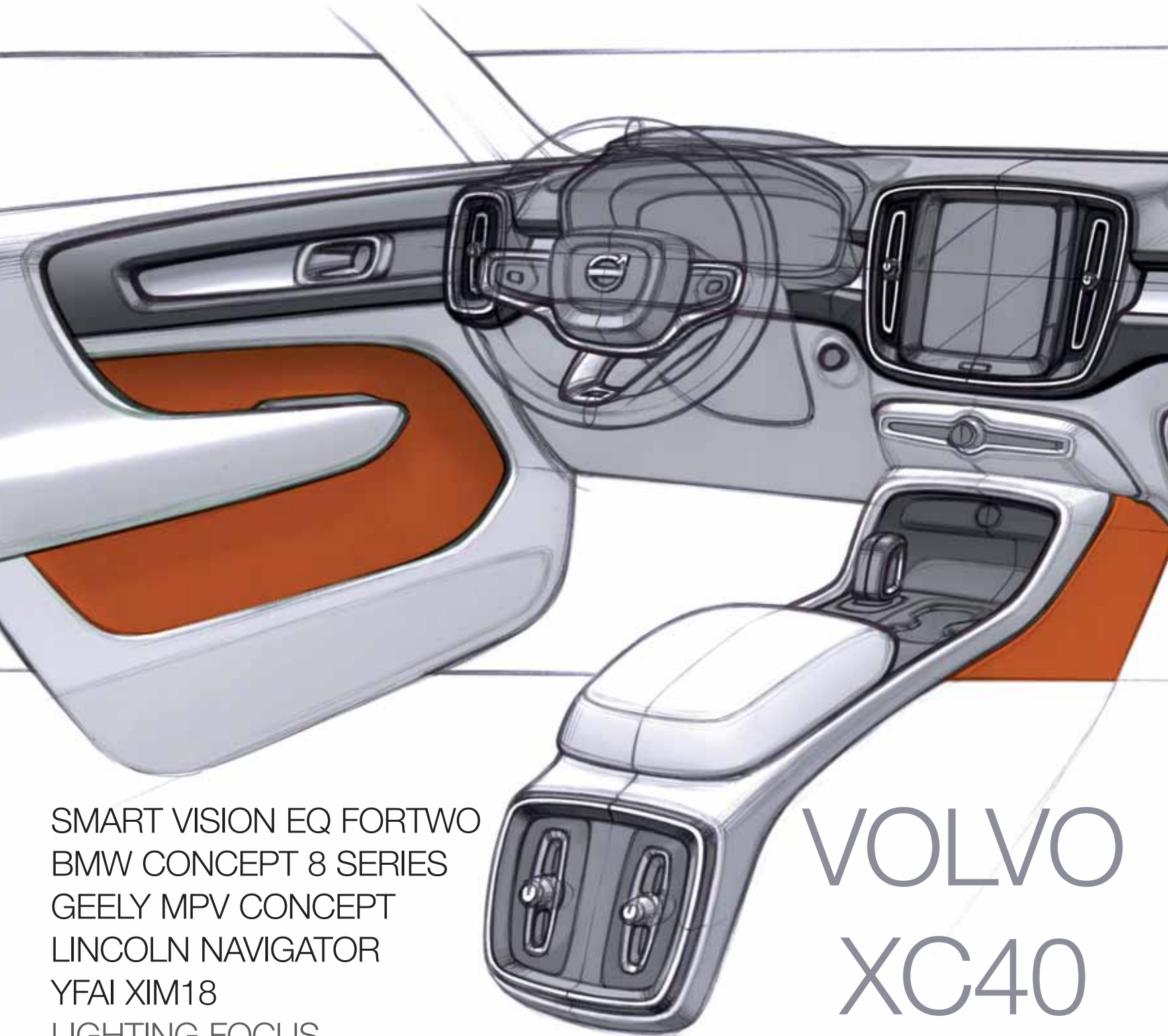


interior motives

AUTUMN 2017



SMART VISION EQ FORTWO
BMW CONCEPT 8 SERIES
GEELY MPV CONCEPT
LINCOLN NAVIGATOR
YFAI XIM18
LIGHTING FOCUS

VOLVO
XC40

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interior motives

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WELCOME

We're talking a lot about the challenges – both creative and technical – of designing interiors for autonomous cars, but of course, there's no one answer, nor any one type of driverless vehicle, and as we saw at the Frankfurt motor show, diverse proposals are emerging. Nonetheless, the development of nearer-term, human-driven production vehicles continues. Yet these are not necessarily mutually-exclusive programmes or disciplines: we're certainly seeing some parallels and shared approaches. Good interface and UX design, clever packaging and comfort, for example, should feature in both autonomous and traditionally-driven vehicles – and we'll continue to look for the best representatives of each.

Farah Alkhalisi, Editor

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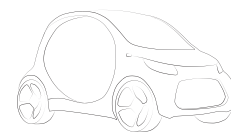
At home with Renault, new interfaces from Audi and Jaguar; our Frankfurt show highlights – and purple lights...



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Smart Vision EQ ForTwo

A glass ball on wheels, a pearl: these inspirations shaped this shared, fully-autonomous city car for 2030



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Simplified forms and some adventurous colour and materials: this isn't just a smaller XC60 or XC90, but a crossover with its own distinct character



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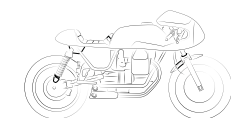
Representing BMW's latest 'precision and poetry' design phase, it's a clear preview of the upcoming production model



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5 INSPIRATIONS Sergio Loureiro

Chery's interior and UX/UI design director has an international, era-spanning outlook and a love of art deco: he tells us about his stylistic stimuli



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Renault Symbioz

Both figuratively and literally part of the conceptual house it was displayed within, this autonomous, electric family car is integrated into the domestic sphere via its energy storage capability, IoT-enabled communications and design elements: its multi-modal interior matches the living room's. Renault worked with a number of product, furniture and homewares designers to create textured felt seats, porcelain tableware and trim details, and accessories such as cushions and a removable rucksack, reinforcing the home-car relationship and shared eco-system. We'll have the full story on the Symbioz in the next issue of *IM*.



Audi Aicon

Pushing the driverless car interior a stage further, the wraparound, teak-trimmed cabin of the Level-5 fully-autonomous, 5.4m-long Aicon concept has no steering wheel at all, not even a fold-out device, no pedals, and no traditional IP: backlit smart surfaces plus a personalised electronic assistant replace switchgear, buttons, instruments and dials. Swivelling lounge chairs and a slide-out rear bench allow for different layouts and high comfort.



Borgward Isabella

Highlighted by magenta ambient illumination and bold colour and trim, the flamboyant Isabella's interior was notable for its equally adventurous forms: the overlapping 'scarf' of two OLED touchscreens in the centre console, the 'surfboard' display, the slim blade-like IP and sweeping, flowing lines throughout.



Jaguar Sayer

Premium-level car-sharers won't want anyone else's grubby hands on their steering wheel – so Jaguar Land Rover envisages a sculptural AI-enabled, voice-activated and fully-connected device which drivers can keep at home. It's named after Jaguar designer Malcolm Sayer, who worked for the company 1951-70.



Honda Urban EV Concept

We loved this super-minimalist city car, and its interior is suitably stripped-out too: no centre console, simple bench seating, but a full-width display plus further info screens in the doors. High-tech, low clutter.





SMART VISION EQ FORTWO

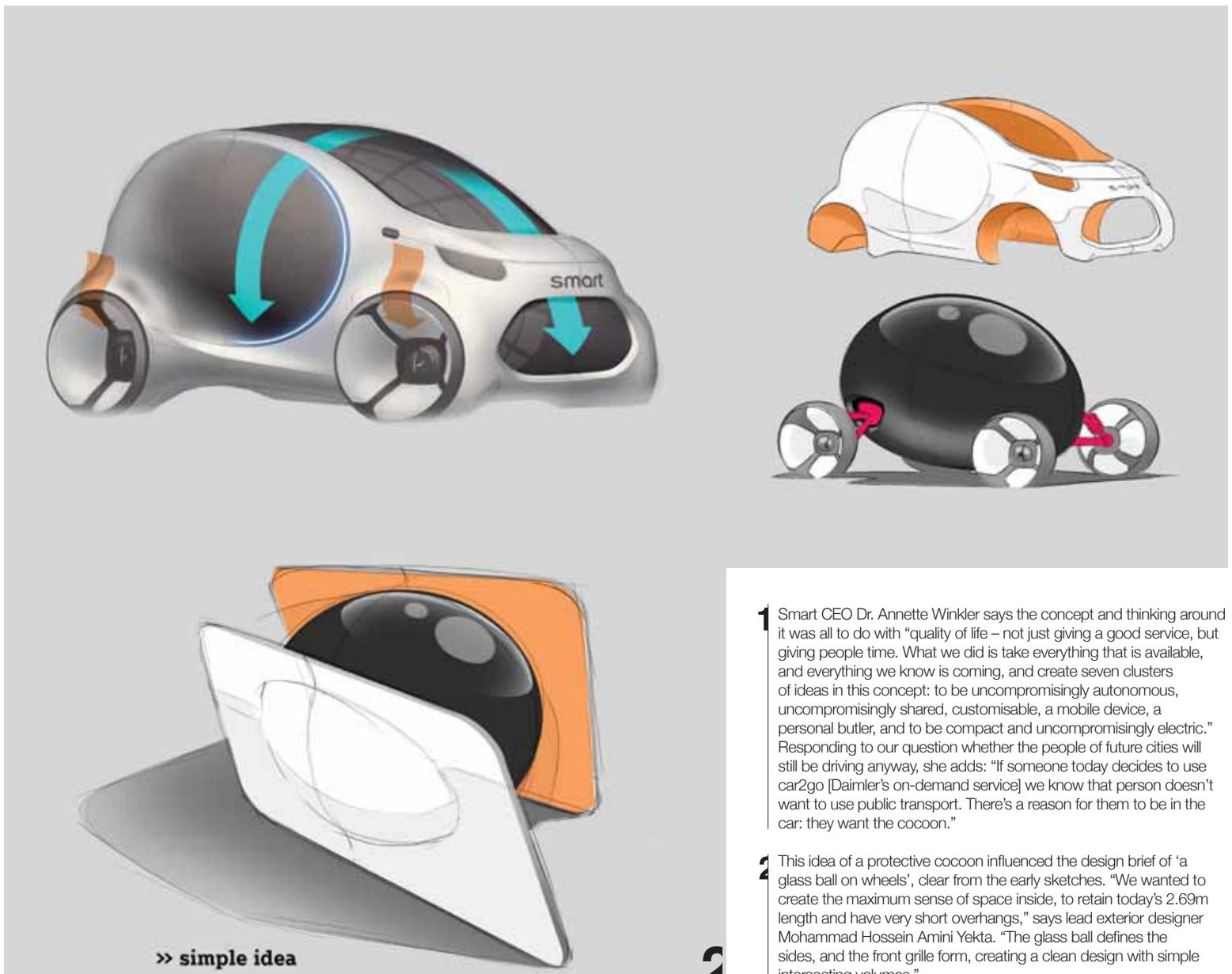
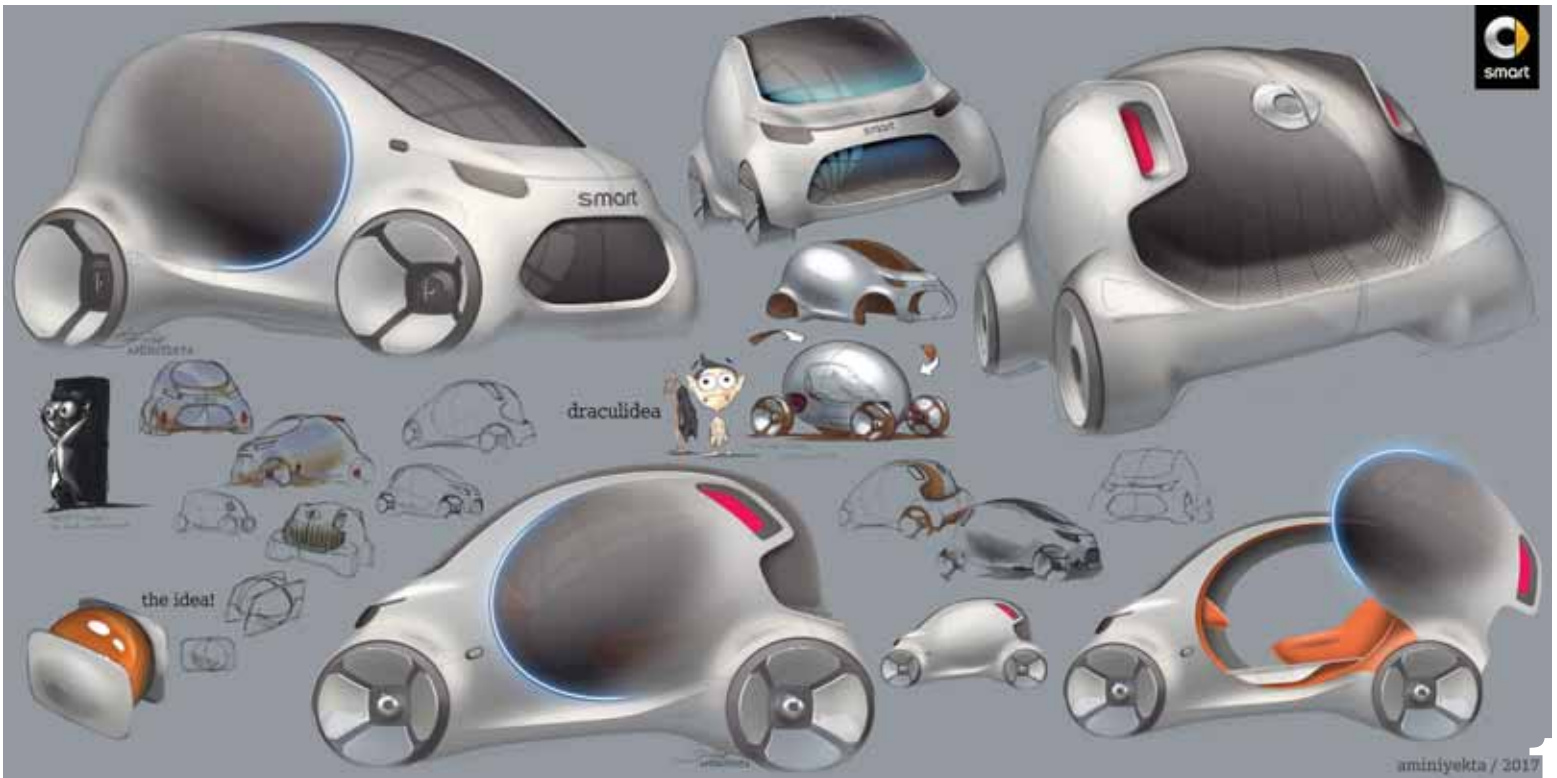
| | |
|----------------------------------|----------------------------------|
| Vehicle type | Concept / autonomous city car |
| Chief design officer, Daimler AG | Gorden Wagener |
| Design director, brands | Kai Sieber |
| Senior creation manager, brands | Bertrand Janssen |
| Lead interior designer | Adrian Rivinius |
| Advanced digital designers | Arthur Gängler, Christian Pecher |
| Project started / completed | October 2016 / July 2017 |
| Launch | Sindelfingen / August 2017 |

Text | Joe Simpson

A concept for a Smart of 2030, the Vision EQ ForTwo needs neither steering wheels nor pedals: its Level 5 full autonomous-drive capabilities mean that its interior can be thoroughly rethought. “In the Mercedes-Benz F 015 [*IM: Spring 2015*] we had a steering wheel and pedals, so you could choose to drive,” says Arthur Gängler, Daimler advanced digital designer. “Here, it’s about going from A to B. The target is the destination, not the driving. Take the pedals and wheel away, and people can concentrate on other things.”

This is more than just an exercise in in-car information and entertainment for the autonomous age, however: the Vision EQ ForTwo represents a wider outlook on future mobility and extensive research within and beyond Daimler. “We talked with architects, city planners, people working on AI, to create pictures of future cities, to understand what mobility and cities will look like in the future,” explains Dr. Marianne Reeb, head of Daimler’s Research for Society and Technology group. “In 2025 we’ll be at the point where costs will make [commercial] sense for fleets of autonomous cars. Beyond 2025, with autonomous driving in shared fleets, car-sharing will become much more commonplace. See these things [autonomy and sharing] together, and from 2025 on we have a revolutionary development of mobility.”

The Vision EQ takes the existing car2go car-sharing concept several stages further, too, thanks to its autonomy plus swarm intelligence: it can be summoned to meet its passengers, aided by predictive data on where demand is likely to be; it can take itself off to dock for battery-recharging; and it can feed electricity back to the grid if required. It’s also designed to be hailed by individual ride-sharers who may not already know each other.



1 Smart CEO Dr. Annette Winkler says the concept and thinking around it was all to do with “quality of life – not just giving a good service, but giving people time. What we did is take everything that is available, and everything we know is coming, and create seven clusters of ideas in this concept: to be uncompromisingly autonomous, uncompromisingly shared, customisable, a mobile device, a personal butler, and to be compact and uncompromisingly electric.” Responding to our question whether the people of future cities will still be driving anyway, she adds: “If someone today decides to use car2go [Daimler’s on-demand service] we know that person doesn’t want to use public transport. There’s a reason for them to be in the car: they want the cocoon.”

2 This idea of a protective cocoon influenced the design brief of ‘a glass ball on wheels’, clear from the early sketches. “We wanted to create the maximum sense of space inside, to retain today’s 2.69m length and have very short overhangs,” says lead exterior designer Mohammad Hossein Amini Yekta. “The glass ball defines the sides, and the front grille form, creating a clean design with simple intersecting volumes.”



3

4 And in turn, of course, this idea was carried through to the cabin. Lead interior designer Adrian Rivinius says that the question they wanted to answer here was 'how does it feel to be inside a pearl?' "The whole car is like a glass pearl," explains Kai Sieber, Daimler's design director, brands. "The front display is also part of that, if you follow the line of the windscreen. The whole idea is that in your pearl you're protected, you have the maximum space, and on the outside you just have wheels in the corners." Rivinius adds: "We wanted to really convey a sense of space, even within a very small car to create a spacious feel – something that carries through all Smarts, and which we refer to as the Smart/body index."

"We started with an empty shell and kept it as empty and pure as possible, to enhance our already magnificent body space index," adds Sieber. "So we added just a floating, superlight lounge sofa and the big display. Very few features link the elements together."

Sieber says of the development process: "We started the concept phase in October 2016. We spent more time than usual, to discuss the overall story and user experience for the people inside and outside the car. After an intense sketch phase, three sketch models in scale 1:4, we froze the design around February 2016. The prototype was running by July."



4



1 The user interface is reduced to a single 24-inch (585mm x 156mm) cross-cabin screen which is controlled via smartphone app or voice commands. "A Level 5 autonomous car is radically different, we can get rid of all the conventional pedals and wheels," says Adrian Rivinius. "A black-panel display is actually all you need to interact with the car." Arthur Gängler explains further: "This is not a touchscreen. Someone is going to order the car with their phone – it's in their hand – so it doesn't make any sense to make them put it away. So we're using their smartphone to interact in the car."

"We thought about giving each passenger a single screen," Gängler adds. "But we will know the interests of the people who are going to be in the car, so why not find the common interests and share them? Of course, people will take rides on their own too, but we are trying to present this sharing as an advantage." The car's first hirer can, for example, get credits on their account for picking up a second passenger, to encourage the shared use of the car. They can choose who to pick up based on their user profile and travel plans, and the display then shows some shared interests (Daimler suggests concerts recently attended, or sports that they play) to aid conversation.

At each end of the display are small four-inch (102mm) screens giving welcoming messages, for example, and projectors (which look like speakers): when the car is not in use, or if occupants want privacy, the side glass can be turned opaque and further personalised messages or advertisements projected onto the door panels.

Gängler gives further context: "Our department used to be focused on the things you see and touch inside the car," he says. "But for the past few years, we've been much more focused on the wider user journey experience – what happens before and after someone's in the car."

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1 The sense of space is enhanced by the super-thin screen. "We wanted something very precise, and it's surrounded by the rose gold elements; we get a nearly seamless transition from metal to screen," says Adrian Rivinius. This reflects the aim to give Smart a more grown-up look and create a mature experience. "The Vision EQ resembles a piece of jewellery," adds Mohammad Amini Yekta. "There's a more premium look here, created by the glass next to the white body, which we set off with rose gold detailing."

2 The black screen sits "in contrast to a very soft and cosy seat, which is made up of very fluent surfaces," Rivinius notes. "We wanted it to be easy to ingress and egress [get in and out], and every detail and object is tailored for shared mobility use. The armrest pops up out of the sofa-seat, so you can split the seat to have a bit more privacy."

3 While white may not look like the most sensible choice for a shared vehicle, Rivinius points out that "the seat covering is an environmentally-friendly artificial leather that is easy to clean. You can even write stuff on it with a pen and wipe it off. The floor is made of a durable 3D-patterned rubber material, which is also easy to clean." And further attention to hygiene: not only does the smartphone/voice-activated interface mean no buttons or switchgear to touch, there's an anti-bacterial handwash dispenser on the edge of the seat (another rose gold detail).

There's no trunk in the Vision EQ – users with luggage would just use the car alone – but bags and other items can be secured on the floor under blue rubber straps, or put under the seat, in pockets or in the armrest. A Smart interior should combine both functional features and be fun to use, says Rivinius, and the design fun can be seen with the central strap: "We wanted to show a way of strapping things to the floor, and in the original sketches drew a teddy bear. The management loved it, so this made it all the way to the concept," he grins. "The centre strap, the pockets which are flexible, and the handle in the headlining, which also resembles the circular light strip around the circular side glass: these are all part of our character."

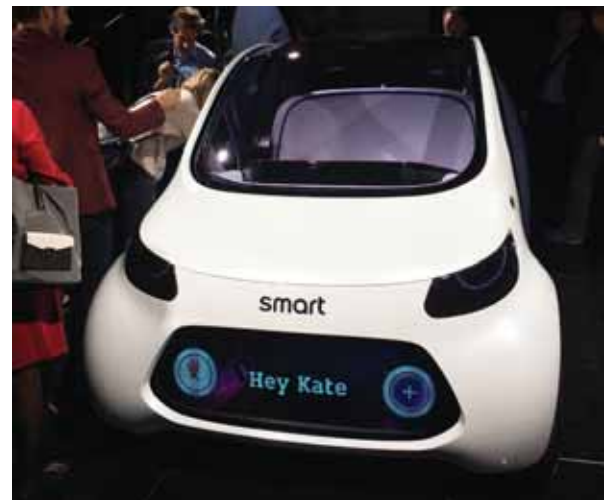
There's a practical aspect to the straps and pockets, too, says Kai Sieber: "When something is stored, the flexible surfaces bulge out and you right away notice the change in the otherwise featureless surfaces. That helps you to not leave behind your belongings, as could happen easily in a classical glovebox." Important, in a shared vehicle likely to experience a high turn-over of users.



4 It's easy to get in and out of the tiny Vision EQ through the wide apertures created by the wing-like pivoting doors. These not only save space in narrow parking bays, but could lessen the chances of hitting ['dooring'] cyclists or pedestrians.

When *M* caught up with the Smart design team again at the Frankfurt motor show, Bertrand Janssen, Daimler's senior manager for creation, brands, put the concept back into wider perspective again: "In the past, a designer only had to think about the vehicle: now they have to think about the infrastructure and environment," he said. "It's not just about static elements any more. We are slowly getting used to the idea that we are selling mobility, not just selling metal boxes."

His colleague Kai Sieber concluded: "These are very different discussions going on. For us, it's a paradigm change. As young guys, we were car nuts, and now we are talking about selling services and so on. It's very interesting – but challenging."



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Our view: It's not just passenger interaction that the UX designers explored, but the city the Vision EQ is moving within, so it sports a series of exterior elements capable of interaction. The most overt is the front 44-inch screen, which replaces the grille, projecting personalised information and communicating with the outside world — the team is exploring how a new user recognises it's their car, and how the car interacts with pedestrians. In place of headlights, an anthropomorphic projection of eyes can wink, for example, or gesture that it's safe to cross in front.

In profile the design is dominated by the circular DLO-cum-door. To open, this shuffles out laterally, then arcs up and back around the axis of the rear axle. While letting as much light into the cabin as possible, it can also become opaque for privacy, or be used as a display when the car's not in use; part of the central idea that in the future a car should 'give something back to its city' — weather information, local football results, details of local events or exhibitions, perhaps.

The designers retained the present-day Smart's two box profile, with a distinct inflection point between screen and 'hood' surface — which firmly roots the Vision EQ in the lexicon of a present-day car. Nonetheless, the conceptual form isn't without interest, the curved 44-inch front grille/screen visually carrying through the idea of a ball's curvature into the front fascia, the white body surface wrapping around like a protective shell and creating a strong contrast with the highly reflective black. It's also a nice change to hear designers from a German firm talk about the need for cars to be approachable and friendly, although the composition of the DRG is slightly confusing: the hood surface chops off the top of the 'headlamps' (digital projectors) to give the Vision EQ a distinct frown.

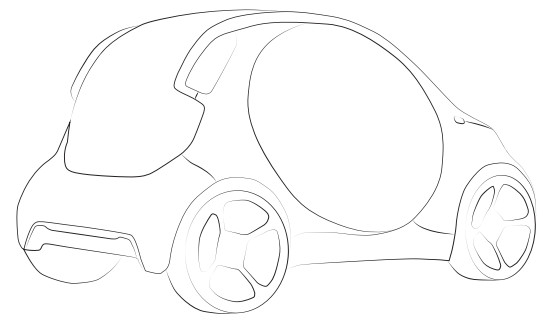
What's most interesting, though, is that the Vision EQ shows just how much of an asset the Smart brand could be for Daimler in the future. Over 25 years ago, Swatch's Nicholas Hayek conceptualised a 2.5m-long, electric, on-demand city vehicle capable of transporting two students and a crate of beer across a city: though Daimler has struggled to turn Smart into a commercial success, the maturation of the necessary technologies may now finally make good on that vision.

Joe Simpson

SMART VISION EQ FORTWO

| | |
|--------|--------|
| Length | 2699mm |
| Width | 1720mm |
| Height | 1535mm |

Read the full design development story online:
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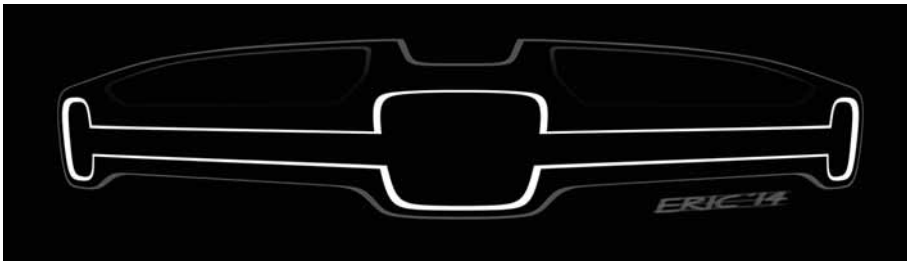
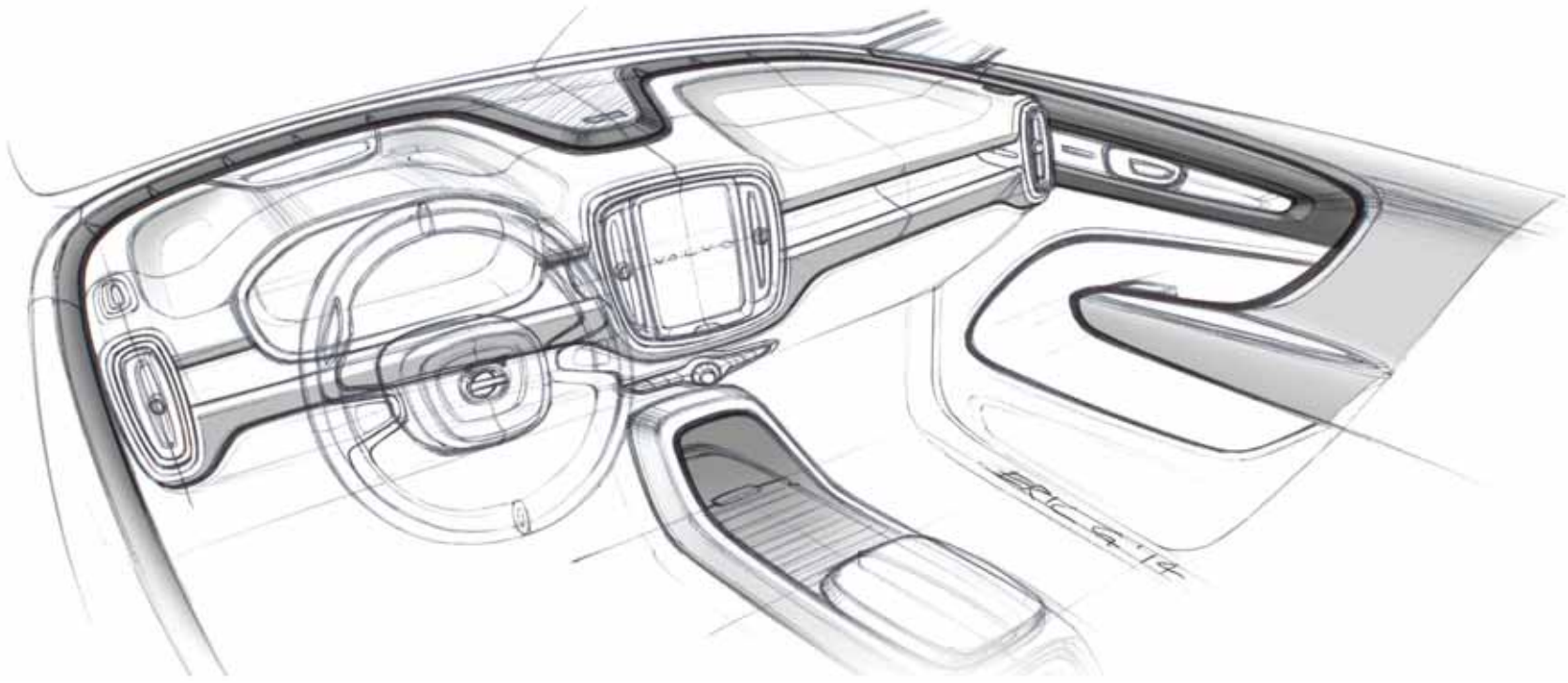
When the covers were whipped off the XC40 at its launch during Milan Fashion Week in September, its shape came as no surprise: its exterior had been very closely previewed by Volvo's 40.1 concept shown in May 2016. This was very deliberate, giving potential customers over a year to digest its new chiselled form language quite distinct from that of other recent Volvos.

There was a goal of creating the XC40 as a cousin rather than a close sibling to the larger XC90 or XC60, since as a smaller vehicle, it needed to appeal to a broader, younger buyer demographic, says senior vice president of design Robin Page. He adds a further analogy: "We see the 90 and 60 cars as being like a lion, with authority and potential energy, but this one is more like a bulldog."

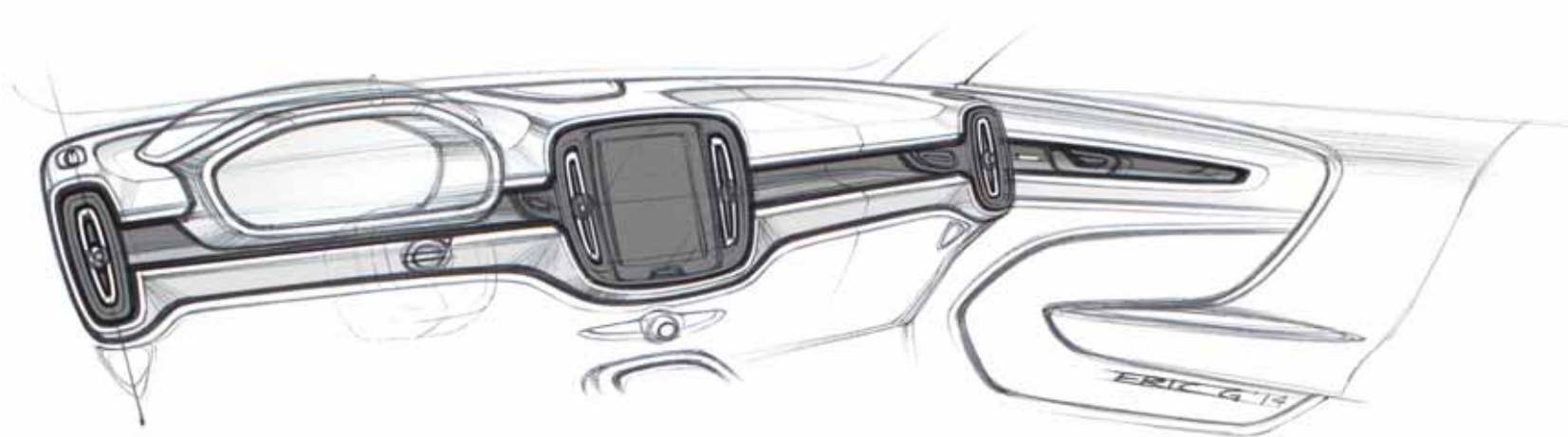
VOLVO XC40

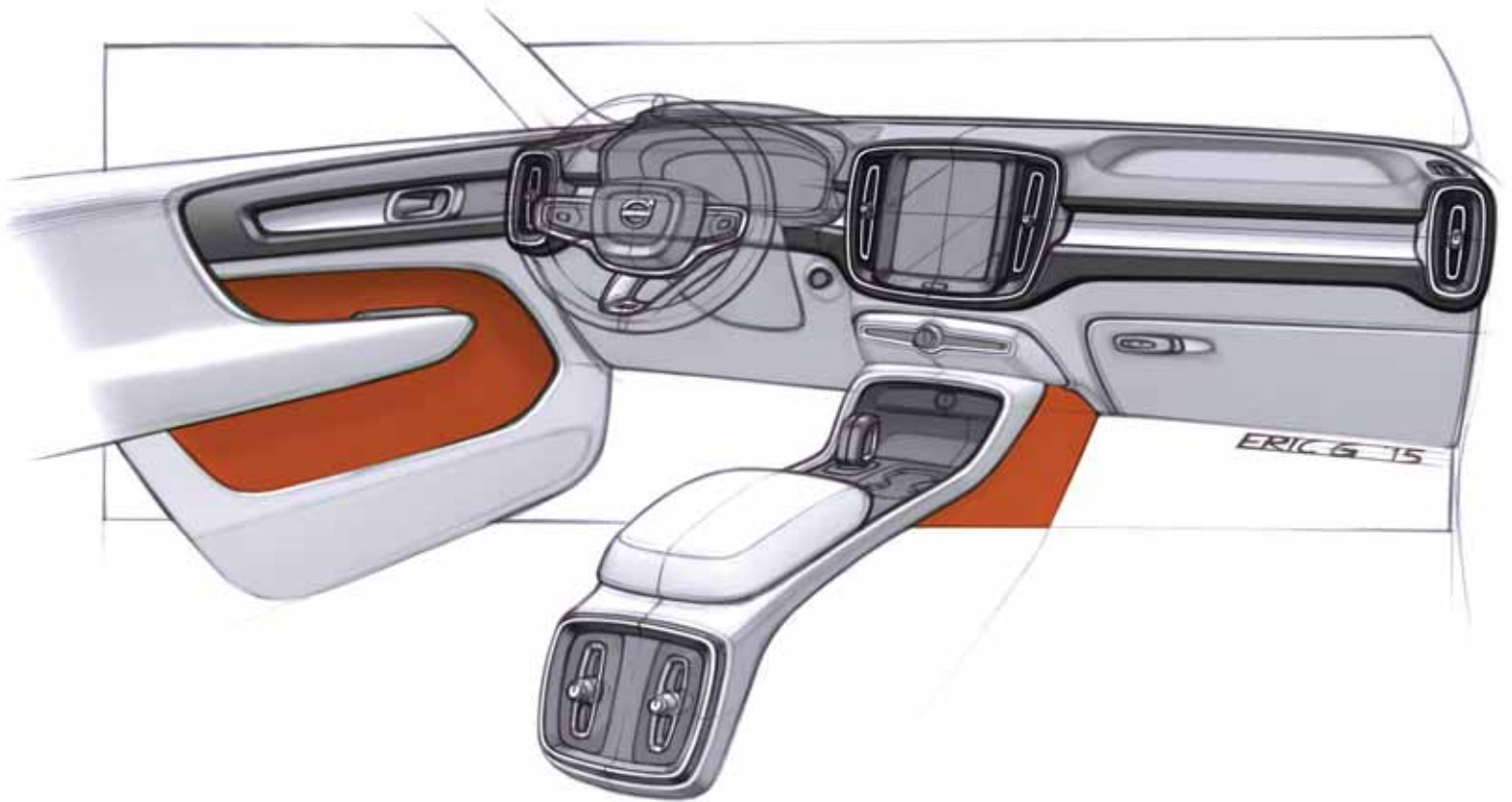
| | |
|--|--|
| Vehicle type | Production / compact SUV |
| Chief design officer | Thomas Ingenlath |
| Senior vice president of design | Robin Page |
| Vice president, interior design | Tisha Johnson |
| Senior design manager | Conny Ewe Blommé |
| Lead interior designer | Eric Gunnarsson Hörnsten |
| Interior designers | Louise Temin, Todd Levy, Per Ryberg |
| Vice president, colour and material | Ebba Maria Thunberg |
| Senior design manager, colour and material | Sylvie Buller |
| Colour and material designers | Sara Erichsen Susnjar, Erik Åleby, Linnea Karlsson, Matilda Johansson |
| Project started | January 2014 |
| Launch | Milan / September 2017 |
| Supplier | Component |
| Dinamica | Microfibre textile |
| Elmo | Nappa leather |
| TMG | Materials |
| Text | Lem Bingley |





The different character of this all-new model allowed the team an unusually blank slate when brainstorming began in late 2013 (prior to the project's formal start date in January 2014). Robin Page, vice president of interior design at the time of the XC40's gestation, says that "it was one of those projects where the first sketch happened, and we jumped on it and said yes, that's it, stop there!" He explains that lead exterior designer Ian Kettle "approached it graphically, then started chiselling surfaces out rather than putting lines in. That's what we saw in his [exterior] sketch, and it all carried on from there."

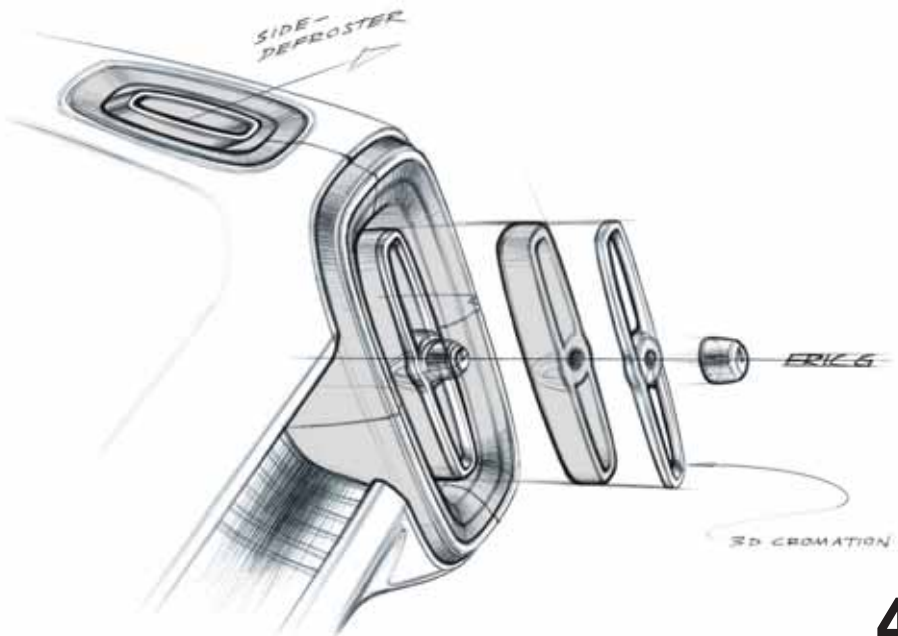
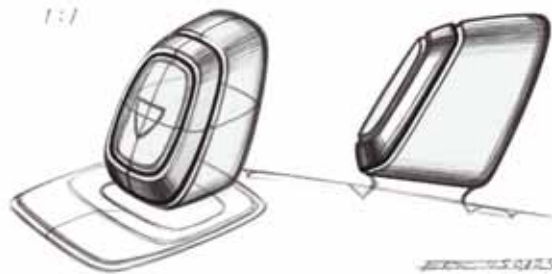
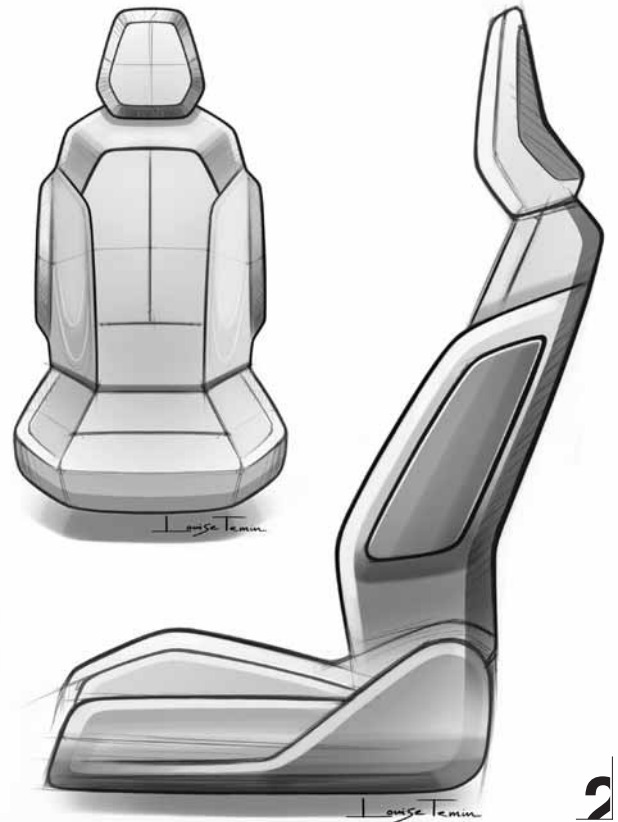




Taking a similar approach for the interior, the cabin “matches the language of the exterior. It’s about strong graphics and then cutting away the surface,” Page says. A theme for the IP was put forward by lead interior designer Eric Gunnarsson Hörnsten of an archipelago of three islands, connected by bridges – an appropriate reference given Sweden’s coastal geography, and forms clearly seen in the early sketches. Gunnarsson Hörnsten, who also came up with the core designs for the centre console and door cards, notes that “a bit more visual loudness was allowed”, compared to the 60 and 90 series cars.

Page says of the sketching process: “I always say, describe your design in just three lines. The next stage is to create a sculpture – just the form with no details. From there you can start adding details, which is how Scandinavian design is built up: get back to the rawness of the materials, and how you’re going to solve the problem.”





1 About 11 interior proposals were initially put forward across Volvo's Gothenburg, California and Shanghai studios, six of which progressed to quarter-scale, three-dimensional sculptures. With the final theme chosen, work continued on developing the details and components, such as the seats and steering wheel in the sketches here by Louise Temin, and the Volvo-signature crystal gearshift drawn by Gunnarsson Hörnsten.

2 One constraint which arose was the need to incorporate the nine-inch portrait-format touchscreen – shared with the larger cars – and practical goals were also set by Volvo's product planning department. These included a request from China to create a space to accommodate a box of tissues. "They were pushing us to create clever storage – but we really tried to work it the other way round, so that we designed something [overall] that allowed clever storage," explains senior interior design manager Conny Ewe Blommé. "It doesn't look like we've created the most practical, storage-oriented car – but once you start using it, you'll really notice that things are all in the right place."

3 A smartphone can stand up in the centre console, while the tray at the front of the tunnel can include a wireless phone charger. And a medium-sized tissue box fits under the centre armrest, behind a small flip-top rubbish bin that was Gunnarsson Hörnsten's idea. "I've always been annoyed by trash ending up everywhere," he says. "I worked on the tunnel for the 90 cars, and I thought next time I work on a tunnel, we're going to have a waste bin!" Storage ideas and solutions were explored along with their colour, trim and materials, an important part of Volvo's design development process.

4 Gunnarsson Hörnsten is equally passionate about the XC40's slim, upright air vents. "We used to have three blades to direct the air, but we've gone down to two in the form of a loop," he explains. "That also echoes the product-design goal we had, with this loop repeated and even mirrored in the side defrosters." The vents were fully developed and resolved by the designers and studio engineers, adds Blommé. This work included moving pivot points back into the depths of the vent, so that the bright chromated loop appears to float, unsupported, in its dark aperture. "We spent so much time perfecting those, to get this jewel-like piece," she says.

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Ebba Maria Thunberg, design director for colour and materials, says that her team also adopted a fresh-thinking approach: "We tried to cut ourselves free from conventions and got inspired by fashion and city life." Quarter-size styling bucks were made of the interior, featuring one side of the IP, one door panel, one floor, with exchangeable decos and seats that could be rolled in and out. "We explored a lot that way," she says.

Mood and inspiration boards were drawn up, including the images on these pages. The upholstery roster includes four different leather colours, including a red finish called Oxide. The name references richly coloured iron-oxide paint used to protect wooden buildings in Sweden, while the shade was also inspired by Gucci fashion items. Options for the deco panel include a lattice of bright metallic oblongs (echoing the diamond-cut finish of alloy wheels) as well as a stylised map of Gothenburg; this was inspired by galoshes embossed with maps of the fashion districts of Paris, New York or Tokyo on their soles.





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1 The XC40's central cluster of screen and vents takes up 25mm less width than the equivalent unit in an XC60, due to the need to fit everything within the smaller vehicle's platform. The touchscreen is also tilted in towards the driver. "The screen was a challenge but it ended up being the biggest screen in the segment," says Eric Gunnarsson Hörnsten. Accommodating its portrait format dictates the height of the IP at the centre, but mass has been carved away either side to liberate a more airy feel. "We pushed everything to achieve as slim an appearance as possible," adds Conny Blommé, adding that the IP's form consciously echoes the car's exterior: "We used a combination of soft sculpted surfaces and really crisp lines."

2
3
4
5 The deco panel ahead of the passenger was originally envisaged as the lid of a storage cubby, but the need to cleanly deploy a big airbag naturally had to take precedence. The final concave format of the dashboard deco strip lends a three-dimensional quality to the vent housings at either end of the IP, and the same curved trim is repeated on the doors, where it helps to guide fingers towards the metal loop of the door release. A number of options are offered for the deco panel, including the Gothenburg map pattern [3]. "Semantically and ergonomically it leads your eyes and your fingers into the door opener," says Gunnarsson Hörnsten. "That means the ambient light there also serves as a function light, to help you find the opener."



4 The design of this part of the door cuts down on parts, with no plastic cup behind the latch handle, for example. Similarly, the interlocking curves of the door card allow it to dispense with a separate door pull. "I thought about how to make a clean door design in a form-follows-function Scandinavian way," Gunnarsson Hörnsten recalls. "Everywhere that's soft, where you put your arm, we made into one part: both to make it ergonomic but also to make a more simplified set-up for production." The void between the negative and positive inner door surfaces creates space for the grab handle, bridged by a spar carrying the window switches.

5 "There was no particular demand to lose parts," adds Blommé. "It was more our wish to simplify the product and make it modern and a little bit different to what had been done before, both within Volvo and in the competitive set. There are traditional ways of resolving a door, and this is extremely non-traditional."

Against the simplified backdrop, the details such as gearshift and vents are magnified and set off to best effect – another key principle in Volvo's interior design approach.





The interlocking curves of Eric Gunnarsson Hörnsten's door concept provided an unusually large canvas for felt door-pocket lining, which as a result has become a striking feature of the XC40's interior, particularly when trimmed in contrasting blonde or orange felt. "When you look across the car you get this very clear sight of it," says Conny Blommé. "At the sketch stage we hadn't really resolved that this was going to be the pocket, we just had an idea that it was going to be a negative shape."

The same felt, made from 100% recycled PET bottles, is also used for the carpet. "In the past, that has been a no-go for a car material designer," Ebba Maria Thunberg adds, noting that Volvo uses it "proudly" in the XC40. The Lava Orange carpet option – splashed across the floor, console and door cards – brings into production ideas from Volvo's Concept Estate, shown in Geneva in 2014. Cecilia Stark, colour and trim designer for that concept, was inspired by the rich red carpets of the classic P1800, Thunberg recalls.

The bright carpet reminds us that Scandinavian design is not all about restraint and light, neutral tones, Thunberg says. "It can be quite bold and confident as well, and not being shy but being proud," she adds. "It's also about daring to reduce, allowing you to concentrate on those things that are most important."



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Our view: Volvo's 40.1 (XC40) and 40.2 (V40) concept cars showcased both Volvo's new Compact Modular Architecture (CMA) platform and the brand's design direction for the next generation 40-series cars. Both were about "really great wheel-to-body proportions, not dash-to-axle, for the CMA", chief design officer Thomas Ingenlath explained at their unveiling in Gothenburg last year, and these more angular designs were "less cliché automotive design and more product design", displaying "more technical, robotic faces, but still with a soul." Certainly, they featured fewer overt curves, especially around the grille, where Volvo's vertical chrome lines were flanked by rows of black squares, which look a little like chunky, geometric chain mail. These could act as part of an active grille shutter system (or hide future autonomous driving sensors).

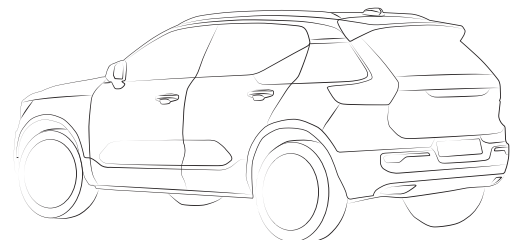
Ingenlath alluded at the time to the fact that the 40.1 was based on the by-then long-finished XC40, and bar the flush front door handles, fancier camera-equipped door mirrors and some minor details, the production model's exterior design appears to have come to fruition little different to that of the conceptual preview. And along with the 'notchback' 40.2 concept, the 40.1 and XC40 suggest something of a return to Volvo's boxier heritage. As Volvo's vice president of exterior design Maximilian Missoni told Car Design News last year: "We proved we could do elegance with the 90 series, but in the 1980s and '90s we had some fantastic models like the 740 and 850 models, and with our new 40 series I think we can tap into that. Rounder elegant elements in the car's sculpture can sit alongside the angular details." Missoni is pictured [above, right] with the finished XC40 and its lead exterior designer, Ian Kettle.

Guy Bird

VOLVO XC40

| | |
|-------------------|--------|
| Length | 4425mm |
| Width | 1863mm |
| Wheelbase | 2702mm |
| Height (with fin) | 1652mm |

Read the full design development story online:
cardesignnews.com



LIGHTING

Used for communication, decoration and brand differentiation, interior lighting technologies are undergoing rapid development and becoming more diverse. For automotive designers, this increases the possibilities both in terms of creating aesthetic appearance and user experience. **Lem Bingley** and **Farah Alkhalisi** round up the latest news and views on illumination





Halo effect

The Vision Mercedes-Maybach 6 Cabriolet was a star of the 2017 Pebble Beach Concours d'Elegance – especially at night, when its white-upholstered interior gave off an ethereal blue radiance from a halo of light encircling the cabin. A transparent centre console and glow from the buttons on the seat upholstery added to the effect.

The idea was to merge lighting and information functions, explains Hartmut Sinkwitz, interior design director at Mercedes-Benz. “The passengers are simply surrounded by a 360-degree OLED display.” While some sections of the ‘halo’ ring provide interactive functions, including navigation and seat adjustment, other areas are simply decorative. As well as an opportunity to rethink switchgear, it’s about conveying emotion, he insists.

The central tube, filled with illuminated filaments, aims to create a visual connection with the electric powertrain at the car’s heart. “The idea was to express the energy flow,” Sinkwitz says. “Customers don’t really get a strong experience with electricity compared to a combustion engine. You start an engine and you hear an evocative sound, especially with a V8 or V12, so in an electric car we need to find new ways to stage the character of electricity, to make it enjoyable rather than having emotion disappear.”

The illuminated seat buttons connect with the luxury brand’s history and add a touch of glamour, and – although this is not yet functional in the show car – could also become active sensors measuring occupant comfort and triggering heating, cooling or massage features. “It’s a nice, very playful, idea that can also be used for many realistic functions,” says Sinkwitz.





1



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Light and data

In many recent concepts, large surfaces have been swathed with digital screens combining display, interaction and lighting functions. Notable examples of this include the full-width touchscreen of the Honda NeuV (CES, January 2017, image 2), designed to be operated by both driver and passenger in this automated shared-use two-seater; and the TFT displays, plus central touchscreen complementing ambient lighting, in the Pininfarina-designed Hybrid Kinetic K750, K550 and H600 concepts (Geneva and Shanghai motor shows, spring 2017, 1). In the Smart Vision EQ Fortwo [see p4], the screen is supplemented by digital projectors at either end of the IP which shine information onto the car's glazed doors: parked ForTws could act as billboards hosting adverts or useful information such as weather forecasts.



Cool blues

Blue remains popular to signify high-tech and environmental credentials; Mercedes-Benz's EQ-series electric cars feature blue lighting, as do the HK H600 and Audi e-tron Sportback concepts [iM: Summer 2017], although perhaps the most comprehensive application of the colour has been in the blue-upholstered Hyundai FE Fuel Cell concept (Geneva 2017, 3).

It's not just about symbolism, however: research has shown that blue lighting can improve mental acuity or sharpness of thought and perception. Audi has been exploring the impact of interior lighting on concentration in partnership with Germany's Fraunhofer Institute for Industrial Engineering, Stuttgart, with reference to optimising the interiors of future autonomous vehicles. The '25th Hour' project [1, 2], named to reflect the potential time-saving offered by autonomy, involved 30 young 'millennial' participants in a static simulator, surrounded by moving cityscape projections and noises. Brain activity was measured while occupants solved puzzles – and diffused blue lighting contributed to improved test results, the researchers concluded, along with fewer external distractions.





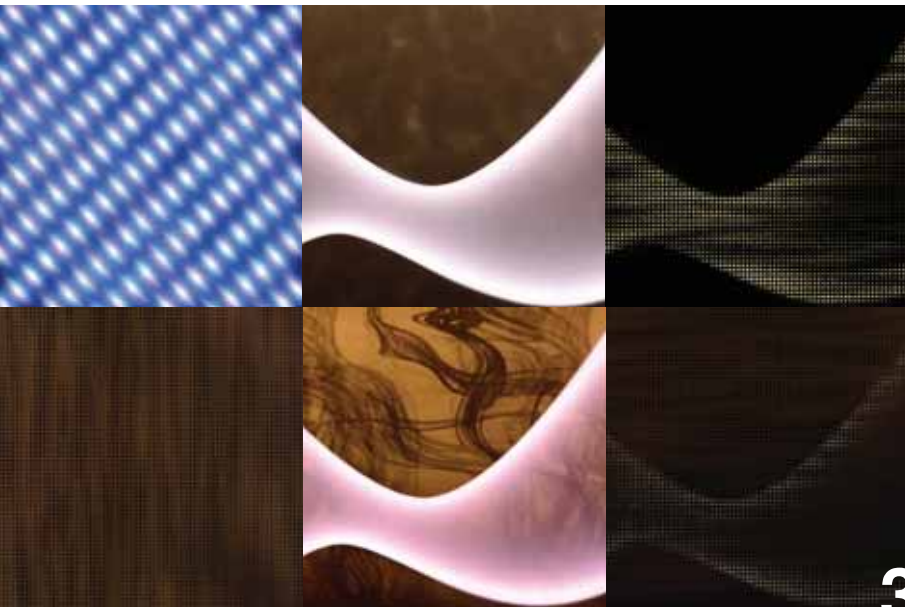
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"Lighting systems are not just showing us the way, they are tailoring new emotions to our driving experience"
Paolo Marzolla, head of FD Group Lighting Division

Flexible illumination

The Rinspeed Oasis concept (CES, January 2017) featured illumination stitched into soft upholstery [1]. The core technology for this was provided by German start-up Carpetlight: a flexible cloth embedded with a matrix of LEDs, connected by conductive threads rather than wires. This fabric can be scrunched up, sat upon, or tied in a knot [2]. "We have no wiring," says Carpetlight co-founder Goetz Schmidt zur Nedden. "Conductive thread is mainly used for medical treatments, not for high-output lighting devices. We invented a way to make high currents possible."

Carpetlight's founders worked in feature-film lighting, their first target market: flexible illuminated textiles have proven invaluable for lighting shots where conventional lamps can't go. "Movie-making is even harder on equipment than the military," notes Schmidt zur Nedden (Carpetlight is also supplying roll-up lamps for army paramedics). And the company is currently working with an un-named car-maker to light the gloomy interiors of closed convertibles: "You can use our technology and still just fold the roof away, you don't have to be careful about breaking anything," Schmidt zur Nedden explains. "The nicest impact is where you dim it down low, so you are not lit up, but the ceiling is bright."



Smart-lit surfaces

Audi's e-tron Sportback Concept [M: Summer 2017] featured electroluminescent surfaces built into the door cards and centre console. Surprising new looks can be created when seemingly plain trim is backlit; Continental, for example, has created a translucent version of its PVC trim material called Acella Hylite [3]. "Different textures bring out different light pictures," says Jens Jünemann, head of surface identity at Continental's Benecke-Hornschnuch Surface Group. "You could use printing to create patterns of light, and we also offer semi-perforation, an embossing technology that can create a pattern of shining spots. If the light is switched off, you see nothing but the basic colour of the material. With the light switched on, you can see the different structures."

Yanfeng Automotive Interiors is working on 'smart surfaces' that combine HMI, heating, lighting and other functions, as showcased in the XiM18 [see p55]. "When you sit in the front, controls are visible in the door, and when the seat slides back, the controls travel across the surface to the back of the vehicle, where they appear on the rear door," says chief technology officer Han Hendriks. "Functions will be invisible when you don't need them, but will appear when you need them."



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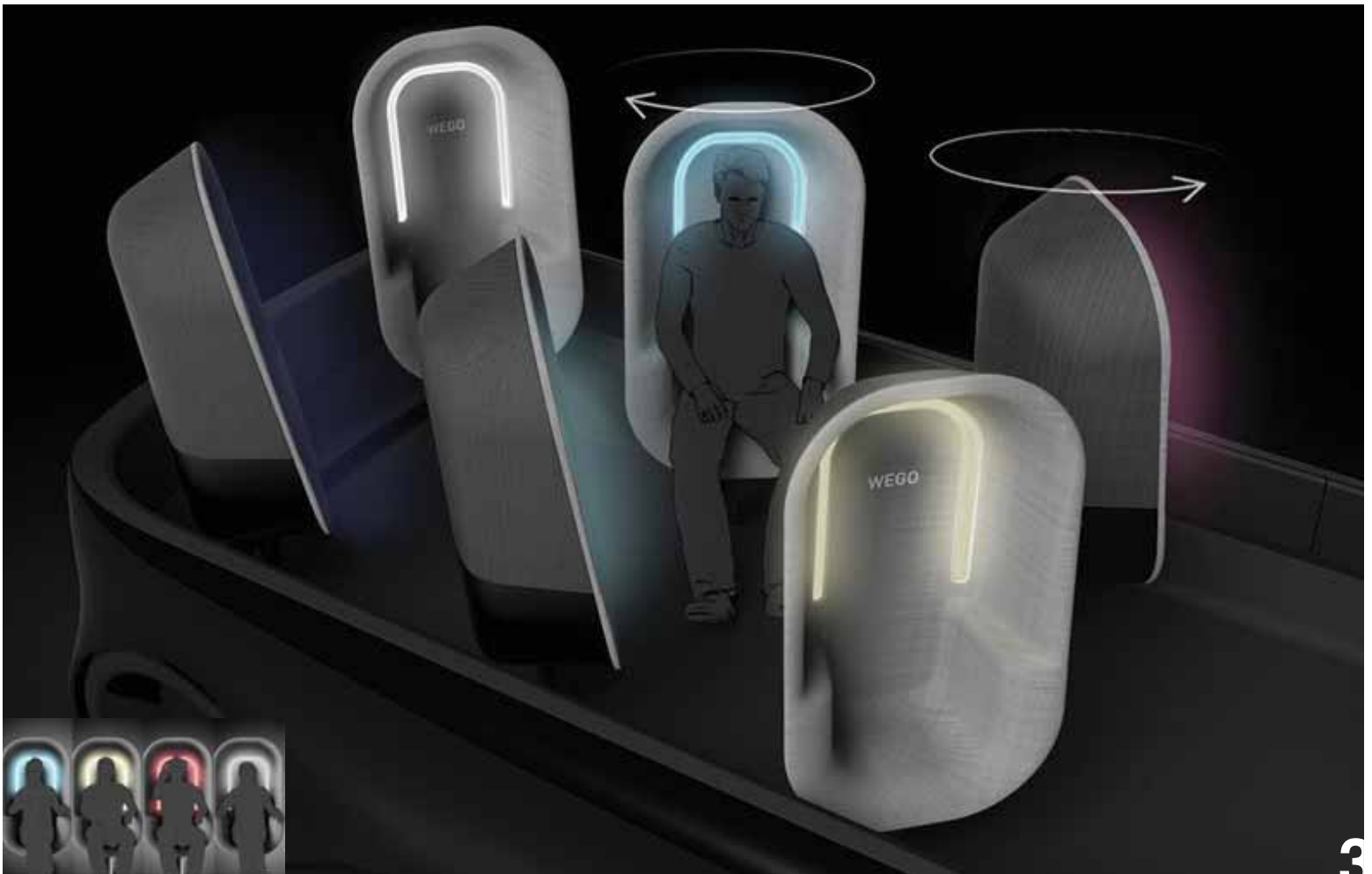
2

Autonomous communication

The Toyota Concept-i (CES, January 2017, 1) makes great use of surfaces with hidden functions [*IM: Spring 2017*]. "Lighting became a really simple, intuitive way to communicate," says William Chergorsky, chief designer at Toyota's Caltex studio. "Whether it's very immediate or an emergency, or a subtle thing, lighting was a great way to do it." Among other applications in the Concept-i, lighting underscores the difference between automated and manual modes. "It came out of a funny conversation about Star Wars and the colours of lightsabres," Chergorsky admits. "Darth Vader has a red lightsabre, Luke has a blue or green one... it sounds silly, but it came out of this oblique source." The Concept-i's illumination diffuses through clean white surfaces with a porcelain-like luminance. "Lighting and the information is behind these very simple ceramic-appearing surfaces," Chergorsky says. Again, "it's just there when you need it and then when you don't, it's gone, and you're left in a more calming space."

The Volkswagen I.D. Crozz (Frankfurt, September 2017, 2), meanwhile, has received a colour-change since its first appearance in Shanghai, its previous violet lighting toned down to avoid a clash with its new glossy red exterior paint; blue and red indicate autonomous and driven modes. Its glass roof panel has embedded gesture-controlled overhead lights: this underline the I.D. Crozz's identity as like "a modern tool, a modern gadget", says Volkswagen's head of interior design Tomasz Bachorski. "I'm sure we will see it [in production cars], because we already have gesture control, and the big glass roofs today, you can already order the lights inside. I think with the next generations we can deliver that." Bachorski points out how, in the I.D. Crozz and last year's I.D. Concept [*IM: Autumn 2016*], the ambient lighting flashes to warn if, for example, a bicycle or an overtaking car is approaching in the driver's blind spot. "At VW it's really important to not just have an effect, not just a light to be a light: it was really important to combine this with a function," he stresses. "It's not just jewellery, you can use it for different things."

Lighting plays a further role in autonomous vehicles for on-demand ride-sharing: the WeGo concept [3], by LUNAR for the McKinsey & Company management consultancy, gives each occupant a seat individually-lit to emphasise their personal space.



Mix and match products

Looking at themes in non-automotive lighting, mixed materials are a strong trend in contemporary products, often further involving a contrast of geometrical shapes with natural or handcrafted elements. Examples of this we've seen lately include the Voie Lights: Stone Edition by Sabine Marcelis for Bloc Studios [4], in which hoops of neon are embedded within stone blocks, exploiting the translucence of marble and onyx to striking effect. And David Derksen's geometrical Aero lights [5] feature an unusual metal foam, this rough-textured material doubling as lampshade and heat sink. "I'm interested in the principles of nature, and specifically materials and their properties," says Derksen. "In the case of metal foams, I looked at what this material is good at: dissipating heat."





1



2

Portable products

Wireless induction has simplified charging of consumer devices, and the same technique can liberate lighting to enable the fitment of portable lamps. Efficient LEDs and lithium-ion batteries have also helped to reduce the weight of dockable and removable lights or torches. Volkswagen's concept of 'physical apps' has included the I.D. Box detachable centre console [1], as seen in the I.D. Buzz show car (Detroit, January 2017): this includes a mobile lighting unit as well as a music system, all you'd need for an outdoor party. Similarly, Toyota's FT-4X concept (New York, April 2017) has a removable in-dash stereo/portable boombox plus a ceiling-mounted detachable flashlight – important for 'lifestyle' vehicles like this and the I.D. Buzz, designed with camping and outdoor activities in mind.

Portable lights are becoming increasingly elegant and sophisticated outside the automotive world, too, and this thinking will no doubt filter into vehicle interiors. A neat example is the Nox lamp [2] by Alfredo Häberli for Astep Design: this can be docked on its powered base or detached for up to 15 hours of mobile illumination.




3

Bioluminescence

Even more conceptually with reference to automotive design, natural and ecologically-friendly sources of light and biomimicry can be deployed. Dutch designer Daan Roosegaarde's Bioglow plants for the Dezeen/Mini Frontiers project (2014) explored the use of bioluminescent bacteria as found in fungi and creatures such as fireflies and jellyfish, and visualised a built environment with glow-in-the-dark trees [3]; Teresa van Dongen, also Dutch, used luminescent octopus bacteria in her movement-activated, 'living' Ambio lamp [4] in which the bacteria are stimulated to produce light. And French start-up Glowee is now aiming to provide self-sustaining raw materials for natural and infrastructure-independent lighting; it is genetically engineering bacteria using DNA from squid, then encasing these, along with nutrients to sustain them, into a transparent shell which offers a range of design possibilities. As communicating eco-friendliness becomes ever more important, such techniques may well be inspirational for designers – if not quite suitable yet for mass-market application.



4

A woman with blonde hair, wearing a brown jacket and a watch, is sitting in the driver's seat of a car. She is looking up and pointing her right index finger at a control panel on the ceiling of the car. The car's interior is dark, and the ceiling panel has several buttons and a small display. The background shows a blurred view of a building with lights at night.

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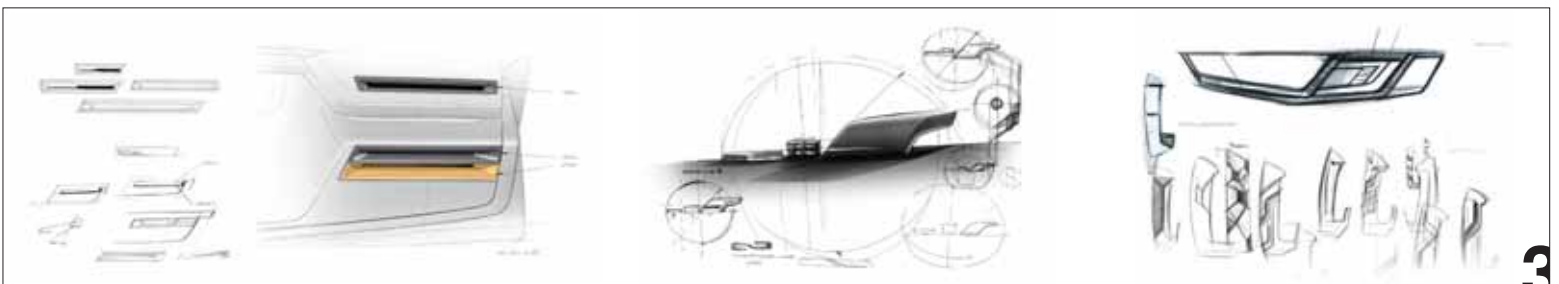
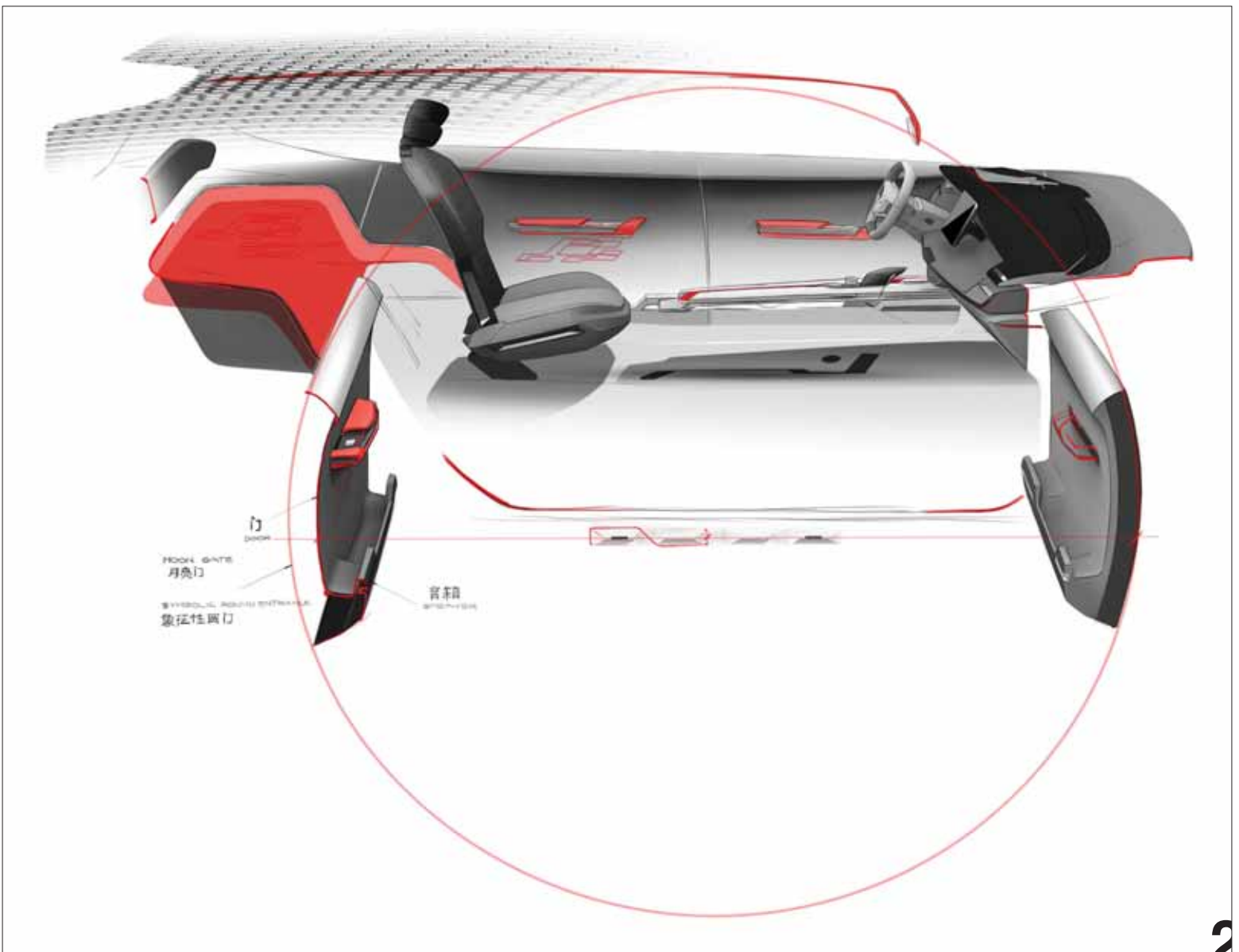
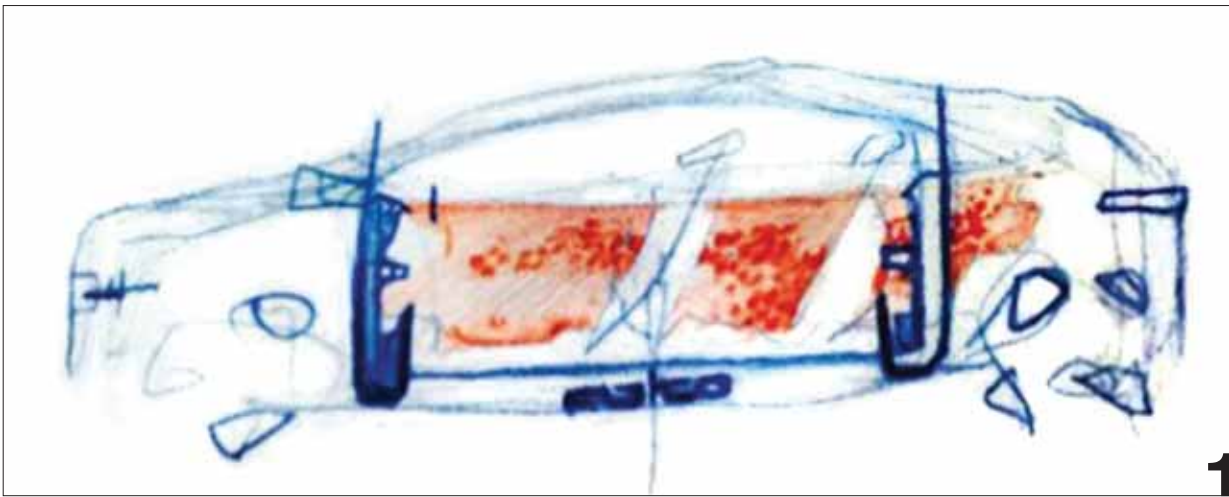
GEELY MPV CONCEPT

| | |
|--|-----------------------|
| Vehicle type | Concept / MPV |
| Executive vice president, Geely Group Design | Peter Horbury |
| Head of Geely Design China | Guy Burgoyne |
| Interior design chief expert | Justin Scully |
| Interior design manager | Zhang Hua |
| Colour and material design | Zhou Feng |
| HMI design | Mark Wang Chao |
| Project started / completed | 2014 / early 2017 |
| Launch | Shanghai / April 2017 |
| Text | Farah Alkhalisi |

The MPV Concept represents over 30 months of work by Geely Design China to research and explore the needs of modern MPV buyers. At a time when SUVs and crossovers have come to dominate the family car sector, there's still a place for MPVs, Geely believes – but only as long as they have the right design values.

“We went through multiple rounds of consumer clinics,” says Guy Burgoyne, head of Geely Design China. “We found that the majority of potential consumers wanted a dual-use vehicle, they wanted something that would satisfy their professional life from 9-5 Monday to Friday, and also satisfy their free time, whether family life at the weekend, going from dance class to football to picnics or socialising with friends, or enjoying time together having adventures as a group. But they also were not willing to compromise: they did not want a large box on wheels.”

In addition, the Shanghai studio was tasked to come up with a concept that was authentically Chinese and identifiably a Geely, but which took a new approach in terms of digital connectivity.



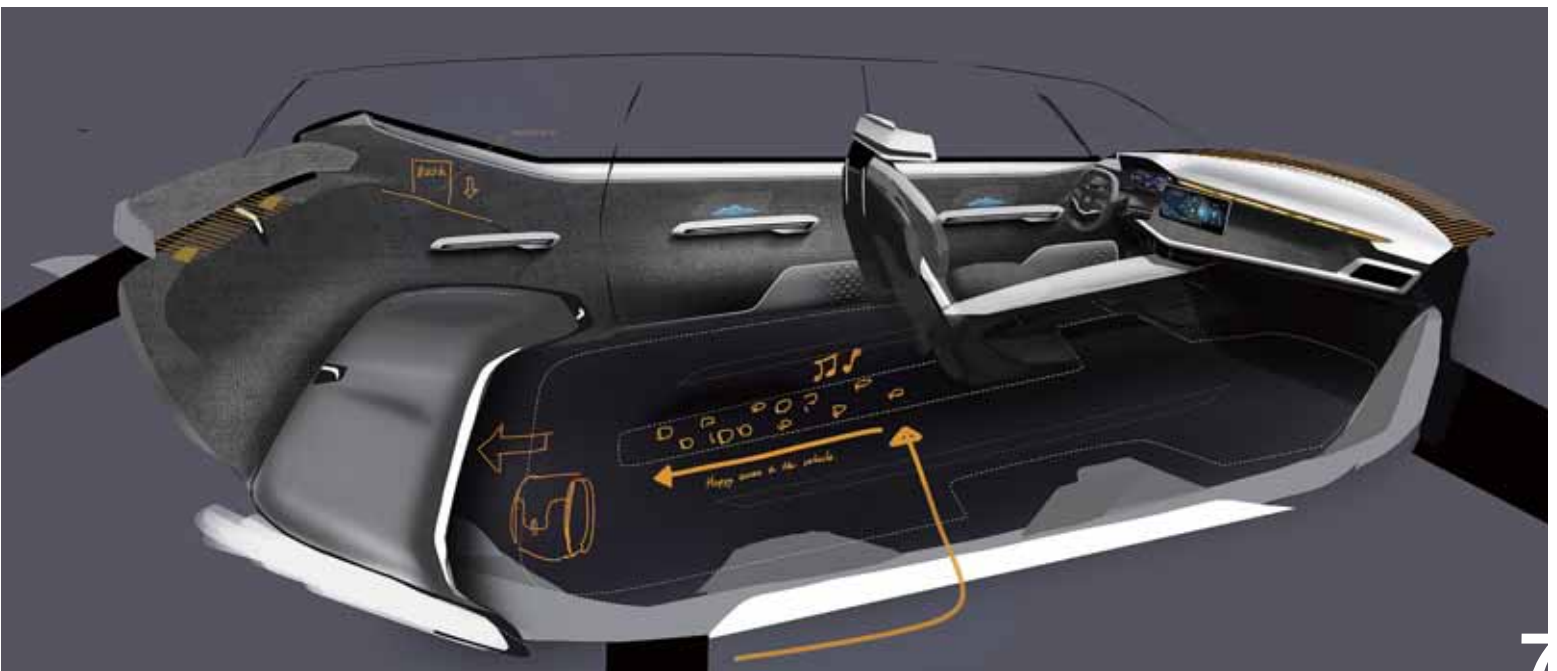


1 Geely Auto has an established set of 'design pillars', says Guy Burgoyne, and "our challenge was to evolve the already successful design language and apply it to a new body style and configuration." In the creative design phase, these pillars or keywords – 'refined', 'dynamic', 'confident' and 'inspiring' – guided the development of an outline less upright than that of a traditional MPV. "We used the private jet as our inspiration, we wanted a shape that could cut through the air with relative ease and provide the comfort that your own personal jet brings," says Burgoyne. Within these proportions, the passenger compartment is set forwards but with a raked-back feel, as seen in the key sketch.

2 Burgoyne points out that "when you open the clamshell doors, the edges of the two doors actually define a perfect circle to both welcome you in and give a feeling of calm." As the sketches showing door handles, vents and the console suggest, the circular theme is complemented by angular geometric elements for the more intricate detailing, including the patterned inlays on the door sills.

4 "We opted for a six-seat layout to give occupants a VIP feeling, each with their own individual seat," says Burgoyne. "There is ample space for children, parents and grandparents on their weekend adventures – or for the business user heading around the city with clients." The team considered both the needs of the chauffeur-driven and the Chinese idea of a traditional three-generation family of parents, grandparents and children, very often seated in that order from front to back. The headrests are fitted with a microphone and speaker system, to avoid the need for turning around and shouting at children in the rear seats.

7 Without the middle-row and front passenger seats, some further ideas are suggested: space to stow a bag under the rearmost seats, a pocket for a book, blue ambient lighting in the doors – and a clear route for 'happy access to the vehicle'.





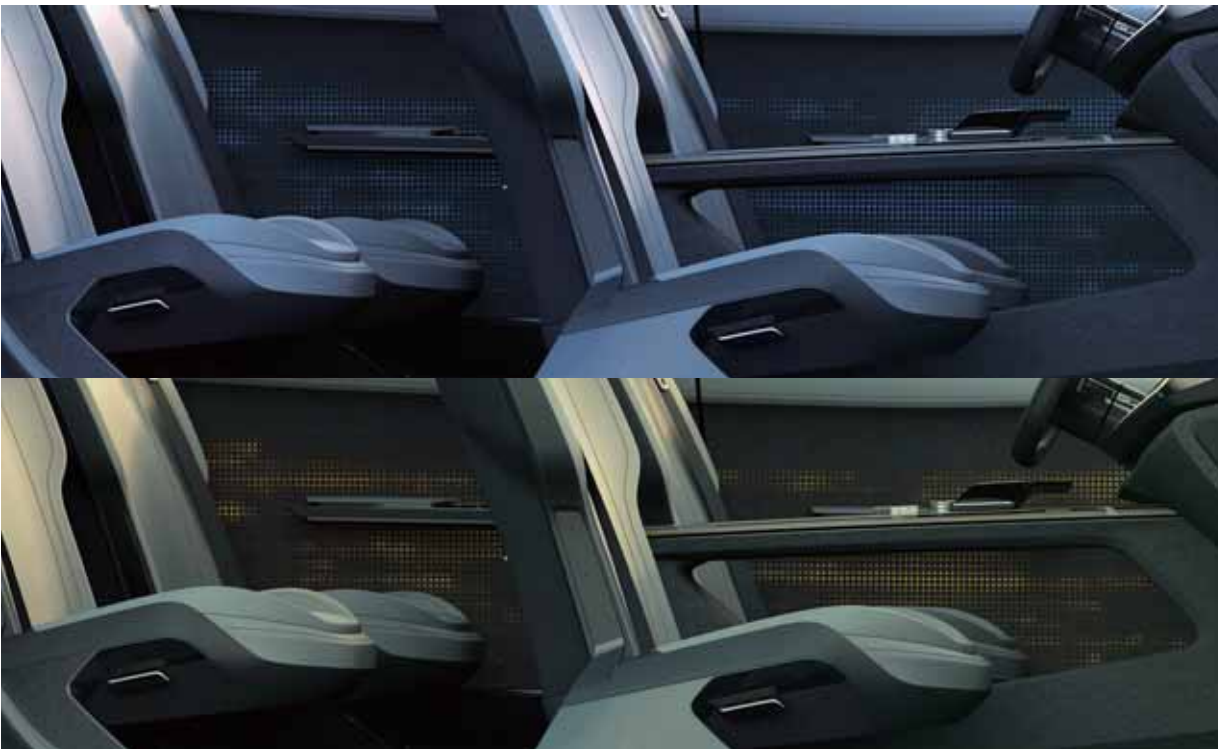


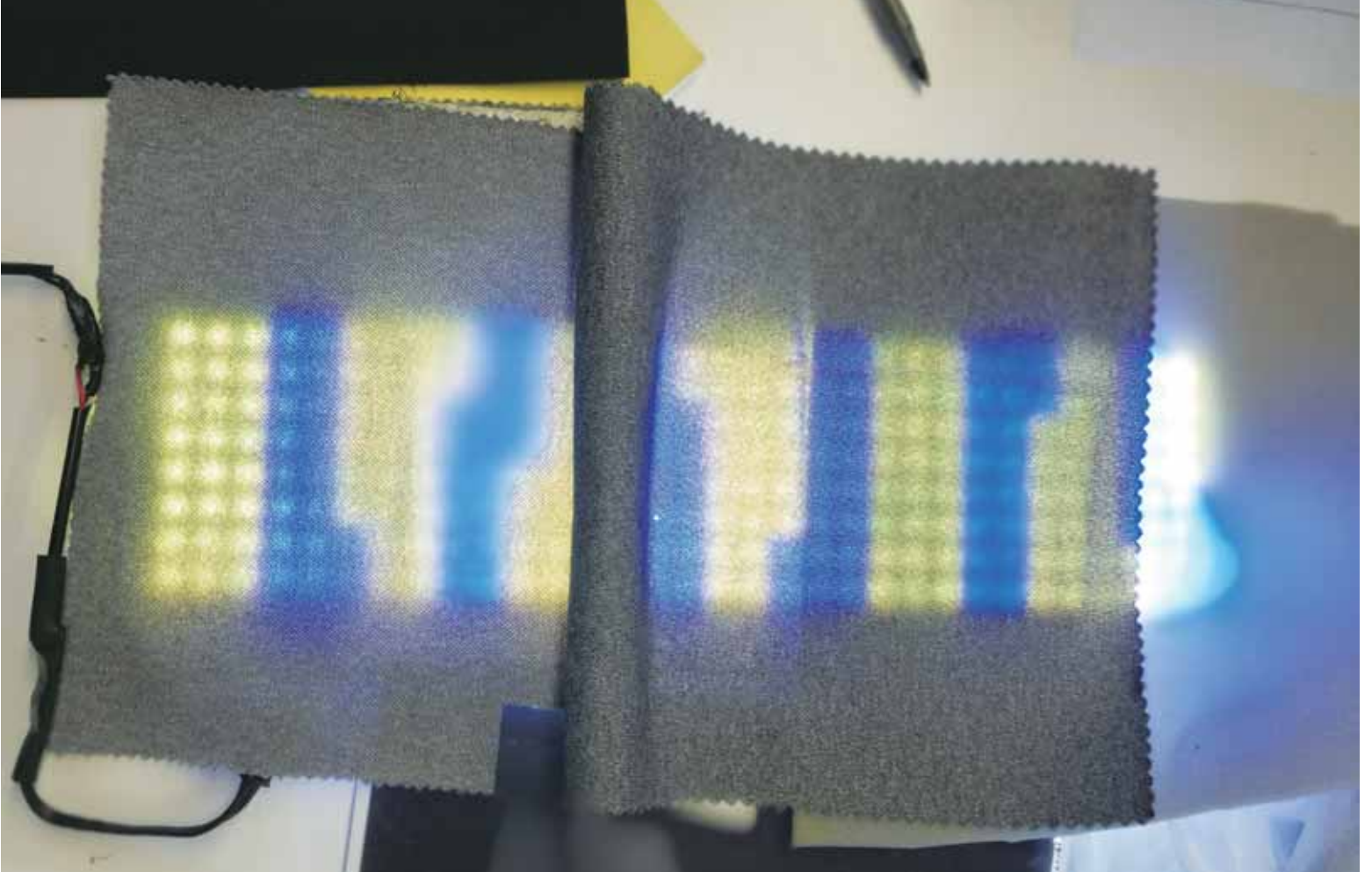
"Previously we have shown concepts for a full-width IP as a high-resolution screen, as in last year's Emgrand Concept, and this time we have explored the whole interior as an interactive canvas," says Guy Burgoyne. "But we are not aiming for you to watch a movie on your door panel: we're aiming more at an advanced level of interactive ambient lighting, and we were inspired by the wonderful lower-resolution on a large scale like on modern high-tech buildings."

Burgoyne describes the connectivity concept as "a digital blanket wrapping the occupants together and allowing them all to connect in new ways," noting that "modern society is one that looks down at its cellphone far too much: people are sharing more than ever to a wide group, but they are not always communicating with those directly around them... We have no intention to replace the personal digital assistants we all carry in our pockets; we intend to complement them in a special and unique way."

So while the IP in itself is relatively conventional in terms of driver information, incorporating a central glass screen and a head-up display, the door panels [below] are conceived as linked interactive elements, on which occupants can play games, share photos, or bounce information: business users could follow their stocks and shares, for example. The panels and screens link for a wraparound effect on which low-res games such as Pong or Snake can be played, or the display of WeChat, animated emojis and suchlike. "We envisage this concept as an ideal platform for apps, just like for your phone or your tablet," says Burgoyne.

This is supported by the ambient lighting, which could give feedback (i.e. red for sports mode, gold for comfort or green for eco mode), and in-built cameras: projecting the patterns or colours of occupants' clothing onto the panels, for example. Furthermore, "in-seat diagnostics will measure the temperature of your children and confirm they are being kept warm," Burgoyne suggests, and bio-sensors could also be used to trigger mood lighting.





The underlying forms and shapes of the interior can be seen here in the images of the show car's assembly, and the sample section of the underlit smart textile [top] used for the door panels demonstrates how the interactive concept is applied.





Photos of the built and upholstered details show how the themes appear in the finished vehicle. "The forms of the interior are deliberately light and minimal to maximise spaciousness," says Guy Burgoyne. "Where we do have forms, we take subtle reference to local habitats, and it also gives a solid appearance to reassure you that we are taking care of you and your passengers." The geometric motifs are repeated and echoed.





Design team members are pictured prior to the show car's debut in Shanghai. To the left [L-R] are project management director Jane Zhang, exterior design director Huang Ning, digital modelling director George Cui, interior design chief expert Justin Scully, colour and trim manager Agnes Cao, physical modelling director Matthew Nicolson; to the right [L-R] are Geely Group Design executive vice president Peter Horbury, deputy general manager Kevin Shao, head of Geely Design China Guy Burgoyne, exterior design chief expert Brett Patterson, brand identity director Danny Du, interaction design (HMI) manager Xin Yun-Yue.

In Shanghai, the interactive panels were demonstrated [below], against a backdrop of colourful imagery projected onto external screens. "We wanted to spread our wings – move into a new territory, throw out the 'box on wheels' philosophy that has struck down MPVs so far, and make something refined, dynamic and user-oriented," said Peter Horbury, presenting the MPV Concept at the show. "Connectivity, technology and safety have been combined in clever ways to protect and entertain all of the occupants together and individually. I could talk about this vehicle at what it means for Geely forever."



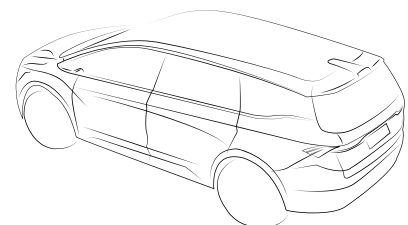
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Our view: MPVs remain popular in China, but so far have been mainly utilitarian in look and not particularly aspirational. The Geely team has taken some SUV cues such as a higher beltline and body cladding to create a more desirable shape, much as Renault achieved with the Espace, and the forward-positioned cabin with raked-back screen gives what Guy Burgoyne called a "solid, powerful and sporty look"; 20-inch wheels helped, too. A glass roof flows into the rear screen to increase interior light – Burgoyne compared this to "a traditional Chinese courtyard garden" – while the taillight graphics are likened to the flowing, twisting ribbons of rhythm gymnastics. The front grille is an updated and more subtle version of Geely's 'ripple in the pool' design, with a clever trick: its fabric covering conceals LED lights which can flash a unique signature or pattern to help locate your own car. The exterior detailing's not short of thoughtful and often quite intricate ideas, many of them referencing a carefully-researched yet subtle idea of the brand's Chinese identity. "There are certain patterns that crop up all the time in China," Burgoyne explained, "which we've tried to reference, but in a low-key way rather than being too obvious. It works both ways: our customers will feel immediately comfortable with the motifs, and maybe when they see them used elsewhere, they'll associate them with Geely."

Nick Gibbs

GEELY MPV CONCEPT

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LINCOLN NAVIGATOR

| | |
|---|---|
| Vehicle type | Production / full-size SUV |
| Lincoln design director | David Woodhouse |
| Interior chief designer | Soo Kang |
| Interior design manager | Ryan Niemiec |
| Design manager, advanced design | Andy Webber |
| Interior designers | Ryan Blodi, Chris Young, Chacko Abraham, Donghun Park |
| Colour and materials designer | Carrie Bommarito |
| Digital interface design manager | Craig Sandvig |
| Project started / completed | 2012 / 2016 |
| Launch | New York / April 2017 |
| Component | Supplier |
| Textile (headlining, pillars, sunvisor) | Dinamica |
| Colourant (for hard plastics) | Americhem Inc. |
| Text | Karl Smith |

At its debut in July 1997, the Lincoln Navigator effectively opened an entirely new market sector for full-sized luxury SUVs, bigger and more highly-specified than anything else available at the time from a mainstream US manufacturer. The Navigator proved immediately popular, and it took a while for its arch-rival the Cadillac Escalade to catch up, but GM has since taken the majority of sales in this sector and a comprehensive rethink was demanded for this fourth-generation model. The Navigator Concept made a dramatic impression at the 2016 New York motor show, with its interior particularly striking, and many of that show car's distinctive features and highlights are now seen in this 2018 production model, which made its debut in New York earlier this year.







1



1 Lincoln identified the typical Navigator buyer as being the head of a family, aged between 45 and 60, with an income around the \$250,000 mark, says design director David Woodhouse, and the team created a narrative around a fictional family they called 'the Cunninghams' – seen here in the mood board [1]. This family pack up their Navigator for a weekend at a house in the Hamptons (a luxury resort destination on the coast close to New York), and tow their boat to the local harbour for a sailing adventure; their destination and the strong yachting culture there were important elements of the story, and general nautical themes were strong influences on the overall design as well as in the detailing. The Cunninghams, Woodhouse explains, are to find their journey pleasant in all weathers, not just due to the SUV's sure-footed handling but its luxurious cabin which shelters them and provides an environment for family activities and entertainment.

DESIGN PROCESS

Woodhouse says that early in the process, key words were identified to inform the design of the interior: 'family', 'protection', 'beauty', and 'sanctuary'. The Navigator was conceived as first and foremost a place of community for the family, of comfort but also of utility; and a sense of safety and protection was important for the owner's most precious cargo. The team aimed for elegance in the overall atmosphere and smallest detail, with luxury touch-points reinforcing the idea of a continual interaction with beautiful details; and a Lincoln cabin is intended to be a place of quiet repose.

This activity informed the guiding sketches seen here by Chris Young [2] and Ryan Blodi [3], and more detailed renderings by Young [4] and Blodi [5], leading towards Blodi's final sketch [6]. These show the explorations of colour and materials, but also, very importantly, the balance of masses and volumes in the Navigator, including the tuning of horizontal lines – a critical part of Lincoln's design language going forward, Woodhouse says.

7

A further mood board [7] shows the colour and trim themes for each of the production model's 'Black Label' top-of-the-line packages: 'Yacht Club', 'Chalet' and 'Destination'.



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1 Many of the packaging parameters of the project were already determined by the Ford T-3 platform (as shared with the Ford Expedition and F-150 truck developed as part of the same programme) but the Navigator's interior was to be unique. Following the review of the initial sketches, modelling began both digitally and physically:
 2 "Creating models in clay is very important to us at Lincoln because it maintains that sense of craft, that sense of 'made by hand' that is so important to the brand," says David Woodhouse.

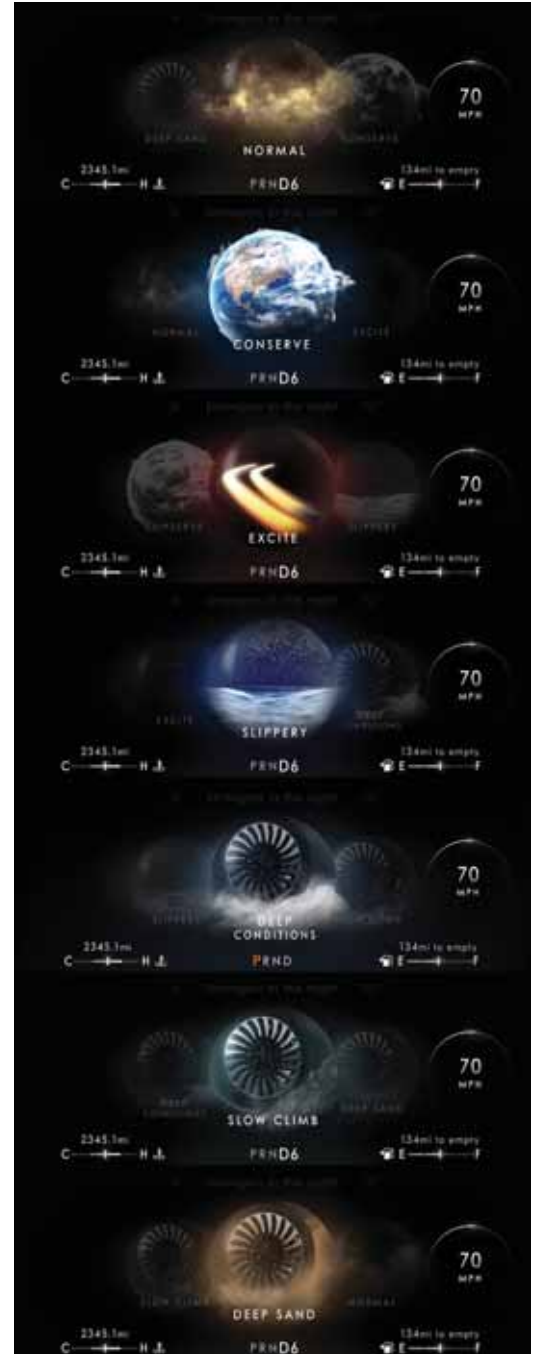
A key part of the programme was the creation of the Navigator Concept for reveal at the 2016 New York motor show. "I wanted to showcase the interior," says Woodhouse, noting that its enormous gullwing doors and deployable concertina-style steps [as seen in Jae Chang's 2015 rendering] were strictly for show-stand drama, but the interior was to remain quite faithful to the finished production vehicle. A greyish-blue colourway, Storm Blue, was chosen for the Concept with teak trim and finish to complement the blue inside – reflecting the continuing eye kept on the Cunningham family narrative and its Atlantic setting and yachting theme.



3 In keeping with the yachting theme, a bespoke wardrobe management system was designed for the Concept to hold all the gear necessary for a day on the water. This was inspired by something seen in the Kingsman action/espionage films, says Woodhouse, and comprises a motorised rear bulkhead unit housing sunglasses, jackets, shoes and accessories such as binoculars, pocket knife and flashlight. This would be a great feature for a future 'Black Label' model, Woodhouse added, though for the moment, it remains conceptual.

4 Individually-controlled screens for all the passenger seats share games or entertainment from multiple platforms, in keeping with the family and community idea, and the Revel audio speakers in the Concept previewed the high-end acoustic environment to be offered in the production Navigator. The Concept reflected trends from executive-class travel as well as the automotive sector – its atmosphere is as much private jet as SUV, underlined by the focus on 'ultra-luxury touchpoints'. These include details such as the frameless rearview mirrors, the 'piano keys' transmission selector, the driving mode selector, grab handles and of course, the sumptuous carpets.





"The reception at the auto shows confirmed our instincts about the design of the Concept and gave us confidence to move forward with the production Navigator," says David Woodhouse, adding that there were few elements beyond the gullwing doors and concertina steps that needed to be changed. The passenger screens in the production Navigator are reduced in size, to suit the latest 'Perfect Position' seats, which have over 50 patents on their design plus a multitude of adjustable positions, thigh supports, and heating, cooling and massaging functions; and the steering wheel and some IP controls were brought into line with those of existing Lincoln products.

The technology and infotainment mark a big step forward from the previous Navigator's, and include a 12-inch configurable instrument cluster, optional head-up display, six USB ports, four 12-volt power sockets and a 110-volt plug, wireless phone charging and a wifi hotspot supporting up to 10 mobile devices; Apple CarPlay, Android Auto, Amazon's Alexa and Ford's Sync 3 system further enable connection and sharing of entertainment. The Navigator's interior was also acoustically shaped (within the limits of the T-3 platform) to optimise the sound system, the Revel speakers in turn tuned to the shape of the cabin. There are three listening modes, stereo, 'audience' and 'on-stage'.

Driver preferences for seat, mirror and pedal positions, climate control and infotainment are stored as a personal profile on the key fob, and there are selectable modes for different driving conditions such as wet, icy, slow climb, sport or economy – each of these having unique display graphics [right]. Lincoln describes these as 'little works of art', echoed also in the 'constellation' start-up screen [right, below].

The images on this page show Black Label 'Destination' trim in the extended-length Navigator, which has increased cargo capacity, an extra below-floor storage compartment, and a larger second-row door for easier entry and exit. 'Destination' was inspired by vintage luggage, and features Mahogany Red Venetian leather with a diamond weave on the seats, plus laser-etched khaya wood trim appliques. "While it's monochromatic, it is rich, warm and inviting through the use of colour and textures," says David Woodhouse.





1 Although the gullwing doors and concertina stairs didn't make it to the production Navigator, Lincoln did manage to keep some drama for the entry sequence welcoming driver and passengers into the cabin. Upon approach, the chrome star logo on the grille softly illuminates, as does the LED lighting in the lower front body and tail lamps, and a luminous 'welcome mat' appears beneath the front doors. A running board – like one of the stairs – then deploys to aid stepping into the cabin. It's not far from the spectacular opening-up of the Navigator Concept, then.

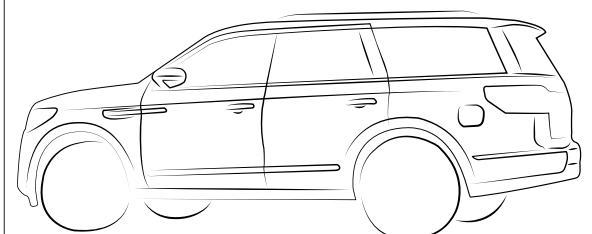
2 Members of the Navigator's interior design team are pictured: [back row from far left] Donghun Park, Chris Young, Ryan Niemiec and Ryan Blodi, with [front row, L-R] Chacko Abraham, Carrie Bommarito, Soo Kang and [far right] design director David Woodhouse.



LINCOLN NAVIGATOR

| | |
|-----------|--|
| Length | 5334mm / Navigator L 5636mm |
| Width | 2383mm (incl. mirrors) |
| Height | 1941mm (4x2), 1938mm (4x4) / 1935mm (4x2), 1933mm (4x4) |
| Wheelbase | 3111mm / Navigator L 3343mm |

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Our view: Though toned-down with traditional doors, this mega-sized SUV is no less impressive in production form than last year's concept. The Navigator is based on the newly-revamped Ford Expedition, and shares much of its architecture, but there are differences between them – mostly at the level of luxury detailing and technology. The interior is where the Navigator primarily parts ways from its Blue Oval counterpart: the IP is Lincoln-only, and is sleeker than the clunky version found in the Expedition, only the placement of the touchscreen interrupting its pleasing horizontality.

Karl Smith

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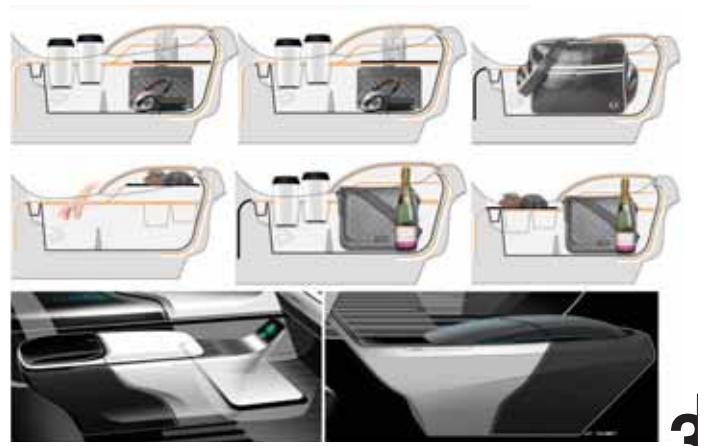
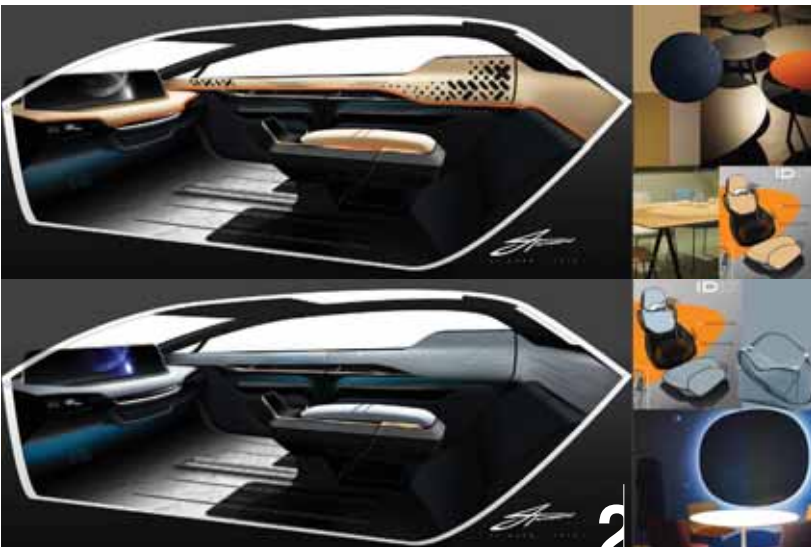
YFAI XIM18

| | |
|-----------------------------|--------------------------------|
| Vehicle type | Concept / autonomous crossover |
| YFAI global VP, design | Tim Shih |
| Principal interior designer | Leo Schurhaus |
| Chief technology officer | Han Hendriks |
| Project started / completed | 2015 / 2017 |
| Launch | Frankfurt / September 2017 |
| Text | Lem Bingley |

“Just in the last six months, the number of requests from our OEM customers to talk and brainstorm on the impact of shared vehicle interiors – how they will change and adapt – is exploding,” says Han Hendriks, chief technology officer, Yanfeng Automotive Interiors (YFAI). “We’re all used to designing around a vehicle experience that’s based on several years of ownership, but now the experience is going to be a 20-minute ride. We need to design a car for 4000 users, instead of four.” YFAI’s XiM18 concept, launched at the Frankfurt motor show, explores how interior design can address the disruptive changes brought by autonomous-driving technologies, shared mobility services, and new business models.

The XiM18 builds upon the XiM17 seen in Detroit earlier this year, and again features a four-mode cabin as per a typical compact crossover with its seats and a split, two-piece centre console all mounted into rails. This allows the interior to be reconfigured into ‘driving’, ‘lounging’, ‘meeting’ and ‘family’ configurations. Both XiM demonstrator cars were developed as part of a rolling research and development programme, says Tim Shih, YFAI’s new global vice-president for design. “We spend a year doing research: talking to customers and consumers, researching technology and trying to understand the landscape of the future. Then we spend the year after that developing concepts for those scenarios.”





XiM18 was created to meet needs expected to arise by 2025, and the two-year process from the initial research to this show car's completion brought together individuals from numerous disciplines, not just design, Tim Shih explains. "The development process is cross-functional, because the relevant technologies are part of the story. We need to understand what manufacturing processes or new products we have to bring into the car." However, while XiM17 and XiM18 sprang from a fairly typical process of competition between designers, Shih (who only arrived from BMW in April) says he may rethink this approach: "A lot of work ends up not going anywhere, and I think there could be opportunity in collaboration rather than competition," he observes. "It's usually better when you have more people involved, to exchange ideas and to round out a story together."

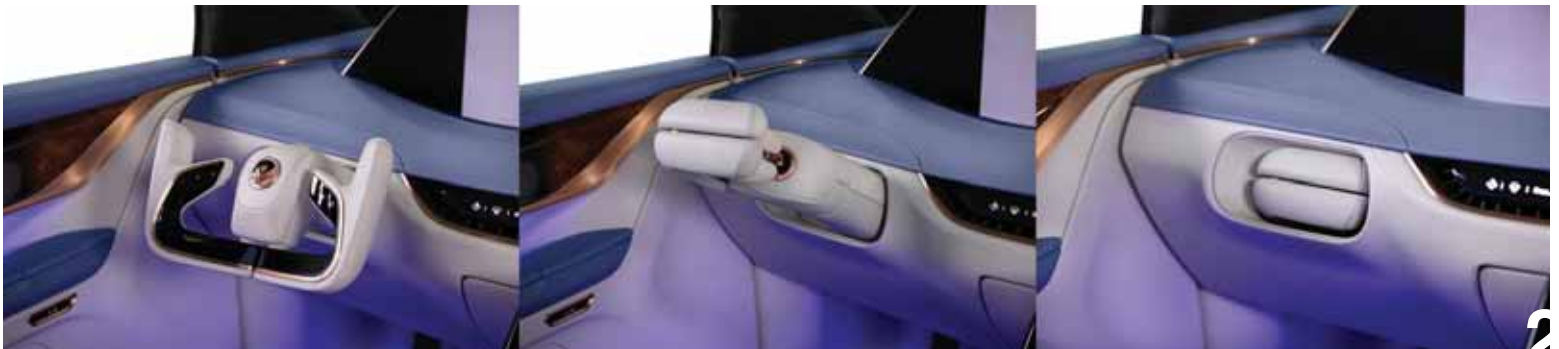
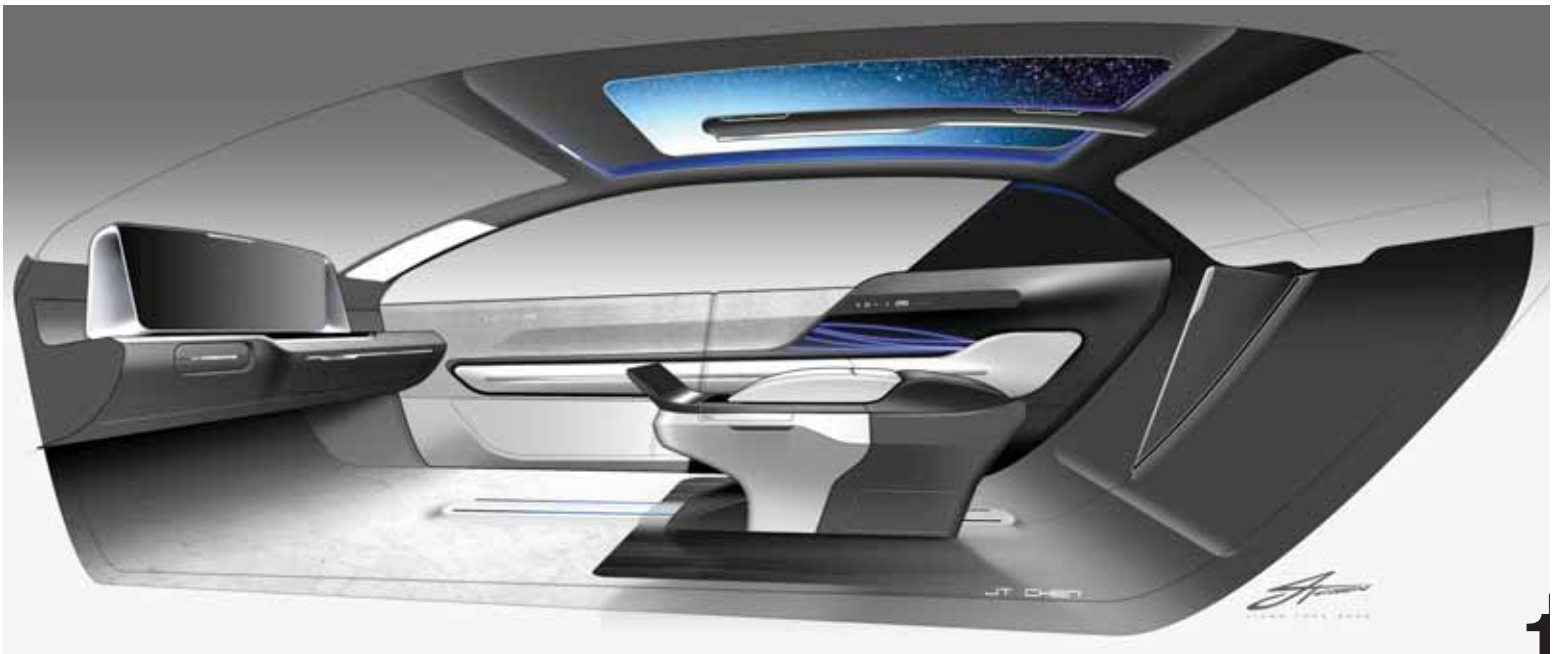
Leo Schurhaus, principal interior designer, notes that the research phase often turns up surprises: while XiM17 and XiM18 showcase four distinct cabin modes, the design team learned that Google's Waymo self-driving project had researched 24 different layouts. "To begin with, we had more than four modes on the table, but not as many as 24," he says. "But it came down to purity of story. We're very aware that we have a limited amount of time to tell our story, within a very busy auto show environment, so we wanted to come up with some very iconic experiences."



4 XIM18 moves forward the layout from XIM17 with revised surfaces and additional technologies. “We now have cameras for occupant sensing,” says Shih. “Cameras front and rear sense where occupants are, at all times. That lets us control airbag activation: which ones need to go off, given the positions, sizes and weights of the passenger.” Similarly, heating and ventilation can focus on actual occupants, rather than the cabin in general. The camera system can perform facial recognition for personalised settings in the cabin, adds Han Hendriks: “It can adapt to the preferences of the person entering the vehicle, including temperature, radio channels, mood lighting and so forth.”

5 Early ‘ID17’ sketches (previous Yanfeng concepts were called ‘innovation demonstrators’) show explorations into colour and trim, and the influence of furniture design, as well as the adjustable seat bolster, inspired by a bag. Packaging, storage and stowage were also important, and the sliding centre console was developed to accommodate bulky bags, bottles, drinks containers and items such as headphones.

5 The development of the door cards now better-highlights the thinking behind YFAI’s adaptable ‘smart surfaces’, Shih says: “Smart surfaces let us put controls exactly where you need them. Today, we typically see control surfaces and décor surfaces, and everything’s kind of split up. But if you could integrate those things, everything becomes more harmonious.” Touch controls illuminate in different places on the surfaces according to seating mode and position, within the dark, glossy sections of the door cards. “If you can build functionality into existing surfaces, maybe they [controls] go away when you don’t need them, and we can get back to a sort of simple elegance,” Shih adds.



1 Ambient lighting is embedded into both the interior textiles and the overhead display panel, a large screen the size of a panoramic sunroof that can host animated images or simply throw light on the interior. Like much of the XIM18 show car's technology, this is fully functional, as Tim Shih demonstrates to IM, using the centre console's smart surface to adjust it. The overhead console module, meanwhile, houses the start/stop and automatic-drive controls; along with overhead slim air vents, which can be gesture-controlled, this frees-up lower-level space.

2 More developed sketches show the autonomous 'lounge' mode, with the steering wheel retracted, rear seats folded away, and front seats slid back to allow for maximum legroom, and 'meeting' mode with the passenger seat swivelled for face-to-face contact. 'Family' mode, meanwhile, is similar to 'driving' mode, but sees the rear console moved forward, the rear seats coming closer together, and the front seats angled inward by 18 degrees, bringing occupants closer and better able to make eye contact.

It's notable that none of the four cabin modes feature the driver's seat facing rearwards, and that the XIM18 retains a neat fold-out steering wheel [2]. "We still assume for the next generation of autonomy that the driver can take control of the vehicle," says Han Hendriks. "We want to support a transition time that is relatively quick. If the driver's seat has to slide forwards and also turn 180 degrees in order for the driver to take control, we believe that's too complicated."

Underpinning the sliding and swivelling seats and consoles, nonetheless, are 47 motor functions; these are supervised by a bevy of computerised controllers based on the Arduino electronics platform. "Bringing the modes to life, and developing the code, is not a skill that's native to our organisation, so we had to look for a partner," says Leo Schurhaus. "You need to understand how to manage that relationship, and because we're not software engineers, we needed to learn on the fly... That's definitely a big challenge on a project like this, but we feel this level of complexity is going to be an enduring trend. We think our future show cars are going to have the same level of interaction and complexity."

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In addition to the movement of the seats and consoles themselves, well-engineered details such as tray tables, bottle holders and other storage units glide in and out from door pockets or their compartments, in a single, smoothly-integrated action. The door storage showcases fingerprint-lock technology.

The XiM18's cabin has been retrimmed compared to the XiM17's, for what Tim Shih calls a "more upscale look and feel": leather trim in shades of light blue and grey, applied and wrapped over the IP and door panels using a simplified direct back-foaming technique. Piano-black surfaces are complemented by copper plus an extensive application of wood, intended to give more of a feeling of the natural environment.





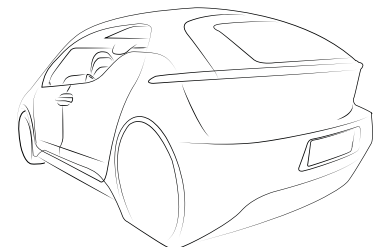
Creating the Frankfurt show car [above] drew in about 150 people from across the Yanfeng organisation at various times, says Leo Schurhaus. "It was a tremendous, global team effort," he says. "At any time you might have a group of 30 to 50 people working on it full time." YFAI's largest studio, with 25 designers, is in Shanghai; studios in Neuss, Germany and Holland, Michigan each employ about 10 designers and studio engineers, while a Silicon Valley research office has recently been set up to monitor trends and liaise with the flurry of automotive startups on the US West Coast. "If you want to create a company that thinks globally, that company needs to have a project like XIM18," says Schurhaus. "It's the perfect mentality training for a team to think not only regionally, but to really understand that our capabilities often lie all over the place."

Tim Shih sums up by noting that XiM stands for eXperience in Motion. "The industry is only just scratching the surface of that: of what an experience means," he observes. "For the most part, driving has been the predominant experience of the car. But now, with autonomous, what else can you create? How immersive can we get in a car, so that passengers have an emotional experience? It sounds corny, but that's what we're after."

YFAI XIM18

| | |
|--------|--------|
| Length | 4800mm |
| Width | 2000mm |
| Height | 1800mm |

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Our view: OEMs tend to be reluctant to reveal to us the sources of their externally-supplied components and technologies, and suppliers tend not to name their clients, so it's instructive to check out the likes of the XIM18 and then see where similar-looking features or systems are ending up (we can make our guesses). While the XIM18 itself is a demonstrator rather than a fully-developed road-going prototype, its technologies are very much for real, and are displayed to good effect in this well-engineered and well-finished model. It's easy to overlook the supplier firms at a motor show like Frankfurt, where there's so much else going on in terms of eye-catching concept vehicles and new production car launches, but a lot of the real innovation is on clear display outside the mainstream manufacturers' areas. It's now down to designers to use this to effect in their own creations.

Farah Alkhalisi



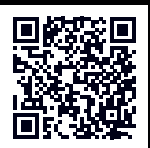
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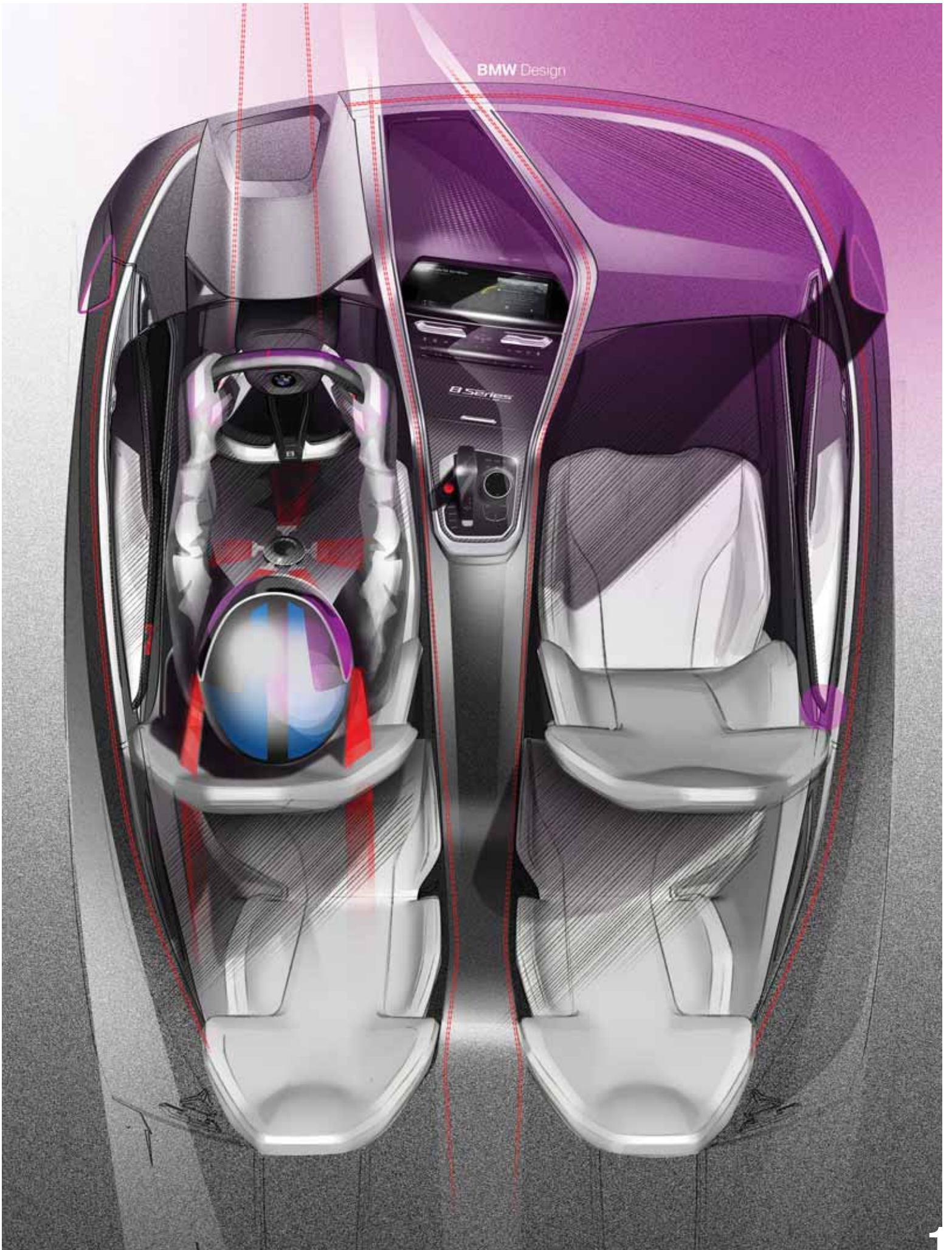


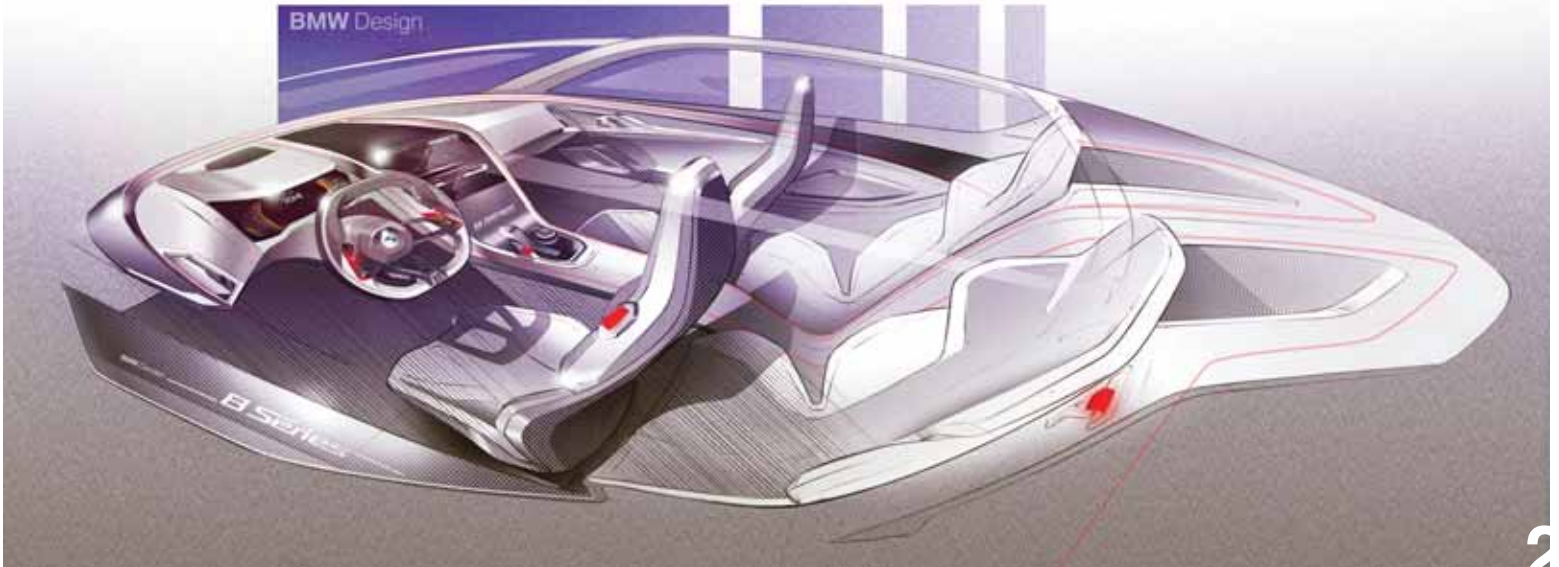
BMW CONCEPT 8 SERIES

| | |
|---|--------------------------------|
| Vehicle type | Luxury sports / concept |
| BMW Group chief designer | Adrian van Hooydonk |
| Head of BMW Design concept cars | Marc Girard |
| Head of BMW brand vision and brand design | Martina Starke |
| Project manager, design concept vehicles | Julia de Bono |
| Lead designer, interior | Robert Hlinovsky |
| Project started / completed | Spring 2016 / Spring 2017 |
| Launch | Villa d'Este, Italy / May 2017 |
| Text | Jens Meiners / Farah Alkhalisi |

The Concept 8 Series, seen first this summer at the Concorso d'Eleganza at Villa d'Este, Lake Como, was not one of the 'Homage' cars BMW usually showcases at this event but gave a very clear hint at an upcoming model: "86 percent true to the production car," joked BMW Group chief designer Adrian van Hooydonk at the event, pointing out that the 8 Series also represented how "we will completely change the face of the brand." And it gave further context to BMW's ongoing design development when we saw it again at the Frankfurt motor show in September, alongside the subsequent Z4 and X7 concepts. "We are launching a new design era at BMW Design," said head of concept cars Marc Girard, speaking to *IM* in Frankfurt, "and of those three cars, the first one, 8 Series, is there to display and pre-communicate the new form language of BMW, in exterior as well as interior design."

BMW Design





1 The Concept project ran for around a year prior to Villa d'Este in parallel to the ongoing development of the production 8 Series, M8 and race-spec M8 GTE, under the leadership of Marc Girard, who is now based in Munich. "I used to be at Designworks [BMW's studio in California] until last summer; we did some stuff on the 8 Series there, and when I moved back from Designworks I was given responsibility for the concept cars [Z4, X7, 8 Series]," Girard explains. While early insight and input into the 8 Series project came from Designworks, "the concept car has been running in Munich, we have developed it in Munich up to production."



This new 8 Series uses a shortened version of the 5 Series architecture (the 1989-99 8 Series was 7 Series-based), and the coupé is wider, lower and shorter than the 6 Series it will replace mid-2018. "The 8 Series is obviously a gentleman driver's car, it's a sports car and it's a luxury car at the same time," says Girard. "So the middle console is very strong, because we have a very powerful drivetrain in the car, and you want to display it."

Sketch 1 shows how the tall centre console is angled towards the driver, and how the forward-pointing surfaces and lines are aligned to emphasise sportiness and the driver's role. This direction – quite an antidote to much current autonomy-themed interior design – has been further developed in the Concept Z4 (unveiled at Pebble Beach, August 2017), where it was emphasised by differently-coloured driver and passenger seats.



2 Behind the Concept 8 Series' rear headrests, the rear speakers are visually exaggerated too, evoking the 'hump' behind the roll bar in a classic race car and also fitting with the 'double bubble' roofline.

3 The infotainment screen emerges from the centre console much as it does in current BMW models, but is more aggressively-raked; the dashboard is lower. Functions are grouped in clusters positioned on the centre stack, centre console and doors; the outer air vents are vertical, and seem to blend into the door panels.



4 The overall 'look' is altogether more angular, less sculpted and more minimal than in the curvier and somewhat playful 6 Series, almost to the point of starkness. This reflects BMW's new 'precision and poetry' form language, Girard explains. "The reduction process we went through on the exterior, we did that for the interior as well. The overall volumes are a little bit more monolithic, they are a little simpler, they are more of a clear gesture. What is left is highly-designed: we put a lot of attention to details. For example, in the centre console there are far fewer buttons and switches than before. Here we go the next step [beyond the current iDrive control system]; because cars are getting far more intelligent, you need fewer switches to operate them, and if you have fewer switches, the overall appearance is going to look simpler. The gesture is clearer."





The low-set seats are upholstered in quilted 'fjord white' merino leather over carbon fibre shells, with integrated headrests plus red stitching. This matches the red gearshift paddles and integrated red seatbelts. The fjord white continues in the door trim, while dark brown merino leather serves as an accent on the dashboard, upper part of the door cards, and on the centre console, where it is again red-stitched.

Flat at the top and bottom, the suede-covered, aluminium-spoked steering wheel is accentuated by metal shifter paddles in anodised red. A specially-developed material with aluminium yarn woven into carbonfibre is applied on the centre console and in the door panels, where it contrasts with the polished aluminium, while 'regular' carbonfibre is used for the door sills. Most notably, however, the iDrive controller and gear selector feature smoked quartz Swarovski crystal.

Marc Girard points out that the shapes on the instrument cluster reflect the architectural, graphical elements of the 8 Series' headlights, and says that "our goal is to not have the interior being a kind of standalone item which is built into an exterior design. On this car, what I personally really like, is this symbiotic approach between exterior and interior."





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The IP offers a mix of established and forward-looking design elements. The instrumentation in front of the driver is executed as an ultra-high-resolution hexagonal screen with a choice of analogue-style displays and digital graphics; the screen atop the centre console and a large head-up display communicate further information. The geometric and angular forms appear to be echoed in the pattern of the seat upholstery.

BMW's familiar font for button-labelling and infotainment is carried over, with a conventional array and arrangement of functions: start-stop button, electric handbrake and the four-way iDrive controller will all be easily-found by BMW's existing customers. The touch-sensitive surfaces on both upper and lower parts of the centre console are new, however. Like the screens, they indicate BMW's next-generation infotainment system (the Concept features a Bowers & Wilkins audio system), and will appear in similar form in the production 8 Series before making their way across the brand's line-up.

How similar? "8 Series is basically a pre-communication programme, so we had a lot to do with the production car," Girard smiles. "So obviously we wanted to spice it up and make it very emotional, but on the other hand, we do not want to disappoint our customers when the production car is going to hit the road! So we are balancing both: it's like finding the sweet spot between enhancing the emotionality a little bit for the concept car, and forecasting what the real car is. And I have to say that those three concept cars [8 Series, Z4 and X7] are close to what you are going to see on the road."



4



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Our view: The 8 Series is characterised by bold proportions and an aggressive appearance, marking a clear departure from BMW's current (and arguably somewhat stale) design language. The long, low front end features two large kidney grilles, spreading wide across the bottom and connecting with an unbroken chrome frame. The slim, angled headlights are executed as laser lights, with hexagonal inner workings reminiscent of those on the new 5 Series. A somewhat imperfectly-executed carbonfibre lip is mirrored at the lower rear end.

Sculpting of the side is accentuated by large air outlets behind the front wheels. A sweeping lower character line connects the front spoiler with the rear spoiler, featuring a pronounced upwards kink just behind the doors. The area above the rear wheels is sculpted in a muscular fashion, and the roofline describes a classic fastback silhouette. Meanwhile, the DLO (the 8 Series features frameless windows) comes up with a new interpretation of the Hofmeister kink: together with the slight kink just behind the door gap, this also creates a slightly Giugiaro-esque overtone.

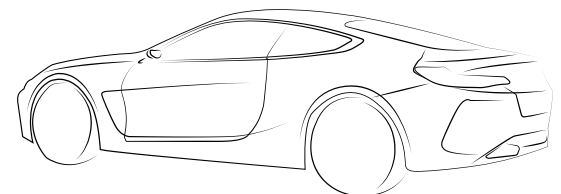
The rear end is dominated by semi-freestanding L-shaped tail-lights of an opaque quality; they clearly evoke the i8, a car that "opened the door in many ways," says Adrian van Hooydonk, who adds that the trapezoidal exhaust pipes underscore "sharpness and precision." Painted in an iridescent bluish grey called Barcelona Grey Liquid, the Lake Como show car is a pleasantly realistic outlook towards the series production model, and the new 'precision and poetry' design philosophy.

Jens Meiners

BMW CONCEPT 8 SERIES

| | |
|-----------|------------------------|
| Length | 4837mm |
| Width | 2144mm (incl. mirrors) |
| Height | 1318mm |
| Wheelbase | 2821mm |

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5 INSPIRATIONS

SERGIO LOUREIRO

Design director for interior and UX/UI, Chery Motors

After a degree in mechanical engineering from University of Compiègne (UTC), France, Luxembourg-born Loureiro worked as a studio engineer for PSA before taking the MA in vehicle design at the Royal College of Art (RCA), London. He joined Opel's advanced design team in 2008, and moved to Shanghai to work for Chery as a design manager in 2012; he was promoted to his current position in 2014. His career has also included working in Brazil for Busscar, and spells in advanced design for Mercedes-Benz in Japan and for BMW in Munich.



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1 Alfa Romeo SZ "When I was living in Luxembourg as a kid, I kept passing an Alfa Romeo dealer's with an SZ inside. Once I went in, and the owner took his time to explain to me about Zagato, the 'designer' of the car; I was nine years old. Only later did I find out that Zagato was in fact a studio and the designer was Robert Opron! Anyway, I started dreaming then about becoming a car designer, and still love the SZ: it's such a different statement."

2 Art Deco architecture "I'm a big fan of Art Deco architecture in general, and my second home-town Porto (my parents are Portuguese) is very rich in buildings of this era such as the Armazéns Cunha and Cinema Batalha. And in London, not far from the RCA, there are splendid buildings like the former Barkers department store on High Street Kensington [pictured]. I love how the very floral Art Nouveau style was abruptly replaced by something so clean, straight and rigid."

3 1920s sci-fi "Cinema from the Art Deco era is also fascinating – films like Fritz Lang's Metropolis (1927). In general, I love all those retro-futuristic worlds that show what the future should have been like, according to the vision of the time. Sometimes, it's so well-predicted that you wonder if they had time-machines!"

4 Café racers "I love the hipster trend of café racers and scramblers, and admire the quality of execution, attention to detail, and tasteful colour and trim of many of these. The Ruamachines Rua'8, based on a Moto Guzzi 750, is a good example. I currently have a real passion for projects based on 1980s motorcycles – it's being a retro-futurism fan, again."

5 Chinese product design "Being in China allows me to look into future trends – especially in product design, connectivity and user experience. The Xiaomi brand, for instance, has not only great designs for its products [which include phones, TVs, smart devices, drones, webcams and audio equipment] but also interfaces that are perfectly intuitive and modern. This is how I hope to develop vehicle interiors for Chery."



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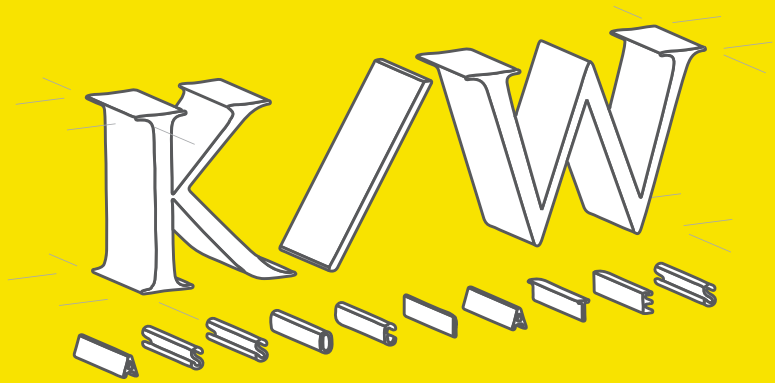
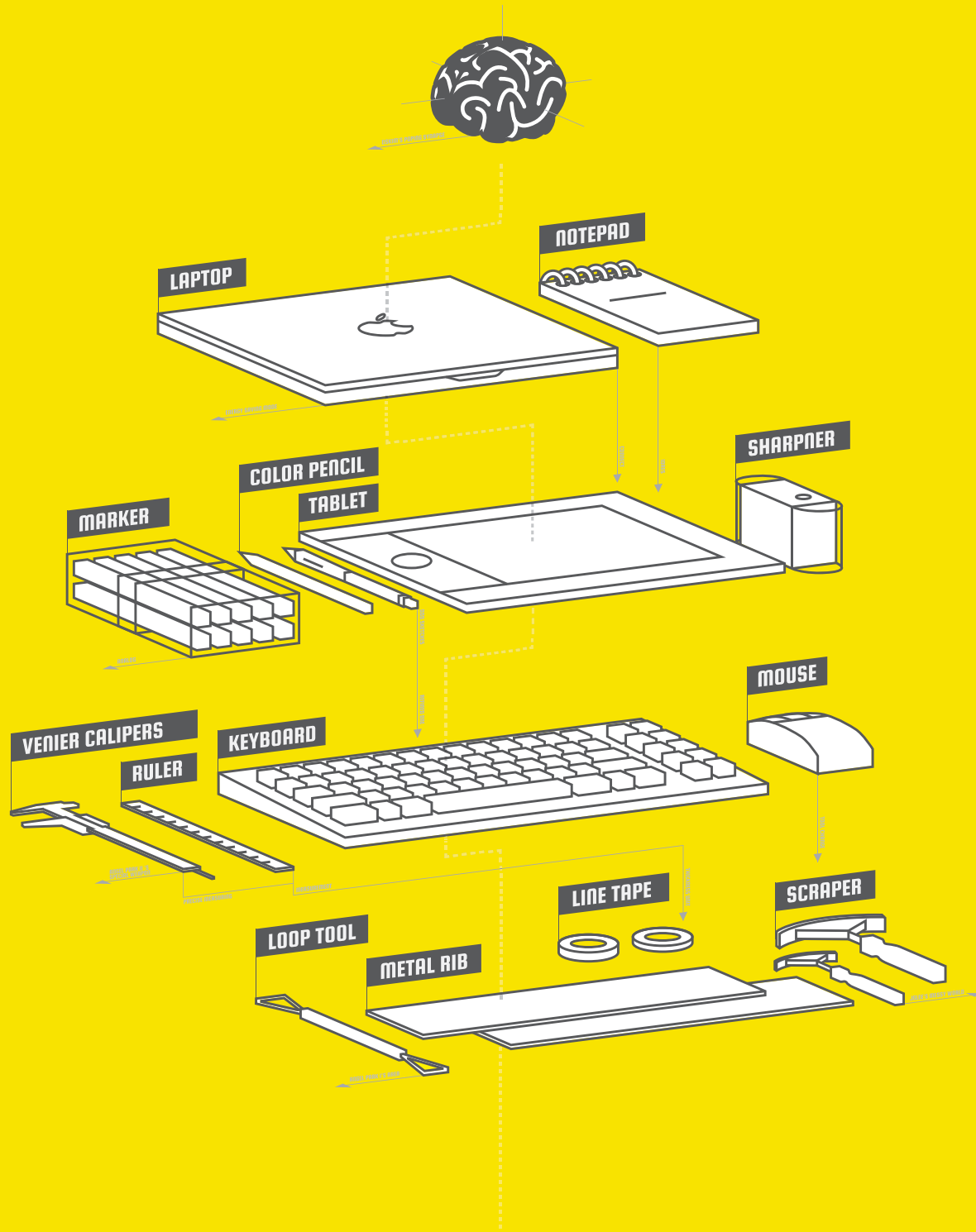
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