Editorial

Blue Ocean For Occupant And Services

ACCESS IN-CAR MEDIA SERVICE

Automotive technology progresses thanks to digitalization, which helps cars to be more connected, autonomous, and shared. Product and vehicle technology integration efforts incorporate in-car data and existing customer information as much as possible. These efforts help improve occupants' overall user experience, safety, comfort, and convenience, while traditional automobile attributes benefit from electrification and autonomous driving. On top of that, newcomers tend to focus on areas like car sharing and mobility-as-a-service. There's still a blue ocean of services, already accessible from home or office, which could come into the car. Music and video streaming, online commerce, home automation—the list is endless. All this digital content is potentially lucrative, and could change the business model of this industry through new revenue streams and a different mix of participants.

Car interiors, of course, are strongly affected by these trends—after all, the humans sit inside the car, so the interior is the point of contact between the humans and the machine. As such, it is the interface layer between driver and car, passenger and car, customer and car, occupant and services. Controls, displays, and all other elements of

the HMI; functional surfaces, voice recognition, and everything else; the whole interior environment is morphing and adapting to this new generation of services. In this week's in-depth article, we look at the future of infotainment through media content. It will become a new pillar of what car interior and DVN Interior will deal with.

And don't miss this week's Design Lounge, with the first chapter of our look at how 7-seater SUVs came to such high dominance in the American market.

We're sincerely grateful for your being part of the DVN Community!

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Interior Technology

Infotainment's Future Through Media Content
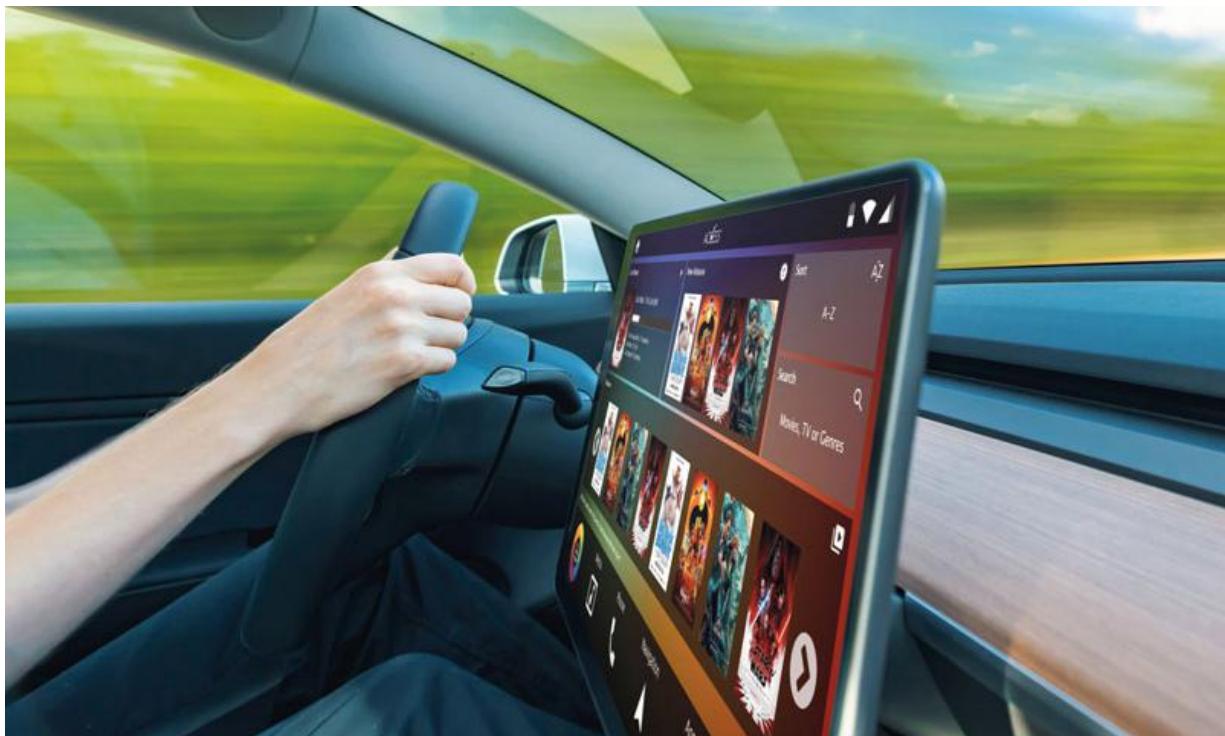
IMAGE: ACCESS COMPANY

The rise of EVs and AVs, together with the increased connectivity afforded by 5G, offers a foundation for the automotive industry to realign its offering to capitalize on exciting new opportunities and recurring-revenue business models.

Streaming media content—video, gaming, satellite radio, services, etc—is expected to serve car occupant as more autonomous drives, especially on boring motorways, will allow even the driver to be entertained during long trips. And not just while the car is in motion; a new use case being described by several automakers is to keep EV occupants occupied while parked and charging!

Car and mobility brands can begin to capture behavioral signals in the car through driver and occupant identification and monitoring and voice interactions. Occupant behavior information, merged with customer data from other channels, will drive truly personalized experiences and new in-car digital services, opening up new revenue sources.

AUDI Q7 REAR SEAT ENTERTAINMENT SCREENS

Then there is the untapped potential for rear seat entertainment ("RSE"). It's been stagnant for almost 25 years since first introduction of video screens in the late '90s within headrests or headliners, as on the Opel Zafira and others. The growing adoption of RSE will accelerate across increasing numbers of vehicle types and classes.

From a technology standpoint, IP, cloud computing, software technologies, voice activation systems, self-driving technology and infotainment all combine to create an additional layer fed with external content already available at home or at the office. Music and video streaming has largely replaced CDs and DVDs—85% of music content is now streamed—so it's a natural evolution to get the same business model in cars.

Of course, in-car content for both drivers and passengers must come without further negatively affecting safety. Videogames, movies, and other such content must not be available to the driver when driving; nor must overly-bright screens and displays be allowed to distract the driver.

Maintenance types of services and access to social media are whole other oceans of opportunity for RSE, perhaps the subject of another article soon. In the meantime, let's have a look at recently announced initiatives targeting new content in vehicles.

Polestar Points the Way with In-Cab Video App

Polestar has developed their own video streaming app for the Polestar 2. The beta app, now available in Europe, brings web-based streaming content from various providers directly to the central display screen in the car.

Content includes news services and national TV broadcasts where available, as well as a video playlist curated by Polestar. At launch, the app includes feeds from SVT in

Sweden, TV2 in Norway, and GOPlay and RTBF in Belgium. All European markets also receive feeds from BBC Ideas, Al Jazeera English, and Germany's Tagesschau. Additional feeds specific to other markets will be added over time.

The video app can only be used when the car is not in motion. However, when streaming and shifting out of Park, audio continues in the background, allowing occupants to continue to follow the broadcast. Data consumed by the app is included in the car's data plan, meaning no extra costs for owners—though probably with caps and limitations.

Polestar's decision to adopt the Android Automotive OS is cited as one of the main reasons they were able to develop their bespoke app with comparative ease. As customer needs and desires evolve, so can the services and solutions the app provides—without the typical long lead times demanded by the traditional car industry.

Toyota and AT&T bring TV and movie streaming into the car
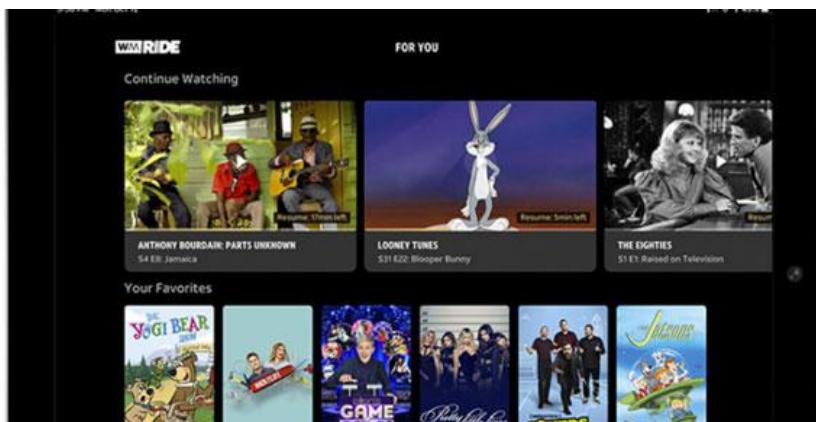
Toyota North America and telecommunications provider AT&T have rolled out the WarnerMedia Ride App, which enables Toyota and Lexus owners to connect up to five compatible devices to browse, stream, and share content while on the road. Passengers will be able to view a rotating selection of live and on-demand content, including TV shows and movies, while also accessing services such as Cartoon Network, CNN, and HBO.

"Customers are hungry for access to new experiences with integrated, everywhere connectivity, whether they're on a long road trip or short commute," said Joe Mosele, Mobility & IoT VP at AT&T Business. "Looney Tunes, Tom & Jerry, and The Jetsons are some of our most watched content."

XPeri HD Radio & TV content

DVN Interior already presented Xperi (DVN-I 7 April 2021) with their broadcaster-focused solutions: HD Radio, TiVo®, AIM® (all in media), and Arctic Palm®, provide radio companies with the tools necessary to deliver the best experiences to listeners, using DTS AutoStage™, a global hybrid solution that combines linear broadcast with IP-delivered content for a richer, more personalized in-cabin infotainment experience.

Access decentralized control of content

IMAGE: ACCESS

Access has removed all the stumbling blocks around content deals, so that one single service can be provided across all of an automaker's markets.

Access Twine™ for Cars ("Twine4Car") is a white label in-car app store and content solution for in-vehicle-infotainment. It enables automakers and suppliers to provide entertainment services including video, audio, live TV and games on the car head unit, rear seat entertainment devices, and on occupants' own devices. Twine4Car is a flexible solution that will work across a variety of OSs including Android, Linux, and QNX-based systems.

Twine4Car connects the in-car infotainment system components seamlessly with occupants' devices via the in-car Wi-Fi network. It provides a decentralized control of content that enables a multi-device user experience far beyond common single device streaming applications or screen mirroring technologies.

Related technology to foster in-vehicle content

Recent Shanghai Motorshow gave a good picture of what is happening in China, around in car technology enabling interaction with added value content.

Operating Systems

GEELY GKUI

Chinese automotive HMI systems most commonly use Geely GKUI, BYD DiLink, GAC ADiGO, SAIC Banma, Chery Lion, NextEV NIO OS, or Xpeng Xmart OS for their connected ecosystems. These HMI operating systems can support the advanced features users expect. The GKUI Geely Smart Ecosystem is one of China's fastest-growing intelligent-connected in-car systems. Since its launch in 2018, it has been installed in more than 22 Geely-branded models and has 1 million active users.

Tencent Auto Intelligence (TAI), launched in 2018, is an IoV (internet of vehicles) ecosystem that can support Android and Linux. Last year saw the release of version 3.0, which includes the in-car user interface and supports a number of Tencent apps and functions. It also provides location-based services to provide a more personalized driving experience.

Intelligent assistant to copilot content

Many models come with intelligent in-car assistants that owners can't wait to show off to their friends. The best assistants, though, are more than a neat party trick; they add true value to the driving experience, and to interact with media content.

To accelerate adoption of these tools, manufacturers are strategically choosing designs and branding strategies that earn user trust. They often chose anthropomorphic words to describe the technology, such as *companion* or *guardian* to encourage emotional connection and quell fears drivers may have about new technologies.

Nio NOMI

Hozon U's AI assistant

Examples include Nio's NOMI (it will also take a selfie and will countdown from three so users can get ready!); Hozon U's AI assistant named Xiao You; Aiways' Intelligent Companion Technology, Ideal One's voice assistant Wiki, Enovate's AI, Changan Uni-T, XPeng's Xiao-P (or Lil-P) voice assistant, and more.

Entertainment Options

ZOTYE AUTO TRAUM 3 BUILT-IN KARAOKE

The BYD Han comes with a wireless microphone. Zotye Traum Meet 3 comes with a built-in karaoke system as part of its OnlyMic infotainment system. OnlyMic includes an 8" touchscreen, 12-speaker Pioneer sound system, and Traum-branded wireless microphone. Users can add their favorite songs using USB or Bluetooth.

The Changan UNI-T's shift handle, which resembles the joystick of a spaceship, features a selfie button user can push to easily snap pictures.

The MG HS infotainment system allows users to upload pictures and video for display. It also includes an ambient lighting feature that allows you to choose custom colors that adapt to your driving mode.

WM MOTOR'S IN-CABIN SMART AI ASSISTANT "XIAOWEI"

Weltmeister, the EV brand owned by WM Motor Technology in Shanghai, has an in-car assistant called Xiaowei. It offers "Date Night Mode," in which it sets romantic music and mood lighting, and "Cinema Mode" to make the car interior feel like a movie theatre.

Last December, Huawei launched their in-car smart screen for all models. It is the first in-car smart screen equipped with distributed technology in China, as well as the first

after-mounted in-car product supported by Huawei HiCar. It also includes a camera and can support smartphone video calls and Huawei cloud conference functions.

Conclusion

Once connected, automakers can use communications technology to start building stronger relationships with drivers and passengers, to increase brand loyalty.

Offering a branded, value-added app, tied to each vehicle, creates a direct-touch communication path which is directly in the control of the automaker. This means the automaker can reach every car owner, globally, with localized content.

Value of this new market is huge; if the automotive industry does not embrace it, someone else will. And that would be either the internet giants like Apple, Google, Facebook, Amazon, and Baidu, or the entertainment giants like Disney, Netflix, CCTV, and Bambu—or both.

Thanks to Star and Access for their recent research reports used to document this in-depth.

Star is a global strategy, design & engineering service company based in Silicon Valley, with focus on HMI, from production-ready HMIs to futuristic concepts and robotic companions. They create holistic mobility journeys through user centered design and omni-channel digital experiences.

Access, with headquarters in Tokyo, is a company providing a variety of software for connected and mobile devices, such as mobile phones, PDAs, video game consoles and set top boxes. They were founded in the 1980s, when the Internet was just starting to take off in Japan. Their vision is: "Connecting Everything over the Internet".

Interior News

Fresh Air for Chinese NEV

ZOTYE T300 INTERIOR. (IMAGE: AUTOHOME)

China's severe air pollution and the need to have a unique selling proposition are spurring new-energy vehicle manufacturers to innovate in the field of IAQ (interior air quality) management.

Zotye is a privately-owned Chinese automaker based in Yongkang, Zhejiang—south of Shanghai. It is owned by Zotye Holding Group and was established in 2005.The Zotye T300 is a subcompact crossover with an air purification system including pollen filtration and negative ion purification so drivers and passengers can breathe clean, fresh air.

Weltmeister is an electric car brand owned by WM Motor Technology, a Shanghai-based maker focused on BEVs. They launched their first production car, the EX5, in May 2018, with deliveries starting that September. The Weltmeister EX6, introduced in 2019, offers CN95 micron-level filtration with a PM0.3 filtration rate of more than 95 per cent. It also includes UVC active ultraviolet surface purification: when the vehicle is not occupied, a ceiling-mounted UV light keeps the cabin free of harmful bacteria.

High-end versions of the Xpeng P7 include the Xfreebreath Intelligent Air Purification System, which offers PM2.5 detection and purification, plasma purification and sterilization, external tail gas monitoring, and self-drying and mildew proof materials. If the Uni-T identifies smoke, such as secondhand smoke from a passenger's cigarette, the vehicle automatically opens the windows and engages the air purification system to protect the driver and other passengers.

It looks like air purification system are becoming standard for the Chinese auto industry.

Cipia DMS/OMS Powered By Computer Vision AI

Cipia (formerly Eyesight Technologies) is a provider of in-cabin sensing solutions for the automotive industry. Their portfolio includes Driver Sense, an advanced DMS (driver monitoring system) tracking drivers and their real-time state; Cabin Sense, an OMS (occupancy and interior monitoring system) which monitors the entire in-car environment, and FS10, Cipia's aftermarket video telematics and driver monitoring device for fleets and TSPs (telematics system providers).

Cabin Sense is a software solution offering advanced computer vision AI algorithm library and API, accompanied by professional services for optimization, porting, camera selection and positioning, validation and more.

Driver Sense is a software-based DMS which keeps track in real time of the driver's state, detecting signs of drowsiness as well as distracted driving. Recognition of enrolled drivers and detection of actions (such as wearing a seatbelt, wearing a face mask, holding a cellphone) are also available.
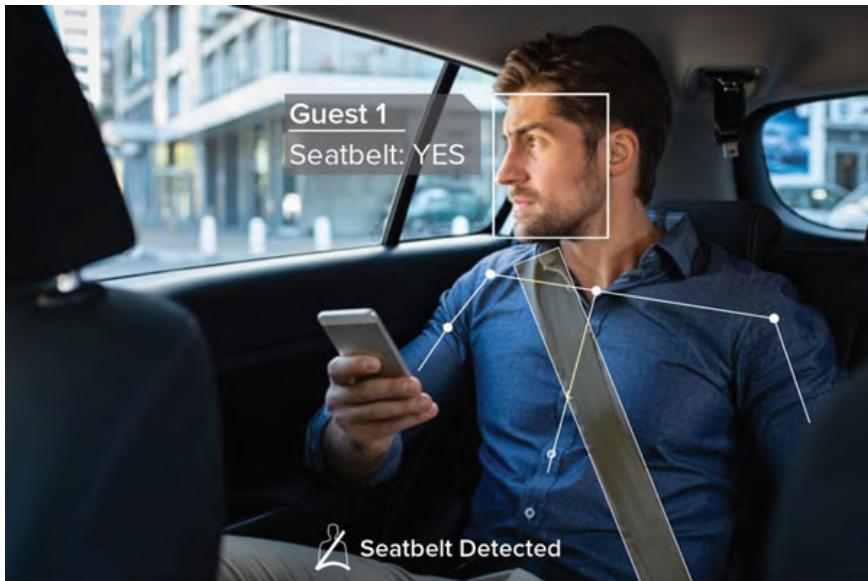
Cabin Sense is an occupancy and interior monitoring solution (OMS). This software solution is designed to enhance passenger safety and the in-cabin experience. Cabin Sense is a software solution, offering an API that can be integrated along with in-cabin cameras and sensors selected by the automaker from their choice of supplier. It detects seat occupancy; occupant posture; child seat and seatbelt usage; passenger identification, age & gender; and objects such as bags and phones.

The Cipia-FS10 is a video device for telematics system providers (TSPs) and fleets. As an aftermarket solution, it is designed to detect driver fatigue, distractions, and actions, enabling life-saving alerts to the driver and cost-saving features to the fleet operator.

Tesla Patents Swiveling Seats, Movable Steering Wheel
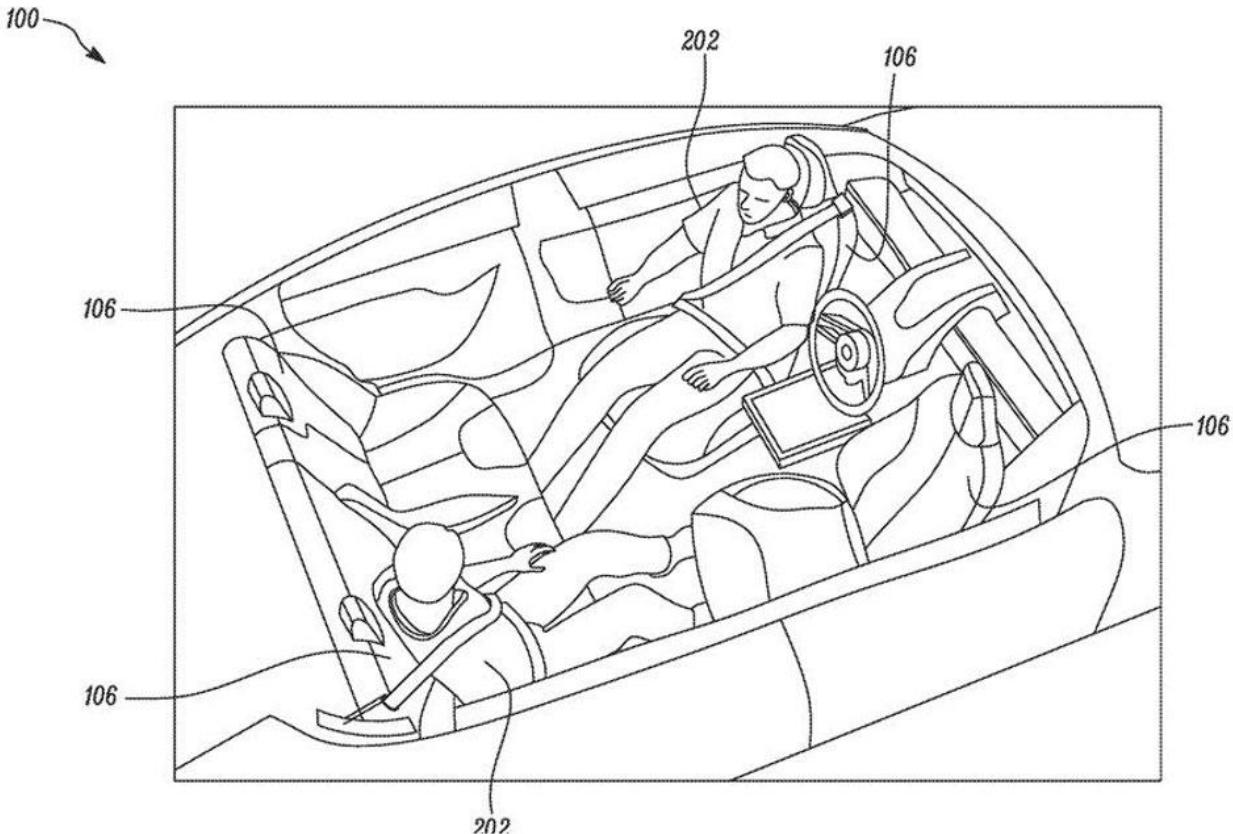
Patent filings are a relatively reliable way of keeping tabs on innovation efforts by whatever company might come to mind. Snow Bull Capital CEO Taylor Ogan, a Tesla fan, tweeted bits from Tesla patent filings for swiveling front seats and possibly a moveable steering wheel.
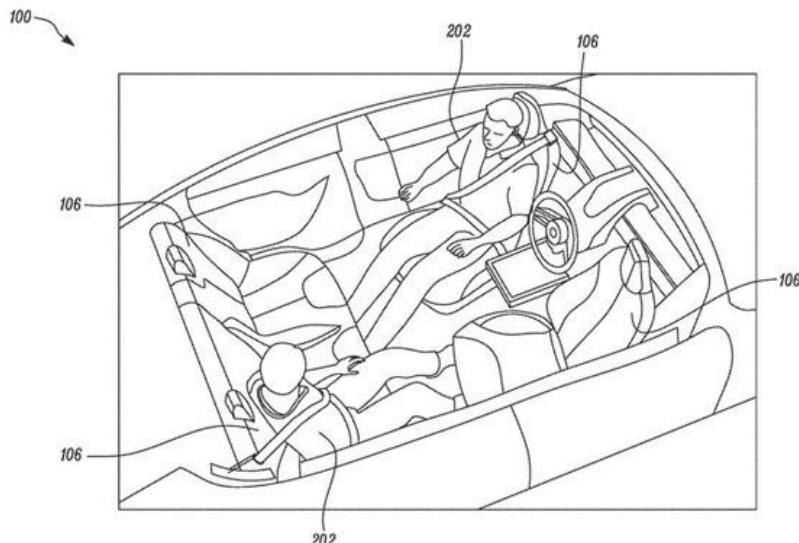
FIG. 1 illustrates an exemplary vehicle 100. Vehicle 100 may be a passenger car, truck, sport utility vehicle, or van. Vehicle 100 includes a frame 102 that is supported by a set of wheels 104. Vehicle 100 includes a power source (not shown) configured to propel vehicle 100. Vehicle 100 may be a manually driven vehicle, a semi-autonomous vehicle, or an autonomous vehicle. Vehicle 100 may include any suitable arrangement of vehicle seats 106 (shown in FIG. 2 onwards) inside vehicle 100 to accommodate passengers. For example, vehicle 100 may include two rows of vehicle seats having driver seat in front. Another exemplary arrangement is provided in FIG. 2. It should be understood that vehicle 100 may include various other essential and non-essential components which are not being discussed in context of present disclosure, as present disclosure is not limited by any such components in any manner.

FIG. 2 shows vehicle 100 as an autonomously driven vehicle having vehicle seats 106 provided such that occupants 202 sitting on vehicle seats 106 face each other. In embodiments, vehicle 100 is not autonomously driven. Vehicle 100 includes safety systems for ensuring safety of occupants 202 while riding in vehicle 100 in case of an unwanted event such as a crash, a sudden acceleration, or deceleration etc. One of such system is a seatbelt system. Seatbelt system includes seatbelts associated with each of vehicle seats 106 to ensure occupants 202 are seated on vehicle seats 106 in case of an unwanted event.

We see the depiction of a cabin where both the driver and the passenger sitting shotgun can swivel their seats 180°, creating a living room atmosphere for the interior. To allow the driver's seat to move freely without taking up too much space, the diagram also depicts a central steering wheel position with no seat behind it.

This suggests if the seats in a future Tesla model will swivel, then the steering wheel will be moveable too. This idea isn't especially new, but the cost-saving must surely be significant in producing a single car configuration for both the LHD and RHD markets.

The tweets make no mention of where these patents were filed, or when, but the wording of the text says that the vehicle shown in the diagram "may be a passenger car, truck, sport utility vehicle, or van." It may also be semi-autonomous or fully-autonomous vehicle, as the position of the steering wheel indicates.

Will AVs in general and Teslas in particular be dependably safe enough one day to allow such a dream use case? That's difficult to answer optimistically right now, but evidently Tesla wants to be prepared…or to block competition.

Kurz Holds Interior Deco Webinar

Open pore wood | Backlighting | Haptic finishes | Metalized
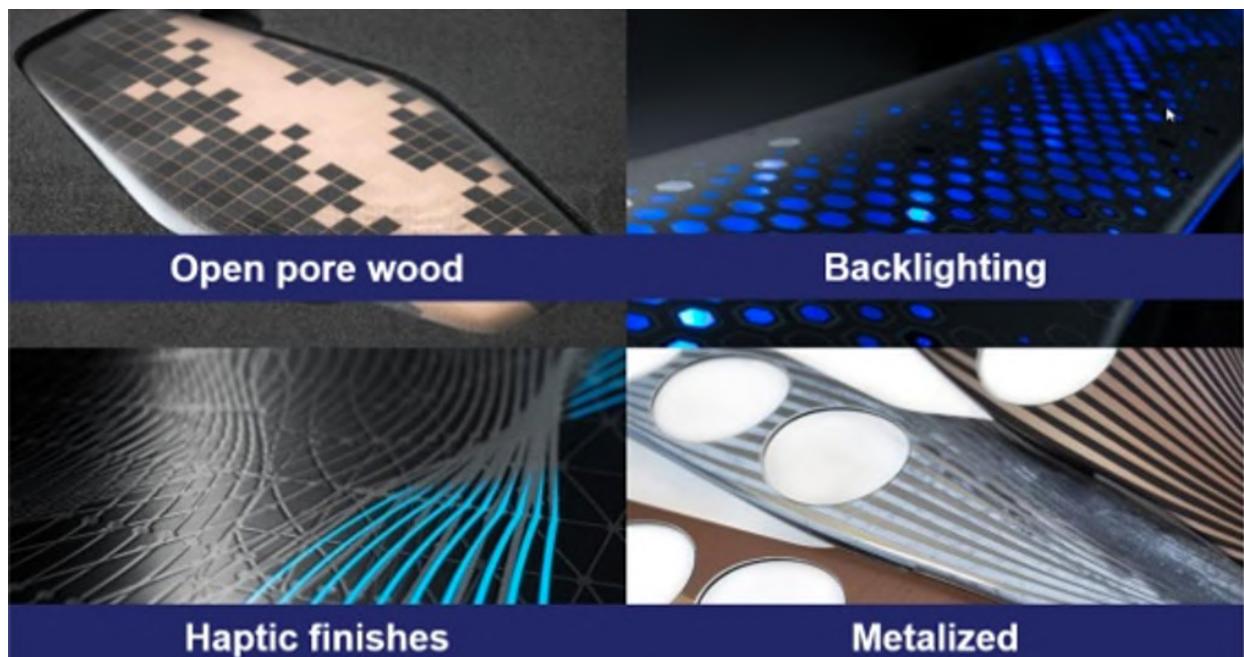
The Kurz Group hosted a webinar on May 11th under the motto "Next level decoration for automotive interiors". The Kurz Group is a global player in thin film technology, surface finish, sensor technology, integration and tooling.
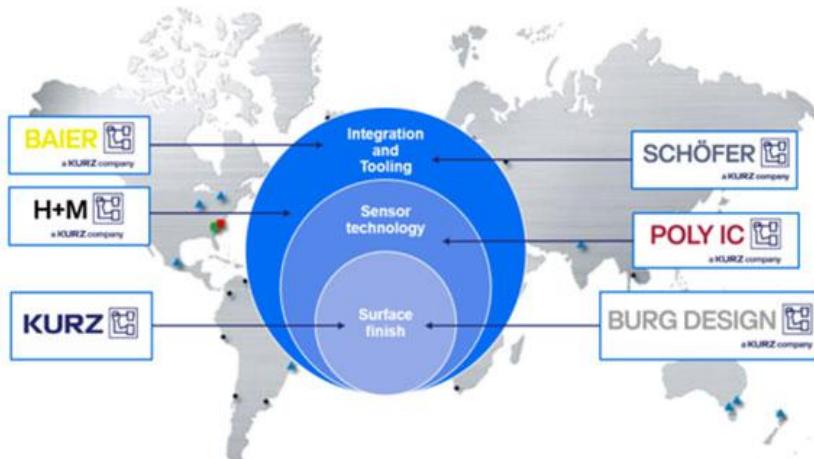

Lutpold Haarländer, Director Business Development from the partner BURG Design, presented his company as manufacturer of individual decors for new surface designs. He emphasized the trends to seamless surfaces and backlighting, touch and UX, new surfaces and textures and sustainability.

Seamless parts

large scale parts / 3D / backlight / integrated functions

UX

backlight / touch / surface texture / antibacterial

Sustainability

Recycled / biopolymer / vegan
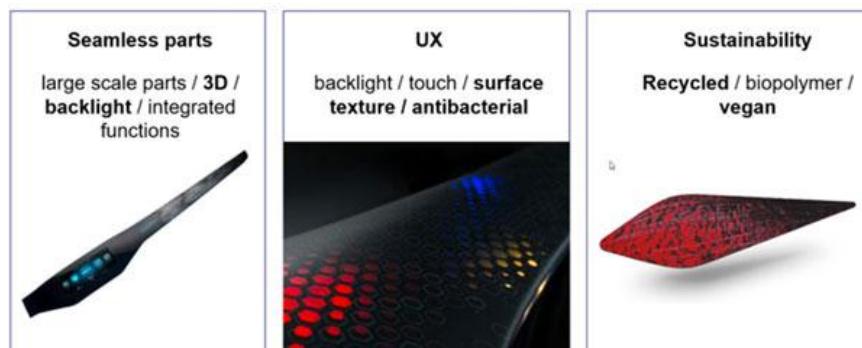
Burg Design uses the following methods to manufacture innovative decors for automotive interiors:

Gravure printing | Screen printing | TieSie (Gravure + Screen)
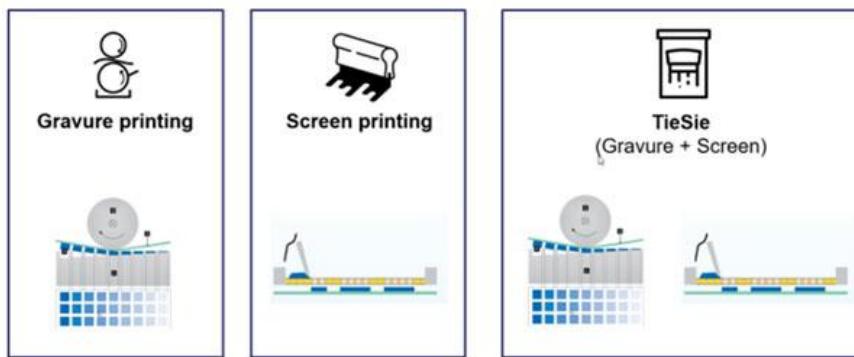
Dr. Markus Fischer, Kurz's key automotive account manager for Europe, gave an overview of the company's activities in the fields of open-pore wood, backlighting, haptics, and metalized finishes.

Open pore wood | Backlighting
Haptic finishes | Metalized
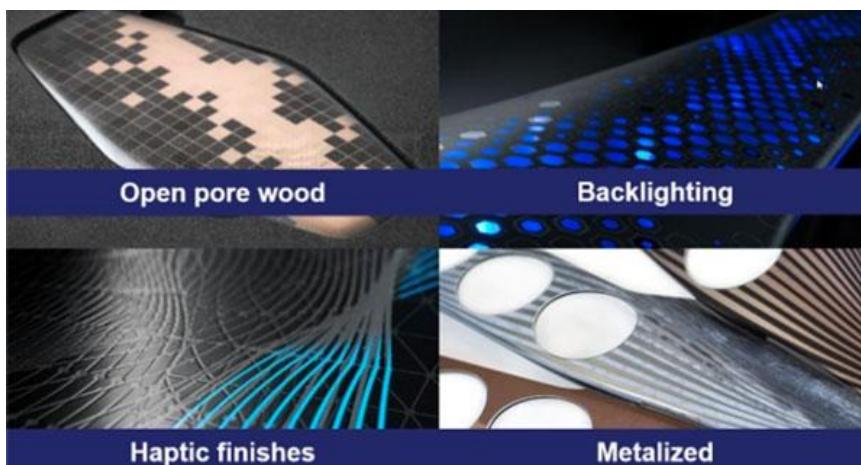
For example, backlighting is available with all decoration technologies, with hidden-until-lit day and night design. The degree of transmission is adjustable.

The picture below shows a case study "Backlighting: IMD Technology":

Mercedes EQB

Mercedes-benz.de

Haptic finishes are also available in all decoration technologies in three different touch experiences, which can be combined with other effects like backlighting and metalization. With IMD the haptic can be integrated in the decoration without tool modification in an affordable one-shot process.

Real metalization with indium is also feasible with IMD technology. It's less expensive than electroplating, and involves no toxic hexavalent chromium. The light transmission is also adjustable, and nonconductive versions are available for touch application buttons, displays, and trim parts. 5G and radar transparency and customized tints in various gloss grades are also feasible.

A short survey among the attendees, which effects are the most relevant for the market, brought the following results:

Open pore wood	6%
Backlighting	58%
Haptic finishes	27%
Metalized	9%
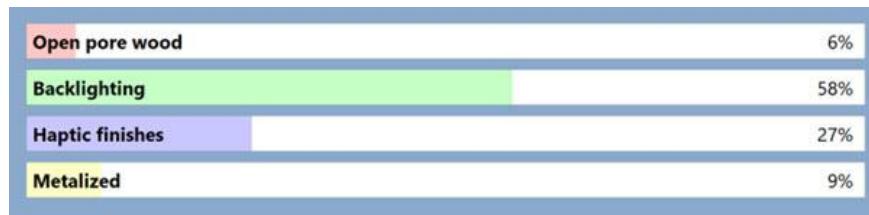
Radiant Head-Up Display Windshield Glass Testing

Variations in windshield glass form, lamination, layer thickness, and wedge angle may result in visible defects that appear as dimensional distortion or ghosting (duplication) of HUD virtual images when viewed through the glass. Requirements for HUD testing are based on industry-standard test parameters and formulas in addition to automaker-specified requirements that must be met by suppliers throughout the HUD ecosystem, from glass makers to projection system manufacturers.
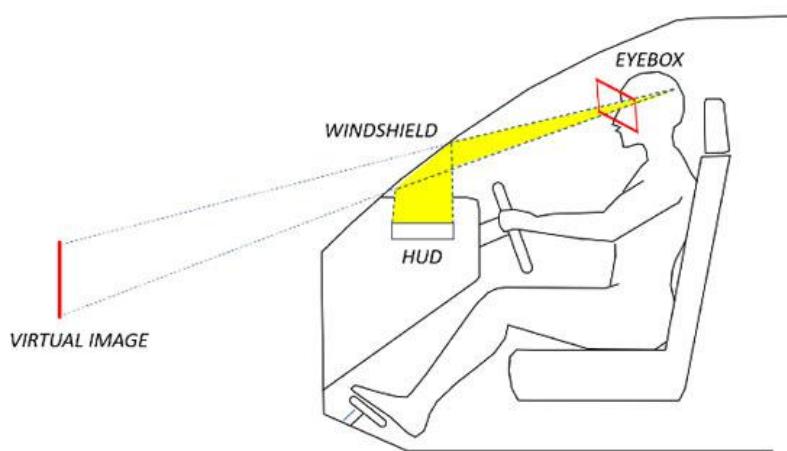
WITHIN THE "EYEBOX, THE HUD VIRTUAL IMAGE IS COMPLETELY VISIBLE THROUGH THE WINDSHIELD (IMAGE: RADIANT)

Radiant Vision Systems, based in Redmond, Washington, produces their TrueTest™ automated visual inspection systems for measurement and control, ProMetric® imaging colorimeters and photometers, Source Imaging Goniometer® systems, lenses for view angle performance measurement, and a machine vision software tool library for production-level measurement and control. Their solutions incorporate test criteria per SAE J1757-2, as well as features developed around unique customer application

requirements. Radiant's systems are applied to test photometric qualities like luminance, chromaticity, and contrast, as well as dimensional checks for distortion.

Additionally, data from the ProMetric system is analyzed using Radiant's TT-HUD™ software platform, a test suite and user interface developed specifically for automated visual inspection of automotive HUDs. TT-HUD provides all data-capture and analysis functions, including built-in calculations to measure the qualities of HUD projections based on standard formula. For example, a complete distortion evaluation for HUD glass inspection may require 10-20 calculations to evaluate all visual qualities to account for the range of potential deviations within the projected test image. The windshield acts as an optical component of the HUD system, so visual performance of HUDs is impacted by the characteristics of the glass itself beyond the performance of the image projection technology. Cameras, software, and efficient data management are key to optimize efficiency in terms of development time and complexity.

Hyundai Rear Occupant Alert Standard By 2022

HYUNDAI TO MAKE REAR OCCUPANT ALERT STANDARD BY 2022

Hyundai Motor America has applauded NHTSA, the U.S. Congress, Consumer Reports, and the automotive industry for working together to make rear seat reminder systems standard features on new vehicles in the future. Hyundai will voluntarily make their ROA (Rear Occupant Alert) door-logic system standard on most of their new vehicles by 2022. They also will increase the number of models on which they offer an optional ultrasonic rear occupant alert, or a similar sensor-based system.

Hyundai currently offers two types of ROA systems. The door-logic system detects if a rear door was opened or closed before the car was started, then reminds the driver to check the rear seat with a message on the center cluster when exiting the vehicle. The Ultrasonic ROA has the door-logic technology and an ultrasonic sensor that helps to detect the movements of children and pets in the second-row seats. If the system detects movement in the second-row seats after the driver leaves the vehicle and locks the doors, it will honk the horn and send an alert to the driver's smartphone via Hyundai's Blue Link connected car system (if equipped with Blue Link and the Blue Link service is active).

Hyundai have also added a door lock linked to blind spot detection, to avoid opening the rear door when a car or 2-wheeler is passing by.

Renault Mégane EV Debuts New Digital Cockpit

The interior of the new Renault Mégane E-Tech Electric has been teased ahead of its full reveal later this year. It's a first look inside the cabin of the reborn Mégane, which will morph in profile to become a compact SUV similar in size to the Captur.

The Mégane E-Vision concept was revealed last year at a virtual event, at the time of the Paris motor show. It showed an L-shaped cockpit architecture, with a large portrait center console display seamlessly linking into a wide digital instrument panel. There's also a low storage space beneath the screen, thanks to a no transmission tunnel construction, thanks to the new CMF-EV architecture developed with Nissan.

A new multimedia system is planned, and the screen will incorporate Google Cloud services under an agreement announced last year. The screen includes an air duct that allows a near seamless transition between the driver's display and the central infotainment screen. Smartphone storage is located under the central screen.

From an EV architecture standpoint, the Mégane EV will use the slimmest battery pack on the market, at just 11cm deep, which will boost interior room and storage space.

The wheels are pushed out to the corners of the body to give interior space to rival a larger family hatch with exterior dimensions similar to the current Mégane.

The Mégane E is expected to be unveiled at the IAA in Munich this September.

The Design Lounge

The American 'Family Truckster" for 2021: 7-seater SUVs

The iconic "Wagon Queen Family Truckster" in National Lampoon's Vacation movie with Chevy Chase satirizes the excessive 'do it all' vehicles Americans have bought for years. It is based on what American consumer want (whether or not they actually need it) in their family vehicles: lots of space to haul people, luggage, purchases, and to go on holiday vacations.

In the early 1980s when that movie was made, those vehicles were station wagons; the Wagon Queen Family Truckster was a restyled Ford LTD Country Squire station wagon.

Station wagons are almost absent from the American market in 2021; they've been supplanted by the 7-seat 'mid-size' SUV. But let us trace a brief history of how the American market got there.

From the 1960s until the 1980s, the solution was the long and low 7- or 9-seater family station wagon. These were devised mostly for 'long haul' trips along the recently finished Interstate Highway system. People hauling was a compromise, with rearward facing fold-away 3rd row seating for kids (then called the "wayback"; now known as the crumple zone) and a long, flat load floor for hauling goods.

1969 OLDSMOBILE VISTA CRUISER

1973 DODGE STATION WAGONS

…until the introduction of the 'Minivan' by Chrysler in the 1980s.This vehicle changed the marketplace by offering more space for kids and goods with a taller profile that allowed better packaging efficiency for the occupants and the ability to haul larger cargo. Every automaker needed to develop this new 'minivan' format to have any chance of a sales success in the marketplace.

The vastly improved fuel economy and easier handling provided by the new packaging efficiency killed off the traditional 7-seat family station wagon.

When you're the chauffeur for kings and queens and fair maidens, you need The Magic Wagon. Plymouth Voyager.

You've got to drive it to believe it.

Front-wheel drive magic. Seating magic. Parks like magic. In-and-out magic.

1985 PLYMOUTH VOYAGER MINIVAN

*1996 HONDA CR-*V

…until the evolution of the SUV/CUV/crossover category in the mid-1990s. Today, these vehicles dominate the American marketplace from smaller entry level vehicles, to larger premium and luxury offerings from all automakers.

During upcoming issues of The Design Lounge, we will compare what is on offer in 2021 on how these vehicles carry on the spirit of the original 'Family Truckster'.

2021 AMERICAN-MARKET 'MID-SIZE' 7-SEATER SUVS

News Mobility

_Car interiors Unplugged
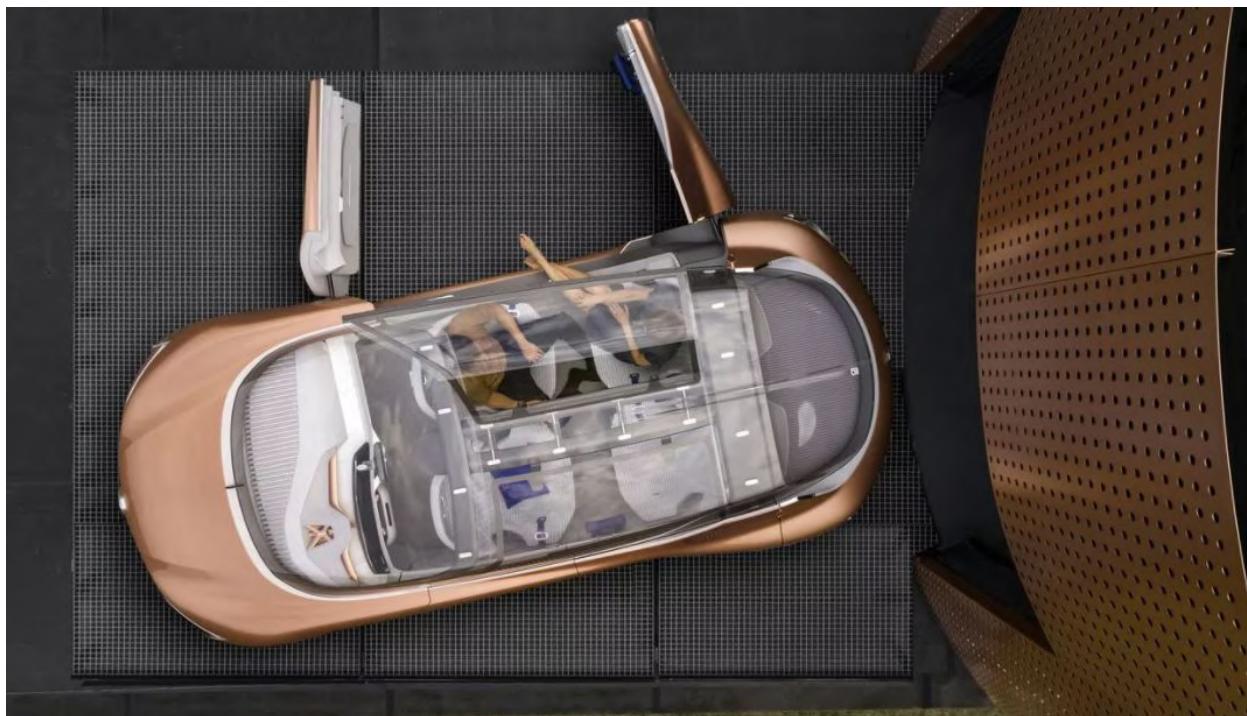
RENAULT SYMBIOZ CONCEPT – IAA 2017; IMAGE: RENAULT

19. Ownership 2.0_

(this story is part of an ongoing series introducing automotive interiors as an evolution of our habitat)

With the first wheel-less manpowered sedans, the notion of carrying along our intimate proximity and personal belongings set the fundamental narrative of car interiors. From then on, we have never stopped idealizing the setting of habitat and motion as one unique experience.

Since the early studies of General Motors in the 50s, to more recent ones (i.e. Renault Symbioz), show car exercises allowed to shine a halo glow of glamour over possible future products merging home and car interiors into one seamless journey. Even if most remained untouched by any public concern, designers being always ahead of their times, had already sensed a much more abstract notion of property. Today's technology can in fact enable ownership for a product that physically does not exist; at least not yet. Indeed, in this futuristic scenario the mode of use becomes the product itself, underlining the ability to create assets out of a notion or a detected necessity. A specific 'mode of use' can be securely owned and marketed. Crowdsourcing, cryptocurrency, tokenization, block chain is part of the vocabulary associated with such inventive attempts to create original property out of ...just an idea, like that, bringing future ever closer. But is it a new approach?

Value is psychology versus assets. At some of the most significant moments, history has shifted over this notion. Renaissance sparkled in a financially depressed fief in medieval Tuscany, reinventing itself through 'bonds of social status'. In a different era, East Indies Company established 'typing' as the only necessary act to assign ownership, unleashing the world of exchange. An idea became a physical asset, just like that, out of thin air and an act of magic. Way earlier, in Ancient Athens, a country-state of the 5th C. BC, devastated economically by two consecutive lost wars against the empire of the era, turned the odds to expectation, creating its assets out of 'the nothing' that was left. That was the Republic, founded upon its citizen values/assets. That changed the perception of ownership, founding a collaborative society on commonly shared set of principles.

Within today's Urban Republic, a universe composed by the highest density and proximity of the two most important assets, habitat and mobility, are evermore interconnected, that in times their borders are blurred.

From selling equipment to selling outcome, digital abstract assets are hovering over durable goods empowering and multiplying transactions to a new economy. From physical possession to digital access and rights, a new world of exchange unlocks. We are now attributing worth to things that had no inherent value before or perhaps we could not understand earlier due to lack of technology. Cryptography allows to generate and secure digital assets (digital renditions of physical objects), transfer value and create fractional properties of the real product; a genius approach 'hacked' by technology that brings about the future of now.

In their immense mathematical beauty of algorithmic designs, cryptocurrencies have accomplished what designers with their infinite visionary and creative talent have not been able to materialize for the past decades.

Cars and houses will probably not change much but what changes is how we own them and through that, our relationship to interior spaces whether static or itinerant. Maybe we have to decide what value is but just like beauty, value lies on the eyes of the beholder.

_to be continued…

_____INDUSTRIOUS__

Robotaxi Development Hots Up in China

SOURCE: IOT-AUTOMOTIVE.NEWS

BloombergNEF's Intelligent Mobility research team looks at how autonomous vehicles and shared mobility services are scaling up around the world.

Cumulative autonomous kilometers tested

■ California

■ Beijing and Shanghai

Source: BloombergNEF, government agencies.
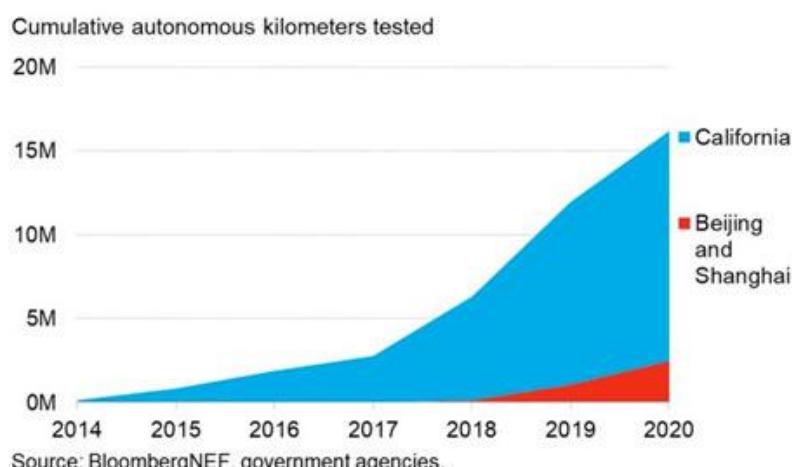
According to this Bloomberg chart, California leads the way in Robotaxi development. Waymo and Cruise have completed over 11 million kilometers of autonomous vehicle testing in California, around 75 per cent of the total there. Some real applications are starting, like Waymo opened its autonomous ride-hailing service in Phoenix to the public in October and Cruise recently signed a deal to deploy 4,000 robotaxis in Dubai by 2030.

Now, China races to establish itself as the premier testbed for this technology. Since greenlighting AV testing on select public roads in March 2018, BNEF data shows that 27 cities have awarded permits to over 70 companies operating around 600 AVs. Beijing and Shanghai alone have seen over 2.5 million kilometers of AV testing to date. That's about 10 per cent more testing than what U.S. companies completed in California in the same amount of time following the legalization of public road testing.

Baidu is the leader for now, with others catching up: WeRide and AutoX plus ride-hailing operator Didi. Baidu operates China's largest AV testing fleet, with nearly 200 vehicles, and has partnerships with over 100 third parties, including automakers, through its Apollo program. The company's ambitious goals include deploying 3,000 robotaxis in 30 Chinese cities by the end of 2023.

Favorable policy has enabled China's fast progress. Regulators allowed AV developers to start offering passenger rides in June 2019. This January, the Ministry of Industry and Information Technology released a draft policy permitting AV testing on highways. The short-term goal is to commercialize robotaxis, autonomous shuttles and self-driving heavy trucks by 2025. The long-term goal is probably to sell and deploy Chinese AVs abroad. The same is not true for American or European developers in China.

General News

SAE Refines Automation Levels

SAE J3016 STANDARD TABLE FOR LEVELS OF DRIVING AUTOMATION

SAE International, in collaboration with the International Organization for Standardization (ISO) has announced a key update to the most-cited reference for self-driving capabilities: the SAE J3016 Taxonomy and Definitions for Terms Related to Driving Automation Systems for On-Road Motor Vehicles, or the SAE Levels of Driving Automation.

The six levels were established by SAE in 2014. They range from 0 (no driving automation) to 5 (full automation). Now, they have been evenly divided into two groups. Levels 0 through to 2 have been termed as driver support features where applicable, and the first three levels of automation states that the driver is driving whenever these support features are engaged, even if their feet are off the pedals and there is no driving input applied to the steering. In these lower levels of automation, features for L^0 are defined as limited to providing warnings and momentary assistance, such as autonomous emergency braking (AEB), blind spot warning and lane departure warning. L^1 is defined as features that provide steering **or** braking/acceleration

support, such as lane centering or adaptive cruise control. L^2 is defined as both types of systems in L^1, combined.

The table defines L^3, L^4, and L^5 as levels where the driver is not driving the vehicle when automated driving systems are engaged, even when seated in the driver's seat. The organization additionally notes that in L^3, the driver must retake control of the vehicle when the system issues a request to that effect. This is where DMS—driver monitoring systems—come is as absolutely crucial.

L^4 differs from L^3 in no longer requiring the driver to retake control of the vehicle, however both L^3 and L^4 will only enable autonomous driving in limited conditions, and will not do so unless all required conditions are met.

At the highest level of vehicle automation, L^5, a vehicle of this classification has all the autonomous driving capabilities of L^4, with the added ability to do so under all conditions.

New Campaign Against Distracted Driving

The Governors Highway Safety Association (GHSA) and StopDistractions.org have announced a joint venture to reinforce the critical role of equitable enforcement in effectively combating distracted driving.

The GHSA is the US national organization that represents state highway safety agencies, and stopdistractions.org is a nonprofit organization dedicated to build awareness and recognition of distracted driving. The two organizations are calling on US states to implement a comprehensive strategy that includes high visibility enforcement of texting and handheld cellphone usage bans, coupled with extensive public outreach that explains how distraction takes a driver's eyes and mind off the road and puts others—especially people outside vehicles—at risk.

"At any given moment during the day in the United States, nearly a half a million drivers are distracted behind the wheel," says GHSA executive director Jonathan Adkins. Crashes caused by distracted driving killed 3,142 people (nearly 10 per cent of total fatalities) in the United States in 2019, up 10 per cent from the year before. With overall traffic fatalities surging in the first nine months of 2020 and evidence pointing to increased distracted driving during the Covid-19 pandemic, those numbers could climb even higher.

The effort appears to be a good start, although the degree to which handheld versus hands-free is a worthwhile distinction in terms of distracted driving. Howe'er it is, ADAS and driver monitoring technologies will help reducing the effects of distracted driving, but it's also important to teach and coach drivers to responsibly devote the necessary attention to the driving tasks.