DVN-I
Automotive Interior

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ascorium INDUSTRIES

Editorial

Interview: Han Hendriks, Yanfeng CTO

This week we present our conversation with Han Hendriks. He's CTO of auto interior supplier Yanfeng, ranked 15th in the 2019 top 100 automotive suppliers list overall, and № 4 for interiors. His is the newest in our ongoing series of feature interviews with DVN-I community members. Want to join the list for a DVN-I interview? Gladly, just **drop us a line**!

Interior news this week includes two unusual steering wheel systems—maybe not interior technology, strictly speaking, but they're important elements inside the car and they open new interior design opportunities, so we think they count!

In the Design Lounge, we put a spotlight on interesting design details and quirks—"easter eggs", if you will—strategically designed and implemented to reinforce brand and status signatures inside the car.

And automotive designer Industrious is back! This week we present the first chapter of his latest Car Interiors Unplugged series, which will describe in seven chapters how mobility is hybridizing and how that is shifting our interiors.

Thanks for being part of the community! We appreciate your presence and participation. If you're not a member yet, come and join us here.

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Interview: Han Hendriks, Yanfeng CTO

HAN HENDRIKS, YANFENG CTO IN XIM21 CONCEPT (YANFENG IMAGE)

China-based Yanfeng is one of the major global interior system suppliers. DVN Interior general editor Philippe Aumont recently met with Yanfeng's chief technology officer, Han Hendriks, at the Yanfeng Innovation Centre in Neuss, Germany, to talk about Hendriks' vision for the future of automotive interiors.

DVN Interior: Tell us about Yanfeng's vision for the automotive interior, won't you?

Han Hendriks: Yanfeng's strategy is focused on the automotive interior through what we call our Smart Cabin strategy. Yanfeng has demonstrated this with our different generations of XiM concept cars, XiM 20 and XiM 21. The XiM20 showcased our Smart Cabin vision for 2030, and a year later we debuted the XiM21 reflecting the next generation of vehicles to come, with innovations ready to enter into program development. And our XiM 21s looks to the same horizon, but for a shared vehicle interior.

DVN-I: What is Yanfeng's scope, then?

HH: Our scope is now completely supporting the full cabin with interior components, seating, safety systems, lighting, and electronics. In 2020 we announced the further globalization of our business to include not only interiors but also seating, electronics, and safety systems outside of China. Yanfeng has now one single point of view, not multiple perspectives. In addition, we recently completed the purchase of the Adient stake of our joint venture in China with them, making this a wholly-owned business of Yanfeng. All of this uniquely positions us as a supplier that can offer seating and interiors integrated with electronics and safety systems. Our safety product offering includes airbags, belts, retractors, and other components.

DVN-I: And what is your role in all of this?

HH: For the past two years, I have served as the chief technology officer for Yanfeng Technology. In this role, I have global responsibility for Yanfeng's Smart Cabin vision and strategy and am in charge of total portfolio management for all product groups, from initial research and ideation through market launch, as well as new business incubation, technical sales and marketing.

XIM21 SMART CABIN CONCEPT (YANFENG IMAGE)

DVN-I: You presented Yanfeng's interior lighting vision at the recent ISELED conference. What does it represent to your company?

HH: Lighting is an essential element in our Smart Cabin strategy for many reasons. Through ambient lighting we can elevate the in-vehicle experience. Functional lighting reinforces, for instance, safety, with a light that alerts the driver when they do not have both hands on the wheel when they should.

DVN-I: How is innovation management organized within Yanfeng?

HH: Innovation starts with the end-consumer. We do our own proprietary research and analyses in three regions: Europe, North America, and Asia. Then our design team transforms it into use cases and directions for technology development. Then there is cross business unit development to a system product, with real integration, which is answering customer expectations. Whatever type of customer—whether a traditional automaker or a new entrant to the market. Although system capabilities are increasingly important and offer new opportunities, you can only be successful when you can build on a strong component portfolio.

DVN-I: How do you approach system and integration?

HH: We combine technology and components from multiple divisions into one system solution starting early in the new product development process. The goal is a better user experience, product performance, and cost. Also important in our system solutions are the automated and logical choreography of physical and digital features and functions. If you trigger one feature, it sequences several others, as it makes sense to do so. Like music and interior lighting. Like face recognition and safety features adjustments. That's why we have developed our own smart cabin controller and sub-system ECUs to manage sequence and speed. Yanfeng has the strength to manage hardware, software, and algorithms.

DVN-I: Displays are the centerpieces of the today's interior; how do you handle them?

HH: For displays, we don't develop and produce the screen ourselves. We work with several display companies and have a partnership for that. But as soon as integration starts, we're there to provide bonding or backlighting, for example. It'll be even more important as we get formable screen surfaces, like foils, potentially back-injected to the instrument panel or door panel. Interior lighting integration is similar.

DVN-I: How do you deal with your customers, as far as innovation is concerned?

HH: Predevelopment is done either together with automakers or on our own. There's no magic split, but it's important to have our own projects because that's what our customers are expecting. They don't want to have us only executing what they ask for!

XIM21 SMART CABIN CONCEPT – RED DOT DESIGN CONCEPT AWARD 2021 (YANFENG IMAGE)

DVN-I: Can you tell us about some of your latest innovations?

HH: We do not talk about innovations still in development, but I can say that in 2022 we will show new breakthrough solutions in fields of CO_2 reduction and circularity. Also we will present our next smart cabin interior XiM23, integrating many new products and technologies from all our divisions in a complete vehicle interior. By the way, its predecessor XiM21s recently got a Red Dot Design Concept award in the Mobility and Transportation category, which we're very proud of, as it recognizes our innovation efforts

DVN-I: Carbon neutrality and sustainability are now on the industry agenda; how does Yanfeng address these?

HH: Achieving carbon neutrality has become part of everything we do. Last year we established a corporate governance structure to ensure a companywide and structured approach. Each group of the company is represented. We have a roadmap until 2040 with the target to achieve CO_2 neutrality, transparent and data driven with industry recognized KPI's For example, our CDP rating improved from D to B. We target to be A rated next year. As a technology lead, I'm in charge of all product/process sustainability including recycling, light weight, new materials, and others. Sustainability is a KPI at any of our development gates, at the same level as strategic fit, technical feasibility, business potential, and time-to-market. It is very important to us.

DVN-I: Are you still having fun in your business life?

HH: You know what? We're in an exciting decade, much more will happen now than in the past three or four ones. Automotive products are fascinating. They are a combination of technology and emotion. I enjoy Yanfeng's international company culture. We walk the talk. When it's decided, it is then executed.

DVN-I: Thank you, Han.

Interior News

Nexteer's Stowable Steering Column

INTERIOR NEWS

OLDER EXAMPLE OF STOWABLE STEERING: JCI ARISTON CONCEPT CAR, 2001

Nexteer Automotive is a majority Chinese-owned US-based supplier delivering electric and hydraulic power steering systems, steering columns, driveline systems, and ADAS and automated driving enabling technologies.

Nexteer's steer-by-wire technology with stowable steering column, which won a 2021 PACEpilot award, uses software and electronics to allow the steering wheel to be retracted into the dash and away from the driver when not in use. Steer-by-wire replaces the mechanical connection between the steering wheel and the road wheels with algorithms, electronics, and actuators. That offers the potential for enhanced stability, parking, braking, and steering feel through new functions such as park assist, automatic emergency steering, and tailored steering feel and road feedback.

The stowable column provides innovative solutions for crash safety, with ASIL-D (Automotive Safety Integrity Level) steering column positioning.

Steer-by-wire with the stowable column opens new possibilities in cockpit design and new opportunities for automakers to repurpose the driver's cabin space. When driving is automated, additional space is created for the driver to engage in other activities.

Toyota's Steering Yoke

INTERIOR NEWS

TOYOTA BZ4X STEERING YOKE (TOYOTA IMAGE)

Toyota will offer yoke-style control of the steer-by-wire system in their first BEV, the bZ4X. It opens a direct line of sight to the dashboard displays, as the steering does not rotate uniformly around the hub but instead sits lower than its center at rest.

Poor handling in tight corners is a pain point, judging by feedback on other vehicles, so Toyota worked to address this with new software. The electronic steer-by-wire system adjusts the steering ratio dynamically; Toyota says the yoke rotates just 150° lock-to-lock, far less than the three complete turns (1,080°) usually required in cars today. Moreover, drivers will be able to change the steering characteristics via the drive mode selector.

This unusual steering wheel will initially be available in China, before being fitted to models in other markets as well. Otherwise, the BZ4X will have a normal, round steering wheel. This could be a test, whether the new yoke steering wheel is understood by the customer, as it takes a bit of time to get used to.

TOYOTA BZ4X FOR COMPARISON WITH A STANDARD ROUND STEERING WHEEL (TOYOTA IMAGE)

Right Rear is Best Seat in the House in Audi's New A8

INTERIOR NEWS

AUDI IMAGE

As Mercedes just completely revamped their S-Class and BMW their 7 Series, Audi is right up in there with a new A8.

It's a big car—5.19 m long, or 5.30 m for the stretched version—and it retains its generous wheelbase of an even 3 m (12 cm more in the long model), which is particularly beneficial to rear-seat passengers' roominess and gives a lounge feeling.

In the longer version, especially suited for chauffeured vehicles, the right rear passenger gets a real business-class seat with an almost-flat surface when it's reclined and the front passenger seat is all the way forward. That super de luxe right rear seat (left, in RH-drive models?) includes a back massage with 18 pneumatic cushions, electrically adjustable headrests, and a footrest that warms and also massages feet of the executive seated there. The rear seat remote, which is now firmly mounted to the center armrest, allows many comfort and infotainment functions to be controlled from the back seat. The control unit, with its OLED touch display, is about as big as a smartphone. It is also available with optional fold-out tables; four-zone automatic air conditioning, and new 10.1" screens with full HD resolution attached to the backs of the front seats. They display content from passengers' devices and can receive numerous audio and video streams, including from well-known streaming platforms or TV media libraries. A cooler including a bar compartment in the Audi exclusive program emphasizes the comfort of the environment.

All these features look to have been designed for the Chinese market, as does an optional air quality package including an ionizer and fragrance distribution. The Ambient Light Package Plus, standard with the Audi Design option and in the S8, elegantly stages the interior and there are reading lights in the rear that use Matrix LED technology to provide light exactly where the passenger wants it without spilling over into other passengers' space.

LONG VERSION WITH MASSAGE SYSTEM (AUDI IMAGE)

The seats are upholstered with Valetta leather as a standard feature. Valcona leather is available as an option, with "cognac brown" as a new color option. New to the program is Dinamica sustainable microfiber material (see DVN Interior 7 January 2021) for the door panels, which can also be used for the pillar trim or the roof lining as an option.

For highly demanding listeners a Bang & Olufsen Advanced Sound System brings 3D sound to the back seat. A 1,920-watt amplifier drives 23 speakers and the tweeter lenses operate electrically.

Even the driver gets lavish treatment; the MMI touch response operating concept relies on two displays (10.1"and 8.6") and natural voice operation. The dialog starts with "Hey Audi!" The virtual cockpit, with the optional head-up display, completes the display and operating concept and emphasizes the orientation to the driver. Important information is displayed directly in the driver's line of sight.

Kurz Recosys: a New PET Carrier Recycling System

INTERIOR NEWS

KURZ IMAGE

Leonhard Kurz Stiftung & Co, based in Fürth, Germany, are now offering their new Recosys return and recycling system that re-processes a valuable raw material from used PET carriers. Recosys is the world's first process that makes it possible to transfer film residues to be recycled. The system can be used to produce both recyclables and monomers for PET polymerization. This converts residual transfer products into a high-quality injection molding material called Recopound.

KURZ IMAGES

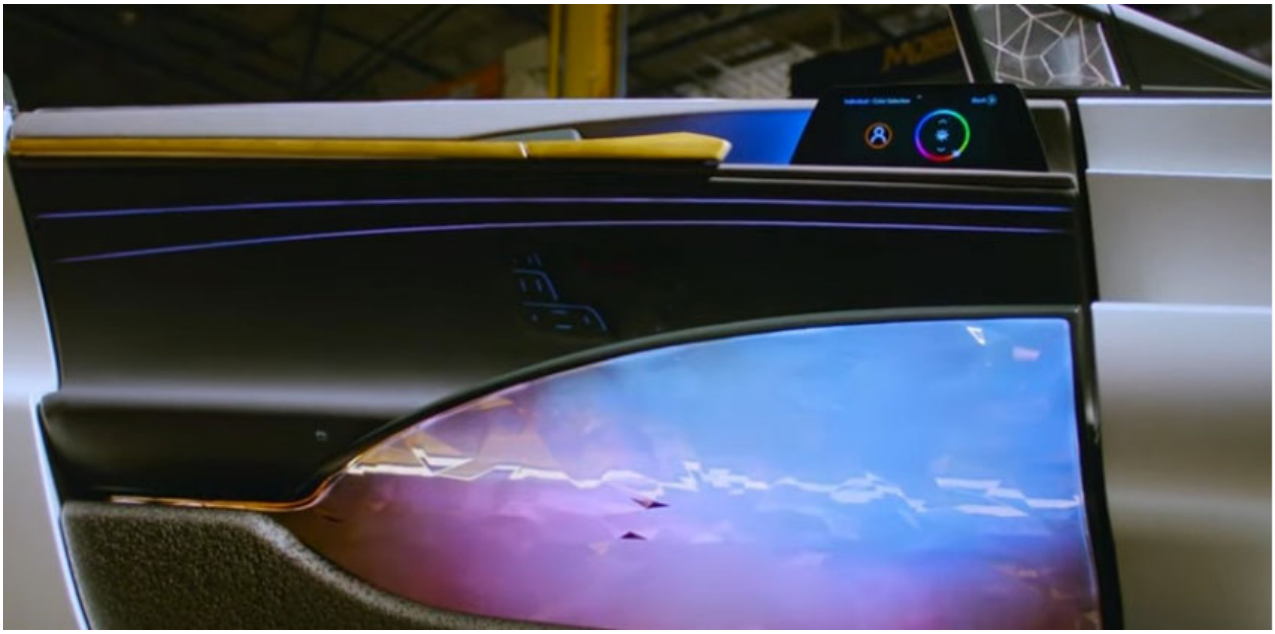
Traditionally, PET carriers have stopped being important once the transfer decoration has been applied to the substrate, because KURZ surface finishes did not transfer any carrier film to the product. On the contrary, the transfer material was removed, collected, and stored separately as industrial waste. On its last journey, PET was mostly used as a substitute fuel instead of gas, coal, or oil in various industries such as the cement industry.

As an eco-conscious trendsetter in the graphics and plastics industry Kurz didn`t want to waste valuable raw material any more. Therefore, Kurz developed a completely new recycling system for PET carriers. The goals of Kurz Recosys are full transparency of the sustainability within the supply chain, minimize fossil fuel consumption and sharpening the company profile as a green leader.

Steps of the transfer finishing:
• Transfer design is processed in the printing house
• PET backing film is sorted and stored
• Collection of used PET backing material
• PET backing material is fed into the Kurz recycling process
• Recycling properties are optimized
• The new raw material returns to the recycling loop as injection molding material for quality products with a wide range of properties.

IAC Door Technology Demonstrator

INTERIOR NEWS



IAC DOOR TECHNOLOGY DEMONSTRATOR

International Automotive Components (IAC)'s core products are instrument panels, consoles, door panels, and overhead systems. Headquartered in Luxembourg, they have over 19,000 employees in 18 countries. The group comprises the former global interiors divisions of Lear and Collins & Aikman, with the addition of Stankiewicz; United Technologies; Automotive Industries, and Masland Industries.

IAC presented recently a Door Technology Demonstrator (**video**) to showcase innovation and catalyze smart and sustainable solutions for the interior of a vehicle. It includes capacitive touch; a phone charger; an e-release door handle; smart surface with window control and lighting (illuminated panel, with variable shades); an armrest, and a seat controller. As your hand approaches the smart sensor, it illuminates a small screen displaying seat settings. It is built out of a lightweight carrier.

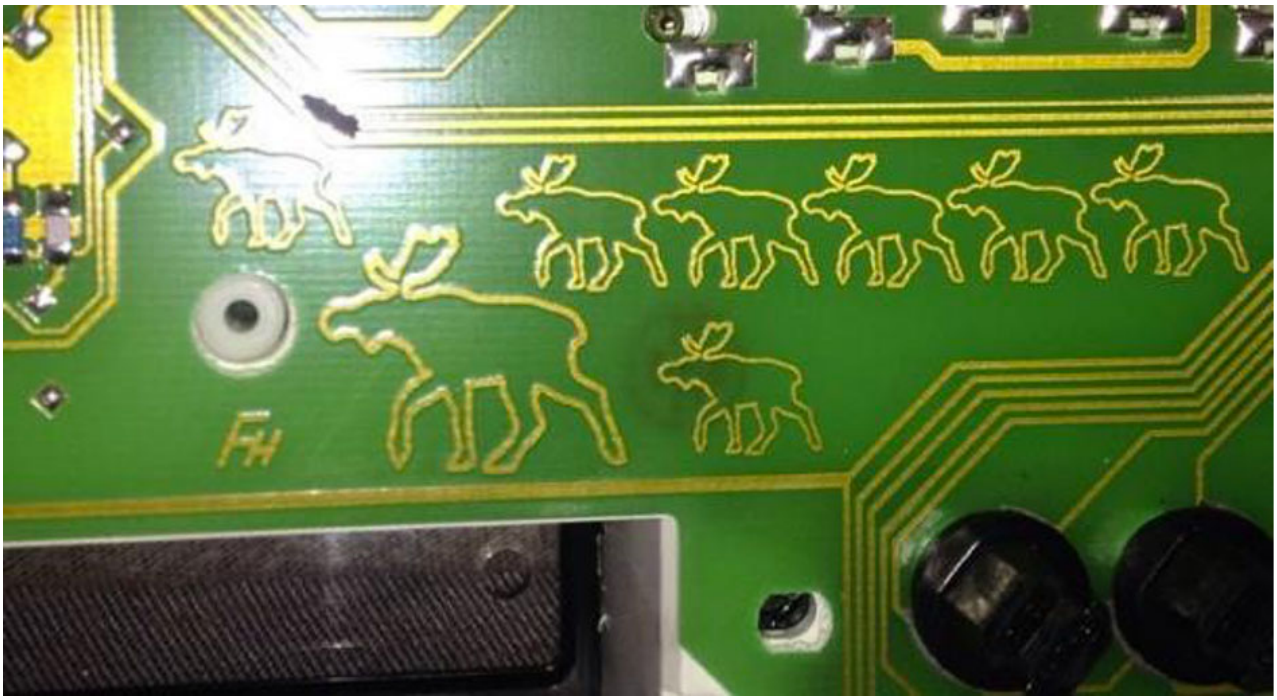
Air and surface cleanliness is also addressed, with active and passive antimicrobial and antiviral solutions to protect surfaces from contamination. A two-minute treatment with UVC light from LEDs, which—together with radiant heat-up of surfaces to 65°C, is activated automatically upon exiting the vehicle; it eliminates the more than 700 bacteria found in the average vehicle. Further cleanliness is achieved by microbe/virus abatement materials and coatings on surfaces. It is probably based on the StreetSmart door project developed in cooperation with FICOSA, a Panasonic subsidiary, and introduced in the Panasonic booth at CES 2019.

STREETSMART DOOR AT CES 2019 (PANASONIC IMAGE)

The Design Lounge

Hunting for Easter Eggs Inside the Car

THE DESIGN LOUNGE

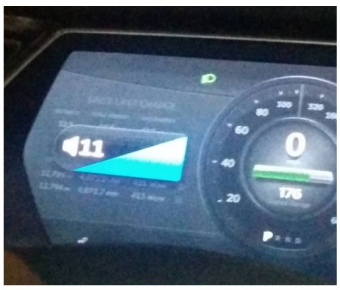


VOLVO INSTRUMENT CLUSTER PCB MOOSE DESIGN

Design detailing has traditionally focused on improving the perceived quality, craftsmanship, and fit & finish of interior components and the environment they create. Recently, this attention to detail includes a more playful aspect borrowed from the software and film industries: easter eggs. They're hidden images, messages, visual jokes, or features in images, movies, software, video games, or other media. The term used in this manner was coined around 1979 by Steve Wright, the then-Director of Software Development in the Atari Consumer Division, to describe a hidden message in the Atari video game Adventure, in reference to an Easter egg hunt. The earliest known video game easter egg is in Moonlander (1973), in which the player tries to land a spaceship on the moon; if the player flies horizontally enough, they encounter a McDonald's restaurant and if they land next to it an astronaut will visit it instead of standing next to the ship. The earliest known easter egg in software in general is one placed in the "make" command for PDP-6/PDP-10 computers in the late 1960s: if the user attempts to create a file named "love" by typing "make love", the program responds, "not war?" before proceeding.

These unadvertised or hidden features are somewhat detached from the overall design theme but give the consumer an opportunity to further engage their vehicle and ownership experience.

TESLA 'BOND CAR/SUBMARINE' LOTUS



'VOLUME TO 11' SPINAL TAP REFERENCE

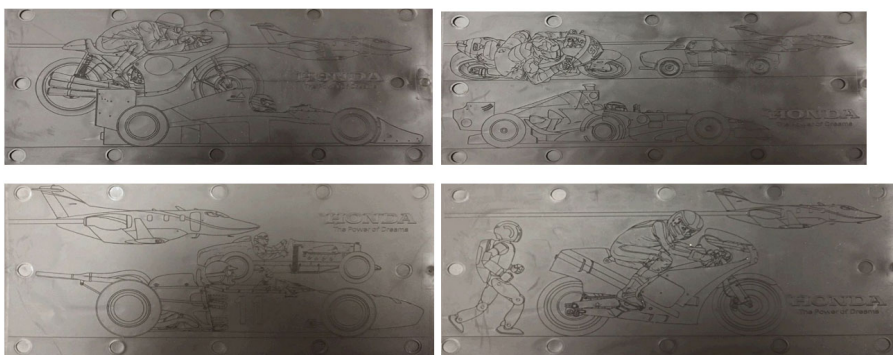
One of the first automakers to incorporate 'Easter Eggs' was Tesla. Integrating items such as the iconic James Bond submersible Lotus into their navigation display or referencing the cult movie classic Spinal Tap by having the volume 'go to 11'—these and other items were easily integrated without adding any real cost.

DODGE DEMON LOGO IN HEADLAMP/AIR INTAKE

Easter eggs can be found anywhere on or in the vehicle, as seen by our initial image of the moose-shaped solder traces on a Volvo printed circuit board. A less-hidden logo placement is the demon logo in a pretend-headlamp that's actually an air intake and daytime running light on the Dodge Demon.

A more discreet way of integrating easter eggs is by using the B-side surfaces of injection-molded components. automakers such as Honda have been doing this for years now as there is little to no cost increase by this approach. The added bonus being that by hiding these details behind components, such as the Volvo example, only the curious or enthusiastic user will find these items. This creates a new surprise-and-delight detail much later than the original purchase, that only owners in the know will experience.

HONDA B-SURFACE TREATMENT HISTORICAL REFERENCES



HONDA MOTOR COMPANY TRANSPORTATION OVERVIEW AND EXPERTISE

A more playful approach is also used by automaker studios as seen here with Volvo's B-surface spider and web…

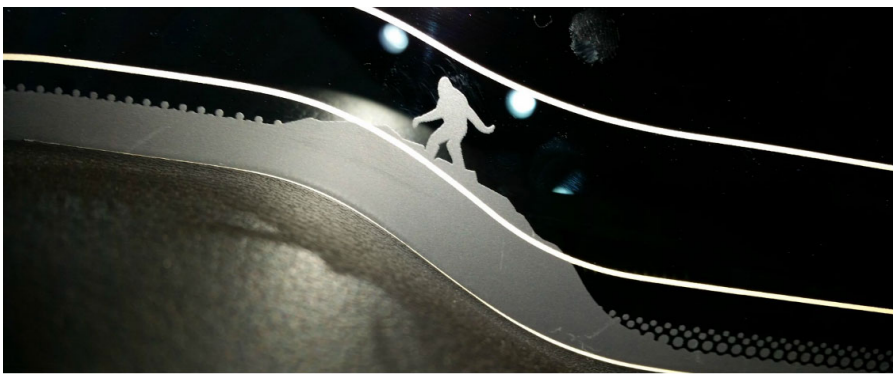
…Opel and their integration of sharks onto glovebox latches, floor console inserts, and door pocket storage…

…and the Dodge Viper incorporating tunnel console anti-slip inserts with topographical race track maps. These highlight the Viper's lap time for both Laguna Seca and Nurburgring race circuits.

This hidden-goodie design integration approach has also expanded into the typically mundane are of windshield/glass graphics as another low-cost and lighthearted approach for designers:

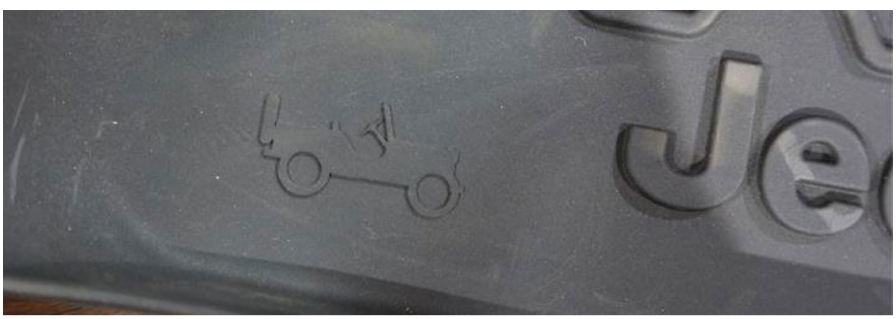
Look at how Jaguar portrays Simba, from the Lion King movie, following a traditional Jaguar (note the variance in the dotted and solid border on the windshield).

Here's a smoky burnout in the same area on the Dodge Challenger…



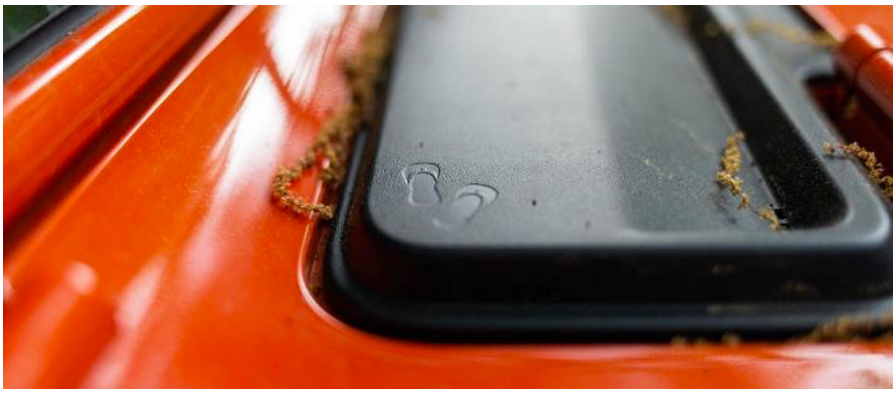
…and a Sasquatch walking up a 'hill' on the rear hatch of the Jeep Renegade. Jeep in particular has wholeheartedly embraced this easter egg concept, with:

A classic Willys Jeep incorporated in the front windshield border…



…another Willys Jeep imprinted into a rubber cargo mat…

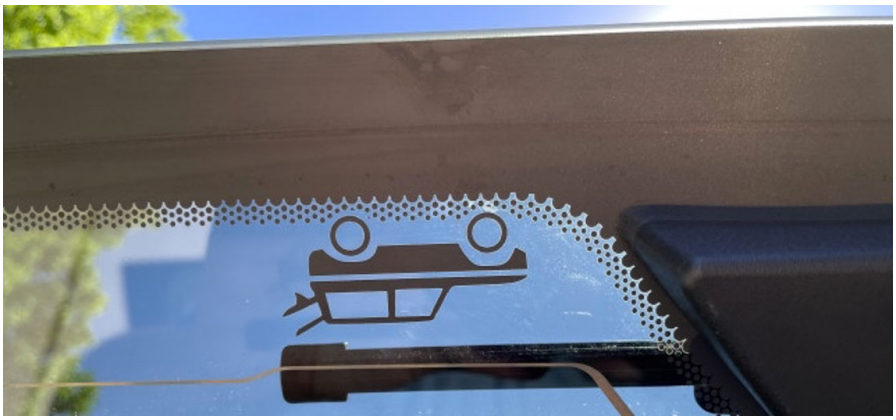
…yet another Willys on the shift knob…



…flip-flops on the hood cowl cover…

…a Jeep-shaped telltale on the instrument cluster, and the iconic Jeep "face" as a bulb shield in the halogen headlamp.

Ford, knowing their new Bronco is a direct Jeep Wrangler competitor, has also cached their own set of easter eggs. Following the placement and approach used by Jeep, the new Bronco has:



A rear hatch with surfboard Ford Bronco graphic…

…a Ford Bronco tailgate with a campfire-and-classic-Bronco graphic…

…a Ford Bronco 'history reference' in the center tunnel console…

…and in the cargo space, the use of a 'lasso' cargo tie down hook indicator, emphasizing the 'Bronco' analogy for this vehicle.

Finally, with a more traditional usage from Ford, the incorporation of the Bronco horse logo into the headlamps and a lighted interior logo for the rear cargo compartment.

This easter egg approach is very engaging for the consumer and a refreshingly whimsical change for automakers' designers in their design studios but there is already a next generation on its way. In our next Design Lounge, we will show how these easter eggs are now being incorporated as a part of the overall interior theme—including form language and color and material execution.

News Mobility

_ Car interiors Unplugged. (Summary Series, 1st out of 7)

NEWS MOBILITY

SHANGHAI ELEVATED ROAD JUNCTION AND INTERCHANGE OVERPASS AT NIGHT

Pursuit of Character_

The offspring of two different species, and in general a blend of two diverse cultures or systems, is called a hybrid. It is this specific term that narrates at this moment our mobility history, by merging automobile into its wider infrastructure. So far, we have used cars to build the surrounding context. Now, we are about to use this very context on the purpose of building the factual 'vehicle' for it. It is like a system implosion: the mobile unit that created the up-to-date global network, a car, is about to transform, to be replaced or in cases even disappear. 'Mobility' is the magic word that makes whatever is individual clash with the systemic, the exclusive with the universal, the analog with the digital, the public with the private, the local with the global. Meanwhile, statistic projections and foregone conclusions give constantly birth to ephemeral products of a short-lived success and identity. Indeed, in biology, anything hybrid does not guarantee a long succession.

Our notion of driving is been transformed through new perceptions of moving in any possible way and direction, such as drones, electric scooters and kickboards, mono-wheels, bicycles, tricycles and light urban vehicles and, equally, has modified our environment into a new pathway scenery. We reinvented and relocated functions in public spaces and persistently examined autonomy within the immediate circumstances. Cars are becoming 'less cars' and more 'integrators of multiple technologies', productive data centers and ultimately components of a larger mobility network. In addition, sharing platforms and driverless vehicles express a new form of urbanism, by laying down invisible tracks, reterritorializing public spaces. On the other end, inside the vehicle, the connected culture has been gradually succeeding our mechanical saga by the suppression of controls and commands, prospecting to a complete exclusion of cockpit and driver. We are about to put in place an automated logistic-system to transport into pre-

coded destinations, integrated habitable spaces (previously called, car interiors).

Motion is not anymore proposed as a participatory intention, in other words, car gets separated from car interior. During the most recent decades, cruising and seating comfortably have gradually drawn notions unrelated to performance and engineering mastery, addressing frequently something more difficult to conceive and describe: the luxury of inhabiting motion. Unbeknownst to Tier1 suppliers, interiors acquired a key standing.

Entering the age of autonomous vehicles means that the act of fabricating mobility is different from 'getting there'; the act of doing from the actual result. Once we physically detach from the vehicle just about any motion command, we find ourselves looking for a reference, a point break, an edge, an expression of some short, or a limit of the freshly presented autonomous vehicle plot, just so we can compare and identify with it. How much of it is quantitative and how much is cognitive? The automated approach to motion relates to fault-proof policies that certify constantly and flawlessly the deliverable. Consequently, a mobility-for-all type of approach is a bit like inventing a unique, alternative vehicle-segment for everyone within 'the urban republic'.

To visualize such ultimate future vehicle as the tool that generates and reconstructs our territory is a lot more than just another vehicle silhouette. It is the emblem, the supreme expression of the new mobility era. In the need of an ever-progressing supporting system that flawlessly and constantly enables mobility, we have indeed already started defining somehow 'the vehicle' in a top-down approach. We have the feeling that it is being designed from a peculiar bird's eye view, as if we hired an urbanist to do the architect's job.

We realize that rebranding mobility is somewhat more difficult than observing, and analyzing. Looking at it from far away always appeals smooth and optimized that even gravity obeys to statistic certainties and projections.

An entire motorized century has been sculpted into volumes, shapes and lines for just about every mobile temperament, descriptive of its proportions and its way of dealing with speed. We have adjusted our body stance accordingly, as an act of negotiating smoother transitions in space, trading with any one single factor, individually or as a whole. This gave birth to a multitude of postures/types-of-motion, types of vehicles, symbols to the outside (berlins, coupes, hatchbacks, etc.) and within (rider, driver, pilot, passenger, co-driver etc.) defining objects, integrating environments and usage profiles. Car interiors are equally shaped to accommodate specific body attitudes: firm side bolsters for cornering, tall-wide and soft for comfort cruising, lots of low-empty and deep horizontal space with important levitating utility volumes for MPVs. We have lived up to expectations ranging from off-road and utility to cruising and racing, and now comes the time that we must create a new category of vehicles to accommodate for the least of the automotive of tasks.

What would really be the new form-attitude 'symbol' of the new era of mobility? The expectations are very high. The fact that autonomous vehicles suffer an identity disorder is also because are perceived as the successors of the automobile. However, as any uncodified hybrid object, they benefit or suffer instant associations by reflex, by approximation or similarity to another, more familiar, object.

Correspondingly, in another era, the mobility icon used to be the horse and carriage, the railway or the automobile. To the question what will be the mobility label of the near future, we certainly know the answer is not as simple. The answer inevitably relates to the major players and stakeholders of both public and private sector and the battleground on which they cross paths

A strategic inflection point is the time in the life of a business when its fundamentals are about to change, thus, it might be defined through a tactical and 'territorial' fight per square inch of technology in the entire supplier network. The automobile is about to shatter in its thousand facets and expressions of mobility, what used to be one self-contained entity. Equally the automobile as a symbol, this time, it is about to generate the new icons of mobility. It would take a very skillful crossexaminer to find out which part will become what and how.

But, if we really want to visualize mobility and its character(s) at a future stage, we can start by looking at a chessboard. It shows particular kinds of characters that strikingly reflect the structures of the actual power game. The way the chess pieces are labeled, as well as the way they move, tell us a great deal about how the system works.

The pawns are small, brutally conscripted to the battlefield; all societies tend to think of them as interchangeably identical, with no individuality at all. A little bit like the minions in another play that tend to just populate a system. The systemic transportation infrastructure (public sector transportation) with its infinite components and processes.

The main pieces, on the other hand, are full of personality and beautiful moves with character, elite guards, knights on horseback, commanding kings and meditative queens. These are the 'vehicles' of

tomorrow and each one displays a specific role and choreography on the terrain. The king is tallest, territorial, the ultimate source of legitimate power (automakers). Kings' guards are specialist warriors mounted on horseback (supplier network). The bishop in medieval Europe was a figure of immense power controlling not only spiritual life but commanding land and people (sharing mobility apps). The queen, of high status, is the most powerful figure on the board, moving in any possible way, straight and across and backwards (internet/information). At the edges, are the castle-towers that move 'along the walls', territorializing the battle as well as the formidable mathematics of the possible trillion moves that can take place within. After all, mobility is what happens in between the buildings.

Contrasting to its sedentary nature, chess constitutes a great analogy to the mobility systemic game of the near future, rising passionate emotions by both its physical and virtual aspects. The distinctive nature of something, like a symbol or an icon, its uncommon assets, the strength, the originality, its unusually amusing or distinguishing qualities, in the ancient world were eternalized through 'karakter' a stamping tool, thus should be never lost.

For over a century through the automobile, one of the most admired 'inhabitants' of our planet, we have expressed through rare combinations of physical mass and evocative strength, a diverse set of characteristics, behaviors, cognitions and emotional patterns. Mass, proportions, silhouette, stands, whether still or in motion, are all things that matter in a way humans can relate to and exchange with. Any timid postscript to the confident figure of the automobile will not do justice to our heritage.

'Mobility' is a supremely powerful statement of the fact that all societies keep looking for new ways to make sense of their changing world and ensure their survival. This story is familiar and as always, vehicles have the power to engage, to surprise, to enlighten.

General News

Interior Expo Stuttgart Happening Now

GENERAL NEWS

Automotive Interiors Expo Europe exhibitors will present products being found in vehicles from makers as diverse as Ferrari, Maserati, McLaren and Porsche through to GM, Volkswagen, Jaguar, BMW, Kia, Toyota, and Chery. The show is about quality, color, texture, touch, feel, and innovation. Specialty finishes are a strong theme of the expo, with some companies offering plastic compounding and master batching, metalized and chrome-look plastics, and others presenting hot foil stamping and film insert molding.

A wide range of fabrics, acoustical and shape-forming materials and foams, fasteners and adhesive systems, lighting and more are on display at this show dedicated to tier-1 suppliers and automakers' interior design teams.

Product Areas:
• Haptic Technologies
• Adhesive, surface protection and textured films
• Sewing and cutting machines, etching, surface decoration
• Injection-molded/thermoformed plastic and slush-molded parts
• Decorative textiles, non-woven, foams, fillers and spacer fabrics
• Rubber and foam additives
• Plastic metallization and printed electronics
• New interior concepts and lighting solutions
• Subassemblies and load floors
• Screen and 3D printing, IMD and prototyping,
• Fasteners, upholstery, trim parts, sunroofs and badges
• Specialty tapes, metal components and technical textiles
• User interface technology
• Instrument panels and screens
• Tooling

We'll be reporting on the most interesting products and technologies in next week's Newsletter.

Chip Shortage: Less Production, Less Content

GENERAL NEWS

BMW IMAGE

The shortage of semiconductors is having a serious impact on industrial companies worldwide, and the automotive industry has been hit hardest so far. There is mainly a shortage of electronic components such as oscillators, microcontrollers and power chips.

Even conventionally-powered vehicles can no longer manage without a lot of chips. And for the cars of the future, which will rely on electric drives, connectivity and automation, the demand will increase enormously. Microchips regulate for example, the drive and driving behaviors in control units and control airbags and assistance systems.

According to several forecast, total impact could reach 10 million vehicles *not* produced in 2021.

To limit this impact, automakers are limiting chip content of cars. Production lines have been stopped, employees sent on short-time work, new cars are given an analog speedometer instead of a digital version, or built without certain assistance systems. BMW recently started to build models without touchscreens; these cars are sold with a €500 credit. The removal of the touchscreen means the infotainment system can only be operated through the iDrive Controller and via voice control. Vehicles optioned with the Parking Assistant Package will also lose the Backup Assistant. All other functionality of the infotainment system will be retained, including Apple CarPlay and Android Auto.

It also influences automaker production priorities. Felipe Munoz, global analyst at JATO Dynamics said: "At the end, most of these compact SUVs are almost the same vehicles of their compact sedan counterparts, just more expensive, that is why the few semiconductors available are being used to produce these cars."

Semiconductor production is complicated and cannot be ramped up in a short term. Therefore, a quick solution is not likely. Roland Berger expects that "the semiconductor shortage to continue well beyond 2021".