW Automotive Cloud will be created from scratch, powered by Mirosoft's Azure cloud and IoT Edge platform. It will also allow Volkswagen to leverage consistent mobility services across their entire portfolio, providing new services and solutions such as in-car consumer experiences, telematics, and the ability to securely connect data between the car and the cloud.

Digital technology and culture will be baked in right at the factory. VW Group head of connected cars Heiko Huettel says “We came to the conclusion that we needed to change in a revolutionary way; we want to leverage what we can from Microsoft’s culture and Microsoft’s technology. We want to be the Microsoft of the automotive industry, in terms of being seen as the company that made a digital transformation and is really perceived as one of the digital players in the market".

As part of this partnership, Volkswagen will establish a new automotive cloud development office in the US, close to Microsoft’s headquarters in Redmond, Washington.

Ford + Google

FORD MUSTANG MACH E (FORD IMAGE)

Ford and Google announced last February a collaborative effort to accelerate Ford’s transformation and reinvent the connected vehicle experience. Ford has also chosen Google as their preferred cloud provider to leverage Google’s world-class expertise in data, artificial intelligence, and machine learning.

Ford's Google Cloud plans include improving experiences for customers with differentiated technology and personalized services; accelerating the modernization of product development; manufacturing, and supply chain management, including exploration of using vision AI for employee training and increasing the reliability of plant equipment performance; and speeding the implementation of data-driven business models resulting in customers receiving real-time notices such as maintenance requests or trade-in alerts.

The new digital experience they have in mind includes expanded and improved voice control so drivers keep their eyes on the road and hands on the wheel, confident they'll reach their destination efficiently with Google Maps as the primary navigation, providing guidance on real-time traffic, automatic rerouting, lane guidance and more. And with Google Play, drivers will have access to their favorite apps for listening to music, podcasts, audiobooks and more, optimized and integrated for in-vehicle use. Android in the car also enables Ford and third-party developers to build apps that provide a constantly improving and ever-more-personalized ownership experience.

BMW + Amazon Web Services

BMW WITH AMAZON ALEXA (AMAZON IMAGE)

The BMW Group and AWS will jointly develop innovative cloud-enabled solutions and upgrade the training of up to 5,000 software-engineers in cloud technologies. A key element of the collaboration is the further development of BMW's Cloud Data Hub, the central platform for managing company-wide data in the cloud. The Cloud Data Hub offers BMW Group employees across all corporate divisions a central starting point for implementing analytical and data-driven applications; employees use various AWS services already today to process, interrogate and enrich development; production; sales, and vehicle performance data—several *petabytes* of it!—and to gain insights through the application of machine learning. For example, this will enable the BMW Group to better forecast the demand for their range of vehicle models and equipment options worldwide.

In this way, planning in purchasing, production, and sales can be optimized and customer satisfaction increased. For example, the companies plan to develop a natural language processing solution, optimized for terminology used in the automotive industry, that can automatically extract, process, and translate data from diverse text sources.

ZF + Microsoft

ZF IMAGE

ZF Friedrichshafen is entering their next phase of digitalization by expanding their strategic collaboration with Microsoft. The goal is for ZF to create a holistic data and integration platform called the ZF Cloud to digitalize all their industrial and operational production and business processes on the Microsoft Azure cloud platform—turning data insights into passenger-centric automated driving experiences and energy-efficient transport. This, in turn, will optimize the data exchange between a wide array of cloud-connected ZF components, and create new products or business models using AI. For example: a continuous data flow between autonomous ZF shuttles and their environment, for autonomous driving. ZF envisions multiple use cases that add value for customers and people interacting with ZF shuttles. Imagine mobile applications for shuttle services, using live locations for updates on shuttle availability, capacity, and estimated time of arrival with real-time route planning to avoid congestion and save time and energy. Integrating data from infrastructure partners and smart

city services providers can help make autonomous shuttles available to more people and address last-mile transportation needs.

Bosch + Microsoft

BOSCH IMAGE

Bosch and Microsoft have joined forces to develop a vehicle software platform. The technology is based on Microsoft Azure and includes software modules from Bosch. The two companies want to make the installation process of automotive over-the-air updates as fast and seamless as when updating an iPhone to the latest iOS version. This new platform is intended to not only deliver a painless experience, but also give drivers quicker access to new functions and digital services over the lifetime of their vehicles, as car manufacturers make them available.

Safety is a much more central factor in updating cars than in updating phones, of course; if a software update breaks or bricks a phone, it's a nuisance and an expense. But lives are at stake if the same thing happens to a car.

Faurecia + Accenture & Palantir

COCKPIT OF THE FUTURE (FAURECIA IMAGE)

Faurecia and Accenture have, for the past three years, been pooling their innovation expertise, co-investing to develop products and services for connected and autonomous vehicles. They've focused initially on two areas: cognitive technologies to reinvent the on-board user experience, and services to enhance health and wellness. They are also leveraging digital technologies such as AI, advanced analytics, augmented and virtual reality, blockchain, and quantum computing to further accelerate Faurecia’s digital transformation. Their expertise for these initiatives will be organized within what they're calling a “digital services factory.”

Another new Faurecia partnership is with Palantir Foundry, designed to help organizations integrate disparate data sources and make the best possible use of their data. Faurecia will use Palantir's software to gain further insight into data from across the company, from manufacturing to purchasing, from engineering to finance.

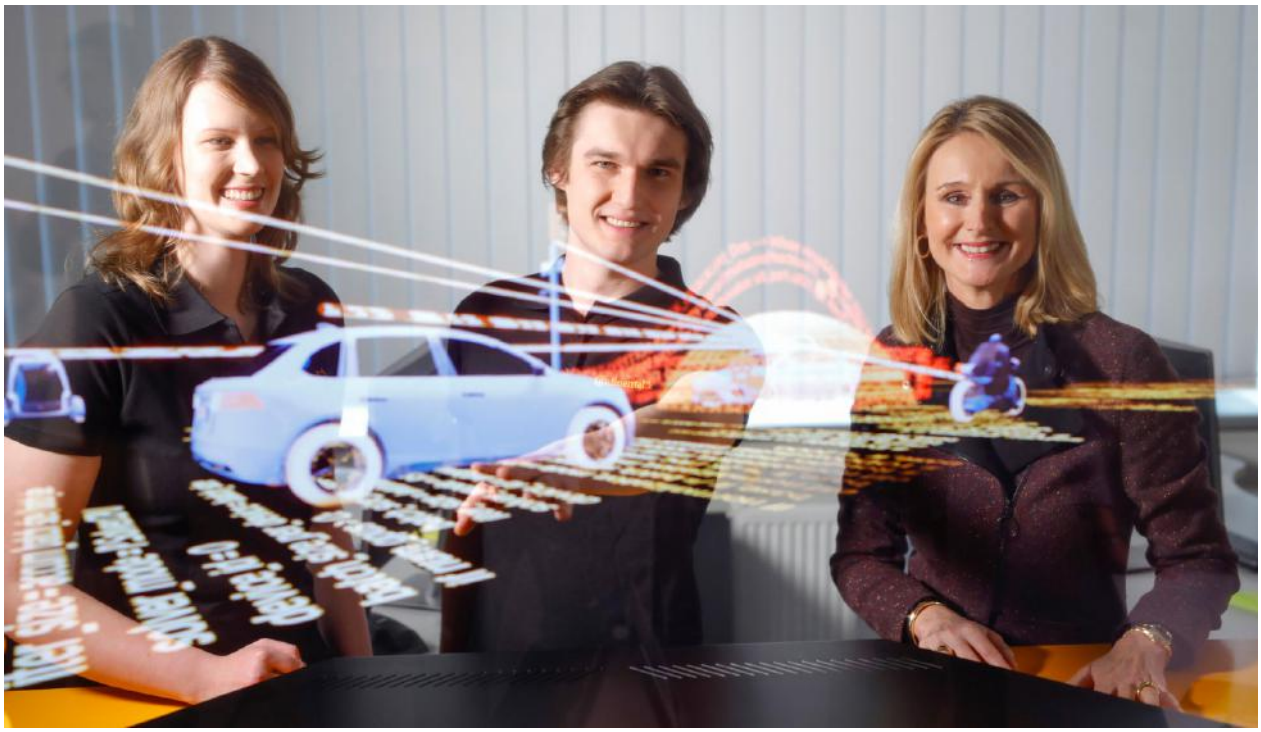
Conclusion

Software is only getting more important these days as automakers add more safety, comfort and conveniences to their cars. Mobility services and autonomous technology are also factors driving this computerization gold mine. Automakers and tier-1 suppliers are partnering with the digital tech world to accelerate and strengthen their next steps, and will surely carry on striving for the best solutions on an ongoing basis. Everyone who interacts in any way with a vehicle—which is pretty much everyone not living in a cave—stands to benefit!

Interior News

Continental's Role In Software-Enabled Vehicles

INTERIOR NEWS



CONTINENTAL IMAGE

The management team and corporate structure of Continental Automotive Technologies have been radically reformed recently. The major global supplier wants to forge ahead with their evolution toward software- and data-driven vehicle architectures as well as cross-domain platform strategies. In addition to product solutions, this includes the further development of processes, methods, and tools around the focal points of embedded software and high-performance computing.

Future vehicles will require much more integration and networking not only as they drive on the world's roads, but also in the development processes. This requires a lot of synchronization with Continental's development roadmap, and a lot of coordination with customer requirements. So Continental is working on strategies to determine which key components are required for a high-performance architecture, and how best to procure or produce them. This means not only include high-performance processors, but also small components such as ASICS, MOSFETs, and transceivers. It includes hardware, software packages, and the necessary system integration in the vehicle. The software is distributed across different processors and consists of different layers: operating systems, "middleware", and applications.

With around 17,000 software and IT specialists, Continental is driving development towards the software-defined vehicle. Four years ago, Continental set up their own software academy to develop and expand the skills of their employees around the world. Over 20,000 employees are currently in training through the academy.

And Continental is working intensively with two subsidiaries—Argus and Elektrobit, who specialize in tailor-made UX solutions—on the conversion to new vehicle architectures with central high-performance computers. It is intended to guarantee the secure networking of the

vehicle with the cloud, and to provide development tools for future software, sensor technology, and big-data solutions in order to significantly accelerate series developments.

It is becoming apparent that the automakers want to master and be responsible for this technology themselves, so as to incorporate their brand-specific philosophy and value propositions as unique selling points. But Continental also wants to build up a comprehensive understanding of the system in order to optimally develop components or system parts which meet customer requirements. It is especially true for ADAS/Infotainement/Comfort where digital tech giants are very active.

TomTom's IndiGO Cockpit Platform

INTERIOR NEWS

TOMTOM IMAGE

Today’s driver expects in-vehicle services to perform like smartphone apps. Now comes TomTom, the Netherlands-based developer of location technology and consumer electronics, to transform the connected in-car experience with their newly-launched IndiGO platform. It unifies all vehicle screensthrough a common user interface that provides access to the audio and infotainment system, HVAC, and other vehicle system settings, as well as the apps and services. IndiGO can be operated by touch or voice control. It automatically recognizes the driver's profile from their phone, customizing the interface to their preferences, and synchronizing their apps and calendar to guide them to their next appointment. It manages all in-car infotainment screens.

IndiGO integrates with on-board systems and sensors, which allows it to display practical and reliable information related to the systems. It cooperates with ADAS to calculate more precisely the range of EVs, or to precondition their battery to benefit from an optimized recharge time according to the destination. This platform facilitates the connection of companion apps ,and allows the user to calmly prepare for their next trip by preheating the cabin, tracking the state of charge, and otherwise like that.

It takes into account external factors, so drivers and passengers can send messages, enjoy a wide range of entertainment, or use the main dedicated applications to work in complete safety.

Navigation offers ultra-fast routing, updating, address search, and mapping, thanks to its preinstalled hybrid cloud-native system.

From a development standpoint, IndiGO provides the building blocks that enable automakers and their suppliers to create immersive, brand-specific experiences. It provides a framework for engineers, user experience and brand teams, and software development partners to work together. IndiGO's connectivity, its integration with the vehicle's system and the taking into account of the context and the driver's environment allow a unique, intuitive and safe user experience, which is constantly improving. By providing access to the source code of IndiGO, TomTom offers its automotive customers complete freedom to modify and extend the modular software platform. Stellantis and Renault are working directly with TomTom to integrate this technology.

Tablet Screen: The Only Future?

INTERIOR NEWS

FORD MUSTANG MACH-E (FORD IMAGE)

Tesla started the trend of vertical center stack infotainment screen almost 10 years ago. Since then, many concept cars, and production vehicles like Ford's Mustang Mach E, have adopted the same layout.

Is this really an HMI best practice? Or is it just reflexive copycatting out of awestruck compliance with the hype surrounding Tesla? When Stellantis introduced the current Ram 1500 truck, they offered a vertical 12” infotainment screen dominating the center stack. Critics pointed out that large vertical screens make it hard to make changes by feel, so drivers wind up taking their eyes off the road for longer. A portrait display necessarily either blocks part of the view out the windshield (a big no-no), or it brings significant portions of the display lower on the center stack and away from the driver’s line of sight—all while precluding the use of the dashboard space behind it for non-screen controls.

General Motors' directly competitive Chev Silverado and GMC Sierra trucks use horizontal screens, enabling drivers to quickly gather information via an eye sweep across the dash, reducing distractions by minimizing time away from watching the road. This horizontally-oriented approach makes even more sense when we consider that Apple CarPlay and Android Auto both display information in a horizontal format. Even though Tesla doesn’t support either of those two technologies, they now have shifted to horizontal screens in all models.

VERTICAL SCREEN IN RAM 1500, WITH APPLE CARPLAY (STELLANTIS IMAGE)

Nevertheless, Stellantis says that their Uconnect 5 infotainment system will allow Apple CarPlay to occupy the entire space of the Ram's 12” vertical screen for the 2022 update. So app icon design and position are at least as important as screen orientation, as it seems, and the rigourously controlled design of Apple or Google apps will have to be adapted to the screen size and position.

CADILLAC ESCALADE 38” CURVED SCREEN (GM IMAGE)

The debate may be moot now, with screens growing bigger and ever bigger, up to car-wide setups such as the Mercedes Hyperscreen; the similar Byton system, and the Cadillac Escalade with a 38” curved screen. However, size, position and multiplicity of app icons remains the main HMI safety issue.

Faurecia-CNRS Pact To Gird Expertise

INTERIOR NEWS

FAURECIA IMAGE

Faurecia has entered a 5-year pact with the French National Center for Scientific Research (CNRS—Centre National de la Recherche Scientifique). Collaboration areas being discussed include cockpit of the future—particularly, human-vehicle interaction and cabin thermal management; hydrogen systems, and sustainable materials and the circular economy.

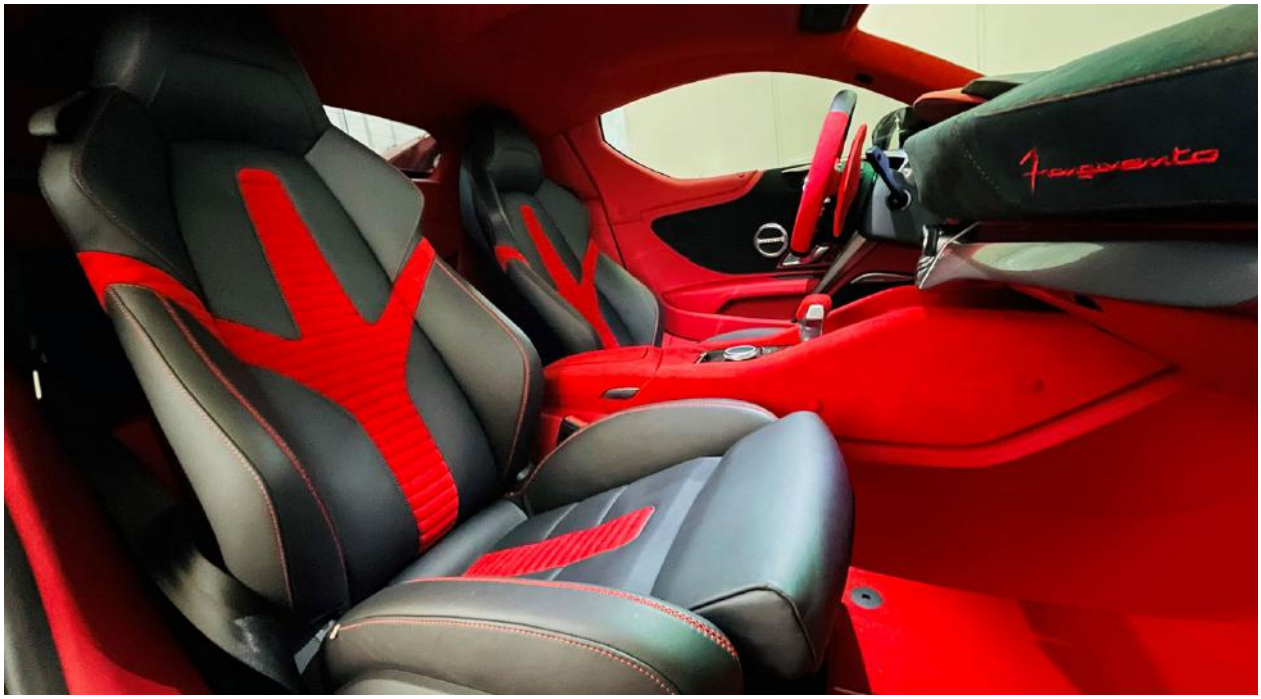
This partnership will enable Faurecia to have regular exchanges on a large variety of research fields, benefit from the CNRS' recognized expertise, and create collaborative research projects by pooling together human and financial resources. Faurecia will also have access to the CNRS ecosystem of partners, especially startups in those fields.

The CNRS is one of the world's leading research institutions. Its scientists explore the living world; matter; the universe, and the functioning of human societies in order to meet the major challenges of today and tomorrow.

This partnership will feed into Faurecia's recently created Scientific Council, comprising high-level representatives of renowned scientific institutions such as the Collège de France, the CEA (Alternative Energies and Atomic Energy Commission), and CNRS. The work of its members is to provide a global and comprehensive overview on latest technology and science developments, propose new areas for investigation, make global assessments and define different scenarios to help in technology deployment.

Alcantara vs. Miko Court Case: "Recyclable" Means Something!

INTERIOR NEWS



ALCANTARA IMAGE

Dinamica® is a luxury microfiber suede from Miko, a subsidiary of US-based Sage Automotive, made primarily from recycled polyester fiber and 100 per cent recyclable. They've been reported several times in DVN Interior, especially for the VW Group (A8 door; Cupra; ID.3, and A6 e-tron seats) and JLR.

Around 1972, a joint venture between Italian chemical company ENI and Toray formed Alcantara, creating a premium trim material, made of 68 per cent polyester and 32 per cent polyurethane, with appearance and tactile feel of suede. Miko is relatively new, as they began production of their own synthetic fiber materials in 1997. An Italian court has upheld eight separate claims that Miko's marketing statements for Dinamica are unsubstantiated.

Chief among the disputed claims: their materials are 100 per cent recyclable, a claim Alcantara says is currently impossible and formed an unfair competitive advantage if believed by consumers and automakers.

The court agreed Miko's advertising was wrong to suggest Dinamica was "the first and only microfiber that guarantees eco-sustainability throughout the production cycle", and ruled Miko must change their sales pitch on sustainability, to avoid steep fines.

Some environmentalists may argue that even Alcantara is still a plastic product, so what are its green credentials? Alcantara says the polyester amount used is around 70 per cent recyclable, and that they are working on polyester recycled from post-industrial use, such as from bottles. Moreover, "it's also important for us to be able to say this polyester is traceable".

Microplastics could represent also an issue. Microplastics are generated much more through the washing of the materials, and car interior or upholstery, in most cases, there are usually no necessity to wash the products because they are very easy to clean and remove stains. Alcantara is made using long fibers (~50mm) that are much more robust and resistant to disintegrating compared to textiles using short length fibers.

Xpeng Software Revenue is Reality

INTERIOR NEWS

XPENG P7 (XPENG IMAGE)

Xpeng, the Chinese e-car startup, has made profits with software offerings for the first time. According to the carmaker's current quarterly report, their Xpilot 3.0 software package contributed to the profits. It involves driver assistance functions for the P7 sedan that can be subsequently activated by customers in over-the-air (OTA) upgrades.

Some market observers see the business model of the future for car manufacturers in software functions that can be additionally booked or activated as automakers transform from hardware producers to mobility and software service providers. In view of the total quarterly revenue of almost €380m, the new revenues from software are minor, yet. But the fact remains: Xpeng has successfully tapped into a new source of income. Established automakers are also experimenting with unlockable functions. In the Audi E-Tron, for example, the LED headlamps can be upgraded to matrix LED lights. Many other car brands offer parking assistance, infotainment functions and other things over the air.

While some manufacturers try to have customers pay for these services by subscription, Xpeng has opted for a purchase model: buyers can either pay €2,600 once at the time of car purchase, or three installments of the equivalent of €1,600 over a total of three years. Apparently, buyers of e-cars in particular are more willing to pay extra for modern and smart functions. Whether this will be enough for a completely new business model remains to be seen.

News Mobility

_ Car interiors Unplugged. (Summary Series, 7th out of 7)

NEWS MOBILITY

MULTITASKING (T2CONLINE IMAGE)

Participative Interiors

‘Why do French people drive on the wrong side of the road?’ The statement came way too fast to fully appreciate British humor, moments before rolling out the Ferry to UK. For the rest of us, suspense and disbelief were to describe the atmosphere. After several low-thrill hours during the crossing, we all focused, by reflex, into a collective 360-degree effort of pointing out every single car passing (mainly on the right) and then silence, attention and uncertainty, entering (and exiting) the roundabouts the wrong way. Bonded more than ever, on the midst of the unknown, we acted together, each one playing a part on what was our common journey or rather our common destiny. After a while, I got used to gently turning the steering wheel to the opposite direction, until I felt a resistance that proved the existence of a real mechanical link between my actions and the position of the car on the road. Car interior space would stand for anything between a movie theater and an amusement park. But here, we were the ones to build the adventure simultaneously with the events. Unlike the address dialed in the GPS, it felt like we were constructing together the road ahead, laying the tiles one by one, one after the other, what later on became a story to tell in our gatherings to this day. After all, there is indeed such a thing as a social dimension of *automobility* and is not about motion or location, but about circumstance. This is the incidence of creating memorable experiences that are potentially transformative.

Mobility represents our perception of progress, anything static is seen as remote. We travel for work, holidays, adventure and new experiences and often all together combined in one same trip. Our conviction of going towards a destination is what fitted our social life into motion. From the crafting of motion, we become craftsmen of social interaction. Our relationships have also been shaped by tailgating, family get-togethers in long journeys, and other collective activities, drive-troughs or drive-inns, to intimate sex attraction and love, cars became a place to interact, dream and fantasize. After all, human rights start in small places or maybe just by simply sharing the ride.

In early railway days, social life was challenged by automation. The non-participation to motion created several episodes of social resistance and segregation. An amusing example has been described in the 19th century, Railway pathology*. Among others, it refers to a physical discomfort as a result to the close proximity of travelers with social and cultural implications; the train was functioning as an instrument of social segmentation. Railways and 'social distancing' were a real subject to the point that created its own market. People within the same cabin kept distance from strangers by reading; some known editors are associated with this event (1848, WHSmith). The new mode of transport participated in a profound evolution of modern society. The link between man and his immediate environment began to disintegrate. This amazing shift into the mechanical nature of movement implicated cognitive adjustments. Apparently, the missing link was the lack of direct engagement to the mobile act. Soon enough, the automobile and the fact of traveling by looking ahead (unlike railways), put everyone into a somewhat common perspective, thus redistributed the right share of participation to the journey, to each one passenger, helping to reestablish their relation within the novel itinerant space and practice, and that remained intact ever since. Car interiors used to be places that they were neutral in terms of external communication therefore they were generating activities related to travel, related to curiosity and related to human interaction among passengers. And this has generated for over a century, itinerant social activities.

Today our connected mode of driving, way more participative than the early pioneering days of automobile, incorporates our habits to many complex operations. For example, while talking and driving we can manipulate objects with flexible dynamics, like a cup of coffee in a cup holder. The cup is rigid but there is liquid inside that moves, disturbed by gravity during our ongoing social interactions. Mathematically, it can be described in terms of chaos and unpredictability. Then, there is a speed bump… and yet a few more speed bumps down the road, and this is how we learn to deal with. This complex dynamic reflects how our body is harnessed by our brain but also how it is harnessed by its surrounding interior. If car exteriors are shaped by the wind, car Interiors are shaped by human body.

Conceiving car interiors is a proper R&D process, with technology being inseparable from our figure. An augmented human is the up-to-date reference model, regulated by vast samples of populations around the globe. Proportions are defined around body posture and surrounding components are fitted accordingly. We can imagine a constellation of mechanisms and ergonomic features, framing digital human-figure mannequins and all corresponding functions and commands, virtually levitating in optimal positions within reach. When design is applied, just like a snapshot, a still image of the specific usage scenario, sealed by integrated surfaces that visually express the final creation and thus, a technical outfit is dialed into a custom profile. The more the profiles, the more the lay outs and configurations, in an ongoing race to provoke, adjust and satisfy latest trends. Eventually once the final version available, the market may have slightly changed. From people buckled on their seats looking out the window cruising at high way speeds, to urban driving and texting while eating a sandwich and looking for a free parking spot. Car interiors, the imprint of our up-to-date body postures, are revealing of our social habits and interactions. Indeed, conceiving a car interior is more than rendering a usage scenario, it is about enabling a collective event as a very refined expression of our relations. The anthropological contextualization of these artefacts, nevertheless, sheds light on the making of the car culture that encompass our everyday life and which we now take for granted.

Unlike any other environment, car interiors never were ordinary places. They remain the illustration of any abstract or practical aspiration in the interests of speed, prestige, formal or technical connotation, differentiation, emotional investment, projection and fantasy. In other words, an extension of our social self._The part that makes car interiors different from any other inhabited space is the general idea of being in command of motion and at the same

time participating in many ways just by being present. It expresses a group dynamic shaped around the roles we assume by being together, while moving. Car interiors became the stage in which we performed our mobile lives for decades. Hence, the dream of motion joined the dream of social life.

Architecture of mobile objects for about a century is built on “direction”. People look forward to the road hands-on in a direct engagement with the traveling experience. At the very moment we delegate the act of motion, everything changes so that the vehicle does not need to look like anything we know. However, as far as humans are engaged, there is a necessity to accommodate for human-body and this is a physical and by extension, a social aspect of mobility.

From an anthropological point of view, it is remarkable that this sort of individual relationship with the artefact is one of those physical and mental interactions with a piece of material culture that create, reproduce, and modify an ongoing network of shared practices, knowledge, and feelings among individuals. The mere mention of the UK driving experience is enough to immediately unleash stories, images, and memories that even someone you meet for the first time would enjoy and fuel with his own piece of car culture. Second trip by car to UK of course, was nowhere nearly the same thrill…

**(Desportes, M ., «Paysages en mouvement » Z, Gallimard 2005).*

_____*INDUSTRIOUS*__

General News

China Saves German Auto Industry From Corona Slump

GENERAL NEWS

MERCEDES-BENZ IMAGE

The German automobile industry is regarded as the most competitive and innovative in the world. Part of its success is on account of the Chinese market—the largest in the world—providing sales volume and profit. Chinese have a special relationship with cars; status, personalization, and gadgets play an important role. That fosters innovation, especially in visible conveniences and features in the interior.

With its traditional strength in the luxury segment, the German car industry has so far come through the Corona crisis better than one might have feared at the beginning, thanks in part to China. In 2020, the industry already generated 38 per cent of their global sales in China. BMW and Daimler recently celebrated sales records with their respective brands in China. China has long been the most important market for Mercedes passenger cars, accounting for around 35 per cent of total sales. In October, the Stuttgart company opened a new technical center in the Beijing region; over 1,000 engineers work there. Daimler and Geely want to launch the Smart car from Chinese production next year. BAIC's investment in Daimler reflects the commitment to a joint successful alliance in production and development.

China's importance for the German automotive industry is growing faster and faster, not only as a sales market but also as a production location. "In 2019, for the first time, German carmakers produced significantly more passenger cars in China than in their domestic production locations," says an analysis by Deutsche Bank Research. Five million passenger cars of German brands were produced in China in 2019.

A new global hotspot of electrified mobility, modernized with electronics, is emerging in China. Auto Shanghai has become one of the most important leading automotive trade fairs on the

planet in the opinion of many German suppliers. Not only the faster recovery from the economic consequences of the Corona crisis is currently further strengthening China's position. The communist leadership in Beijing has promoted electromobility since 2014, and decisively at that. They are now showing the same industrial policy determination again in important trends such as connectivity and autonomous driving. China is thus increasingly becoming a pioneer and probably the most important center of gravity in the world for the modern car industry, which is striving for transformation. There is also the fact that the Chinese government pursues a far-sighted, technology-friendly industrial policy that is clearly focused on the domestic location.

Raw Material Shortage Includes Interior Plastics

GENERAL NEWS

LANXESS IMAGE

The global parts shortage involves not just computer chips. Automakers are starting to see shortages of wiring harnesses, plastics and glass, even as the chip shortage is so far “protecting” the other shortages. The interior is obviously the biggest user of plastic in the car. The shortage of materials rose by another four percentage points in November 2021 compared to the previous month. According to the report of the Ifo Institute, three quarters of the companies complain about bottlenecks and problems in the procurement of intermediate products and raw materials. The mechanical engineering sector (86 per cent) and the automotive industry (88 per cent) are among the most affected by the supply chokedown.

The annual raw materials study by the purchasing consultancy Inverto, procurement and supply chain management subsidiary of the Boston Consulting Group, reveals details of the challenges in the supply chain. According to the study, nine out of ten companies have difficulties procuring raw materials. Plastics (35 per cent), ferrous metals and steel (31 per cent) as well as wood, paper and cellulose (33 per cent) pose the biggest problems for buyers. The greatest risk of price increases comes from aluminum, ferrous metals, steel and plastics.

The long-term price development depends on the economic and the pandemic development. The situation is comparatively difficult for automotive suppliers: they are confronted with massive price increases by upstream suppliers, but have difficulties passing on additional costs to the carmakers. A good half of the suppliers want to move away more from the just-in-time supply chain and build larger warehouses. They mainly want to secure supply in order to remain able to deliver and to secure market shares.