SAFETY IN MOTION (S.I.M)

SHEIKH . IMAN . MELISSA

TEAM BACKGROUND

Sheikh	Iman	Melissa
• Hardware/Software Integration • WebOS backend	• Prototype Designer/Developer • Object Detection	• WebOS Interface Designer/Developer • User Testing (UI/UX)

CURRENT PROBLEM: CARS LACKING SAFETY FEATURES

- Nearly 1.25 million people die in road crashes each year, on average 3,287 deaths a day (WHO statistics)

- Of the children ages 12 years and younger who **died in a crash** in 2016 (for which restraint use was known)**, 35% were not buckled up**

- Children in front passenger seat are **more prone to injury/death upon deployment of airbag** in the event of a crash

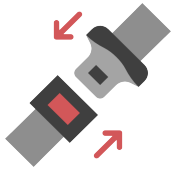
SOLUTION

- A smart, secure, modular system that has cross compatibility with any vehicle on the road
- System must be able to inform the user of any safety violations that the user practices when a child is onboard
- More features can be added beyond Proof Of Concept (POC)

SMS Notifications

Check Hands-On

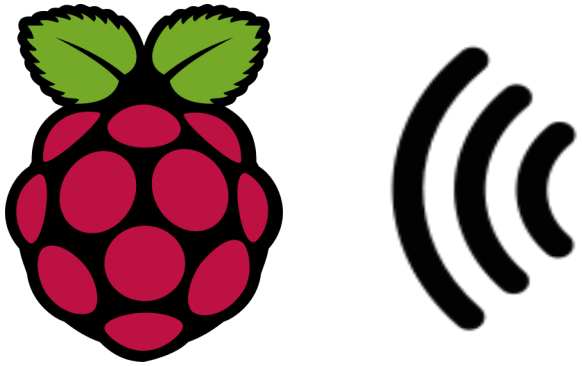
Child Detection



Check seatbelt

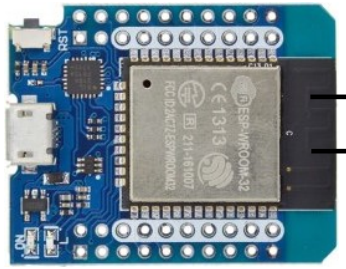
HOW IT WORKS

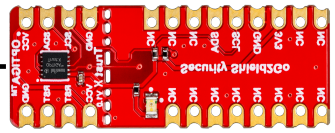
ARCHITECTURE STACK DIAGRAM (ELECTRICAL)



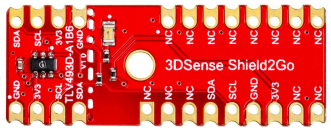
WebOSOSE

ESP32 Mini





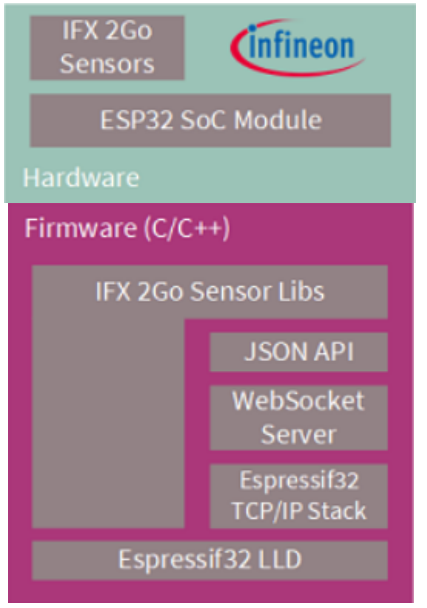
Optiga Trust X Shield2Go



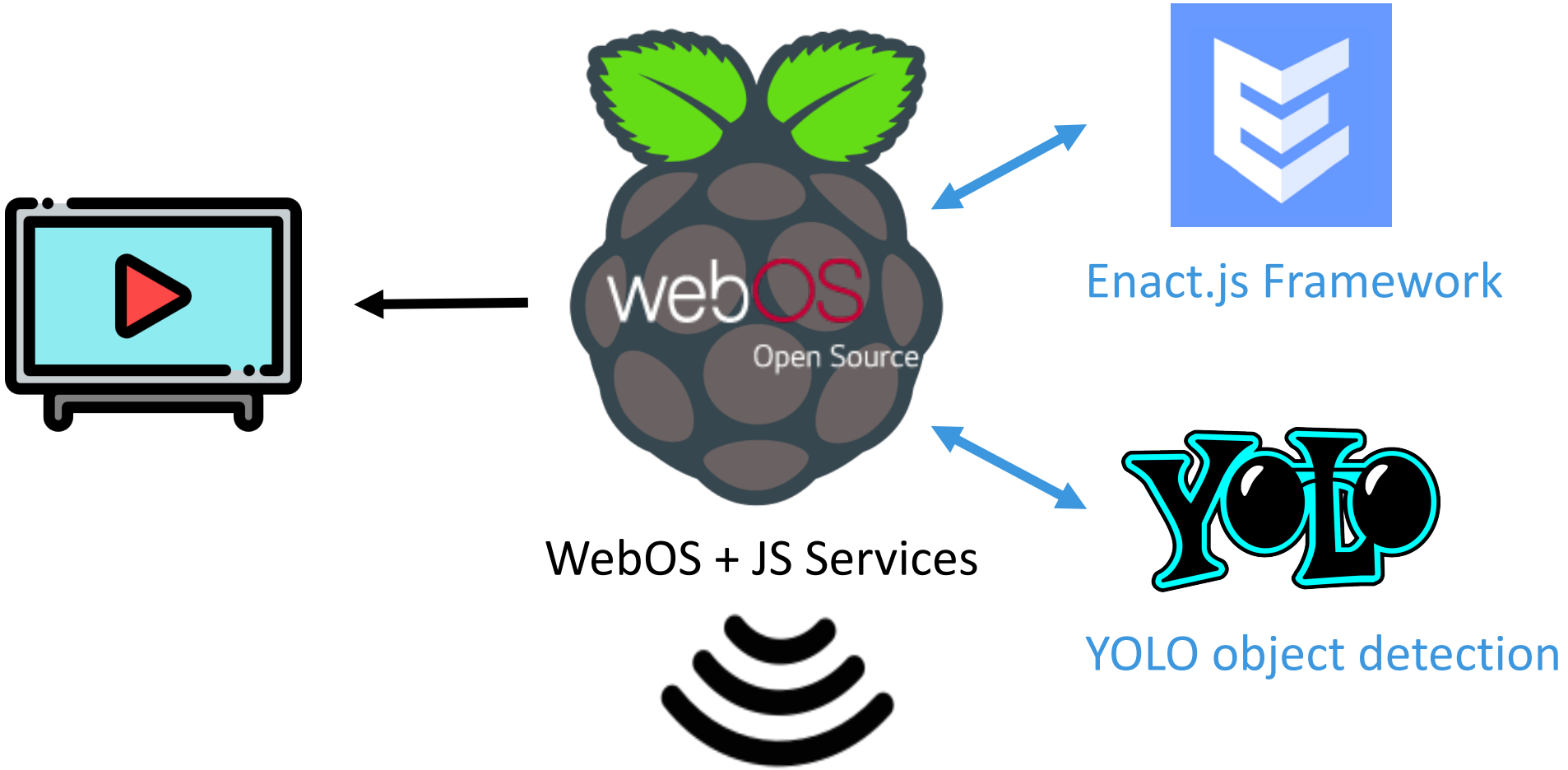
3D Sense Shield2Go

Steering Wheel

Seat Belt

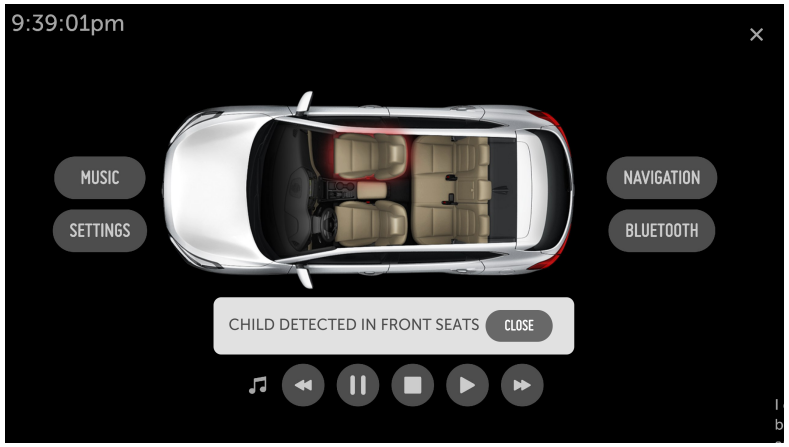


ARCHITECTURE STACK DIAGRAM (SOFTWARE)



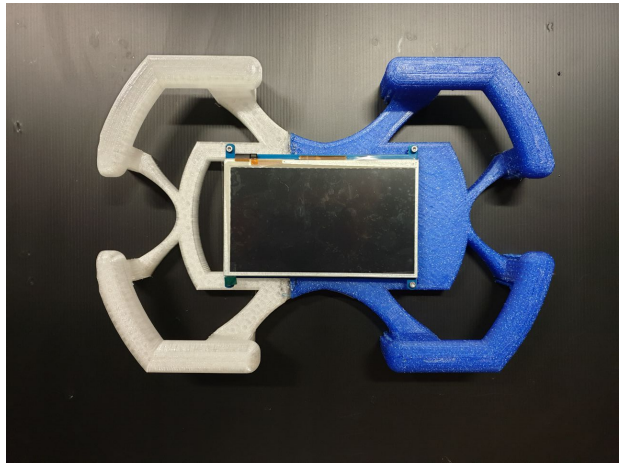
INTERFACE

WebOS Enact

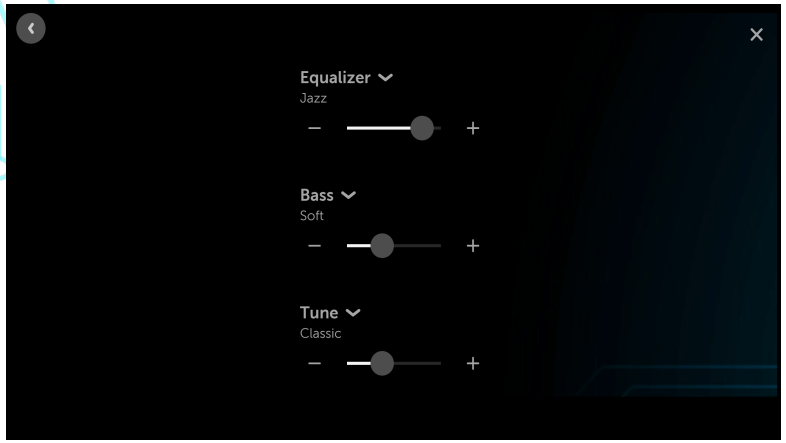


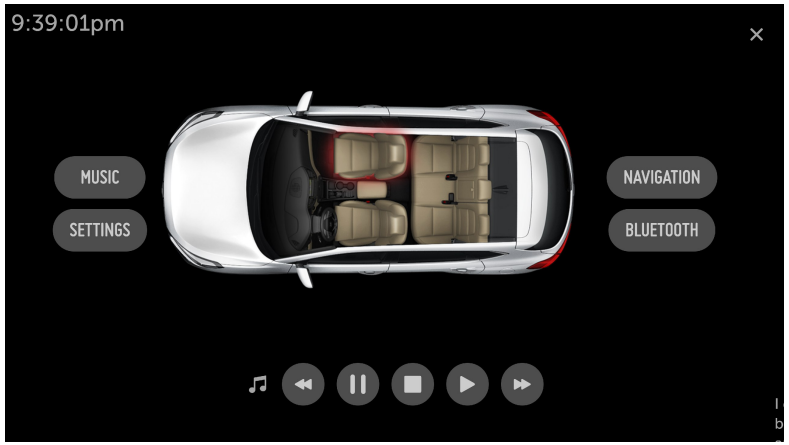
- Simple and clean design, easy to navigate
- Non-distracting (Faint signals – slow blinking for notification)
- Notifies users when:
  a. Child detected in front seat
  b. Person detected and seatbelt not used
  c. Driver is not alert

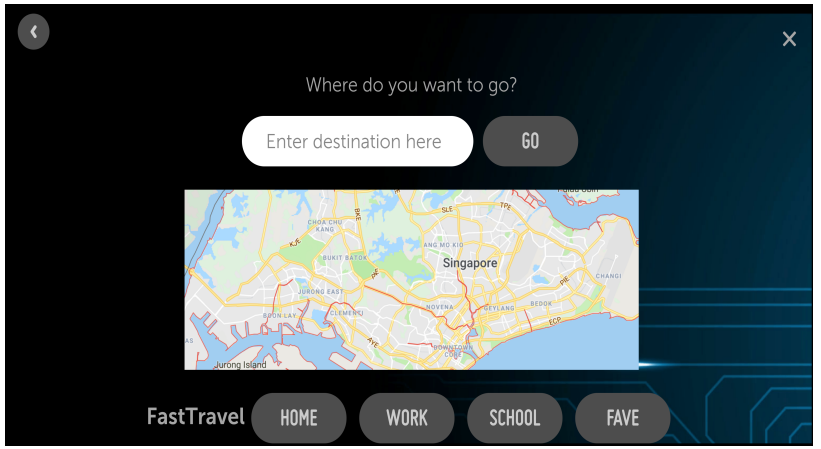
Prototype Design

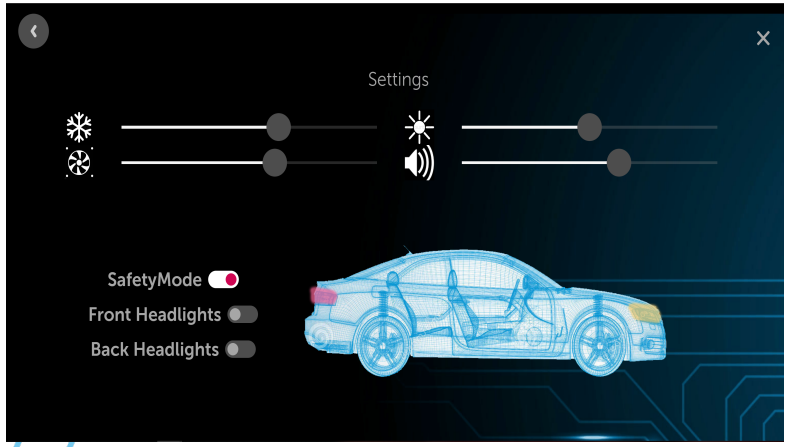


- Screen is on the steering wheel allowing for easier reach and less distractions for drivers
- Basic function of car dashboards are maintained and compiled in one screen


Equalizer
Jazz
Bass
Soft
Tune
Classic


9:39:01pm
MUSIC
SETTINGS
NAVIGATION
BLUETOOTH


Where do you want to go?
Enter destination here
GO
Singapore
FastTravel
HOME
WORK
SCHOOL
FAVE

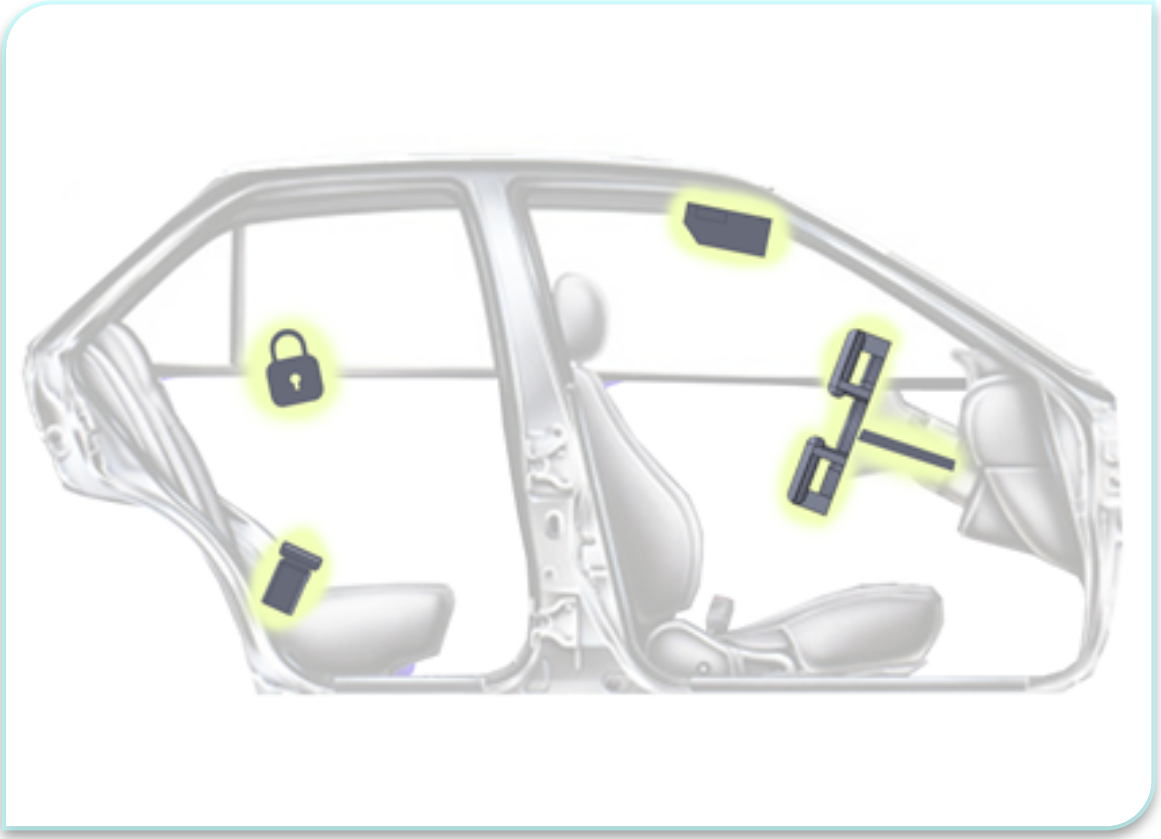

Settings
SafetyMode
Front Headlights
Back Headlights


Bluetooth
Searching for devices ...
JBLU/U/JLY
SHAKE11
EMAN22
MAHLIZA33
INFINEON10
LG10
M1213

PRODUCT VIDEO

PRODUCT SPECS (SCALING UP)

- Hardware provided is a **modular fit to any existing car** and can be purchased by the user depending on own needs. Our Proof-Of-Concept (POC) is for child safety
- Backend managed entirely by **secure WebSocket communications**
- Software currently managed solely by **Enact JS and Node.js.** More recipes can be added for easy development (similar to BeanBot by LGSV team)
- Enhanced **Computer Vision** integration



CURRENT MARKET

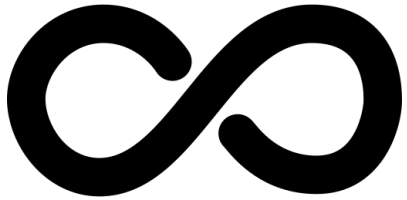
OEM In-Built Dashboards

- Poor Integration with other compatible devices
- Lacks customizability, predetermined by manufacturer
- Good systems are EXPENSIVE

3rd party systems

- Often limited by features agreed upon between manufacturers and provider
- Hardware limited to those already available on the vehicle
- 3rd party anti-trust issues

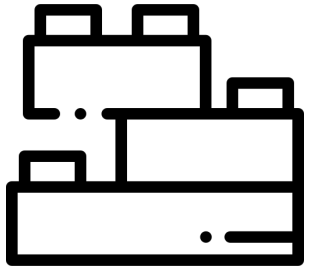
WHY OUR PRODUCT WORKS



Unlimited Potential

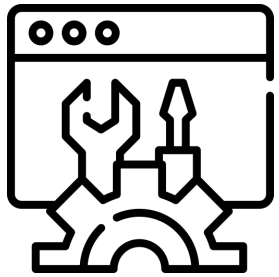
With the right kits, more features can be explored :

- WIFI Unlock [via ES32]
- Bluetooth Intrusion detection [via RPI built in]
- And a whole lot more..



Simple Modular Design

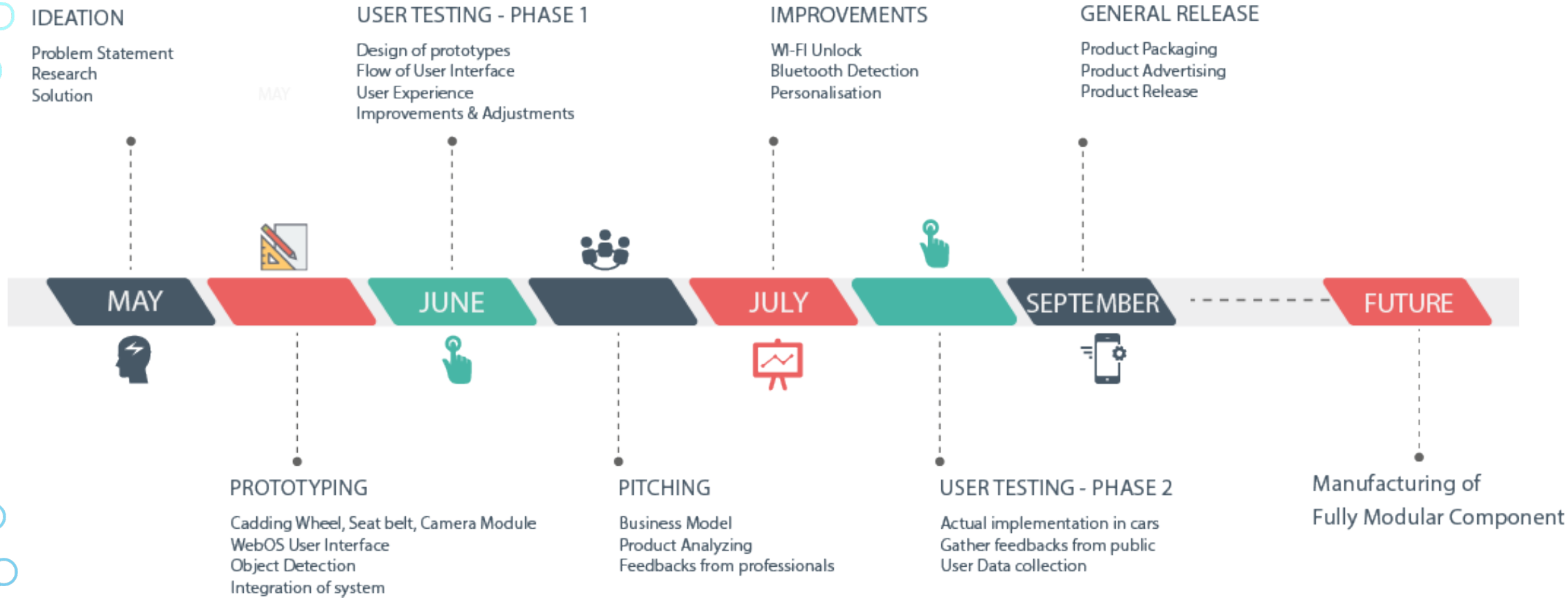
Shield2Go modules provided by Infineon are simple to use, and can be refined to fit any car's design requirements



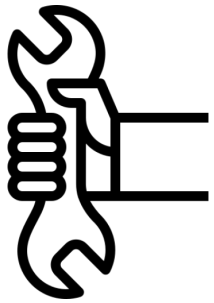
Open Source, Developer Friendly

WebOS has good support of external libraries and good hardware compatibility

PROJECT TIMELINE



INTO THE FUTURE (3D)

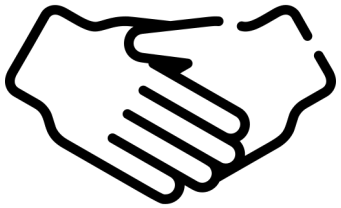


DIY Kits

Designing of Modular kits that can be easily retrofitted to most vehicle sytems

Dealership and Distributor networks

Distributors in the form of car-dealersips and repairshops will provide technical installation and expertise in retrofitting more advanced kits



Direct Manufacturer partnerships

Possible partnerships with direct car manufacturers to install prerequisites (base layer) of these systems