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635 - In-Car HMI UX Evaluation & Benchmarking

SBD's HMI UX Evaluation Report Series provides a comprehensive assessment of the latest systems released globally. Over the course of this year, our team of HMI and UX experts will benchmark vehicles from Europe, the US, China, and Japan to understand who is leading in the space, and who is falling behind.

CON

Connected

#644

Digital Cockpit & Infotainment Forecast

Since its introduction to consumer vehicles, the digital cockpit has relied on the correlation between technology readiness and vehicle lifecycle management, as well as the customer's own expectations and acceptance of the system. Today, more intelligent cockpit solutions are being rolled out by an increasing number of OEMs around the world, with software-focused solutions constantly improving through over-the-air updates.

As the digital cockpit continues to evolve, it is essential that OEMs, suppliers, and developers alike remain ahead of their competition to match current and future consumer needs. These needs are especially important as newer solutions work to accommodate the digital experiences familiar to users from the world of consumer electronics.

SBD Automotive's Digital Cockpit & Infotainment Forecast provides an outlook on the penetration of cockpit elements and key cockpit features, showing their fitment rate by market ten years into the future. Throughout the report, OEMs can benefit from deep analysis broken down by region, connectivity, and service type, as well as a defined methodology that utilizes top-down and bottom-up approaches.

COVERAGE	FREQUENCY	PUBLICATION FORMAT	PAGES
GLOBAL, NA, CHINA, EUROPE	ANNUALLY, QUARTERLY, ONE-OFF	PDF, POWERPOINT, EXCEL, ONLINE	70+

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Key questions answered

- How will major OEM groups deploy cockpits in the next 10 years?
- What is the expected evolution of specific infotainment features?
- How will cockpit fitment and services vary per region?

This research supports

Product Planners

Engineering

Marketing

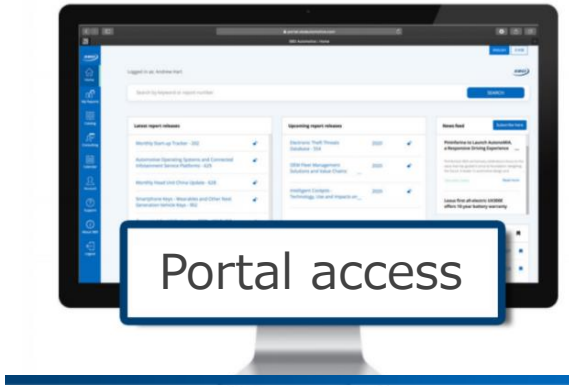
IT

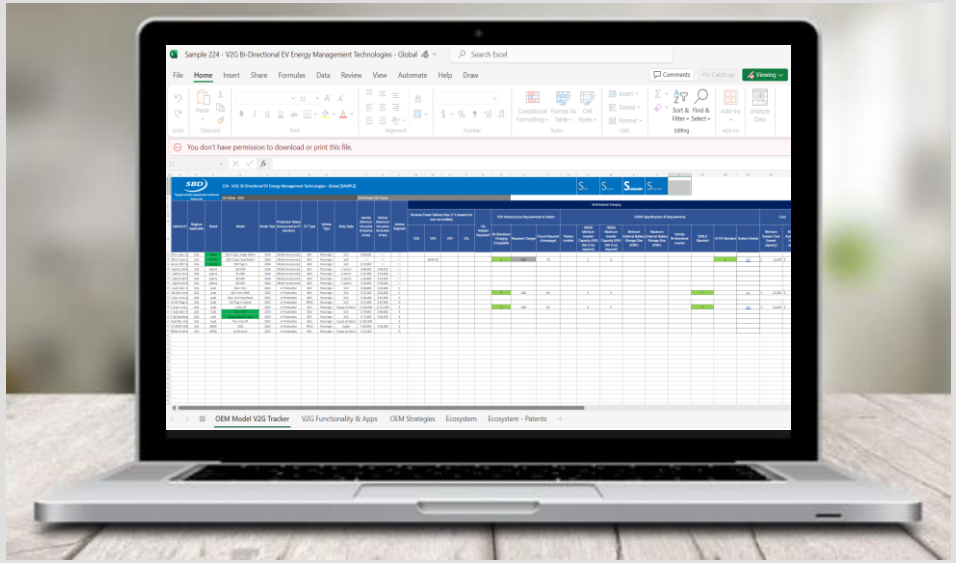
Do I have access?

100+
Reports published per year

50k+
Slides of insights, forecasts & data

4,000+
# of auto professionals who access our reports





View Excel Data Sheet Sample

Digital Cockpit & Infotainment Forecast

For a forecast data sheet on Brand/Country/Service-level hardware forecast, including revenues

Click for Sample

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SBD

2024

Digital Cockpit and Infotainment Forecast

Contents

644 – Digital Cockpit and Infotainment Forecast 2024

Total number of pages - 74

Introduction

Introduction

The modern digital cockpits are changing the way users interact with their cars and proving to be an extension of our lifestyle, almost to the point that they are indistinguishable from the rest of our digital gadgets.
The number of displays in the cockpit has significantly increased and with every new model launched, the **central displays** keep getting bigger and equipped with more features. The driver-facing **instrument clusters** that once used to have clumsy analog dials are more digital now and work in tandem with the other in-car displays. For several years, **Heads-up displays (HUDs)** are slowly making their way into more budget models and include speed, ADAS and navigation aids to help drivers.

SBD's **616 - Digital Cockpit and Infotainment Guide** provides data-driven insights into the various cockpit offerings by OEMs. The report looks at **FIVE key benefits of digital cockpits for automakers:**

- **Consumer demands**
- **Brand loyalty**
- **Enhanced capabilities**
- **Competitive**
- **New revenue streams**

The guide identifies key trends that are slowly becoming a mainstay and the challenges facing the OEMs as they migrate from siloed to a more integrated cockpit design facilitating inter-display content exchange.

Section	Content
Cockpit & CX Birds Eye View	An overview of the key topics that correlate with digital cockpit and consumer experience developments
Executive Summary	High-level overview of the digital cockpit landscape across the regions (US, EU, China)
The Basics	Introduction to the factors driving the digital cockpit dynamics, OEM monetizing strategies and HW/SW consolidation etc.
What's New	Latest activity in the digital cockpit space in terms of partnerships, investments and new product announcements
Analysis	Key trends driving the digital cockpit evolution and the most popular features, their pricing and fitment strategy.
Summary Tables	Summarizing the trends identified in the associated Excel spreadsheet, identifying the most popular cockpit combinations and their features
Ecosystem	Offering, acquisition and patent insights for key non-OEM stakeholders
Future Outlook	Four OEM personas are considered against drivers and barriers into the future to understand when full benefits of digital cockpit will be realized
Next Steps	Can SBD help you with any unanswered questions?

We Listened and Invested In Our Report to Align to Your Goals

You Said…

"I sometimes struggle to relate conclusions from research reports to the Outcomes and KPIs that we are working towards…"

"I would like to see what has recently changed within a forecast or domain to help decide if any changes to strategy need to be made…"

"I want to know where we stand 'head-to-head' against the competition on major industry trends…."

"I can find it difficult to take actionable next steps on Guides without assessing the future direction of the industry…"

"It would be helpful to identify disruptive companies and start-ups to keep an eye for partnerships in the future…"

"I would like the topics to be more 'forward looking' to help with future planning and take advantage of enabling technologies."

We Did…

Added **a cockpit and infotainment birds eye view** chapter with a high-level overview of all our cockpit, and connectivity reports.

Enhanced **CROSS-REFERENCING** with insights from our Cockpit Guide and CX evaluation

More **DATA-DRIVEN ANALYSIS** through our Analysis, and Executive Summary

Pushed boundaries to **UPDATE** and **IMPROVE** the cockpit and infotainment forecast and add new features to the forecast.

Example slides from the report

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High bandwidth infotainment is the new normal

Connected integrated cockpit

- ✓ Premium brands are advancing towards connected integrated and Pillar-to-Pillar infotainment system.
- ✓ Some volume brands are expected to adopt connected integrated infotainment, but the overall market penetration is expected to be slow during the forecast period.

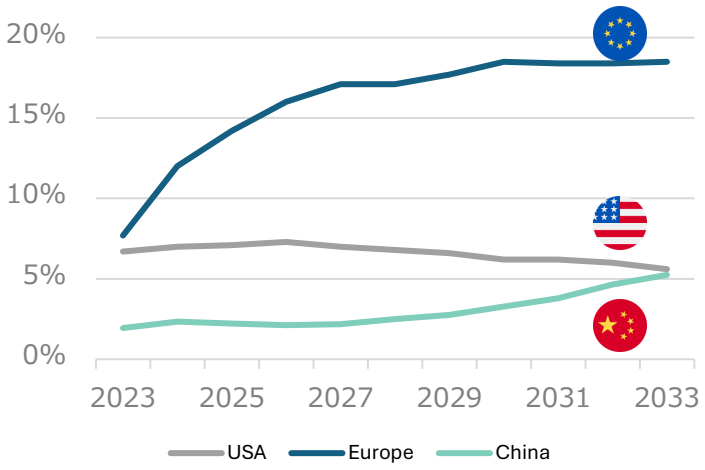
High bandwidth infotainment

- ✓ For premium brands, high bandwidth infotainment is the standard.
- ✓ Most of the volume brands already have or progressing towards advanced to high bandwidth infotainment and it is expected to be the standard by the end of the forecast period.

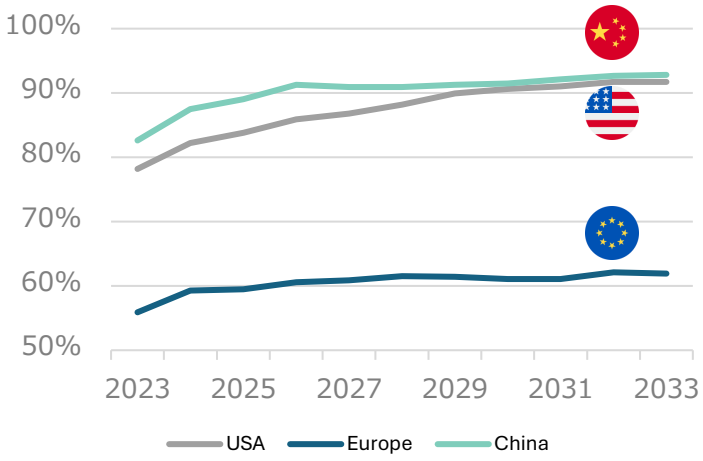
Pillar to pillar

- ✓ Pillar-to-Pillar infotainment systems are expected to be limited to premium brands by the end of the forecast period.
- ✓ However, in China Pillar-to-Pillar infotainment system is being adopted by some volume brands like Ford and Hongqi, but it is not expected to have high market penetration in the volume segment.

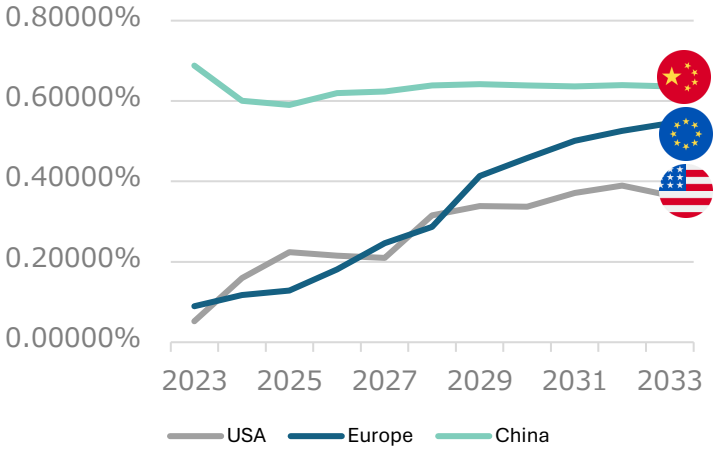
Connected integrated infotainment penetration by region



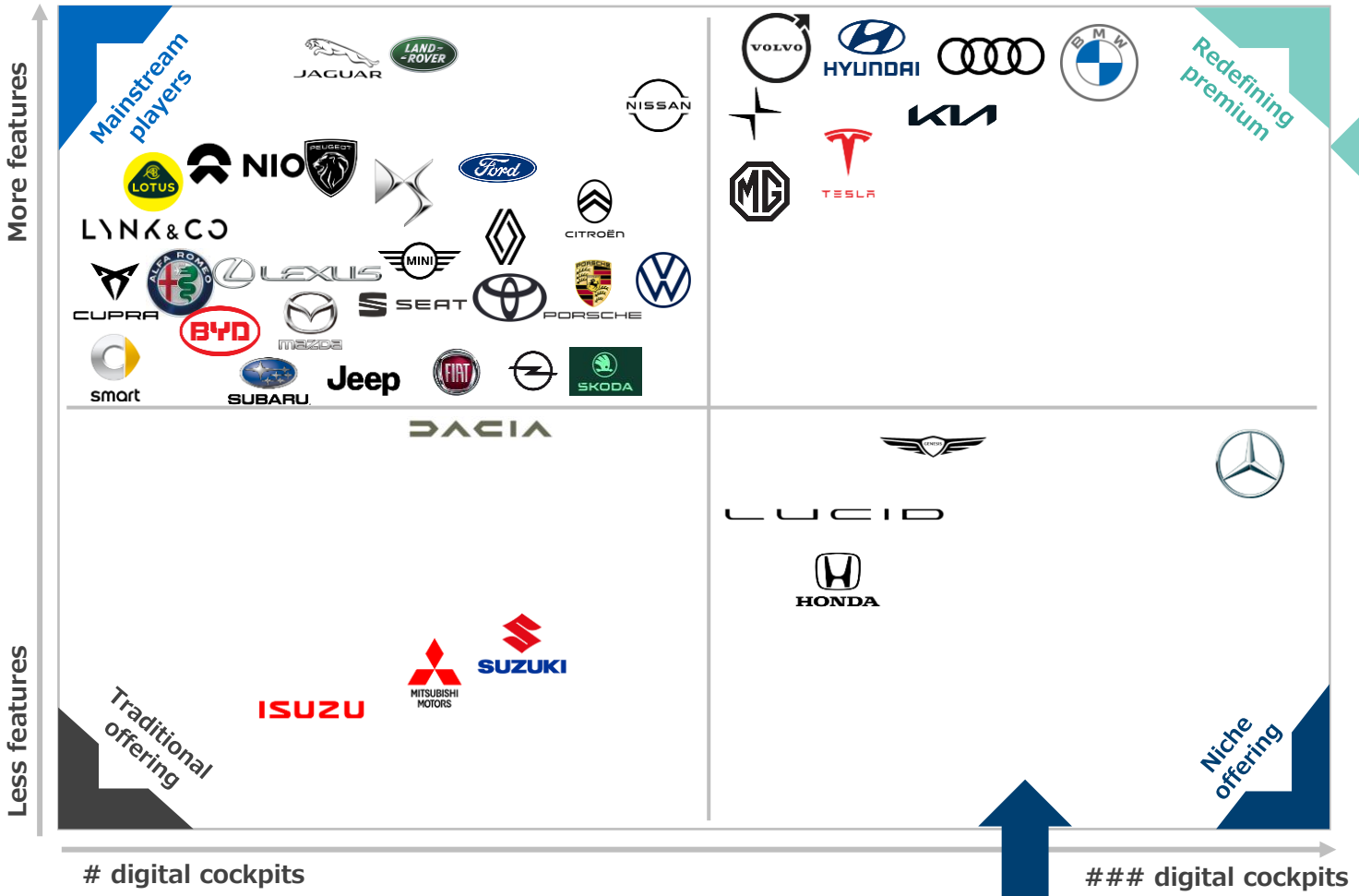
High bandwidth infotainment penetration by region



Pillar-to-Pillar infotainment penetration by region



Automakers are redefining what's traditionally considered premium



Some mega-volume brands are offering advanced digital cockpits that are at par, or in some cases, even better than many premium brands

Offering state-of-the-art digital cockpits or some 'first-ever' features

Digital Cockpit & Infotainment Guide

This guide covers digital cockpit and infotainment systems offered across the globe along with their features, penetration rates, pricing and fitment strategies.

Learn more

Displays. Is the past an indication of the future?

1

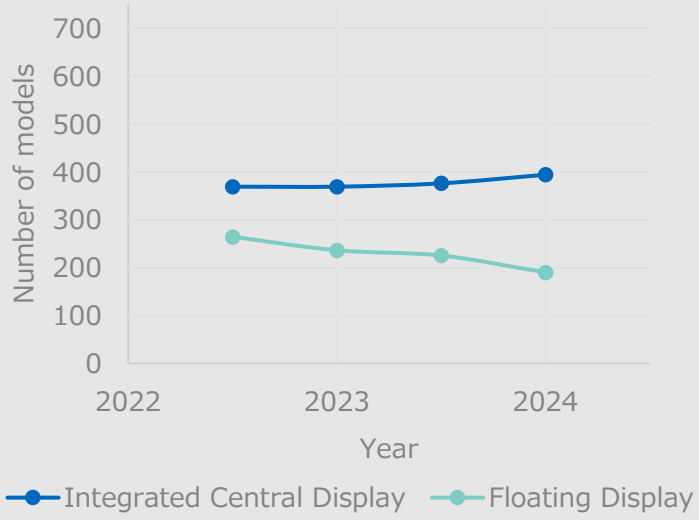
-39%

Decrease in number of models with floating display between 2022-2024

+6%

increase in number of models with integrated display between 2022-2024

Historic availability of Touchscreen & floating Display in the USA



2

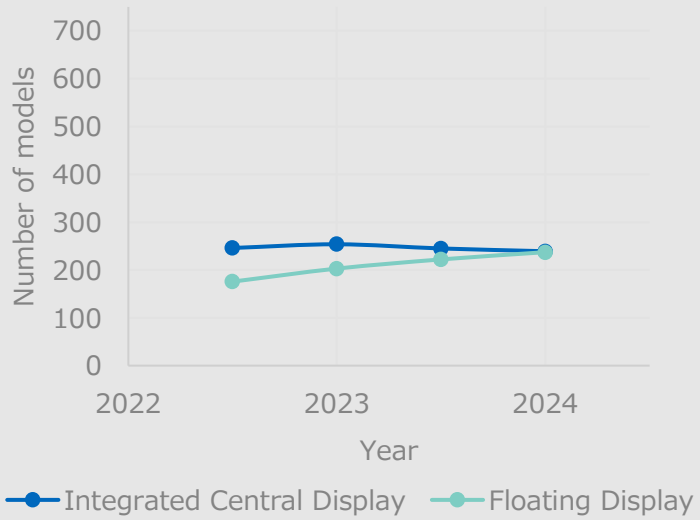
+32%

increase in number of models with floating display between 2022-2024

-3%

decrease in number of models with integrated display between 2022-2024

Historic availability of Touchscreen & floating Display in Europe



3

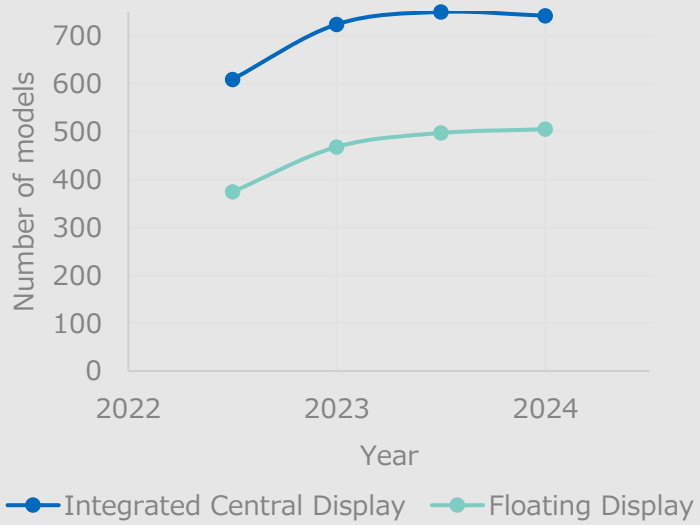
+35%

increase in number of models with floating display between 2022-2024

+21%

decrease in number of models with integrated display between 2022-2024

Historic availability of Touchscreen & floating Display in China



Data from SBD Report 616 - Digital Cockpit and Infotainment Guide

Future Technologies

Eye and Gaze Tracking

Gaze Direction and Eyelid Movement are the most widely considered parameter, assessed by OEMs, Tier 1 suppliers and Tier 2 suppliers.

Driver facing cameras typically use an infrared camera to monitor eye closure and gaze. Eye closure rate is used to estimate the driver's drowsiness level.

Adoption Timeline

Feature Availability	0-3 yrs	4-8 yrs	2031+
Mainstream	Gaze direction		
Differentiate		Eyelid movement	
Niche			Pupillometry

Facial Recognition

Most systems on the market in Europe and the USA are used for driving monitoring and driver identification. Some systems in China are used for driver authentication to unlock the vehicle.

The main technologies are infrared camera to allow recognition in low-light environments.

Adoption Timeline

Feature Availability	0-3 yrs	4-8 yrs	2031+
Mainstream	Head posture		
Differentiate		Driver identification	
Niche		Driver Authentication	Facial expression

Voice Identification

Currently limited to a small number of applications in vehicles.

Some supplier systems claim to recognize individual users among multiple voices present. Future applications include emotion detection.

Adoption Timeline

Feature Availability	0-3 yrs	4-8 yrs	2031+
Mainstream			
Differentiate			Emotion detection
Niche	Personal settings Accessing personal data		Unlocking the vehicle

Augmented Reality Navigation considerations

Drivers

Current Feature Importance

Augmented navigation data adds an extra layer of perceived value to a Head Up Display.

In the future, using Augmented Reality to present ADAS information such as Adaptive Cruise Control and blind-spot alerts exploits the positional benefit of the augmented reality HUD. This could become a meaningful driver support feature.

The best augmented reality systems may use HD map data and dynamic on-road graphics.

Barriers

Hardware cost

The current Augmented Reality Head Up Display or infotainment navigation technologies are limited by design decisions. WayRay Navion and Google Augmented Reality may raise the expectations of consumers. Any embedded system will have to outperform these solutions.

Basic driving information like speed and fuel level data can be shown on most non-AR HUDs and still be sufficient for most users. Specialist films and windscreen structures may be required to ensure the projected image is clear in bright sunlight.
An AR HUD system may have to rely on HD maps and may need to be designed with scope to allow the use of data from other on-board sources.

Forecast Outcome

Vehicle segments

~~A-B~~ C-D D+

Estimated time to reach market saturation (years)

~~2-4~~ ~~5-9~~ 10 +

Typical fitment type

~~Standard~~ Optional

AR HUDs are already on the market in 2024 and demonstrate benefits for navigation. An OEM will need to provide a system that is more advanced than a dashboard unit. In this forecast, it is assumed that AR HUDs will take relatively longer to reach saturation than non-AR HUD.

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Contact SBD Automotive

Do you have any questions?

If you have any questions or feedback about this research report or SBD Automotive's consulting services, you can email us at info@sbdautomotive.com or discuss with your local account manager below.

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