

Switch

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Overall Problem

Imagine a scenario:

- Pulled an all-nighter
- Dozed off in driving
- CRASH!

A man with a beard, wearing a maroon hoodie, is shown from the side, sitting in the driver's seat of a car. He is looking down and to the right, with his hands on the steering wheel. The car's interior and the view through the windshield are visible. The overall lighting is dim and blue-toned, suggesting a nighttime or low-light environment.

328,000 drowsy driving crashes per year
899 per day
37 per hour

Data from National Safety Council

Goal 1

Prevent Drowsy
Driving

Goal 2

Plan for Long
Distance Trip

Design Research

- Interviewed 5 people with diverse background
- Re-interviewed 4 people
- Non-professional long-distance drivers
- 20~25 years old
- Open-ended questions

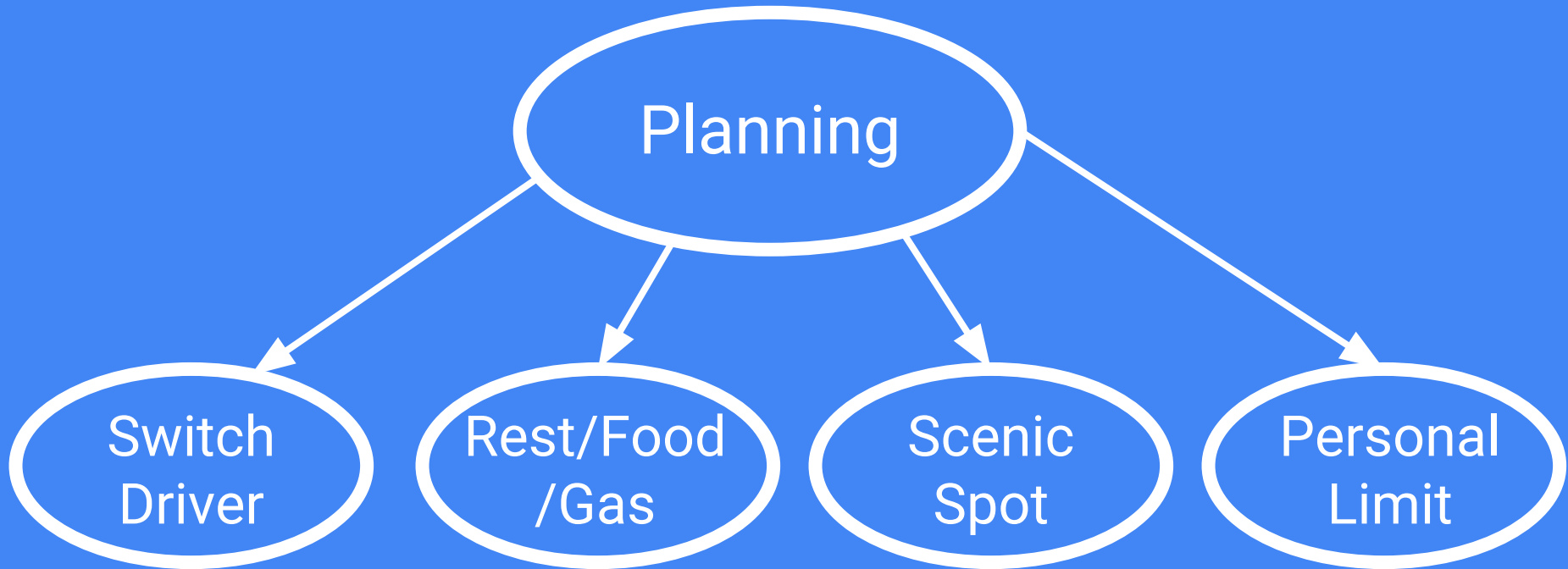


Interview Method

- 1 hour interview
- 3 on 1
- Note taking
- audio recording
- 18 short answer closed-end questions (e.g., what is your occupancy?)
- 1 open-ended question



Key Research Findings



Tasks: Easy Difficulty

- **Track** continuously about one's tiredness during driving.
- **Alert** oneself to take breaks when one is tired during long-distance trips.

Tasks: Medium Difficulty

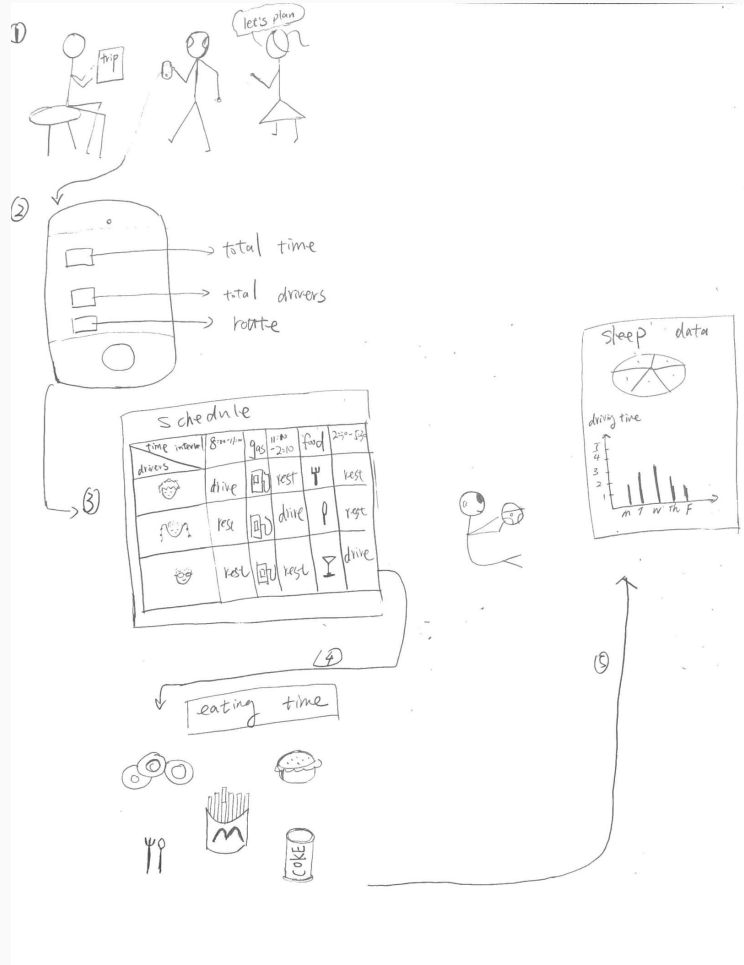
- **Discover** which personal symptoms signify drowsiness to stop oneself from driving during long-distance trips.
- **Assist** oneself to drive without any rest when one is tired.

Tasks: Hard Difficulty

- **Plan** time to drive, **switch**, and **rest** on a long-distance trip.
- **Measure** personal maximum driving time so knows if one should choose driving or other commuting options when going on long-distance trips.

Design 1: Switch

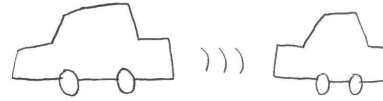
Mobile App that helps drivers to plan on their driving times and switch drivers during a long distance trip



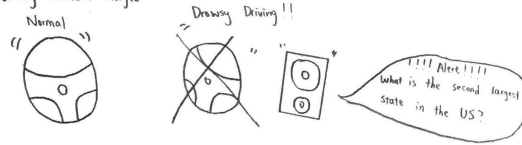
Design 2: Soteria

Vehicle-Based Measures + Smart Speaker Integration

① Safety distance



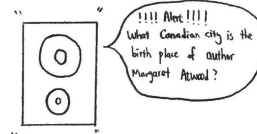
② Steering Wheel Angle



③ Speed Monitoring



④ Smart Speaker that plays mind game when detects drowsy driving (Symptoms above)

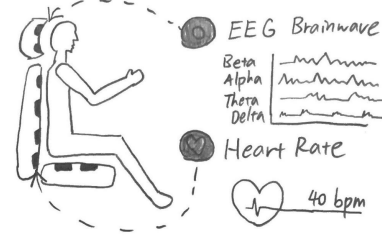


Design 3: CLY

Intelligent Personal Assistant +
Physiological Sensors

Sensor

① Track Tiredness



② Send Data To CLY



Intelligent Personal Assistant (CLY)

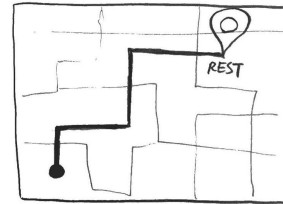
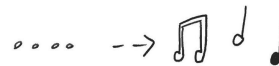
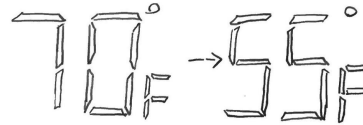
③ Vocal Alerts



④ Driving Assistance



⑤ Environmental Adjustment ⑥ GPS Navigation



Reason choose design 1

- Feasibility

Switch require only smartphone (almost everyone has one)

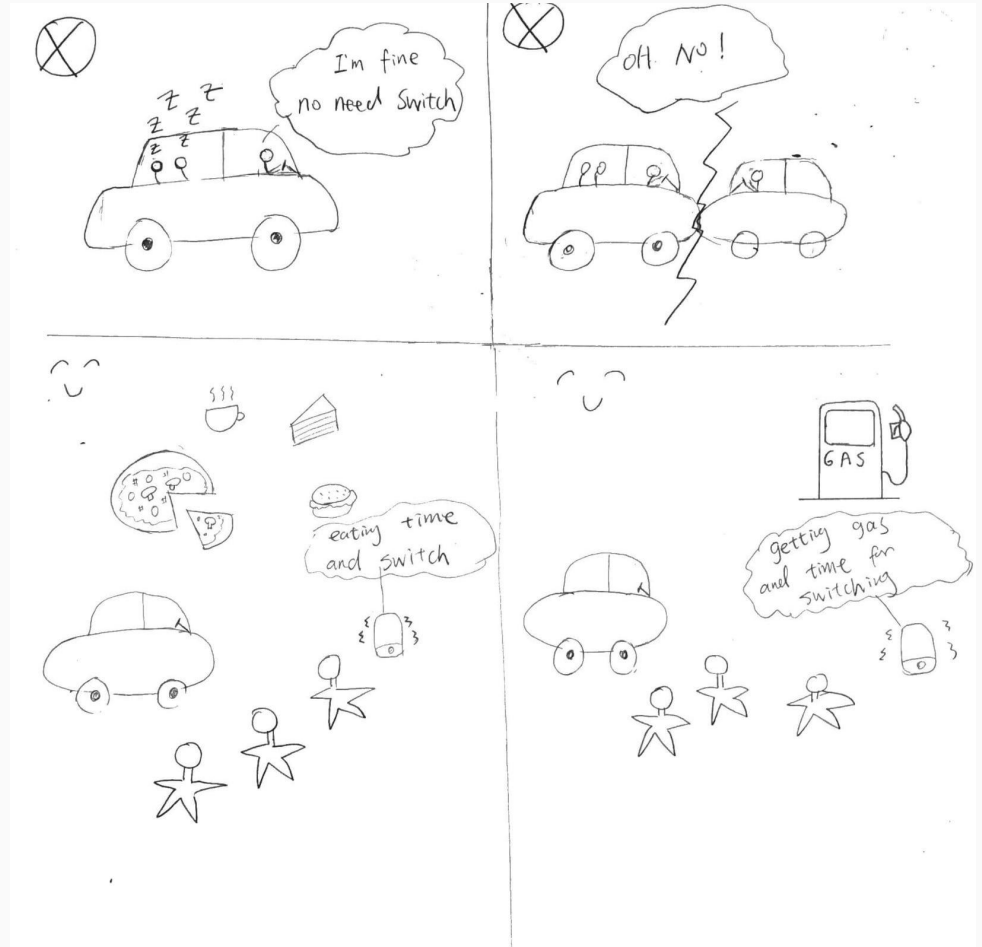
Other design require unrealistic hardware

- Uniqueness

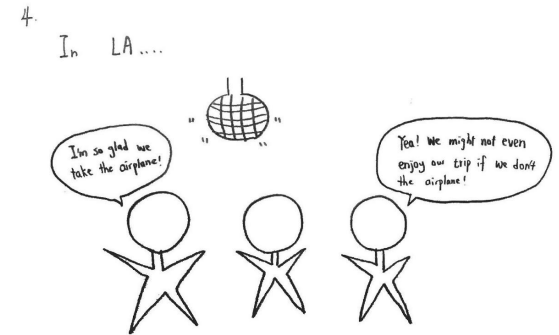
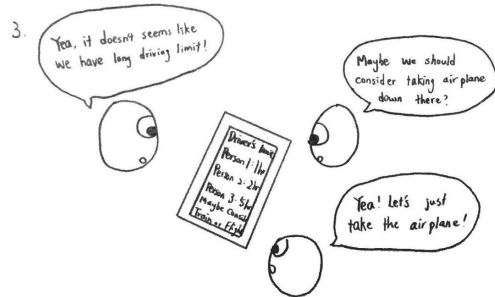
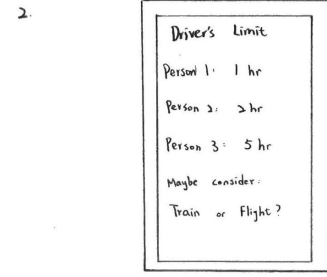
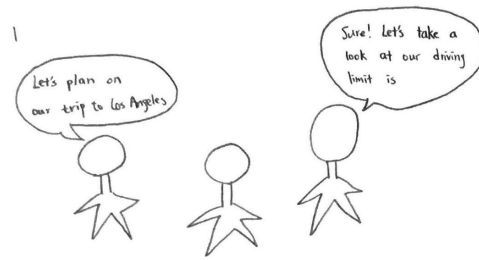
Companies such as Mercedes Benz already invented similar technology like design 2 and 3

Nothing similar to Switch has yet been invented

Plan time to drive, switch, and rest on a long-distance trip.



Measure personal maximum driving time so knows if one should choose driving or other commuting options when going on long-distance trips.



Lessons Learned

From Ourselves

- Narrow our focus
- Understand and improve from feedback
- Ask for help if needed

From Participants

- Tricks to stay awake
- Different driving limits
- Different priorities
(Safety/Time)

Thank
you

The image features the words "Thank you" written in a fluid, cursive script. The text is rendered with a vibrant rainbow-to-black gradient, starting with yellow and orange at the top and transitioning to dark brown and black at the bottom. The words are centered and framed by elegant, black, flowing flourishes that extend to the left and right edges. The background is a soft-focus bokeh of warm, golden-yellow and light blue circular lights, creating a dreamy and celebratory atmosphere.

