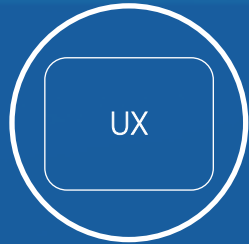


Remaining Range: 120 km



#645c

# Vehicle UX Evaluation: Navigation for EVs

User Experience

The way in which key features are deployed within the vehicle can have a significant impact on how consumers perceive them. As such, deploying them in a manner that helps facilitate a satisfactory user experience is crucial to ensuring successful vehicle launches, while securing customer loyalty in the longer term.

In 2024, to support our best-selling, long-running, HMI UX Evaluation & Benchmarking report series, we launched the two-part UX Enabling Tech Series to more closely analyze the technological performance of various OEM aspects that deliver the biggest impacts on usability and the overall customer experience.

For 2025, we will be releasing the next two entries in this series, with this edition focusing on navigation for EVs. Utilizing the vehicle models tested in our In-Car HMI UX Evaluation & Benchmarking Series, other models we have tested, and the overall usability study based on secondary data, this report will highlight the best user experiences offered by EV navigation systems today and understand how they interact with the EV's connected features.

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- Birds Eye View
- Executive Summary
- The Basics
- Methodology
- Analysis
- Car-by-car Summary
- Next Steps

## RELATED SBD REPORTS



### In-Car HMI UX Evaluation & Benchmarking – Summary – 635(23g)

SBD Automotive chose six cars to evaluate in 2023, based on two selection categories. New/interesting UX focuses on systems with to never-seen-before features or functionality, or the implementation of a solution that has previously been a challenge or pain-point for end-users. New mass-market UX includes vehicles in segments that are sold in high numbers and are entering a new generation of UI for that vehicle.

### COVERAGE



### FREQUENCY



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# Key Benefits

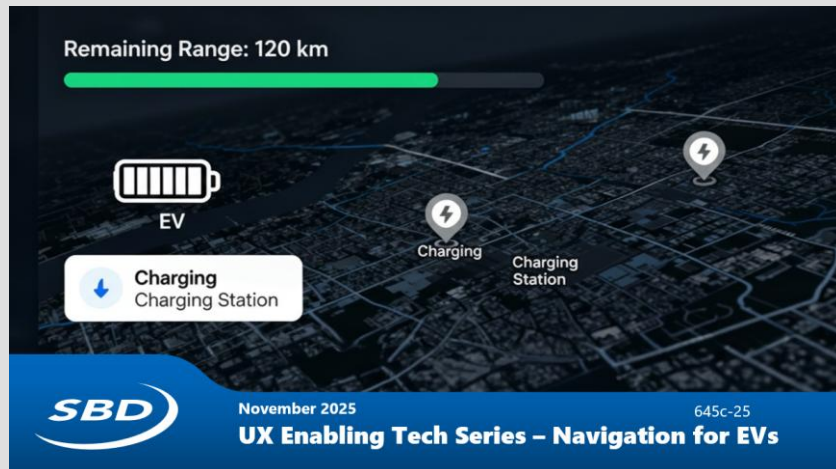
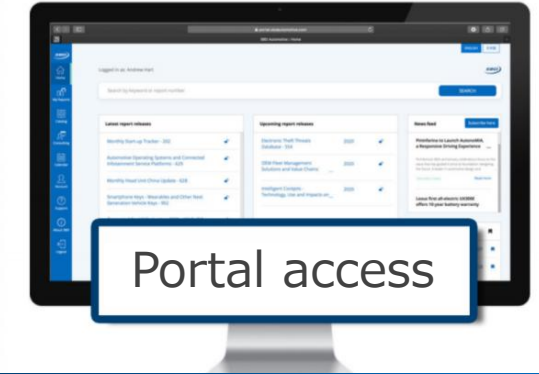
- > Deep case studies of each navigation experience backed by objective testing data
- > Evaluate the technical and functional differences in the implementation of the selected features across the vehicles
- > Identify best practices and novel ways of delivering seamless user experiences across different use cases
- > Recommendations to enhance the customer experience for your own systems and technologies

# This research supports



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Remaining Range: 120 km



EV



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November 2025

645c-25

**UX Enabling Tech Series – Navigation for EVs**



## Introduction

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# Introduction

EV navigation is becoming one of the most influential elements of the electric-driving experience as it shapes how confidently and seamlessly drivers plan and complete their journeys. This report provides an overview of today’s challenges, notable innovations, and where SBD expects public charging to evolve in the near future.

Early EV navigation systems often offered limited EV-specific intelligence, for example, inconsistent range estimates, poorly planned charging stops, and route guidance that lacked awareness of real consumption factors. These gaps often left drivers feeling uncertain or anxious, compared to the predictability they were used to with combustion-engined vehicles.

Over the past years, rapid improvements such as real-time data availability, charging-network integration, and predictive modelling have elevated the EV navigation experience. Moreover, dynamic range prediction, enriched charger information, AI-assisted routing, and deeper coordination between in-car systems and mobile apps increase convenience and help to reduce range anxiety. However, challenges remain, because some systems still show unclear range communication, limited automation, missing connection of app and IVI systems, and a lack of proactive guidance.

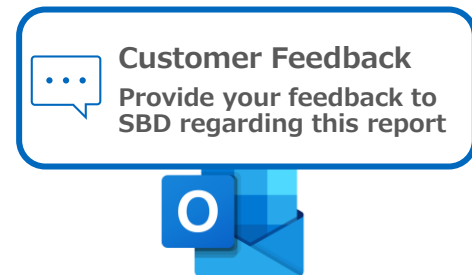
SBD expects future developments to focus on precision, consistency, and anticipation. Navigation systems should reduce cognitive load, align with driver habits, adapt intelligently to conditions, and seamlessly connect car and phone.

Differentiation will depend not only on map quality or routing algorithms, but on how intuitively and holistically navigation supports users in their EV journey. OEMs that embrace user-centric design, intelligent prediction, and tight ecosystem integration will not only improve the day-to-day and travel experience of EV drivers but also strengthen trust and loyalty in a rapidly evolving market.

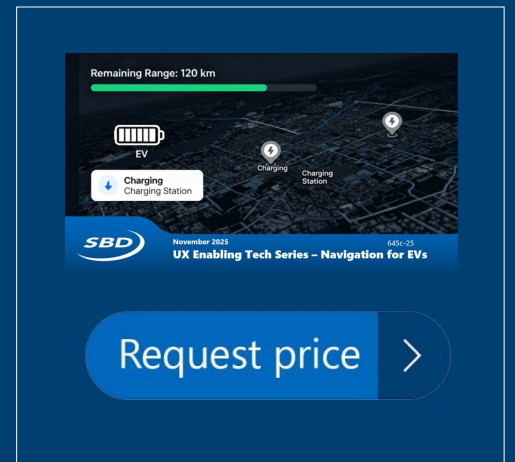
Layer	Section	Conclusion
STRATEGY & IMPACT	Executive Summary	High-level overview of features, functionality and trends along with key recommendations for creating a satisfying EV navigation experience
	The Basics	Describes UX principles, unique challenges to charging, use cases and explains certain terms
LEARNING & ACTION	What’s New?	New partnerships, the latest technology, new launches or announcements
	Usability Analysis	Defines 14 pain points in EV navigation and provides in-depth analysis
	Feature analysis	An overview of notable features and a MoSCoW analysis of features for 2026
CORE INSIGHTS	Best Practices	Provides insights into best practice implementations from different OEMs and mapping providers, grouped into 15 categories
	Birds Eye View	An overview of the key topics that correlate with navigation for EVs
CONTEXT	Future Outlook	How is EV Navigation likely to evolve in the coming years?
	Next Steps	Can SBD help you with any unanswered questions?

## 645c – UX Enabling Tech Series – Navigation for EVs

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# Example slides from the report





# Navigation as part of a cockpit ecosystem

## Navigation



Navigation is an intuitive feature that offers many services to consumers. For instance, it allows users to easily search for Points of Interest (POIs) and address destinations through a smartphone interface. Users can then send these locations to their car for routing. Another helpful feature is the reminder function, which alerts users when it's time to return to their vehicle before their paid parking period expires. Additionally, users can pre-plan long journeys for their EVs with charging pit-stops. This feature helps track nearby charging stations for a hassle-free ride.

### Features Included

- Destination send-to-car
- Parking reminder
- Route Planning with Live EV Charging Station Availability
- Journey planning

### App Type

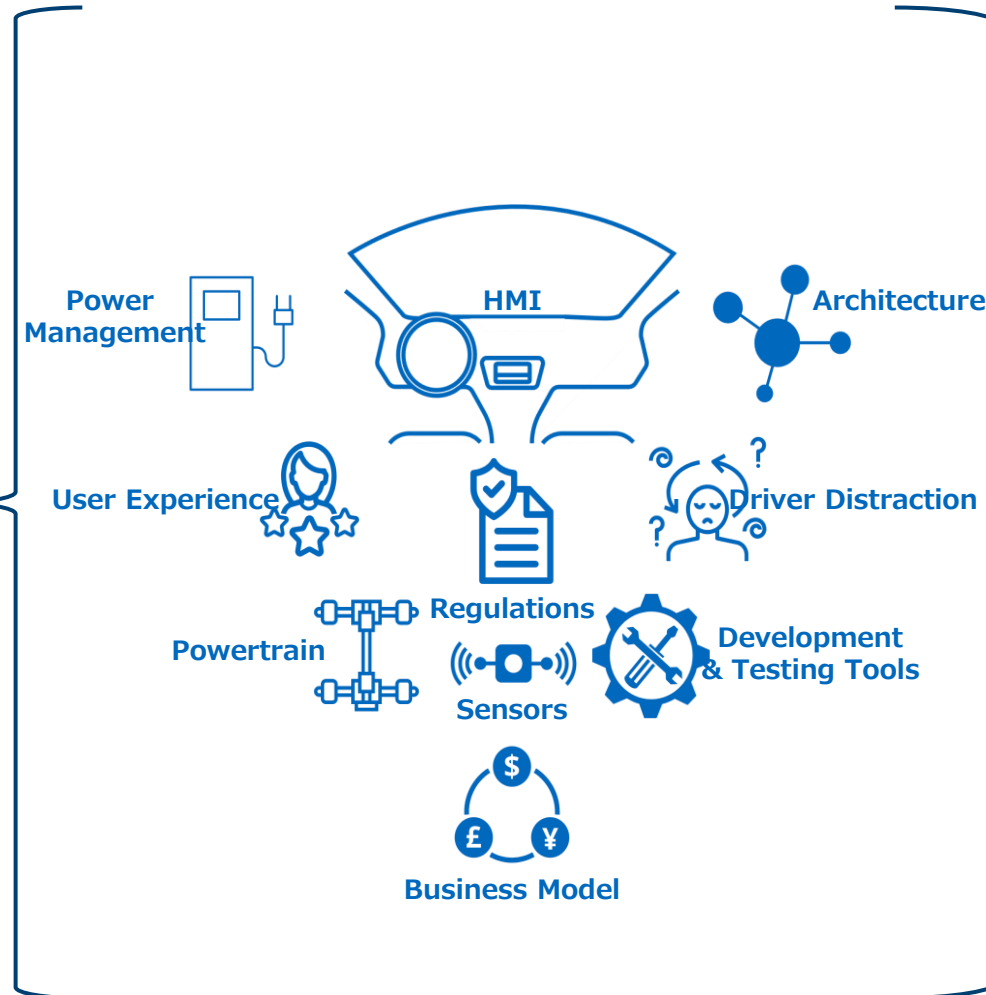
OEM Driven

3<sup>rd</sup> Party Driven

*The digital cockpit, at its most capable, will touch every aspect of vehicle development.*

*Intelligent interactions can be implemented onto most vehicles.*

*The perception of an intelligent cockpit, though, will only be possible by designing intelligence in from the beginning.*

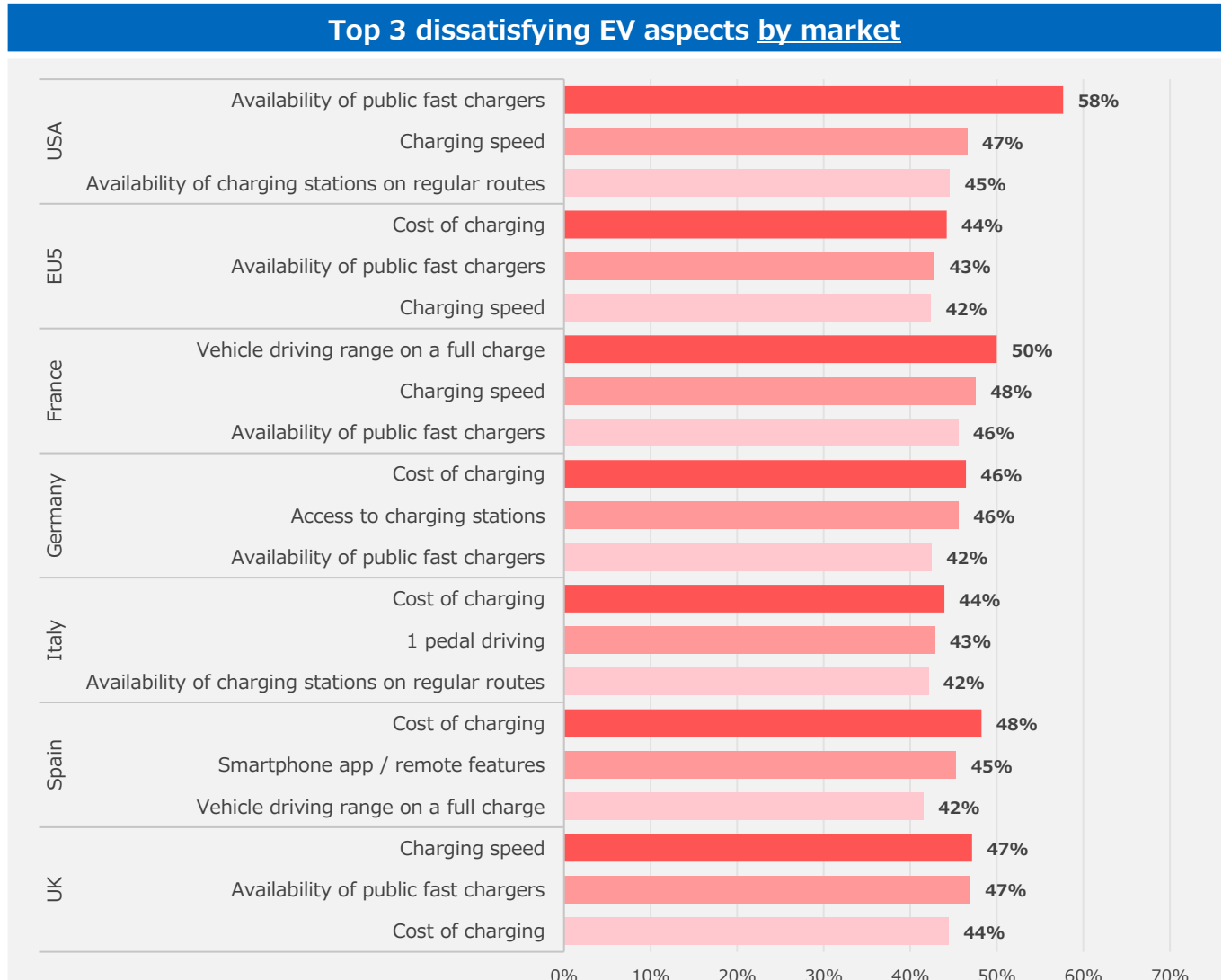
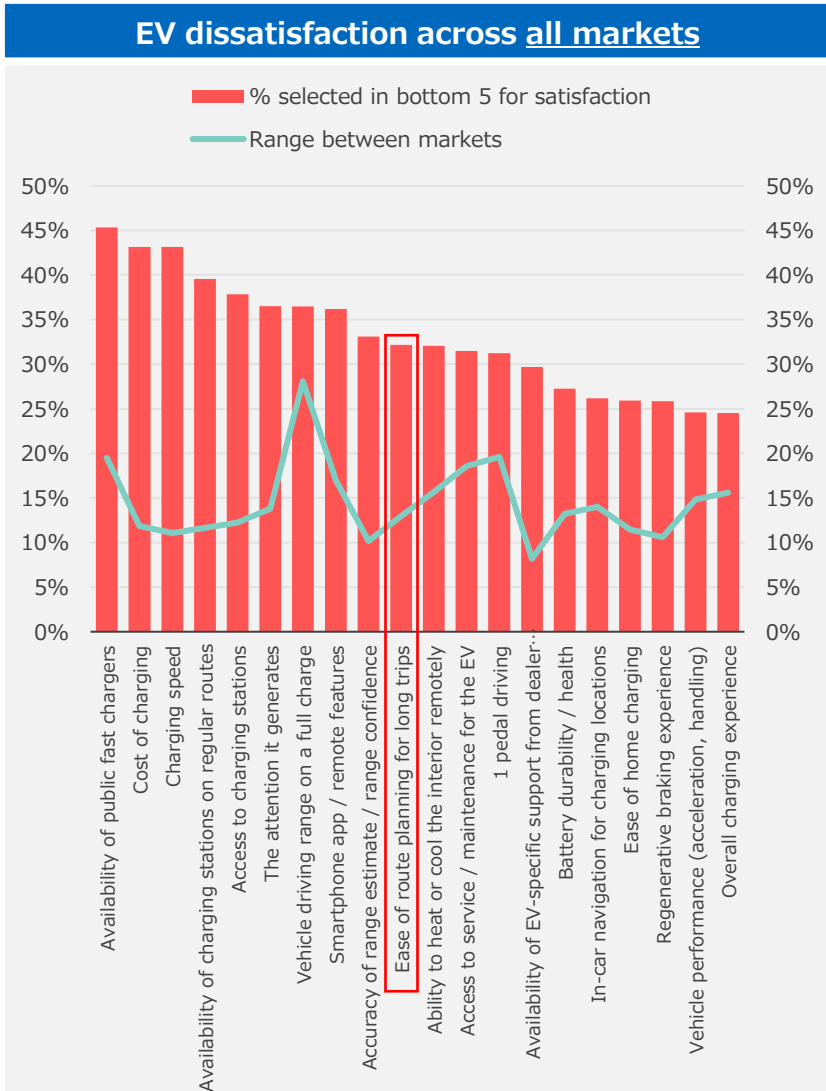


*A continuously interactive vehicle combines internal occupant information, external vehicle context, and current vehicle settings and information to deliver advanced user experiences.*



# EV owners dissatisfied with some range and navigation functionalities

**SBD:HERE EV Index Consumer Survey** shows dissatisfaction with EV ownership. Over one third of EV owners are dissatisfied with ease of route planning for long trips.



Participants were asked "Please choose the 5 things you've been LEAST satisfied with while owning your electric vehicle".

n= 507

## 8. Confusing range metrics (CLTC, WLTP, EPA)

EV owners are routinely confronted with three different range values: CLTC in China, WLTP in Europe and EPA in the US. All are calculated under different testing conditions with different assumptions about speed, temperature, and driving style. As a result, the same vehicle can appear to have quite different range figures depending on the market. For users, this creates inconsistencies and erodes trust before they even start driving.

- **Three standards:** CLTC is more optimistic, WLTP is quite moderate, EPA is more conservative.
- **Different numbers for same car:** A 700 km EV in China becomes ~600 km in Europe and ~500 km in the US, without giving users any context on why.
- **Marketing numbers:** To customers, the number may feel like a sales figure, not a planning tool, so they could mentally discount it.
- **Missing transparency:** The IVI rarely discloses which standard is shown or what assumptions are behind it.

### SBD recommendations

- Provide a short description or tooltip explaining why numbers differ across regions.
- Offer a “realistic range” or “live estimate” alongside the regulatory figure.
- Frame the certified value as a baseline, not the user’s likely on-road experience.
- Clearly label (e.g. within settings) which standard the range value is based on (CLTC / WLTP / EPA).

r/TeslaSupport • vor 2 Jahren  
ICEPower47

### Website range VS car

I just picked up a new Model 3 LR and was kind of surprised by the range displayed on the car when fully charged. Tesla website shows 629km of range (WLTP), but the car screen shows 548km when fully charged. Why this discrepancy? What calculation method does the car use? I have only driven it for 5km, there is very limited data for my driving behavior.

r/MercedesEQ • vor 9 Monaten  
Exotic\_Conference\_95

### EQE350 Range



Quite surprised to see my EQE350 (not the 350+, not the SUV) scoring such a high range. (419miles / 671km)

The announced WLTP range is 621km... so the MAX was adjusted to my driving style.

Examples of users on Reddit, who are confused of the discrepancy between advertised range and the actual range their car shows.

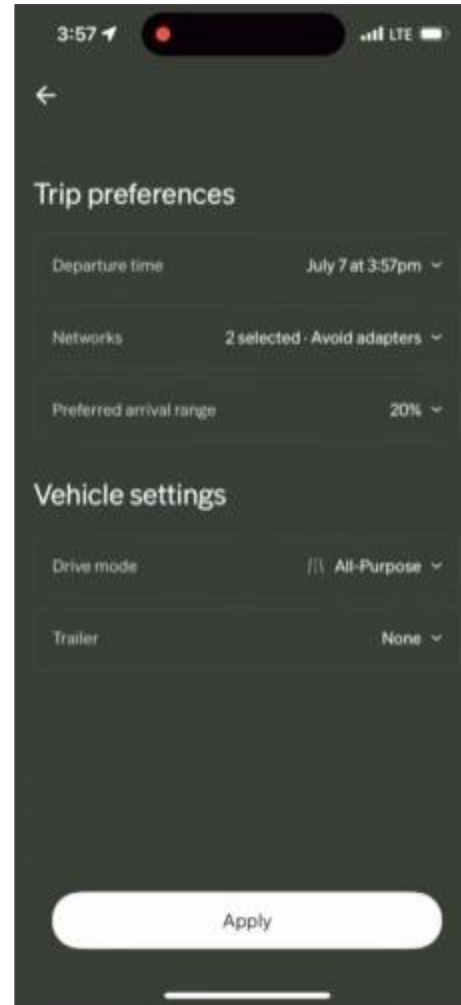


## 2. Effective multi-stop-route planning

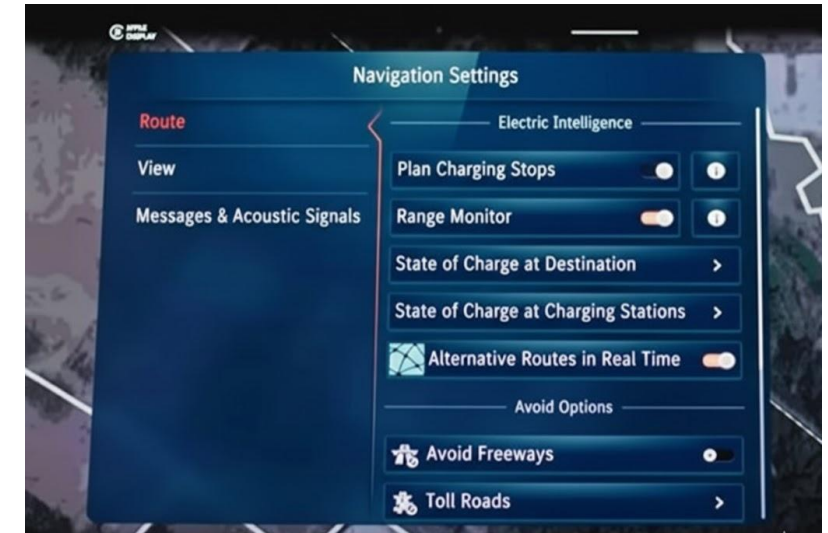
Several OEMs offer automatic, multi-stop-route planning with preferred filters. Generally, when a destination is selected, the system automatically determines if the vehicle needs multiple charging stops and selects the most appropriate stops and the amount of charge to add at each stop to create maximum efficiency. A well-designed multi-stop route planner transforms long-distance EV travel from stressful to seamless. Leading implementations are clear, highly automated, and flexible.

- **Rivian:** The user is able to set their own preferences for individual trips using filtering, setting preferred charge stations, and set targets for range at arrival at destination. Ability to name and save trips for future use, for example planning and saving business or leisure trips in advance.
- **Mercedes-Benz:** Users can apply settings for longer journeys such as adjusting their preferred minimum SoC during the journey to their preferred level – separately for charging stops and at the end of the journey.
- **BMW:** BMW offers the same settings as Mercedes-Benz for minimum SoC at charging stops and at the destination.

When drivers understand the route planning, can adjust it freely, and can see that the system adapts intelligently, long-distance EV travel becomes simple and intuitive. Strong multi-stop route planning reduces range anxiety, increases trust, and encourages users to stay within the OEM ecosystem rather than relying on external apps.



Rivian lets users set a route in the IVI or app; multiple settings are available for the route.



Mercedes-Benz offers multiple settings for long journey planning, e.g. to set minimum SoC at charging station and destination separately.

# No companion app today fully meets all user expectations

## Feature set

1. Lack of useful functionality
2. Lack of delight features

## User experience

3. Slow system and unclear visualization
4. Multiple apps from OEM
5. Regional issues
6. Poor/inflexible information architecture
7. Unclear operation
8. Design inconsistencies
9. Disappointing aesthetics
10. Lengthy or complicated sign-up process
11. Lengthy or repetitive login process
12. Poor stability
13. Lack of flexibility
14. Poor account deletion process
15. Disappointing/lacking customer service
16. Slow/unreliable communication

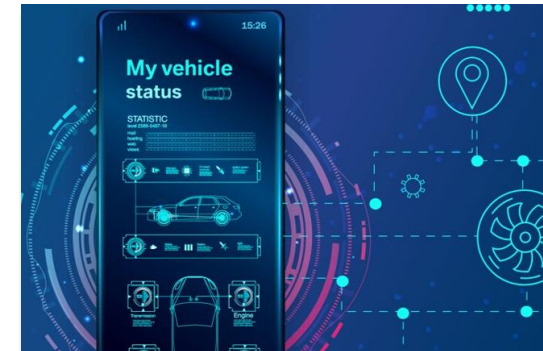
## Communication

17. Outdated information/lack of sync or updates
18. Problematic Phone as Key (PaK) operation

Although automotive companion apps have been in the market for almost 15 years, no single app offers a comprehensive **feature set**, a great **user experience**, and fast, reliable **communication** with the vehicle.

SBD has defined 18 pain points divided between these three categories.

- A diverse feature set is evident in the market as a whole, but many apps are missing some basic hygiene features or provide a limited feature set. Delight features and gamification are not particularly common.
- User experience concerns make up the majority of identified issues, including slow or unexpected interactions, too many apps per OEM, poor app structure, lengthy account sign-up, login and/or deletion processes, poor stability, and poor customer service.
- Communication issues are evident in almost all apps, with Tesla being an exception, at least most of the time. Slow, unreliable, and infrequent communication is repeatedly experienced in the majority of apps, and Phone-as-Key operation rarely offers the faultless level of reliability expected from many years of key fob usage.



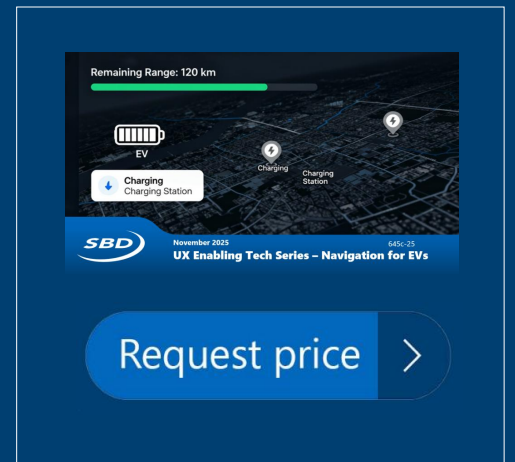
## UX Enabling Tech Series: Companion Apps

SBD's UX Enabling Tech Report Series will more broadly provide insight into the implementation, differentiation, and key USPs of contemporary companion apps and the latest hands-off driving systems.

[Learn more](#) 



# Request the price





# 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](mailto:info@sbdautomotive.com) or discuss with your local account manager below.



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