

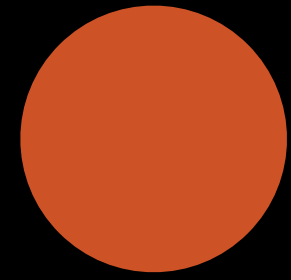
Eyes on the Road

What can designing for a complex and dangerous activity teach us about product design?

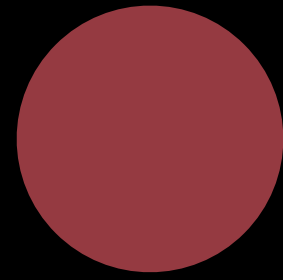
Casper Kessels



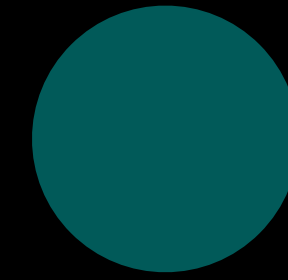
What happens when designing for the opposite of engagement?



Multitasking



Multimodality



Cognitive load

Multitasking

Should drivers even do anything other than driving?

Task 1



Task 2



Task 3



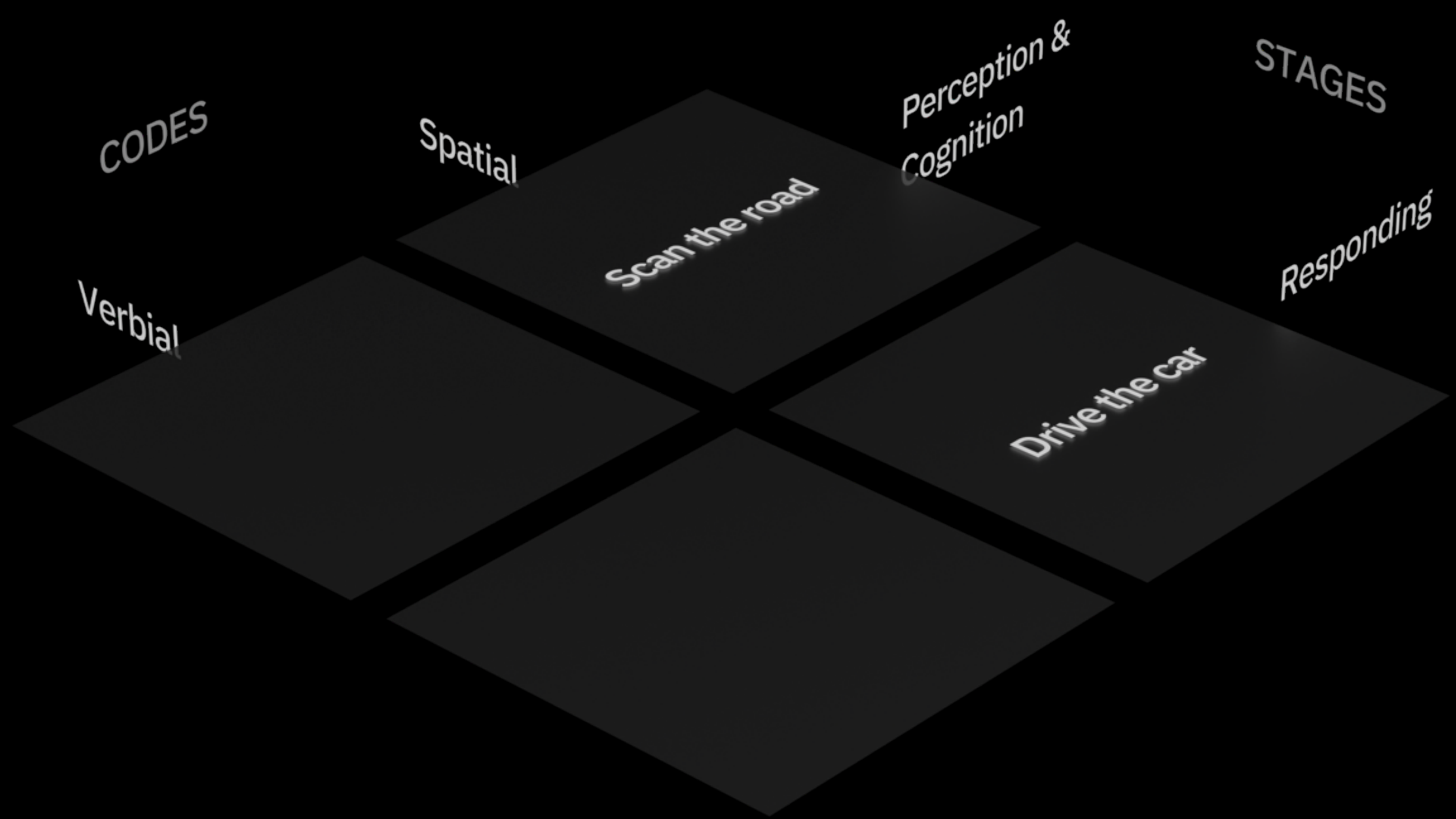
Scan the road

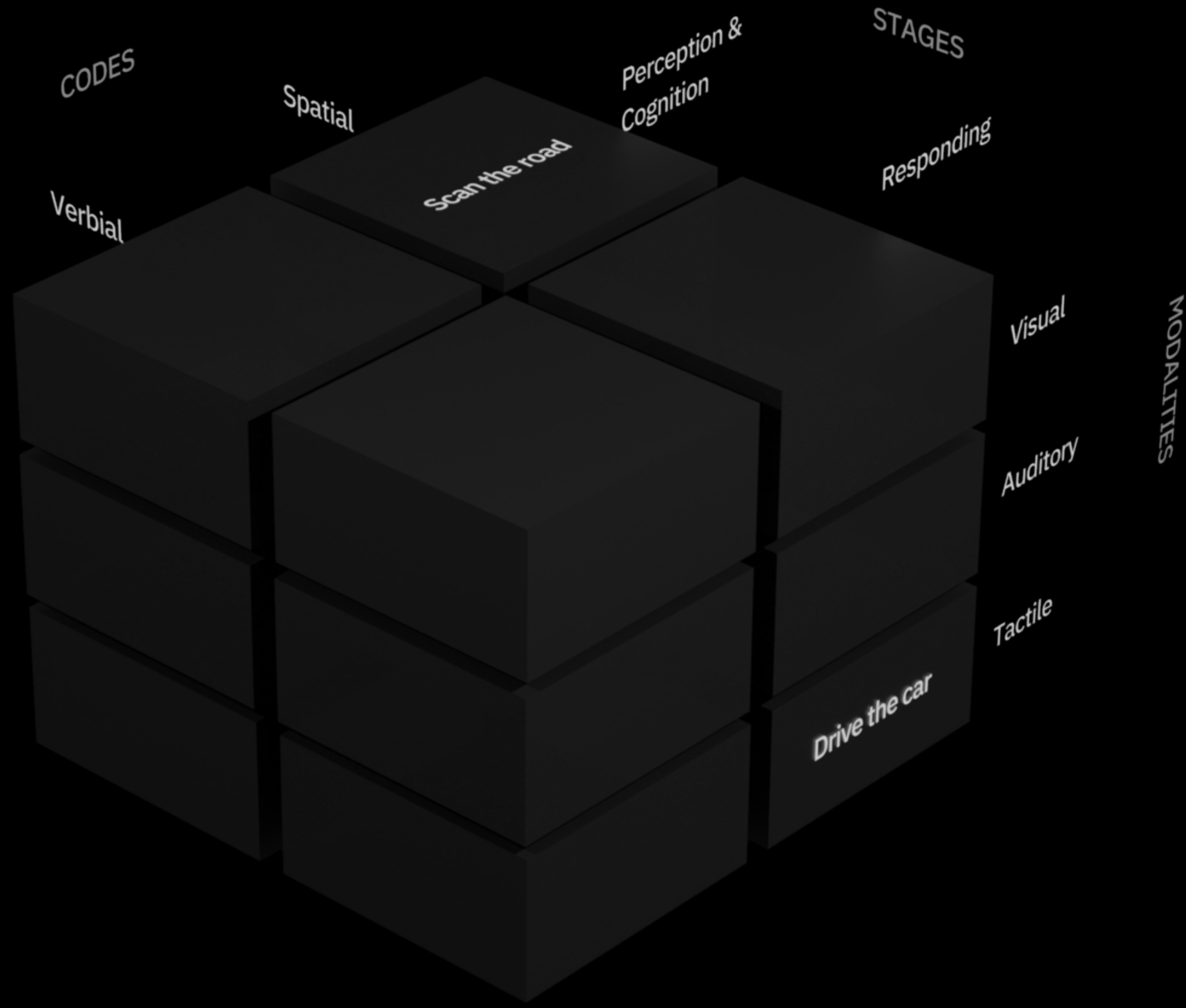
Perception &
Cognition

STAGES

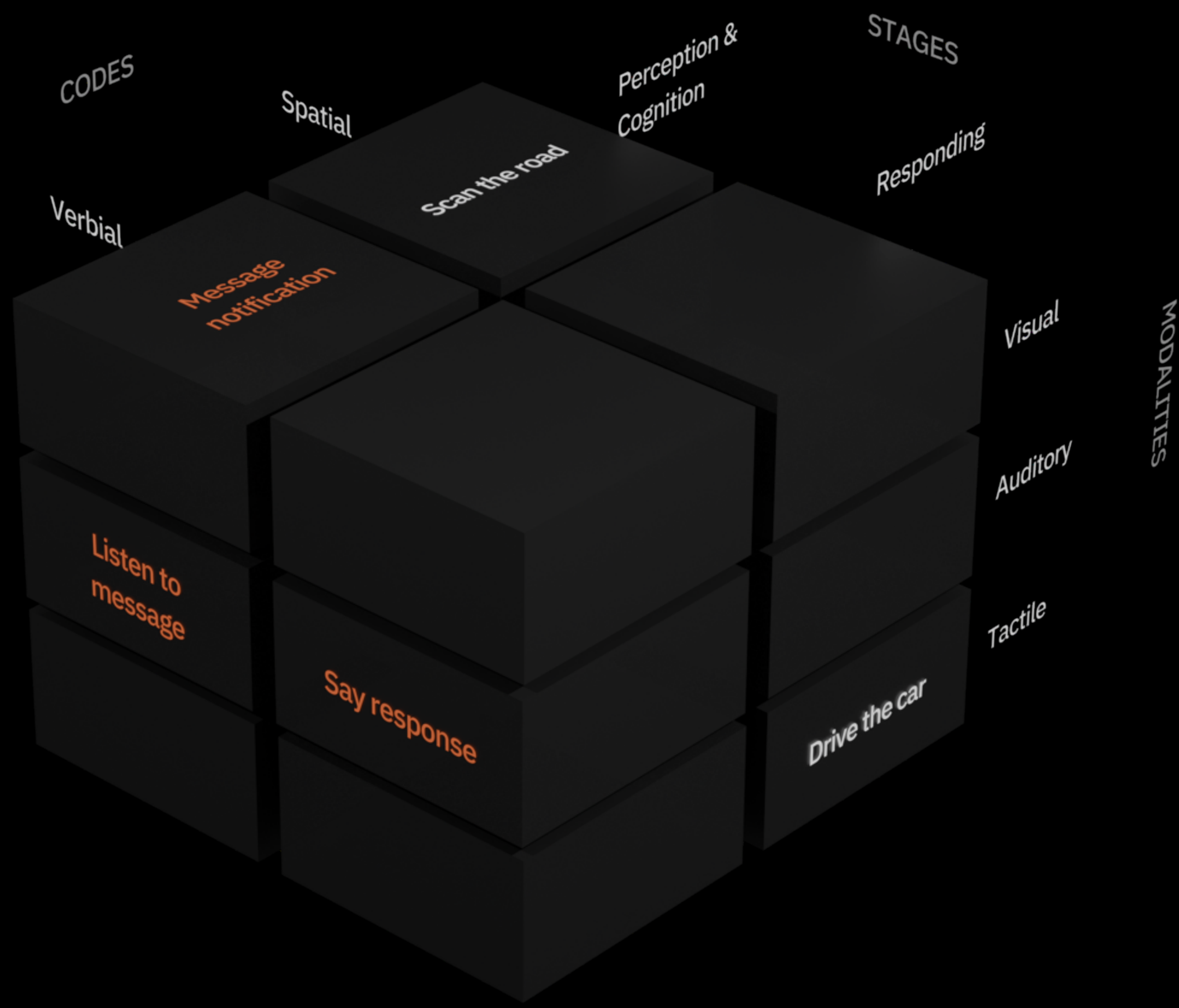
Responding

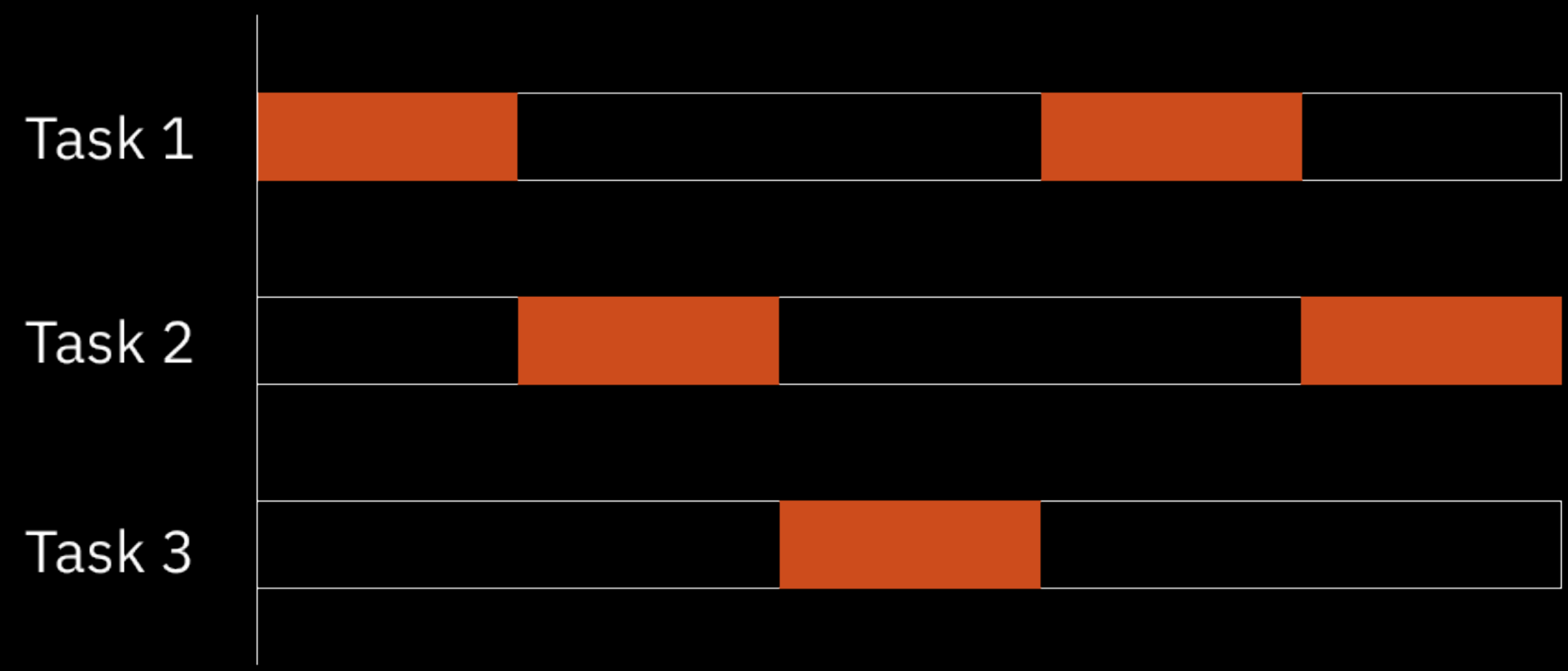
Drive the car











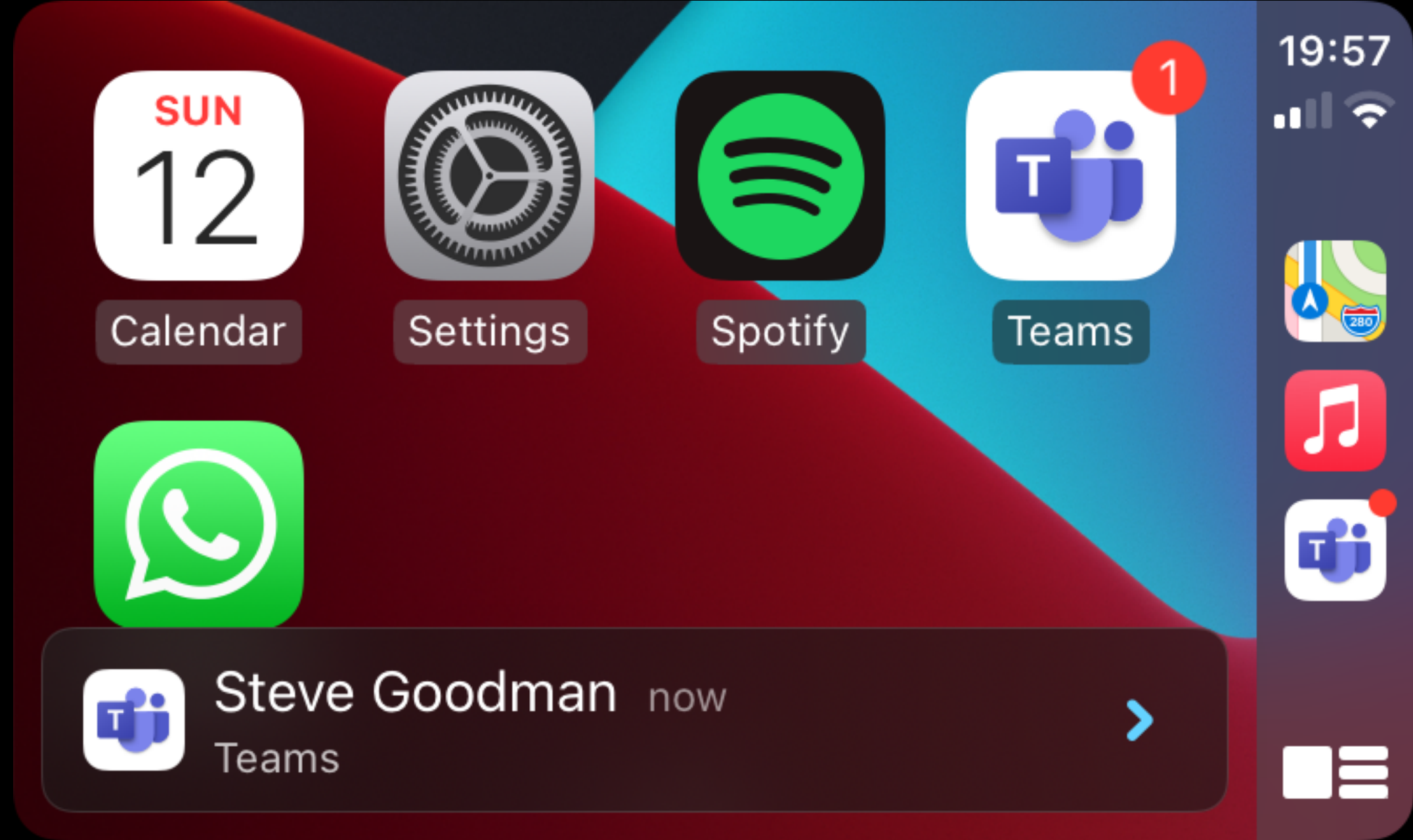
What color are the letters on a stop sign?

Task 1



Task 2





SUN
12

Calendar



Settings



Spotify



Teams



Steve Goodman now
Teams

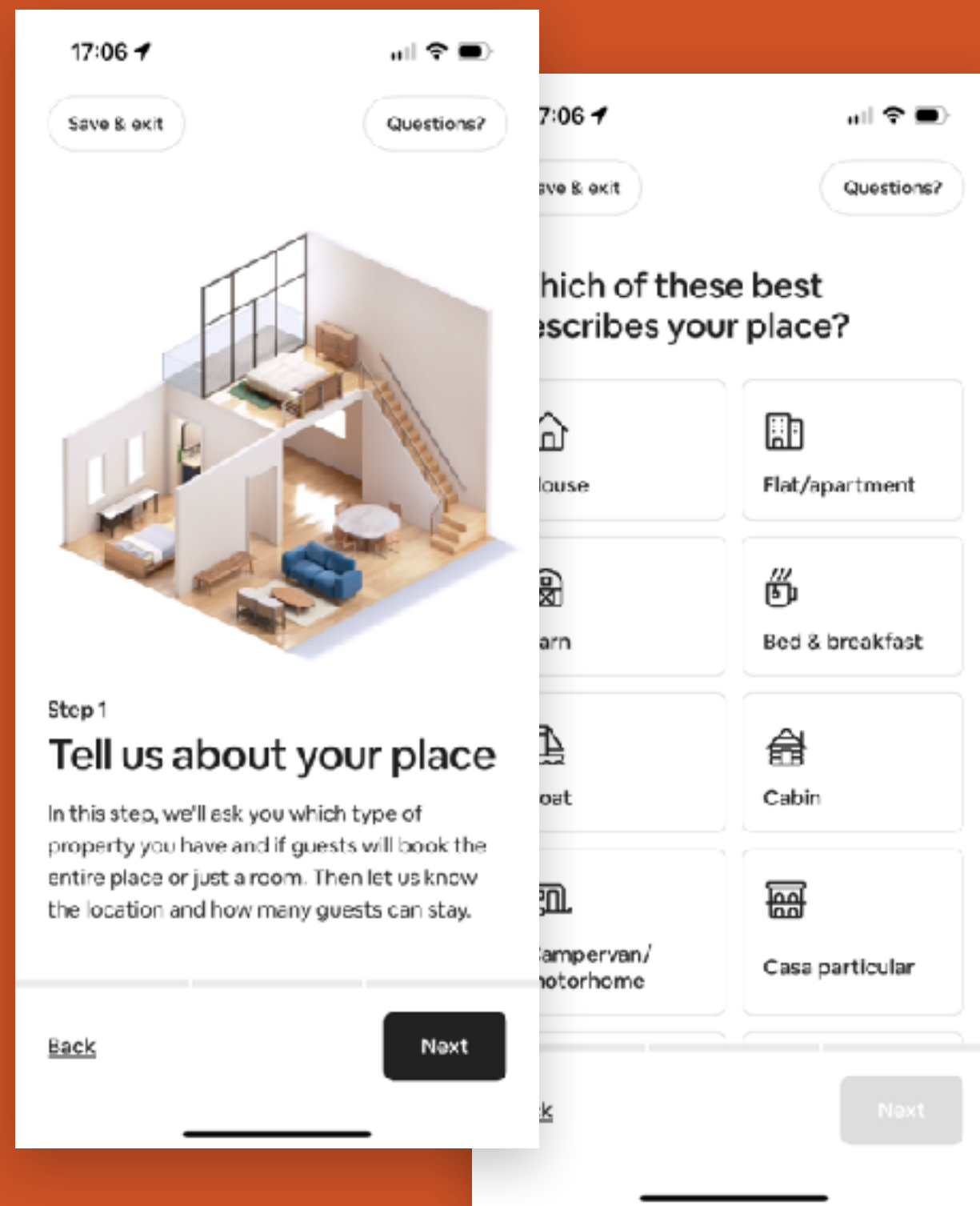
19:57



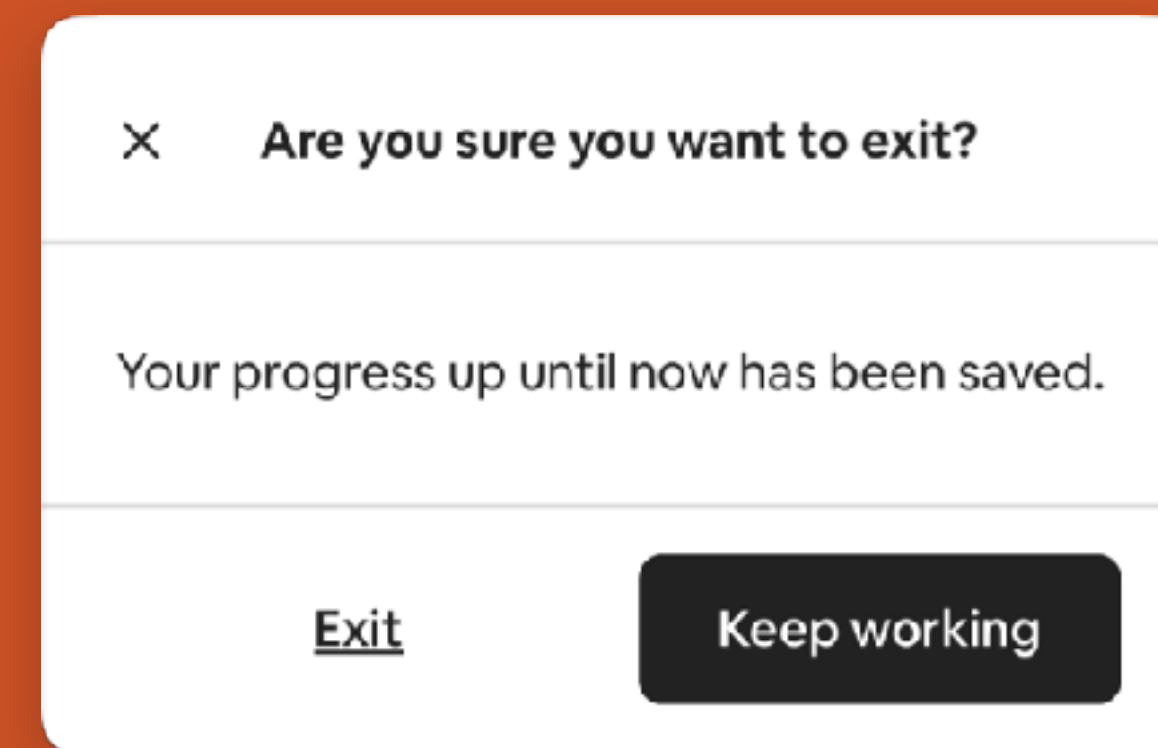
We can and will multitask when interacting with products, so design for it!

Our capacity is increased when spread over multiple modalities

The senses are linked to some extent so a difficult task will impair others



Create focus in complex flows



Make sure users can return to earlier states

Multi-modal design

What's up with all these touch screens in cars?



1991
Volkswagen Golf 3



2024
Volkswagen Golf 8.5

Decrease volume

Change route

Play a podcast

Open sun roof

Checking speed

Traffic information

Change screen brightness

Skip a song

Defrost windows

Change drive mode

Increase temperature

Warning messages

Pay for parking

Place phone call

Find a charger

Fill in destination

Change fan speed

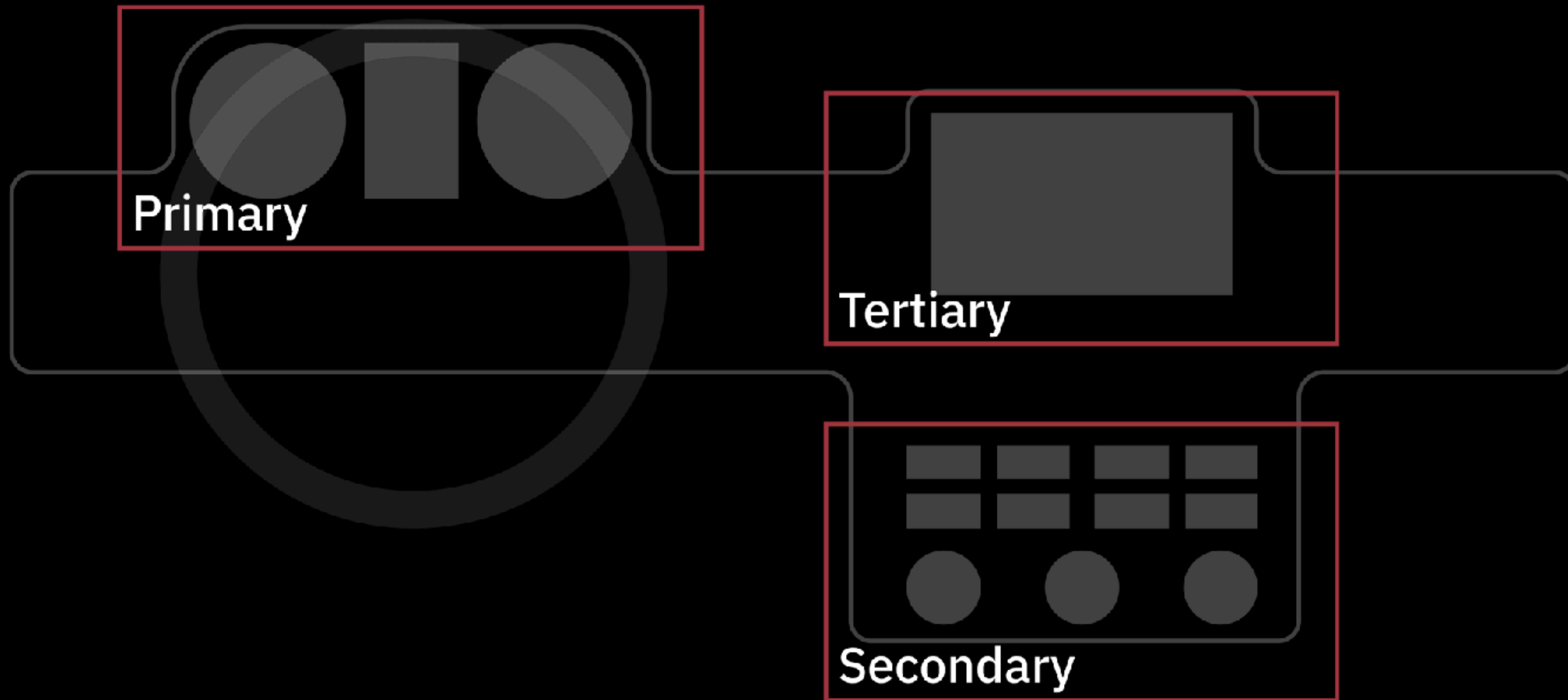
Save seat position

Weather information

Turn-by-turn navigation

Check charge level

Reposition mirrors

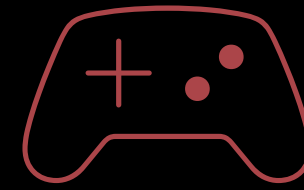




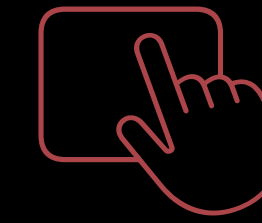
Direct input
physical



Direct input
physical



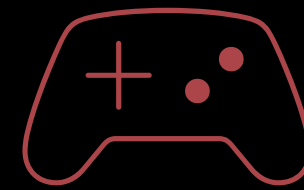
Indirect input



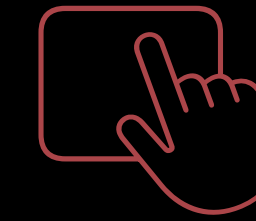
Direct input
touch



Direct input
physical



Indirect input



Direct input
touch



Voice



Gesture

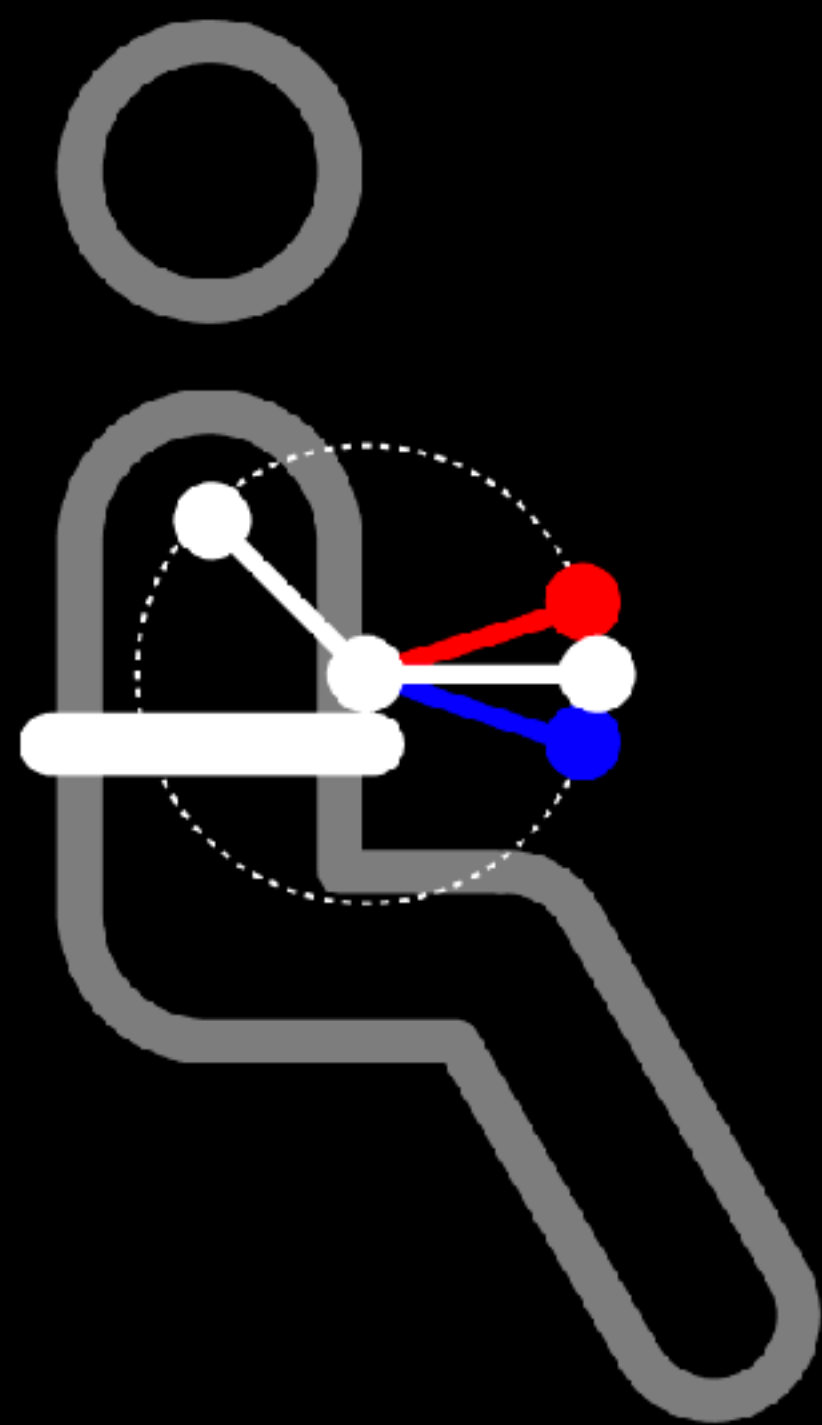
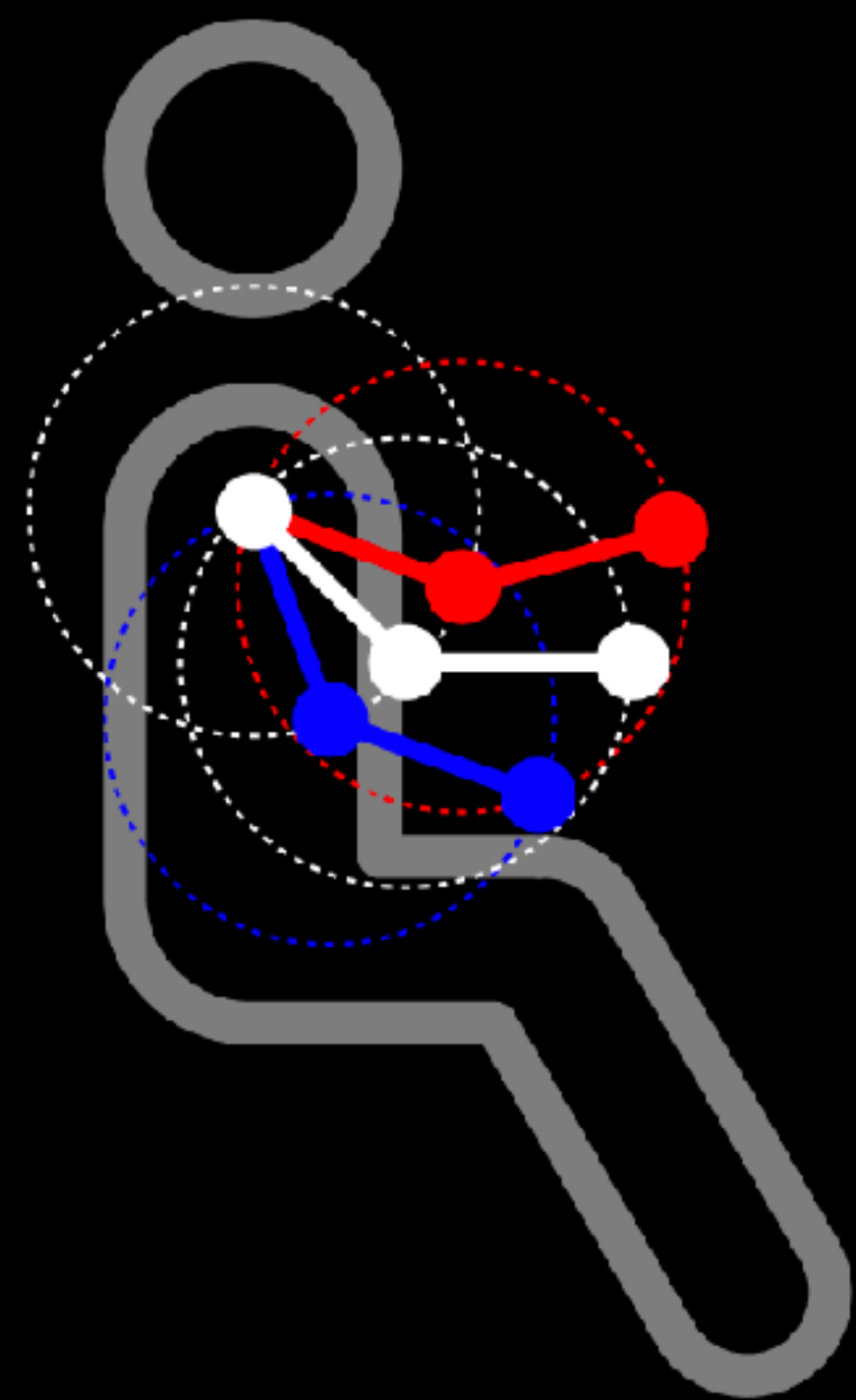
For complex interactions, touch is the *least worst* interaction mode if the interface is optimized for use while driving

Mobile



Car





UI

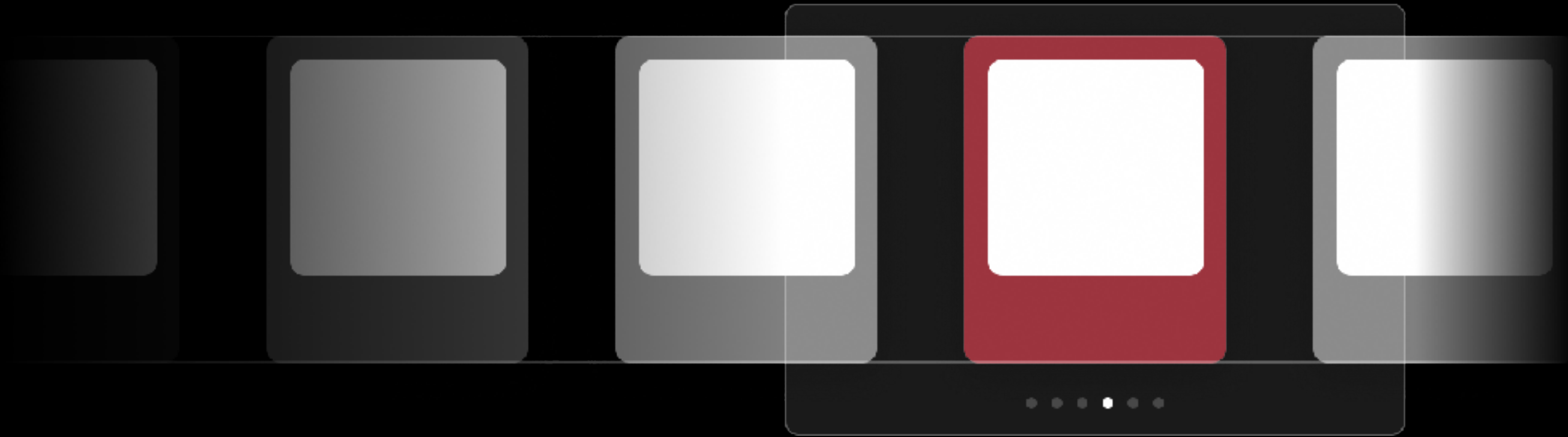
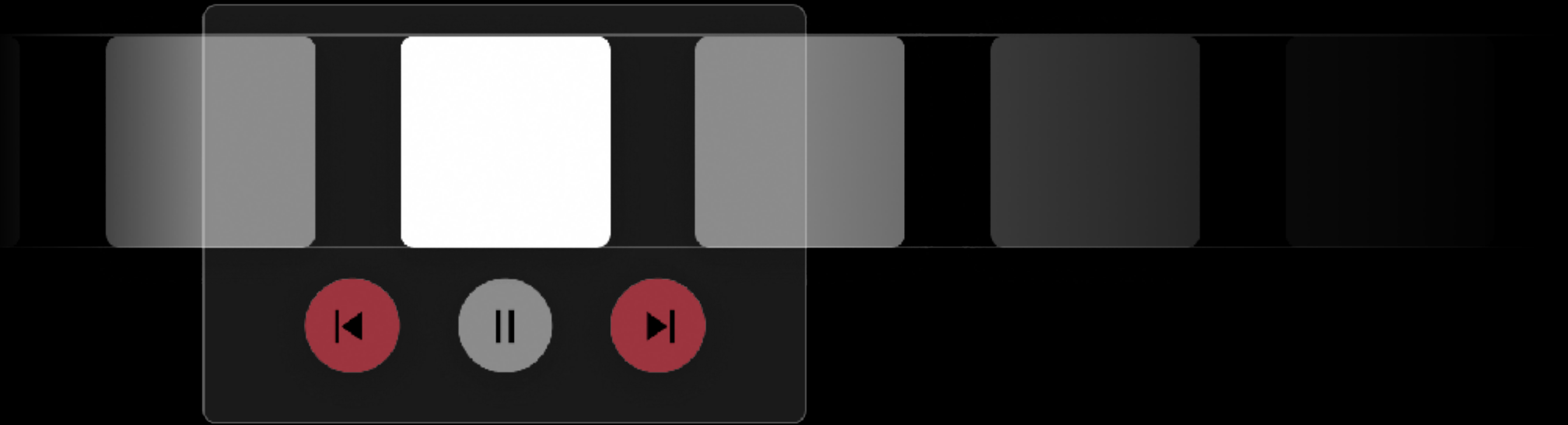


Touch target



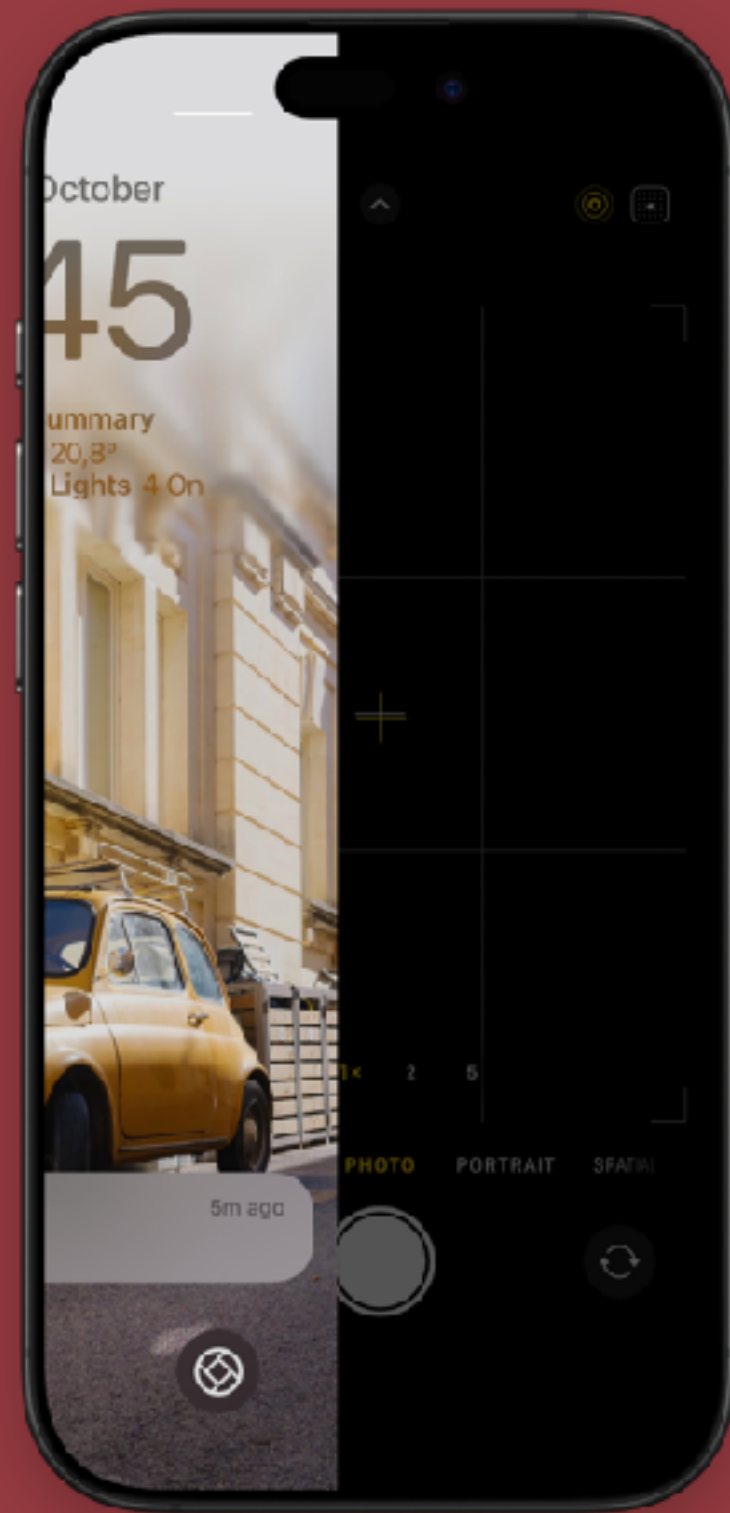
Adjusted touch target



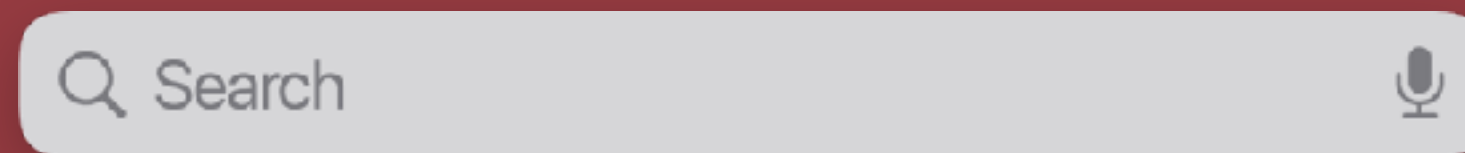


Consider the context and choose the right mode accordingly

Use more than just buttons in touch interfaces



Implement swipe gestures



Add voice to complex interactions

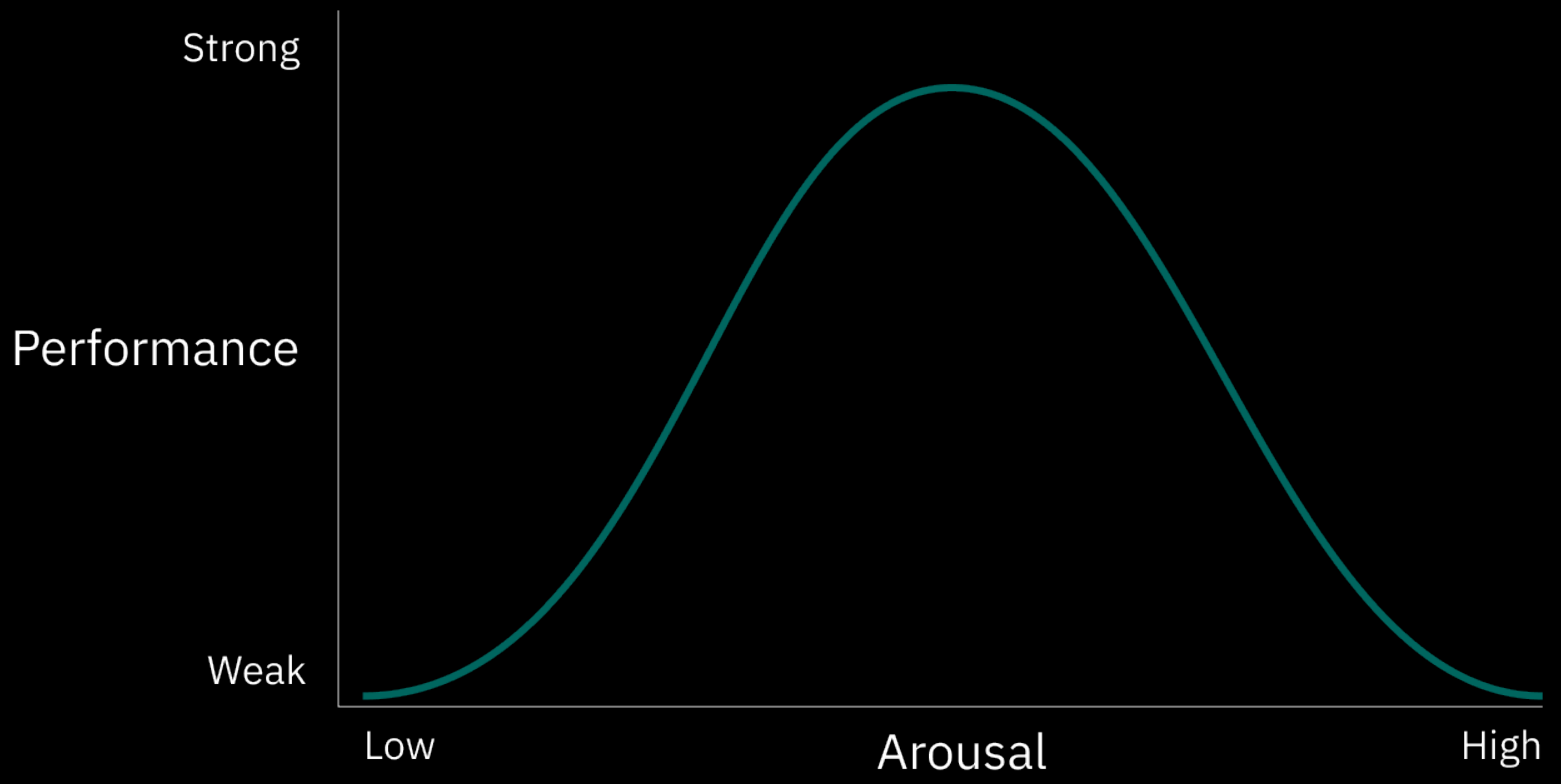


Make use of haptics

Cognitive load

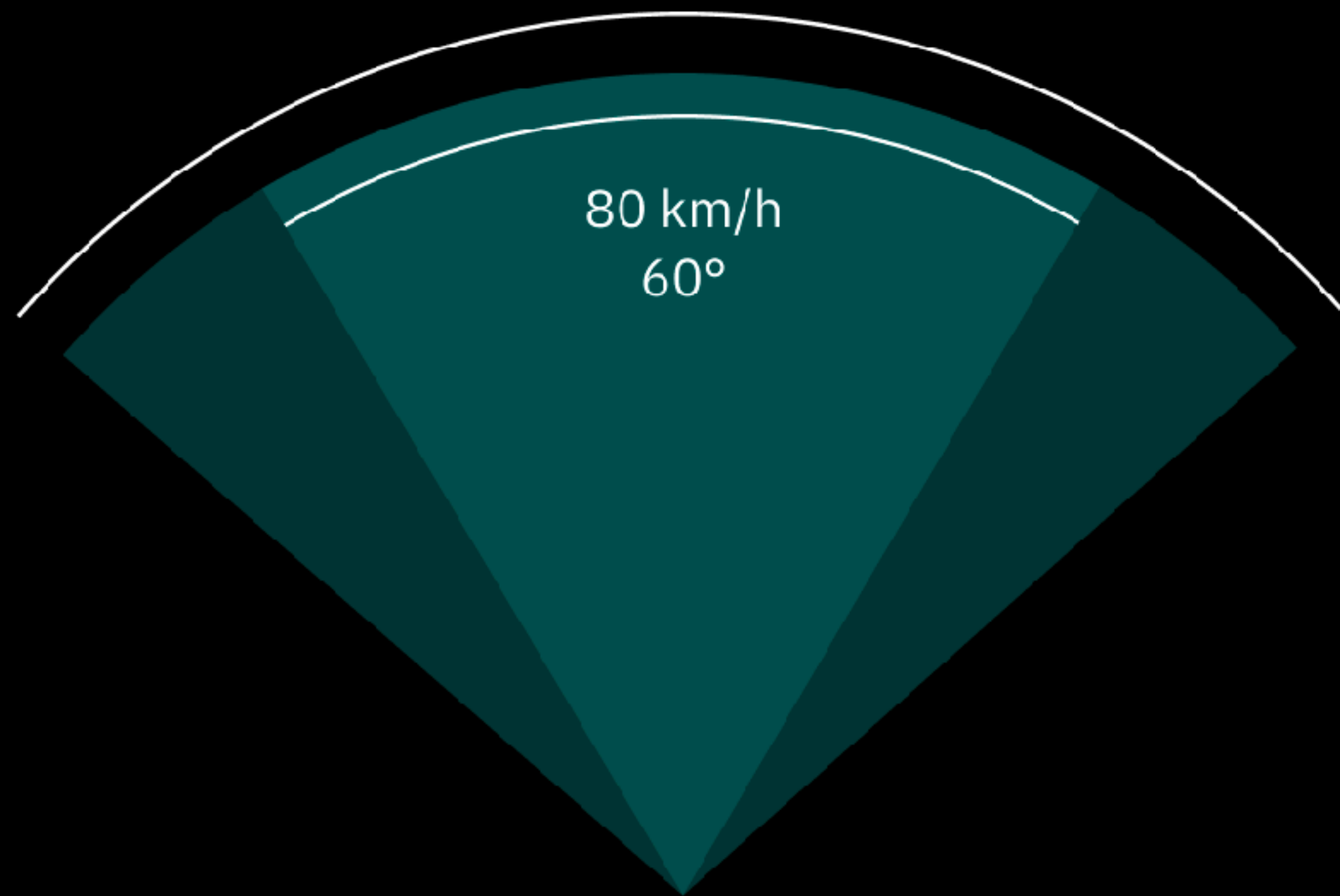
Can difficult interfaces cause accidents?

Yerkes-Dodson Law

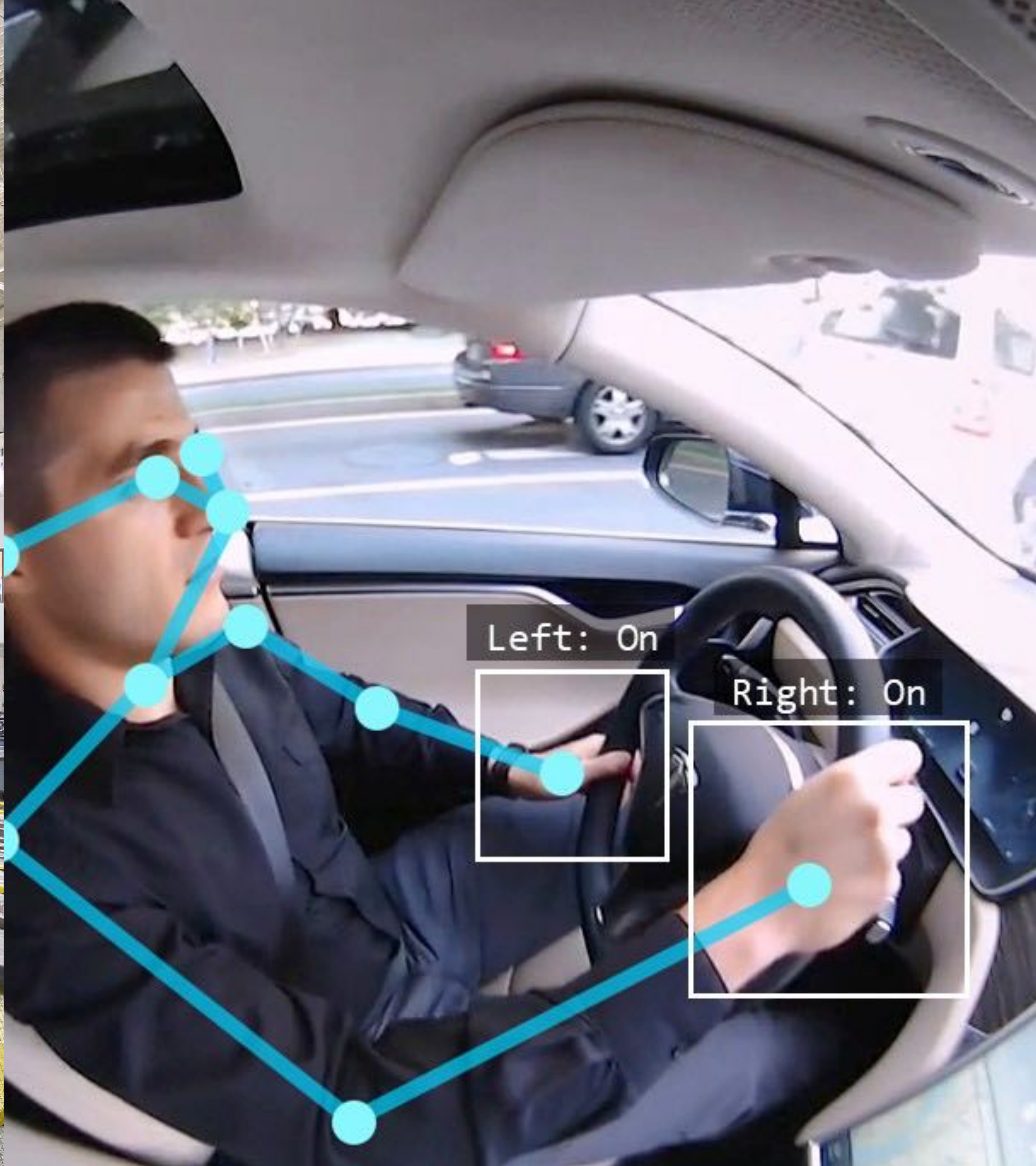


40 km/h
100°

80 km/h
60°







Automized tasks

- Lane keeping
- Following distance
- Operating the car

Non automized tasks

- Object detection
- Navigation
- Reading traffic signs

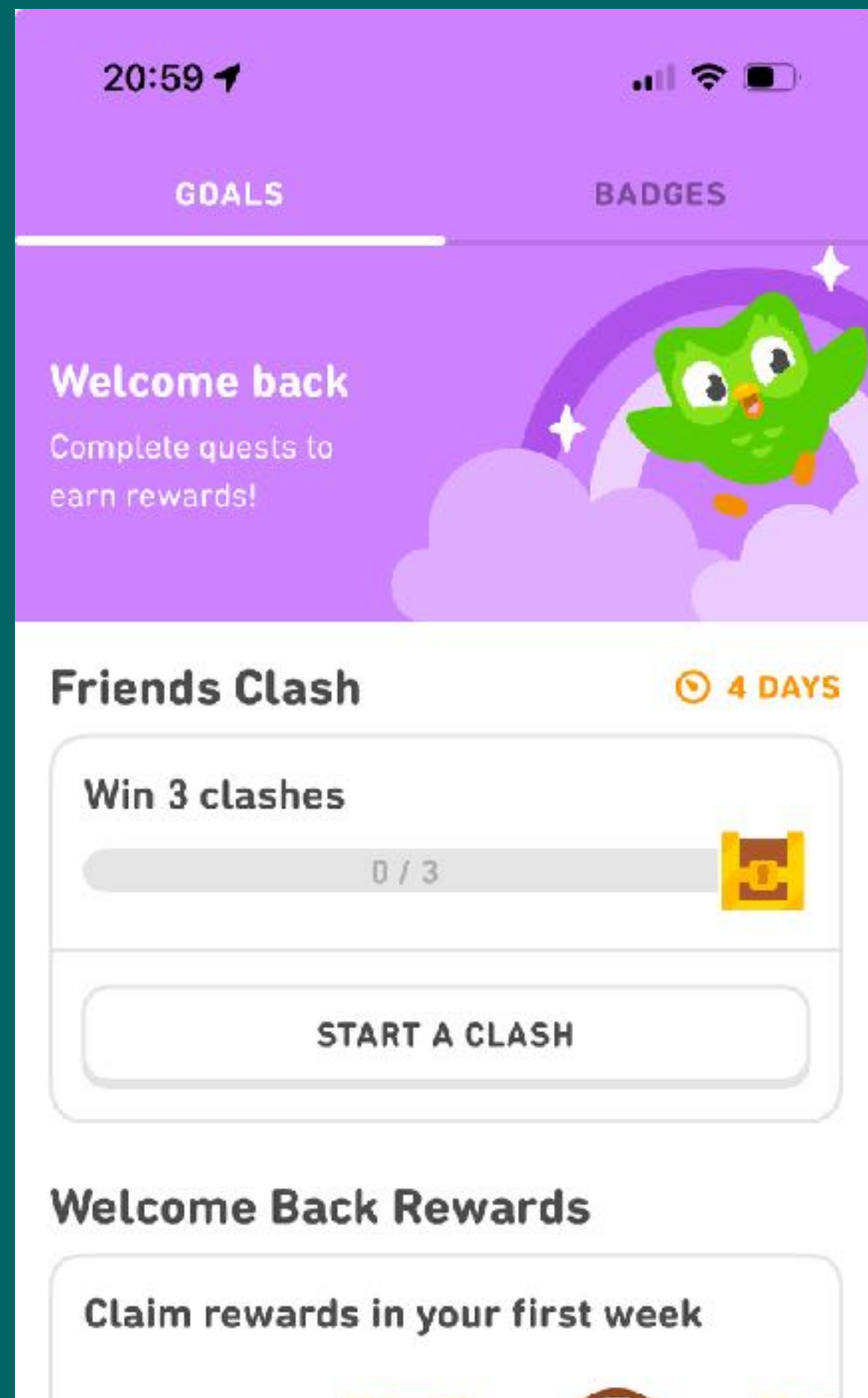
High cognitive load is uncomfortable
so we *naturally* manage it

High cognitive load is mostly uncomfortable

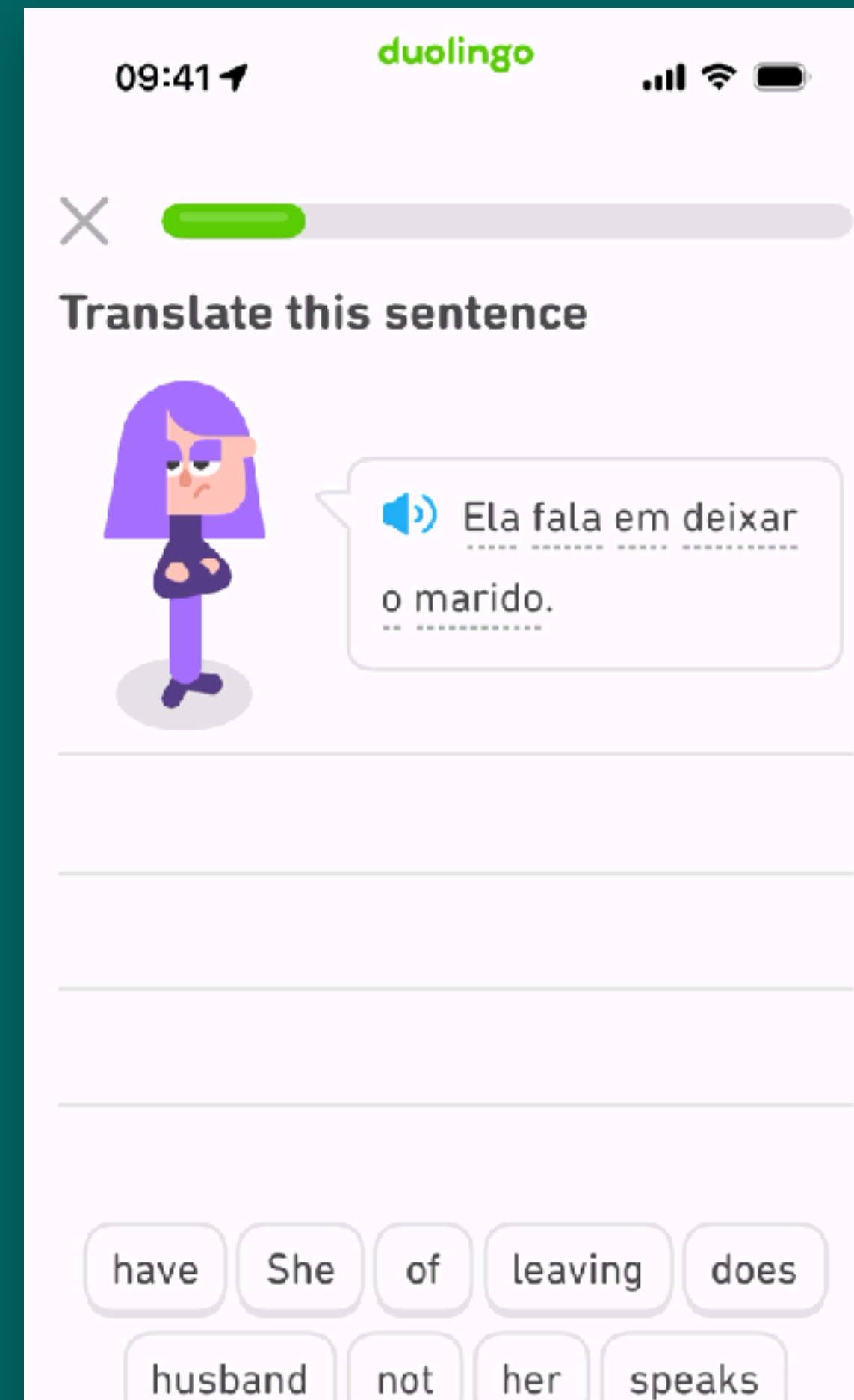
We are very good at managing cognitive load so we may stop using a product when it's too difficult

Focus on creating automatized behavior

Make use of common interaction patterns



Keep users engaged in boring tasks



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Increase capacity by spreading
over multiple modalities

A difficult task will impair others

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We naturally manage cognitive
load

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Casper Kessels

theturnsignalblog.com - casperkessels.com