DVN-I
Automotive Interior

Thu, 7 November 2019 Weekly Newsletter NEWSLETTER #14

Editorial

EVs, Mobility, Technology At The Tokyo Motor Show

The biennial Tokyo Motor Show is the crown-jewel showcase of the Japanese automotive industry—almost exclusively, with very little participation of foreign makers or suppliers.

This year, multiple exhibition spaces housed exciting new concepts in EVs, kei cars, mobility appliances including robo-taxis and new kinds of vans, and an open-road park with micro mobility test drives. There was a special Future Expo section with predictive visions of Japan's near future, with the newest innovations and promising technologies around mobility, city life, sports, retail, new energy…real life, really, in context of the 2020 Olympics next summer there in Tokyo.

The automotive supply industry was out in force, with about a hundred tier-1 and -2 suppliers and material specialists. Unlike the car brands, here there was significant presence of major international suppliers—Faurecia, Schaeffler, Mahle, Continental, and Bosch, for example.

Toyota was presenting many different mobility tools along the different sections, and was positioned in the main hall as a city planner on a backdrop of science fiction-like stages with demonstrations of new mobility ideas—scooters, the e-palette, and the magic broom, to list a few. That said, Toyota took a half-step back and let their suppliers do most of the interior technology show-and-tell, centered around a Toyota Boshoku interior project collaboration.

Suzuki, Daihatsu, and to a lesser extent Nissan and Mitsubishi strongly positioned their exhibits around happy, fun lifestyles through themes such as WakuWaku (trembling with happiness) for Suzuki, or WaiWai (an excited expression, like "Woohoo!") with Daihatsu. In this philosophy, cars are to provide energy, freedom, and happiness for people and communities; obviously the interior is a key enabler through spacious versatility and freedom of movement, convenient storage, shiny colors and attractive surfaces, activity centers for children and adults, and otherwise like that.

All in all, it was a terrific show. Following extended in-depth is reporting on the major automaker displays here in the newsletter, we'll be releasing a comprehensive DVN-I Report in December—including a thorough introduction of the Japanese interior supplier ecosystem and market.

If you haven't yet been to the new **DVN-Interior website**, do give it a look; there's a convenient subscription button, and you can easily **register** for the DVN-I Munich Workshop taking place next January with the rubric "Automotive Interiors: New Technologies for New Usages". workshop.

Enjoy reading

Sincerely yours,

Philippe Aumont
General Editor, DVN-Interior

In Depth Lighting Technology

Interior Concepts and Lifestyle Predictions at Tokyo Motor Show

The Japanese auto industry presented many concept cars, most of them focused on lifestyle, where words such as enjoyment, comfort, spaciousness, and crossover were applied to new products. There was a clear dual focus on crossover/SUVs and minivan/robotaxi EVs.

Toyota

Booth for residents of the Future

e-Palette mobility service for people & goods

Micro Palette delivery robot from an e-Palette

e-Palette mobility service interior

Toyota staged a "mobility theme park" to immerse visitors in the maker's vision of the future through demonstrations of futuristic concepts. The aim was to help each visitor feel like a resident of a future mobility society wherein “beloved cars" bring driving fun to everybody, as a wide range of mobility responds to each customer's needs. Still, not everything in the future will necessarily be amazing in a Star Trek type of sense; there will still be a need for the utilitarian. The E-Palette interior, for example, was executed as a standard good quality shuttle interior.

e-4me futuristic luxury single-seat mobility

e-4me interior

The single-seat mobility e-4me concept allows the passenger to use their time en route to do whatever they want, enjoying various services without being bothered by other people: individualism as a luxurious lifestyle service!

This futuristic vision was showcased without even exposing the vehicle! not even the new Mirai was relegated to a new technology space. But the main booth included an e-Racer, as Toyota president Akio Toyoda said "The birth of the car has resulted in the replacement of 15 million horses by cars in the US but we still have racehorses"—meaning that car racing will continue.

Daihatsu

The theme of Toyota subsidiary Daihatsu's booth was "Gathering: Providing Warmth to Everyone's Lives". The Daihatsu brand here focused on kei cars—the smallest highway-legal passenger car class in Japan, with severe constraints on every aspect of size and an exemption from Japan's strict parking-availability certification prerequisite to buying larger cars. Kei cars represent a third of the Japanese market in sales volume. Daihatsu presented concept cars for each kei car segment.

Daihatsu WaiWai Minivan

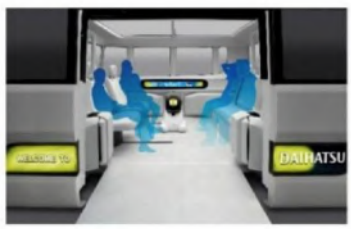
Daihatsu WaiWai Minivan drive deck

The WaiWai provides a surprisingly spacious and stylish interior, and is designed and configured to satisfy demands of parents, for example, whose needs and wants can change from moment to moment. And for out-of-doors activities, Daihatsu showed the WakuWaku: the front seats prioritize driving, while the rear compartment is more flexible to accommodate passengers, cargo, and whatever else one could want to bring along.

Daihatsu WakuWaku Crossover

Verstile interior with many storage features and robust surface materials

Daihatsu, like all automakers at the show, presented an autonomous public transporter: a robo-taxi minivan called the Ico Ico which includes a "Nipote" ("grandchild") robot to serve as an assistant with carrying capabilities.



Lexus

Lexus unveiled its "Lexus Electrified" vision for an upcoming generation of electrified vehicles. The concept comprises many advanced technologies such as a new human-centered interior design philosophy and a steer-by-wire system. Onboard AI distinguishes the voices of vehicle occupants, and uses personalized information stored on the driver's control key to serve as a partner. It facilitates the adjustment of elements of the interior environment, such as HVAC and audio, and the setting of navigation routes and destinations, while also making proposals for activities after arrival. Interior design and materials expressed a warm, futuristic feeling—take a look at the waffled textile covering the door panels, for example.

Suzuki

Waku Sport coupe

Waku Sport estate with interior view

Suzuki, № 2 in Japan's kei cars—they sell 450,000 of them a year—presented a wide variety of vehicles. Their futuristic PHEV Waku Sport is transformable as a coupe or a wagon: the wagon pat of the roof retracts to become a coupe, or vice versa. The lack of a B-pillar permits sliding rear doors for easy ingress and egress.

Suzuki's autonomous robo-taxi minivan concept, the Hanare urban mobility solution, is an EV with a pod like layout meant to carry passengers—sort of like an MPV of the future. Top-hinged side panel doors allow walk-

in, walk-out access.

Suzuki Hustler | Instrument panel with box closed... | ...and open

Suzuki also showed the Hustler small SUV with new design packages, but still complying with the kei car size limits, including its 3-cylinder petrol engine.

Nissan

IMk with slim concept seats | Ariya's production-looking thick seats

Nissan had 14 models on display including the IMk, a new 3.43-meter EV concept coming as successor to the IMx presented two years ago, and the 4.6-meter Ariya crossover concept. All the concepts on display centered around Nissan Intelligent Mobility, the company's vision how cars are powered, driven and integrated into society. These two concepts illustrate the dominance of the electric vehicle strategy for the brand that has already capitalized on, as R&D chief Kunio Nakaguro put it, the "12 billion kilometers traveled by Leaf owners".

The Ariya concept, sized like the Rogue, also shows Nissan's new design identity and the company's new vision of an electrified brand identity. Presented by Nissan design chief Alfonso Albaisa, the new design theme philosophy is called "Timeless Japanese Futurism". The Ariya looks athletic, with its big tires—but we have some questions about the interior space; surely a compact interior feeling is not the trend of the show.

The Ariya also incorporates Nissan's latest version of the Pro Pilot 2.0 driver assistance system, combining highway driving with single-lane driving capabilities without user intervention: the system may assist the driver in overtaking, lane deviations and lane exits on multi-lane highways.

Probably to emphasize the family link with the Alliance, Renault had a modest booth in the Nissan zone, presenting mainly the Renault Lutecia, which is the Japanese version of the Clio.

Subaru

Subaru came right out and said "There will be cars that can make our lives even better" through its philosophy of enjoyment and peace of mind, including an ambitious target: zero fatalities in Subaru cars by 2030!

Models on display included a prototype of the next Levorg, which looked very production-ready. Its interior was not visible because of dark windows, but Subaru describes it as "your personal space" in accord with an office, home, or any other space where you'll spend a lot of your time. Per the specs, it is a feature-rich and

inviting space: full black leather upholstery with blue stitching, reclining rear seats, D-shaped telescopic steering wheel, USB power outlets front and rear, a 5.9-inch high-definition color display, front and rear view monitors to ease visibility at intersections and when parking facing a wall—speaking of which, the rear view camera can assist with parking maneuvers by projecting a live image.

Subaru is using Panasonic's Nanoe™ display protection technology to get rid of fingerprints and dust. The same base technology is used for an in-car air purification system that deodorizes, inhibits the growth of bacteria and viruses, and is effective in dust removal to create a fresher and cleaner interior environment.

Subaru's Viziv Adrenaline concept is a hybrid SUV first introduced at this year's Geneva motor show. It's the first concept vehicle designed under the new Subaru "Bolder" design philosophy to combine off-road and active lifestyle. Size and styling of the Viziv Adrenaline hint that this could possibly be the look of the next Crosstrek.

Honda

Honda took the wraps off the completely new Fit (known as the Jazz in certain markets). This 4th-generation Fit comes only with gasoline-electric hybrid powertrains, and offers a spacious cabin realized with Honda's original center-tank layout and a versatile seating arrangement from the previous generation Fit. The forward cabin design is a simple one, with clean lines and a touchscreen mounted in the center console. In Japan, five different versions of the new Fit will be offered: Basic, Home, (Fit)ness, Crosstar, and Luxe.

Honda also showed a brace of vehicles—the spacious new Accord, the Freed mini MPV, the boxy N-box, the N-Van, and the NSX—which together express a certain classicism of the brand. And the new "e" model, in its Japanese premiere, demonstrated a new fun-and-lifestyle approach to appeal to the EV target customers. See our DVN-I report published this past June for more detail on the e.

Mistubishi

The Mitsubishi Engelberg Tourer mid-size SUV evolves MMC's own Twin Motor PHEV drivetrain developed in the Outlander PHEV with the addition of next-generation electrification technology and four-wheel control. Drivetrain has been made more compact and the layout has been optimized to deliver more passenger space and make it possible to offer a package with three rows of seats.

The Mi-Tech is an interesting, but—frankly—weird concept, seemingly completely impractical—there's no roof, and limited space for occupants related to the overall size of the car—perhaps to direct full attention to its unusual powertrain flexibility: it can run on anything (within reason) poured into the tank, from gasoline or diesel to kerosene or alcohol. Whatever is poured in is used to generate electricity to power the wheels.

Then there was the eKX Wagon, a tall-wagon kei car arising from the Mitsubishi-Nissan joint venture NMKV. The eKX was promoted on strength of its comfortable space with "stimulating, attractive detailing and smart usability," fashionable looks, and practicality. The dashboard uses MMC's Horizontal Axis concept to provide excellent forward visibility in a clean design.

Here's the new Mitsubishi Super Height K-Wagon, another boxy cubic monospace, targeting a maximized interior space, a long wheelbase allowing a wide rear door, and maximum space—especially knee room—for rear passengers to feel free and uncramped.

That's certainly not all the delights on display at the Tokyo Motor Show. Watch for our forthcoming coverage of the enormous amount of show space dedicated to suppliers, in a DVN-I Report to be released next month including suppliers such as Toyota Boshoku, Toyoda Gosei, Tokai Rika, Denso, Aisin, Faurecia Clarion, Marelli, Yazaki, TS Tech, Keishin, Imasen, Delta, Hitachi, Nischa, and more.

Interior News

ZF Automatically Adjusts Seats to Suit Each Driver

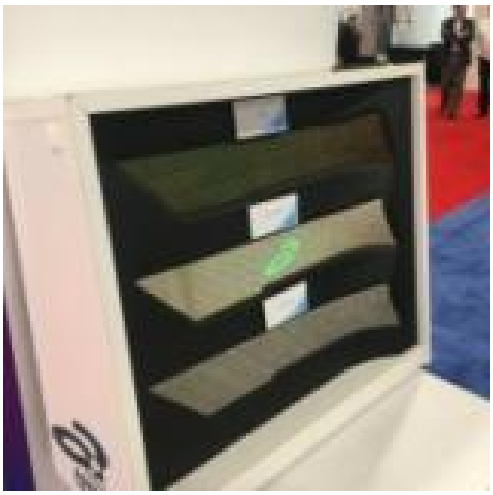
In the Safe Human Interaction Cockpit (SHI Cockpit) made by ZF in partnership with Faurecia, advanced assistance systems and automated driving functions communicate with the driver simply and effectively.

The seat can adjust automatically to suit all kinds of driver across a wide variety of situations.

The SHI Cockpit advises when road traffic conditions permit automated driving, and the vehicle can take over as soon as the driver lets go of the steering wheel. This is sensed by a HOD (Hands-On Detection) function within the steering wheel system.

The wheel rises and retracts forward to make more space for the driver while remaining within easy grasping range. Steer-by-wire allows the steering wheel to remain stationary in this driving mode, rather than continuing to track the wheel movements. At the same time, the seat moves backward and downward, and inclines to a steeper angle. To enable it to do so, the seat has an extended range of adjustment. Uwe Class, ZF's Director of Safe Mobility Systems Advanced Engineering, says "…safety remains at a high level because our airbags, the active seat belt, and the active seat belt clip are integrated in the seat.

Antolin Trim Panel is Made of Stone



At the recent Automotive Interiors Expo near Detroit, Grupo Antolin and Walter Pack presented a variety of natural decorative inserts using materials like cork, leather, and natural stones to enhance any interior surface. A year ago the two companies entered a strategic alliance to develop integrated products with state-of-the-art technology. Walter Pack is specialized in decorative technical surfaces, while Spain-based Antolin develops and produces overheads, doors, instrument panels, trim, insulation, and interior lighting. As part of this alliance, Antolin acquired a 40% stake in Walter Pack.

A trim made from stone would seem somewhat at odds with the current drive for lightweight materials, but as innovation director Nora Beevers explained, "the trim pieces actually weigh very little, as they use a very thin sheet of stone. Traditional wood or metal can be very heavy".

The display items also showed how trim pieces can become functional items with capacitive touch and haptic feedback. Cork pieces can be perforated to display shapes and information, while the stone trim was naturally translucent.

Beevers said they're in discussion with automakers "specifically on the testing parameters, because there is a lot of concern around things like cleanability, durability…the main concern is probably UV resistance, but you also get that with wood. In terms of cleanability, cork has very good natural properties, but we do coat it to protect it from some of the very harsh chemicals like air fresheners and sunscreen".

Kenaf for New Range Rover Evoque

At the Automotive Interiors Expo, Kellie Solutions director Dr. George Kellie described how sustainability is driving the automotive interiors materials market. He said the composite plastics sector is trending toward the incorporation of natural fibers in a range of materials. A broad range of fibers are being used, including kenaf, bamboo, and flax. Some of these fibers have excellent physical properties, which in the right matrix offer properties that can be comparable to glass fibers.

For example, kenaf—also called deccan hemp or java jute—is one of the allied fibers of jute and shows similar characteristics. Kenaf fiber is increasingly seen as a glass or polymer fiber alternative. It has excellent tensile strength close to that of synthetic fibers, combined with a lower density that helps to reduce component weight. In some composites, by using kenaf the overall tensile modulus and impact strength have actually been improved.

One spectacular application area for environmentally friendly materials is Class A surfaces. Jaguar Land Rover is actively developing and commercializing this idea together with the Danish premium innovative textile maker Kvadrat. Its focus has been to create high-quality natural fiber structures, combined with recycled plastics, to deliver a very different upmarket seating experience. This has been initially used in the recently launched Range Rover Evoque.

Autoliv becomes “Safety Strategic Supplier” to Great Wall

Great Wall Motor, China’s largest light-truck maker, is partnering with Swedish supplier Autoliv to help research road safety in North America and prep its vehicles for that important market, which so far has not yet been cracked by Chinese automakers.

Under an agreement signed last month with Autoliv, the two companies will establish a North American road safety research lab in the northern Chinese city of Baoding. Autoliv's China engineering chief Fabien Dumont says "We expect to see timely and efficient research outcomes from this lab, which will help Great Wall Motor with its safety systems strategies for the North American market". This partnership will support and speed up Great Wall's US market development, as regulatory acceptance takes development efforts, money and time. Great Wall's homologation of Haval vehicles in Europe was a long and difficult process, for example.

At the Frankfurt auto show last month, Great Wall founder and Chairman Wei Jianjun said the company plans to distribute vehicles under its premium Wey brand in Europe in two years.

Pace Award Interior Nominees

This year's contenders for the Automotive News Pace Awards are 28 companies from all over the world, including suppliers from Canada, Germany, Israel, Japan, Mexico, and South Korea. Among them, four catch our attention for their relevance to vehicle interiors, supporting new features and experience modes and the deployment of lightweight materials:

• An integrated toll module from Gentex is a nationwide toll collection technology for factory integration into new vehicles. The system uses a multi-protocol toll transponder in the interior mirror to provide motorists with access to any toll road throughout North America.

• A 3D switch from China's Joyson Safety Systems (which recently acquired Germany's Preh, a premium interior switch and button supplier). The new switch is a touch-force sensing device for use in vehicles. It

measures touch force and delivers information for the control of a vehicle system.

• Nyshield™ corrosion-barrier fasteners for lightweight materials from US-based Nylok. They're designed to prevent galvanic corrosion between steel fasteners and lightweight materials like magnesium and carbon fiber.

• Lightweight molded-foam door trim from Toyota Boshoku. They have high impact resistance, and use renewable materials.

Magna's New FreeForm for Sculpted Seats

As multi-activity and shared cars come to the fore, seat comfort and clean cover surfaces are at the top of the short list of of must-have interior features. Now comes Magna with a new seat trim cover called FreeForm that began with a new foam formulation.

Magna's VP of Advanced Seating Technology Engineering Dino Nardicchio says "The new chemistry formulation is really the breakthrough, as it allows us to create a new foam laminate. We can mold shapes with this construction that are not feasible with the traditional cutting and sewing of trim covers".

Compared to current molded trim technologies, FreeForm is four times more breathable and enables design details as precise as a 3 mm radius versus the 20 to 25 mm for traditional cut-and-sew. Deep draws on a seatback mean second- or third-row occupants can gain up to 10 cm of precious knee space.

Seat cleaning is aided by FreeForm's sculpted, seamless surface; Nardicchio says car buyers and passengers dislike small grooves between the seat bolster and insert because debris collects there, making the seat hard to clean. Multi-material surfaces within the same seat cover are possible, such as leather /suede, vinyl/leather, cloth/vinyl, and other mixed-material combinations. And "It's perfect for (vehicle) mid-cycle trim changes, because the base foam pad is common. We can literally provide differentiation by simply removing the topper cover".

Covers that zip on and off are another option. Nardicchio says "We have the means to remove the topper cover to either clean it or replace it via a zipper. This is especially appealing for ride sharing domains because fleet owners want the ability to clean vehicle interiors with minimal downtime". Responding to that need, FreeForm seat covers could quickly and easily be unzipped, removed, and replaced for routine or emergent cleaning, or in the event of damage.

Nardicchio says FreeForm could reach the marketplace as early as 2021. It's competing with Foam-in-Place technology, which has the same benefits, but possibly more drawbacks.

News Mobility

VW's New AV Tech Company for Self-Driving Taxis, Vans

Volkswagen Group is setting up an autonomous driving unit, led by a former Apple executive, that will work to bring self-driving cargo vans and robo-taxis to market. Volkswagen Autonomy will be based in Munich and Wolfsburg, with subsidiaries in Silicon Valley and in China.

Unit leader Alexander Hitzinger, who worked on Apple's Project Titan electric car project, says "Around the middle of the coming decade, we want to start commercializing autonomous driving on a large scale". By 2023, VW plans to invest about 30 billion euros in electromobility. About 14 billion euros will be spent on digitization, the development of new mobility services and autonomous driving.

Volkswagen Autonomy will be a center of excellence for autonomous driving for solution from Level 4 and above. Its expertise will be available to all VW Group brands, including light commercial vehicles for "robo-vans".

In July, VW announced closer cooperation with Ford in autonomous driving and acquired a stake in Ford subsidiary Argo AI, which develops systems for autonomous vehicles.

Renault-Waymo-Paris Airport Shuttles for '24 Olympics?

With the signing this past June of an exclusive agreement between Groupe Renault and Nissan with Waymo on autonomous mobility services in France and Japan, the Paris Region and Groupe Renault are exploring the implementation of an autonomous mobility service between Roissy-Charles de Gaulle Airport and La Défense.

Valérie Pécresse, President of the Paris Region and of Paris Region Mobility, says "This autonomous mobility service is likely to play a key role for the mobility of Île-de-France inhabitants, tourists, and therefore for the international attractiveness of our Region, which is investing €100 million to develop the infrastructure on which autonomous vehicles will operate. I hope that we will be able to bring this project to a successful conclusion for the Paris Olympic Games".

Cars will drive in a dedicated lane of the motorway, for a 40-minute trip, with between 5 and 10 passengers per trip.

Give Up on L5: Steve Wozniak

Apple co-founder Steve Wozniak has given up on autonomous vehicles, despite previously being a major supporter of their advancement.

Automakers have spent years aggressively promoting autonomous driving technologies, but Wozniak says "I stepped way back on this idea of Level 5. I've really given up. I don't even know if that will happen in my lifetime".

Automotive News reported the quote, noting that Wozniak's opinion has changed dramatically from the days where he optimistically saw Apple blazing the trail for advanced driving technologies. He's been more dubious recently, openly expressing his growing doubts since 2017.

Autonomous vehicles would fare better, he said, "if we were to modify roads and have certain sections that are well mapped and kept clean of refuse, and nothing unusual happens and there's no road work". Weather and road conditions would also have to remain good, and snow, heavy rain, potholes shouldn't exist—since we're dreaming.

So, is Woz right? We don't have a crystal ball, but a diversity of opinion will always help the industry to progress.

The Design Lounge

Toyota Design Language Evolution: E Drive (Prius, Mirai)

Introduced just before this year’s Tokyo motor show, the second-generation Mirai represents a shift in Toyotas design language regarding their E-Drive (hybrid, hydrogen) vehicles to a more upmarket philosophy and away from a specific E vehicle aesthetic. To better understand why they have steered in this direction, let's take a short historical overview of this line and how E Drive vehicles stylistically differentiated from Toyotas with traditional drivetrains.

GEN 2 MIRAI

The newly introduced Mirai has moved away from its predecessor by locating the cluster/display into the traditional location just in front of the steering wheel while also integrating the central HMI display into the cluster unit. Along with the asymmetric construction of the center console, this has created a driver-focused environment that is a thematic departure from the centrally located displays that defined the interior of its predecessor.

GEN 1 MIRAI

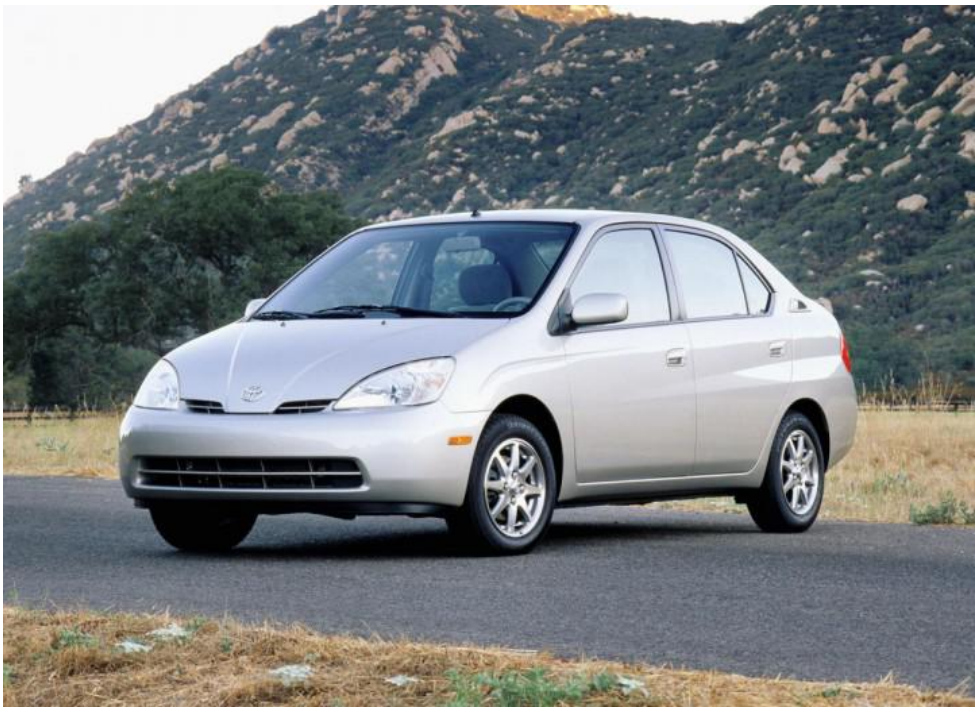
This first Mirai was an expansion of Toyota's Prius line, and the visual aesthetics that were established to differentiate E-Drive cars from traditionally-powered Toyotas. Key aesthetic features were purposely done so the buyer could "advertise" their purchase of a hybrid or hydrogen powered vehicle. This established a strong thematic presence for Toyota's E-Drive vehicles without needing to create and inflate another brand identity. Contrast this with BMW, for example: when they launched their E-Drive range with the i3 and i8, decided that both a sub brand (i series) and visual aesthetic were required.

I3

I8

It will be interesting to see how BMW's future design language for their E-Drive vehicles will be implemented, now that they will be stopping production of the i3 vehicle line.

The original Toyota Prius hybrid was fundamentally based on their Corolla platform architecture, as can be seen below. To differentiate their new hybrid drivetrain—and to save money on left-drive and right-drive versions of the initially low-production vehicle—the instrument cluster was placed in the center of the vehicle. This inherently created a more 'social' space, less isolative of the driver. By moving the information out from directly in front of the driver, that space was opened up visually to help create a unique brand aesthetic.



Gen 1 Prius exterior

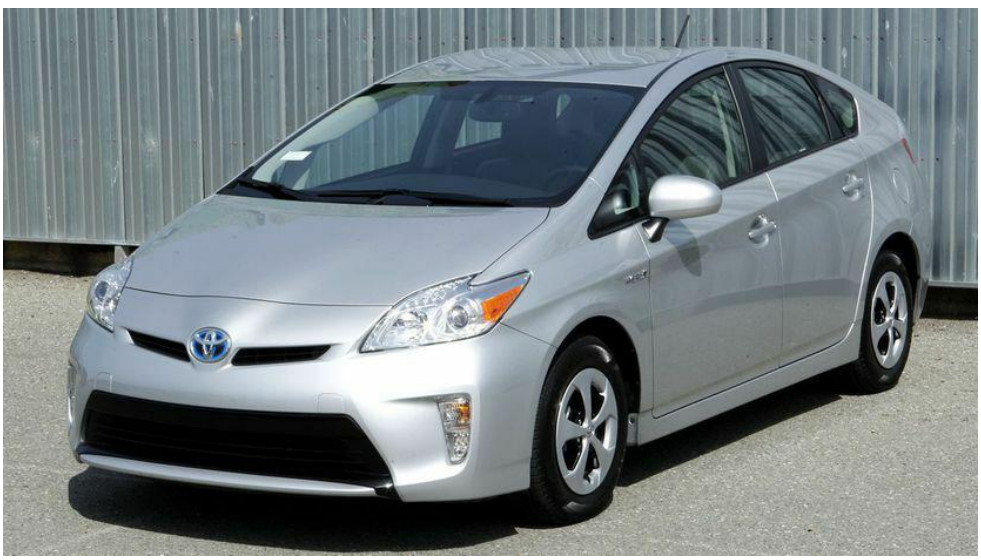
Gen 1 Prius interior

The evolution and refinement of the second Prius moved further away from the Corolla underpinnings and a bit more upscale. The dynamic triangulated lines of the exterior were not carried over on the interior, like the Gen 1 model, but a display cluster more integrated at the base of the windscreen then allowed the central display to protrude and be more prominent—a forerunner to today's tablet-type center displays.

Gen 2 Prius exterior

Gen 2 Prius interior

As the overall E-Drive vehicle aesthetic was established with the previous two Prius vehicles, Toyota then refined a slightly more traditional aesthetic. The triangular lines of the exterior were still dominant—though slightly softened—but the interior moved away from the strong centrally oriented theme by the addition of a center console, shifter, and asymmetric visual towards the driver. The central- and high-mounted cluster also gained a brow and started to protrude from the instrument panel.



Gen 3 Prius exterior

Gen 3 Prius interior

With Toyota introducing the Mirai, the Prius also moved towards this new aesthetic so both E-Drive vehicles remained cohesive. The more angular and detail-oriented exterior contrasted greatly with the smoother contours and higher material quality of the instrument panel. The high-mounted cluster now protruded from the instrument panel as a standalone element, along with the center display, that contrasted with the round soft interior surfacing.

Gen 4 Prius

Gen 4 Prius

You can clearly identify the maturity and design progression that Toyota developed regarding their E-Drive line up and I would expect that the next generation for the Prius would also build on what the latest Mirai represents.

General News

PSA–FCA Merger Plan Announced

Fiat Chrysler and PSA Group have announced the terms of a €43bn merger to create the world's 4th largest automaker and help spread the costs and efforts involved in developing electric and autonomous vehicles.

Shareholders of each automaker would own 50% of the combined operation, the companies said in a joint statement on Thursday. A binding agreement could be finalized within weeks. The combined company would be based in the Netherlands, which is the current headquarters of Fiat Chrysler, although it will keep a head office for its North American operations near Detroit. John Elkann, the US-born scion of the Italian family that founded Fiat, would be chairman of the combined company, while PSA chief executive Carlos Tavares would be CEO.

The combined company would have roughly 410,000 employees and annual revenues of €170bn, selling a combined 8.7 million vehicles last year—almost the same as General Motors.

PSA acquired Opel–Vauxhall in 2017 from GM, and Fiat took over Chrysler 10 years ago following the 2008 automotive crisis. Earlier this year FCA made and then withdrew a merger proposal to Renault.

Valeo Plans Biggest-Ever R&D Hub

French-based auto parts conglomerate Valeo plans to build its largest ever research and development facility in the Chinese city of Wuhan. The Valeo China R&D Center will include 14,000 m² of office space and employ over 1,000 engineer and researcher employees.

Based in the Wuhan Economic and Technological Development Zone, the facility will extend Valeo's existing research hub in the city, built in 2017. The new center will focus on automated parking solutions for complex parking scenarios, and Valeo hopes to have its products in Chinese cars sometime next year.

The company invested €7m in the original facility, which spans 8,000 m² and mainly researches lighting technology, vehicle comfort, and assisted driving.

Founded in 1923 in Saint Ouan, Valeo has 186 production bases and dozens of research labs spanning 33 countries. It lists most of the world's automakers among its customers, and saw €19.3bn in revenue last year. The firm entered China as early as 1994 with a local joint venture producing automotive air conditioning systems in Hubei; China is now Valeo's largest single market, with sales making up a quarter of its global total last year and continuing to rise fast.

Faurecia to Buy Out SAS Venture from Continental

Faurecia has agreed to buy full control of the SAS joint venture it runs with German auto group Continental, in a deal which should boost the company’s profits.

The SAS joint venture was established in 1996, and the company has become a key player in complex interior module assembly and logistics; 2019 sales are expected to reach around €700m. SAS employs 4,490 people in 19 facilities in Europe and North and South America.

Faurecia will buy the remaining 50% stake in the venture from Continental for €225m, with the takeover immediately accretive to its operating margin, net income, and return on capital employed.

This project will expand Faurecia's systems integration offer to cover all interior modules as well as Faurecia's new product lines such as displays, electronics, sensors and thermal management. The addition of SAS core competences in systems integration and complexity management is also expected to strengthen Faurecia's just-in-time plant network.