DVN-I
Automotive Interior

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Editorial

Safe, Clean, Comfortable Interiors—What's The Recipe?

BENTLEY 2019 CENTURY CELEBRATION CONCEPT: SUSTAINABLE LUXURY MOBILITY WITH VEGEA MATERIAL

Good News: around 60 percent of the 2500 people surveyed by Innofact on behalf of Bosch in Germany, France, Italy, and the U.K. are unable to imagine living without a car altogether. A clear majority of the remaining 40 percent are only prepared to leave their car behind some of the time. And results are not significantly different between countries, between urban and rural settings, or between younger and older people, or between

combustion-engine and electric-motor powertrains. People just want to be mobile on their own terms and schedules, in a safe, clean, and affordable environment.

The in-car environment, then, must mirror the one at home and in the office: a place where the people are comfortable, they have full connectivity, and where they don't feel annoyed, deprived, or constrained. That's where the configuration, engineering, and design of car interiors plays an important role—more and more so as new use cases, technologies, companies, and business models come onstream, as we present here in DVN-I.

This edition brings news of a proposed EV off-roader, new work on interior aromas' effects on emotion and memory formation, home comfort on wheels, guilt-free sustainable materials, vigilance-supporting technology, and limo-as-office.

DVN Interior brings you all the relevant news, views, and analysis to enable you to make the right recipe for attractive car interiors in the context of a sustainable future for mobility. If you're not yet a member, come **join us**! We eagerly welcome you to the rapidly-growing DVN Interior community.

Important to notice, DVN just released an extensive "New Lighting Functions 2020-2030 Study, including a significant section on Interior Lighting. It gives in 125 pages, the best-informed view on development and market introduction of new vehicle lighting functions and technologies in the coming decade. **More here.**

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Car Interior Design with Aroma

VOLVO S90 AMBIENCE CONCEPT (2018)

In 2018 Volvo presented their S90 ambience concept, a sensory experience Volvo described as "synchroniz[ing] visuals, sound, and scent to redefine in-car luxury".

Korean designer **Jinsop Lee** established the theory of 5-sense design, according to which good design not only looks good, it also sounds, smells, and feels good. Hygge and coziness for all the senses, so to speak. Our favorite place would therefore be somewhere that makes us happy in as many of these five categories as possible.

The five human senses are of great importance for an individual's experience. It is through senses that a customer can differentiate one product or brand from its similar competitors. Makers have to go to market with "sensory branding"—sensory attributes like touch, taste, smell, sight, and sound to trigger emotions that make customers desire a particular product over other options. It's a multisensory brand experience when more than one of the five senses contributes to the perception of sensory experience and how an individual reacts. Multisensory convergence zones in the human brain indicate that one sense can be affected by relations with others.

Comfort and wellbeing; good design and how it feels, looks, and sounds are everyday topics for DVN Interior readers. But what about how it smells? Let's have a look at some recent examples:

The Nio ES8 is full of product improvements, including the maker's Nomi in-car AI system. Among many other features, on vocal request it provides a scent it calculates you will enjoy. Three new fragrances have been created for Nio's intelligent fragrance system. This optional system interacts with the vehicle's other systems for automatic pairing with different user accounts and situations, with concentration adjustment also available via Nomi or the center screen.

In the new S-Class, Mercedes features new fragrances as well. The Mercedes-Benz Technology Centre in Sindelfingen has a Social and Technological Research department, where they examine zeitgeist and long-term social trends in the world's cities. The research results then flow into strategies and products, most recently into the perfume atomizer in the new S-Class.

Fragrance is part of a redefinition of quality of life, a growing desire for the authentic and unique, and preferably that which should be signed personally by hand. Seals of quality such as "Made in Germany" or "Made in the USA" are set to become more important again. And European culture with its understanding of enjoyment, elegance, and style is now viewed again as a desirable life model. Sabine Engelhardt, a futurologist in the Society & Technology Research Group at Daimler, says the challenge lies in redefining European luxury as a life quality in a world which is becoming more ecologically sensitive —green luxury, in a phrase. For Mercedes-Benz this social change is a good omen. "Our cars precisely fulfil people's new heartfelt wishes."

For a number of years now, automakers have offered factory-installed perfume dispensers, such as the one in the Citroën C3 shown here. In that car a dial on the dashboard allows one to adjust the fragrance intensity. The intensity is also tied in with ventilation or air conditioning settings.

Nevertheless, the car-interior fragrance market is still dominated by cheap stinkifiers—they cost pocket change—shaped like little Christmas trees.

Premium Scenting's research indicates that if two senses are triggered, brand impact on the consumer increases by 30%. If three senses are triggered, that more than doubles to an incredible 70%. That same research shows that fully 48% say a pleasant smell would encourage them to stay longer in a space.

HYUNDAI PALISADE

The opposite is true as well, smell can really kill the mood. A number of new Hyundai Palisade owners with the optional premium Nappa leather seating material have found that their SUV smells awful inside. Some owners are blaming the seats as a whole, while others are pointing their fingers specifically at the head restraints. They begin to notice the smell after a few hundred miles, typically within several weeks of ownership. All dealership attempts have failed to make the smell go away. A Hyundai representative confirmed that they're aware of the complaints and are investigating the issue.

Smell is part of the in-car experience, but it's not the only part. While first impression is vital to any vehicle sales, scent marketing is growing in importance. A signature fragrance at a car dealership showroom magnifies brand perception, and over time helps create loyalty if it is present consistently along time.

Why is this so? Because the human sense of smell strongly affects human emotion and plays a vital role in the formation of memory.

Any scent has strongly-linked emotional pulls. Vanilla which evokes trust and dependability, mahogany and leather suggest elegance and luxury, and so on and on with a variety of scents that elicit a positive emotional response in consumers. Negative scents specific to the auto industry include rubber, wax, and paint; also, odiferous bacteria, mold, fungi, and micro-organisms can start to grow in various parts of the car. For example, mildew on the air conditioning evaporator causes an unpleasant odor from the HVAC air outlets.

As we've previously reported, that new-car smell much admired and desired in some markets is reviled and rejected in others. And aside from that, it's not actually to the good; it comes from the release of VOCs (volatile organic compounds). Flowers and other plants are examples of natural-source VOCs, but the ones we're talking about here are off gassed from synthetic compounds like plastics, coatings, solvents, sealants, and adhesives used to manufacture cars.

The perception of smell consists not only of the sensation of the odors themselves but of the experiences and emotions associated with these sensations. Smell sensations are relayed to the cortex, where cognitive recognition occurs, only after the deepest parts of our brains have been stimulated.

Humans have 400 smelling receptors, and researchers think humans may be able to smell over a trillion scents. Neither number is as high as super-smeller animals (dogs, for example), but the much more complicated human brain makes up for the deficit. Still,

smell is not understood to the same degree as hearing, seeing, perhaps even tasting and touch. There's still a great deal of research to do!

According to Ambius (the world's largest interior landscaping company, part of Rentokil Initial plc), smell has other strong links, as well:

- With memory: studies have shown that people can remember a scent with 65% accuracy after one year while visual memory drops to 50% after only a few months. The smells we experience play a crucial role in how we associate with memories and places. A distinctive car interior scent will sink into our brain and stay there.
- With time: pleasurable fragrances have been shown to suppress the perception of time; perhaps a clever tool to help occupants cope with traffic jams.
- With health: for example, lavender fragrances are often used in nursing homes to calm. A scenting solution could do double duty here, putting occupants at ease while simultaneously masking bad odors.
- With focus: specific smells have been found to increase alertness, and some scents help to revive our concentration levels.

Interior News

Sustainable, Antibacterial, Quiet Interior Materials

INTERIOR NEWS

IMAGE: MERCEDES BENZ

With engineering plastics and sustainable fiber materials, Japanese technology company Asahi Kasei offers a variety of products for a high-quality and hygienic vehicle interior application.

As a direct interface between vehicle and user, surfaces attractive to the eye and pleasant to the touch determine the perception of the vehicle interior and its quality. Surface materials, in particular play a major role; this has been confirmed by the Asahi survey as reported in DVN Interior this past July 2.

57 percent of survey respondents believe that sustainable materials for seat covers and surfaces will become increasingly important over the next five to ten years, while genuine leather materials will decline in importance. In addition to the look and feel, the results of the survey show a growing demand for interior surfaces with additional functions that

improve the overall driving experience. Asked about additional functions of seat covers and surfaces, 49 percent of the respondents see a benefit in antibacterial properties, and the same percentage in odor-inhibiting materials.

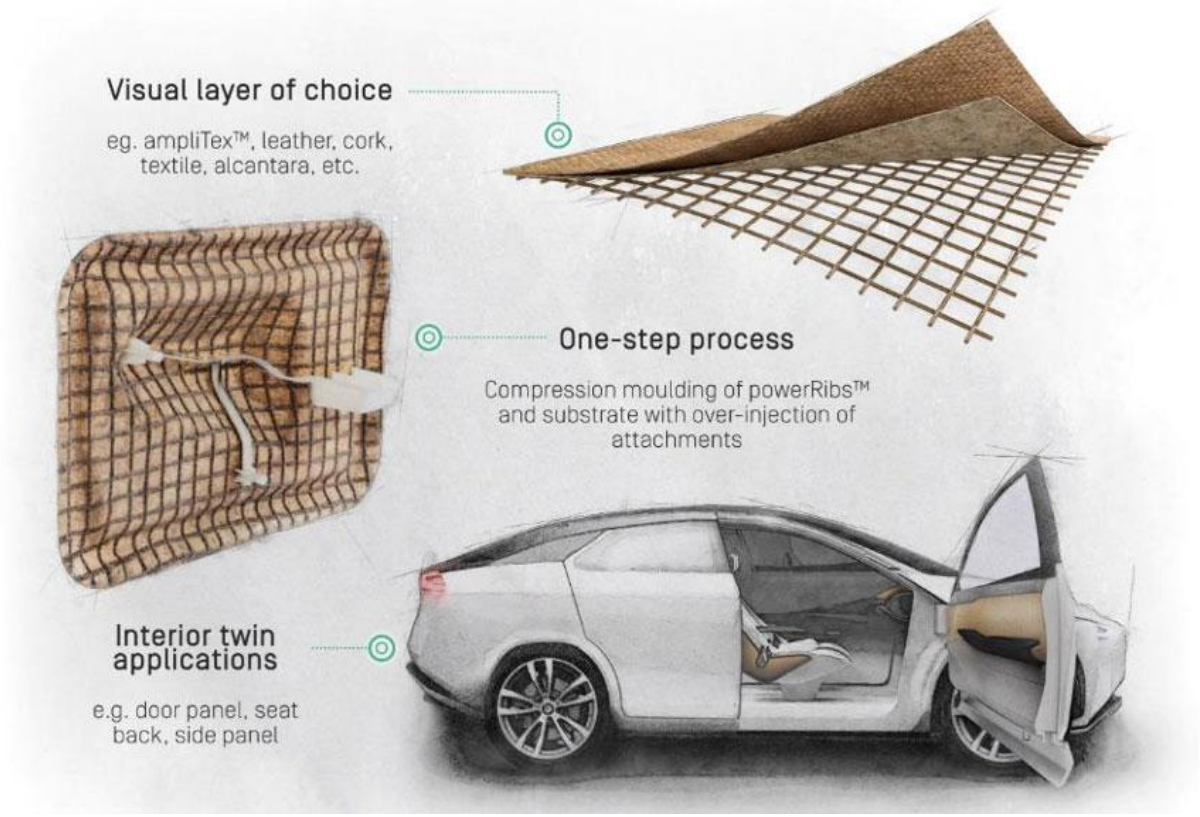
The need for hygienic surfaces is certainly elevated as a result of the pandemic, and so this topic is becoming an important focus of interior development. Asahi Kasei subsidiaries Miko and Sage Automotive Interiors offer dirt-repellent and hygienic microfibers. Sage FXC is water- and stain-repellent and also fungus- and bacteria-resistant. Miko's Dinamica is already used for seats, headliners and other interior surfaces in Mercedes, Porsche, and Volkswagen models. The material is 100% recyclable and is made from recycled polyester with 80% reduced energy consumption and CO_2 emissions compared to newly produced polyester.

16 percent of the survey respondents consider that driving noise is one of the biggest annoyances in the current vehicles. Therefore, suppression of road and engine noise will become more important, especially for electric mobility and automated driving. Asahi Kasei is currently developing the world's first foam based on polyamide beads; their special shape lowers noise level in the interior of the equipped vehicle.

45% of the survey respondents appreciate high quality surfaces with a premium look and feel. The latest addition to Asahi Kasei's automotive interior materials is the glass fiber-reinforced polypropylene "SoForm", characterized by high scratch resistance, good surface feeling, improved durability, excellent matt reflectivity and low emissivity. It can be used bare; it needs no paint, overmold, or overfoam.

Bcomp Sustainable Lightweighting for Interior Trim

INTERIOR NEWS



Bcomp is developing natural fiber reinforcements parts for high performance interior applications.

The company, based in Fribourg Switzerland, started as a garage project in 2011 with a mission to create lightweight, performant skis. The founders, material science PhDs from EPFL, used flax fibers to reinforce the balsa cores and improve shear stiffness.

Now, Bcomp's solutions with thermoplastic "PowerRibs" can cut weight by up to 50% and reduce plastic by up to 70% in interior panels. Bcomp's AmpliTex technical fabrics enable novel design options, creating a functional and visual layer in one.

These thermoplastic parts are made using one-step back-injection, which compression-molds PowerRibs with a base layer of NFPP fleece, a decorative surface layer, attachment points, and punching in the same step. With the award-winning employment of a soft silicone layer on the B-side in the compression molding tool, the full stiffening potential of the PowerRibs preform is reached and maintained.

Bcomp's process allows a visual surface layer to be applied—leather, Alcantara, or textiles, for example.

In 2018, Volvo presented an XC60 recycled-plastics demonstrator using what they call Ocean Plastic, made of plastic waste recovered from oceans. The PowerRibs reinforcement technology, boosted Ocean Plastic's properties so it could be used in a

wide range of semi-structural interior parts. Polestar has recently confirmed they will put their Precept concept car into production using Ocean Plastic and Bcomp composites.

GM Cadillac Lyriq With AR HUD

INTERIOR NEWS

GM's Cadillac Lyriq electric SUV, slated for launch in 2022, will be the first electric vehicle using GM's Ultium batteries. It introduces Cadillac's new design language, bringing the sensual and the technical together as decisive graphic elements contrast against fluid form.

The Lyriq delivers an intimate driving experience with its curved 33" diagonal LED display that can display over a billion colors, and systems that recognize and react to riders' desires.

It will also be equipped with a next-generation head-up display (HUD) with augmented reality, employing two planes: a near plane indicating speed, direction and more, and a far plane displaying transparent navigation signals and other important alerts. The HUD changes based on the environment and delivers clear images even in bright daylight.

The system is a new technology developed by UK-based Envisics, which is announcing a $50m series B funding round led by GM Ventures, SAIC Capital, and Hyundai Mobis.

The Lyriq will offer an AKG Studio 19-speaker audio system with all speakers placed for sound optimization, ensuring all passengers have an immersive audio experience.

The interior is trimmed in juniper-toned leather seating surfaces, and with what GM calls "Moon Glow aluminum" accents.

Volvo's Distraction-Reduction Technology

INTERIOR NEWS

IMAGE: VOLVO

There's growing awareness of the dangers posed by using infotainment features and touch screens inside vehicles on the move, with some studies indicating that fiddling with your display can be even more dangerous than driving while drunk.

Volvo's own safety research and behavioral science experts believe distractions are a fact of life, and not only linked to new technologies; life as a whole is distracting—being late for daycare, having a bad day at work, passengers arguing, and other suchlike.

Therefore, they reason, in-car technology should be used to enhance driver focus. The upcoming Volvo XC40 Recharge makes it possible to operate the infotainment system with voice commands, eliminating the need to take hands off the steering wheel or eyes off the road.

Furthermore, Volvo believes distractions should also be addressed via in-car cameras and other sensors tasked with keeping an eye on the driver, so if for example the driver is intoxicated or distracted and doesn't respond correctly to signals or situations, the car would intervene by limiting the car’s speed, alerting the Volvo on Call assistance service, or as a last resort actively slowing down and safely parking the car.

This technology will be introduced on next-gen SPA2 (Volvo Scalable Product Architecture, global full-size unibody platform) models.

TomTom Roadcheck for Safer Automated Driving

INTERIOR NEWS

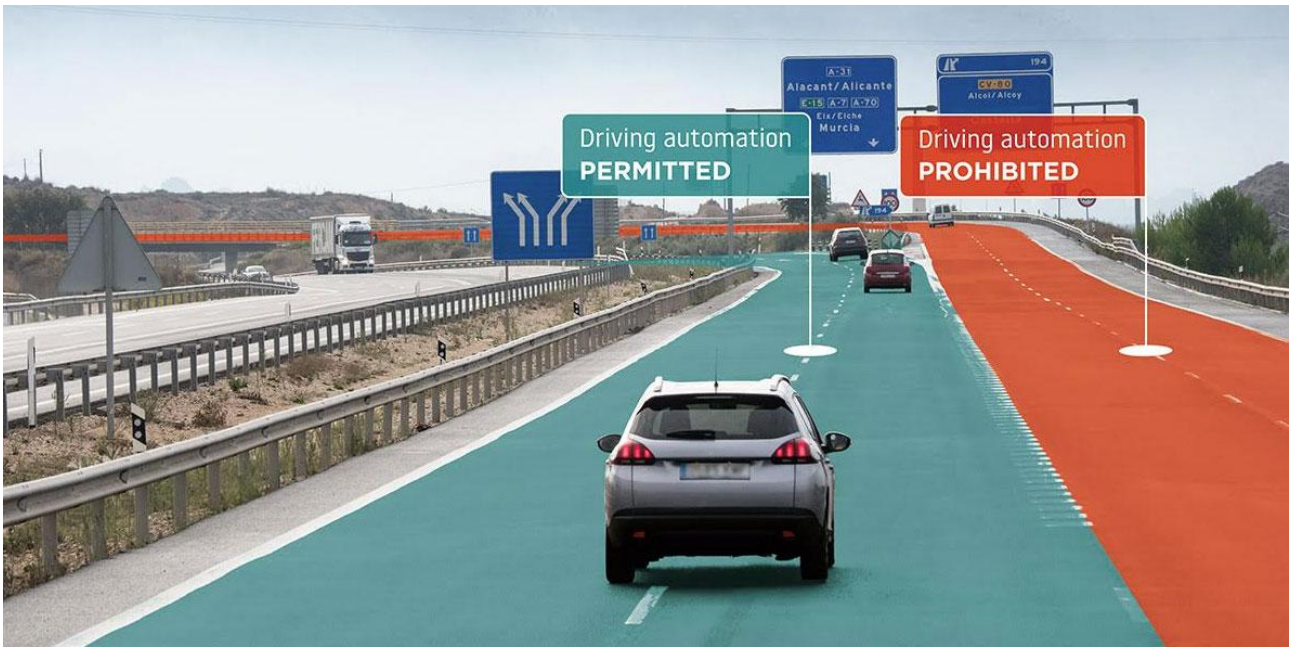


IMAGE: TOMTOM

Carmakers spend years developing and investing in embedded navigation and infotainment systems. But with the rise of smartphone applications, they are progressively losing the ground with the Waze of the world, in the battle for convenience and accuracy.

TomTom presented in a recent webinar how they will progress in the future, and be supporting more automated driving. Navigation today needs maps, and in the future, it will also need sensors, driving policy, and actuators to get to automation.

Crowdsourced sensor data is key for map accuracy maintenance. TomTom defined Roadgrams, a format to compress snippets of camera data for use in HD map upkeep. They developed partnerships with Nvidia, Hella Aglaia, Zenuity, and Denso, to test these systems.

The first step in defining the capability of a driving automation system is the definition of its ODD (Operational Design Domain).

TomTom RoadCheck is a tool for OEMs to determine when, where and under what conditions their vehicles can safely activate automated driving functions. RoadCheck makes competences on map making domain accessible to its customers for their ODD management, under the rubric of "Informed Safety". To test the whole thing, TomTom has engineered its own autonomous car they call Trillian, and test are ongoing in Berlin, Germany.

Hyundai Concept Features Home Comfort

INTERIOR NEWS

Hyundai has unveiled their Ioniq Concept Cabin, which the company presented as a vision for the EV cabin of the future. It reflects the idea that vehicles will move from being only used for transportation to become personalized mobility solutions that suit diverse lifestyles.

Hyundai stated they will leverage the benefits of its efficient architecture to maximize interior space, and then integrate home electronics and appliances in future Ioniq models, all customizable depending on customers' needs and lifestyles.

The concept, built together with LG Electronics, showcases what's possible in EV interiors. For example, the Clothing Care and Shoes Butler functions enable customers to handle mundane tasks on the go, while they enjoying media content on an overhead huge 77" flexible OLED screen. The screen is large enough for two people to enjoy different content simultaneously. Sound is sent to speakers in the headrests, creating a personal sound zone. In addition, a floor-cleaning robot along with the overhead UVED lights ensures the cabin is kept clean and disinfected.

The new ideas will be rolled out into the Ioniq EV model range starting with next year's Ioniq 5, a midsize crossover based on the Hyundai 45 concept. The larger technologies are likely to feature in full in the Ioniq 7 large SUV, expected to arrive in 2024.

Hyundai has also redesigned the i30 hatchback, specifically the sporty N model. It has a retro analog instrument cluster augmented by elements such as an active, variable LED red zone to alert the driver with warnings and when getting to the right gear shift point. It

will be available with lightweight, high-performance N Light monoform front seats, which are 2.2 kg lighter than the standard seats, and are trimmed in premium leather and Alcantara materials.

Inkas Mercedes Sprinter: Bulletproof Limo and Office

INTERIOR NEWS

Inkas is a Toronto-based armored vehicle manufacturing company, known for transforming luxury vehicles into bulletproof shelters on wheels.

Using a Mercedes Sprinter 3500 van base, they have designed the Inkas VIP Mobile Office van, a high-end mobile workspace for top-level executives and celebrities.

The main passenger compartment generously accommodates five passengers, leaving plenty of room for kicking up their feet and relaxing. It features a corner office with a rotating chair and an L-shaped desk, four power-adjustable captain's seats, two 45” smart TVs, wireless connectivity, many USB ports, a premium entertainment system, and a removable center table. All captain's seats are finished in high-quality leather, with a

massage function and adjustable footrests. Of course, flooring and upholstery are fully customizable.

Two refrigerators are integrated into captain's seats for beverages—and they alert the driver when stocks are nearing depletion. In case the driver doesn't get the message, the built-in intercom system, which can use to communicate to the driver that the Topo Chico and Diet Coke are running low.

There's extensive overhead storage for small luggage pieces, and a triple-zone climate control ensures the temperature settings will keep every passenger happy.

The van office comes equipped with advanced safety features and driver-assistance technology, and has an air purifier system and an integrated biometric safe.

Even though this will remain a high-end niche product, real cars in service could be considered as fully functional prototypes to confirm the acceptance of new interior options, or indicate the need for more development work on them.

The Design Lounge

A Battery-Electric Real Off-Roader?

THE DESIGN LOUNGE

GMC HUMMER EV INTERIOR

As was overviewed in the last issue of DVN Interior the Design Lounge, the 'authentic off-roader' has been modernized and made a comeback into the marketplace. But what does the future hold? In the upcoming couple of years, many new BEV's will be introduced into the large SUV and pickup truck markets from makers like GM, Ford, Rivian, and Tesla.

Let's see how these hotly anticipated BEVs fit into the 'authentic off-roader' trend, and what their salient points might be.

BEVs in general have some clear advantages regarding vehicle packaging and performance when compared to the traditional ICE-powered ones on the market today, but also some drawbacks. Although not the traditional charter of the DVN-I Design Lounge, a bit of background is required here as the vehicle regulations have a significant impact here.

To understand the impact of BEV specifically into this market segment, you first need to understand the North American 'light truck' classification and regulatory requirements, of which Classes 1, 2, 2a and 3 of the 8 classifications are relevant for the upcoming BEVs:

Class 1 Light Truck	<6,000lbs (2,722kg) GVWR	e.g., Ford Ranger

Class 2a Light Truck	<8,500lbs (3,856kg) GVWR	e.g., Ford F-150
Class 2b Light/Medium Truck	<10,000lbs (4,536kg) GVWR	e.g., Ford F-250
Class 3 Medium Truck	<14,000lbs (2,722kg) GVWR	e.g., Ford F-350

GVWR, or Gross Vehicle Weight Rating, is calculated by combining an empty vehicle weight, plus the occupants (and fuel for ICE vehicles) and load capacity for the vehicle (the bed for pickup trucks). There are also some size regulations that we will clarify in a minute but the critical path here is that when a vehicle goes up a class, the safety requirements become more lenient—this is because the regulations were written around the assumption that bigger/heavier vehicles are purely commercial, not mainly used for personal transportation.

This becomes extremely relevant because the batteries make a BEV heavier than the comparable ICE counterpart, for the corresponding range required. The 100 kwh battery of the Tesla Model 3 weighs 1,367 lb. (620 kg).

	Tesla Model X	**Tesla Cybertruck**
Wheelbase	2,965 mm	3,807 mm
60 kwh battery	5,071lbs (2,300kg)	
100 kwh battery	5,531lbs (2,509kg)	
200 kwh battery	est. 7,275lbs (3,300kg)	

TESLA CYBERTRUCK CONCEPT

TESLA CYBERTRUCK CONCEPT

The classification table shows us the Tesla Cybertruck and its competitors already are a Class 2b Light/Medium Duty Truck when a standard 2,500-lb load is calculated.

FORD F-150 SVT

FORD F-350

These new BEV trucks also have additional exterior running lights, as required by North American regulations applicable to vehicles over 2,032 mm wide—also seen on the Ford F-150 SVT and F350 trucks shown here.

So, what does all of this mean? Well, regarding the ‘authentic off-roader’ each OEM can now choose to include the interior and exterior safety features for these types of vehicles. Let’s look at how having the option of safety compliance fundamentally changes the interior environment.

Bollinger's entry in the segment is built with high quality materials and fit/finish. It's really a back-to-basics utility vehicle with removable doors, roof and a fold-flat windshield.

Utility is the priority here as Bollinger plans to use this platform for delivery vehicles such as UPS, USPS and DHL currently use today.

BOLLINGER SUV

BOLLINGER PICKUP

BOLLINGER B1

The interior obviously does not have to meet anything like the safety requirements that apply to passenger cars. Note the absence of any airbags.

BOLLINGER B1 "FRUNK"

This puts its utility and practicality at the forefront as seen by the full-length pass-through from 'frunk' to bed.

BOLLINGER B1

A very clean and functional driver environment with a retro-utility flair. Note the column-mounted "gearstick".

BOLLINGER B1 CARGO PASS-THRU

BOLLINGER B1

BOLLINGER B1 DRIVER ZONE

Rivian has developed the opposite approach. Focusing on the luxury aspect of the 'authentic off-roader' experience with more of a 'lifestyle' approach, such as the "glamour camping" (glamping) trend, RIvian allows their customers to experience the outdoors in luxury. Rivian has also incorporated all of the safety features required by Class 1 vehicles.

RIVIAN R1S

RIVIAN R1T CAMPING SCENARIO (GLAMPING EXEMPLIFIED)

RIVIAN IS CLEARLY USING HIGH QUALITY MATERIALS THROUGHOUT ITS INTERIORS.

RIVIAN R1 FRUNK IS PART OF A SERIES OF PRACTICAL STORAGE SOLUTIONS THAT CAN ONLY BE EXECUTED IN A BEV.

SUCH AS THE RIVIAN R1T SIDE CARGO AND STEP SOLUTION…

…AND THE FLIP STORAGE REAR SEAT

RIVIAN R1S

The Rivian R1S rear seating does not present with the rubberized materials that are seen in the ICE vehicles from our last edition, but rather emphasizes the luxury material aspect for their interiors.

The newest BEV into this segment is the much-anticipated Hummer EV. GM, with this vehicle, has taken a middle approach between Bollinger and Rivian regarding usage and materials while also incorporating the safety requirements from the class-2a vehicles.

GMC HUMMER EV

GMC HUMMER EV

The GMC Hummer EV interior forgoes the luxury "glamping" setup of the Rivian and also does not fully embrace the commercial-grade cleanability (no drain plugs and rubberized surrounds for a hose-out interior) but includes all of the high-tech features that a BEV can incorporate.

The Hummer EV's frunk is a quite large volume and contrasting with Rivian, uses this space to store its removable glass roof panels.

The Hummer EV instrument panel uses a strongly rectangular aesthetic to give an 'authentic off-road' experience, even though you can’t hose it clean or remove its doors like the Jeep Wrangler and Ford Bronco.

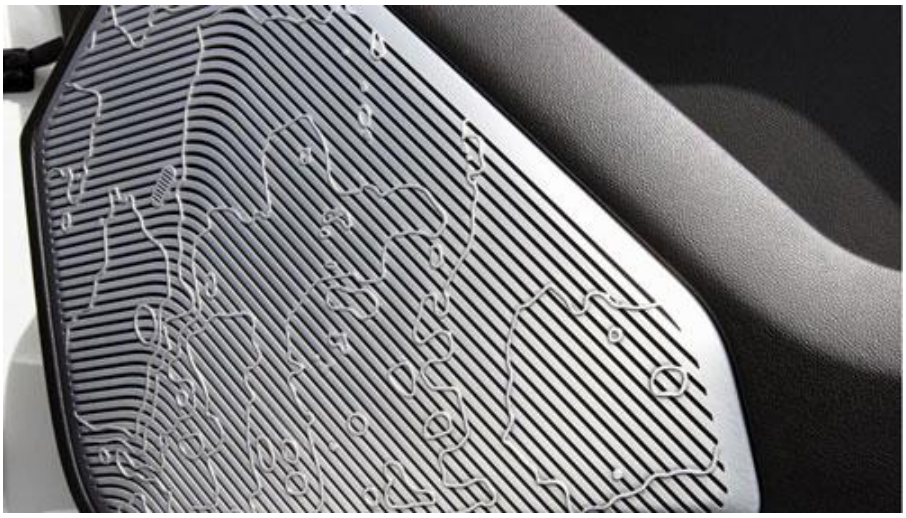
GMC HUMMER EV

GMC HUMMER EV UX/HMI DETAILS ARE LARGE AND ROBUST FOR GLOVED-HAND USAGE

GMC HUMMER EV REAR SEATS

GMC HUMMER EV STEERING WHEEL CONTROLS

GMC HUMMER EV FLOOR CONSOLE



GMC HUMMER EV ‘MOONSCAPE’ SPEAKER DETAIL

GMC HUMMER EV FRONT PASSENGER SPACE

GMC HUMMER EV MOONROOF, CLOSED

GMC HUMMER EV MOONROOF, OPEN (REMOVED)

The 'authentic off-roader' seems to be burgeoning when you consider both the BEV and ICE variants. When you start to compare ICE interiors with BEV interiors, benefits are seen with both versions such as hose-out drain plugs cannot be incorporated into BEVs as the battery packs are under the floors but frunk storage and the versatility it enables are not possible with ICEs as that space is occupied by their motors.

Well start comparing BEVs to ICE variants in the upcoming issues of the Design Lounge.

News Mobility

_ Trajectories, our mobile signature

NEWS MOBILITY

WALTER MOLINO, ITALIAN COMICS ILLUSTRATOR, 1962

(a designer's look at our mobility-centric culture)

10. Social Distancing_

(this story is the last of a series on mobile trajectories as defining element of our cities)

From a simple gesture of motion to the first path traced on a map, from crossroads to outspread railway networks, and from streamline highways to congested city centers, we have crafted our interconnected world. Masters of our movement up to now, in charge of direction and speed, we put together paths and trajectories while discovering new places. We rehearsed modernity on motion, by going to the land of gold or the land of the next business opportunity. Exceeding all previsions, obstacles and expectations, we surfed mobile trends throughout history. Our trajectories became vectors of civilization. We have traced paths that united us and others that separated us, carved and evolved according to territory. We dialed our knowledge into digital carriers entering unexplored domains that accelerated, scaled and multiplied our imminent presence; our mobile self-shaped its virtual ego. At the sharpest moment and unlike all forecasts, a latest constituent adds into the mix of our multi- spatial activity: Social distancing.

Suddenly, everything prior seems a fairytale. We are entering a new era by augmenting spacing from people and surrounding surfaces. That would mean, in theory, smoother trajectories and faster overall, further away from each other, a little bit like space orbits. The way we move is the physical representation of our profile and touches a fundamental dimension of our social interaction. Mobility after all, is an emotional experience. As Gandhi said, *'there is more to life than increasing its speed'*. Fast trajectories enhance the emotion of speed; slow trajectories favor the speed of discovery. Digital trajectories focus only on destination. The more a trajectory is tortured the more it is about the travel experience; desire of connection is what maintains in our era all slow trajectories.

All along our mobile history, the immaterial possession of our surroundings gave a sense of belonging (to a nation, a tribe, a city or a neighborhood etc.). Over the years, we have built a reality of motion-observation to the point where the 'vehicle' became invisible and sometimes irrelevant. People in glass bubbles as in Walter Molino's 1962 illustrations or Melvin Sokolsky's 1963 utopian pictures, today constitute an inverse paradigm. The contrast arising is stunning since for a few moments during lockdown we switched on the other side and became part of the 'static' scape observing out through a window. What is devastating though is that feeling of not being in charge anymore of anything that moves. We delegated to mobile devices, run by overwhelming algorithms, all our needs expecting to be served by an optimized logistic script. C-19 pandemic challenged some fundamental concepts and brought us back to the origins, reminding that mobility is neither obvious nor effortless.

We have built our modern citizenship based on the skills we acquired by moving, driven by vision, passion and conviction. We moved towards progress with a scope, an objective or an intention. Social distancing is directly affecting transportation and it is the moment of reexamining principal notions: transportation alone does not guarantee the right to mobility because being mobile means having plans, projects, and aspirations.

*INDUSTRIOUS*_____

"Shift Mobility 2020" • Future Mobility Systems

NEWS MOBILITY

The first international mobility event of this year, **SHIFT Mobility**, took place on 3–5 September as part of the IFA (Internationale Funk Ausstellung) in Berlin. SHIFT Mobility deals with tomorrow's mobility and the resulting changes in living spaces. Over 40 international speakers presented mobility concepts of the future. All key questions about mobility of the future were discussed with the top decision-makers from the tech community regarding autonomous driving, shared mobility and connected cars, such as:

- **Regulations for autonomous driving cars**
  Autonomous vehicles need regulations worldwide to ensure the safety of traffic members and environment.
- **Digital simulation technology for the development of autonomous vehicles**
  Technological innovation is changing mobility. Research and testing are costly and take a long time to complete. Simulation tools can drive further the development in autonomous vehicle manufacturing and testing.
- **Hydrogen fuel cells to solve the pain points of electric vehicles?**

Government mandates and consumer desire for low energy and carbon-neutral vehicles. While plug-in electric vehicles receive plenty of perception, the hydrogen fuel cells have also been of interest to several car manufacturers/suppliers with a hybrid vehicle concept.

- **Autonomous vehicles require security vigilance**
  Cybercriminals are able to exploit vehicle vulnerability regarding hard- and software. The problem is very complex as soon as the vehicle is implemented in the infrastructure. Automakers are taking the threat seriously.
- **Will augmented reality windshields offer more safety and driving experience?**
  Augmented reality windshields create a link between driver, car mechanics and the road conditions. But will they bring driver distraction or more safety on top of head down displays or smartphones?

- **Impact of Covid-19 on the public transport sector**
  The escalation of Covid-19 has changed our life. People want to avoid infection and stay at home or avoid public transportation. What is the financial, time and cleaning impact in the near future?
- **Autonomous Driving advantages**
  Autonomous driving may reduce traffic congestion, CO_2 emissions, travel costs, and circling for parking spaces. It could make our daily rides quicker, less stressful, under the condition is affordable.
- **In-car communication**
  Drivers will become passengers – that leads to extensive and profitable digital in-car services for in-car communication and entertainment.
- **AI determines the future of global mobility**

AI is already impacting the traffic infrastructure and will play an increasing role in the new mobility.

- **Micromobility will change urban transportation**
  Cities have to solve increasing traffic and congestion problems. Therefore, micromobility could be an emerging and useful alternative to the current transportation systems.

General News

Paris Auto Show Going On Without Visitors

GENERAL NEWS

PEUGEOT'S DIGITAL SHOW

The auto show has disappeared from the agenda for the moment (except in China!). But automakers still need to reach journalists and potential buyers. The Paris auto show, scheduled for the first two weeks in October, was called off on March 30, and automakers have had a lot more time to think about how to make up for its absence.

Since Geneva cancellation in early March, automakers and suppliers have been busily coming up with new ways to virtually present new models, show cars, and innovations.

French automakers Peugeot and Renault have put together elaborate, multi-day virtual events timed to what would have been the dates of this year's show. The goals of their online booth remain the same as a real one: create excitement and sell cars.

The PSA Group brand created a digital facsimile of a spacious stand, with an interface that lets viewers zoom in to a particular model, take a 360-degree tour of the styling and check out the interior. For each model, pop-up windows offer digital explanations of

features such as adaptive cruise control. And just two clicks get you to a live chat with a salesperson, who can pitch special auto show offers.

RENAULT CEO LUCA DE MEO UNVEILS THE MÉGANE EVISION SHOW CAR, VIRTUALLY

Renault created a weeklong online event called eWays, with focus on electrification. It kicked off with a news conference by new CEO Luca de Meo, to introduce two iconic new vehicles, the Renault Mégane eVision concept and the Dacia Spring EV. They hosted as well virtual "roundtables" with executives who took questions moderated by press officers. Experts in fields such as urban planning gave seminars on the future of mobility.

During these difficult times, the positive of this online communication is that much less expensive, very important when cost is of such importance.

Fisker Deal with Magna for Ocean SUV Production

GENERAL NEWS

FISKER OCEAN

Fisker has entered into agreements with Magna International for the Canadian-based global auto industry mega-supplier to assemble Fisker's Ocean SUV from Q4 2022. Magna will be taking a 6% ownership interest in Fisker Inc.

While Tesla is vertically integrated, Fisker is outsourcing almost everything. Suppliers are going to produce all components, and even final assembly with Magna.

Magna is already assembling many different models for many different automakers in the former Steyr Puch plant at Graz, Austria—the Mercedes G-Class, BMW 5 Series and Z4, Jaguar E/I-Pace, and Toyota Supra. And Magna has a manufacturing plant in China, in a JV with SAIC, producing vehicles under SAIC's Arcfox EV Brand.

Every EV startup dreams of becoming the next Tesla. And if Fisker is going further with no in-house manufacturing, it is differentiating from a lot of EV new entrants, including the Benchmark, Tesla, whose strategy is to develop and make almost everything in-house—as most automakers did during the first century of the automobile history, even if sub-

system outsourcing started slowly in the 70s, having a peak around 2000, and continuing today for non-core (yet) activities like EV powertrain, infotainment, and the like.

Benefit would be to be able to design with less compromise, due to existing components re-use, to manage intellectual property but in the opposite direction, as most progress is coming from production along time, where you improve both the product and the manufacturing process. Time will tell us who's right—maybe both!