The Detector Baby
Team 511

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Innovative Logistics

Project Scope

- ❖ Create a device to alert parents if their child is left behind in the car.
- ❖ Alert to life threatening temperature conditions in vehicle.
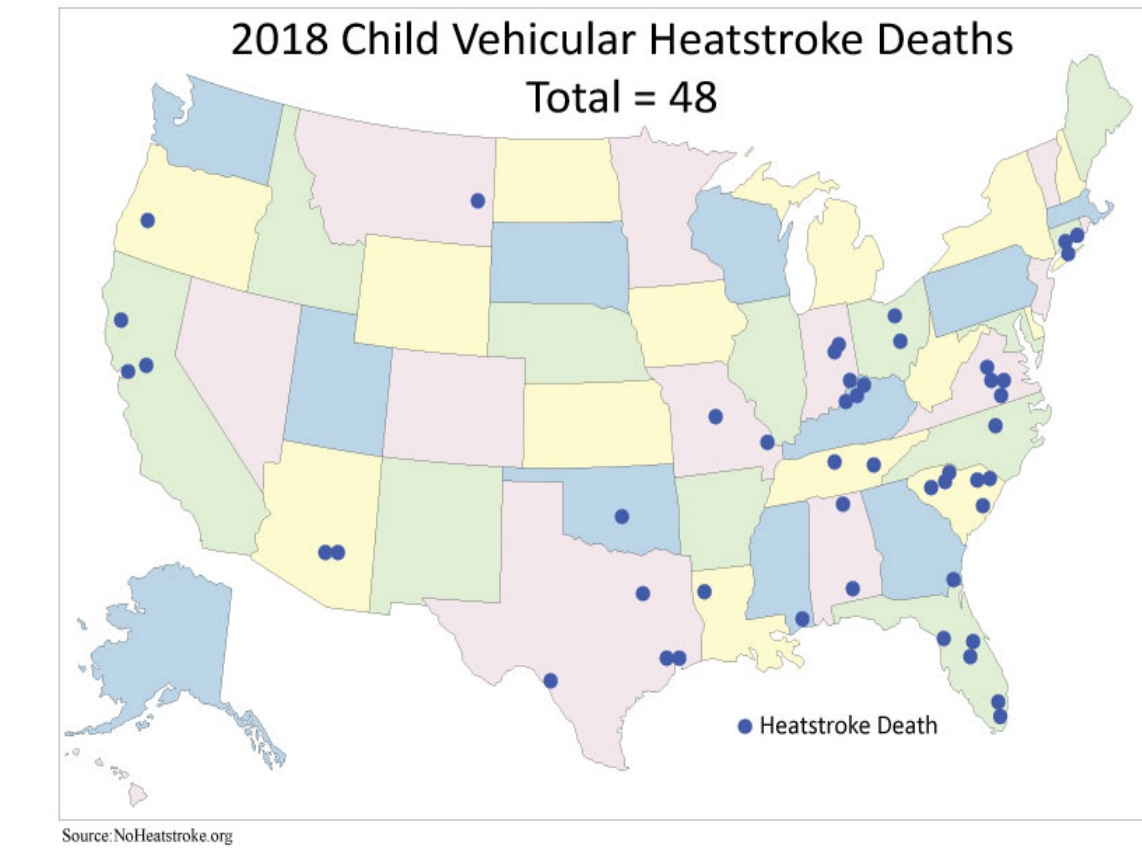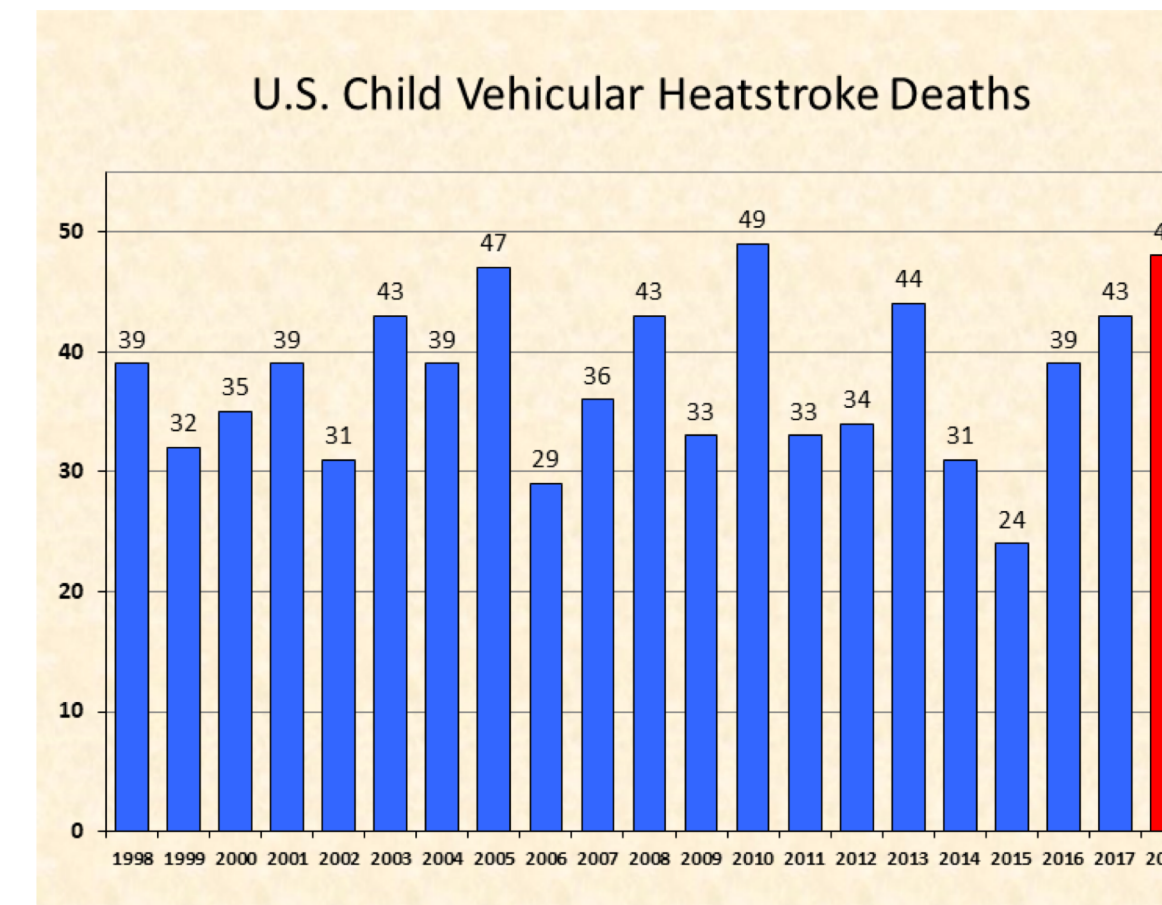- ❖ Prevent fatalities of infants who are left behind in passenger vehicles.

Motivation and Goals

Problem
- ❖ High infant fatalities rates due to being left behind in cars.

Overall Goal
- ❖ Design and build a child alert system that notifies the driver of the vehicle that a passenger has been left inside an enclosed hot vehicle while they are away from the car.

U.S. Child Vehicular Heatstroke Deaths

2018 Child Vehicular Heatstroke Deaths
Total = 48

Source: NoHeatstroke.org

- ❖ On average 37 children die from being left behind in cars per year.
- ❖ The rate is rising over the last 3 years reaching a near maximum of 48 deaths in 2018.
- ❖ Temperature in a car can rise from 70 to 115 °F in an hour.
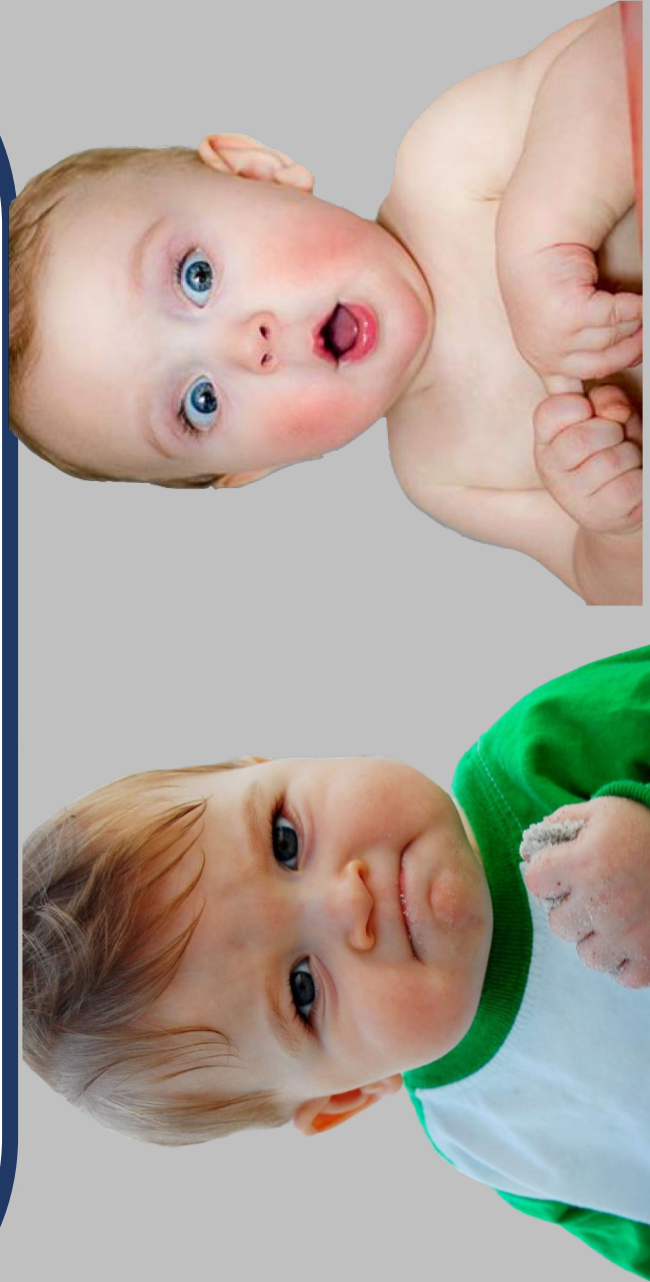
Background & Targets

- ❖ Children internal body temperature benchmarks
    - Fever : ~ 100 °F
    - Heat Stroke: ~ 104°F
    - Death: ~ 107°F
- ❖ Device should be compatible with all car seats and detect is child is present.
- ❖ Device should not be in power or measuring temperatures when passenger is not present.
- ❖ Display temperature ranges and passenger vitals.
- ❖ Target distance was set for the device to operate at a maximum range of 50 to 100 meters.

Selected Design

- ❖ A baby monitor attached to the car seat buckles.
- ❖ A positive/ negative temperature coefficient thermistor.
- ❖ Detects the rate of temperature increase in the car.
- ❖ Uses a Key Fob secondary device.
- ❖ Team plans on creating a clip system large enough to encompass microcontroller and temperature sensors.
- ❖ Proximity sensors in the clip ends will tell if clips are secured together indicating the presence of a child.
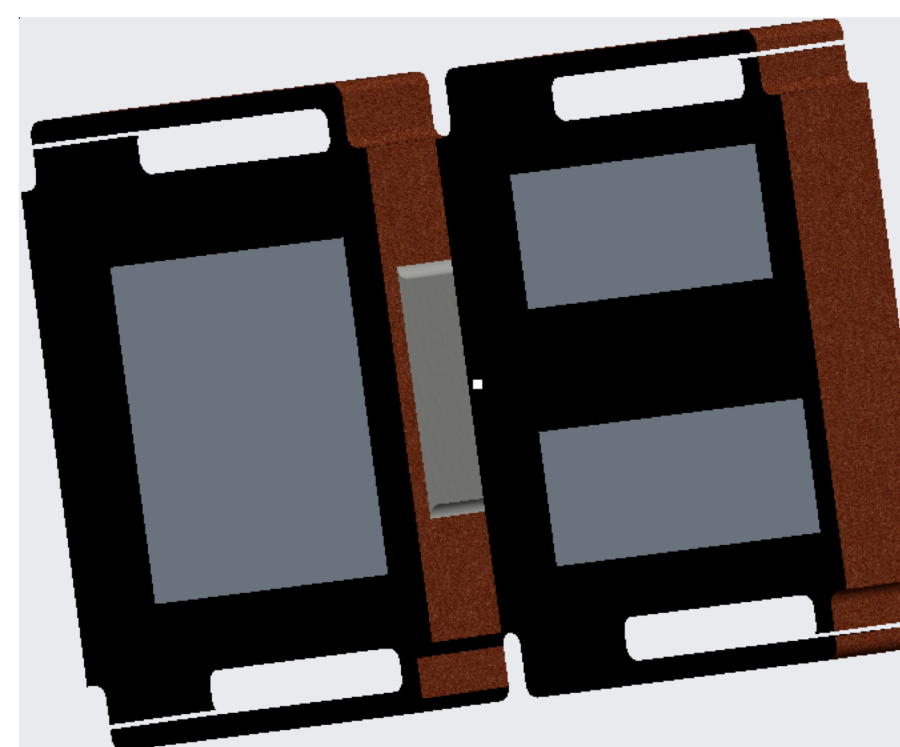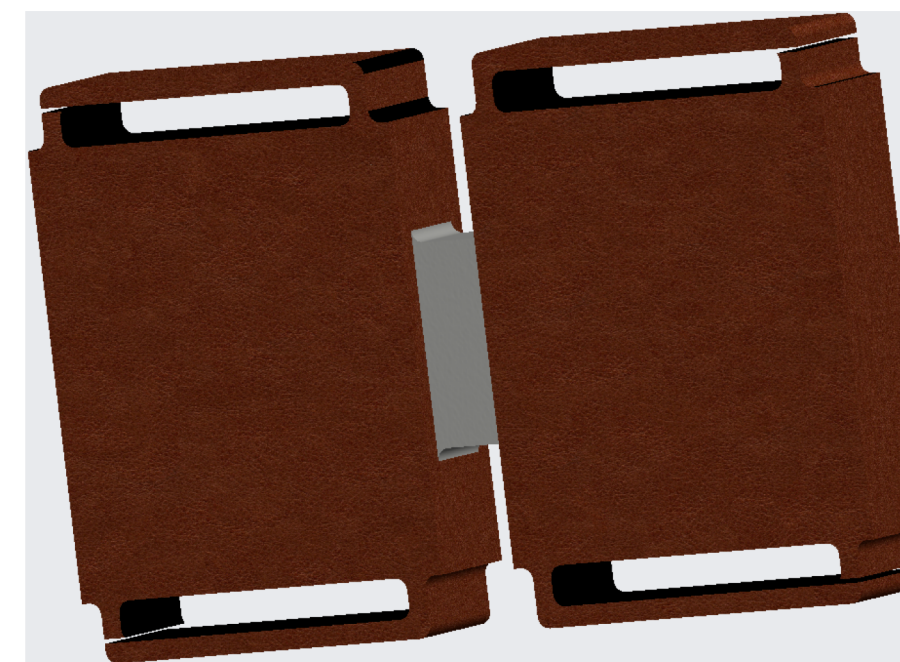
System Breakdown
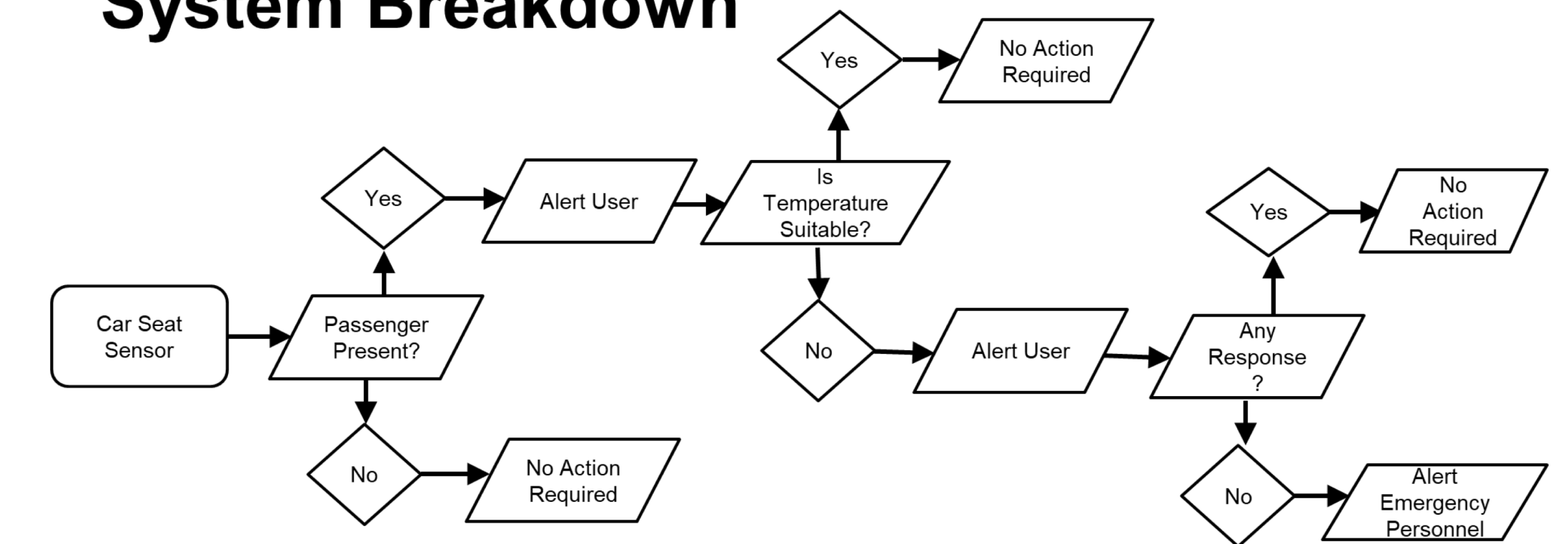
Future Work

- ❖ Order all components.
- ❖ Write code to operate sensors, receivers, and transmitters.
- ❖ CAD and 3-D print casing for key fob and clip.
- ❖ Tests code by simulating possible scenarios and seeing if desirable outcomes occur.
- ❖ Test temperature sensors by placing the thermistor and thermometer in same environment and compare readings.
- ❖ Test reed magnetic switch by seeing if a voltage is produced when brought together.
- ❖ Assemble final product and conduct final testing.