

USER TEST REPORT

The user test lasted 3 days on schedule. There were 8 ordinary users and 8 expert users. Both ordinary users and experts think that the interaction of SWS to manipulate HUD is very interesting, the learning cost is low and the operation process is smooth. Users have noticed the separate information between DIM, HUD/SWS and CSD. They also believe that the linkage between the three screens help them complete the task. Although there are not many updates to the CSD framework, there is still a lot of useful information from the tests.

Characteristics of Ordinary Users

Lu Zhengzheng ♀

24 years old with 0 driving age

She has no car. She has a driver's license but barely drives.

Che Yihang ♂

24 years old with 0 driving age

He is responsible for automobile boutique workshop . He has no car. He loves skating, skiing and painting.

He Di ♂

27 years old with 7 driving age

He has a petrol vehicle and has many years of driving experience. He loves photography and driving .

Zhai Yongchen ♂

36 years old with 3 year driving age

He is an R.D Engineer. He has a petrol vehicle. He loves car. He driving in China for one year and has been driving in the UK for two years.

Pan Xu ♂

29 years old with 0 driving age

He is a HR. He has no car. He has a driver's license but barely drives.

Zhang Zhichao ♂

26 years old with 3 driving age

He is a automobile body engineer. He has a petrol vehicle.He loves listening to music.

Chen Guoquan ♂

34 years old with 6 year driving age

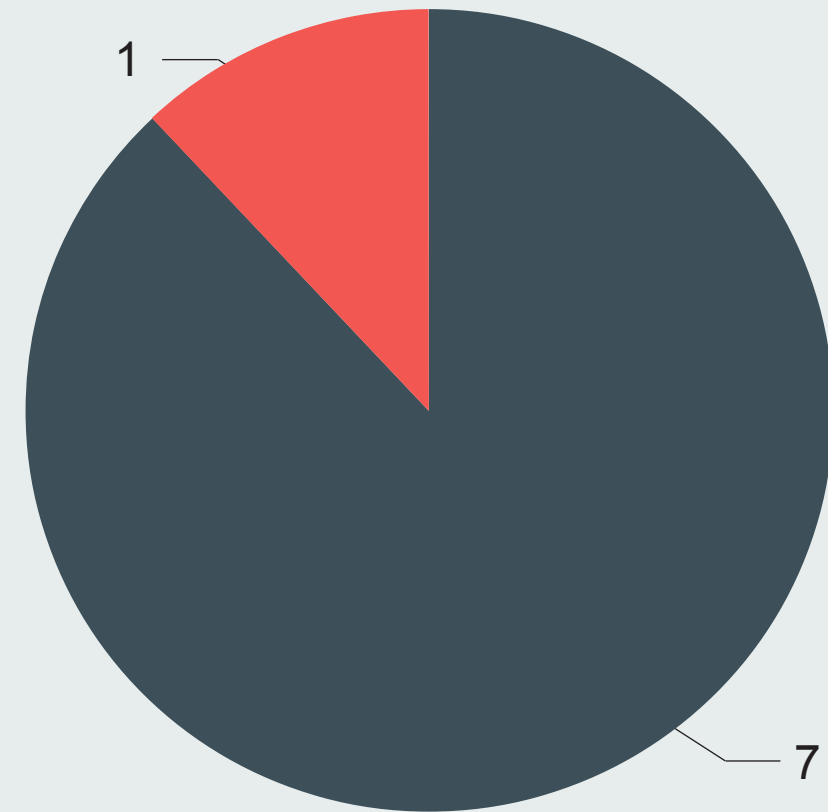
He is a engineer . He has a petrol vehicle.

Lin Wen ♂

31 years old with 16 driving age

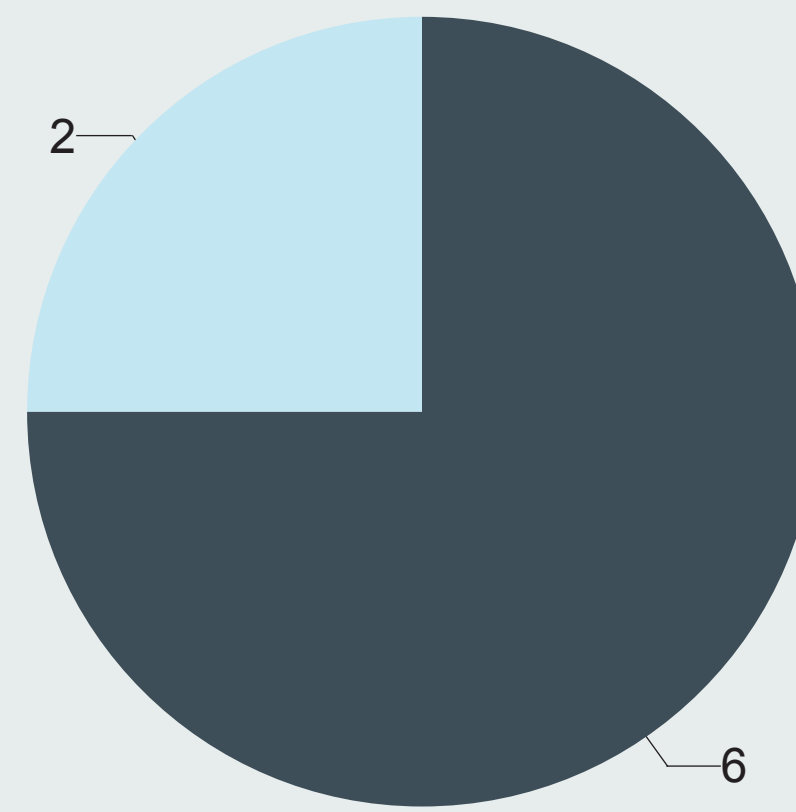
He is an automotive subjective evaluation engineer. He has a petrol vehicle. He loves listening to music.

Gender



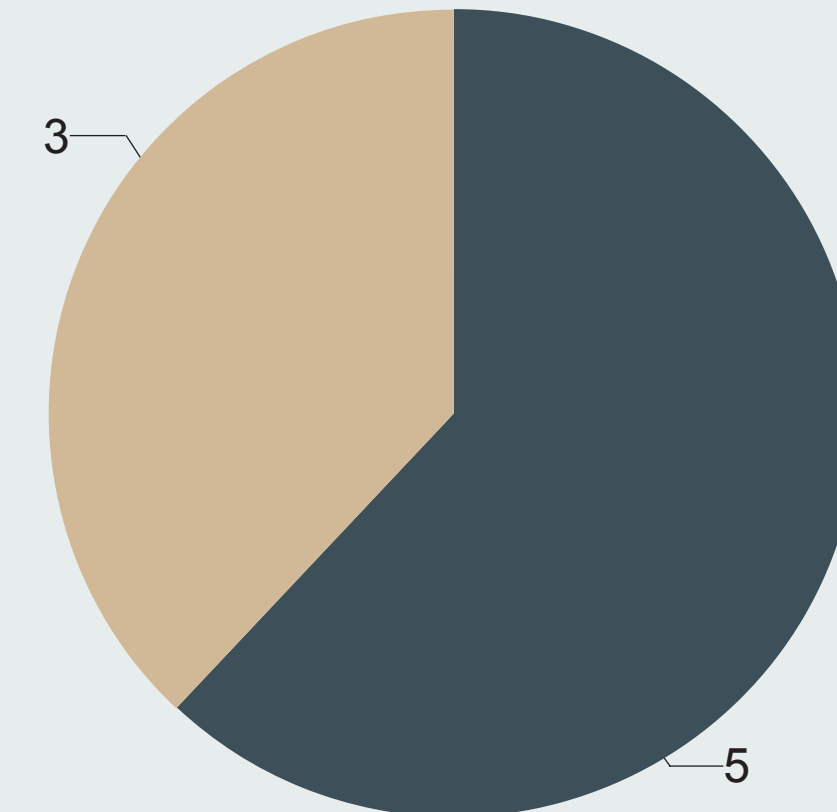
Female
Male

Age



over 30 years old
20-30 years old

Driving Experience



No driving experience
Over 3 years of driving experience

USER TEST FEEDBACK

SWS & HUD

Usability of the framework

6 users agree to use the SWS to manipulate the HUD interaction, and they all think that this method is very interesting and willing to learn. 7 users agree that SWS operations are mutually exclusive, and only 1 user wants both sides to operate at the same time.

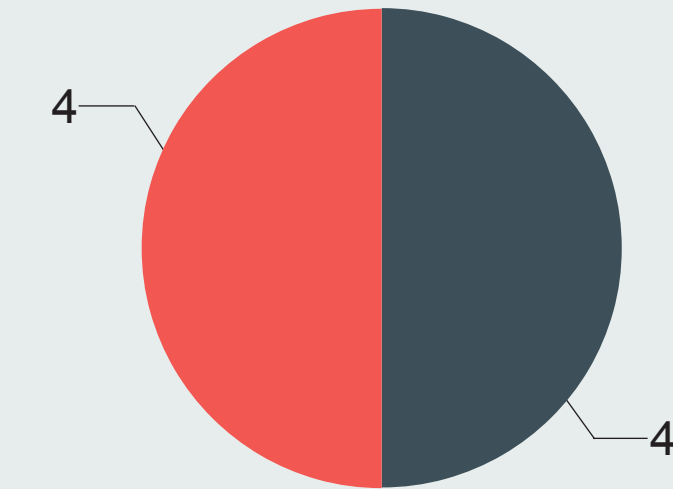
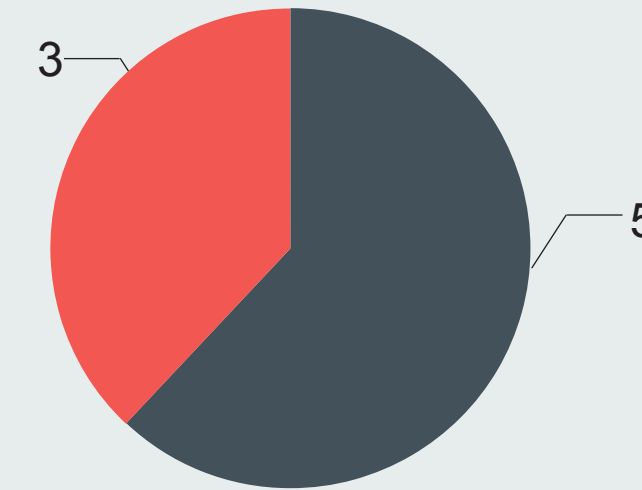
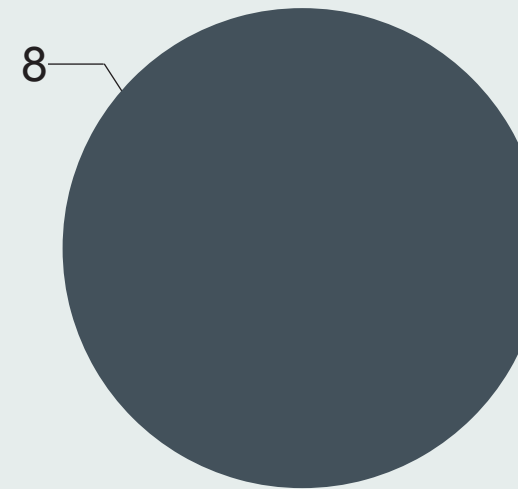
Affordance

8 users quickly found the right infotainment menu and the menu back button.

3 users did not return successfully (software bug).

4 users quickly entered ADAS and successfully activated ACC.

■ Succeeded
■ Failed



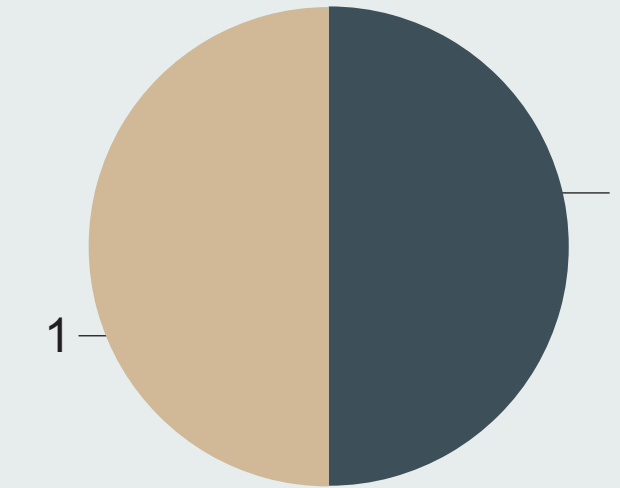
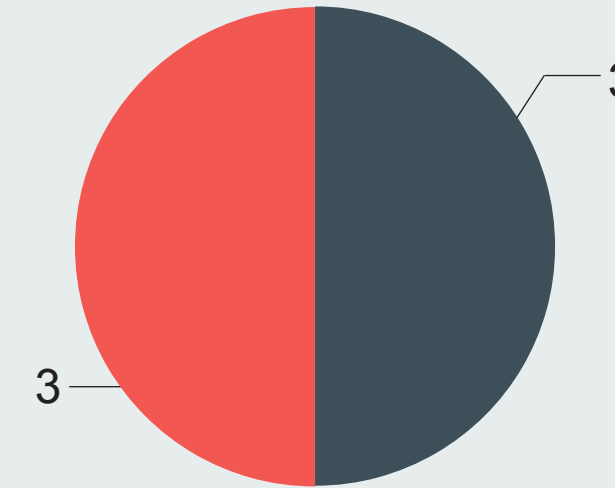
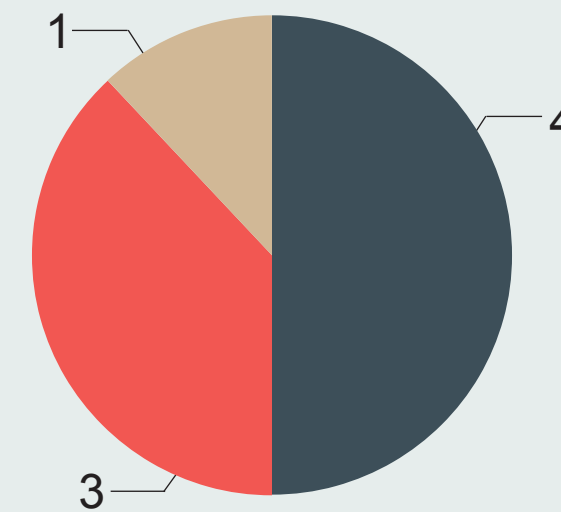
Learnability

Initial learning cost: 3 users- high; 1 user-medium; 4 users-low.

Initial learning cost (20-30 years olds) : 3 users- high; 3 users-high

Initial learning cost (over 30) :1 users- medium; 1 users-low

■ Low
■ High
■ Medium

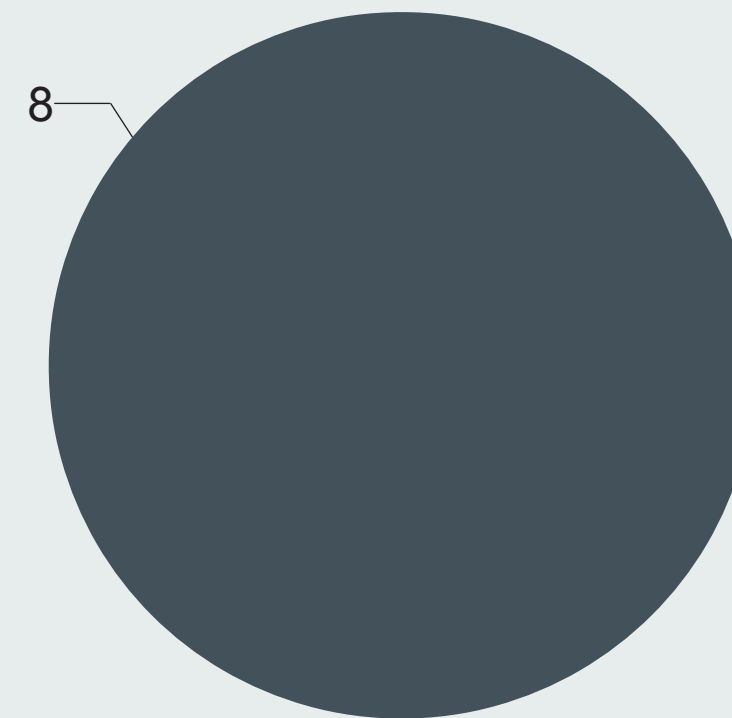


Infotainment menu

Attitude of Ordinary Users

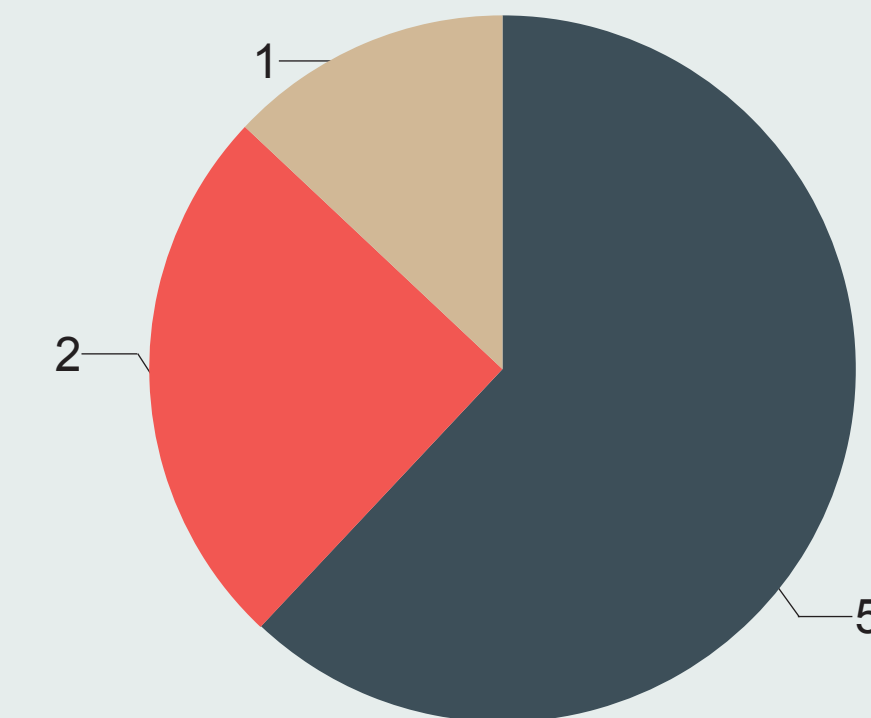
All users think it's convenient to open the infotainment menu, especially when driving. But some users think these features should be more simplified.

All users quickly opened the infotainment menu and activated the function.



■ Succeeded
■ Failed

5 users agree with these features. 3 users did not agree with some features.



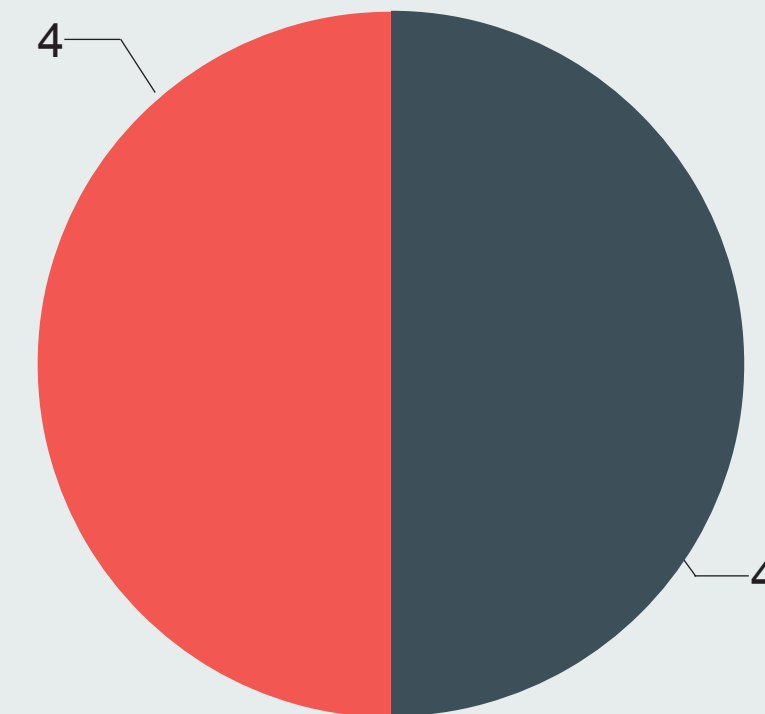
■ Agree with these features
■ Change the climate to seat adjustment
■ Change the climate to drive mode

ADAS Function

Attitude of Ordinary Users

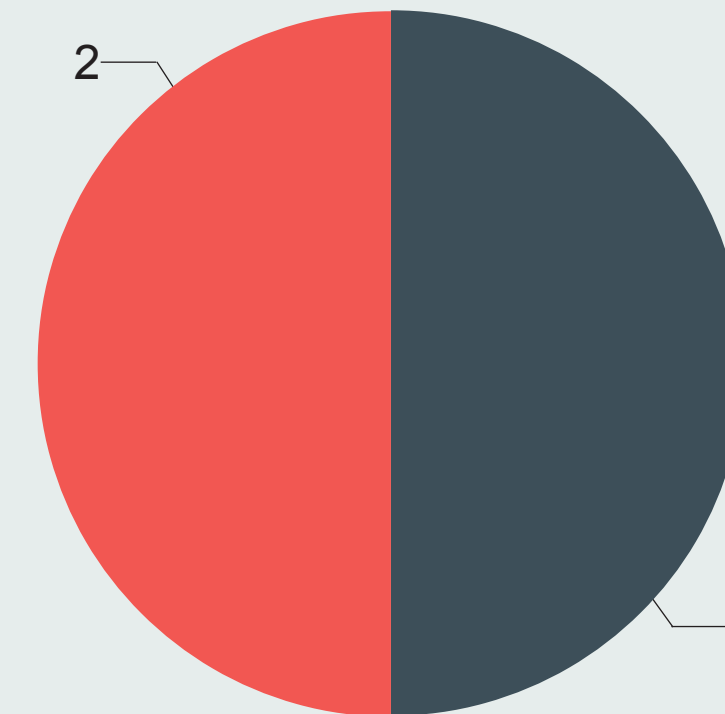
Some users tried many times and opened the ADAS after the tester prompted it, mainly because they did not understand the ADAS function itself. And the interface information is not clear enough.

4 users did not activate the ACC function successfully.



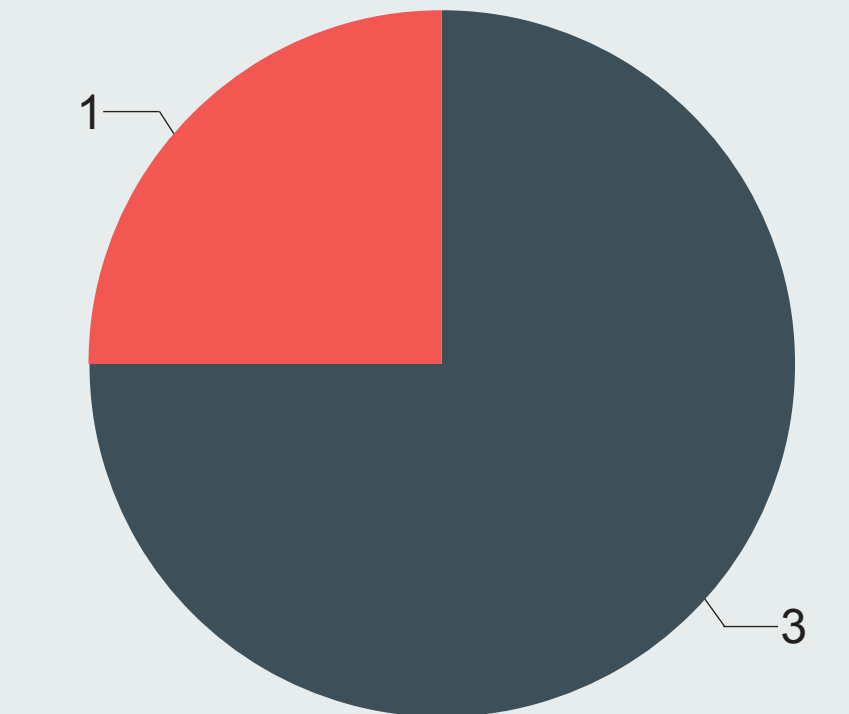
■ Succeeded
■ Failed

4 users who did not activate the ADAS feature, 2 of them users knew nothing about ADAS.



■ Have knowledge of ADAS
■ No knowledge of ADAS

3 users claimed that the ADAS information was not clear enough.



■ Do not understand ADAS information
■ Understand the ADAS through icons/texts

Suggestions from ordinary users & experts

OVERALL LOGIC OF SWS&HUD

- Make the information on the left and right sides symmetrical and set a unified interaction logic.
- Add "The beginner's guide" to let users learn quickly.
- Some user thinks that gestures such as swipe, press, and long press are too complicated, so it is recommended to simplify.
- Optimize text and icons through visual design to make users' perception of information more clear.

Suggestions from experts

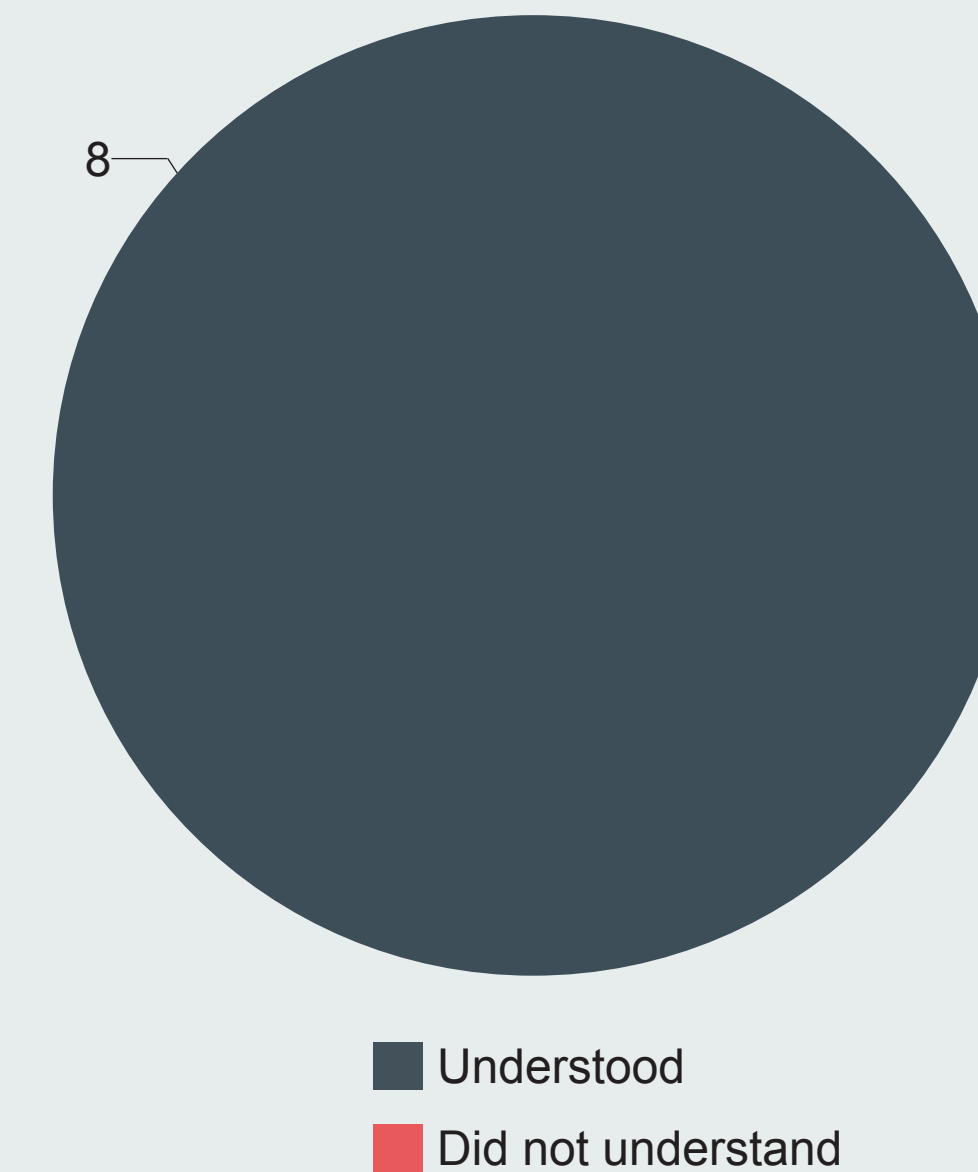
MORE DETAILS OF SWS&HUD

- Simplify gestures. Eg:Free touch in any area of SWS.
- Make the ADAS icon on the right side of the HUD clearer, making it easier for users to understand.
- Added features: font size, color adjustment, HUD height adjustment.
- When the driving state is not complicated, consider adding multi-touch.
- Remind the users of the information levels. Let them know where they are;

Quick settings page

Attitude of Ordinary Users

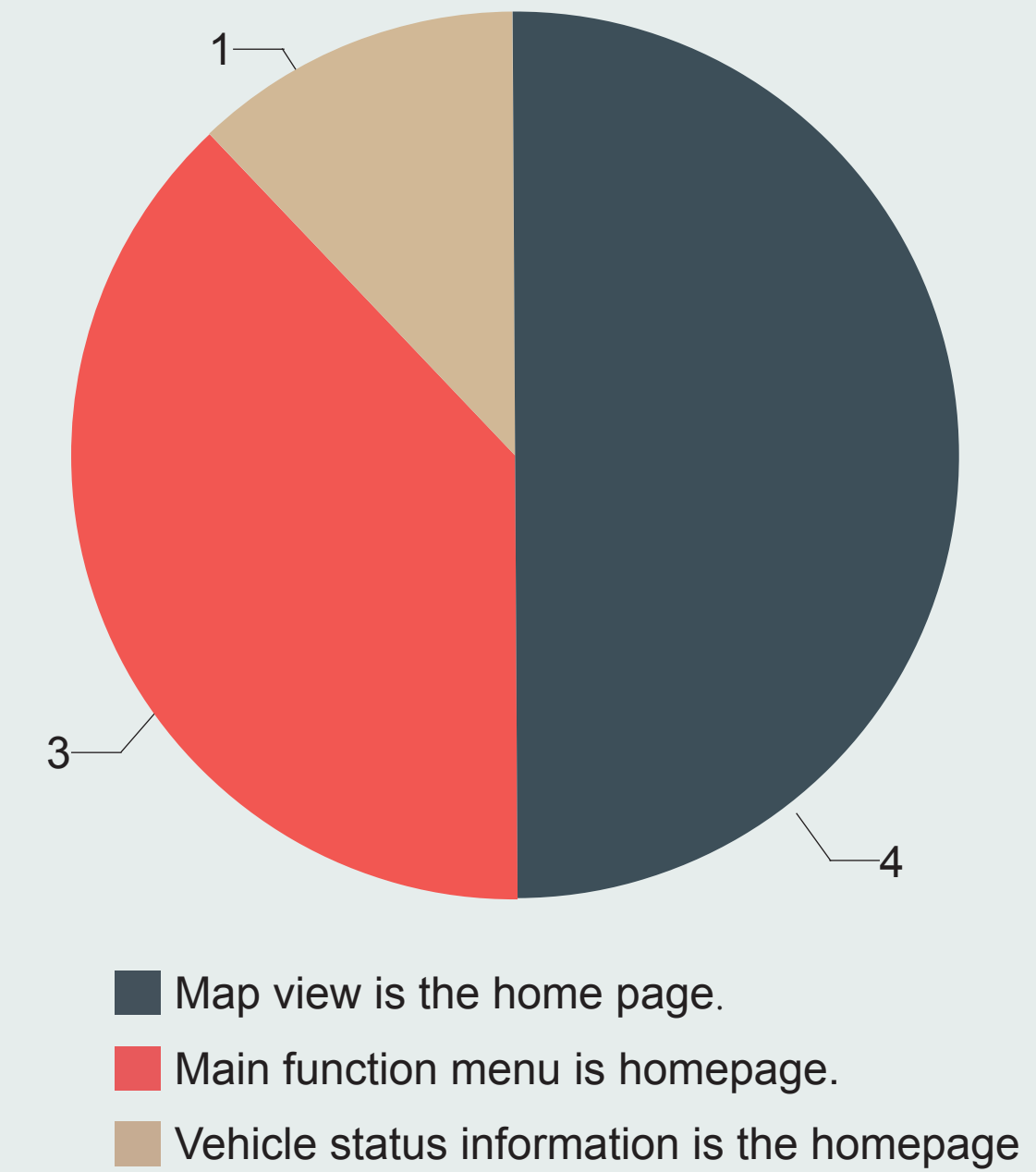
8 users can quickly understand the settings page. 1 user suggested simplifying the icon for the setting item.



Map view

Attitude of Ordinary Users

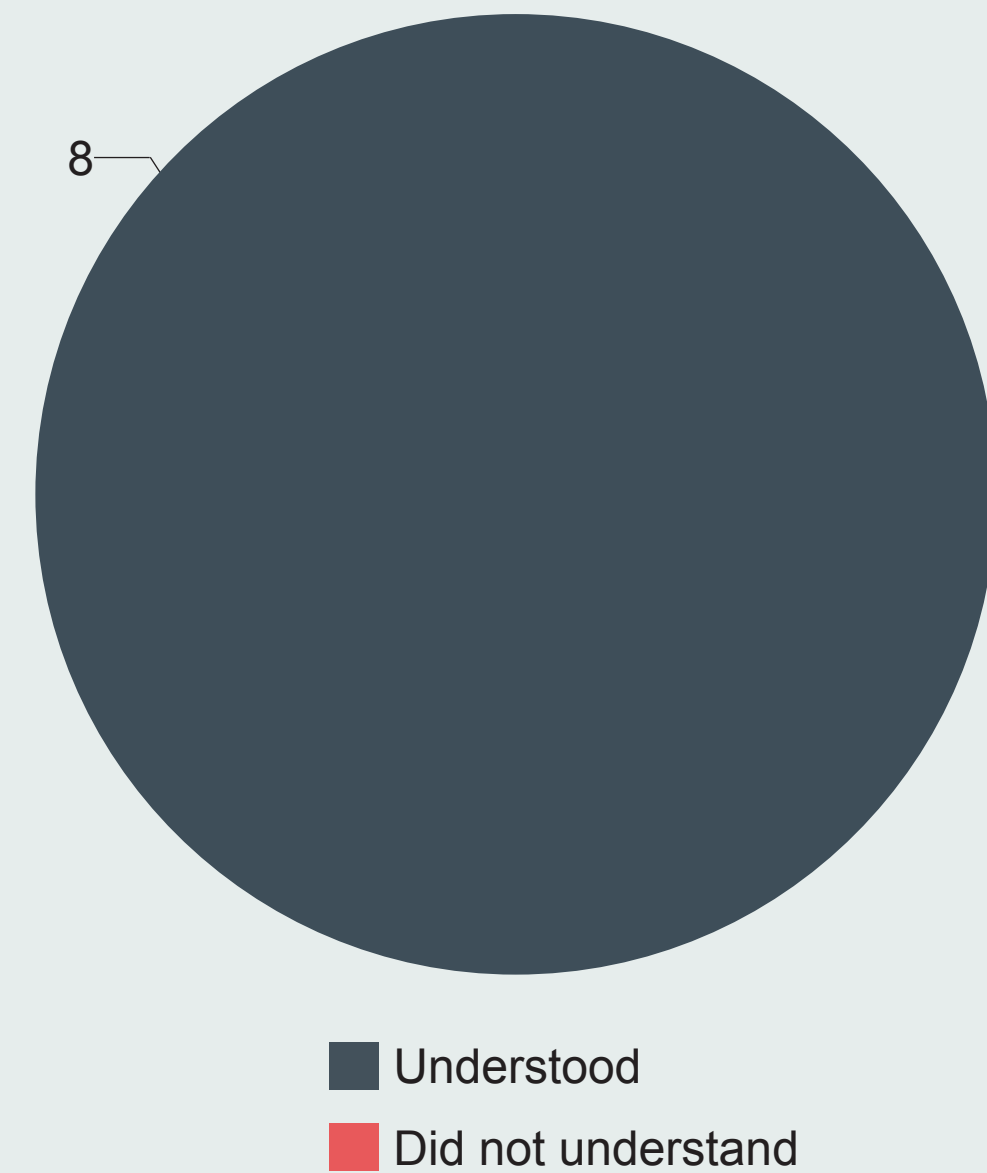
4 users agreed to the map view as the home page, and the other 4 users did not agree.



Climate scene setting

Attitude of Ordinary Users

8 users think that the climate scene is great, the transition is cool, and the settings are easy to understand. Some users want the icons to be clearer.



Suggestions from ordinary users

SOME DETAILS OF CSD

- Seat heating and seat cooling should be split into two functions.
- Simplify the icon of the setting item of the setting page.
- The home page type can be set by the user.

Suggestions from experts

SOME DETAILS OF CSD

- Do not have a second layer of climate settings, make full use of the scene.
- The climate setting only needs to have a “Summer/Winter/Snow ” mode, and no specific settings are required.
- Divide the CSD edge into different areas. Sliding a specific area for a specific function. Users can operate completely blindly.
- Rethinking how to save interaction time.

RECOMMENDATIONS ON LATER TEST

FUTURE TEST

- The hardware prototype device should be consistent with the real vehicle ergonomics design environment.
- Increase the number of samples. And the sample sex ratio should be in line with the gender ratio of the target users of the market.
- It is recommended to update the latest design framework to ensure the test goes smoothly.

THANK YOU!