DVN Interior & Cockpit Report
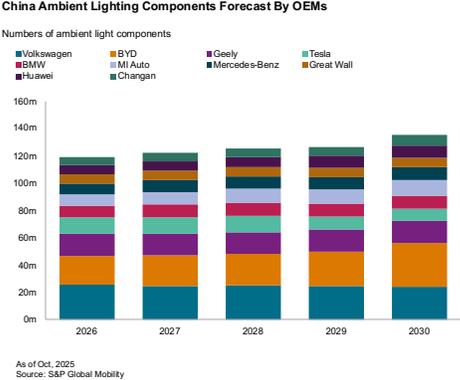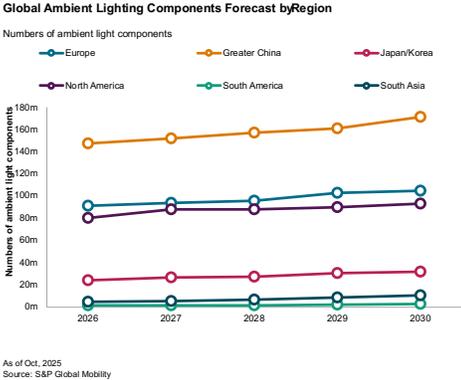
This report summarises the DVN Interior workshop in Shangaï with a focus on the vehicle interior: cockpit architecture, HMI/UX, interior and ambient lighting, cockpit electronics, materials, seats and CMF.

1. Market context and pressure on the interior

The S&P Global presentation "The Future Market and Trend Analysis of Interior, Lighting and Seating" sets the macro backdrop for interior and seating. Global economic growth is expected to remain modest, with mainland China acting as the locomotive while Europe and North America evolve on a plateau. Production of light vehicles hovers around the low-90 million units range, with no explosive volume growth on the horizon.

氛围灯：海外新兴市场或将成为增长新引擎

汽车氛围灯从高端车型向中端车型逐步下探，在新能源车型上逐步趋于标配。其市场规模和单车价值量将实现稳步增长，将为汽车制造商和供应商带来差异化竞争优势和高附加值技术的部署机遇。

Global Ambient Lighting Components Forecast by Region
Numbers of ambient light components

As of Oct, 2025
Source: S&P Global Mobility

China Ambient Lighting Components Forecast By OEMs
Numbers of ambient light components

As of Oct, 2025
Source: S&P Global Mobility

S&P Global
Mobility

座椅：舒适性或成差异化关键配置

受到市场竞争加剧及座椅子零部件成本下探的影响，座椅舒适功能将从豪华级车型逐步下探。

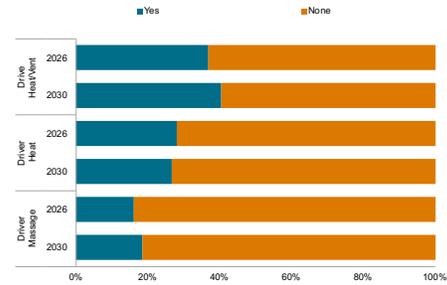**Driver Seat Adjustment System Forecast**

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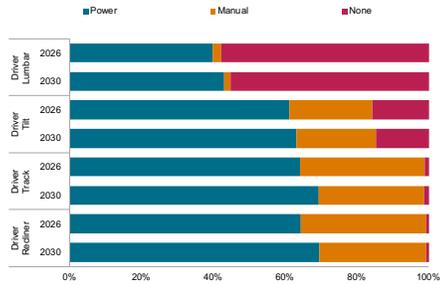
As of Oct, 2025
Source: S&P Global Mobility

Driver Seat Comfort System Forecast

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As of Oct, 2025
Source: S&P Global Mobility

Within this environment, the interior sits under a double pressure: OEMs must both reduce cost and keep raising the perceived innovation level in the cabin. Electrification adds several hard constraints: stronger flame-retardant requirements, lower VOC emissions in production and in use, and a clear push for recycled and bio-based plastics.

In parallel, ambient lighting is cascading from premium into the mid-segment, especially on NEVs, and has become a visible differentiator of the cockpit rather than an optional gimmick. Seating remains a highly concentrated and capital-intensive business where comfort functions migrate from the driver to rows two and three and become a major lever of pricing power.

2. The cockpit as a "third place"

Several concept cabins presented in DVN clearly position the interior as a "third place" between home and office.

Image Yanfeng : *XiM25- Visionary smart cabin demonstrator for next generation*

The XiM25 demonstrator from Yanfeng, described as a "Visionary smart cabin demonstrator for next generation", is built around multi-scenario use: camping, relaxation, cinema mode, immersive gaming, social interaction.

The cabin architecture mixes kinetic seats – capable of transforming into hover seats, a fishing-bench type layout or even a double bed – with doors that provide transparent views on the surroundings. In camping mode, front seats can pivot towards the exterior while the centre console becomes a table, turning the cabin into an outdoor lounge.

Lighting and roof are synchronised to support different scenes and moods. Sustainability is embedded in the design: modular components, recycling-ready solutions and a strong focus on perceived quality rather than only on material labels.

Image Marelli's

The interior cabin is designed around the core concept of "A personal sanctuary for relaxation, offering a new travel experience," focusing on three key pillars: Comfort Space, Driving Experience, and Sustainability.

Marelli's show cabin follows a similar direction but with a slightly different emphasis. The interior is structured around three pillars – Comfort Space, Driving Experience and Sustainability. A rotatable hidden display reduces visual fatigue by disappearing when not needed, a sliding console helps to shift from "driving mode" to "lounge mode", and dynamic ambient scenarios adapt the cabin to work, relaxation or night use. Materials such as bio-based faux suede, mono-material films and PVC made from recycled tea leaves demonstrate that sustainability can co-exist with a premium look-and-feel.

3. HMI & UX: from full screen to the right hard/soft mix

Screen Proliferation

Screens are no longer just for infotainment, but sometimes also for driving features.

This shift means a touchscreen failure could impact safety – not just comfort.

The line between convenience and critical is blurring fast.

Diconium | public

25

The HMI narrative is clearly shifting. For roughly a decade, cockpit competition was largely about screen size and screen count. The Diconium presentation "Hard or Soft Control? Rethinking In-Car UX Between China and Europe" argues that this phase has reached its limits. Excessive reliance on soft controls creates cognitive overload, longer reaction times for safety-critical actions and a poor user experience when basic functions are buried under multiple layers of menus.

DICONIUM

Regulations First – Euro-NCAP 2026 Changes

New mandates require key safety functions to be operable via physical buttons.

UX is now directly tied to vehicle safety ratings, hence OEMs must rethink cockpit flows to balance screen-based innovation with tactile operability

01

Physical Controls

Excessive reliance on touchscreens for functions like the horn, wipers, and indicators will be penalized. Top-tier ratings will require physical controls for essential functions

02

Enhanced DMS

Vehicles will be assessed for drowsiness, distraction, and impairment detection using behavioral analysis like eye-tracking and steering patterns.

03

Post-Crash Safety

There will be increased incentives for post-crash technologies, such as advanced eCall and multi-collision brakes.

Diconium | public

29

Euro NCAP 2026 requirements, which re-introduce mandatory physical controls for a set of core functions, are an official acknowledgement that the "all-screen" ideology has gone too far. Diconium also highlights cultural differences: in Europe, older users and strong safety expectations favour robust, clearly delimited controls and tactile feedback; in China, younger, digital-native customers are more open to expressive, rapidly evolving interfaces – but they still need clarity and hierarchy.

QQ's Warm Technology-Redefining Human-Car Connection Through Multi-Modal Consistency.

New QQ's AI assistant "Little Q" establishes emotional connections that make technology feel warm.

CHERY's New QQ "Warm Technology" provides a very different but complementary answer. The design language is built around a "rounded rectangle" DNA that flows consistently from exterior signatures into the cockpit and UI. The vehicle uses a personified AI assistant ("Little Q"), expressive graphics and a Q-LOOP HMI concept that ensures continuity between screen, sound, light and physical controls. Technology is present, but deliberately framed as friendly and approachable – warm rather than cold.
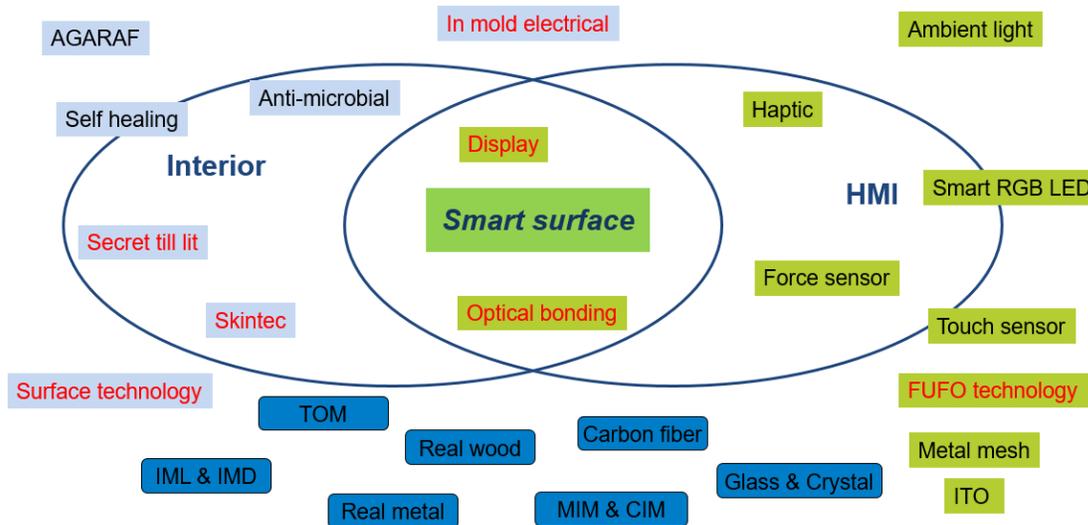

Image KOSTAL

From an HMI product perspective, Kostal pushes smart surfaces and "invisible design". Functional zones are fully integrated into decorative parts: touch fields, sliders and back-lit pictograms are hidden until needed, resulting in a visually calm cabin that can "wake up" where and when the user interacts. This approach combines clean design with the safety of fixed reference points.

Taken together, these inputs point to a new paradigm: the winning cockpit will not be the one with the most inches of display, but the one that finds the right hard/soft control mix for each context and market.

# 4. Cockpit technologies: optics, MiniLED, HUD and simulation

with ISELED® & ILaS® system architecture
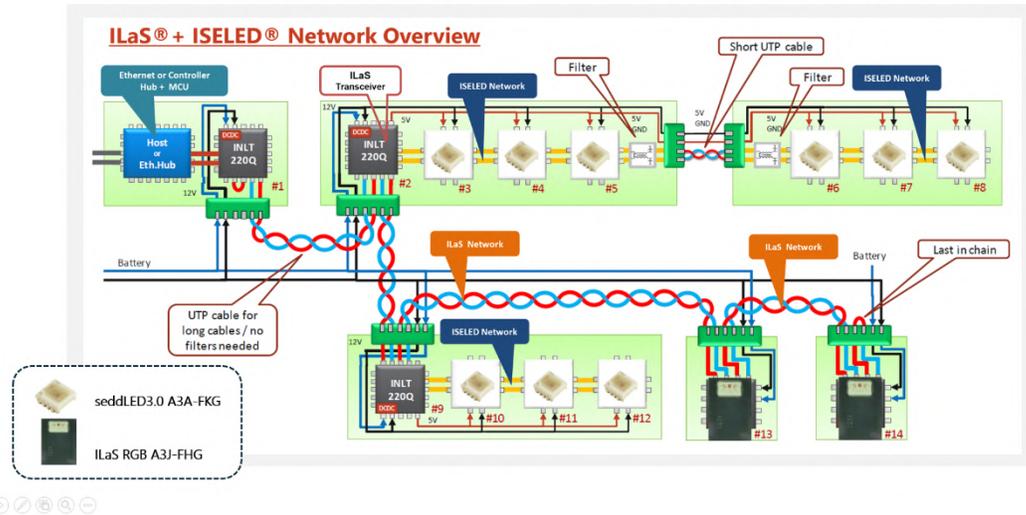
Behind the surfaces, cockpit electronics and optics are also in transition. DOMINANT's seddLED solution illustrates how interior lighting can be treated as a software-driven network rather than a collection of discrete light sources. seddLED devices are digitally addressable and calibrated at factory, with built-in thermal compensation and diagnostics, and they interface with automotive Ethernet via ISELED / ILaS. This architecture fits perfectly into software-defined vehicles (SDV): hardware is standardised, while functions and animations are defined in software.
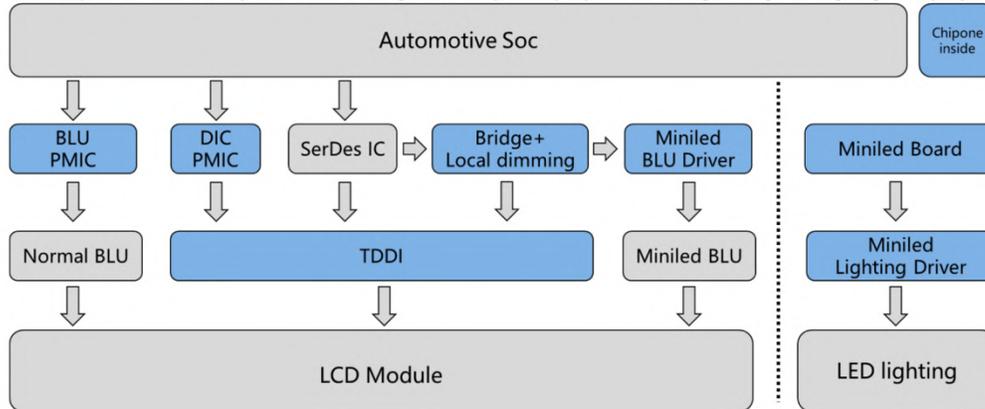
Chipone presents an integrated semiconductor toolbox for smart cockpits: TDDI chips for instrument clusters and central displays, MiniLED drivers for local-dimming backlights and

ambient lighting, PMICs for power management and bridging solutions for complex LED arrays. Several of these components are already ASIL-B capable and allow tighter integration of safety-related visuals into the display system.

Refond demonstrates how automotive-grade MiniLED is now deployed at scale for cockpit displays and interior visual surfaces. MiniLED backlights enable high-brightness, high-contrast clusters and centre screens, as well as thin, flexible display surfaces in locations that used to be pure decor, such as dashboard strips or door panels.

Photonic Crystal adds another layer with nano-structured transparent displays for HUD and glazing. Real-image and virtual-image variants allow projected information to be integrated into windscreens, sunroofs or side glass with very high transparency and controlled luminance, enabling a more distributed display concept inside the cabin.

Appearance properties with native AxF support

Camera Link-Level Solution
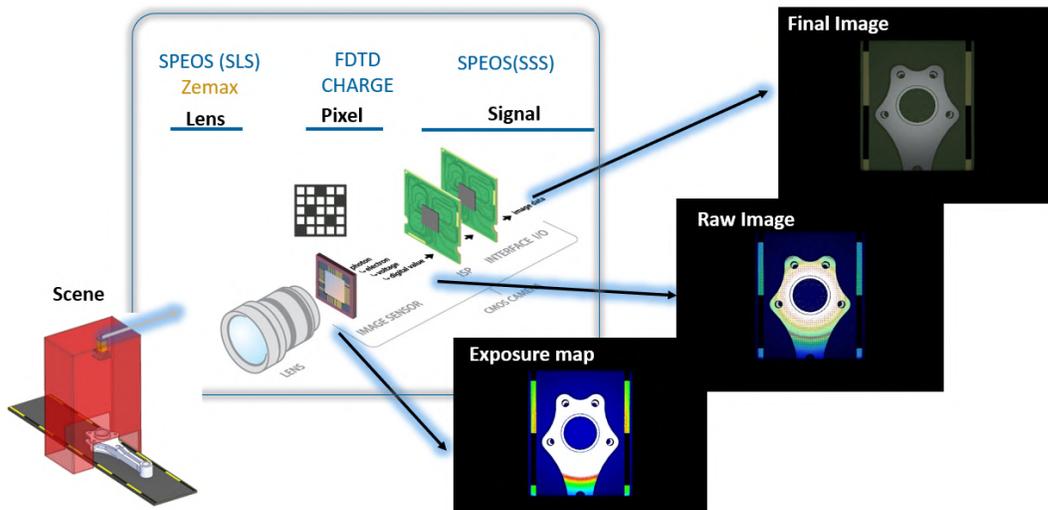
On the simulation side, Ansys showcases an optical "smart cockpit virtual prototype" that uses AxF (x-rite) material descriptions and glTF 3D models to render the full interior, including displays and lighting, before any physical prototype is built. Dedicated workflows exist for DMS/OMS cameras and HUDs to assess feasibility, optical performance and subjective appearance early in the design process.

5. Materials & sustainability: flax, recyclates and crystal

On the material side, three big families stand out across the DVN content: bio-based composites, recycled compounds and high-end decorative materials with strong perceived value.

Bcomp represents the bio-based path with its flax-fibre composite solutions. Compared with conventional carbon fibre, Bcomp reports up to 85% lower cradle-to-gate CO_2 emissions and significant mass savings, depending on the application. The ampliTex™ and powerRibs™ technologies are compatible with high-volume processes such as compression moulding and back-injection, and they offer a very distinctive natural-fibre aesthetic. Typical cockpit applications include door and instrument-panel trims, consoles, seat backs and trunk components.

Plastics to be used in new vehicles according to the proposal of an ELV regulation

25% recyclates from post-consumer material

from this

25% recyclates from end-of-life vehicles

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on circularity requirements for vehicle design and on management of end-of-life vehicles, amending Regulations (EU) 2018/858 and 2019/1020 and repealing Directives 2000/53/EC and 2005/64/EC

Article 6
Minimum recycled content in vehicles

1.The plastic contained in each vehicle type that is type-approved as of [OP: Please insert the date = the first day of the month following 72 months after the date of entry into force of the Regulation] under Regulation (EU) 2018/858 shall contain a minimum of 25 % of plastic recycled by weight from post-consumer plastic waste.

At least 25 % of the target set out in the first subparagraph shall be achieved by including plastics recycled from end-of-life vehicles in the vehicle type concerned.
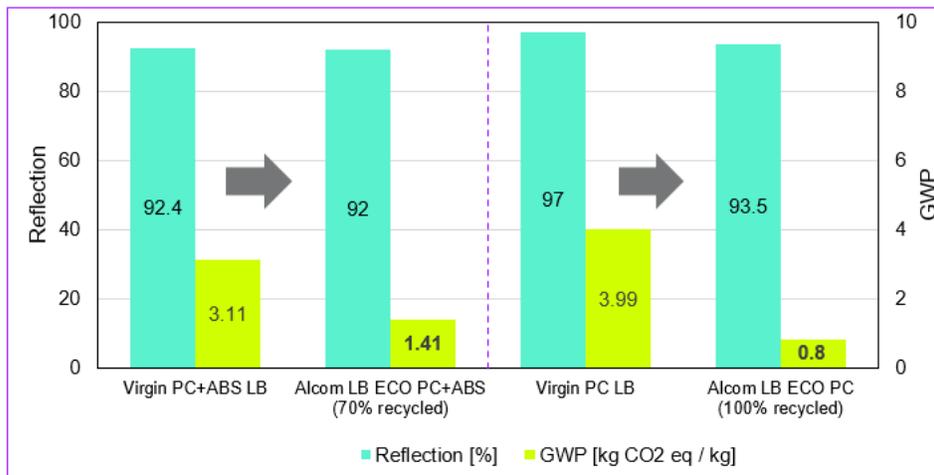

Image MOCOM

MOCOM embodies the recycled compound path. As a German compounder with more than 50 years of experience and an EcoVadis silver medal, the company offers ECO-labelled grades in PC, PC/ABS, PA6, PA66, PP and others. Content of post-industrial and post-consumer recyclate can be tuned up to 100%, depending on the application.

Alcom LD for Bosch Fresh-Up · Alcom LD for lasered galvano buttons · Alcom LD color for black panel · Alcom LD2 ambient lighting

Lighting Trends in Automotive Interior: Deco and Light (Hyundai Concept Prophecy) · Interior Trend seamless display integration New MBUX (Mercedes-Benz User Experience) · Seamless Design: Tactile structure to support functionality & haptic feedback w/o moving parts · Lighting Trends in Automotive Interior: Integrated Function in backlightable Design
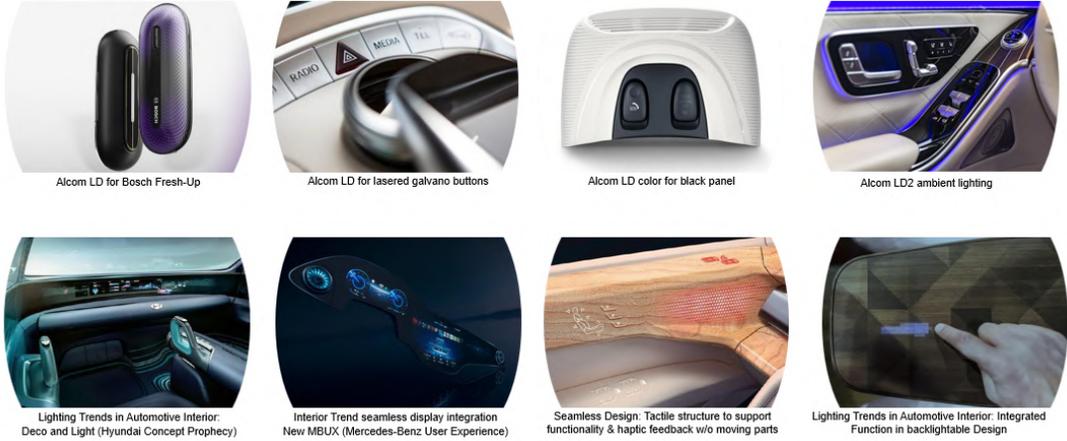
Image MOCOM

In lighting and interior HMI components, the Alcom® family covers light-guiding, light-diffusing and light-blocking grades, now also available in ECO versions with a much smaller carbon footprint. For visible trims, Altech® PC+ABS ECO grades enable 100% recycled pillar mouldings with performance close to prime materials and around 80% CO_2 savings. For structural parts such as IP carriers or luggage-board substrates, ECO PP and PP-rCF compounds provide lightweight, low-emission options compatible with automotive interior requirements.

Metric	Synthetic Glass Crystal (SW1)	K9 Glass	K5 Glass	Acrylic (PMMA)
Refractive Index	Very High (≥1.56)	High (≈1.52)	Relatively High (≈1.51)	Medium (≈1.49)
Dispersion (Iridescence)	Excellent	Good	Fairly Good	Average
Light Transmittance	Very High (>92%)	Very High (>92%)	Very High (>90%)	Very High (>92%)
Density / Weight	High	Medium-High	Medium-High	Low
Mohs Hardness	Very High (≈6)	Very High (≈6)	High (≈5.2)	Low (≈3)
Processability	Difficult (requires diamond tools)	Difficult (requires professional cutting/polishing)	Difficult (similar to K9)	Easy (injection molding, CNC, low cost)
Scratch Resistance	Excellent	Excellent	Good	Poor (prone to fine scratches)
Impact Resistance	Poor (brittle, fragile)	Poor (brittle)	Fairly Poor (brittle)	Excellent (good toughness, shatter-resistant)
Chemical Resistance	Excellent (resists most solvents)	Excellent	Excellent	Good (vulnerable to some strong solvents/alcohol)
Heat Resistance	Excellent (>600° C)	Excellent (>400° C)	Excellent (>400° C)	Poor (softens at ≈80-90° C)
Market Positioning	High-End	High-End / Cost-Effective	Mid-to-High-End	Economy / Mass Market

Image Hauju

Huaju's synthetic crystal SW1 illustrates how decorative materials are also evolving. With high hardness, elevated thermal resistance and a refractive index tuned for "starry universe" reflections, this crystal is already used on interior rotary controls, shifters and decorative inserts in premium vehicles. It delivers a very strong perception of luxury while remaining compatible with automotive constraints.

6. Seats & comfort: from furniture to a technology module

Seats are clearly moving away from the role of "upholstered furniture" to become complex technology modules at the junction of comfort, NVH, safety and sustainability.
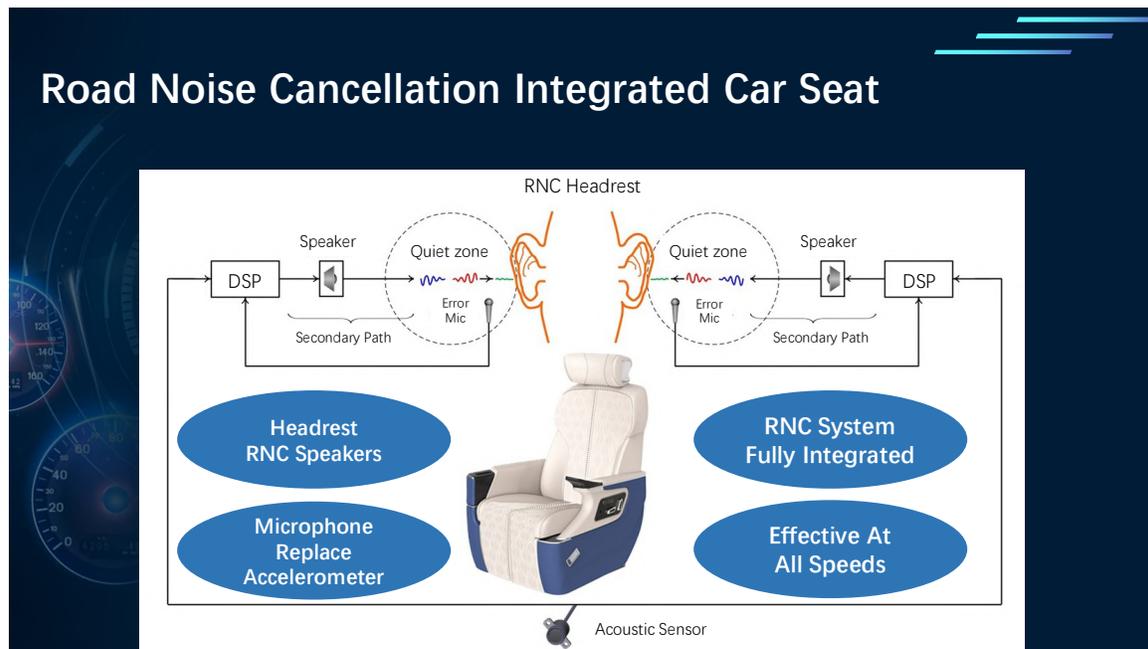

Image Suzhou

Suzhou Dasheng addresses the very specific challenge of road-noise in EVs. With the engine almost silent, tyre and road noise dominate and can degrade both comfort and perceived quality. Classical body-level counter-measures tend to be heavy and expensive. Dasheng proposes a seat-integrated road-noise cancellation (RNC) system, where microphones are embedded in the seat structure and dedicated loudspeakers are placed in the headrest. The system creates a quiet zone around the occupant's head, similar to a virtual noise-cancelling headphone, but without wearable devices. Because the architecture is local to the seat and does not share speakers with the car audio system, integration into both OEM and aftermarket applications is eased.

Market Insight #2

Strong trend towards seat electric cushion-length adjustment features with higher ADAS level

China Market Technology Trend

Trend:
Driver seat electric cushion-length adjustment with high level autonomous driving

Description:
There is no requirement for cushion-length operation by the autonomous driving over Level 3. Driver needs a footrest to free foot during using high level autonomous driving.

Chinese OEMs who using the autonomous driving as a selling point, have added the driver seat electric cushion-length adjustment in model year updating.

Business Strategy Proposal

Proposal:
Add the feature of driver seat electric cushion-length adjustment on all trim levels with autonomous driving over L3

Electric Footrest Adjustment Cost:
- Part Unit Cost: 20 ~25 €
- Tooling Cost: 50,000 ~ 65,000 €

Reference Vehicles

NIO ES8 — 2022 No → 2024* Yes
Zeekr 001 AWD — 2021 No → 2024* Yes
IM Motor L7 Pro — 2022 No → 2024* Yes
Avatr 11 AWD — 2023 No → 2025* Yes

*Images is from the web. Standard features for all trim levels.

Image A2Mac1

A2Mac1, through its "Advanced Seating" teardown and benchmarking programme, shows how multi-dimensional seat analysis is becoming an industry standard. Around sixty vehicles per year are torn down and analysed along six main axes: function, comfort, perceived quality, mass, cost and carbon footprint. The platform compares very different architectures – from mass-market seats to zero-gravity -ready seats – and links macro performance indicators with detailed design and process choices.

7. CMF & brand storytelling in the cabin

The Huawei Million Model "Zunjie" integrates the nebula element design into the door handle position.

Yanfeng

Yanfeng

Harman Kardon

Mitsubish

Shadowy Charisma

"Shadowy Charisma" explores light, shadow, and materials. Mercedes-Benz uses lighting and screens for a futuristic feel, while Rolls-Royce showcases luxury with glossy wood. Mitsubishi's flexible ESK optical fibers create dynamic lighting, transforming the atmosphere from cold to warm.
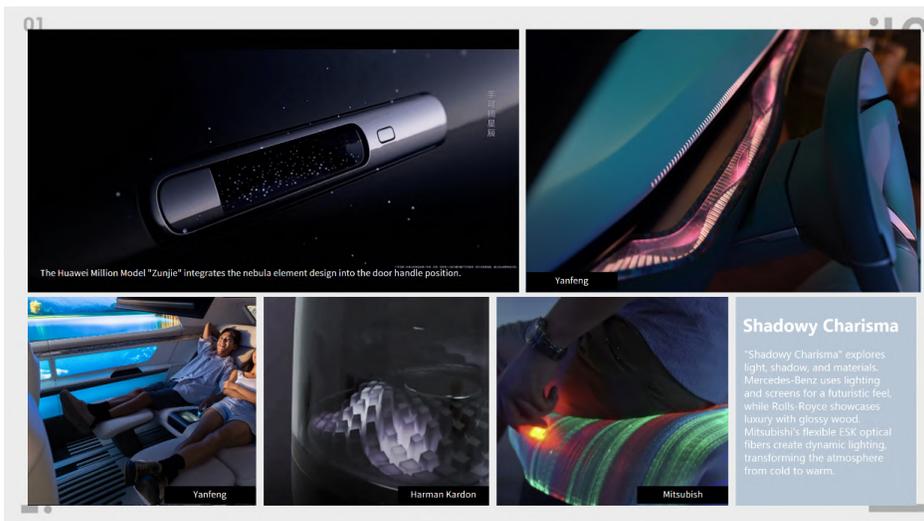
Image WGSN

CMF (Colour, Material, Finish) is no longer a late-stage cosmetic layer but a core language for brand storytelling inside the cabin. WGSN's "The Future Language of Automotive CMF in 2027" describes a move towards an "intelligent, discreet luxury" built on refined neutral palettes, controlled metallics and a subtle mix of high-tech surfaces with warm natural materials.

The XiM25 interior, as presented in DVN summaries, uses semi-transparent materials and layered lighting to create a breathing visual space, balancing calm surfaces with dynamic luminous elements.

Image Zeekr 9X

The Zeekr 9X "Powerful Elegance" interior executes a different but complementary vision: Nappa leather, open-pore wood and carefully tuned tactile details are combined with an advanced audio and ambient-lighting system (Naim audio, synchronised light scenes) to deliver a holistic sense of sculpted, modern luxury.

In both cases, CMF does three jobs at once: it signals the brand's positioning (tech-driven, warm, sporty, serene), it makes the sustainability story tangible (natural fibres, recycled textures, bio-sourced surfaces) and it guides user perception more effectively than additional screens or gadgets.

8. Overall conclusions

Across all DVN interior-related presentations, several consistent lines of force emerge.

First, the cabin is evolving into a true third place. Concepts like XiM25 and Marelli's sanctuary-type interiors treat the vehicle not only as a transport device but as a flexible living space, switching between work, social interaction and entertainment.

Second, HMI/UX is leaving the "more screen is better" phase and entering a more mature era where context, safety and cultural usage patterns matter. The winning architectures will combine hard and soft controls in an intelligent way and use smart surfaces and ambient lighting to support the experience, not to overwhelm it.

Third, materials and CMF are becoming central tools to express both premium positioning and sustainability ambitions. Flax composites, recycled compounds and synthetic crystal are not only technical solutions; they tell a story that users can see and touch. CMF orchestrates colours, textures and light to make that story coherent.

Fourth, seats and interior technology modules (lighting networks, HUDs, DMS/OMS, interior sensors) are now at the intersection of multiple disciplines and will be key differentiators between brands.

This DVN workshop confirms that interior development is no longer a finishing touch at the end of the vehicle program. It is a strategic battlefield where software, hardware, materials, acoustics and design have to be aligned from the very beginning.