ARCHITECTURAL CANVAS - Concept

Idea's name: SafeHaul

Participants: Irena, Minh, Sofia, Thimo

Improving the well-being and safety of long haul truck and bus drivers with infrared and ice blue light

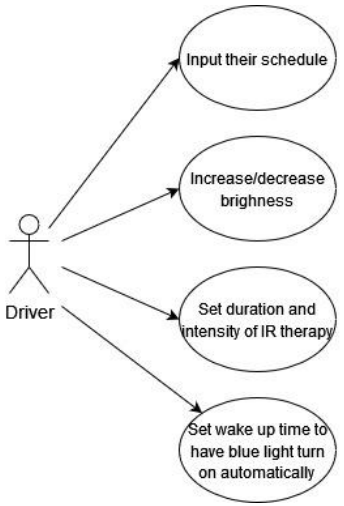
CUSTOMER PERSONAS AND STAKEHOLDERS

Long-haul Truck drivers: Saki
- Length of service: 20+ years
- Average shift: 9h/day driving (45mins break during a shift), the work day be 15h hours (including border delays)
- Biological sleeping clock is disrupted
- Get the least amount of sleep on average.
- Muscle pain, back problems
- Strained eyesight since they have to keep an eye on the road at all times
- Having smartphone, backpack with essentials

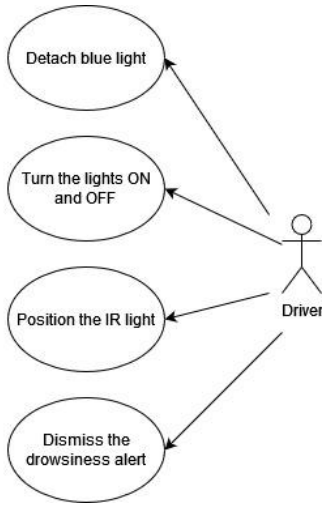
Truck company: Blaze (Owner)
- Have 20 truck drivers
- Know drivers' problems but can only be assessed through an annual physical exam
- There is no method to improve driver performance while driving

KEY INTERACTIONS

Application



Physical product



Customer onboarding: in-app tutorial + instructions on how to use the product and where to position it

VALIDATION

Truck drivers (interview)
- Needs some kind of physical therapy
- Confirmed that attaching BL in the cabin is not a problem
- Needs the device to compact and portable (fit into a drawer)
- Can provide a power source of 24V for the device

Truck owner (interview)
- Wants to decrease amount of accidents involving their trucks
- Would benefit from their hired workers taking less sick leave

SELLING MODEL

B2C
- Crowdfunding (Kickstarter, Patreon)
- Online selling to drivers and individual customers on marketplaces (eBay, Amazon)
- Sell directly to truck companies/ truck manufacturers

B2B
- Sell to retailers (i.e. supermarkets at gas station, auto parts stores)

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KEY PARTNERS

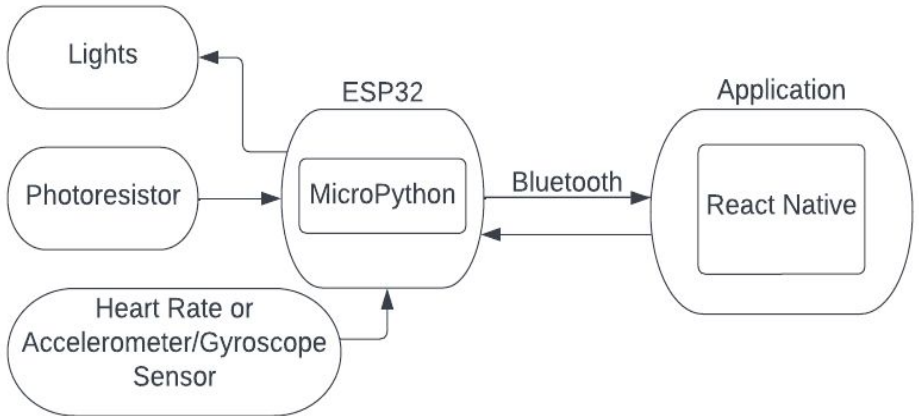
1. Application Stores (Google Play Store, Apple App store, Microsoft store,...)
2. Smartwatch companies (Fitbit, Xiaomi, Samsung,...)
3. Vehicle manufacturers (Man, Iveco, Volvo Group,...)

ARCHITECTURAL CANVAS - Technology

Idea's name: SafeHaul

Participants: Irena, Minh, Sofia, Thimo

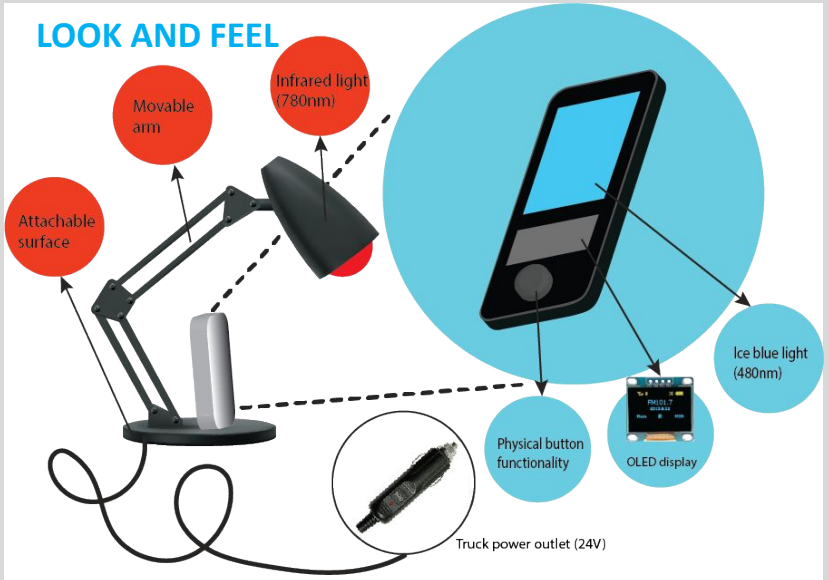
ARCHITECTURE



Software on ESP32 microcontroller:
Micropython

Cross-platform framework for Mobile application:
React Native

LOOK AND FEEL



- Control system is mounted in "Blue" device
- Plugging "Blue" device into dock to charge "Blue" and control "Red" (Infrared device)

BATTERY CONSUMPTION & PRICE ESTIMATION

The power consumption of the battery powered part is estimated to be 1.71W
This power is consumed by the blue LED's, the ESP32 and the display.
Total power consumption during a shift = 9 * 1.71W = 15.39 Watt hours
For a 9-hour shift, the power can be supplied by a power bank of at least 4159 mAh.

We expect the total costs of the parts to be around €90.
This includes a smartwatch that can send HR data over Bluetooth.

KEY TECHNICAL CHALLENGES

- Making sure that the device is not too big to use in a truck
- Making sure that the drowsiness detection does not give too many false positives to disturb the driver
- Making sure that the application is not needed while driving

OTHER IP

- ESP32 microcontroller with Wi-Fi + Bluetooth (€4)
- MOSFET's (PWM dimming) (€2)
- 480nm ice blue LED's(€2)
- Infrared and near-infrared light LED's(est. €15 - 25)
- Power bank / Battery pack (~ €15)
- Smartwatch with BT heart rate functionality (€35)

More parts in the document.

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UNIQUE TECHNICAL/ADDED VALUE CONTRIBUTION

Manual and automatic adjustment of brightness of the BL and an alert system according to ambient lighting and drowsiness sensor detection. Additionally, a red-light therapy feature that contributes to a unique product that has the potential to prevent accidents and improve well-being of drivers.