SBD

HY1 2023 526EU-23-HY1

526 Connected Service Guide

EU

About SBD Automotive

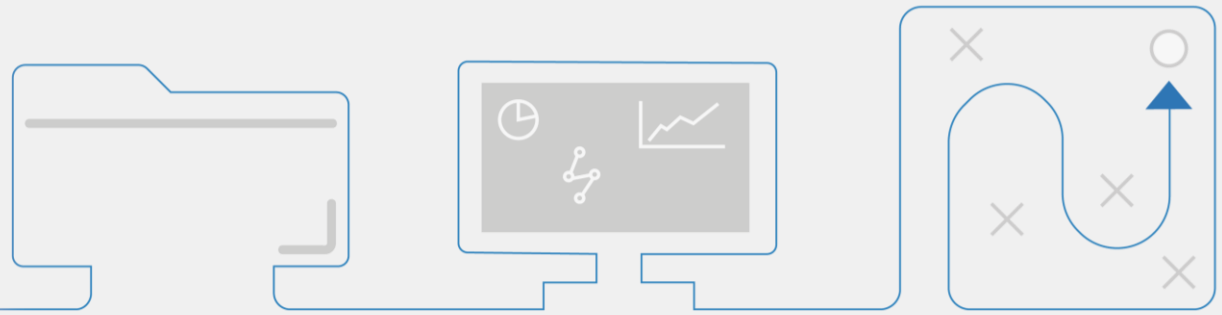
Management & technology consultants to the automotive industry for over 20 years

Our expertise:

- Connected
- Autonomous
- Shared Mobility
- EV
- Cybersecurity
- Anti-theft

Our role:

As our industry faces... **Uncertainty** ▶ We provide our clients with... **Data** ▶ **Insight** ▶ **Advice**



Seeing Beyond Data

Turning data into actionable advice

Click to find out more

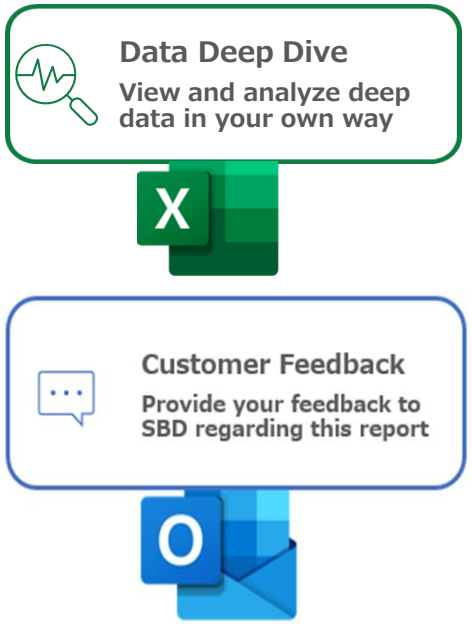
Research Portfolio

Consulting Services

Contact Us

Contents

526 Connected Service Guide



Total number of pages - 71

Introduction

Key questions answered in this report and each chapter’s overview

Contents Page
About SBD
Contact Us

Introduction

In recent years, the uptake of service-based applications and solutions by the automotive industry has impacted how customers interact with their vehicles. Today, in the passenger vehicle segment, the use of connected car services is widespread - with many OEMs reaching 100% adoption rate in different service categories. Today, an ecosystem of connected service offerings provide a wealth of benefits for consumers and service providers alike.

This connected services segment is continuing to benefit from rapidly growing advancements in the ecosystem. However, so do the risks of implementing the wrong connected service strategy or falling behind competitors' offerings. These risks will only increase with the advent of software-defined vehicles, the proliferation of built-in features hidden behind subscription paywalls, and the continued integration of the user's ecosystem of services into the vehicle.

With more than 100,000 data points shared with every release, this guide takes a deep dive into the comprehensive landscape of connected services and examines the strategies adopted by OEMs to enable them. Detailed insights and comparisons of key players, service availability, and more are made throughout the report for multiple countries around the world.

This report is updated bi-annually for the US, China, and EU regions to account for the development of these services globally and provide up-to-date, accurate, data to aid decision-making.

Section	Content
Executive Summary	An overview of the connected services provided by the different OEMs, the prevailing connectivity methods, pricing strategies, and cloud content provider support for these services. **Conclusion**: There are opportunities to partner with cloud content providers, while also keeping the eye on connectivity and pricing strategy.
What's New?	Section focusing on new models launched, notable announcements, partnerships and acquisitions, and trends in the connected services segment. **Conclusion**: In the evolving connected car ecosystem, finding the right partner or acquiring a potential cutting-edge technology supplier can prove vital for the long-term plans.
Analysis	An in-depth look into the market's strategic and financial trends, the connectivity channels' development, trial periods involved, and the cloud content providers involved with connected features. **Conclusion**: Both smartphone and cellular connectivity penetration is steadily increasing with the launch of new services specifically for the battery-electric models.
Summary Tables	Each slide in this section details the differences each OEM group adopts in services' functional mapping compared to a common mapping model. It also features a grid placing each brand under an OEM group based on its sales volume and the number of connected services implemented.
Next Steps	Can SBD help you with any unanswered questions?

Executive Summary

Overview of the connected services, their pricing strategy, and cloud content provider involvement

Contents Page
About SBD
Contact Us

Chapter Introduction

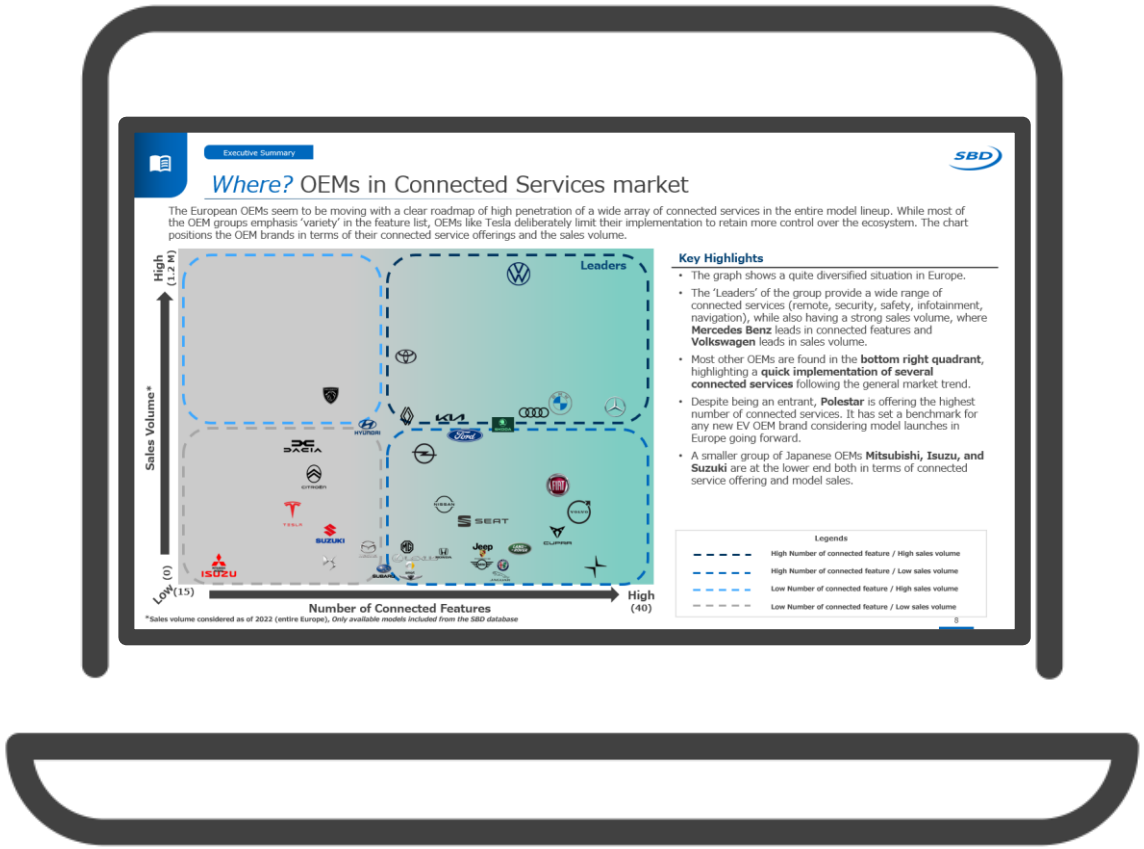
This chapter offers an overall look into the trends shaping the market. By looking at it from different perspectives, it draws a picture of connected services for each OEM profile.

In summary, this chapter highlights

- Where connected services trends differ between OEMs (*Where?*).
- The subscription plans and service package trends in each region (*What?*).
- How cloud content providers benefit OEMs in the connected services (*How?*).

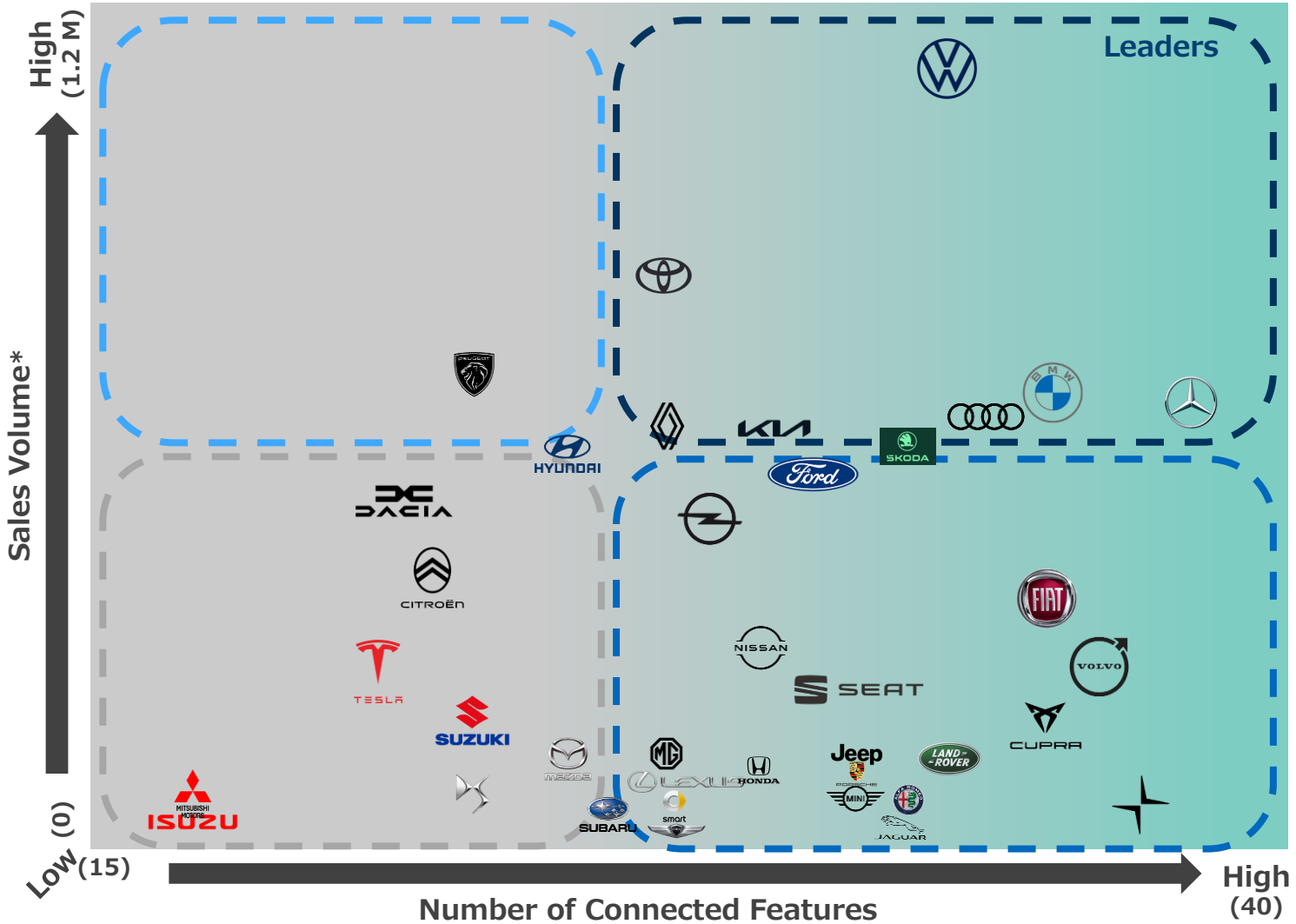
What are the key findings of this chapter?

- Which OEMs are implementing connected features more aggressively?
- Which service categories are most common, which are still being developed, and how do the regional trends in connectivity compare to the global ones?
- How OEMs are trying to monetize the connected services via different pricing strategies, and how many of them offer service packages.



Where? OEMs in Connected Services market

The European OEMs seem to be moving with a clear roadmap of high penetration of a wide array of connected services in the entire model lineup. While most of the OEM groups emphasis 'variety' in the feature list, OEMs like Tesla deliberately limit their implementation to retain more control over the ecosystem. The chart positions the OEM brands in terms of their connected service offerings and the sales volume.



*Sales volume considered as of 2022 (entire Europe), *Only available models included from the SBD database*

Key Highlights

- The graph shows a quite diversified situation in Europe.
- The 'Leaders' of the group provide a wide range of connected services (remote, security, safety, infotainment, navigation), while also having a strong sales volume, where **Mercedes Benz** leads in connected features and **Volkswagen** leads in sales volume.
- Most other OEMs are found in the **bottom right quadrant**, highlighting a **quick implementation of several connected services** following the general market trend.
- Despite being an entrant, **Polestar** is offering the highest number of connected services. It has set a benchmark for any new EV OEM brand considering model launches in Europe going forward.
- A smaller group of Japanese OEMs **Mitsubishi, Isuzu, and Suzuki** are at the lower end both in terms of connected service offering and model sales.

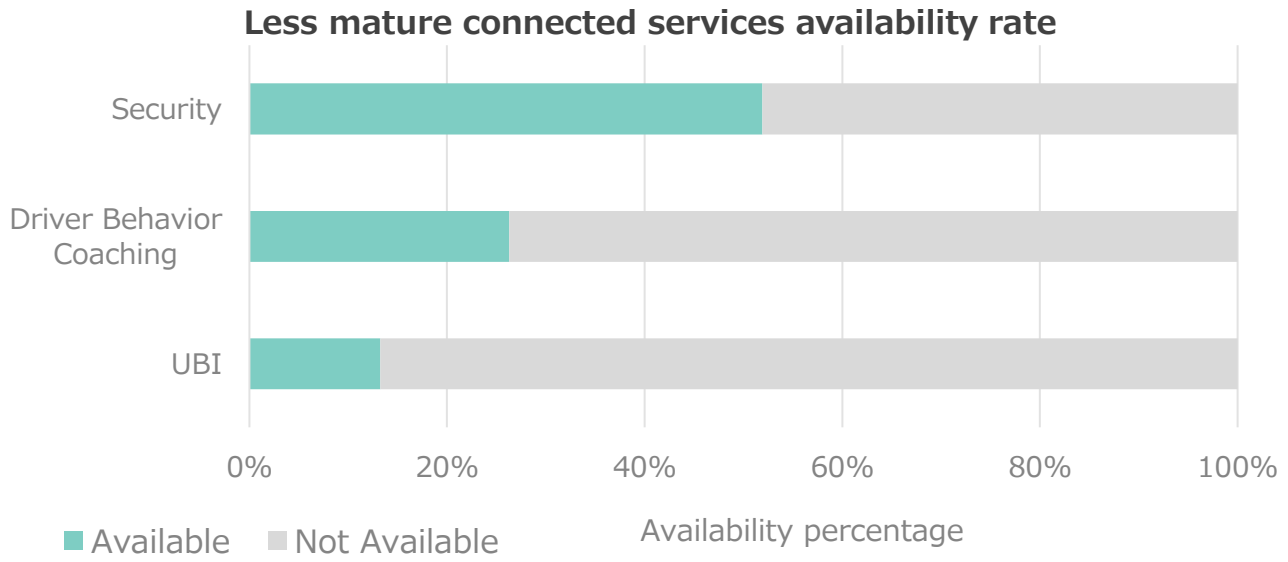
Legends

- High Number of connected feature / High sales volume
- High Number of connected feature / Low sales volume
- Low Number of connected feature / High sales volume
- Low Number of connected feature / Low sales volume

Connected Services Maturity and Connectivity

Most connected services have reached a high maturity measured by market coverage. Three of them, still have a lower adoption rate also due to the market characteristics.

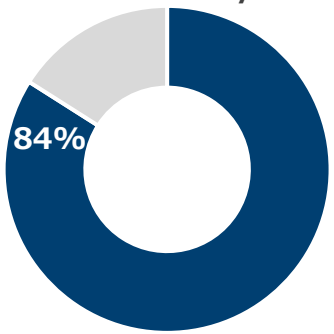
UBI and Driver style behavior coaching has an availability rate of **13.26% and 26.29%**. Also, **Security** despite the important category the availability rate is less as they are not yet as widespread as the others.



Connectivity methods and penetration trends in the EU (2022)

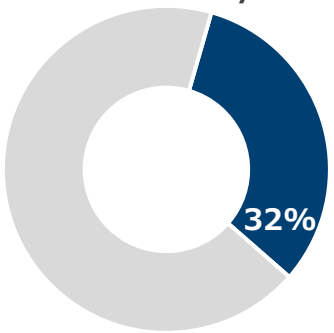
Europe has been closely following the global trends in terms of adopting various in-car connectivity methods to deploy more connected services with time. Compared to China and the US, Europe's availability rate for cellular connectivity is higher. However, Europe is lagging the US region when it comes to smartphone-based connectivity or screen duplication methods (CarPlay and Android). Overall, this puts Europe in an intermediate position.

Cellular Connectivity



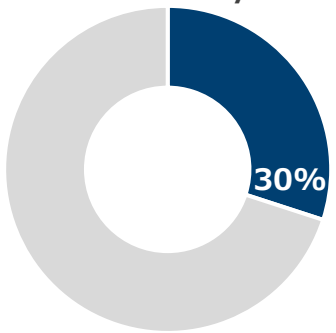
The overall availability rate for Cellular Connectivity is growing with the **EU availability rate at 84%**

Smartphone Connectivity



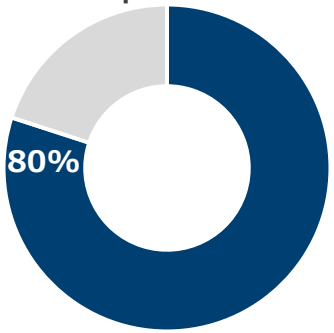
Smartphone Connectivity is being abandoned but it has **a relatively low availability in EU than US**

Local Connectivity



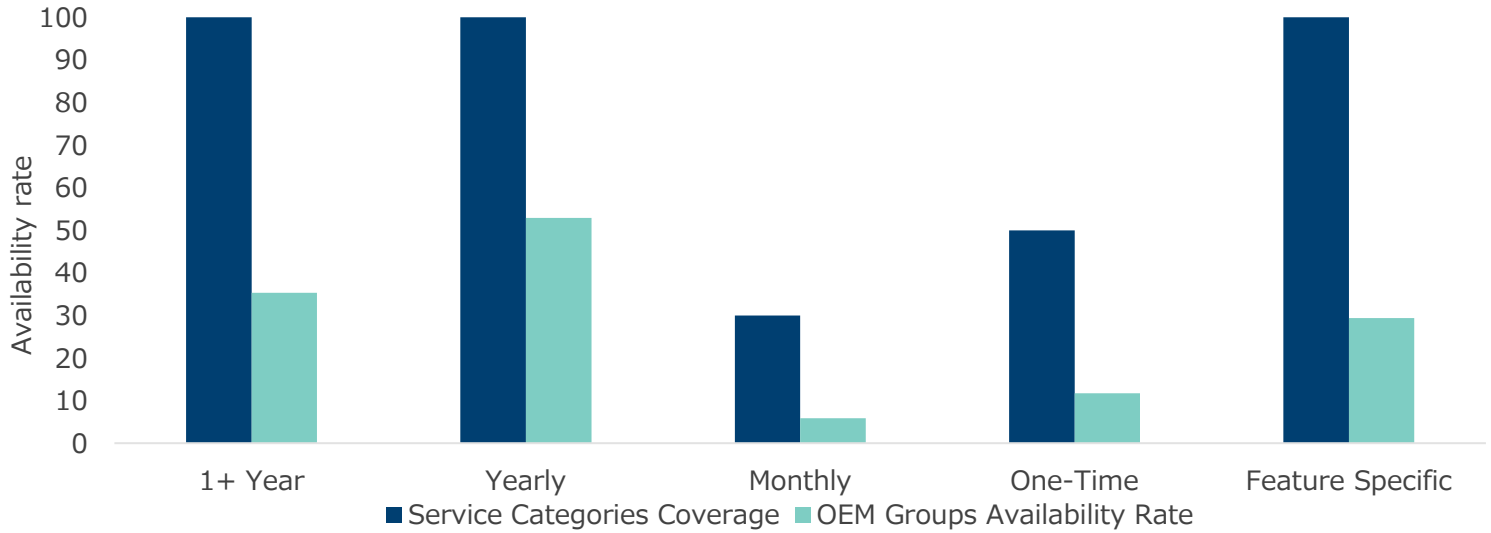
Local connectivity availability has been decreasing as well, with **EU having at 30%**

Screen Duplication



Screen duplication has an **availability rate in the EU with 80%**

Pricing Strategies



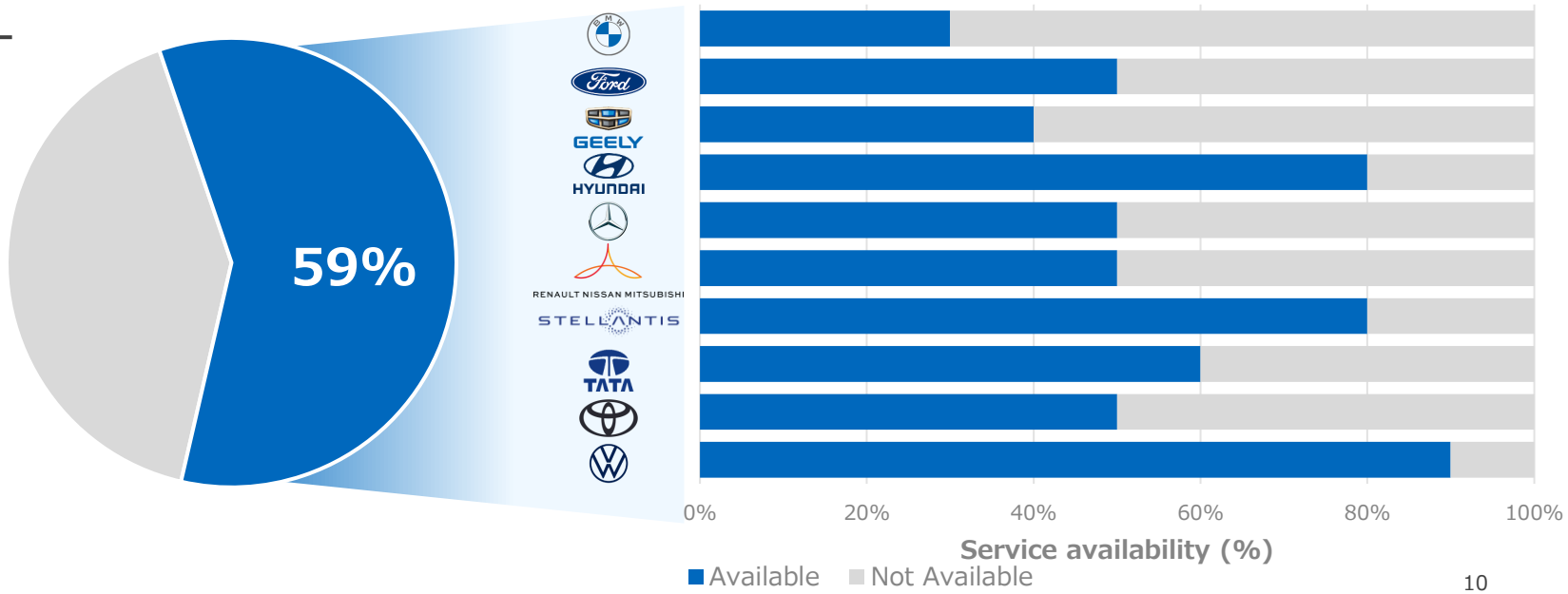
Subscription Plans

There is a **significant variety of pricing strategies**, especially when free trial periods and packages are taken into consideration. **As highlighted in the What's New section**, microtransactions for special features are being introduced and will likely become the norm in the coming years.

For Connected features, the most common pricing strategies are yearly, and greater than 1 year. The current offering, especially for **yearly subscriptions** covers every service category and **more than 50% of OEM Groups (9 OEM groups) feature it**. The **1+ year subscriptions** proposed, still cover the same service categories but **only 35% of OEM Groups** offer at least one such plan. However, the **yearly subscription** is offered the most and by 53% of OEM groups. **One-time subscription** availability also has increased to almost double since the last update**.**

Service Packages

- **59% of the OEM Groups** offer service packages. There has been a slight increase in the number of groups offering, due to the addition of one more OEM group to the list.
- Of these, **8 OEM Groups offer at least 50%** of the service categories, with Volkswagen having the highest number of service availability, followed by Stellantis and Hyundai
- **BMW** offers less, covering only the **OTA, Navigation, Convenience & Remote services categories**. **Volkswagen** instead covers the most categories.
- **UBI** is the only service in the package that **no OEM** group offers, while the categories such as **Navigation and Convenience & Remote services** are offered by all. In addition, **EV-Specific** features**, begin to be included in OEM's service packages.**



Cloud Content providers benefits and concerns

OEMs are adopting cloud solutions to gather insights from the broad array of data generated from their vehicle and app stores. This technology brings several advantages.

1 Lower IT costs

Cloud platforms can save IT resource budgets and improve productivity

2 Software innovations

The development of software and hardware with the continuous services of the back-end cloud platform empower innovation and development

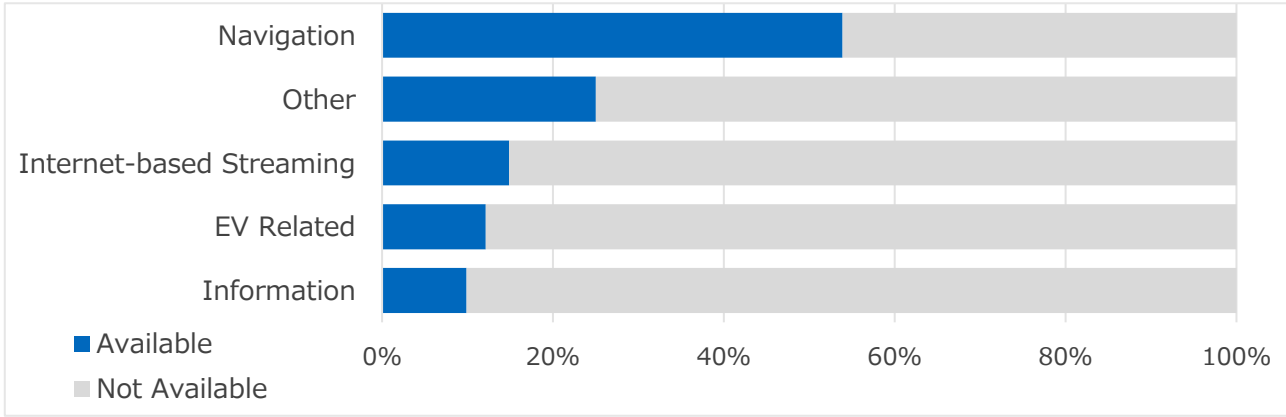
3 Call Centers

OEMs are using cloud solutions to provide full-stack call center capabilities that reduce customer care costs

4 Product differentiation

OEMs can use perception algorithms to create personalized upper-layer applications. New entrants can establish competitive advantages with cloud services and the ability to adjust software on demand

What major services are part of cloud content? And what is their availability rate across OEM models ?



The functions of cloud services are continuously subdivided, and applications are deepened. As SDVs develop, cloud services such as autonomous driving, IoT, "electric drive, battery, electric control", HD maps, V2X, etc. are constantly being segmented and account for higher proportions. In addition, simulation, OTA and other applications have rising demand for the cloud.
The increased use of sensors and data gathered by the vehicle and by cloud services brings **several concerns regarding data privacy**.

- Location data anonymity
- Drivers' adequate information and consent
- Personal data security
- Excessive data collection
- Data monetization

To cater to customers by providing the appropriate and up-to-date information, as well as getting the right consent, **OEMs are implementing Privacy Portals**, along with other solutions.

Major players for cloud content of the region

Navigation	Internet-based Streaming	Information	EV Related	Other
tomtom	TUNE IN	ntv	Chargemap	tomtom
here	deezer	DW	tomtom	Sygic
Google	Spotify	AFP	Google	Google

What's New?

Trends through the lens of the Connected services strategies changing, notable announcements, acquisitions and partnerships

Contents Page
About SBD
Contact Us

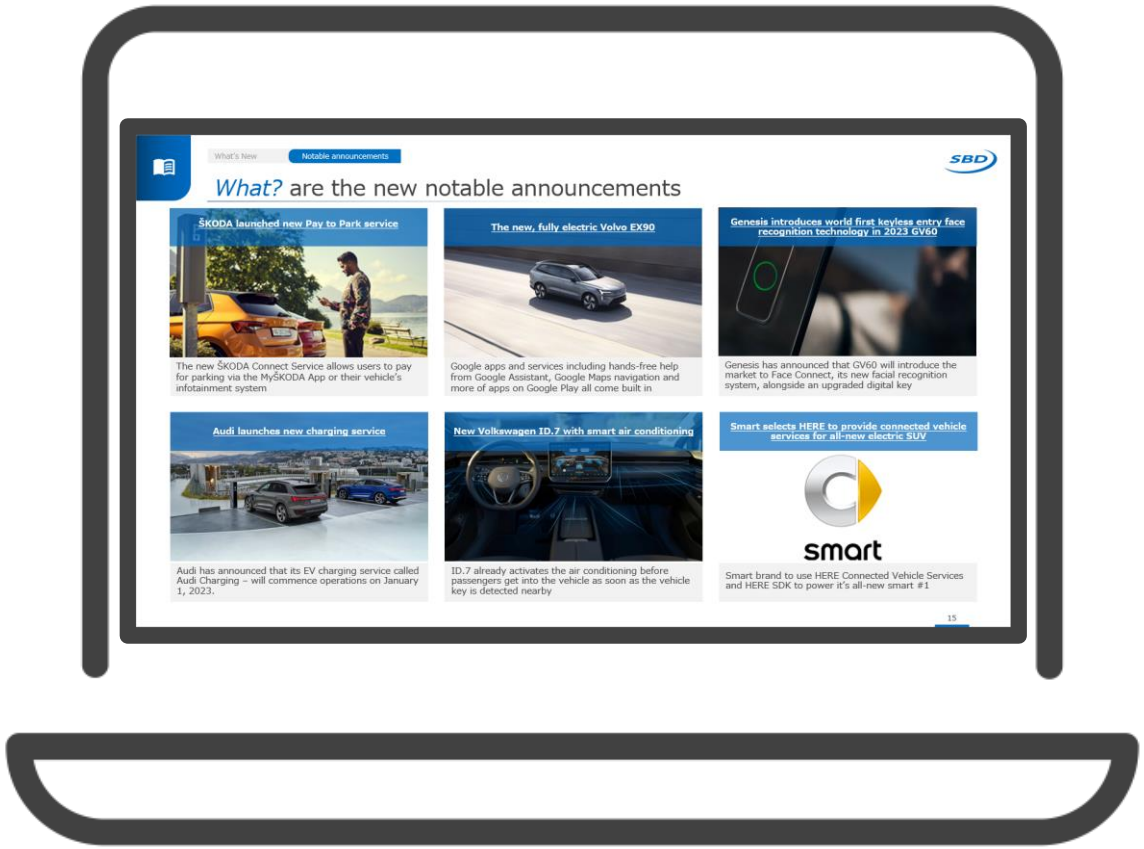
Chapter Introduction

This chapter reports recent updates made in the connected service space.

In summary, this chapter looks at how OEMs are working to improve their services and running 5G trials to gradually move to the next generation of connected services in the region.

What are the key findings of this chapter?

- What are the new models that have been launched in Europe?
- What are the most recent announcements regarding connected services.
- How EV-Specific connected services are offered through Smartphone duplication?



What? are the interesting highlights of new models launched

Here is a list of a few new models that has been introduced with noteworthy updates or innovations.

OEM	New Model Launched	Interesting Highlights
CITROËN	**e-C4 X**	The new midsized electric SUV from Citroen has a range up to 223 miles. e-C4 X gets the same infotainment system as C5 that offers natural speech recognition, remote climate conditioning and personalized connected profiles (available as part of Citroen Connect Services pack). Also, the navigation system is OTA updateable.
Jeep	**Avenger**	At the 2022 edition of the Paris Motor Show, Jeep unveiled 'Avenger', the all-electric SUV with an advertised range of up to 400 KM. Avenger features the UConnect infotainment system (10.25") that hosts a suite of connected services in addition to CarPlay and Android Auto. The system is voice-enabled and OTA updateable.
KIA	**EV6 GT**	Kia launched its all-electric crossover EV6 GT that comes with a 424 km driving range with fast-charging capabilities. It features a 12.3 central display with CarPlay/Android Auto support and a host of other connected features. The connected services come with one of the highest free trial period (84 months/7 years).
	EQS	The two variants of Mercedes-Benz's EQS SUV features a high-bandwidth infotainment system with multiple connected services platforms (Basic, Remote Online, me Connect, Live Traffic) along with CarPlay and Android Auto support. EQS also gets the 2nd generation of MBUX with adaptive software and AI capabilities.
MG	**MG4**	MG4 was launched in Europe in Q4 2022, and the model is based on new MSP architecture with a range of over 450 km. MG4 supports BaaS (Battery as a Service) battery swap systems and OTA updates throughout their lifecycle.
	Polestar 3	Polestar 3 was premiered in a launch event in September 2022. It gets a 14'5" infotainment unit powered by Android Automotive in-car OS and supports 5G connectivity. Polestar 3 users will get lifetime access to embedded and smartphone-based proxy apps.
	Austral	Renault launched its hybrid SUV in five European countries – France, Spain, Italy, Germany and the Netherlands. The model gets a host of native and smartphone-based connected services features with a 5-year free trial period. The connected car platform is powered by ATOS and the cloud partner is Microsoft (Azure).
VOLVO	**EX 90**	Volvo's new electric compact sedan EX 90 features an Android Automotive powered infotainment system with a 14.5" central screen. It supports CarPlay (not Android Auto) and other remote online and basic embedded features as standard (eCall, bCall) in addition to 3rd party content like INRIX, TuneIn Radio etc.

What? are the new notable announcements

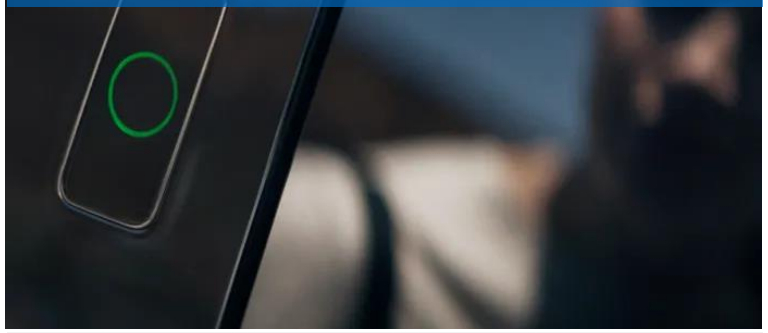
ŠKODA launched new Pay to Park service

The new ŠKODA Connect Service allows users to pay for parking via the MyŠKODA App or their vehicle's infotainment system

The new, fully electric Volvo EX90

Google apps and services including hands-free help from Google Assistant, Google Maps navigation and more of apps on Google Play all come built in

Genesis introduces world first keyless entry face recognition technology in 2023 GV60



Genesis has announced that GV60 will introduce the market to Face Connect, its new facial recognition system, alongside an upgraded digital key

Audi launches new charging service

Audi has announced that its EV charging service called Audi Charging – will commence operations on January 1, 2023.

New Volkswagen ID.7 with smart air conditioning

ID.7 already activates the air conditioning before passengers get into the vehicle as soon as the vehicle key is detected nearby

Smart selects HERE to provide connected vehicle services for all-new electric SUV

smart

Smart brand to use HERE Connected Vehicle Services and HERE SDK to power it's all-new smart #1

What? are the new partnerships and acquisitions

HY1 2023

Aeris to Acquire IoT Business from Ericsson

Ericsson's IoT Accelerator and Connected Vehicle Cloud businesses, and related assets, to be transferred to Aeris Communications

VinFast Chooses T-Mobile as global connectivity provider for electric vehicles

VinFast partners with T-Mobile as the connectivity provider of its electric vehicles. T-Mobile will provide connectivity for VinFast's electric vehicles in North America and Europe, including the VF 6, VF 7, VF 8 and VF 9

BMW collaborates with AWS focusing on cloud-based infrastructure for BMW's vehicle data processing and provision

BMW Group collaborates with AWS to bring new cloud technologies for fast and reliable availability of digital innovations. They are also cooperating to develop commercial off-the-shelf cloud solutions for securely managing vehicle data.

Mapbox to provide Toyota with cloud navigation SaaS solution

Mapbox partners with Toyota Motor Europe and will supply the OEM with Mapbox Dash. Toyota customers will be provided with moment-by-moment information and make driver journeys more time efficient, and safe

Kia launches an EV-charging rewards programme with &Charge

The partnership enables Kia customers to collect '&Charge Kilometres' that can be exchanged for free EV charging. Also, customers can earn credits for providing feedback on the charging experience. The &Charge service allows users to collect EV charging credits ('&Charge Kilometres') that can be used on the Kia Charge App to pay for public charging sessions, reducing total cost of ownership.

EV-specific connected services

Some of the most common EV-specific connected services nowadays are dedicated to locating charging stations. These apps serve EV owners in many ways, most importantly reducing range anxiety by helping to quickly locate the closest places to power up an EV. This is the main differentiating factor between EV-Specific and connected services for any other passenger vehicle.

Charging Station Research Apps

Source: Nine Hertz

Apps such as PlugShare, Charge Point, and NextCharge are already very popular with downloads on Android varying from over 1 million, to 500,000+, to 100,000, respectively.

Apps such as Google maps, TomTom Go Navigation, and HERE WeGo (all with several million downloads, and even billions for the first), are not primarily born for EV-specific services but integrate functions for charging stations research as well.

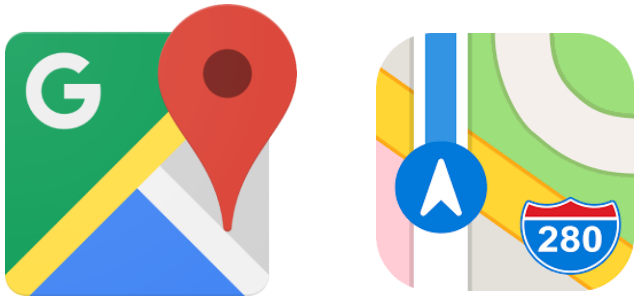
Other EV-Specific services

Source: Renault

As it happens in other areas of connected vehicles' infotainment, OEMs and 3rd party developers are trying to **consolidate their services, using fewer apps that concentrate more functions**. In general, other EV-Specific connected services too cater to **drivers' traveling and charging experience optimization**. Data from connected vehicles can be used to provide various related insights and services.

- **Charging Point Recommendation**
  Combining location and vehicle range data, it is possible to not only show charging stations' locations but actually recommend the ones positioned to make the trip more efficient.
- **Trip Planning**
  These allow preparing a long-distance trip in advance, with specific insights on when, where, and for how long to charge.
- **Driver Alerts**
  Proactive app's function sends a warning to EV drivers to help them plan their next charging station visit to optimize the trip and make each stop as fast and as convenient as possible

Charging Station Information (AA/CP)



EV charging station information which is traditionally part of OEMs' native connected service platform (either cellular connectivity or OEM-develops app suite) is also available via **smartphone duplication** connectivity like CarPlay and Android Auto.

Also, Google has indicated a feature that would allow vehicle owners to select the type of propulsion for their vehicle in order to receive personalized suggestions for the most fuel-efficient routes for the engine. Users will be able to choose the engine type for navigation by going to the settings described above and choosing from petrol, diesel, hybrid, or electric vehicle (EV).

Source: Google, Apple, TechCrunch

5G trials

The industry anticipates a future of Connected automobiles as a result of Industry 4.0 and the Internet of Things. New business models will emerge, which will lead to the creation of several revolutionary services. 5G technology promises ultra-high speed data transfer and minimal latency, which will translate to faster response times and higher reliability.

Today, cellular networks are used by millions of automobiles for emergency services, linked infotainment, and real-time navigation. However, future cellular networks like 5G will allow for more uses, including communications between vehicles, infrastructure, networks, and pedestrians (V2P), as well as autonomous driving. New safety-sensitive applications, collectively referred to as V2V/V2I, will be made possible by 5G's higher throughput, dependability, availability, and decreased latency (V2X, or Vehicle-to-Everything).

5GAA Demonstrated C-V2X Technology Applications and Safety Benefits for Road Users in Málaga, Spain

Source: 5GAA

A group of 16 members of the 5GAA met in Malaga on October 20 to showcase ready-to-deploy C-V2X technology, the industry's future, and the protection of vulnerable road users. Members and partners included 5GCroCo, Anritsu, Autotalks, Commsignia, Continental, Deutsche Telekom, Ericsson, Huawei, Intel, Keysight, Molex, Nokia, Rohde & Schwarz, Stellantis, Vodafone and Omniair. Through a range of indoor and outdoor demonstrations, C-V2X was shown in its current state as well as a wide range of applications for VRU (Vulnerable Road Users) protection.

Porsche accelerates connected vehicle development with Vodafone private 5G

Source: Porsche

Vodafone Business has rolled out a 5G hybrid private mobile network for Porsche Engineering at its Italian tech center as part of a push to further the development of the agenda of the connected car. Due to the hybrid nature of the network appearing the first in Europe, car makers and residents can use 5G technology.
With the Nard Technical Center, users can explore new business-critical applications such as vehicle-to-vehicle and vehicle-to-infrastructure connectivity, automated driving, and self-driving vehicles.

One of the key benefits of the trial is the value demonstrated by bringing in a large ecosystem to help develop not only the technology but also build the business case and model that will help drive the potential market adoption for 5G and C-V2X to help into the digital transformation of smart cities of the future. To succeed in this endeavor, it will need a village and investment from both the public and private sectors to help adopt this new technology to provide a quality of life for all citizens.

Analysis

Trends identified in the associated Excel spreadsheet, through the lens of alternative answers to three key questions: How, what, and which?

Contents Page
About SBD
Contact Us

Chapter Introduction

The chapter opens by highlighting the maturity level of each connected service category offered by the different OEMs. It then goes more in-depth by showing a future trend for connectivity methods.

The chapter then looks into the different approaches used by OEMs in terms of service availability, pricing, and free trials of the OEMs involved in the market.

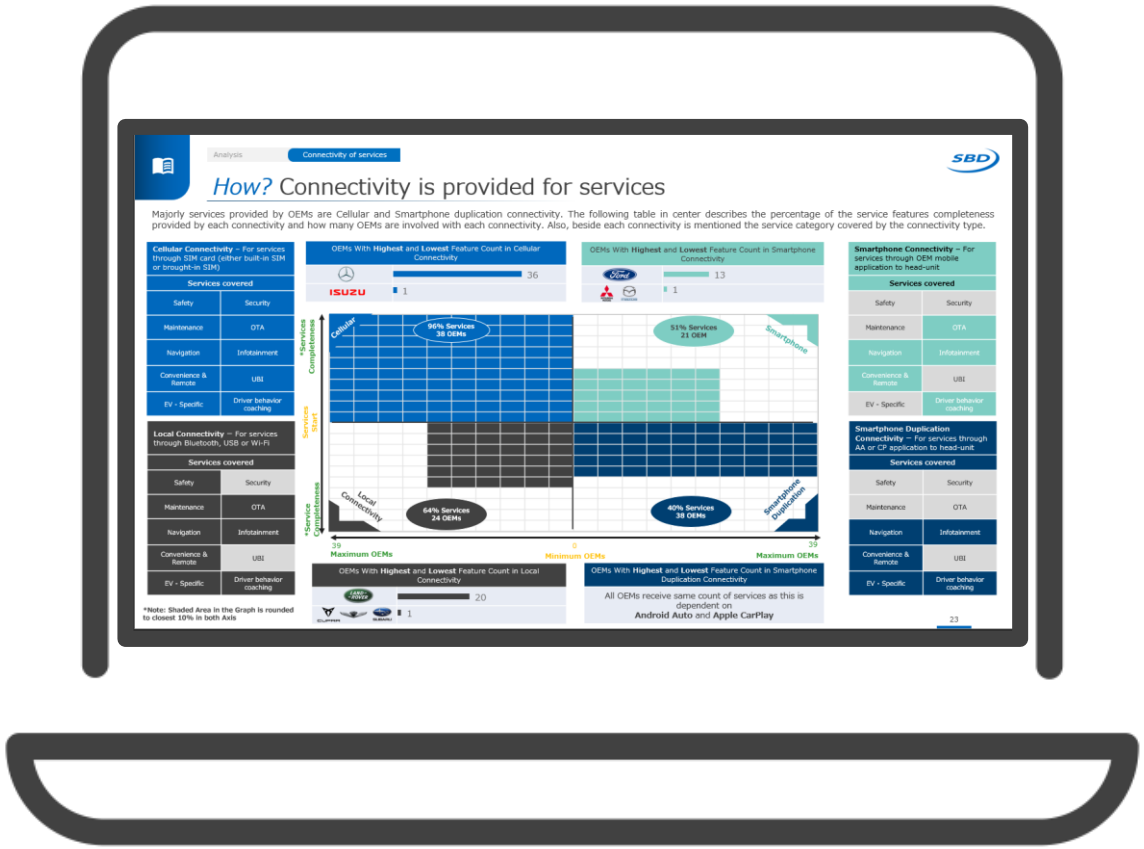
The last section displays the involvement of cloud content providers in providing real-time services for OEMs.

Finally, it provides an overview of the current challenges and risks connected with data protection and consumers' privacy including the measures adopted by certain OEMs to address potential issues.

In summary, this chapter finds how the market is developing (*How?*) what are the new opportunities (*What?*), and what strategies for connected services are being implemented (*Which?*)

What are the key findings of this chapter?

- What are the Connected services and how are these services featured by the OEMs?
- What differences are there among OEMs' connectivity and pricing offerings?
- What is the current level of cloud content provider involvement and what methods are being adopted by OEMs to ensure appropriate data protection?



Which? connected services are scaled

The following table provides an overview of the connected services on passenger vehicles. The scale % represents the models with some form of connectivity that are available with an implementation of the services in each category.

Connected Services		OEMs on the scale currently? (0 – 100)
Safety	Facilitates the connection between vehicle occupant(s) with emergency services and a breakdown (or roadside assistance) service provider directly or through a third party	84.04%
Security	Group of services like tracking and controlling a stolen vehicle remotely, or working as parental alerts for potential unwanted vehicles' movements	51.91%
Maintenance	Group of services like extracting diagnostic data in order to improve servicing and warranty analysis, as well as providing the customer with contextual information to help decision-making for maintenance and failure	75.06%
OTA	Provides updating capabilities for embedded mapping data using a cellular, Bluetooth or Wi-Fi connection	66.52%
Navigation	Any kind of turn-by-turn directions to direct the driver to a destination including last-mile guidance	98.88%
Infotainment	Keeps drivers connected to any kind of audio or video streaming including web radio, cloud-based music storage, video streaming, etc.	98.65%
Convenience & Remote Services	Provides a series of remote services based on the car connectivity capabilities to improve the driving and ownership experience	99.10%
UBI	Uses vehicle data to enable Usage-Based Insurance (UBI) products, requiring OEMs to partner with either a data aggregator (who makes the data available to insurance carriers) or directly with insurance companies.	13.26%
EV-Specific*	Provide drivers with services that allow for greater peace of mind when operating Electric Vehicles (EVs). Some of the services which are captured are-Charging Station Information, Transaction, and Remote charging control. % shown is of EV's with connectivity	98.31%
Driver behavior coaching	A solution that analyses driving habits, typically factors such as real-time fuel consumption as well as throttle and brake operation, to provide coaching opportunities for drivers to improve their habits.	26.29%

*** EV- Specific Services strategy is only analysed for EV models**

Where? is the focus of OEMs connected services

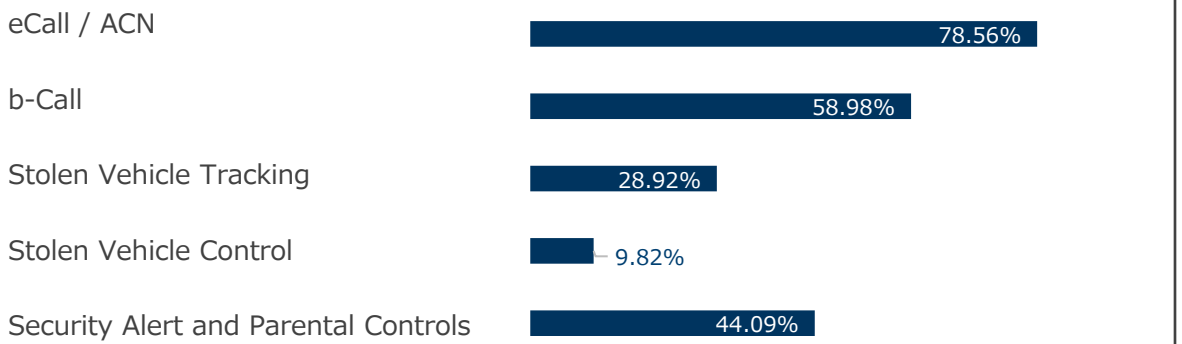
OEMs' focus in connected features development has been on Comfort & Convenience over Safety and Security features. The bar charts show each feature's within the service category and their respective standard availability across the entire market segment.

Safety and Security

5
Features

Safety and security are vital service categories. These features help the vehicle owner in case of accidents, emergencies, and vehicles theft. These features must be standard for connected cars.

Availability of the sub feature in the category (Trim level availability)

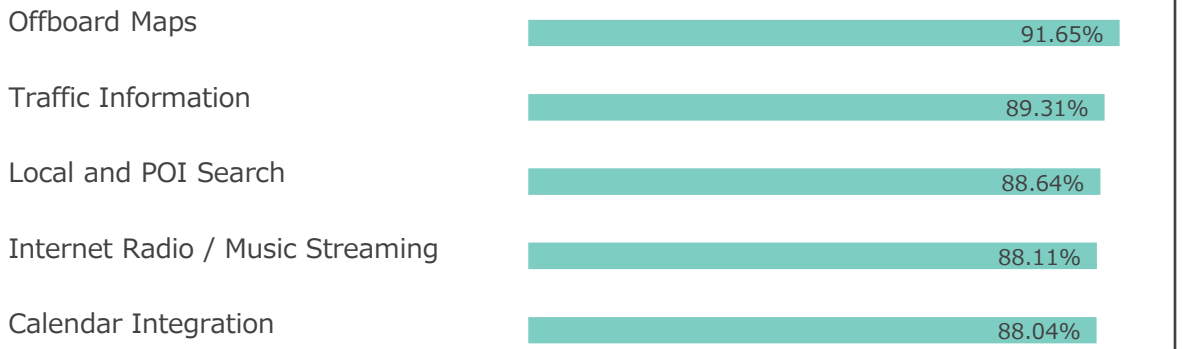


Comfort & Convenience

33
Features

Comfort and Convenience are the most common connected services being provided currently. Not only the number of features under this category is increasing over time but also the availability among vehicles is high as standard.

Availability of the sub feature in the category (Top 5 - Trim level availability)



Note

Although the focus is towards Comfort & Convenience service category. SBD foresees a rapid shift toward Safety and Security services in the coming years due to increasing regulations making safety features (i.e., e Call and b Call) mandatory and stressing the importance of reliability.

How? Connectivity is provided for services

Majorly services provided by OEMs are Cellular and Smartphone duplication connectivity. The following table in center describes the percentage of the service features completeness provided by each connectivity and how many OEMs are involved with each connectivity. Also, beside each connectivity is mentioned the service category covered by the connectivity type.

Cellular Connectivity – For services through SIM card (either built-in SIM or brought-in SIM)

Services covered	
Safety	Security
Maintenance	OTA
Navigation	Infotainment
Convenience & Remote	UBI
EV - Specific	Driver behavior coaching

Local Connectivity – For services through Bluetooth, USB or Wi-Fi

Services covered	
Safety	Security
Maintenance	OTA
Navigation	Infotainment
Convenience & Remote	UBI
EV - Specific	Driver behavior coaching

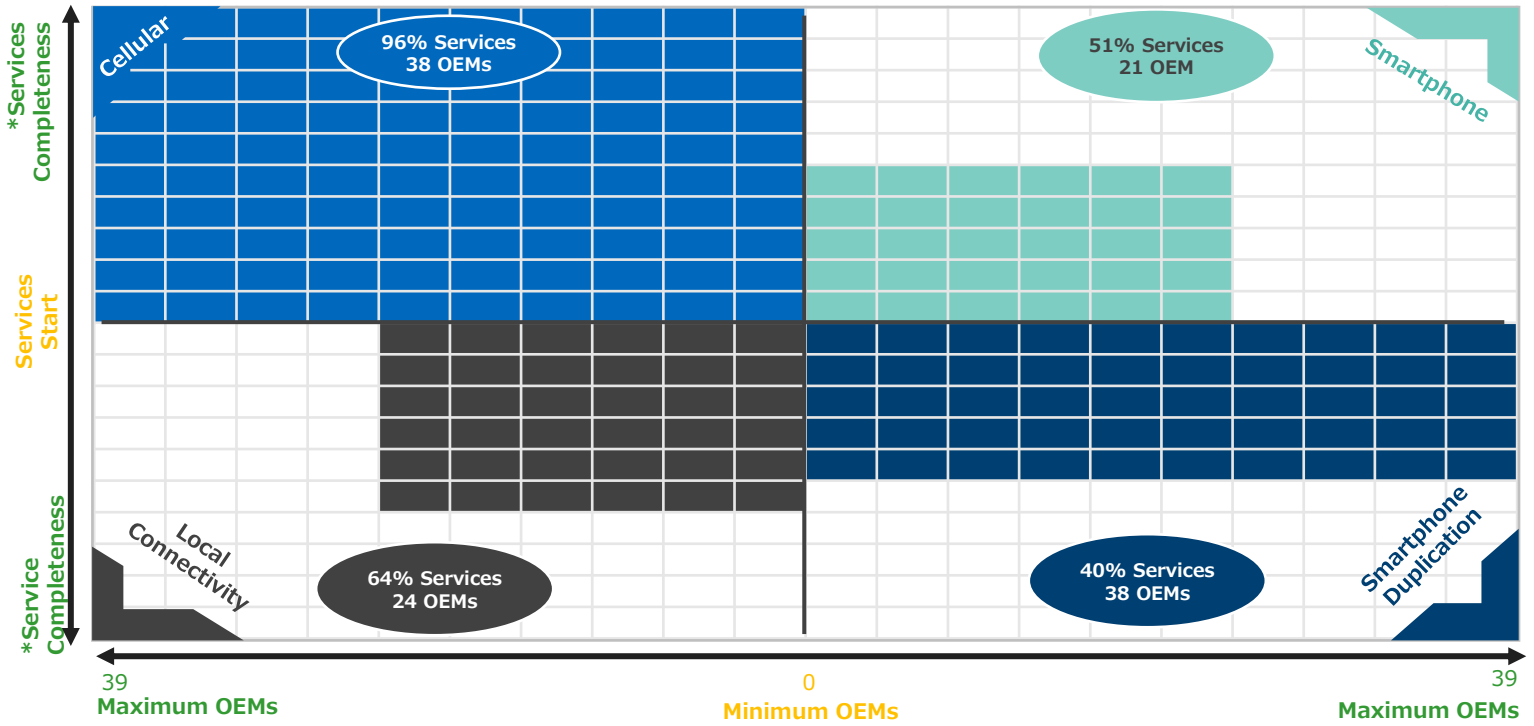
*Note: Shaded Area in the Graph is rounded to closest 10% in both Axis

OEMs With **Highest** and **Lowest** Feature Count in Cellular Connectivity

Mercedes-Benz	36
ISUZU	1

OEMs With **Highest** and **Lowest** Feature Count in Smartphone Connectivity

Ford	13
Mitsubishi Motors, Mazda	1



OEMs With **Highest** and **Lowest** Feature Count in Local Connectivity

Land Rover	20
CUPRA, Lotus, SUBARU	1

OEMs With **Highest** and **Lowest** Feature Count in Smartphone Duplication Connectivity

All OEMs receive same count of services as this is dependent on **Android Auto** and **Apple CarPlay**

Smartphone Connectivity – For services through OEM mobile application to head-unit

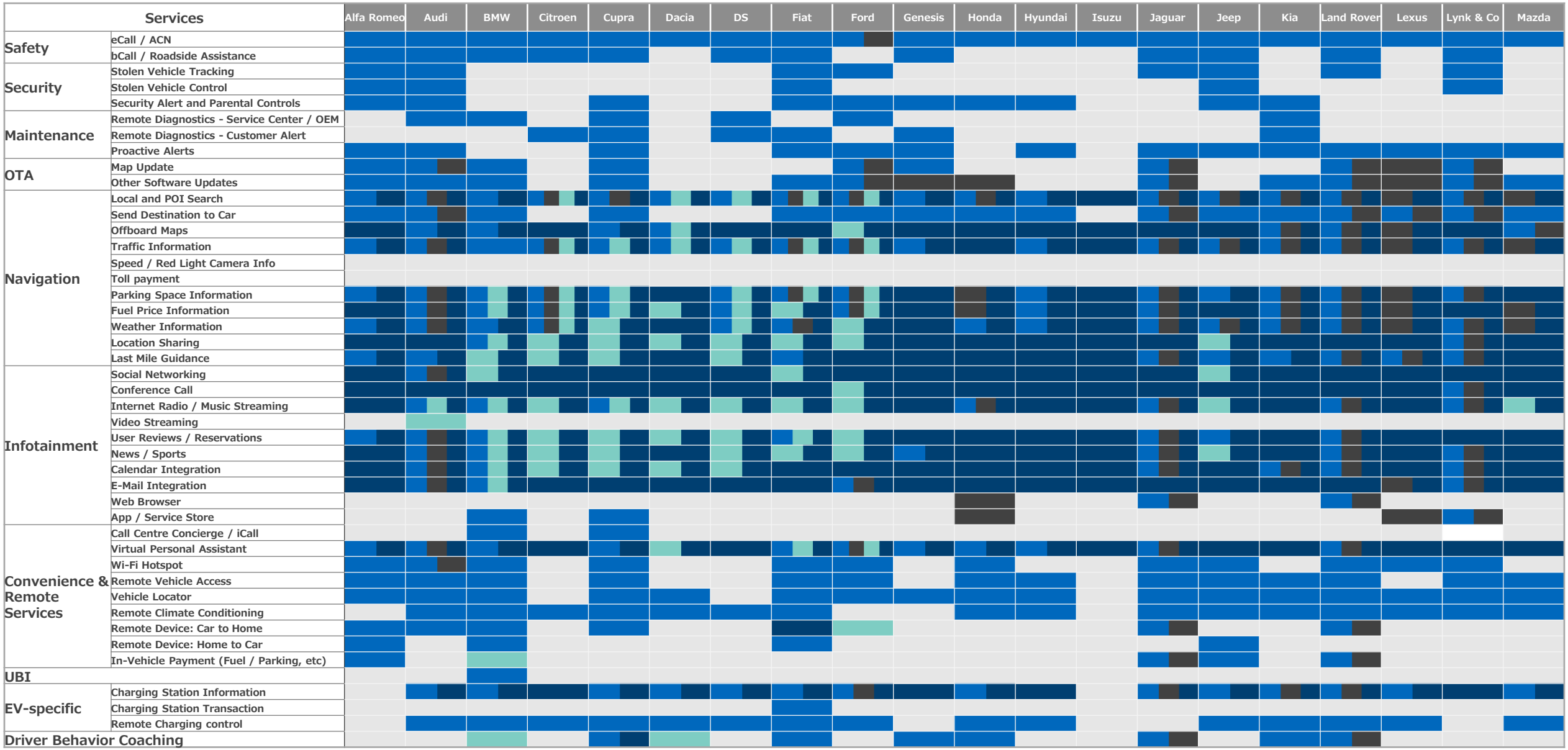
Services covered	
Safety	Security
Maintenance	OTA
Navigation	Infotainment
Convenience & Remote	UBI
EV - Specific	Driver behavior coaching

Smartphone Duplication Connectivity – For services through AA or CP application to head-unit

Services covered	
Safety	Security
Maintenance	OTA
Navigation	Infotainment
Convenience & Remote	UBI
EV - Specific	Driver behavior coaching

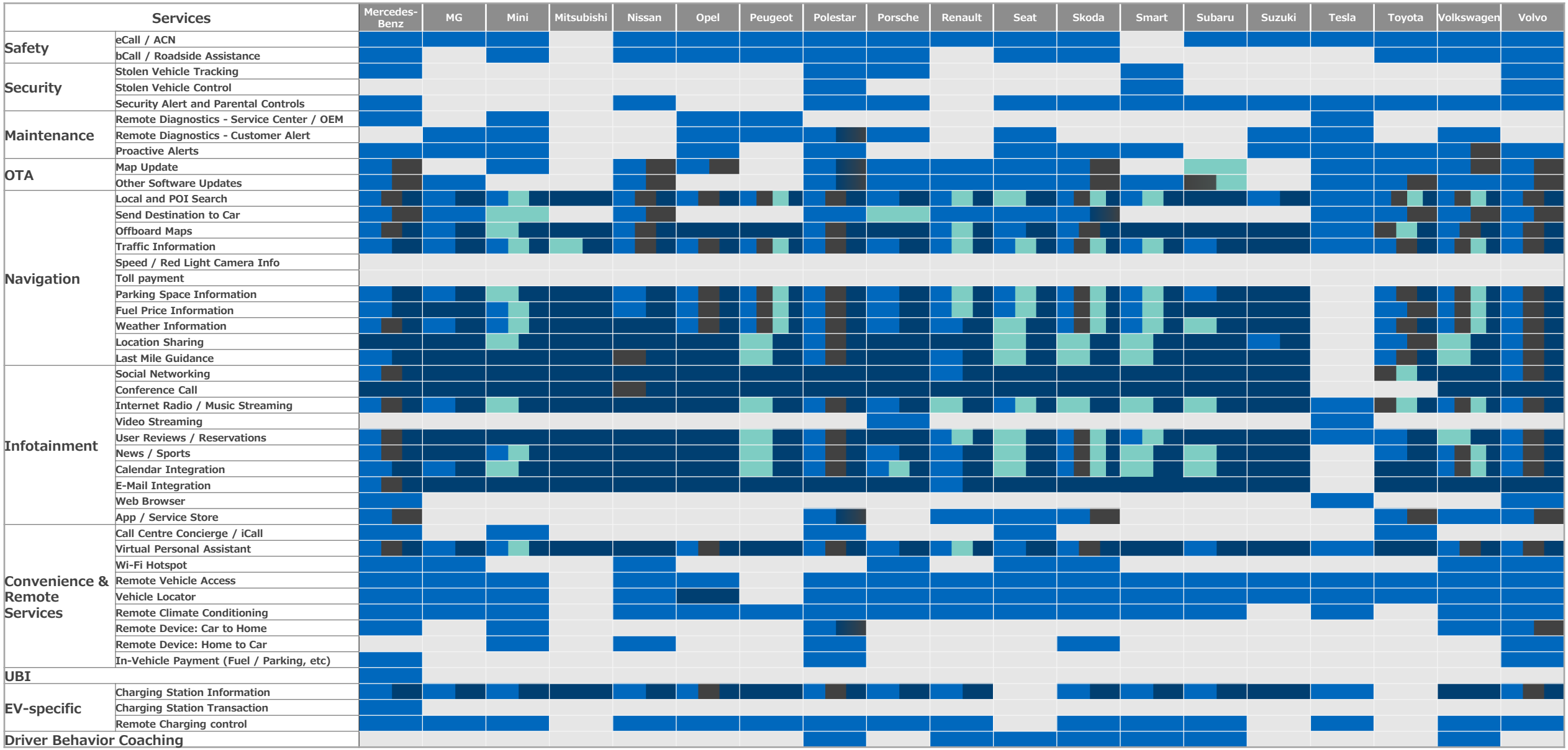
Connectivity summary (1/2)

Connectivity Source	Cellular E.g. Embedded SIM	Local E.g. Bluetooth or Wi-Fi	Smartphone E.g. Connectivity from phone	Smartphone Duplication E.g. – Android Auto



Connectivity summary (2/2)

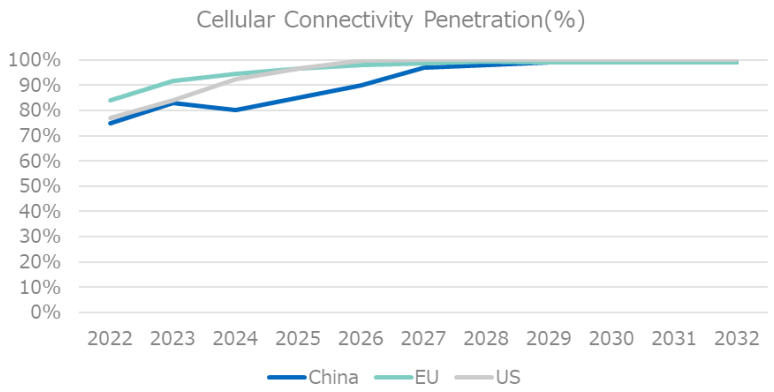
Connectivity Source	Cellular E.g. Embedded SIM	Local E.g. Bluetooth or Wi-Fi	Smartphone E.g. Connectivity from phone	Smartphone Duplication E.g. – Android Auto



What? Connectivity is going to be popular

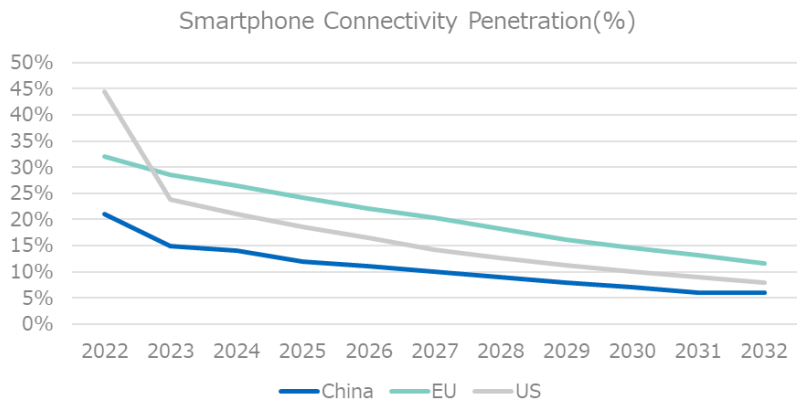
The following charts forecast the adoption of each connectivity method in the three main regions analyzed over a ten-year period (2022-2032).
The following forecast is from Report: 536 – Connected Car Forecast.

Pace accelerating for Cellular Connectivity



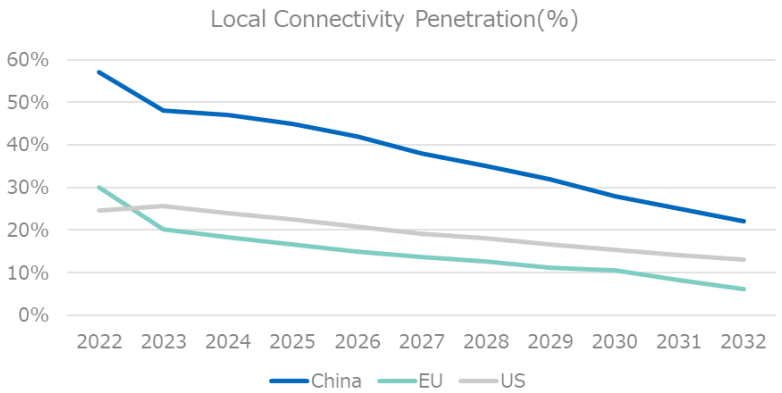
The key driver for this rapid pace is safety and convenience services which are becoming considered 'hygiene' features for many buyers. Brands with the most experience in connectivity are successfully using customer and vehicle data to feed internal use cases for data, such as better dealer retention for servicing, maintenance & repairs. For these use cases to be successful requires brands to achieve high activation and renewal rates and is likely to push OEMs to implement close collaboration with dealer networks, partners, and agencies.

Once-popular connectivity method is declining



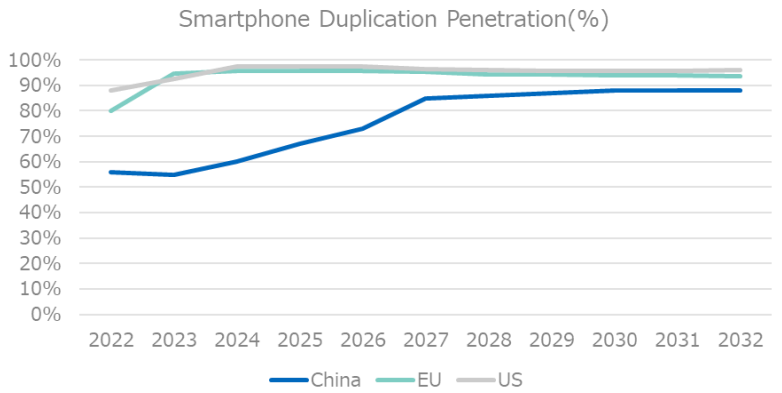
The penetration of proprietary smartphone-based solutions is declining, and the cause of the decline can be attributed to falling in cellular connectivity costs and penetration of screen duplication technologies through Android Auto, CarPlay, and CarLife.

End of the road for local connectivity? Not quite



For volume brands in particular wishing to offer high bandwidth, variable usage services such as over-the-air updates, Local connectivity provides a low-cost approach compared to using an embedded SIM. However, the connection method is more difficult for users to set up and it can't be relied upon for mission-critical services or safety-related software updates.

Well penetrated and still rising



As consumers increasingly expect the integration of their 'digital lives' into the car, OEMs increasingly see screen duplication as a relatively low-cost, low-maintenance way of providing familiar infotainment content to users.

How? are services available across OEMs

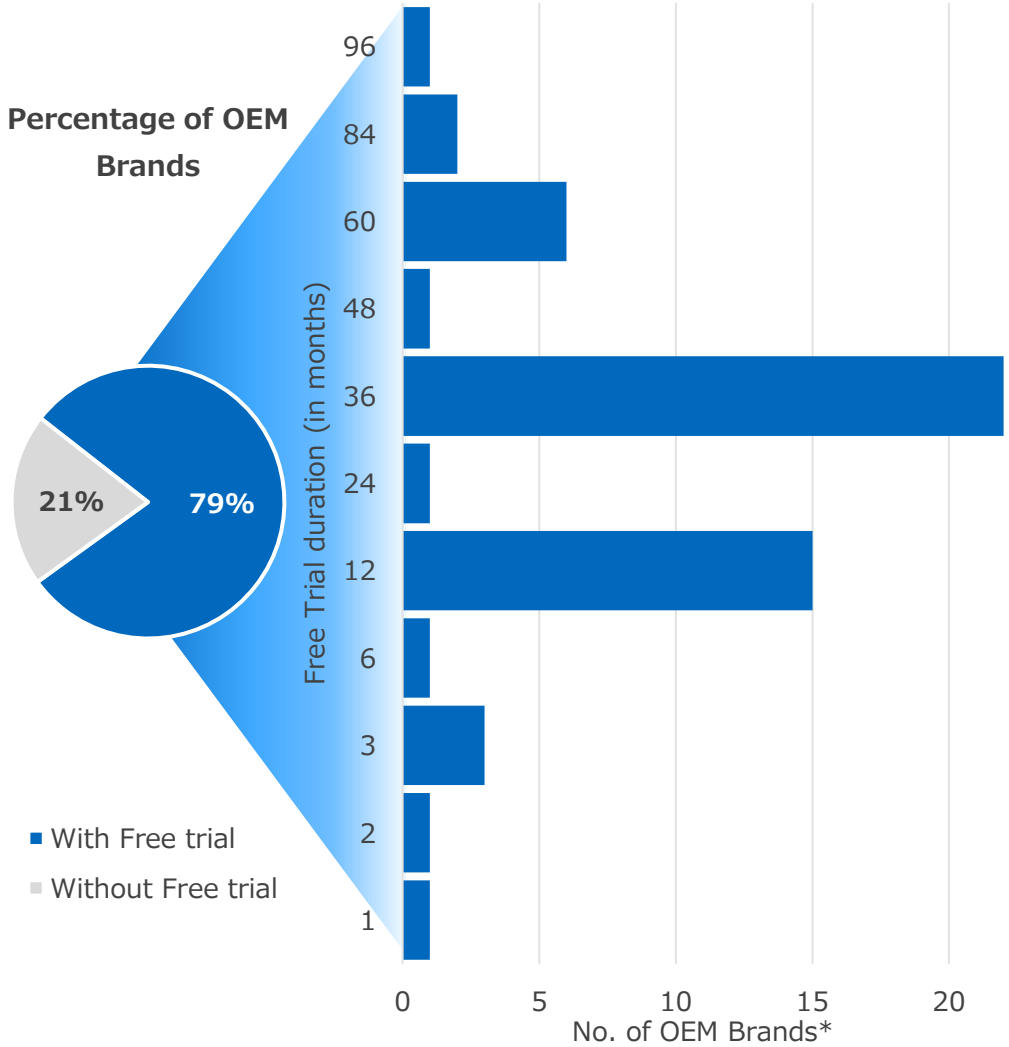
Note:
***Even if one Sub-category of services comes in standard it is marked as standard for the graph. Also some standard services requires subscription after end of free – trial period**
**** EV- Specific Services strategy is only analysed for EV models**

Key Highlights

- **Security, UBI, and Driver behavior coaching** are the only features that come standard in **less than 50%** of the models. The other services are mostly standard.
- **UBI** has the lowest penetration as only **BMW and Mercedes-Benz offer this service in Europe.** Also, **UBI has no optional offering.**
- The most significant connected services i.e., **navigation**, and **infotainment** come standard on ~90% of the models.
- Within the 'infotainment' category the **Virtual Personal Assistant feature is the most common**, being featured in nearly half the European model variants while the connected driver profiles are the rarest ones.
- Within the '**navigation**' category, Local POI search is the most common feature which is available on more than half the European model variants.
- **OTA has the highest optional offering** by proportion suggesting that OEMs are monetizing the OTA channel to push more 'value-added' services throughout the vehicle lifetime.
- **EV-specific connected services have the highest penetration** ~96% of cases but the absolute numbers are lower than other services as there are fewer electric models in Europe.
- **Convenience and Remote Online** features also have one of the highest penetration rates ~96%. The features include remote vehicle access, remote climate conditioning, and Vehicle Locator.

What? are the available free trials of services

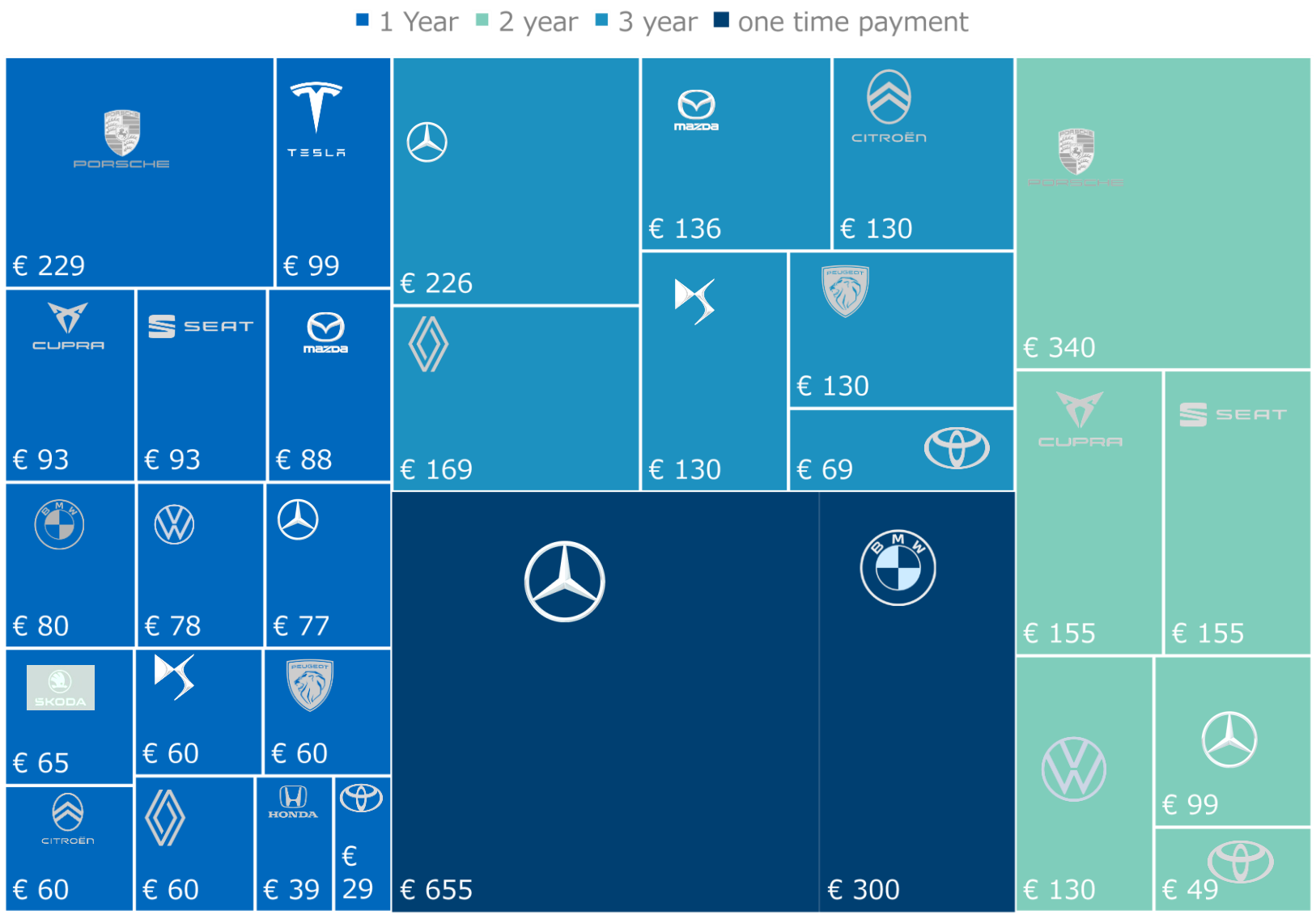
The following chart shows the numbers of OEMs against the respective free trial duration. On the table right are the Key differences mentioned about the services involved with the free trial period for the OEMs



Months	Example OEMs	Key Highlights
96	TESLA	• Tesla has the highest free trial period among all OEMs in Europe. • The services include OTA updates, remote features and EV-specific.
84	KIA, NISSAN	• Kia and Nissan are the only two OEMs offering a 7-year free trial. • Both offer remote services, EV specific and other safety features.
60	HYUNDAI, Renault, Genesis	• Genesis is the new addition in the 5-year free trial category (2023). • Genesis offers remote online services and OTA updates through this.
48	VOLVO	• Volvo is the only OEM in the EU offering a 4-year free trial for services. • The services include Map updates, EV-specific, infotainment etc.
36	Audi, PEUGEOT, TOYOTA	• A majority of OEMs offer the most common 3-year free subscription. • The services may vary by OEMs but mostly they are the same.
24	PORSCHE	• Porsche provides an additional 24-month free trial but does not offer In-car services for driver behavior.
12	VW, BMW, CUPRA	• BMW offers 12 months free trial which includes infotainment and the only OEM to offer UBI. • Cupra is offering EV-specific services while SEAT does not.
6	SKODA	• Skoda offers a 6-month free trial on only one model. • The services include map updates, infotainment and connected navigation.
3	Alfa Romeo, Audi, Mercedes	• Some premium OEMs offer a limited set of features via this category. • Key features include infotainment and remote online services.
2	MAZDA	• Mazda is the only OEM in EU offering a 2-month free trial offering a limited set of navigation features like fuel price info, POI search, live traffic information etc.
1	TESLA	• Tesla offers a limited 1 month free trial for a few specialized services like web browser, video streaming etc.

Note: One OEM brand can be part of different free trial months depending on the different service types

Subscription pricing summary



**Note: For the actual pricing across variants of the brands, please refer excel database.*

Overview

The chart displays a summary of the subscription period (in different colors) with respective OEMs offering in each period. Also, the **average pricing*** is mentioned in each OEM and the box size determines the number of connected services provided against the subscription period.

Key Highlights

- **Mercedes-Benz and BMW Group have a one-time payment option**. BMW charges a one-time subscription cost for CarPlay while Mercedes-Benz offers me Connect service package.
- **Tesla** offers a **one-month subscription** option which is priced at **€9.99**
- Most **OEMs in Europe offer yearly subscriptions** with the highest package being offered by Porsche (for the Porsche Connect service platform) and the lowest by Toyota (for online services).
- Volkswagen Group brands (excluding Audi) offer a 2-year subscription package. This is **primarily for remote and security services.**
- **Mercedes-Benz** offers three different subscription packages, the most among the European OEMs (1/2/3 years).
- Mercedes-Benz, Honda, Renault, Nissan, Volvo and Toyota offer **feature-specific subscription packages.**

Services in packages pricing summary

OEM Group	BMW	Ford	Geely	Hyundai	Mercedes-Benz	Renault Nissan Mitsubishi	Stellantis	Tata	Toyota	VW
Connected services	Package Price Range (€)									
	500-5,000	1,000	1,300	1,140-5,950	119-2,600	300-1,500	250-2,300	1260-1688	600-1,500	390-10,900
Safety		●		●			●			●
Security		●		●		●				●
Maintenance		●		●			●			●
OTA	●				●	●	●	●	●	●
Navigation	●	●	◆	● ◆	● ◆	● ◆	● ◆	● ◆	● ◆	● ◆
Infotainment			◆	● ◆	● ◆	● ◆	● ◆	● ◆	◆	● ◆
Convenience & Remote services	●	●	◆	● ◆	● ◆	● ◆	● ◆	● ◆	◆	◆
UBI										
EV Specific			◆	●	● ◆		● ◆	◆	◆	● ◆
Driver Behavior Coaching				●			●	●		●

Legends	●	Services via Cellular, Local Connectivity or Smartphone	◆	Services via Smartphone duplication

Overview

The chart displays a summary of the package pricing for connected services for each OEM group featuring services in packages. It also distinguishes the connectivity type used by each group to access the different service categories grouping Cellular, Local, or smartphone, against smartphone duplication.

Key Highlights

- Most connected services coming with packages are **offered through cellular, local connectivity or smartphone connection**. **Only Ford and BMW** do not feature any services with smartphone duplication.
- **Jaguar** of **Tata Group** introduces new service packages in **XE** and **XF** models.
- **BMW Group has increased the pricing range** to €500-5000. **A few MINI models are getting the embedded connected services package** at a relatively higher price range.
- **Geely Group**, **Mercedes-Benz Group Stellantis Group**, **Toyota Group** and **VW Group** introduce EV charging station information service via smartphone duplication. The service is available mostly as standard, but a few models also offer them as part of a connected service bundle (e.g., Volvo XC40).
- **Renault-Nissan-Mitsubishi Group** has introduced a 'Technology Package' priced between £960-1188 which is available on Renault Traffic Passenger MPV.

Data payments summary

Time Period	Price (€)			
	0-10	11-20	21-30	30+
Per Week		BMW		
2 GB / month	SKODA, Audi, CUPRA, SEAT, VW, HONDA			
3 GB / month	BMW			
5 GB / month		CUPRA, SEAT, BMW		
7 GB / month		PORSCHE		
10 GB /month		HONDA	NISSAN, BMW	
50 GB / year				HONDA

Overview

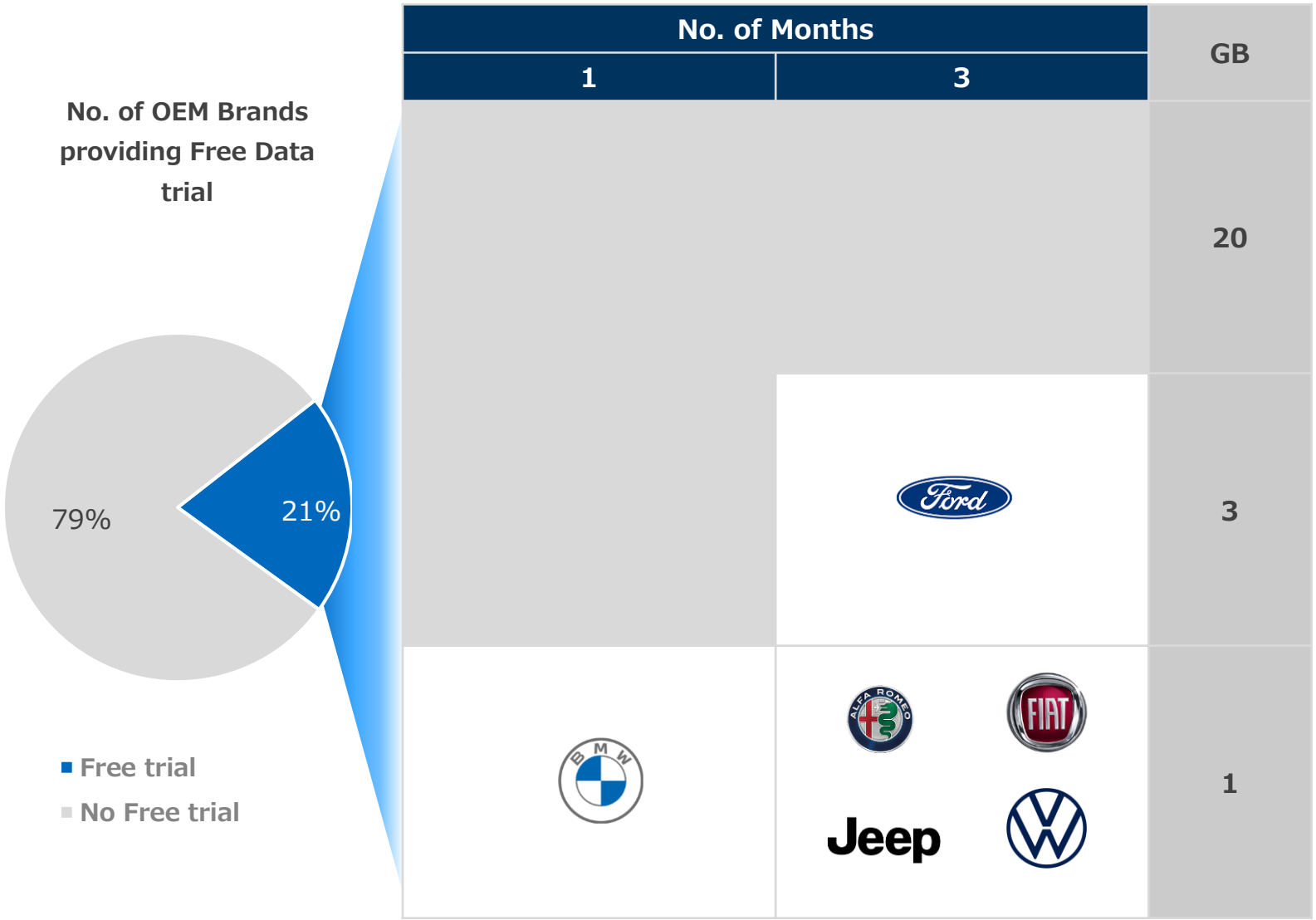
Data plans are provided for users to utilize the Wi-Fi hotspot. The chart depicts the different prices and plans offered for these data payment plans.

The table details each OEM's approach to data payment. The three main strategies are based on time (monthly payments), data plans with specific available GB figures, or unlimited usage.

Key Highlights

- Starting in 2023, **BMW** users will get a **new weekly subscription** for the in-car wi-fi hotspot at €20.
- **Cupra and VW models get a monthly subscription of Wi-Fi priced at** €7 (for 2GB data usage).
- **Cupra** models also get an upgraded monthly package with **more data usage (5GB)** for €15.
- **Honda** and **BMW** are the OEMs to offer multiple pricing options data plans offered, which gives flexibility to vehicle owners to choose according to their preference.

Data free trials



Overview

Data plans are provided for users to utilize the Wi-Fi hotspot via the infotainment unit. Some OEMs provide free trials for these services as highlighted in the chart.

The chart highlights the number of GB offered and the length of each plan in months.

Key Highlights

- **Eight OEMs** are currently offering free data trials as opposed to **six in 2022** showing a steady increase. VW is the latest to join the bandwagon.
- A few Stellantis group brands i.e., **Jeep, Fiat and Alfa Romeo have downgraded the free data offer** from 3GB to 1 GB as of 2023.
- **Jaguar** and **Land Rover** models get the highest amount of free data of 20GB (but the number of free months is unknown).

Cloud Content Provider Mapping with OEMs (1/2)

OEM Brands	Navigation		
	Traffic info	POI Search	Parking info
Alfa Romeo	TomTom	TomTom	TomTom
Audi	Google	Google	
BMW	HERE		ParkNow
Citroen	TomTom	TomTom	
Fiat	TomTom	TomTom	TomTom
Ford	Sygic, TomTom	Waze/What3words	Waze/Sygic
Genesis	TomTom	TomTom	
Hyundai	TomTom	TomTom	TomTom
Jaguar	HERE	HERE	
Jeep	TomTom	TomTom	
Land Rover	HERE	HERE	
Lexus	INRIX	Google	INRIX
Lynk & Co	HERE		HERE
Mercedes-Benz	HERE	HERE	easypark, Parkopedia
MG	HERE	HERE	
Mini	HERE		Parkopedia
Nissan	TomTom	TomTom	
Opel	TomTom	TomTom	TomTom
Peugeot	TomTom	TomTom	TomTom
Polestar	Google	Google	
Porsche		Google	
Renault	TomTom, Google	TomTom, Google	
Skoda	Google	Google	
Smart		TomTom	
Toyota	INRIX, TomTom	Google	
Volkswagen	Google	Google	
Volvo	INRIX, HERE, Google	HERE, Google	INRIX, HERE

Overview

The tables display the cloud content provided to specific OEMs* by 3rd parties in different connected service categories.

Key Highlights

- **Ford** has partnered with navigation service providers Sygic, TomTom, Waze and What3Words. The services are available in Mustang Mach E, Puma, Explorer and others.
- **Lexus** has added Google's POI search service in a wide range of models like UX, NX, LC, LS etc.
- **MG** adds navigation services (traffic information and POI search) enabled by HERE in a couple of its models.
- **Volvo** adds parking information and a POI search feature via **INRIX/HERE** in all the models.
- **TomTom** is the most preferred navigation partner by the European OEMs while **Google** and **INRIX** are slowly entering into new partnerships.

***Only OEMs with available data are included. Colored cells without a specific supplier indicate that the feature is available, but data do not indicate the name of the supplier.**

Cloud Content Provider Mapping with OEMs (1/2)

OEM Brands	Internet-Based Streaming	
	Audio	Video
BMW	Deezer, Napster, TuneIn	
Fiat	Deezer, TuneIn	
Ford	Pandora/Spotify	
Honda	Aha Radio	
Jaguar	Spotify	
Jeep	Deezer, TuneIn	
Land Rover	Spotify	
Lynk & Co	Spotify	
Mercedes-Benz	Amazon, Apple, Spotify, Tidal	
MG	Amazon Music	
Mini	Deezer, Napster, Pandora, Spotify	
Tesla	Spotify	YouTube, Twitch, Netflix, Hulu
Volkswagen	Tidal, Apple Music	
Volvo	TuneIn Internet Radio	

OEM Brands	Other		
	Fuel	Weather	Social Media
Alfa Romeo	TomTom	TomTom	
Audi	Google		
Citroen		TomTom	
Fiat	TomTom	TomTom	
Ford	Sygic	Wetter.de/AccuWeather	
Hyundai	TomTom		
Jeep		TomTom	
Mercedes-Benz		Vaisala	
Opel	TomTom	TomTom	
Peugeot		TomTom	
Porsche		Meteo Group	
Renault		TomTom, Google	
Volvo	INRIX		

*Only OEMs with available data are included. Colored cells without a specific supplier indicate that the feature is available, but data do not indicate the name of the supplier.

Key Highlights

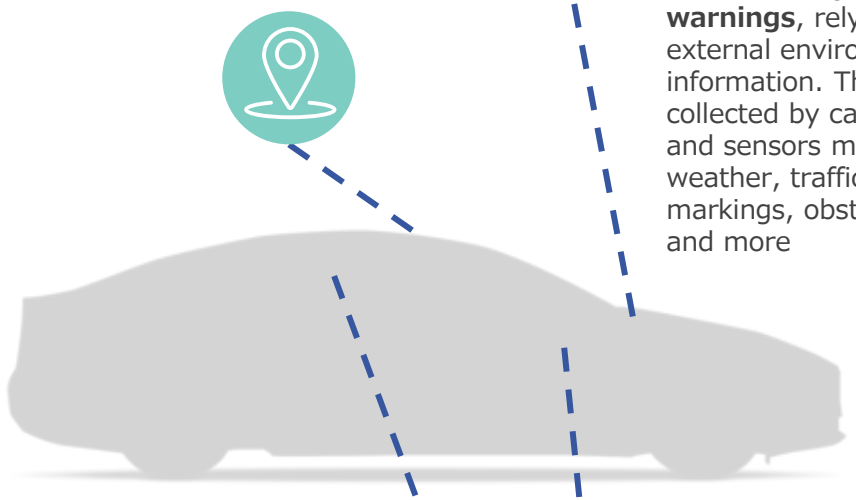
- **BMW** has partnered with several online content aggregators **to power online music streaming** (Napster, TuneIn, Deezer). However, these apps have only been made available to just one model i.e., 1-series.
- **Ford adds Pandora and Spotify** online music service to its connected features which is available on a few models like EcoSport, Fiesta, Puma, Kuga, Focus and Mustang Mach-E etc.
- **Tidal and Apple Music** are the newly added music streaming services to **Volkswagen's** connected car service suite. The service is available in a wide range of models like Polo, Golf, Taigo, T-Cross, Tiguan, Arteon, ID.3, Passat and many others.
- **Both Jaguar and Land Rover** added **Spotify music streaming** services to a long list of models like the F-Pace, I-Pace, F-Type, Range Rover Evoque, Defender, Discovery, Velar and others.

Data privacy risks

A Number of newly connected services collect vehicle data and driver's information, thus requiring data privacy regulations

Navigation systems may collect location and destination information

Technologies like **blind spot monitoring, park and braking assist, and lane-departure warnings**, rely on external environmental information. These are collected by cameras and sensors monitoring weather, traffic, lane markings, obstacles, and more



Driver's specific services may include **emergency calls** using hand-free telephone**, account or driver's recognition, as well as attention monitoring behind the wheel**. In-vehicle sensors, microphones, and cameras, physical and biometric information make a range of in-vehicle services possible

Third-party apps and services can allow communication between phone and vehicle. This means that third-party app developers may access data gathered by a vehicle and use them according to a different set of privacy policies

Current Risks

Location data anonymity
Vehicle localization systems must have measures in place to protect individuals from surveillance and data misuse.

Drivers' adequate information and consent
Information quality must be up to standard so that drivers can make informed decisions about data collection and usage consent. Ideally, separately for different functions and not bundled.

Personal data security
New vehicles expose personal data to several potential risks. Data storage, whether in-car or in an external location should be properly secured to avoid unauthorized access.

Excessive data collection
The increasing number of sensors, machine learning processes, and connected features increases exponentially the quantity of data potentially collected and stored.

Data monetization
This is another important topic as data is "the new currency". Different OEMs have established monetization strategies with data platforms and UBI schemes, requiring an additional level of control.

OEMs' reaction

Privacy Portal

PORSCHE mazda

A few OEMs have recently launched privacy portals.

With these, it is easier for OEMs to comply with data privacy regulations and to ask for and manage customers' consent for different features.

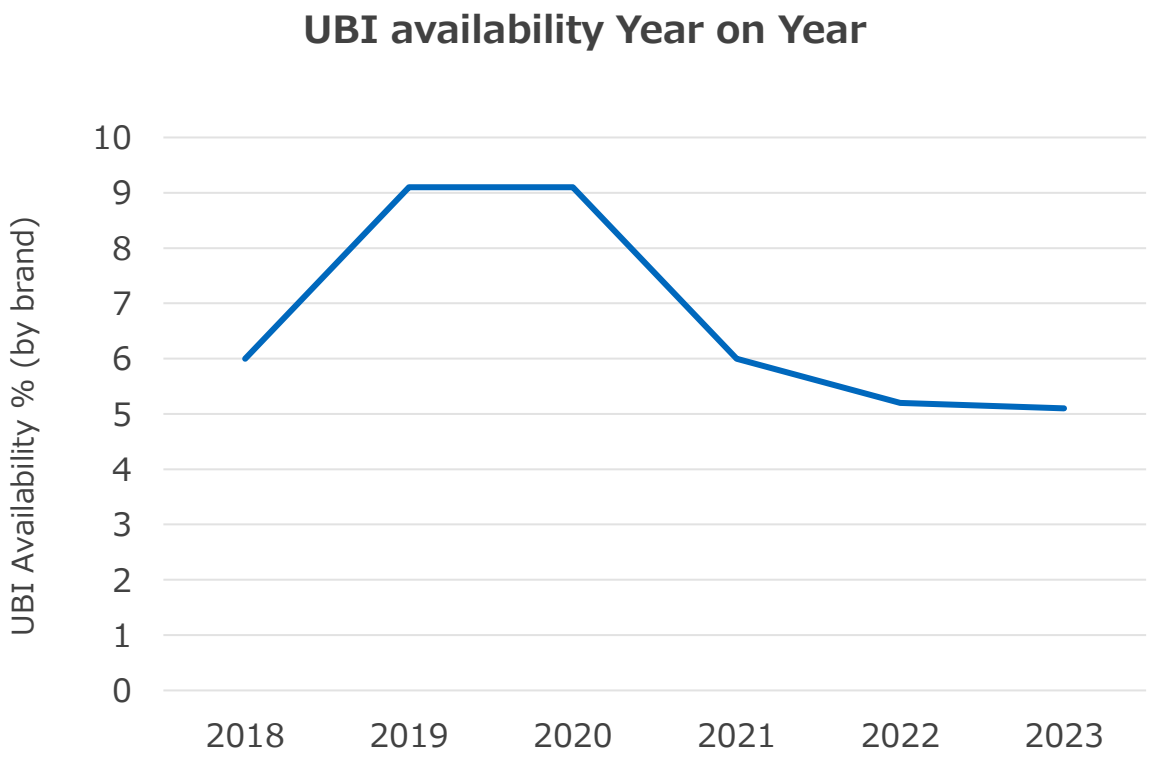
Privacy portals aim at giving consumers a clear understanding and control over the potential usage of data collected. They make it easy to change choices whenever needed, while also reporting how different decisions might affect the services connected.

They also serve to keep the vehicle owner informed when there is a change in the privacy settings or policy.

User Based Insurance (UBI)

The graph on the left features the OEMs that include UBI within their connected services offering and displays the availability percentage for each one.

Also are listed the advantages of UBI from different perspectives.



Only **BMW and Mercedes-Benz offer UBI in 2023 (YTD)**, and due to the introduction of new brands, the percentage, already quite low, decreases even more to just **5.1%**. Both OEMs offer UBI as standard in their model variants (Except Mercedes-Benz EQV).

User's advantages

- Lower premiums and discounts for safe drivers
- Encourages better driving
- Family members and employee tracking
- Stolen vehicle recovery
- Accident Investigation
- Ease of Use

OEMs' advantages

- Data monetization
- Gain insights about drivers' behavior, preferences, and needs
- Additional selling point

Insurers' advantages

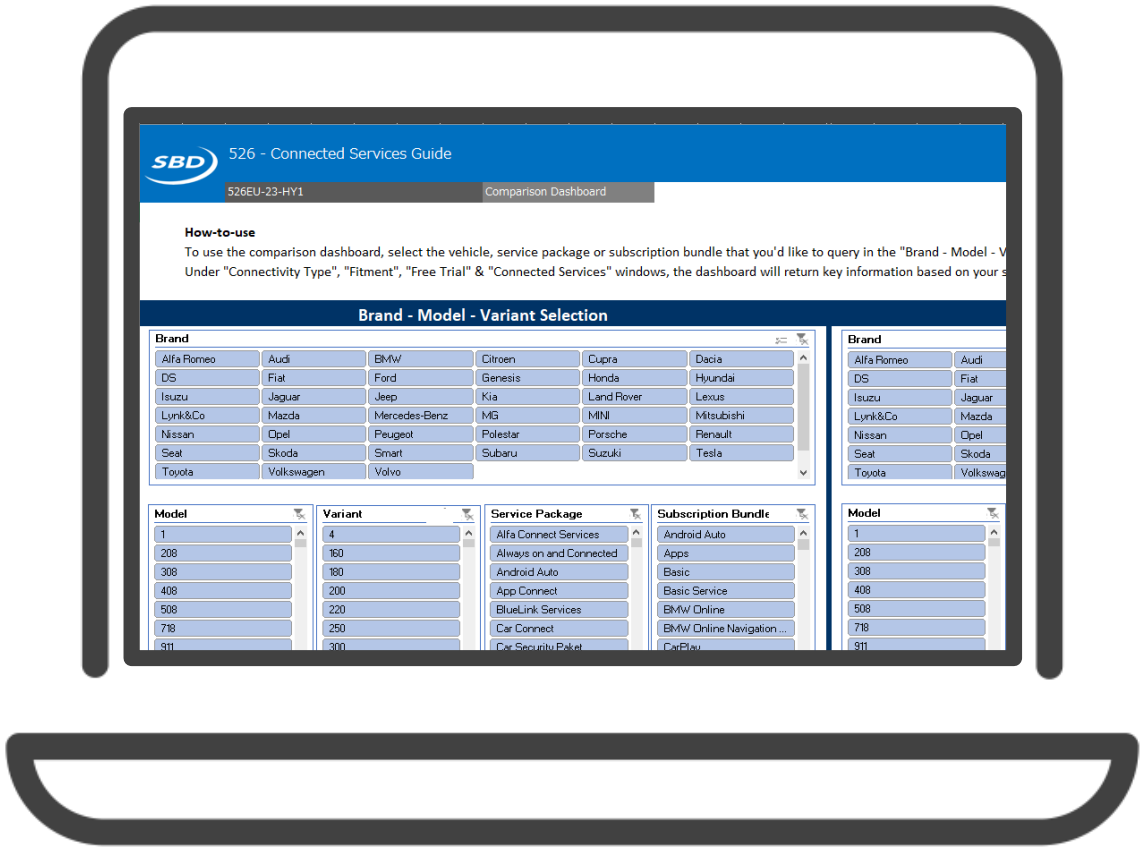
- Can cater to drivers with rates based on accurate predictors like driving behaviors and mileage
- More efficient, with no need for additional hardware installation
- Monitor historical data and prevent biases

Explore

This report makes use of research and analysis of the connected services for a passenger vehicle. The full data set is contained within an accompanying Excel dashboard. This file provides detailed model, connectivity data and more.

How can the accompanying dashboard help you go deeper?

- What connectivity is prevailing in the region.
- Which connected services are mostly provided by OEMs.



Summary Tables

Summation of the connected services functional mapping and OEM group

Contents Page
About SBD
Contact Us

Chapter Introduction

This chapter gives an overview of each OEM's connected services offerings. The 3X3 Grid shows each OEM's brand positioning in terms of the number of connected services offered against sales volume. The table focuses on how OEM-connected services functions are mapped highlighting the differences between each OEM group.

In the Grid, a High, Medium, or Low position can translate into potential connected service strategies within the OEM group and how it has helped in the sales of the brands. The placements are given according to the following criteria:

• Any service count above 30 for connected services and 100,000+ for Sales volume are considered **High**.

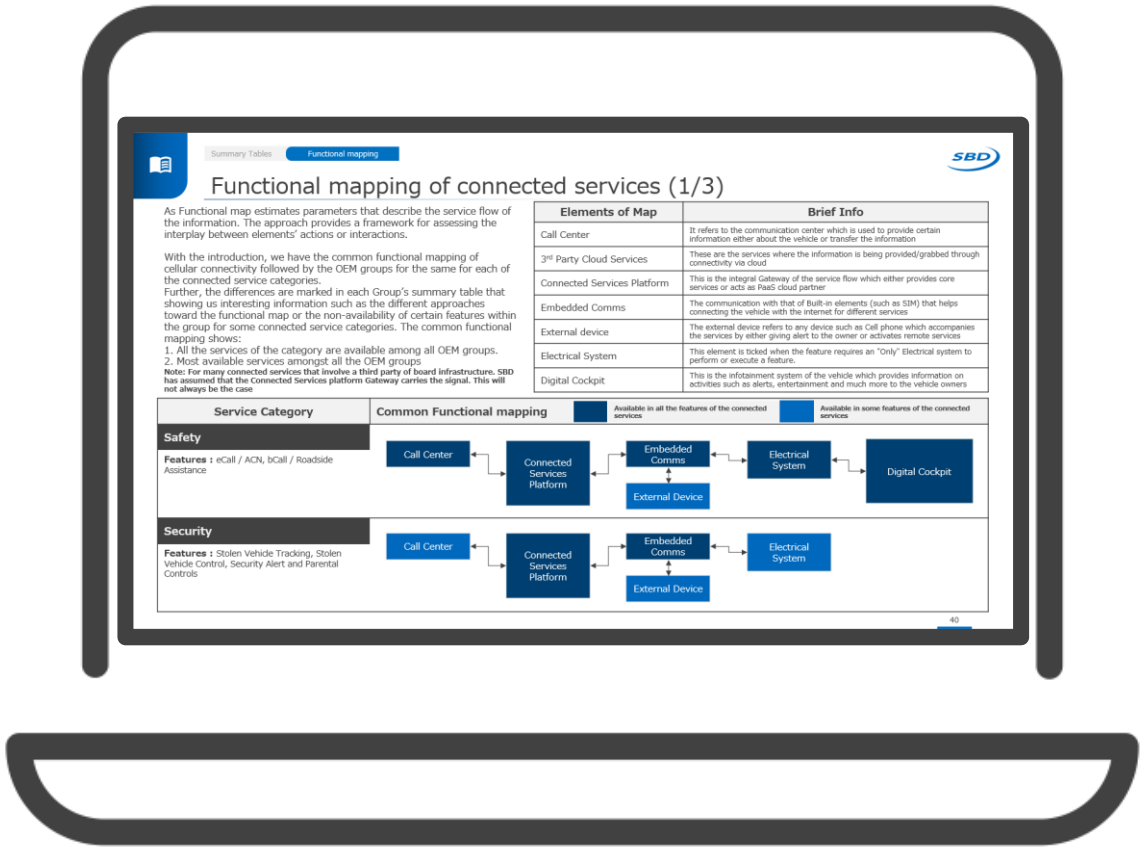
• Any service count between 20 and 30 for Connected services and 100,000 to 50 K for Sales volume are considered **Medium**.

• Any service count below 20 for Connected services and 50 K sales volume is considered **Low**.

What are the key findings of this chapter?

Each OEM group has a summary of one slide:

- Quantified service offerings by OEM.
- Difference in each OEM group's functional mapping.



Functional mapping of connected services (1/3)

As Functional map estimates parameters that describe the service flow of the information. The approach provides a framework for assessing the interplay between elements' actions or interactions.

With the introduction, we have the common functional mapping of cellular connectivity followed by the OEM groups for the same for each of the connected service categories.
Further, the differences are marked in each Group's summary table that showing us interesting information such as the different approaches toward the functional map or the non-availability of certain features within the group for some connected service categories. The common functional mapping shows:
1. All the services of the category are available among all OEM groups.
2. Most available services amongst all the OEM groups

Note: For many connected services that involve a third party of board infrastructure. SBD has assumed that the Connected Services platform Gateway carries the signal. This will not always be the case

Elements of Map	Brief Info
Call Center	It refers to the communication center which is used to provide certain information either about the vehicle or transfer the information
3rd Party Cloud Services	These are the services where the information is being provided/grabbed through connectivity via cloud
Connected Services Platform	This is the integral Gateway of the service flow which either provides core services or acts as PaaS cloud partner
Embedded Comms	The communication with that of Built-in elements (such as SIM) that helps connecting the vehicle with the internet for different services
External device	The external device refers to any device such as Cell phone which accompanies the services by either giving alert to the owner or activates remote services
Electrical System	This element is ticked when the feature requires an "Only" Electrical system to perform or execute a feature.
Digital Cockpit	This is the infotainment system of the vehicle which provides information on activities such as alerts, entertainment and much more to the vehicle owners

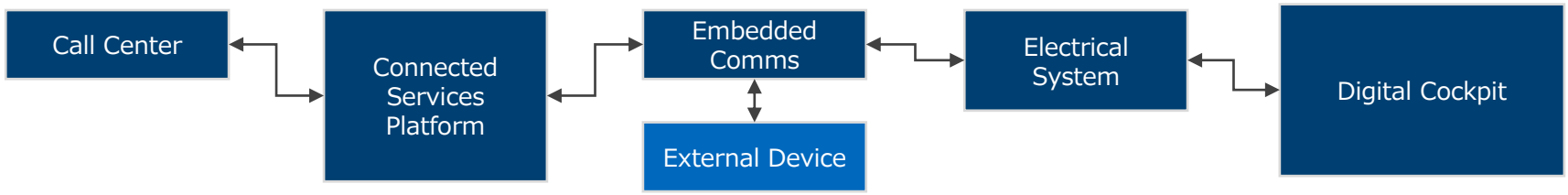
Service Category	Common Functional mapping

Available in all the features of the connected services

Available in some features of the connected services

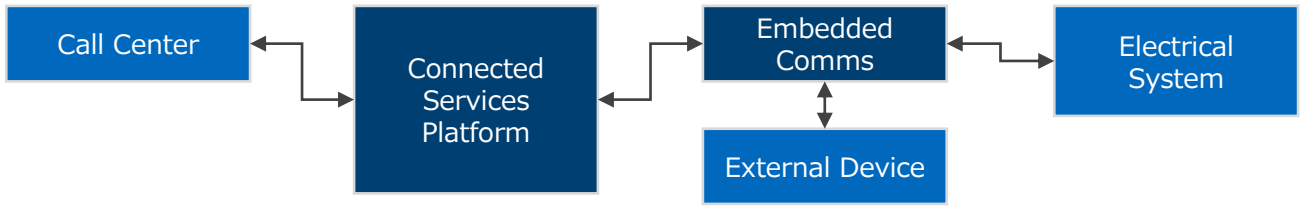
Safety

Features : eCall / ACN, bCall / Roadside Assistance



Security

Features : Stolen Vehicle Tracking, Stolen Vehicle Control, Security Alert and Parental Controls



Functional mapping of connected services (2/3)

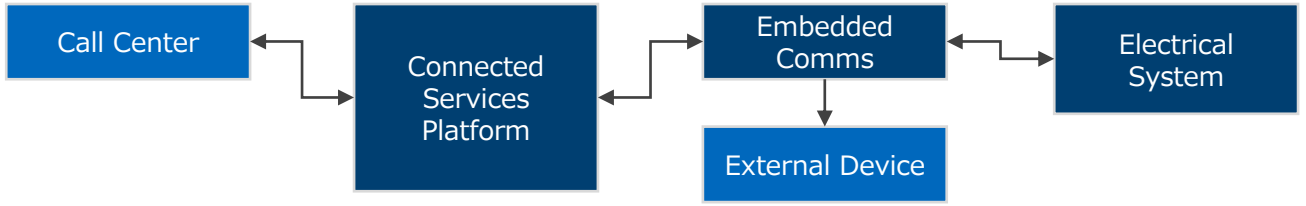
Service Category	Common Functional mapping

Available in all the features of the connected services

Available in some features of the connected services

Maintenance

Features : Remote Diagnostics - Service Center/ OEM, Remote Diagnostics - Customer Alert, Proactive Alerts

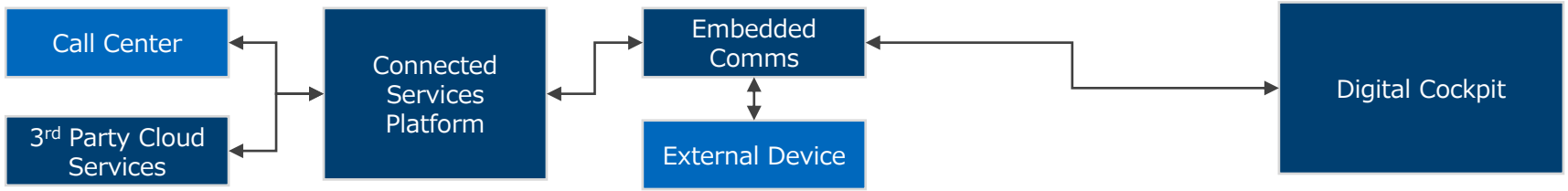


OTA

Features : Map Update, Other Software Updates

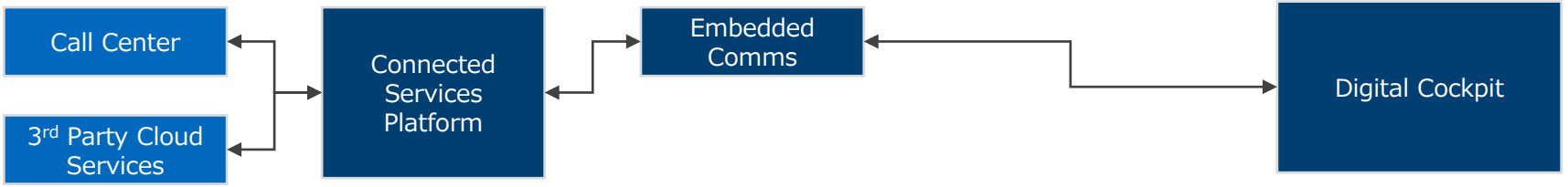
Navigation

Features : Local and POI Search, Send Destination to Car, Route Search & Download, Traffic Information, Speed / Red Light Camera Info, Toll payment, Parking Space Information, Fuel Price Information, Weather Information, Location Sharing, Last Mile Guidance



Infotainment

Features : Social Networking, Conference Call, Internet Radio / Music Streaming, Video Streaming, User Reviews / Reservations, News / Stocks / Sports, Calendar Integration, E-Mail Integration, Web Browser, App / Service Store



Functional mapping of connected services (3/3)

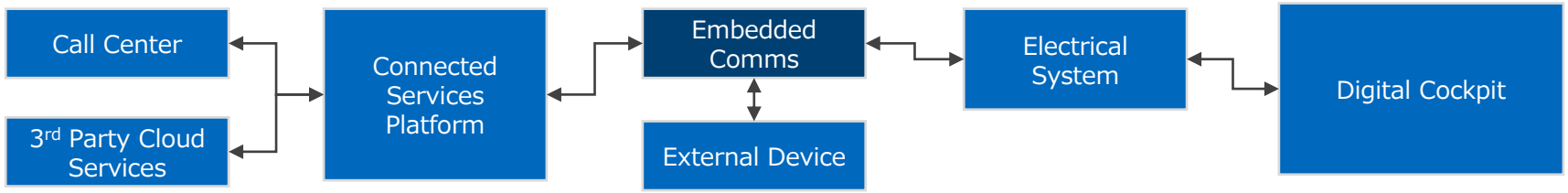
Service Category	Common Functional mapping

Available in all the features of the connected services

Available in some features of the connected services

Convenience & Remote Services

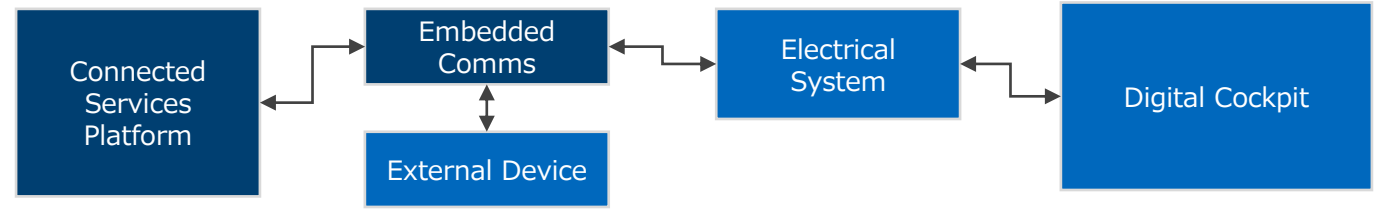
Features: Call Center Concierge / iCall, Virtual Personal Assistant, Wi-Fi Hotspot, Remote Vehicle Access, Vehicle Locator, Remote Climate Conditioning, Remote Device: Car to Home, Remote Device: Home to Car, In-Vehicle Payment



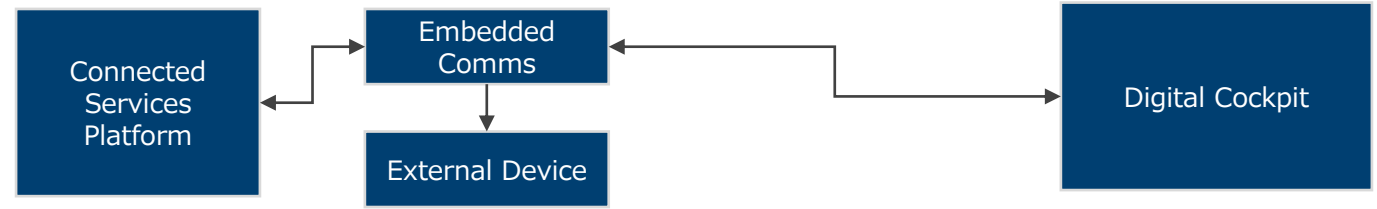
UBI (User Based Insurance)

EV-Specific

Features : Charging Station Information, Charging Station Transaction, Remote Charging Control



Driver behavior coaching



Understanding OEM Group – Summary tables

The first profile slide gives an overview of the OEM group in terms of functional mapping and connected services in EU region

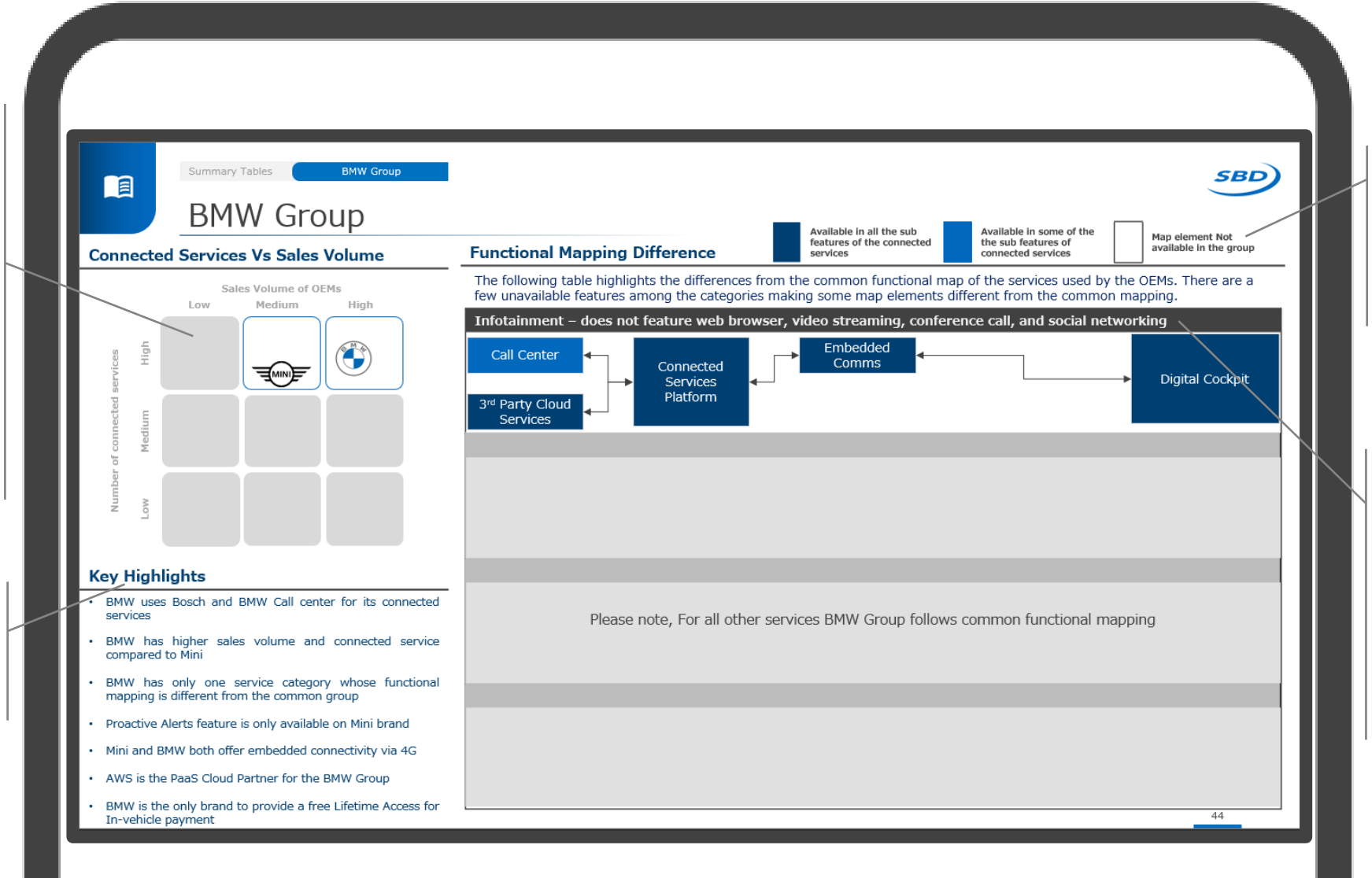
Connected Services Vs Sales Volume

The 3X3 Matrix provides the overview of connected services differentiation among brands within the group. The parameters considered are a count of the number of connected services provided by the brand of the OEM group against the sales* volume of the vehicle

Sale Volume of 2022 (As per the Global data), Only available models included from the SBD database

Key Highlights

Important information about the OEM group



Legends

These are legends that indicate the color differences for the functional mapping from

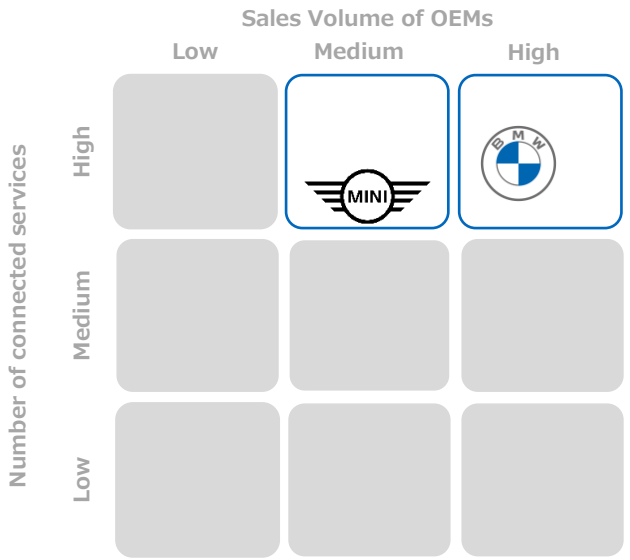
Functional Mapping Difference

There is a common functional mapping provided for each of the service categories.

This section talks about the differentiators from the common functional mapping

BMW Group

Connected Services Vs Sales Volume



Key Highlights

- BMW uses Bosch and BMW Call center for its connected services
- BMW has a higher sales volume and connected service compared to the Mini
- BMW has only one service category whose functional mapping is different from the common group
- Proactive Alerts feature is only available on the Mini brand
- Mini / BMW offer embedded connectivity via 4G
- AWS is the PaaS Cloud Partner for BMW Group
- BMW is the only brand to provide free Lifetime Access for In-vehicle payment

Functional Mapping Difference

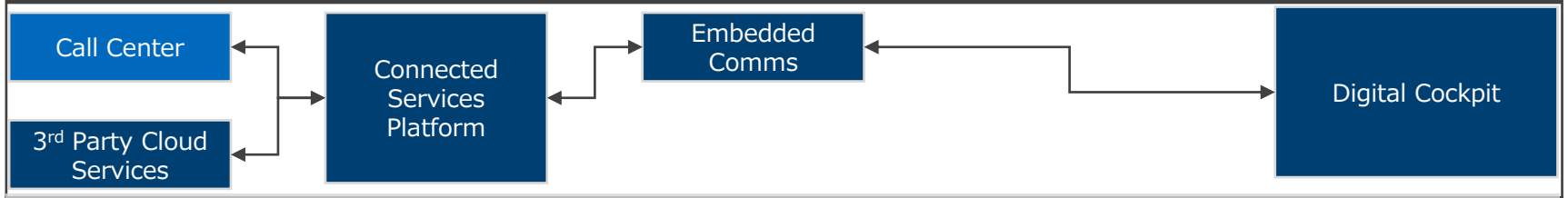
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

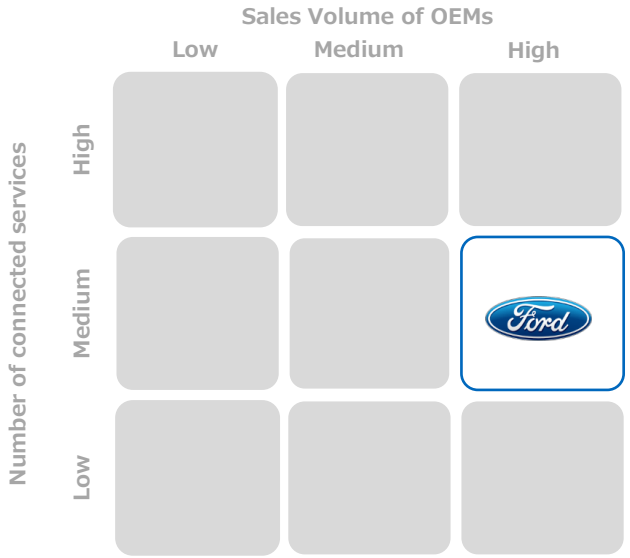
Infotainment – does not feature web browser, video streaming, conference call, and social networking



Please note, for all other services BMW Group follows common functional mapping

Ford Group

Connected Services Vs Sales Volume



Key Highlights

- Ford has four services whose functional mapping is different from the common group
- PSAP is the Call center used by the Ford group for its Safety connected services.
- Continental is the TCU supplier and Vodafone is the MNO supplier for Ford
- Google, Airbiquity and Ford are the suppliers for the Connected services platform. Panasonic also supplies Ford's Infotainment Platform
- SYNC 3 service package is offered to more variants of Fiesta

Functional Mapping Difference

Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

Safety - include eCall / ACN feature

Call Center → Connected Services Platform ↔ Embedded Comms ↔ Electrical System → Digital Cockpit
Embedded Comms ↕ External Device

Security – does not feature Stolen Vehicle Controls

Call Center → Connected Services Platform ↔ Embedded Comms ↔ Electrical System
Embedded Comms ↕ External Device

Infotainment – include only E-Mail Integration

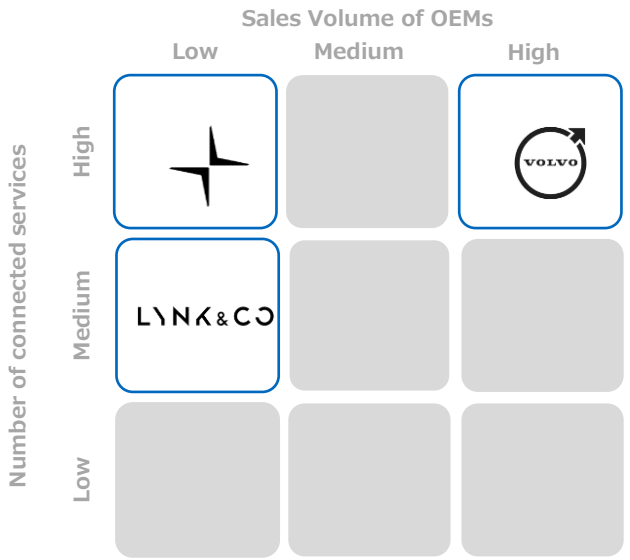
Call Center, 3rd Party Cloud Services → Connected Services Platform ↔ Embedded Comms → Digital Cockpit

Convenience & Remote Services – includes VPA, wi-fi hotspot, remote vehicle access, and vehicle locator

Call Center, 3rd Party Cloud Services → Connected Services Platform ↔ Embedded Comms ↔ Electrical System → Digital Cockpit
Embedded Comms ↕ External Device

Geely Group

Connected Services Vs Sales Volume



Key Highlights

- Volvo's sales volume is higher than the other two brands in the Geely Group
- Geely has only a maintenance-connected service whose functional mapping differs
- Actia is the TCU supplier for Geely Group
- Mobile Network Operator are supplied by Deutsche Telekom, Orange and the user's SIM
- Melco and Google are the infotainment suppliers. Google infotainment includes Android Automotive OS.
- WirelessCar and Ericsson supply Connected Services platform
- Allianz and PSAP are call center providers

Functional Mapping Difference

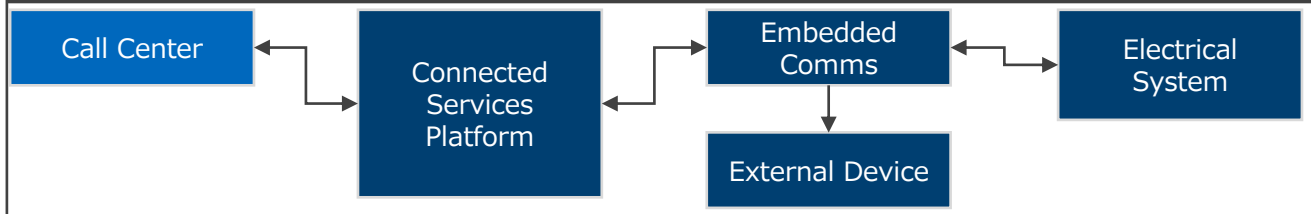
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

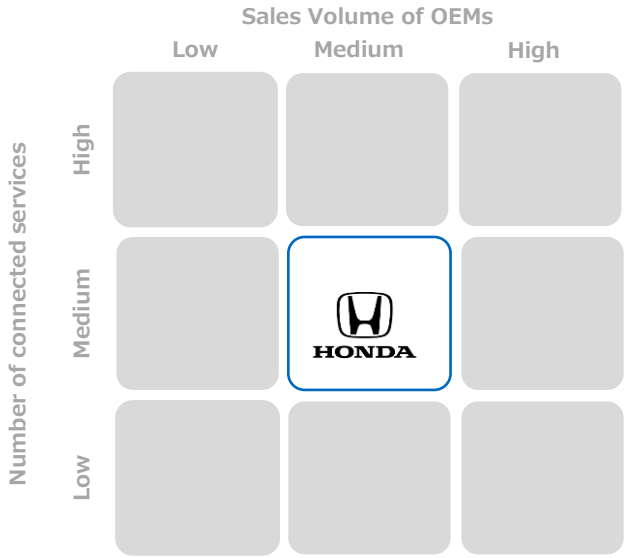
Maintenance – does not feature Service Center / OEM



Please note, For all other services Geely Group follows common functional mapping

Honda Group

Connected Services Vs Sales Volume



Key Highlights

- Continental is the TCU supplier of the Honda Group
- Connected Service platform supplier of Honda group is Digitalist
- Denso Ten is the supplier of infotainment platforms for Honda Group
- Honda provides Internet Radio/Music Streaming under Infotainment connected services
- Honda revamped its My Honda app and in recent years launched an embedded connectivity service platform called My Honda+, which is currently available on Honda e, HR-V Hybrid and Jazz Hybrid models

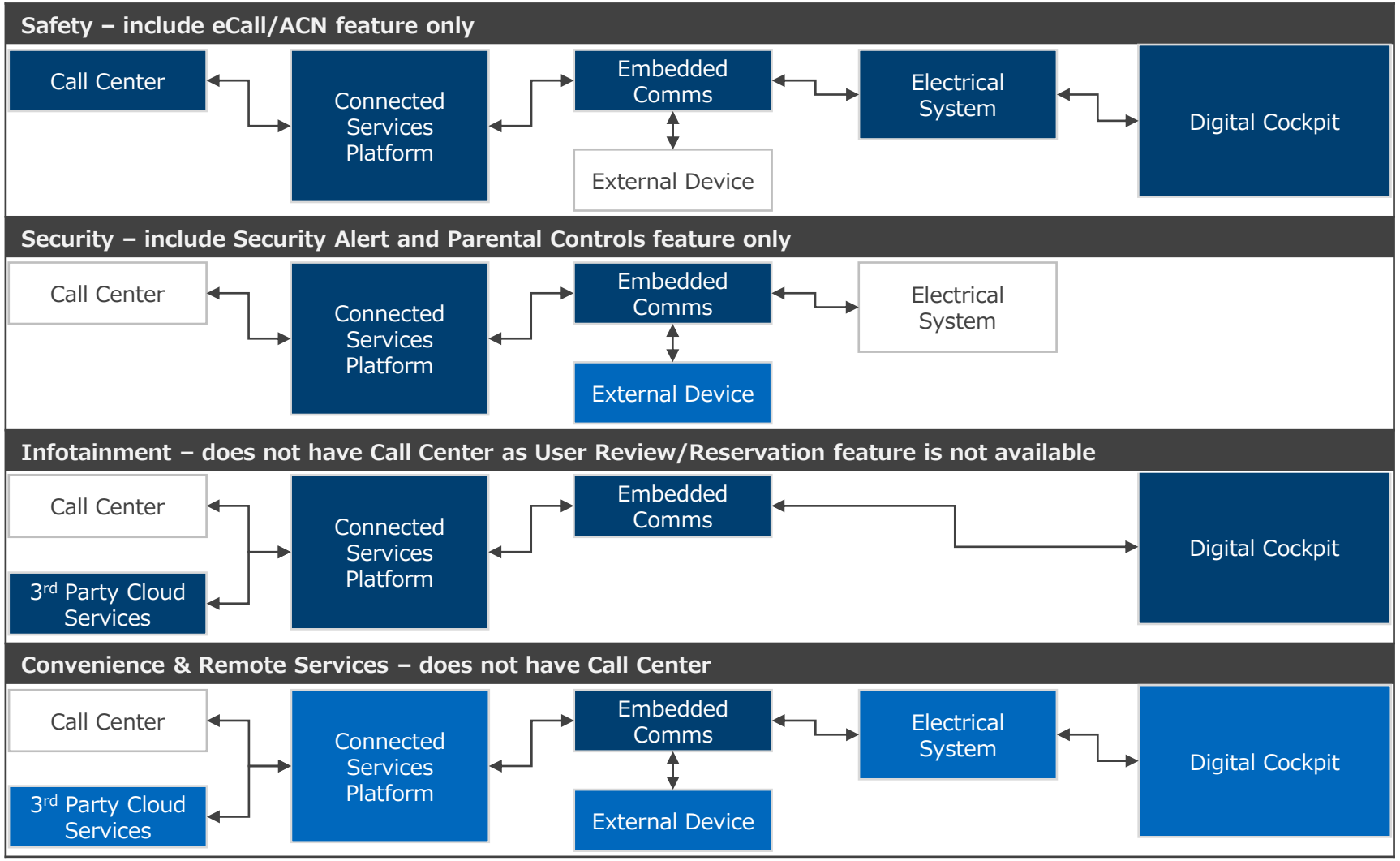
Functional Mapping Difference

Available in all the sub features of the connected services

Available in some of the sub-features of connected services

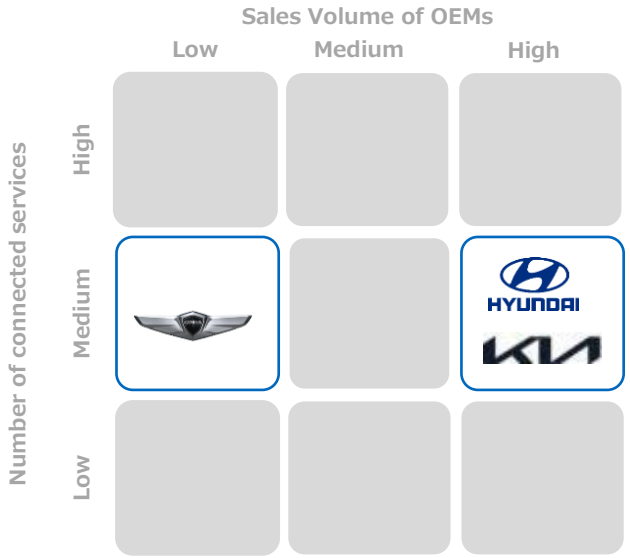
Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.



Hyundai Group (1/2)

Connected Services Vs Sales Volume



Key Highlights

- LG Electronics is the infotainment supplier for Hyundai Group and MnSoft is the supplier for the Kia infotainment platform
- Kia Connect is the latest platform used by Kia for the connected service features with AutoEver as the supplier and AWS as the PaaS Cloud Partner
- The embedded connectivity system uses the Vodafone network
- The cloud content provider for Hyundai is TomTom
- Kia introduced E-call Service Package in more models such as the e-Soul and Niro EV

Functional Mapping Difference

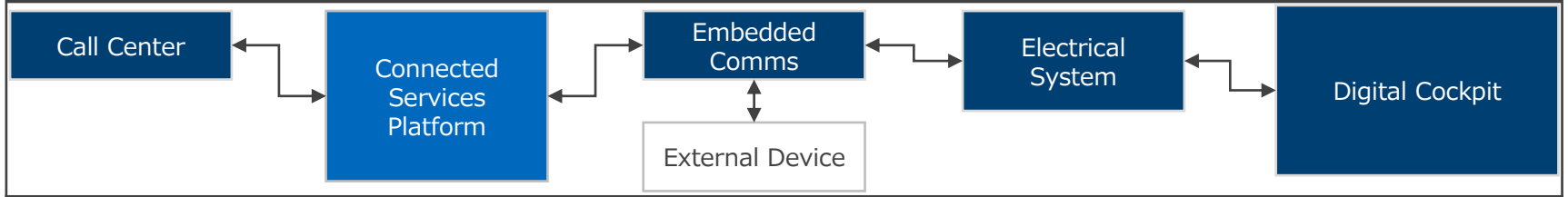
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

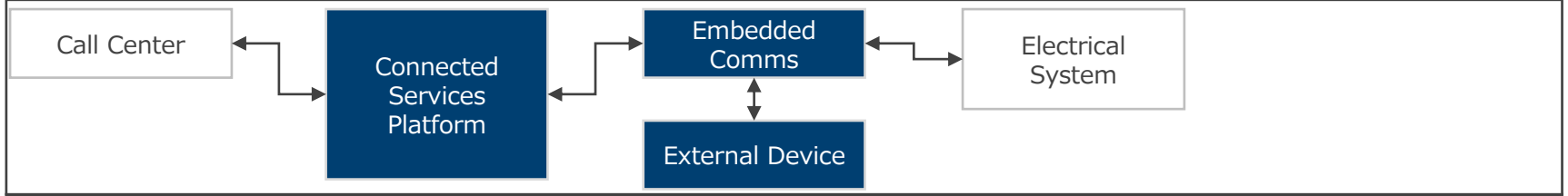
Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

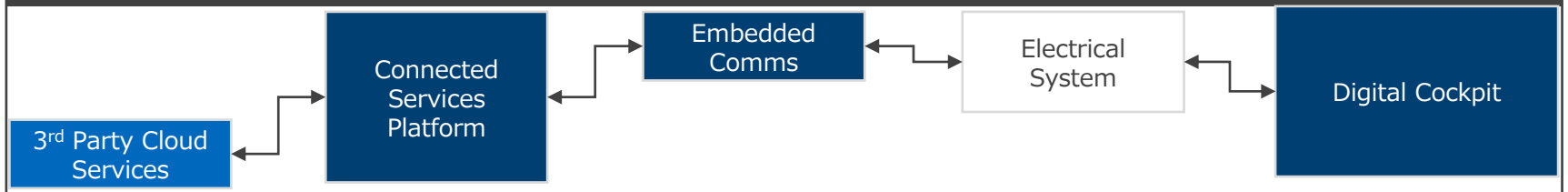
Safety – does not uses connected service platform for the e-call safety feature



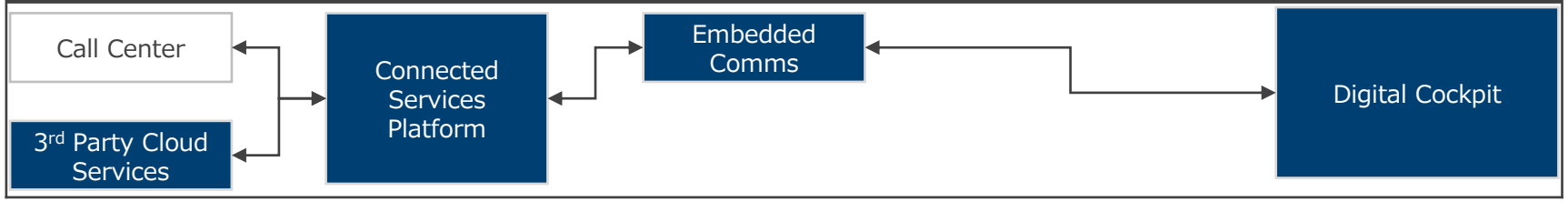
Security – does not have call center and electrical system



OTA – Electrical system may not be part of the OTA service

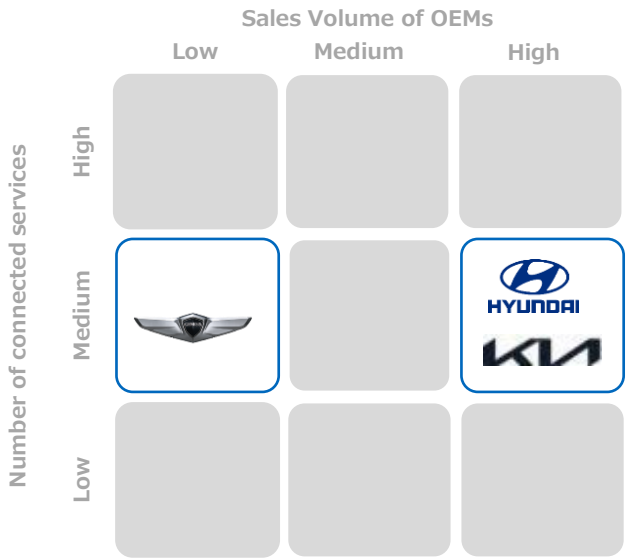


Infotainment – includes only News / Stocks / Sports and Calendar integration feature



Hyundai Group (2/2)

Connected Services Vs Sales Volume



Key Highlights

No further highlights for HY1 - 2023

Functional Mapping Difference

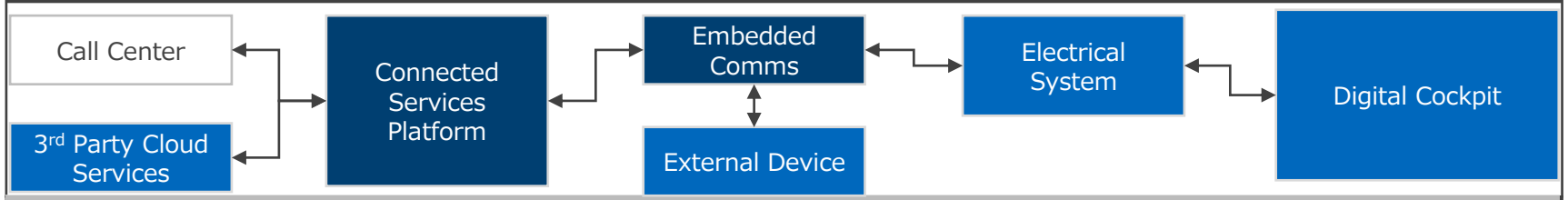
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

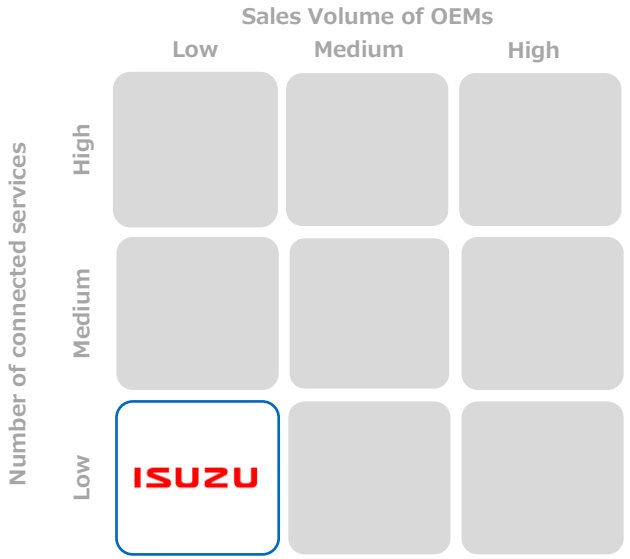
Convenience & Remote Services – does not have a call center



Please note, For all other services Hyundai Group follows common functional mapping

Isuzu Motors Group

Connected Services Vs Sales Volume



Key Highlights

- Isuzu has only Safety service the only built-in connected feature provided, and other services are provided via Android Auto and CarPlay
- PSAP call center is used for the safety eCall feature provided by the OEM
- Isuzu offers embedded connectivity via 4G for its standard E-call service

Functional Mapping Difference

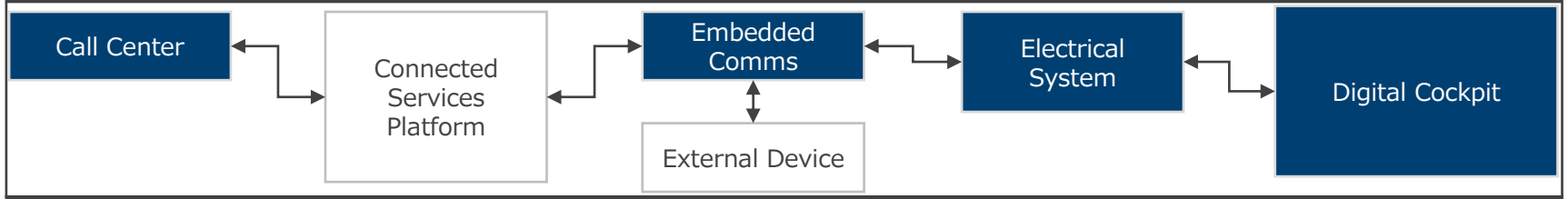
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

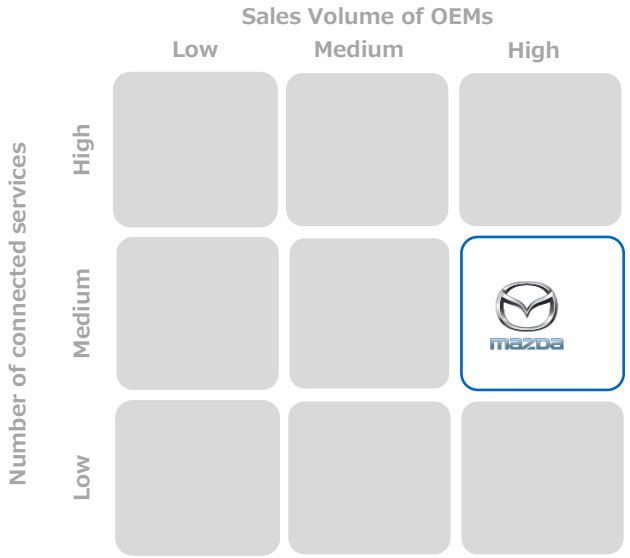
Safety – include eCall/ACN feature only



Please note, For all other services Isuzu Group follows common functional mapping

Mazda Motors Group (1/2)

Connected Services Vs Sales Volume



Key Highlights

- Mazda is amongst the OEM brands whose connected services and functional mapping are majorly different from the common group
- Johnson Controls (Visteon) provides an Infotainment platform to the group
- NNG and Oracle are the Connected service platform provider where Oracle serves as the PaaS Cloud Partner
- Mazda is supporting the Conference Call feature in some of its vehicle models

Functional Mapping Difference

Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

Safety – include eCall / ACN as feature

Call Center → Connected Services Platform ↔ Embedded Comms ↔ Electrical System → Digital Cockpit
Embedded Comms ↕ External Device

Maintenance – include proactive alerts

Call Center → Connected Services Platform ↔ Embedded Comms ↔ Electrical System
Embedded Comms ↓ External Device

OTA – does not have OTA map updates

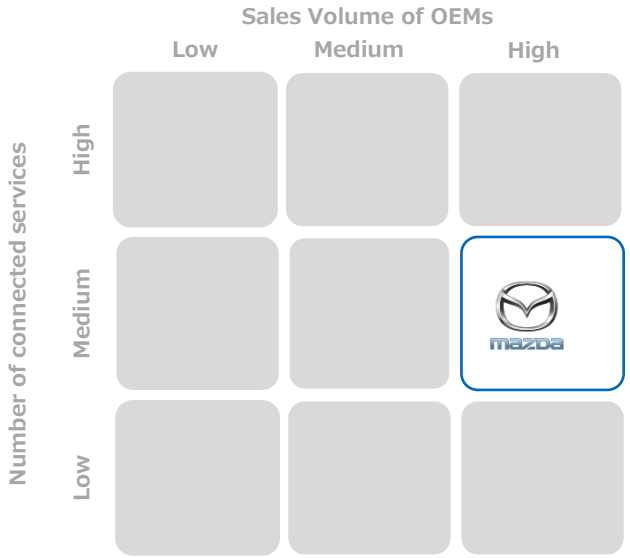
3rd Party Cloud Services → Connected Services Platform ↔ Embedded Comms ↔ Electrical System → Digital Cockpit

Navigation – does not have a call center

Call Center → Connected Services Platform ↔ Embedded Comms → Digital Cockpit
3rd Party Cloud Services → Connected Services Platform
Embedded Comms ↕ External Device

Mazda Motors Group (2/2)

Connected Services Vs Sales Volume



Key Highlights

No further highlights for HY1 - 2023

Functional Mapping Difference

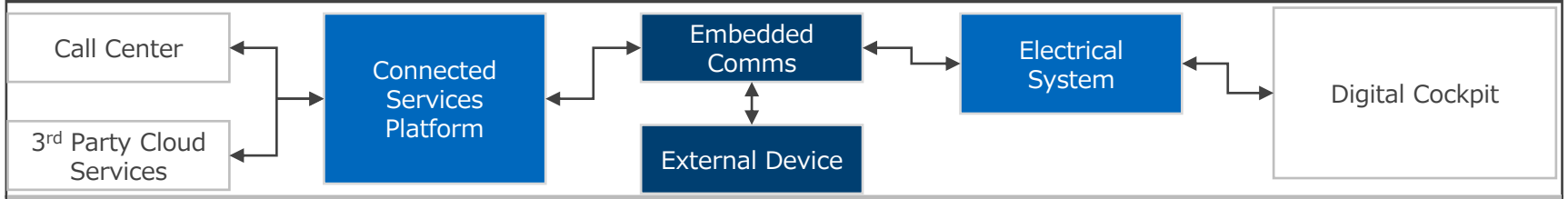
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

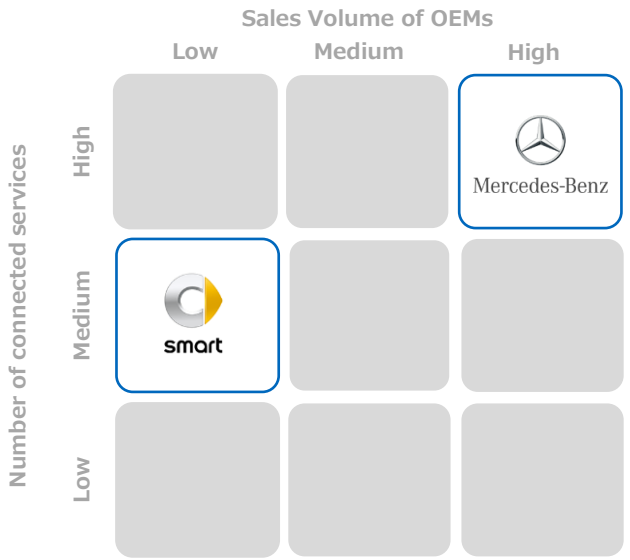
Convenience & Remote Services – has remote climate conditioning and vehicle access, and vehicle locator



Please note, For all other services Mazda Group follows common functional mapping

Mercedes-Benz Group

Connected Services Vs Sales Volume



Key Highlights

- Mercedes-Benz offers a wide range of connected services placing it at the top of the grid whereas Smart lags as a brand within the group
- Harman is the TCU supplier for Mercedes-Benz and Ficosa for Smart. In addition, Vodafone is the supplier of Mobile Network Operator for Mercedes-Benz, and Deutsche Telecom and Orange are suppliers for Smart
- Also, Harman and Melco provide an Infotainment platform to the Mercedes-Benz brand. However, Mercedes-Benz uses an in-house Connected services platform
- More of A-Class and B-Class variants are offered with standard Live Traffic and Navigation Services.
- More models are introduced with the Conference Call feature

Functional Mapping Difference

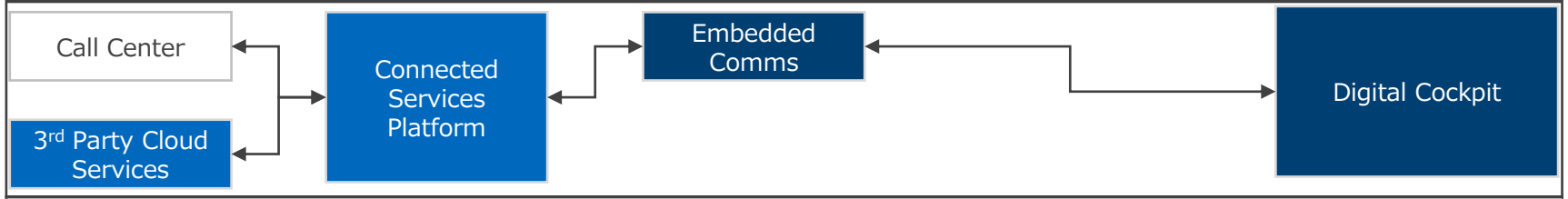
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

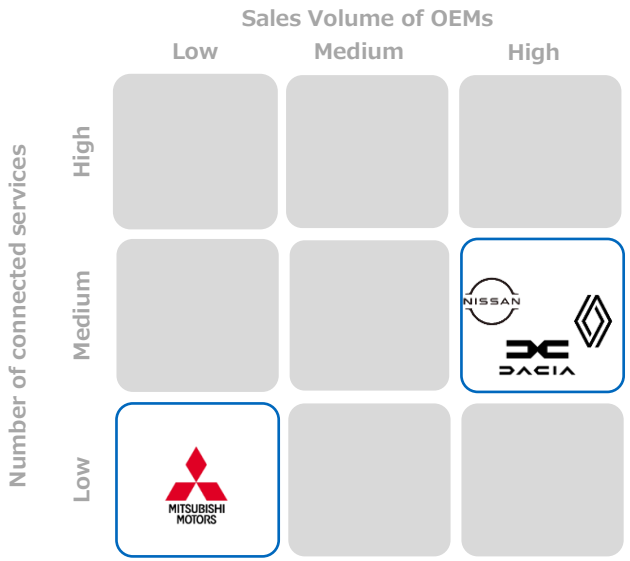
Infotainment – does not have conference call and video streaming and news/stock/sports



Please note, For all other services Mercedes-Benz Group follows common functional mapping

Renault-Nissan-Mitsubishi Group

Connected Services Vs Sales Volume



Key Highlights

- Ficosa is the TCU supplier of the Dacia brand and Continental provides TCU to Nissan and Renault among this Group
- Microsoft Azure is the PaaS Cloud Partner for Nissan. Its connected services suppliers are Microsoft Azure Platform and TomTom. ATOS Platform is also a supplier of Renault's connected services platform.
- JVC Kenwood, Bosch and TomTom are the infotainment supplier of the Renault-Nissan-Mitsubishi Group
- Except for some Dacia models, Android Auto and CarPlay are standard across the Group

Functional Mapping Difference

Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

Safety – eCall/ACN does not have connected services platform

Call Center → Connected Services Platform ↔ Embedded Comms ↔ Electrical System → Digital Cockpit
Embedded Comms ↕ External Device

Security – include security alert and parental control

Call Center → Connected Services Platform ↔ Embedded Comms ↔ Electrical System
Embedded Comms ↕ External Device

Infotainment – does not have call center

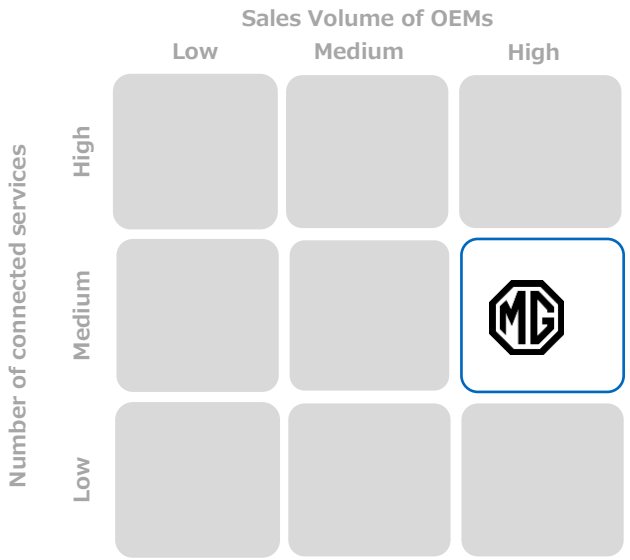
Call Center / 3rd Party Cloud Services → Connected Services Platform ↔ Embedded Comms → Digital Cockpit

Convenience & Remote Services – does not have call center part of this category

Call Center / 3rd Party Cloud Services → Connected Services Platform ↔ Embedded Comms ↔ Electrical System → Digital Cockpit
Embedded Comms ↕ External Device

SAIC Motor Group (1/2)

Connected Services Vs Sales Volume



Key Highlights

- MG is amongst the OEM brands whose connected services functional mapping are majorly different from the common group
- AWS serves as the PaaS Cloud Partner for the MG Brand

Functional Mapping Difference

Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

Safety – include eCall/ACN

Call Center → Connected Services Platform → Embedded Comms → Electrical System → Digital Cockpit

Embedded Comms ↔ External Device

Maintenance – does not have remote diagnostics – service center/OEM

Call Center → Connected Services Platform → Embedded Comms → Electrical System

Embedded Comms → External Device

OTA – does not have Map Update

3rd Party Cloud Services → Connected Services Platform → Embedded Comms → Electrical System → Digital Cockpit

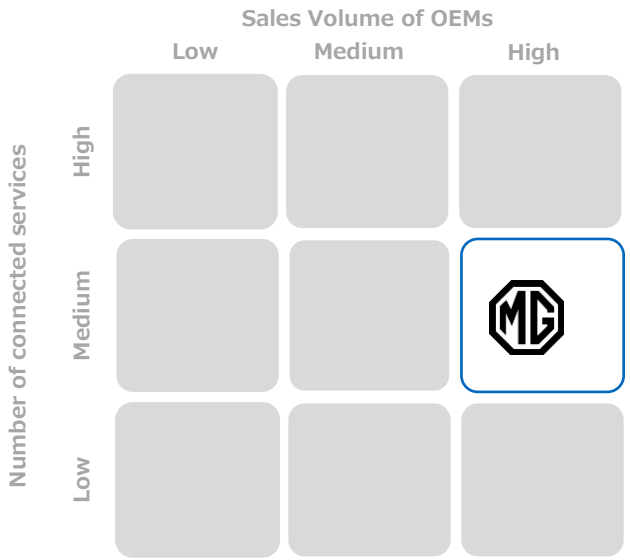
Navigation – does not have call center

Call Center, 3rd Party Cloud Services → Connected Services Platform → Embedded Comms → Digital Cockpit

Embedded Comms ↔ External Device

SAIC Motor Group (2/2)

Connected Services Vs Sales Volume



Key Highlights

No further highlights for HY1 - 2023

Functional Mapping Difference

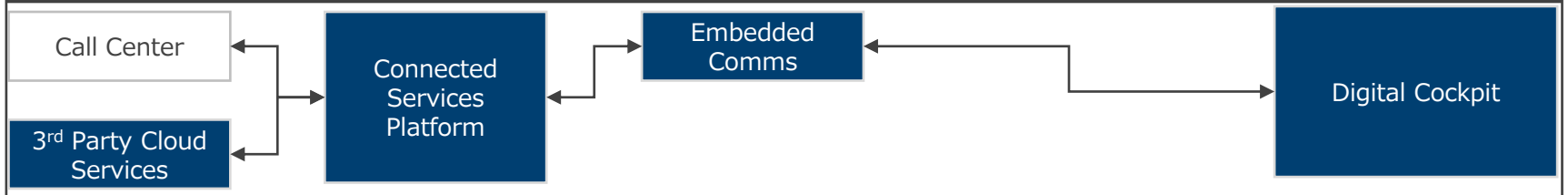
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

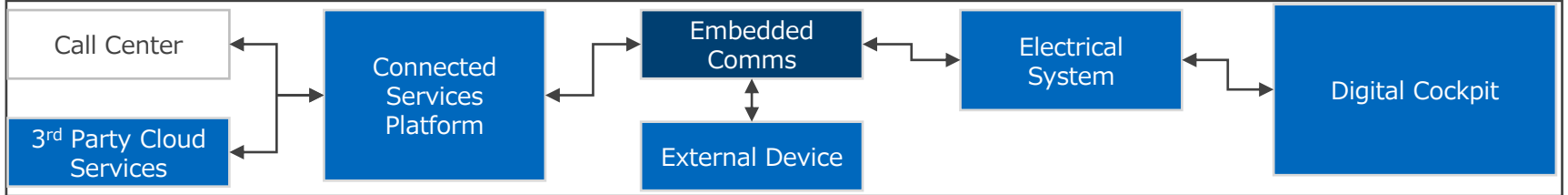
Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

Infotainment – includes internet radio/music streaming and calendar integration



Convenience & Remote Services – does not have call center



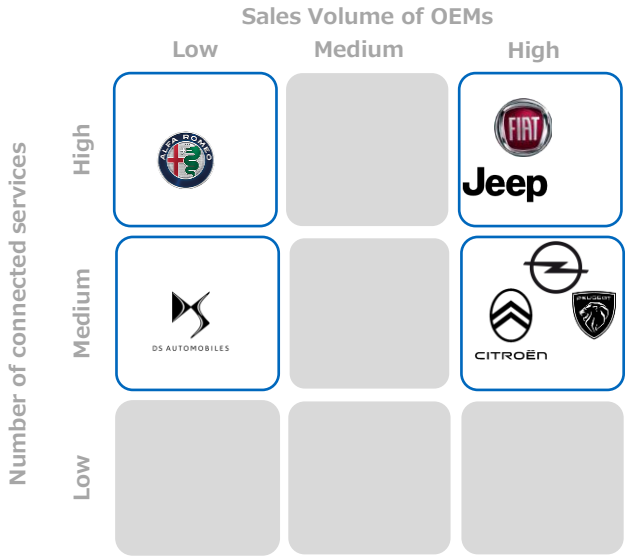
OTA – it does not have Map Update

Please note, For all other services Saic Group follows common functional mapping

Navigation – it does not have call center

Stellantis Group

Connected Services Vs Sales Volume



Key Highlights

- Remote climate conditioning and remote charging control are free for a lifetime
- Marelli supplies TCU for Alfa Romeo, Citroen, Peugeot, DS and Fiat brands among the group
- Speed/Red light camera info is not available in Germany & France (only Danger Zones), but available in Italy and UK
- Bosch, Continental, Harman, Pioneer and TomTom are suppliers of infotainment platform
- AWS serves as the PaaS Cloud Partner
- The group brands offer embedded connectivity via 4G and 3G (DS and Opel). The Mobile Network Operator of the group are Transatel and Orange

Functional Mapping Difference

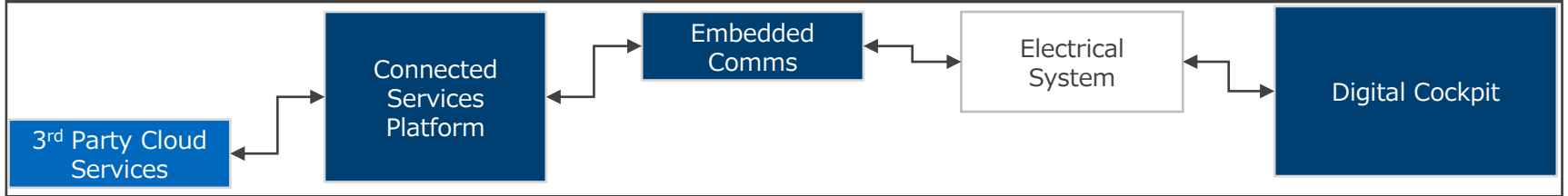
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

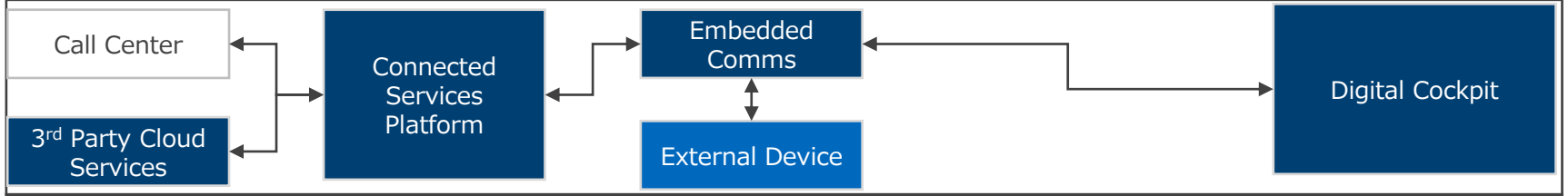
Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

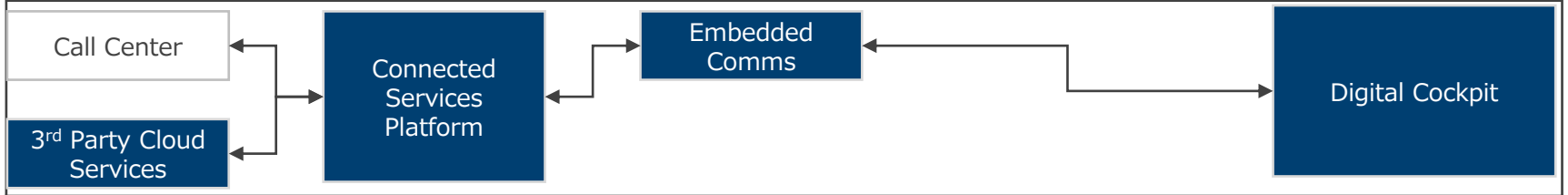
OTA – does not have electrical system



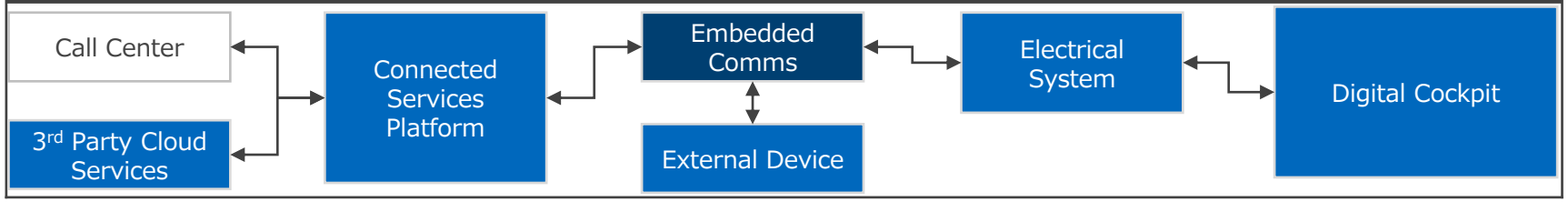
Navigation – does not have call center



Infotainment – only include user reviews/reservation

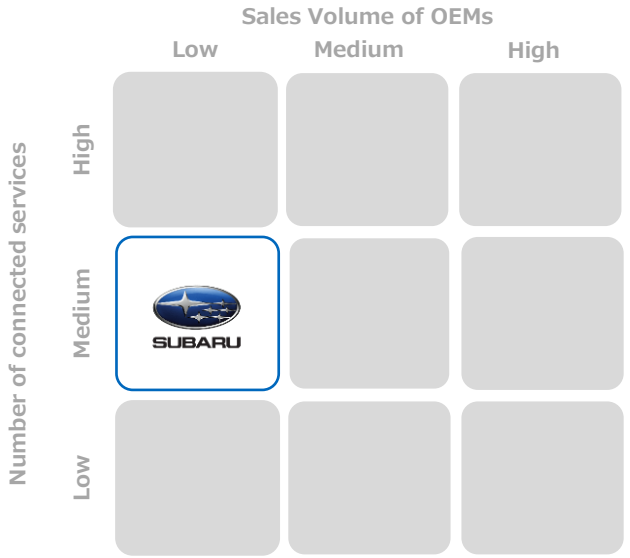


Convenience & Remote Services – does not have Call Centre Concierge/iCall



Subaru Group (1/2)

Connected Services Vs Sales Volume



Key Highlights

- Subaru has a low sales volume in the EU market
- Subaru is amongst the OEM brands whose connected services functional mapping are majorly different from the common group
- Harman is the Infotainment platform supplier for the Subaru Group
- The connectivity Service Package is offered as standard across the Subaru Group

Functional Mapping Difference

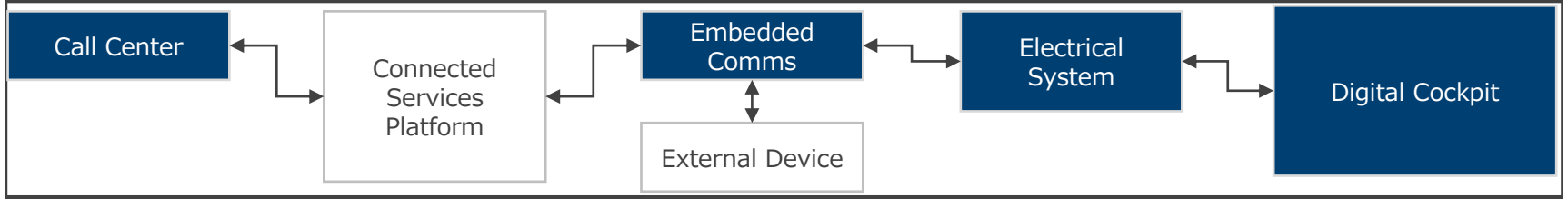
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

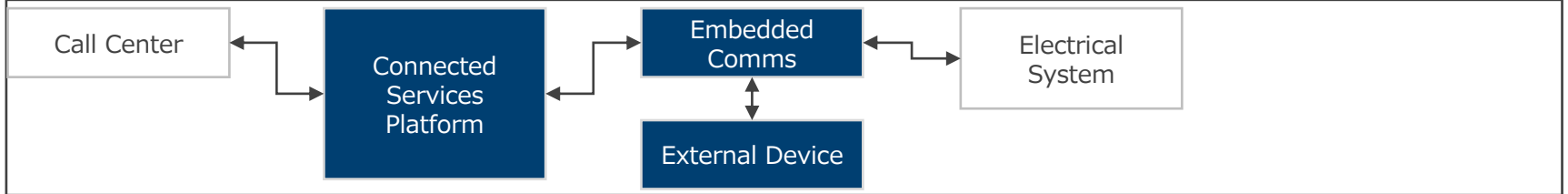
Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

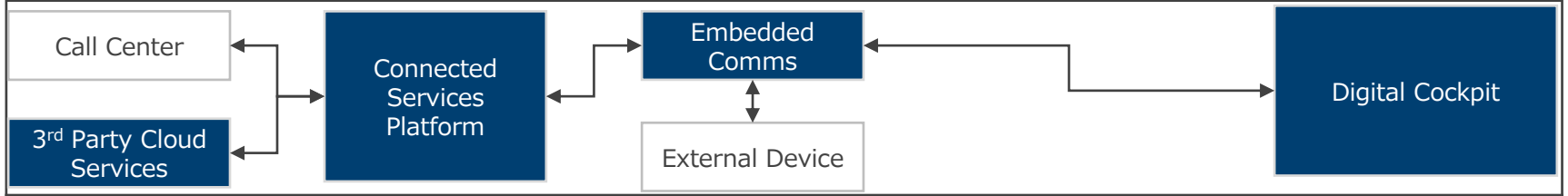
Safety – only include eCall/ACN



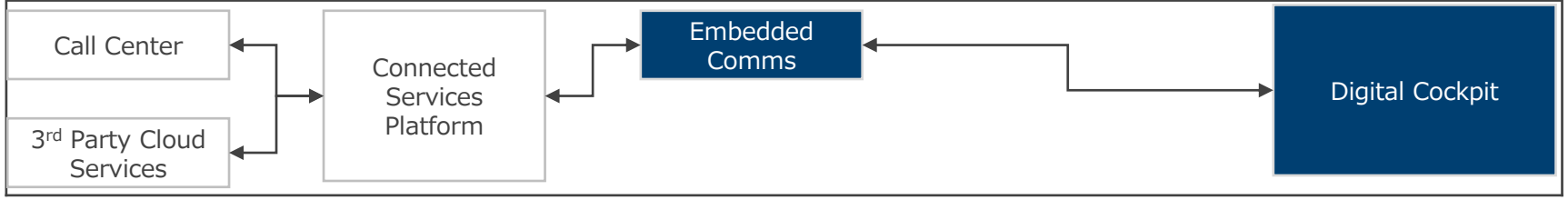
Security – only include Security Alert and Parental Controls



Navigation – includes Traffic Information and Parking Space Information

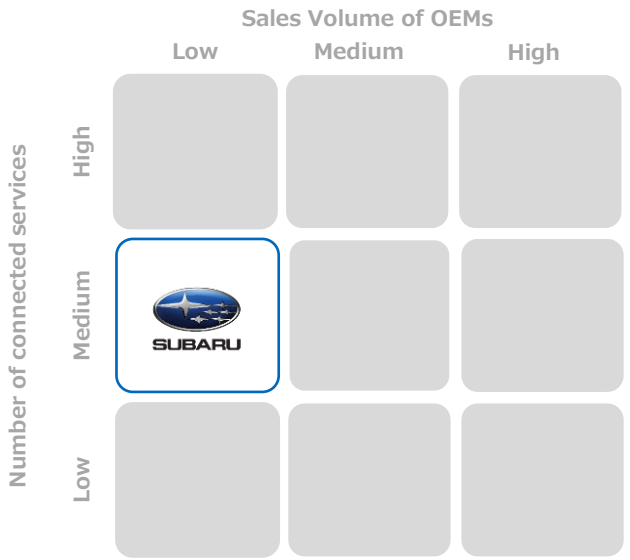


Infotainment – only include web browser feature



Subaru Group (2/2)

Connected Services Vs Sales Volume



Key Highlights

No further highlights for HY1 - 2023

Functional Mapping Difference

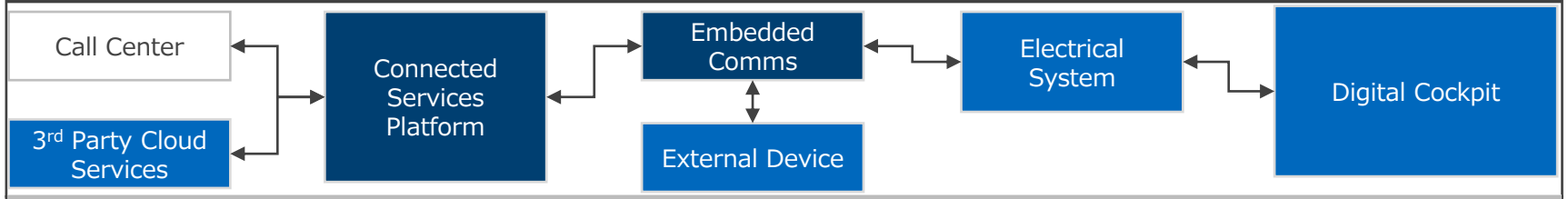
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

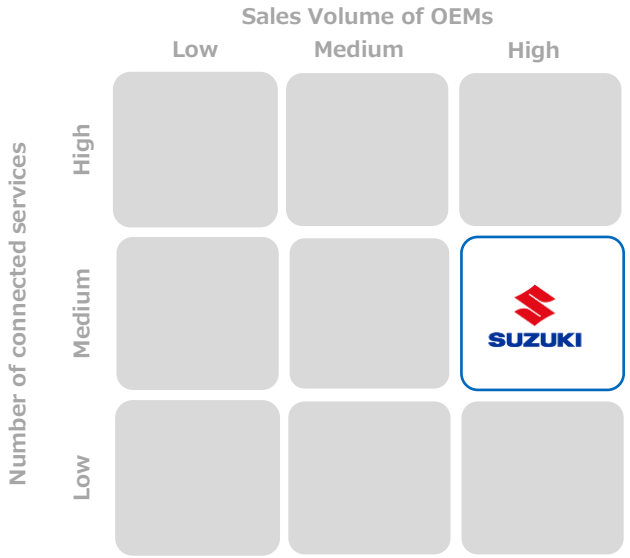
Convenience & Remote Services – It does not have call center



Please note, For all other services Subaru Group follows common functional mapping

Suzuki Group (1/2)

Connected Services Vs Sales Volume



Key Highlights

- Suzuki-Connect Service Package, is introduced for the first time by the S-Cross Hybrid model
- The group brands offer embedded connectivity via 4G
- Melco is the Infotainment Platform supplier for the Suzuki Group

Functional Mapping Difference

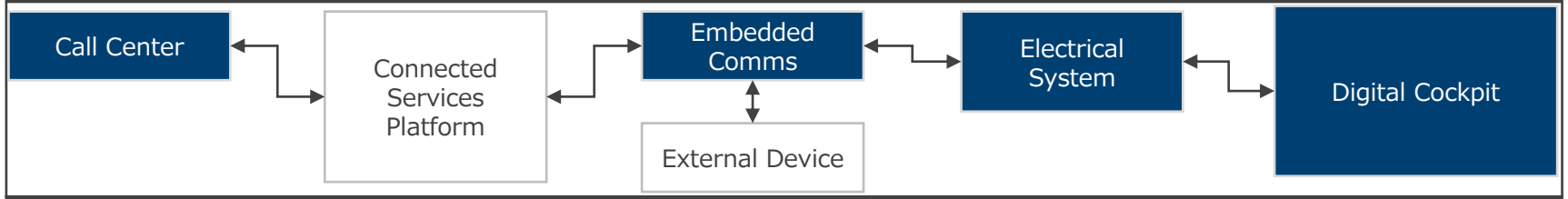
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

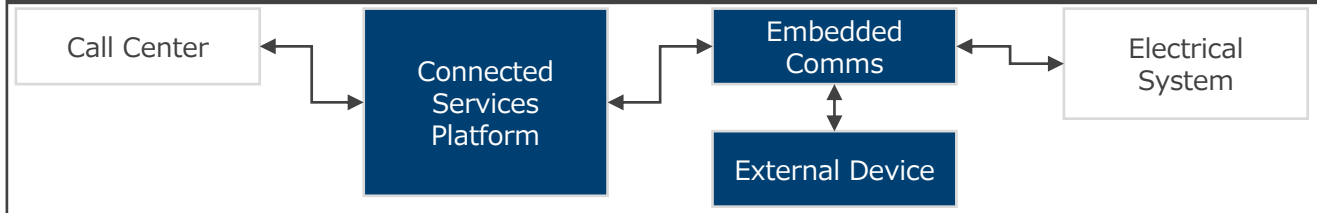
Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

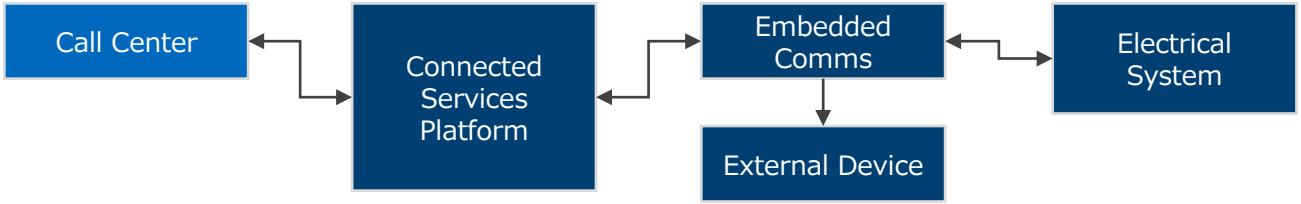
Safety – It only has e-Call/ACN



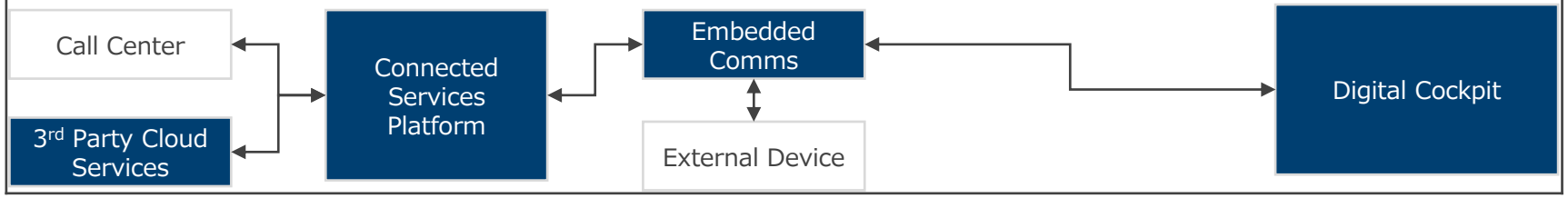
Safety – It only has Security Alert and Parental Controls



Maintenance – It does not have Remote Diagnostics - Service Center / OEM feature

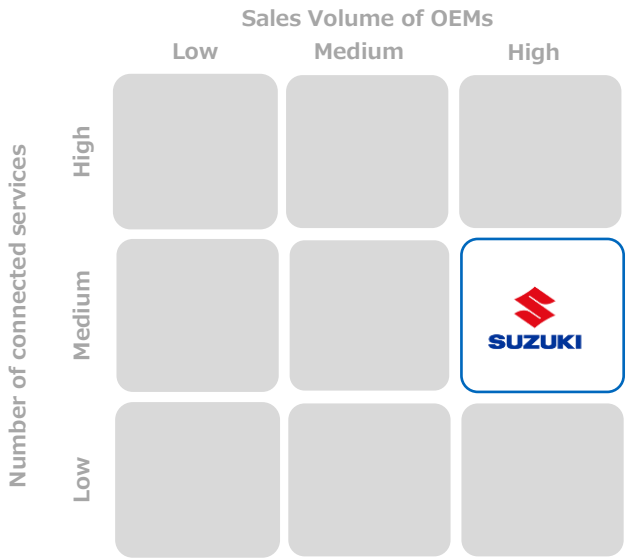


Navigation – It has Local and POI search along with Location sharing feature



Suzuki Group (2/2)

Connected Services Vs Sales Volume



Key Highlights

No further highlights for HY1 - 2023

Functional Mapping Difference

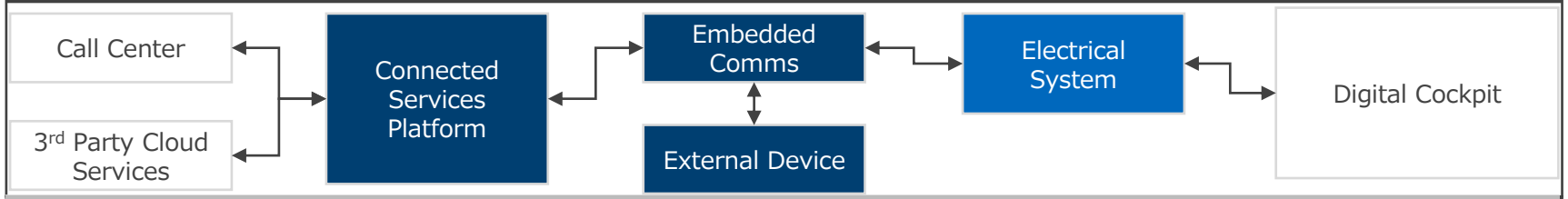
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

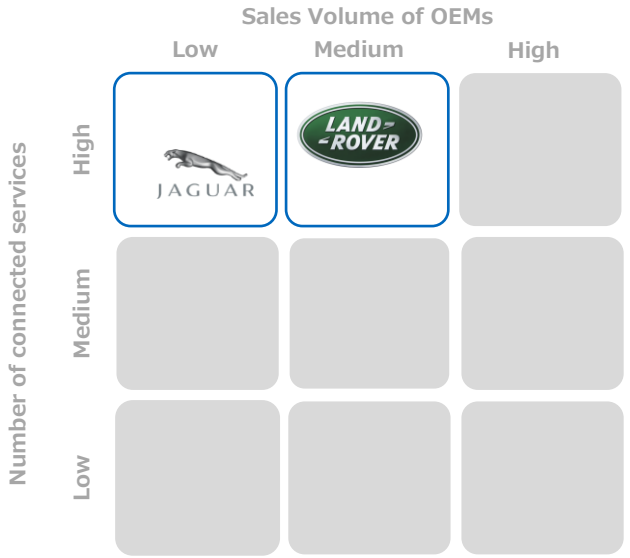
Convenience & Remote Services – only provides remote vehicle access and vehicle locator feature



Please note, For all other services Suzuki Group follows common functional mapping

Tata Group

Connected Services Vs Sales Volume



Key Highlights

- Land Rover is offering Remote Device for Car to Home feature
- LG Electronics supplies TCU for the group. LG Electronics and Bosch are both suppliers of the infotainment platform
- WirelessCar, CloudCar and HERE are supplying connected services platform

Functional Mapping Difference

Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

Security – include only has stolen vehicle tracking

Call Center → Connected Services Platform ↔ Embedded Comms ↔ Electrical System; Embedded Comms ↕ External Device

Maintenance – does not have call center

Call Center → Connected Services Platform ↔ Embedded Comms ↔ Electrical System; Embedded Comms → External Device

Infotainment – does not have call center

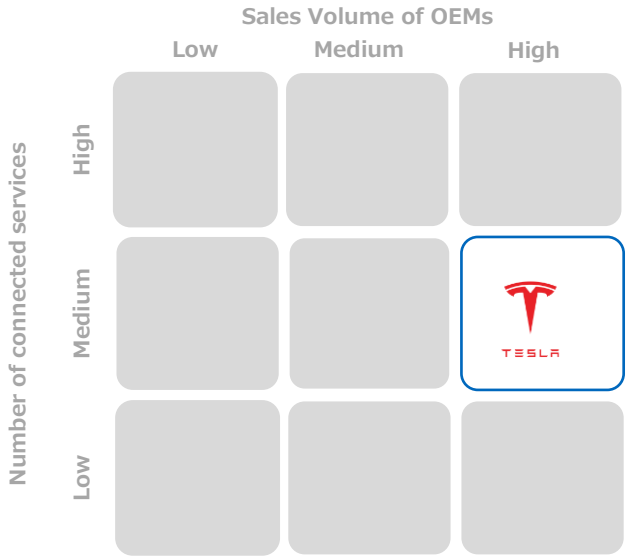
Call Center, 3rd Party Cloud Services → Connected Services Platform ↔ Embedded Comms → Digital Cockpit

Convenience & Remote Services – does not have Call Centre Concierge / i-Call feature thus no call center

Call Center, 3rd Party Cloud Services → Connected Services Platform ↔ Embedded Comms ↔ Electrical System ↔ Digital Cockpit; Embedded Comms ↕ External Device

Tesla Group

Connected Services Vs Sales Volume



Key Highlights

- Web Browser requires a Wi-Fi connection to access, Calendar Integration via Bluetooth connection to a mobile device
- PSAP offers a Call center facility for the connected service
- KPN (Jasper), Telefonica (Jasper), TeliaSonera and Orange are the Mobile Network Operators for Tesla.
- Tesla uses in-house TCU and Connected services platform

Functional Mapping Difference

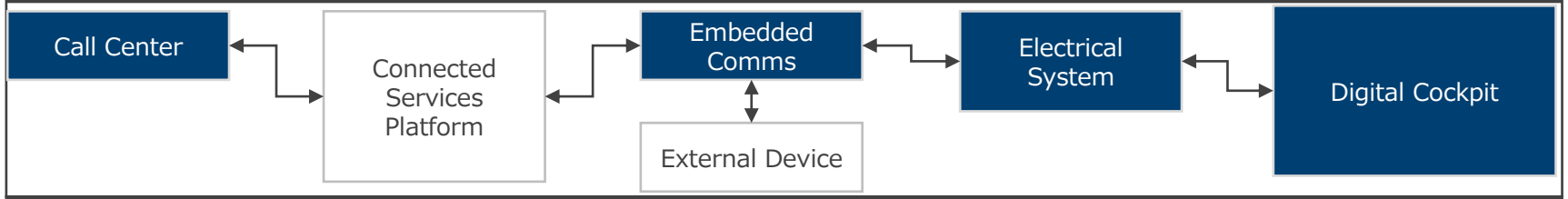
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

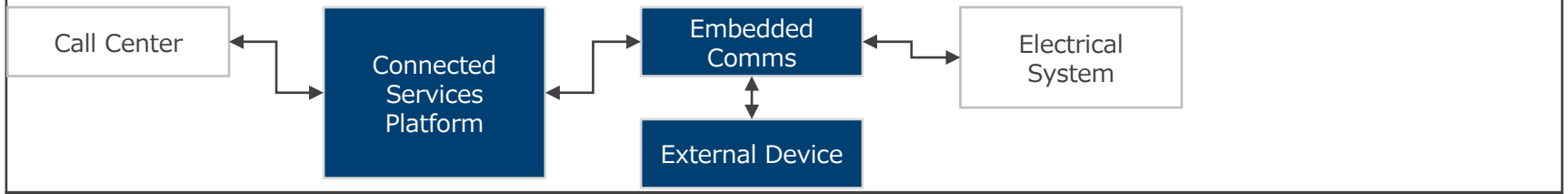
Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

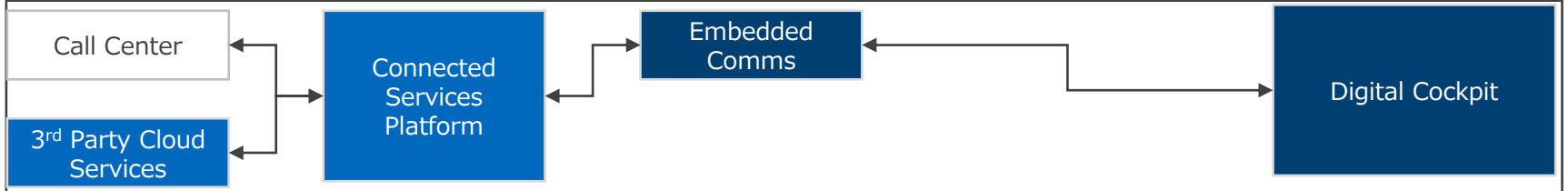
Safety – includes eCall/ACN



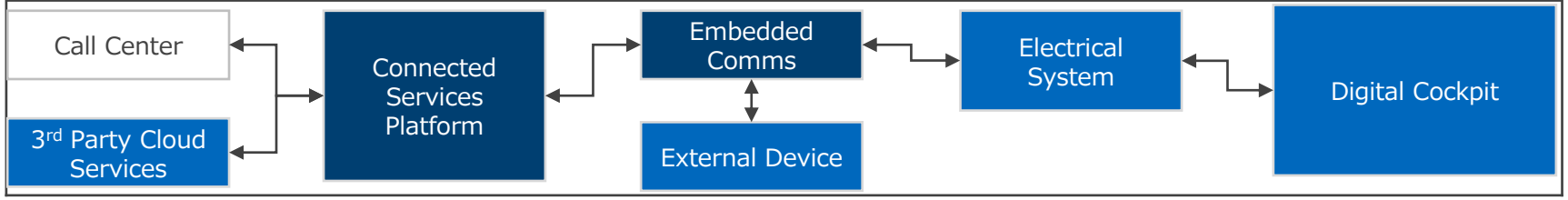
Security – includes Security Alert and Parental Controls



Infotainment – does not have call center

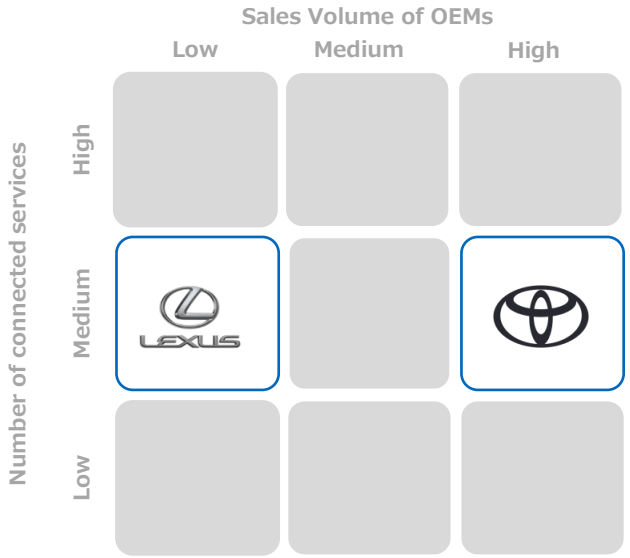


Convenience & Remote Services – does not have call center



Toyota Group

Connected Services Vs Sales Volume



Key Highlights

- Toyota has a higher amount of sales volume in the EU market as compared to Lexus
- TCU supplier for most vehicles is Denso
- AWS serves as the PaaS Cloud Partner for Lexus
- AISIN AW, Harman and Pioneer are Infotainment platform suppliers
- TomTom, Toyota and Toyota Data Center are suppliers for the Connected services platform
- More EV charging station information is offered among Lexus and Toyota vehicle models. In addition, the Conference Call feature which was available in some Toyota models is introduced among some Lexus vehicle models

Functional Mapping Difference

Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

Safety – includes both eCall and bCall

Call Center → Connected Services Platform → Embedded Comms ↔ External Device → Electrical System → Digital Cockpit

Maintenance – includes only has proactive alerts

Call Center → Connected Services Platform → Embedded Comms → External Device; Embedded Comms → Electrical System

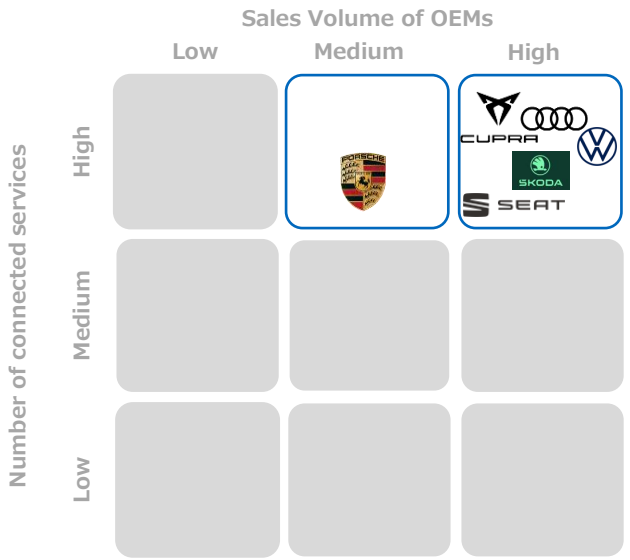
Infotainment – it has User Reviews/Reservations, News/Stocks/Sports, App/Service Store

Call Center; 3rd Party Cloud Services → Connected Services Platform → Embedded Comms → Digital Cockpit

Please note, For all other services Toyota Group follows common functional mapping

Volkswagen Group

Connected Services Vs Sales Volume



Key Highlights

- Harman is the infotainment platform supplier for the VW group
- Vodafone Automotive, INRIX, VW Group and Verizon are the suppliers for the Connected services platform
- SAP serves as the PaaS Cloud Partner for Porsche
- The group offers embedded connectivity via 4G
- Bosch and PSAP offer the Call center facility for some of the group brand

Functional Mapping Difference

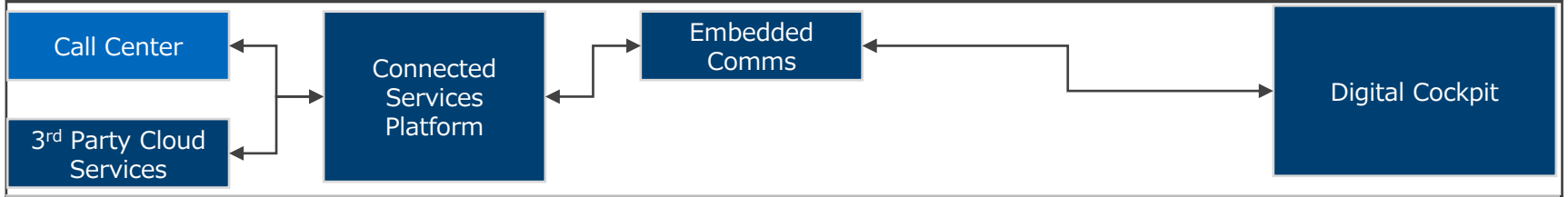
Available in all the sub features of the connected services

Available in some of the sub-features of connected services

Map element Not available in the group

The following table highlights the differences from the common functional map of the services used by the OEMs. There are a few unavailable features among the categories making some map elements different from the common mapping.

Infotainment – does not have conference call, and web browser



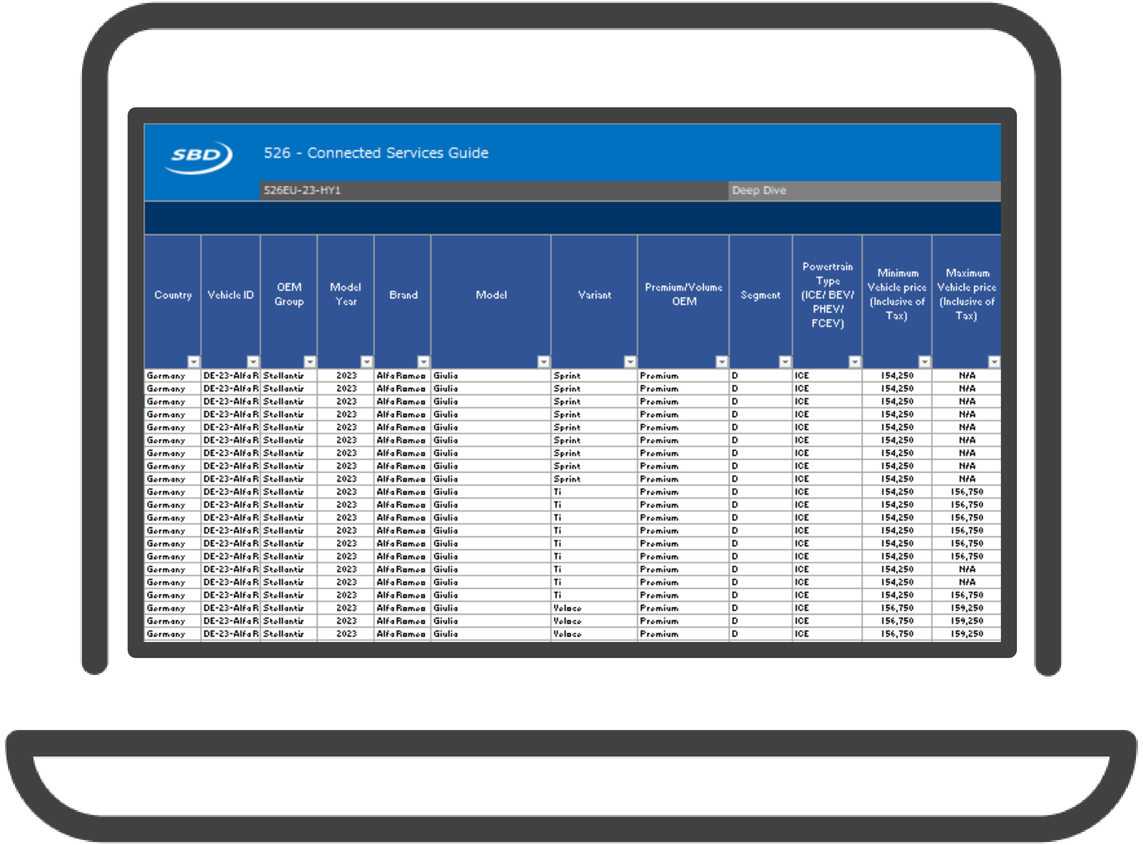
Please note, For all other services Volkswagen Group follows common functional mapping

Explore

This report makes use of research and analysis of the connected services for all passenger vehicles. The full data set is contained within an accompanying Excel spreadsheet. This spreadsheet provides greater detail on connected services on trim level, service fitment, pricing, and much more

How can the accompanying spreadsheet help you go deeper?

- Which services are provided with what variants of passenger vehicles
- How are the packages related to the connected services
- What is the price charged and what free trials available for each trim of the passenger vehicle



SBD 526 - Connected Services Guide

526EU-23-HY1 | Deep Dive

Country	Vehicle ID	OEM Group	Model Year	Brand	Model	Variant	Premium/Volume OEM	Segment	Powertrain Type (ICE/ BEV/ PHEV/ FCEV)	Minimum Vehicle price (Inclusive of Tax)	Maximum Vehicle price (Inclusive of Tax)
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Sprint	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Sprint	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Sprint	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Sprint	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Sprint	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Sprint	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Sprint	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Sprint	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Sprint	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Ti	Premium	D	ICE	154,250	156,750
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Ti	Premium	D	ICE	154,250	156,750
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Ti	Premium	D	ICE	154,250	156,750
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Ti	Premium	D	ICE	154,250	156,750
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Ti	Premium	D	ICE	154,250	156,750
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Ti	Premium	D	ICE	154,250	156,750
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Ti	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Ti	Premium	D	ICE	154,250	N/A
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Ti	Premium	D	ICE	154,250	156,750
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Veloce	Premium	D	ICE	156,750	159,250
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Veloce	Premium	D	ICE	156,750	159,250
Germany	DE-23-Alfa R	Stellantis	2023	Alfa Romeo	Giulia	Veloce	Premium	D	ICE	156,750	159,250

Next Steps

Can SBD help you with any unanswered questions?

Contents Page

About SBD

Contact Us

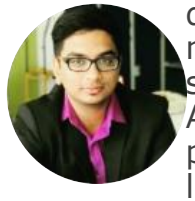
Expert Insight

More partnerships on the way

For connected car services with cellular connectivity, OEMs are providing the greatest number of functions throughout the whole vehicle lineup. Additionally, for services like navigation and infotainment that demand dynamic and substantial volumes of data, cloud partners are essential. The continued participation of the participants, such as the use of digital twins for services like smart maintenance and V2X, will be of interest in the industry collaborations for the services in the future.

Little Flower, Connected Services Specialist

More OEMs should offer Wi-Fi free trials



We are living in times where consumers wish to stay connected even on the go and the data cost is decreasing day by day. Most of the European OEMs have an in-car wi-fi module but only a few of them offer free data trials for the same. The availability is far lower when compared to the American OEMs. We are definitely starting to see some progress as a couple of OEMs brands have joined this small list starting 2023 but it is still a long way to go.

Shamik Ghosh, Analysis Lead

Europe leading in cellular connectivity

Out of all the major automotive markets, Europe has the highest penetration of cellular connectivity. This form of connectivity is becoming increasingly important as it is a key enabler to future business models such as Features-as-a-Service and Software-Defined Vehicles. Europe is expected to lead the way until it has reached market saturation.

Christopher Watson, Forecasting Lead

Advancements in service offerings

Connected car market is witnessing a rapid penetration of connected features across the product portfolio. OEMs are more focused on connected technology offerings like personalized in-vehicle infotainment systems, 3D navigation, secured over-the-air (OTA) updates, and predictive maintenance. An all-encompassing technology, V2X is producing numerous opportunities in terms of cross-functional collaboration between OEMs, software developers, cloud services providers, data center services providers, etc. These advancements in connected services will pave the way for autonomous driving and secured car in near future.

Harsha G, Data Lead

How we help

Consulting Support - Bespoke projects covering nearly all major automotive processes

Research Support

Fast access to data, forecasting and consumer insight

Learn more

Strategy Consulting

Insightful planning support for navigating the industry

Learn more

Technical Consulting

Assessing and contextualizing disruptive tech domains

Learn more

Testing Support

Access to experienced UX, performance and pen test experts

Learn more

How we help

Off-the-shelf Research Reports – Fast access to the latest automotive research

Connected Services Guide - LCVs

The report provides key, up-to-date, insights into the services available for light commercial vehicles. It details the landscape of these services while identifying the strategies used to deliver them

Learn more

Connected Car Legislation Guide

The report defines the legislative landscape clearly across multiple regions and countries around the world

Learn more

Connected Car Data

The report analyzes the differences and details of the best data-sharing practices for stakeholders and lists current data-sharing use cases including the most popular data types among third-party developers.

Learn more

Connected Car Forecast

A ten-year outlook is provided on the penetration of vehicle connectivity and key connected features, as well as the fitment rate of connected systems.

Learn more

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.

info@sbdautomotive.com

Book a meeting

USA | UK | Germany | India | China | Japan

Garren Carr
North America
garrencarr@sbdautomotive.com
+1 734 619 7969

Luigi Bisbiglia
UK, South & West Europe
luigibisbiglia@sbdautomotive.com
+44 1908 305102

SBD China Sales Team
China
salesChina@sbdautomotive.com
+86 18516653761

Andrea Sroczynski
Germany, North & East Europe
andreasroczynski@sbdautomotive.com
+49 211 9753153-1

SBD Japan Sales Team
Japan, South Korea & Australia
postbox@sbdautomotive.com
+81 52 253 6201