

**NIO-MISM** a transparent  
onboarding journey experience for  
NIO L3 self-driving adoption

# Level 2 , level 3 Self-Driving



## Level 2: (Current, TESLA)

**The driver needs to stay alert and keep his hands on the steering wheel**



## Level 3: (Future)

**The driver can take his hands off the steering wheel and eyes off the road; the driver needs to be ready to take over where necessary.**



# Drive into the future



# **Our Service: What is it?**

**An onboarding service that catalyzes the efficiency of the Self-Driving (SD) adoption journey and its experience for Hands-off (Level-3) autonomous users.**

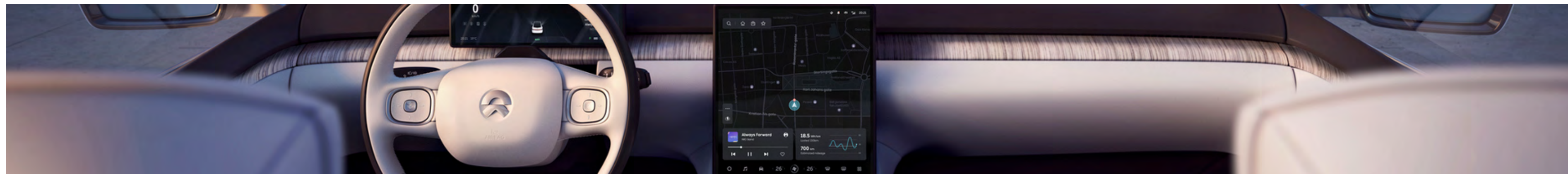


# WHY NIO?

- **Pioneer in user experience and product reliability**
- **Premium smart electric vehicle**
- **Ecosystem and Community Based Brand Strategy**
- **Investing hugely in self-driving technology**
- **Expanding market in Europe from 2022**



# Project Overview



## Primary Research

24 industry organization and expert interviews

14 deep interviews with current customers and potential customer

Proposal validation from 5 car manufactures

## Secondary Research

More than 20 research papers

Government documents and websites

## Prototype testing and validation

10+ in-depth feedback sessions with RCA, IMDC VOVLO, NIO



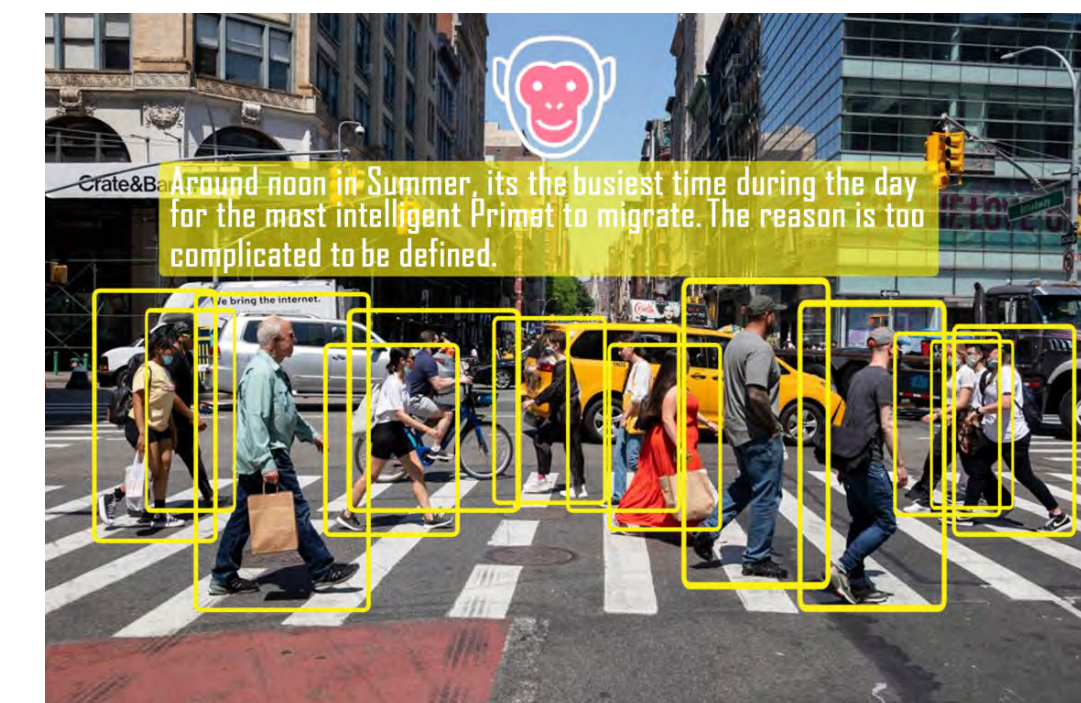
# Range of problems (initial research)

**Users are finding it difficult to understand what Self-Driving systems are about to do.**

**Current self-driving adoption approaches ignore that it takes a period of time for users to become familiar with the system.**

Users don't know the limitations of the Self-Driving system and how much they can rely on it.

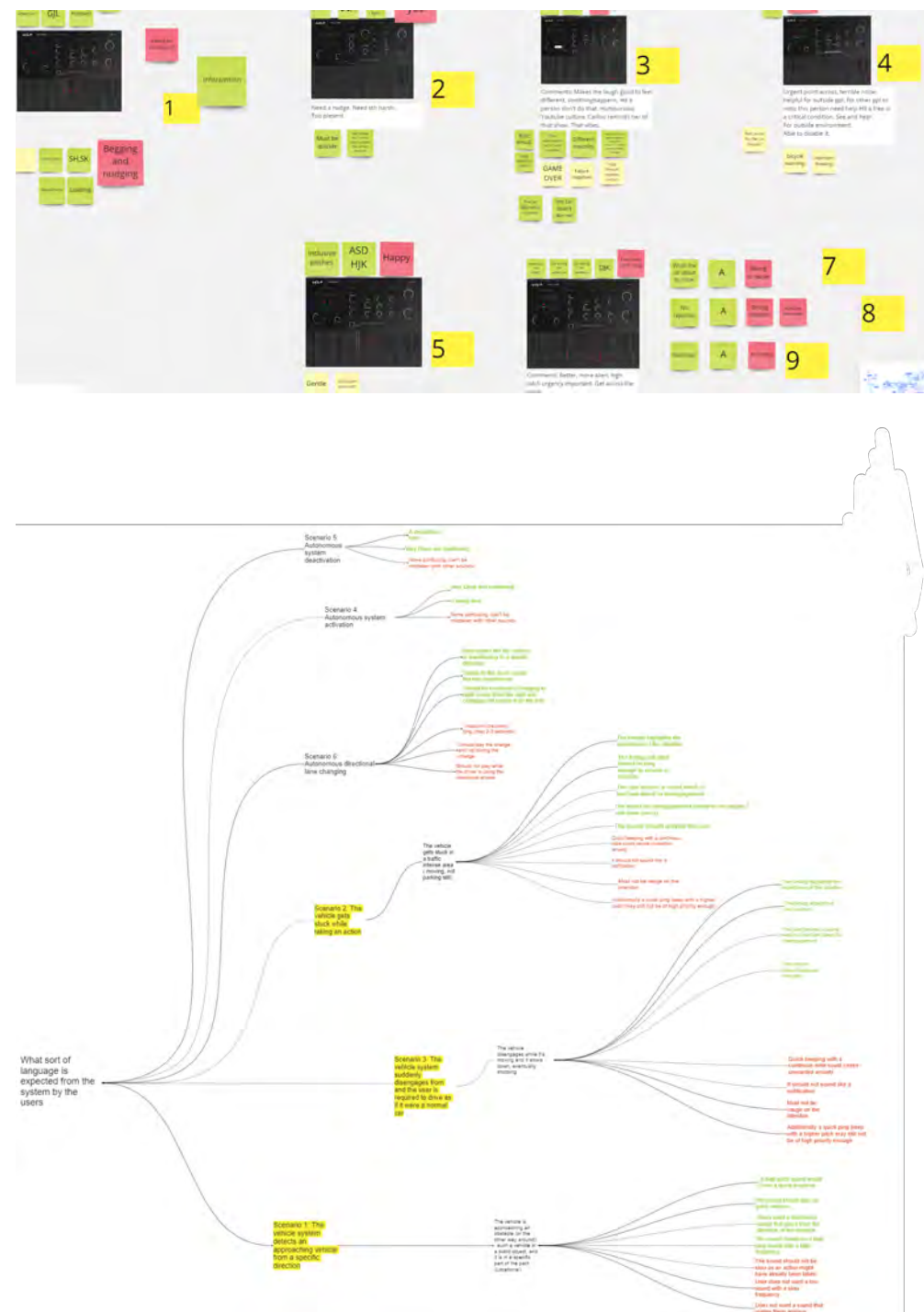
Every car manufacturer is trying to make their own self-driving experience and adoption journey unique.



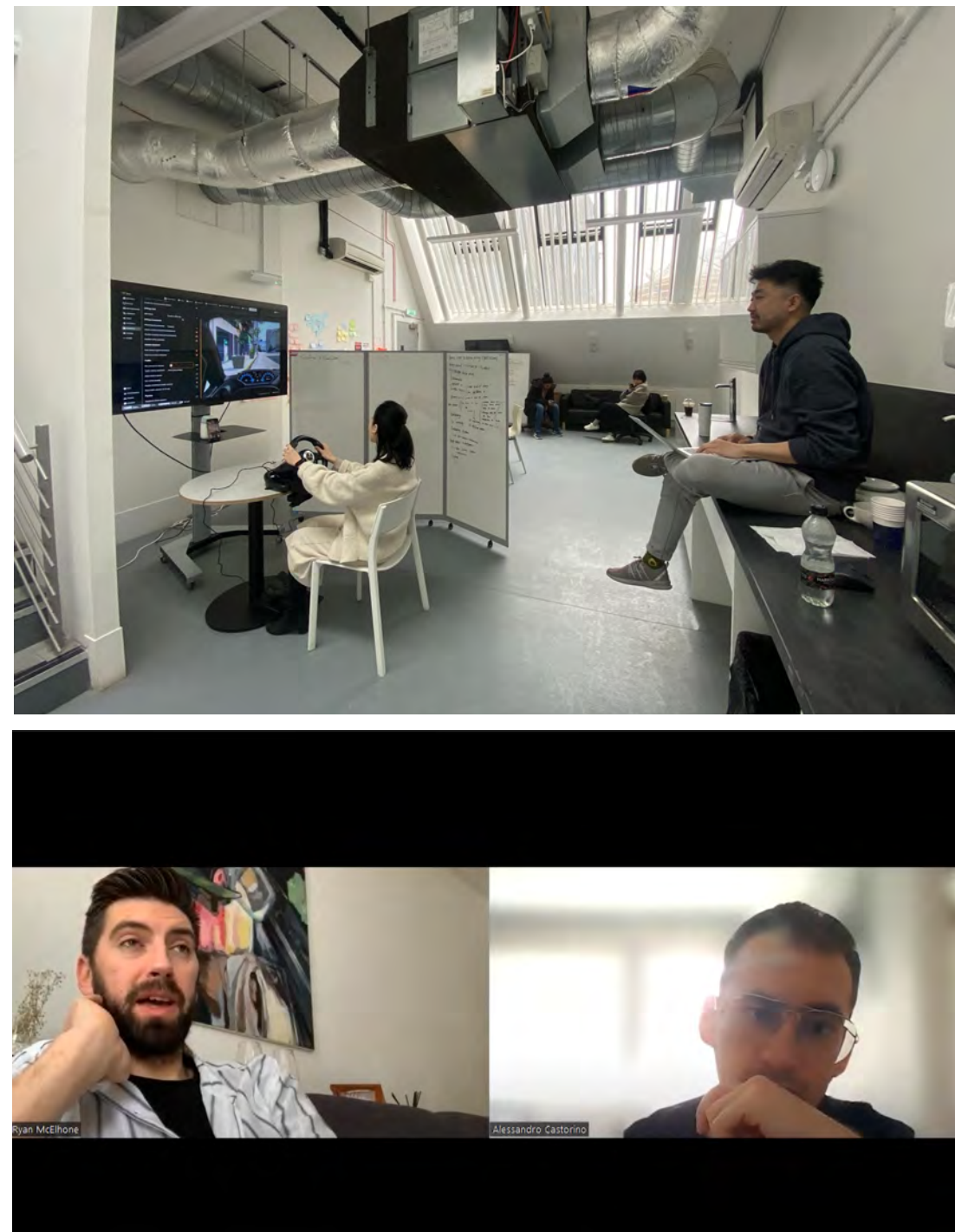


# Initial ideas and prototype tested

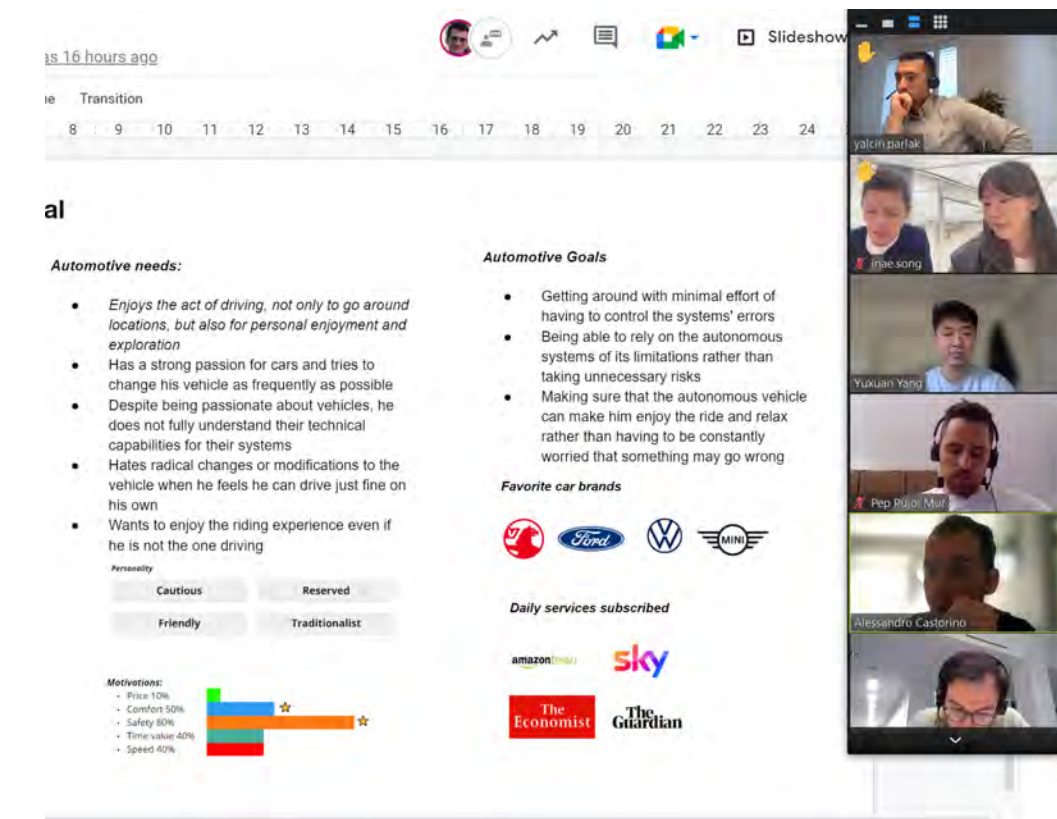
SD service user mental model mapping



User SD service onboarding journey testing



Service structure validating with the industry



**Companies and Organizations connected:**  
**VOLVO**  
**FORD**  
**Aston Martin**  
**NIO**  
**RCA Intelligent Mobility Design Centre**  
**RCA The Helen Hamlyn Centre for Design**

# Feedback

## Value points

**Users would like to have an SD tutorial but are unwilling to put too much effort into it and make it a “self-driving license”.**

Most users do not realize that self-driving services can be sold separately from the car.

**Users want to know more knowledge and personal experience of self-driving before fully committing to the SD service**

## Assumptions

Different users may have a different period for SD adoption

Users care more about usability and reliability than system smartness

Users would prefer to know SD's capabilities and limitations before they start to use it.

## Industry Validations

**Project approach and direction are aligned with our approach, and we think this is an effective direction to improve SD adoption experience. -VOVLO UI/UX team**

Self-driving journeys and experiences are very much brand-based. - Jeff Poon, Ford Senior Creative Strategist / Futuring Designer



## Evidence

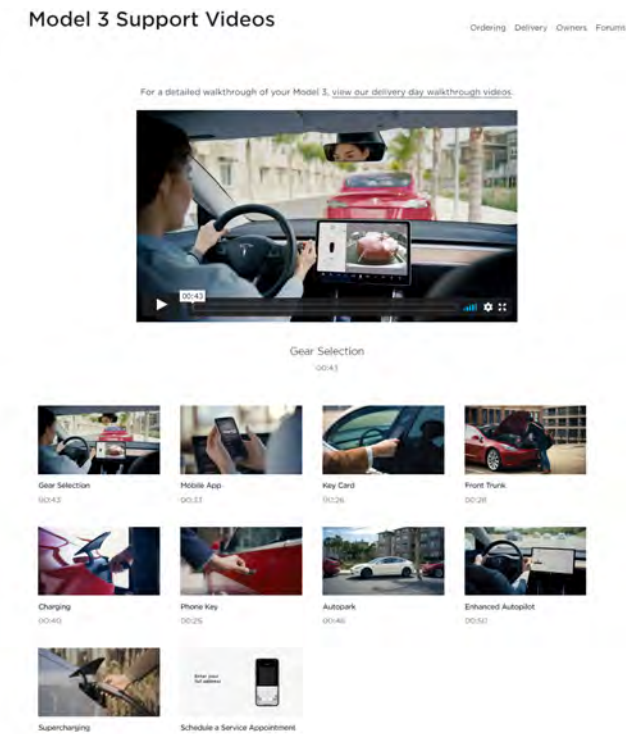
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**“I forget if there is a Guide for self-driving functions.”**

**“There is a guide, but it is not mandatory; I normally search on YouTube for a quick fix.”**

**“My car never tells me its capabilities and limitations.”**

Gang Zhang -Tesla Model Y user



### **Areas for guidance and knowledge sharing**

<https://www.youtube.com/watch?v=sLi9EAJpN-I>

[https://www.tesla.com/en\\_GB/support/model-3-videos](https://www.tesla.com/en_GB/support/model-3-videos)

## Insight 1

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- Users often don't realize there are non-mandatory tutorials and look for third-party resources for knowledge instead.
- Many car manufacturers are neither open nor upfront about their systems' limitations

## Impact

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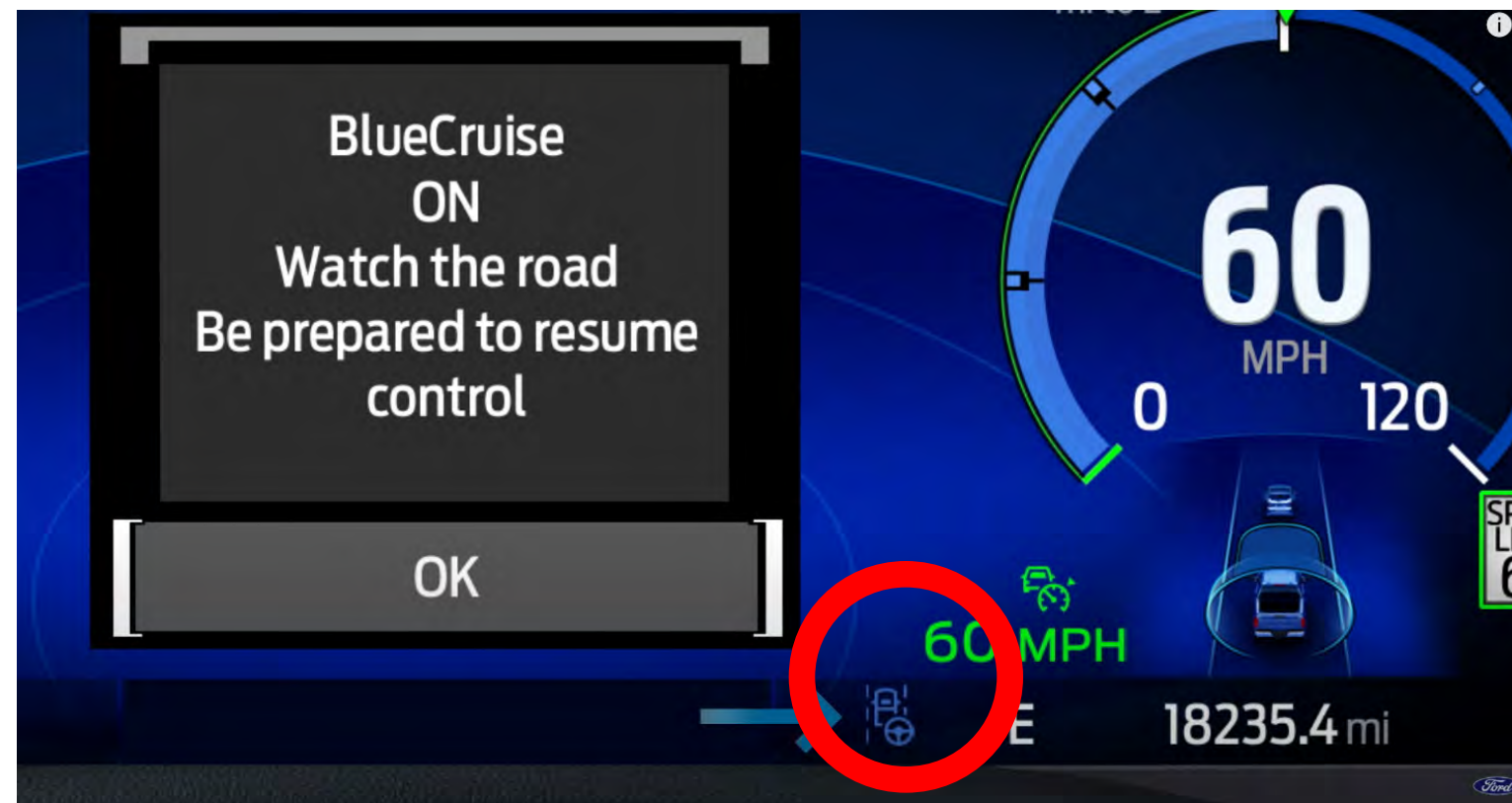
Manufacturers being not transparent about their self-driving service limitations and a lack of stress on self-driving service tutorials causes user confusion regarding self-driving service and disconnection between the user and the brand.



## Evidence

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“I drove a Ford Mach-E, and it took me a week to finally figure out why every time I set it on self-driving, it always disengages and asks me to put my hands back on the steering wheel. But the car is branded as hands-free autonomous. The icon to show the status is way too small. I didn’t know it wasn’t activated all the time.”



### **Areas for guidance and knowledge sharing**

[https://www.youtube.com/watch?v=qk\\_dpv\\_a5RE](https://www.youtube.com/watch?v=qk_dpv_a5RE)

*Eric B. Jahn, GCCcars -Youtube channel*

## Insight 2

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**Users find Self-Driving experiences frustrating when they find it hard to understand the system's intentions.**

**Without a proper onboarding guide, the user adoption period is prolonged.**

## Impact

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Without clear communication to inform the Driver of the vehicle's self-driving status, the user may misuse or be misled by the system. Service functions may not be properly used, thus hindering the user experience.

## Evidence

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**“If I’m new to this service, I may need the system to remind me what this sound means exactly, with a human voice.”**

*Emily Boxall - Non-SD user*



## Insight 3

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**Users need time and support to properly apply the Self-Driving training given by the tutorial in real driving conditions.**

**Tutorial sessions alone are not enough.**

## Impact

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Without assistance after introduction, new users may still be overwhelmed when exposed to driving conditions. Wrong driving decisions can be made by the user.

## Evidence

**“I know self-driving and would like to try it, only when everyone else starts to use it.”**

*Vicky - Potential SD user*

**“I like to see tips and reviews from online forums if I get questions and confusion, also, research before I make a move. To me it is easy, but not everyone has the time or resources.”**

*Gang Zhang Tesla Model Y user*



## Insight 4

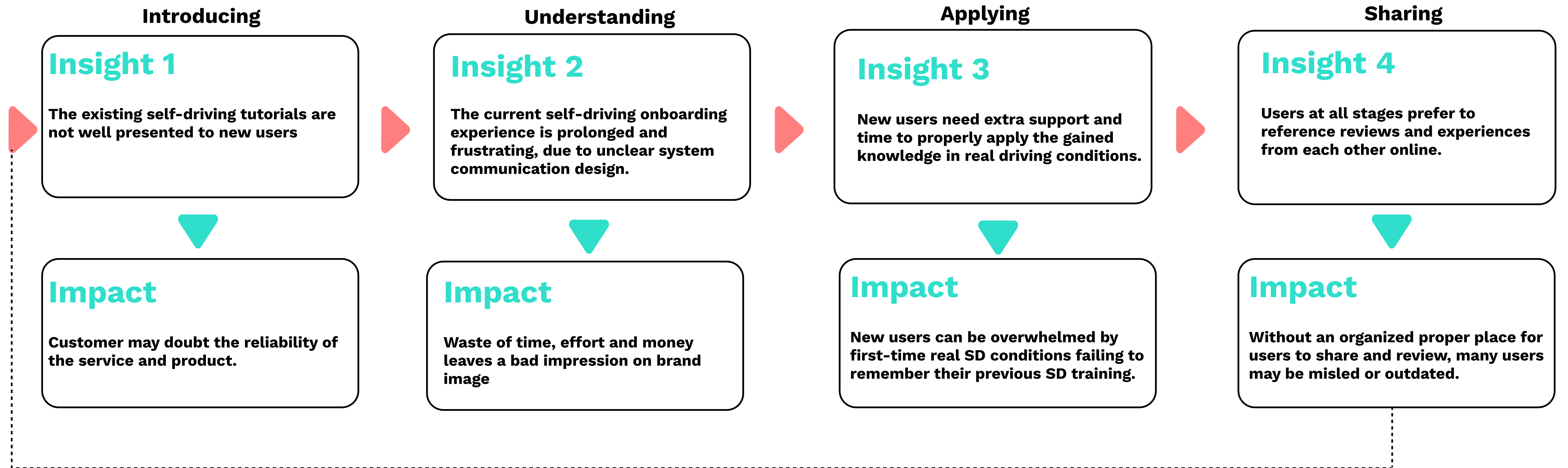
**Users at all stages prefer referencing experiences and reviews from other users' perspectives online to make decisions or to be updated.**

## Impact

Without a organized and transparent reference source, many users ( or potential users ) may not be able to be updated or provided with the proper knowledge to make decisions or use the service.



# Summary of Insights - Opportunities



## Design opportunities

To enable users to be efficiently equipped with system knowledge.

## Design opportunities

To enable a clear and easy communication between user and self-driving system

## Design opportunities

To enable users to properly apply their leanings from tutorial at their own pace.

## Design opportunities

To enable users to share experience and get transparent updates and reviews.

# Key Intended Users



“I'm not very confident about self-driving and will wait until everyone I know starts to use it, but the NIO brand experience so far is very much reliable and enjoyable.”

**Skeptical**

## What do they need?

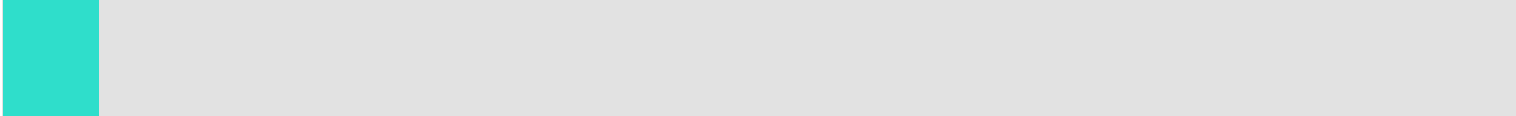
- Good and transparent Self-driving service knowledge
- Constant updates on product progression

## What can they offer?

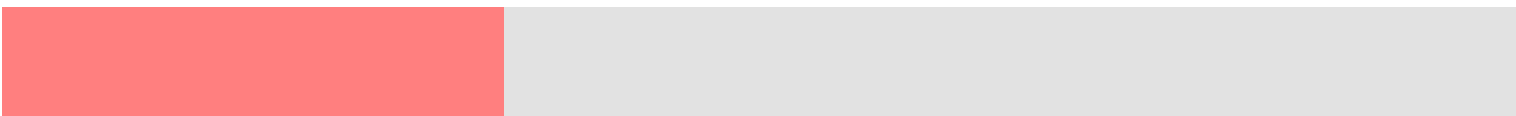
Doubts and perspectives- Safety concerns for SD, ethical concerns.

Eagerness to interact and follow up with other SD users and service progress.

## Level of Self-driving knowledge



## Need of Self-driving onboarding service



# Key Intended Users



**Cautious**

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**“I’m quite intrigued by self-driving technology. It may help me in certain conditions. But I wouldn't right away give it a go. I need to know how cost-effective it is and also the safety aspects as well.”**

## What do they need?

- **Reliable knowledge, tutorial and community with experience to resolve his concerns or questions.**
- **A clear vision of what benefits SD may bring if he commits to the service.**

## What can they offer?

**Share their own experience as a reference to other users**

A constructively critical view of the system's capabilities and limitations

## Level of Self-driving knowledge



## Need of Self-driving onboarding service





# Key Intended Users



**Veteran**

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**“I use NOP when I need to take a break after a day’s work at home, especially when I’m on my phone. Since I’m the first batch of NIO owners, I get the NOP service lifetime for free, and enjoy the overall brand experience quite much.”**

## What do they need?

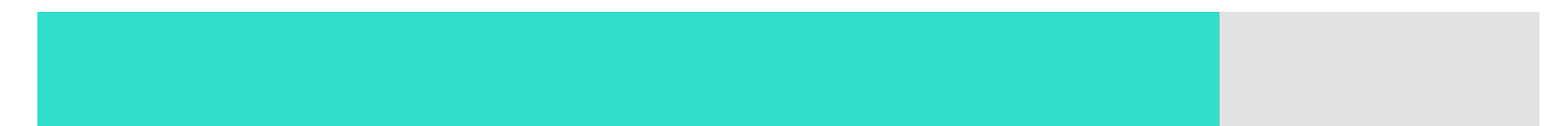
- An experience that allows him to go between his destinations without compromising his comfort or time also frees him from driving partially
- Constant updates on product progression

## What can they offer?

An experienced background that can relay feedback about possible improvements.

Detailed analysis and review of new and potential features

## Level of Self-driving knowledge



## Need of Self-driving onboarding service



# Problem Statement

There are thousands of Level-2 (Tesla) autonomous users that are finding it hard to interpret the intentions of their systems, because they were never trained on how to operate them. This will get worse in the near future, with level-3 (Hands-off self-driving) technology.

# HMW focus

**How Might We Catalyze the Future Self-driving onboarding experience by bridging the reliability and communication gap between the systems and their users, easing the adoption journey?**

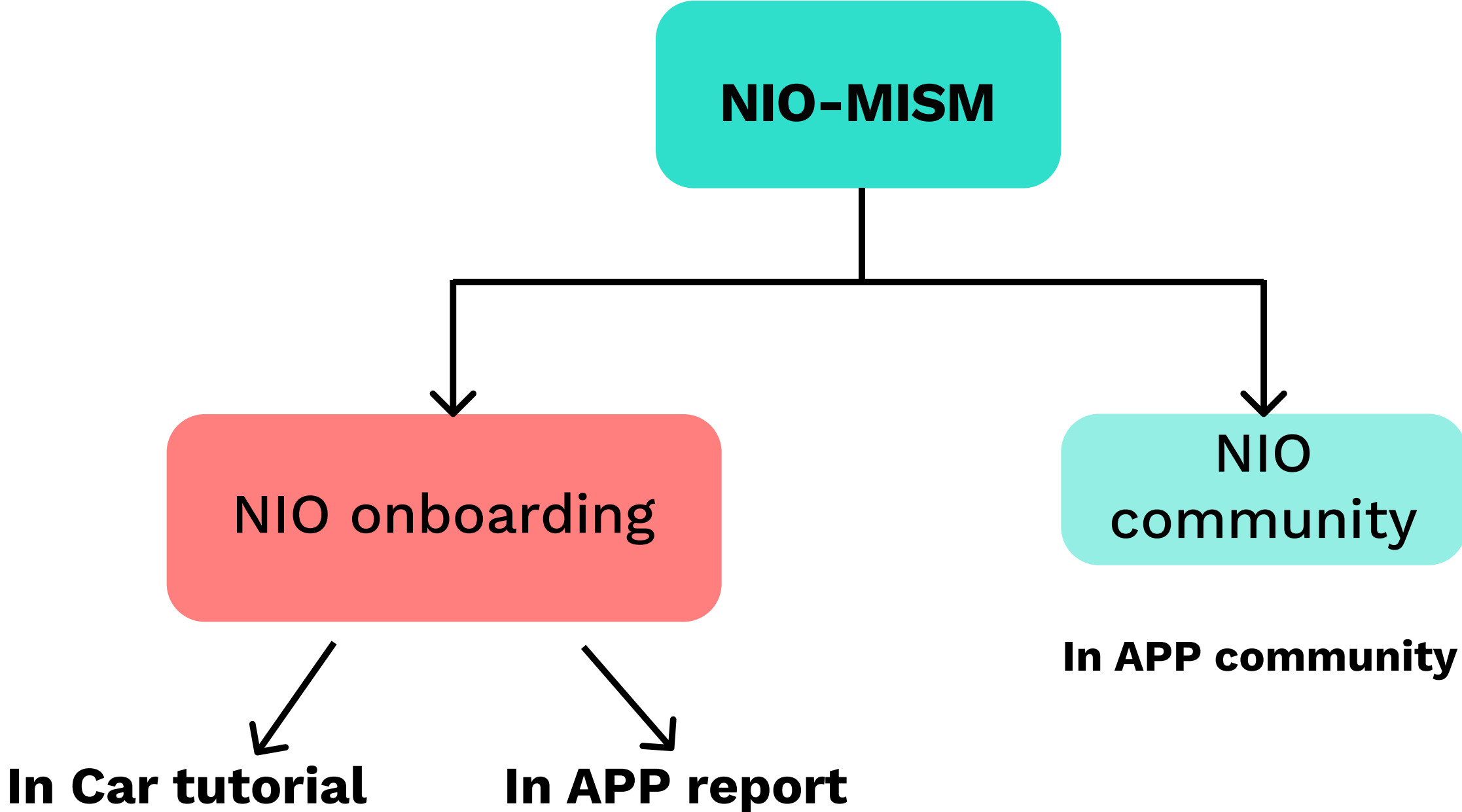
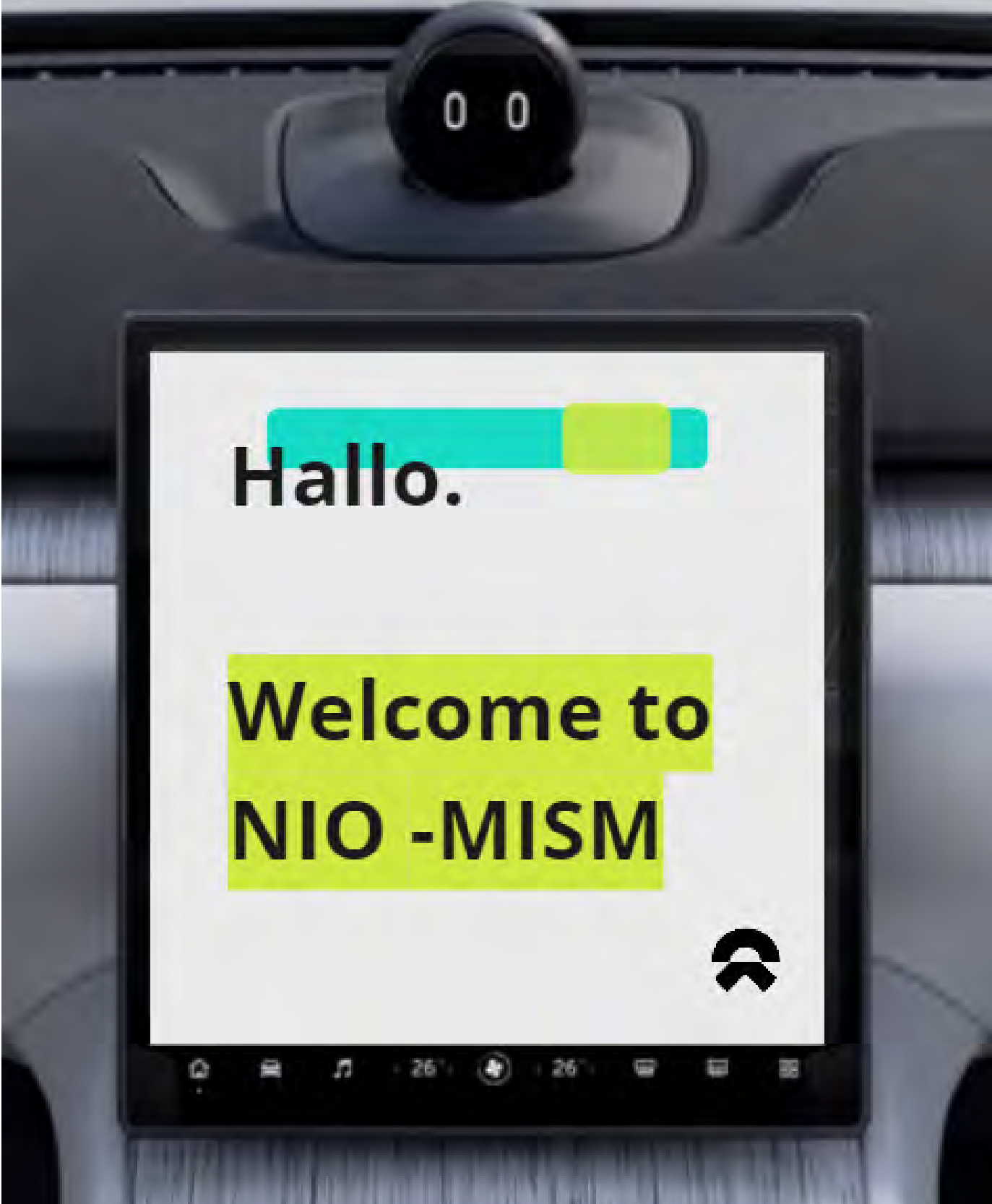




**OUR SERVICE PROPOSAL**

**NIO - MISM**

# Our Service- NIO-MISM



NIO-MISIM aims to give new self-driving users a proper onboarding experience to NIO's self-driving systems and vehicles. The service is delivered mainly through NIO vehicles with the SD functions installed, and the official NIO app. The service gives users a transparent introduction to the self-driving system's capabilities and limitations and the ability to support each other by sharing their own learning and experiences, creating a network of resources and a self-driving knowledge archive. NIOMISIM essentially has two main service segments: NIO- transition ( in-car tutorial and a safety analysis report in APP ) combined with the current existing NIO APP community.

# NIO-MISM Journey

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**ARRIVAL**

**TRAINING**

**EARLY EXPERIENCE**

**FORMATION**

**INTEGRATION**

## **NIO/in Car (tutorial)**

**Greetings  
and tutorial**

**In car SD intro  
training & test**

**30 days trial beginner mode**

**System tutorial reviews and function settings**

## **NIO /APP (-report and community )**

**Knowledge Preview**

**App journey report**

**Future update news**

**Car Arrival  
time status**

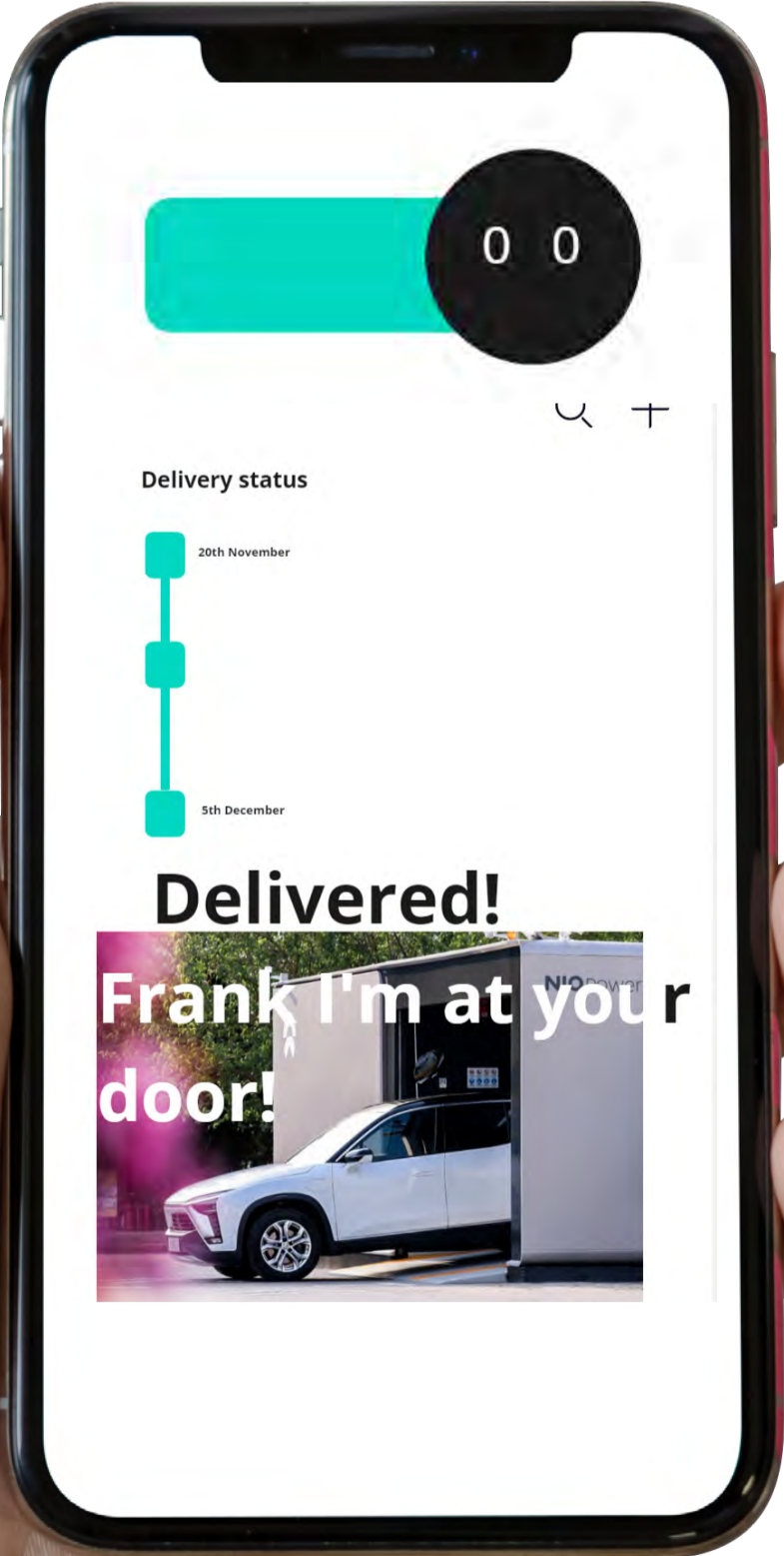
**NIO community connection**



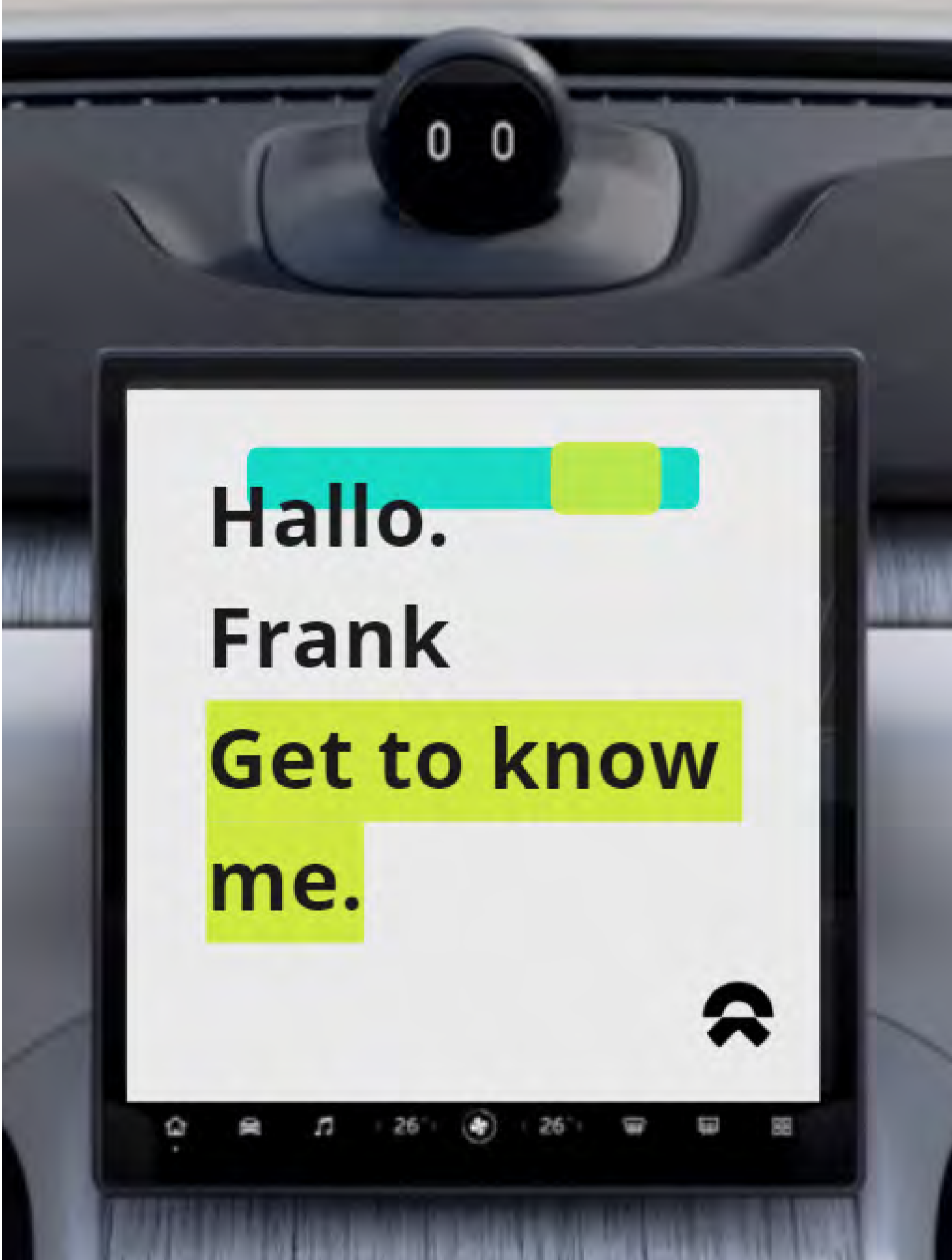
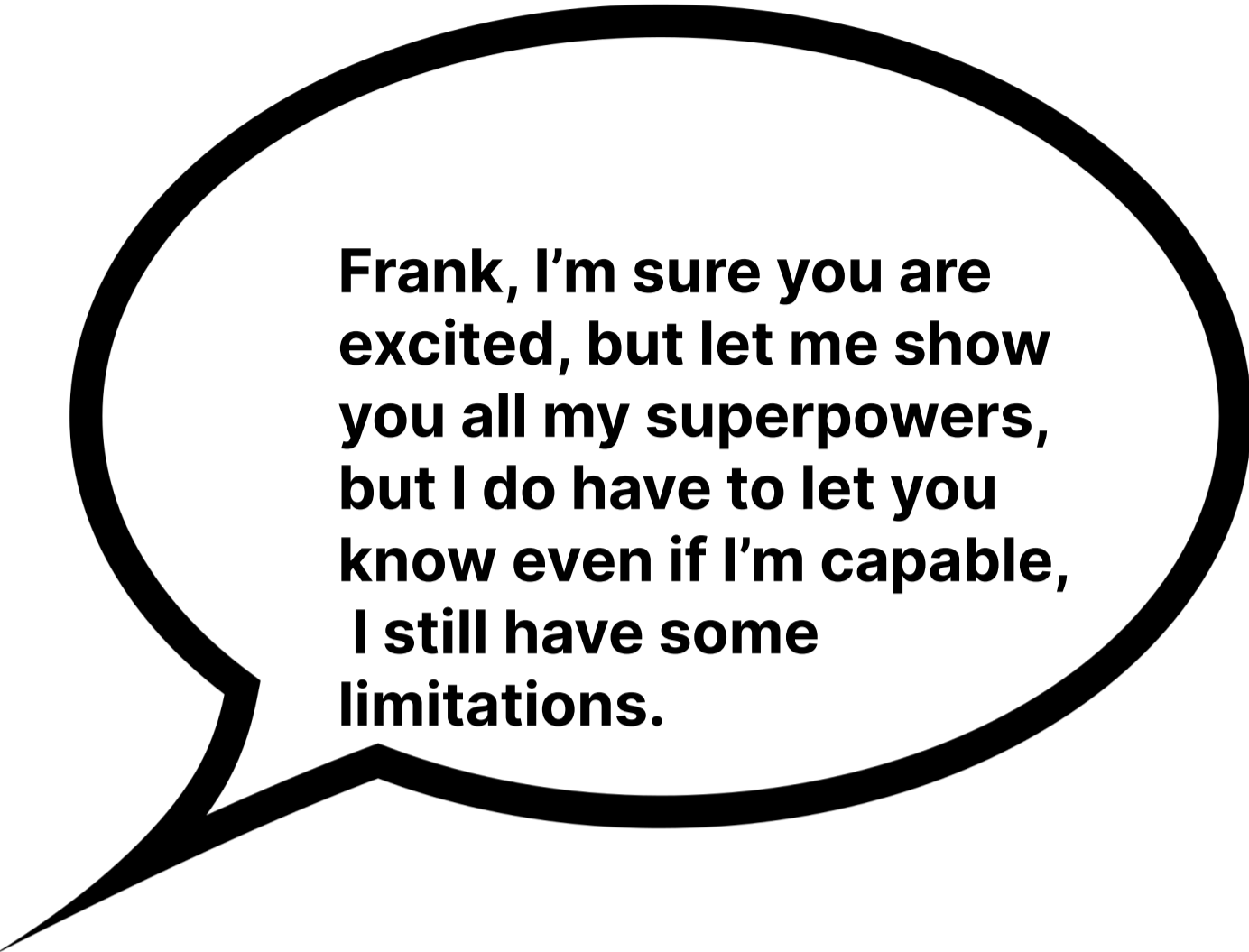
# 1. Arrival

Users can preview features and tips before their car arrives

*CAN'T WAIT!*



NIO-Community/App



NIO-Transition in Car



# Lessons needed





6 FPS



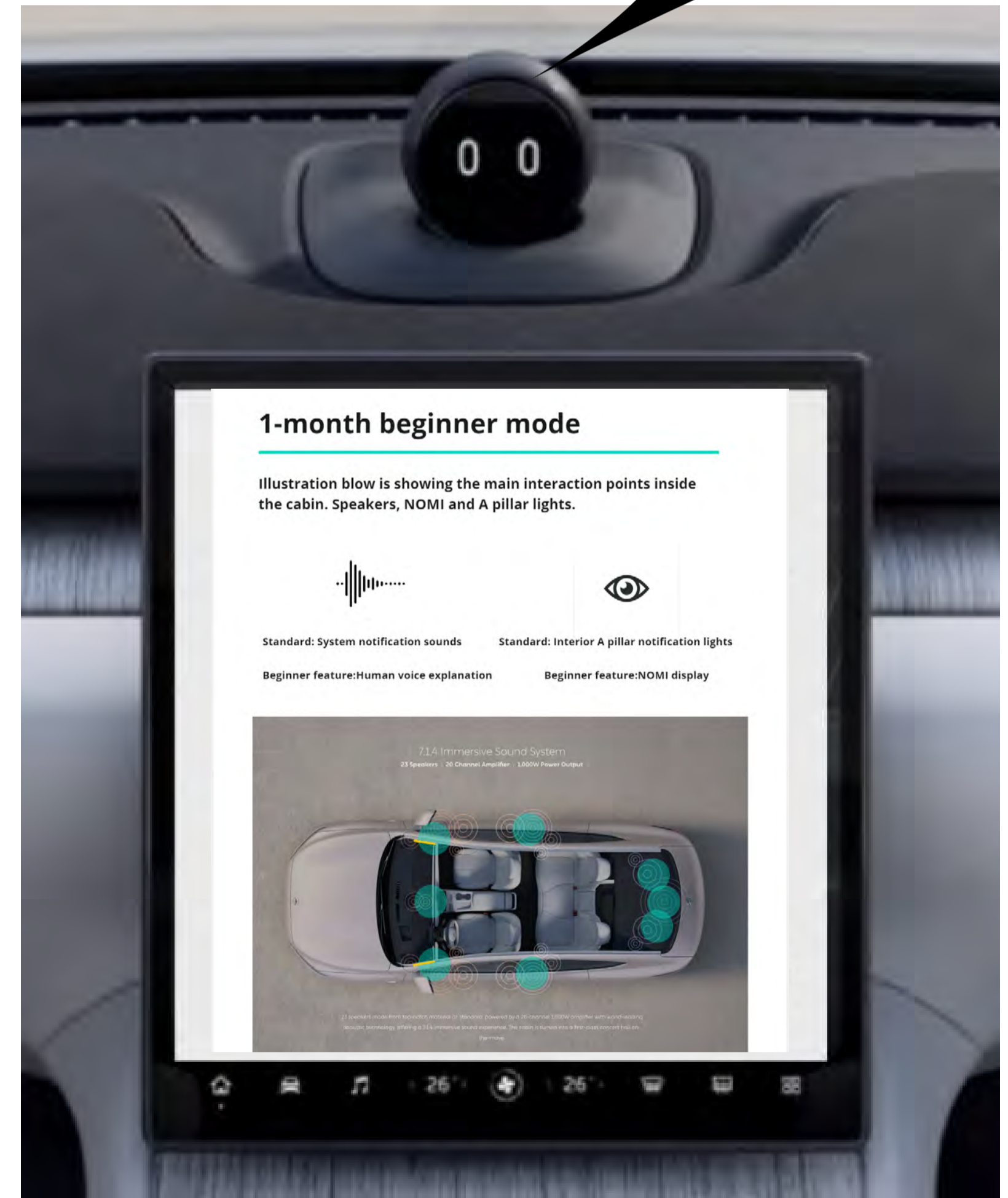




# 3. Early Exp.

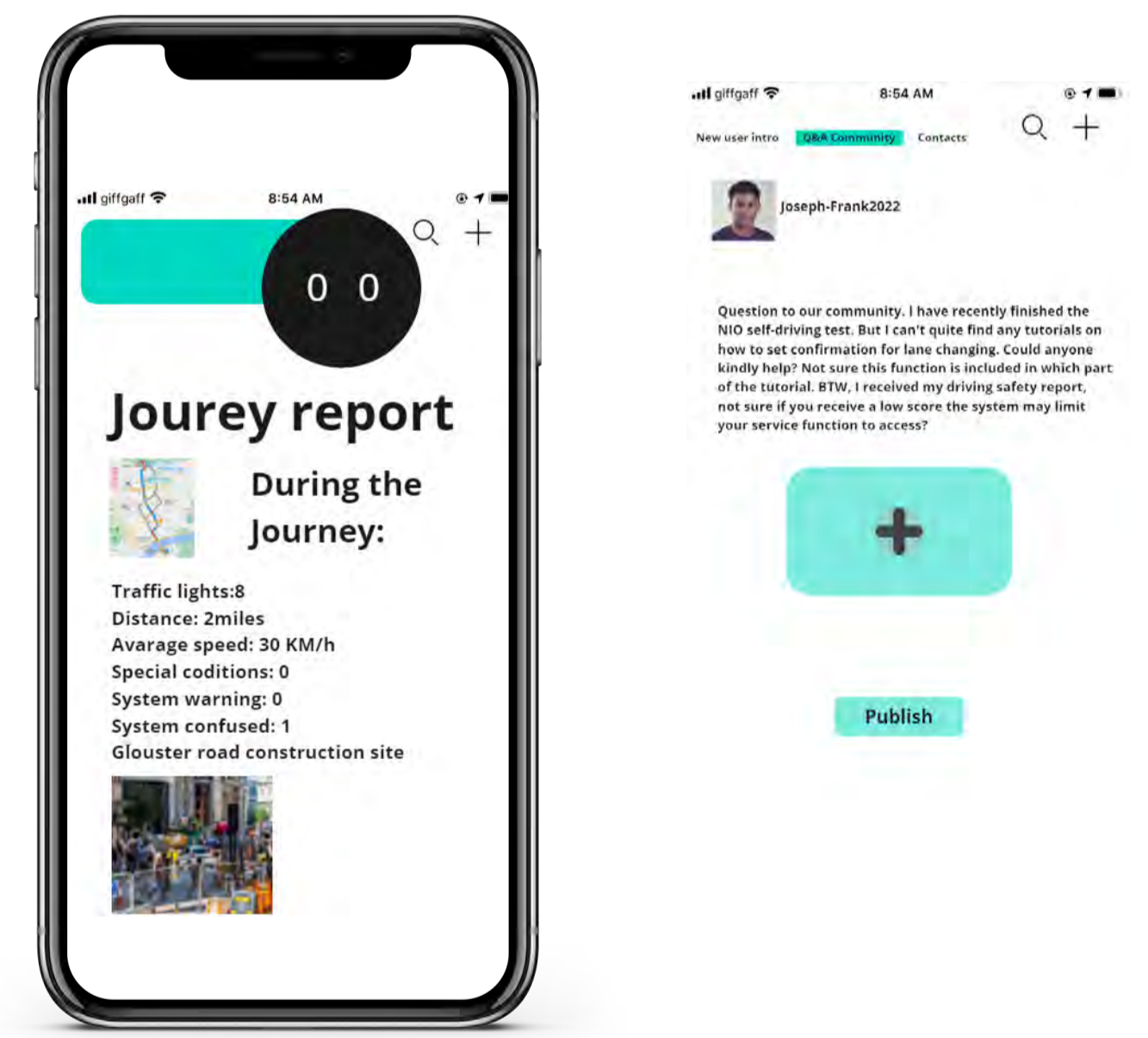
## NIO-Transition in Car

Frank, we care about your safety and want to be transparent with you. You have the option to receive our journey report after each journey. And beginner mode is activated.



User gets to apply the knowledge with beginner support

# You should know

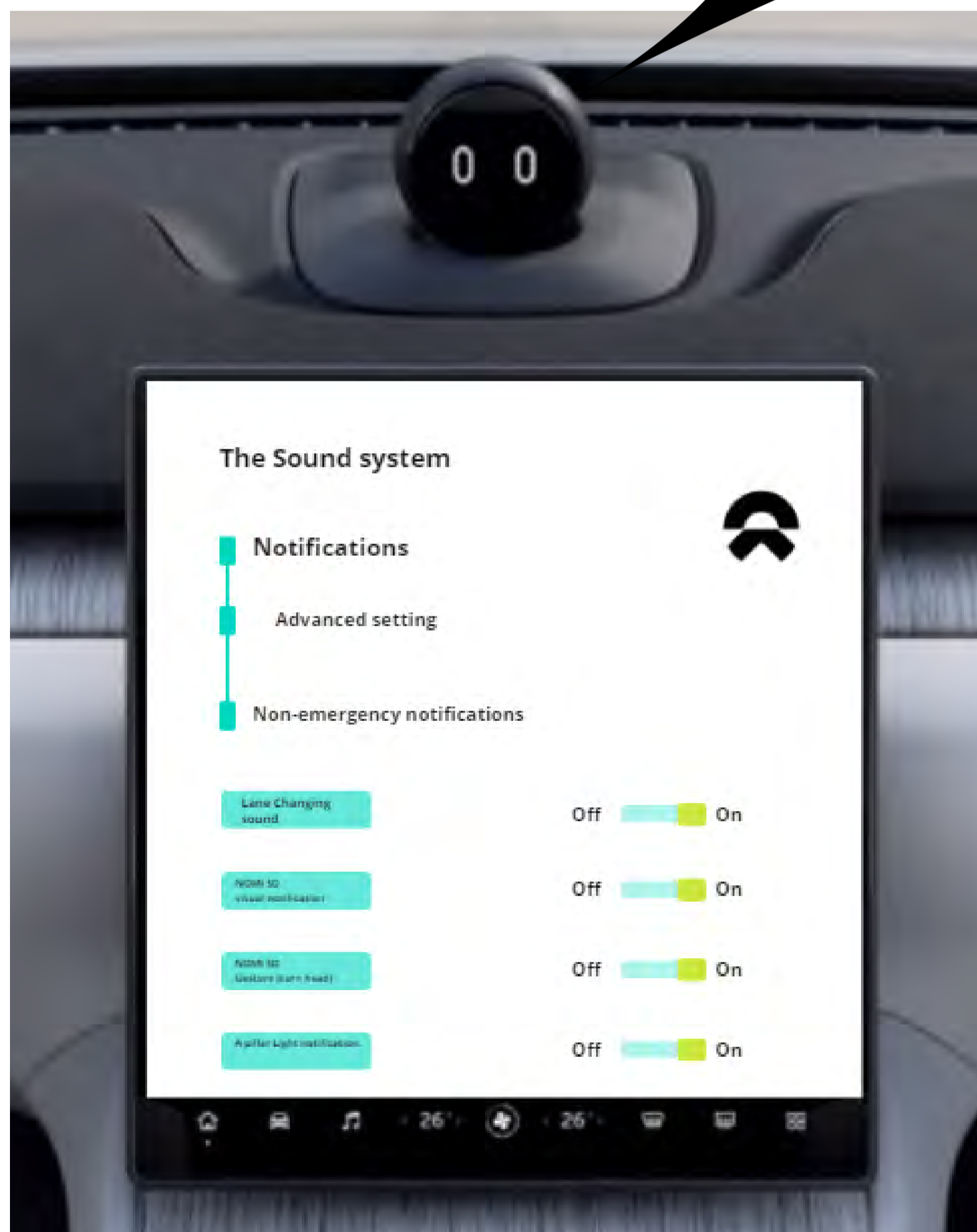


## NIO-Transition & Community/App

# 4. Formation Integration

## NIO-Transition in Car

Frank, it's been a month! Your beginner guide is now officially finished. Here are some advanced settings, you may want to check. We look forward to supporting you in the future!



User can set parameters, and fully take advantage of the system

Keep updated!



NIO-Community/APP

**Don't worry if you don't  
want to subscribe!**

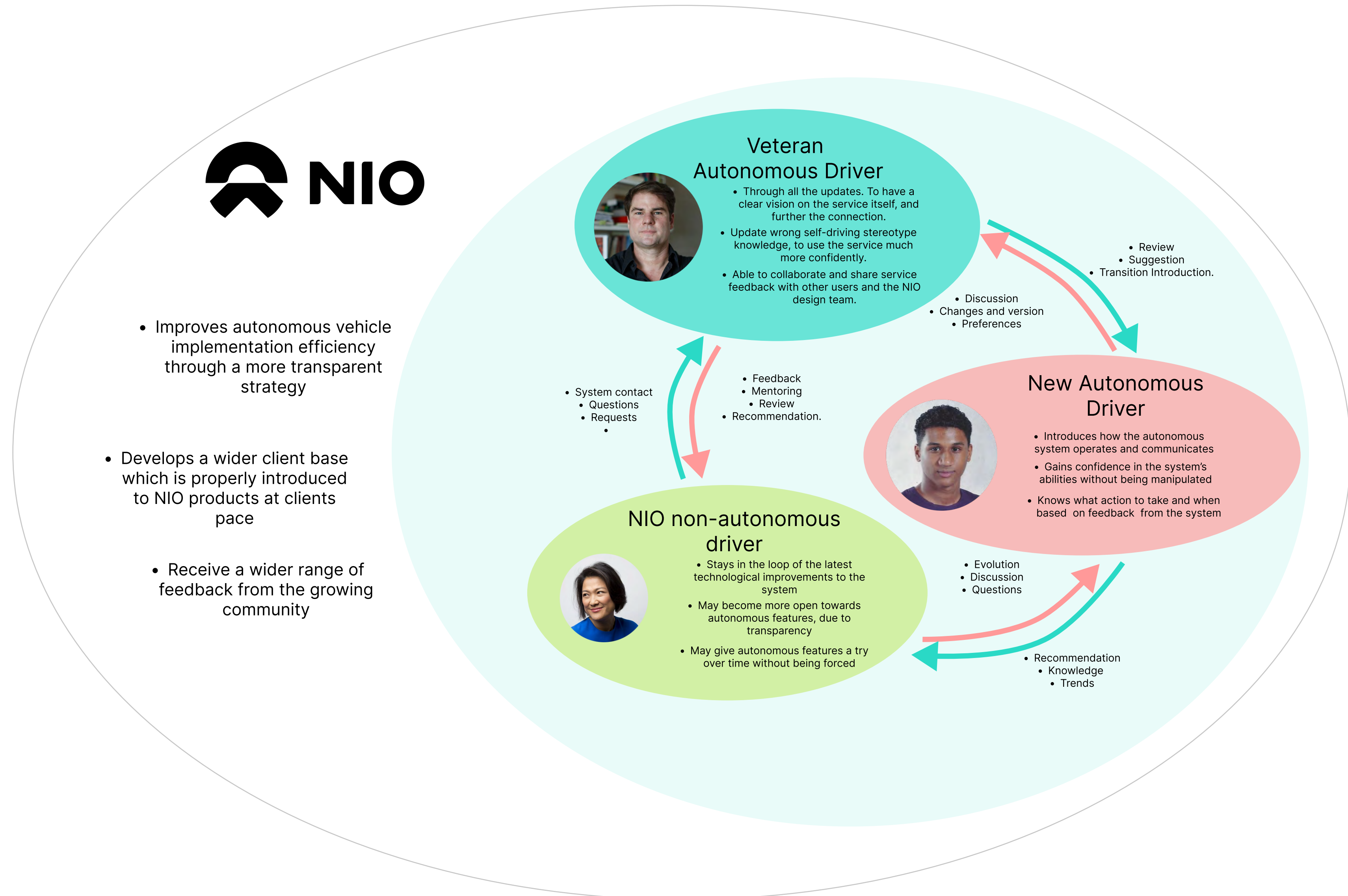
**Equipped with SD  
driving safety knowledge**

**Have the experience and  
can make decision later on**



# Value Exchange between Users

- All users can be updated on oncoming updates and changes directly from official channels
- Users can help co-evolve with NIO for the future service eco-system
- Users can share SD experiences with each other in a more direct fashion

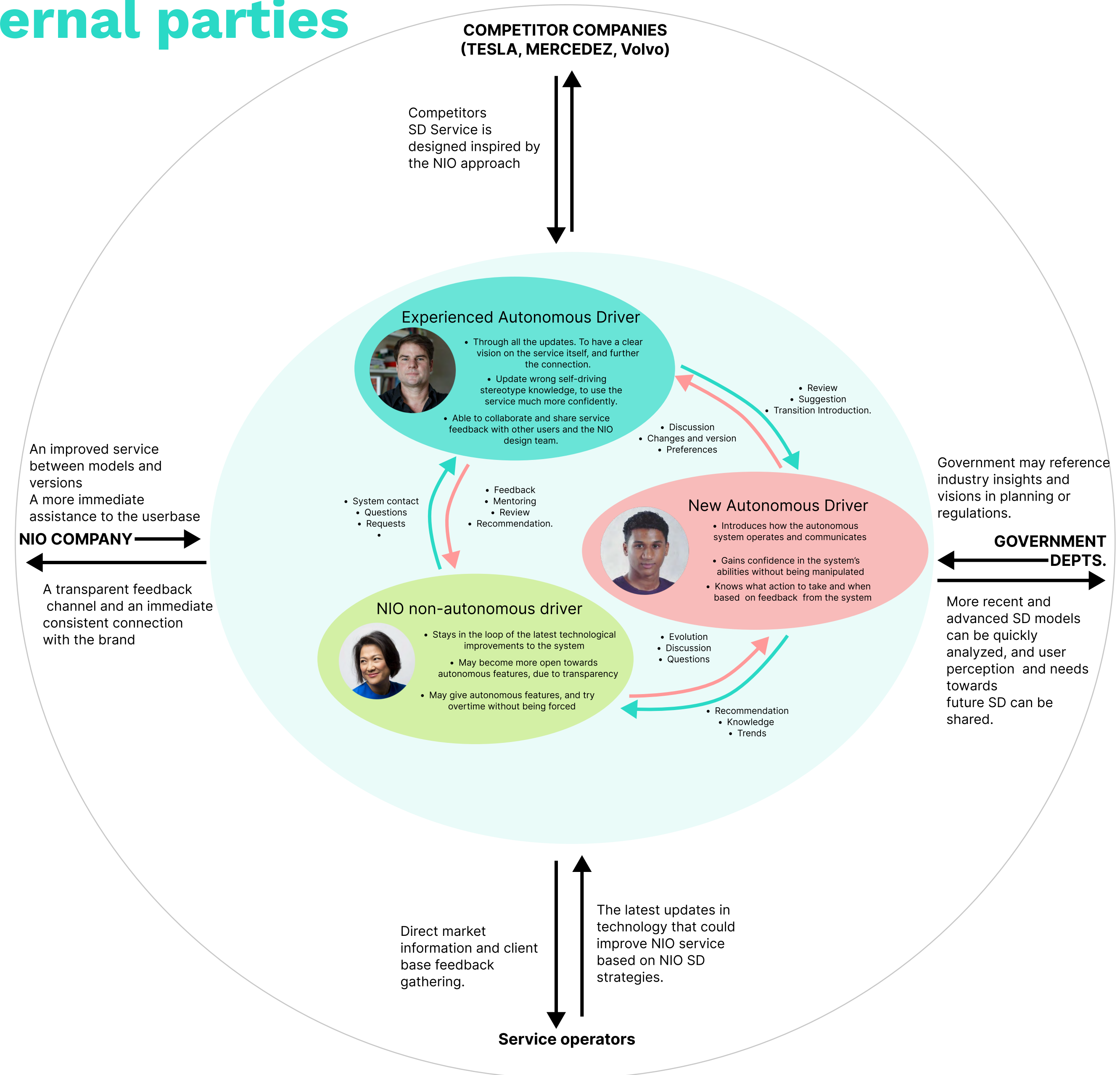


# Value Exchange Map with external parties

System can suggest users the length of time to integrate with NIO SD systems depending on local road conditions

Nio receives constant feedback from the larger group and improves upon the service more quickly

Nio stands out in the market with a more transparent strategy to integrate SD systems with their users' needs.



# NIO-MISM Milestones

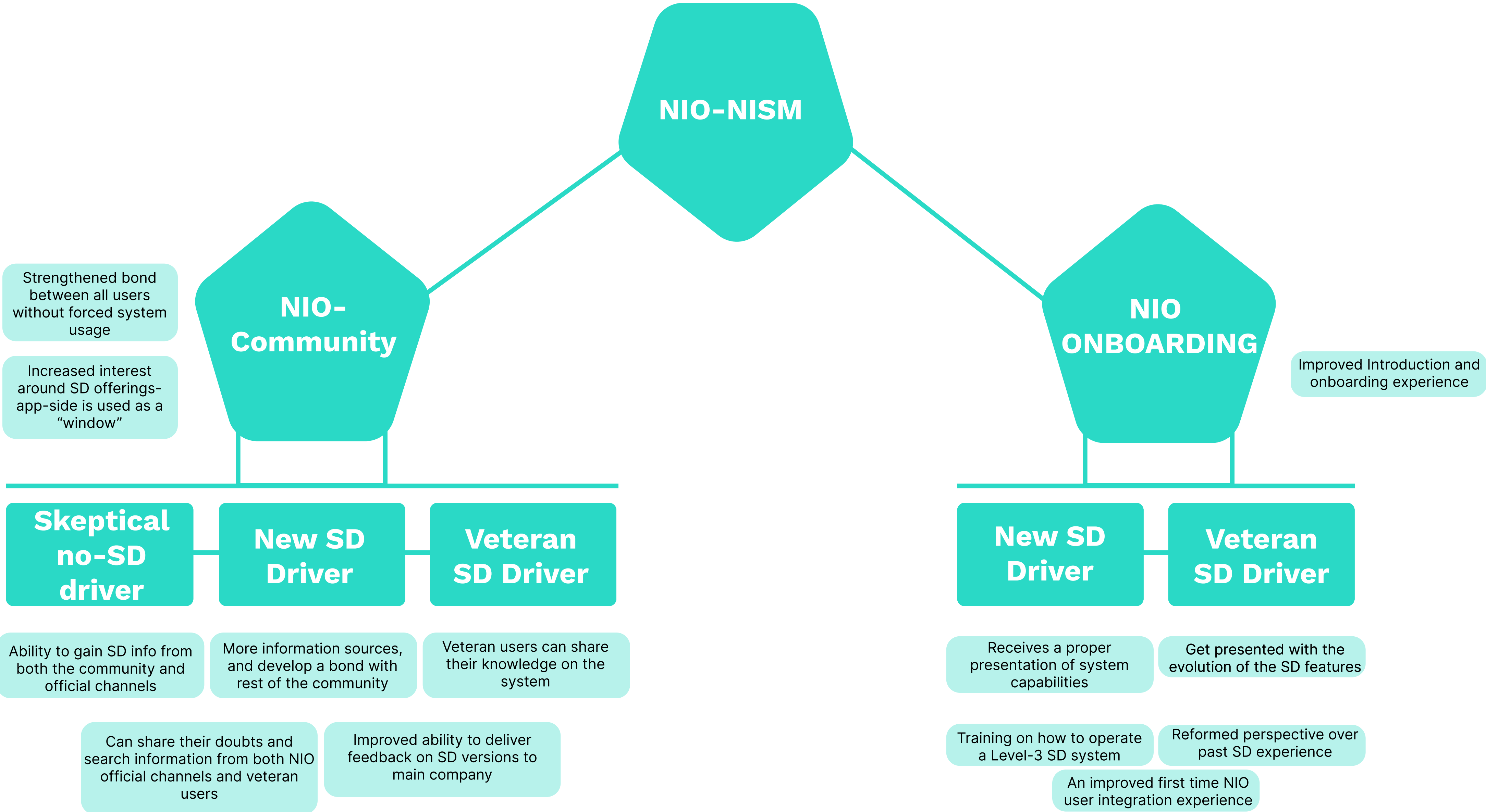
	2022		Late 2024	Start 2025	2026
<b>TIMELINE</b>	<b>Service Components development</b>	<b>Service course implementation phase</b>	<b>First batch service launch</b>	<b>Service upgrading phase</b>	<b>Future Uses/Evolution</b>
<b>SERVICE/COURSE DEVELOPMENT STAGE</b>	<b>Alpha Implementation</b>	<b>Beta testing</b>	<b>Pre launch and Market Launch</b>	<b>User feedback collection and service improvement</b>	
<b>Actions</b>	<ul style="list-style-type: none"> <li>Introduction development</li> <li>Sound implementation and testing</li> <li>Tutorial and quiz development</li> </ul>	<ul style="list-style-type: none"> <li>NIO owners are invited for internal testing</li> <li>NIO app used to prepare for new service release</li> <li>Eco-system compatibility testing</li> </ul>	<ul style="list-style-type: none"> <li>Level 3 service open to chosen users and Media before official launch</li> <li>Level-3 NIO vehicles with service released for purchase</li> <li>Early service users can release feedback on the NIO app</li> </ul>	<ul style="list-style-type: none"> <li>Feedback received through official channels</li> <li>Onboarding service modified based upon feedback</li> <li>More user workshop and feedback sessions</li> </ul>	<ul style="list-style-type: none"> <li>Upgraded onboarding service implemented in future models</li> <li>Service is changed to be implemented into more advanced levels</li> <li>Start to develop and introduce Heptics into notifications</li> </ul>
<b>Marketing</b>	NIO App awareness campaign	Controlled trial event and campaign	Social media channel campaign	Get exposed by car channels/ influencers and enthusiasts	
		NIO owners early teasers	Official forums can be used for discussions and info		



# NIO-MISM Roadmap

	2022		2024	Mid 2024	Launch late 2024
ACTIONS	Preparing introduction materials and communication components	Preparing base for content through campaigns and the ads	Introduction of a matured prototype to correct early shortcomings	Accommodate new features into the current NIO eco-system. (Hardwares to all service touchpoints)	Launch and feedback gathering
APPROACH STRATEGY	<ul style="list-style-type: none"> <li>Developer team internal testing</li> <li>Alpha testing control groups</li> <li>Feature Relevance Planning</li> </ul>	<ul style="list-style-type: none"> <li>Update current users</li> <li>Official NIO campaigns</li> <li>Preview content and development progress news updates</li> </ul>	<ul style="list-style-type: none"> <li>Early Vehicle onboarding experience test with chosen customers</li> <li>Feedback forums</li> <li>Support implementation of new technologies</li> </ul>	Give early access to new service to loyal users and media Pre-release final testing & enhancement Keep interested users updated Testing Self-driving journey report system	<ul style="list-style-type: none"> <li>Commence post-release support</li> <li>Communicate with userbase through channels (Apps, forums)</li> <li>Onboarding: Evolution of components</li> </ul>
RESOURCE	<ul style="list-style-type: none"> <li>NIO Programming team</li> <li>NIO design team</li> <li>Experienced drivers</li> <li>Advertising teams</li> <li>Analysts/ Scientists</li> </ul>	<ul style="list-style-type: none"> <li>Advertising teams</li> <li>Testing Drivers</li> <li>Existing client base</li> <li>Potential future users</li> <li>Media exposure/ channels</li> </ul>	<ul style="list-style-type: none"> <li>Existing NIO drivers</li> <li>Interested service testers</li> <li>Social media and advertising channels for information delivery</li> </ul>	<ul style="list-style-type: none"> <li>Engineering and programming teams</li> <li>Marketing and Forum teams to answer and support doubts and issues</li> <li>Update for pre-order groups</li> </ul>	<ul style="list-style-type: none"> <li>First time NIO drivers</li> <li>NIO community through main channels</li> <li>System user relationship development</li> <li>Marketing team for launch events</li> </ul>
EXPECTED VALUE	Prepare a strong base for the service which will be used by the NIO community	Introduce the interested users to the upcoming service, build-up expectations	Increase interest in service offerings through direct contact Remove shortcomings before official release	Keep the community in the loop Increase initial release interest and impact	Improved bonds between users and systems Community base expansion
COST	Development cost and implementation time	Campaign development cost	User recruitment cost Media cost/ event cost	App update cost Service development time	System delivery cost Service and system maintenance
RETURN	Service is implemented within the eco-system	User initial Interest & better community connection Public attention	Get the whole service tested along with new system	An improved release ecosystem, allowing for less issues	A community wide positive first impact and a strong client base

# NIO User Benefits





# NIO Service Validation Recap



*“What this service does is that it makes using autonomous systems more friendly, with the innovative sounds giving me time to become alert, instead of triggering me and putting me in an anxious state”* **Disha Mittal -Potential Service User**

*“This service touches on a similar area that we are currently looking at: users are getting “lazy”, and just want to have an easy adoption journey. The integration of human voices for support are the best way to help people memorize something. The designs strength is that it presents itself as easily accessible, without requiring the driver to have to memorize too much info, and it can be easily picked up in a brief amount of time.”* **Xiao Yang Tian-EEZI Car Design Manager**

*“I think the whole service when put together makes sense, especially the journey log, which is not mandatory. But it is very helpful to bring those who are skeptical or overly reliant on the self-driving system to the same level of understanding and transparency, makes users much easier to adopt and rationally rely on the service. Regarding implementation feasibility, all the components are there. I don’t see any reason it won’t work technically.”* **Robin Paul Servers-DR. at IMDC RCA**

*“The problems you point out are what the NIO is currently focusing on. We believe that the training and onboarding aspects of this service for the new user are the most valuable for us to further develop this concept.”* **Inae Song- Senior UI/UX Designer**



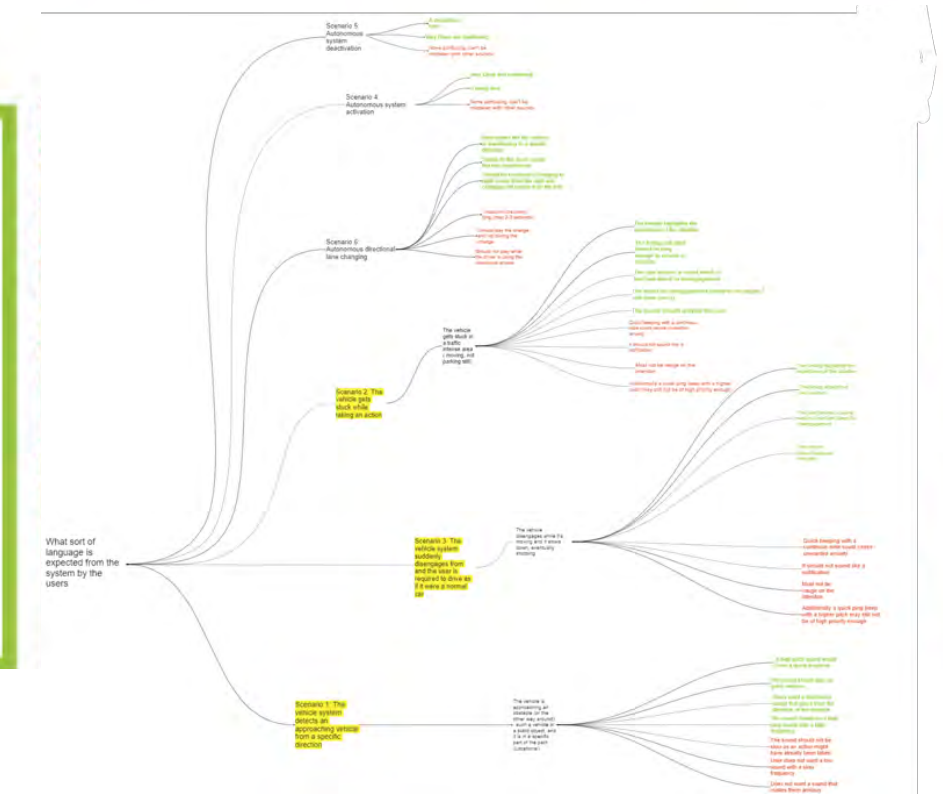
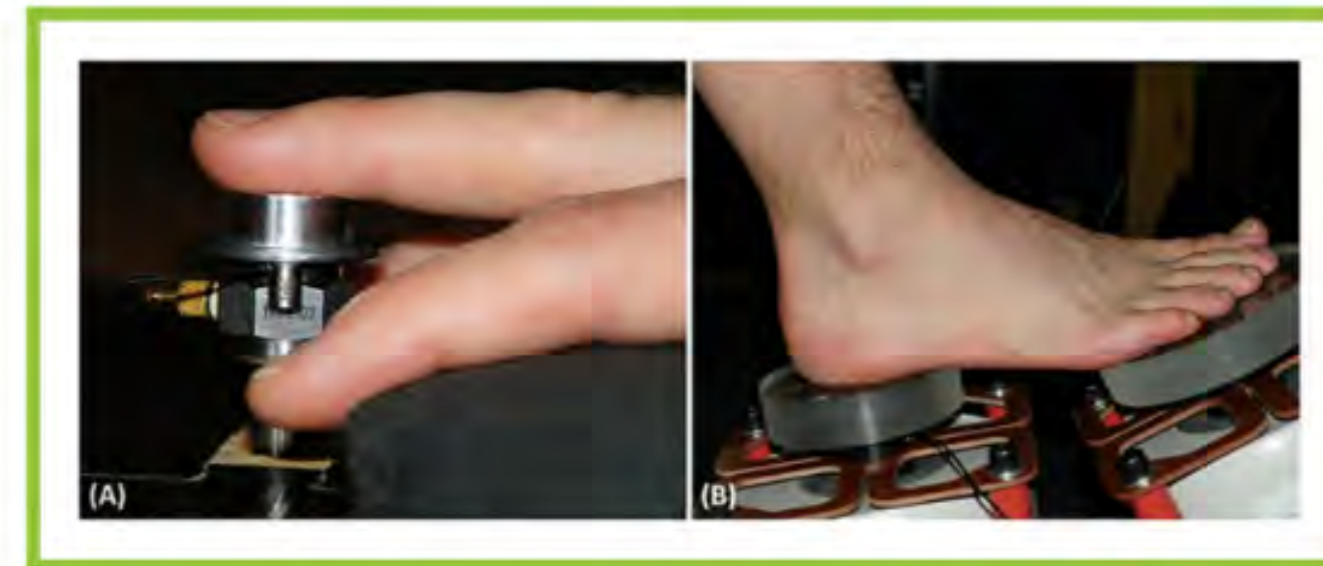
# Future Possibilities

**Onboarding journey iterating, updating service as more customer feedback is received.**

**Enhancing design, inclusiveness, multi-channel communication: Haptic, tactile approach**

**Test and improve current service structure aiming for future L4-L5 self-driving scenarios.**

**Inclusiveness: C1-G5 the sensing range** ( The notes within the red box can be used for the vibrotactile presentation of music. )



**Thank you!**