Aftermarket Child Detection for Car Seats

Virtual Design Review 1

Presenting:
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Our Team

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Overview

- Project Summary
- Background
- Project Scope
- Customer Needs
- Functional Decomposition
- Conclusion

Project Summary

- Organization: Student Entrepreneurship
- Liaison Engineers: Dr. Shayne McConomy and Dr. Michael Devine
- Problem Posed: Infant fatalities in parked cars due to heatstroke shows no sign of decreasing
- Primary Project Objective: Design and create a working prototype

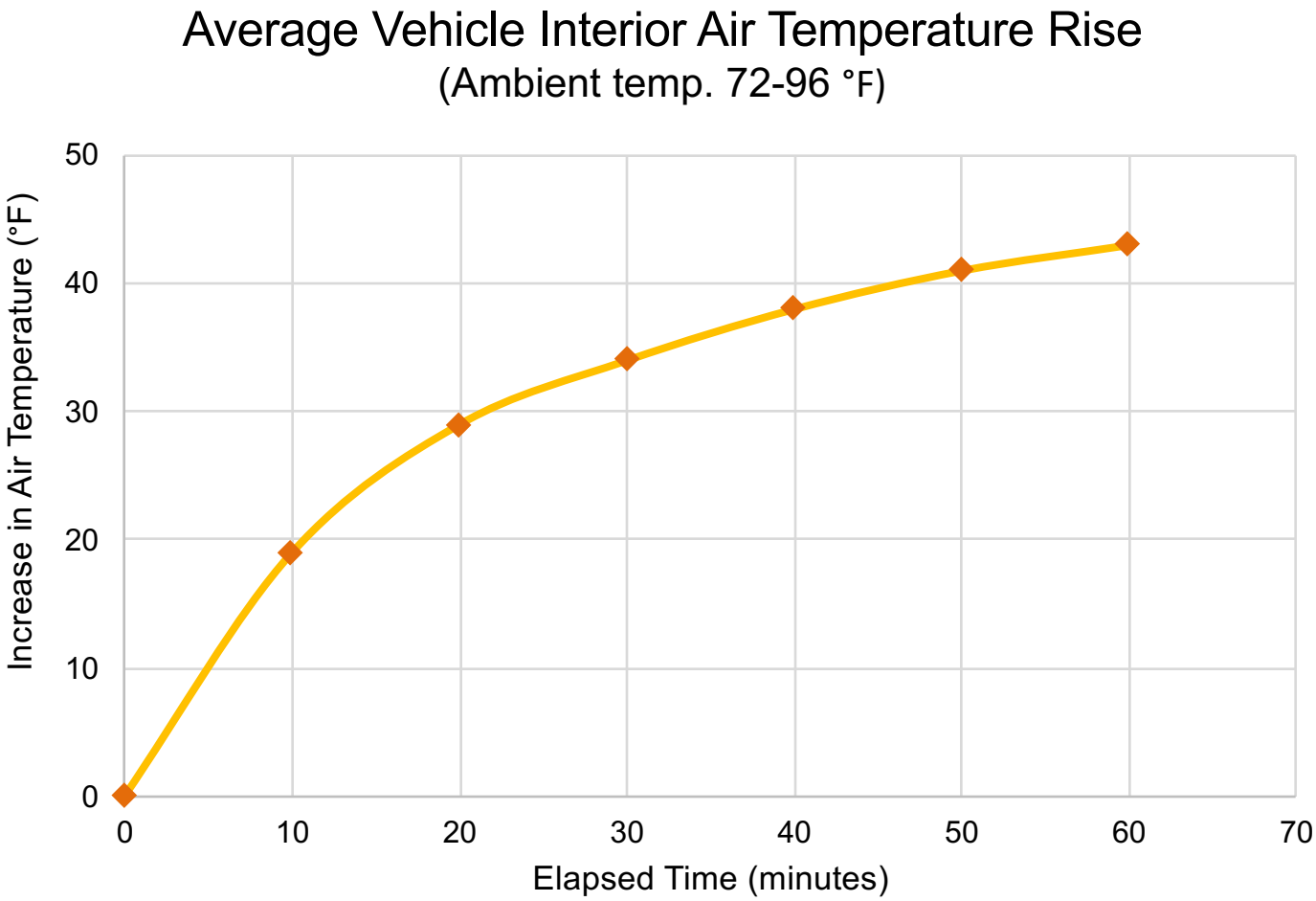
Project Summary

- Prototype Expectations: Create a working prototype that is simplistic and robust in design, while keeping cost as low as possible.
- Funds Available: $1000
- Project Expectations:
  - Implement Device
  - Compete in InNOLEvation Challenge
  - Submit conference paper to SAE world congress

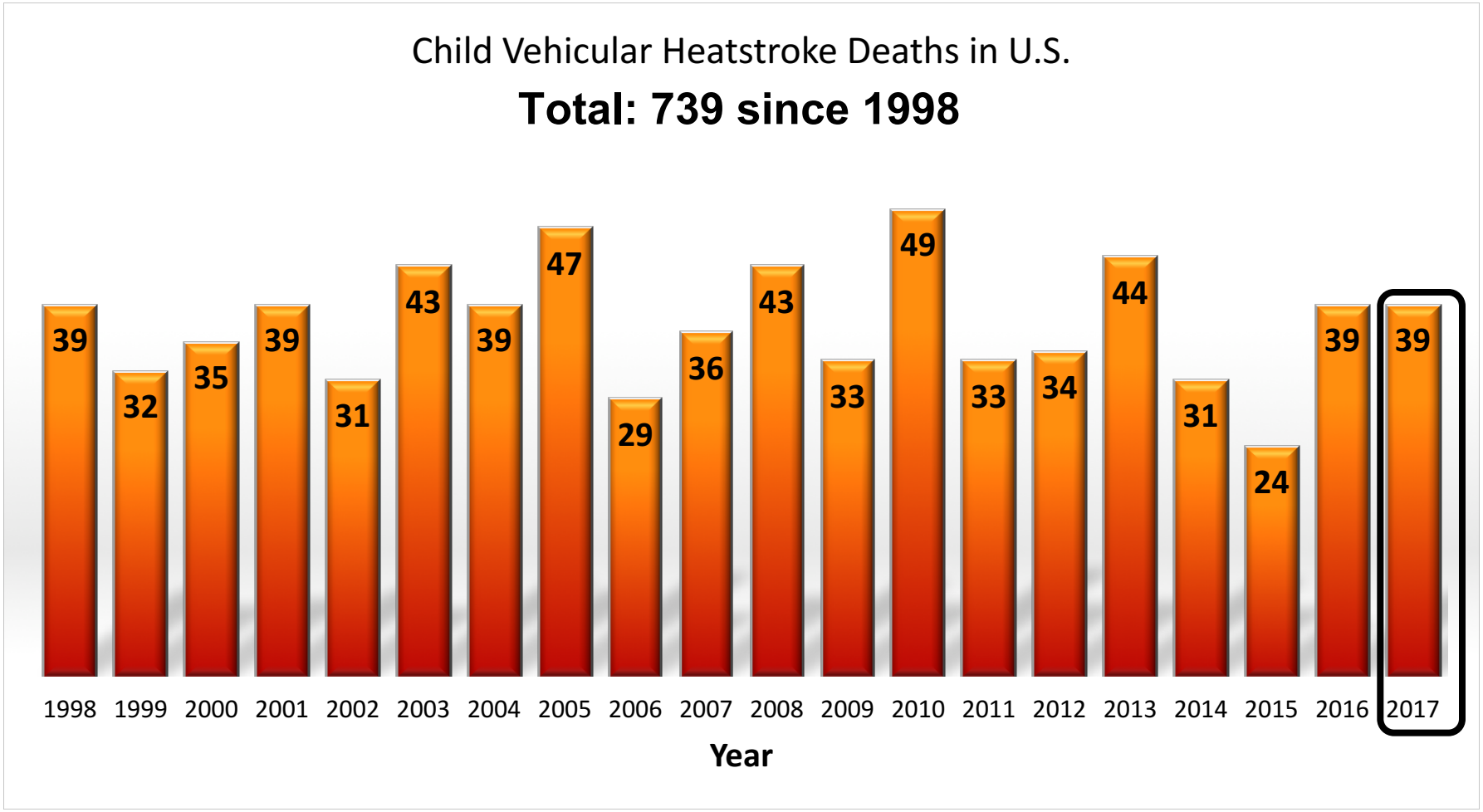
Background

- Children lack efficient thermoregulatory systems
  - -Body temp increases 3-5x faster than adults
  - -Heatstroke begins at 104 °F
  - -50% of children with heatstroke do not sweat

Background


Average Vehicle Interior Air Temperature Rise
(Ambient temp. 72-96 °F)
Increase in Air Temperature (°F)
0
10
20
30
40
50
0
10
20
30
40
50
60
70
Elapsed Time (minutes)

Background


Child Vehicular Heatstroke Deaths in U.S.
Total: 739 since 1998
39
32
35
39
31
43
39
47
29
36
43
33
49
33
34
44
31
24
39
39
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
Year

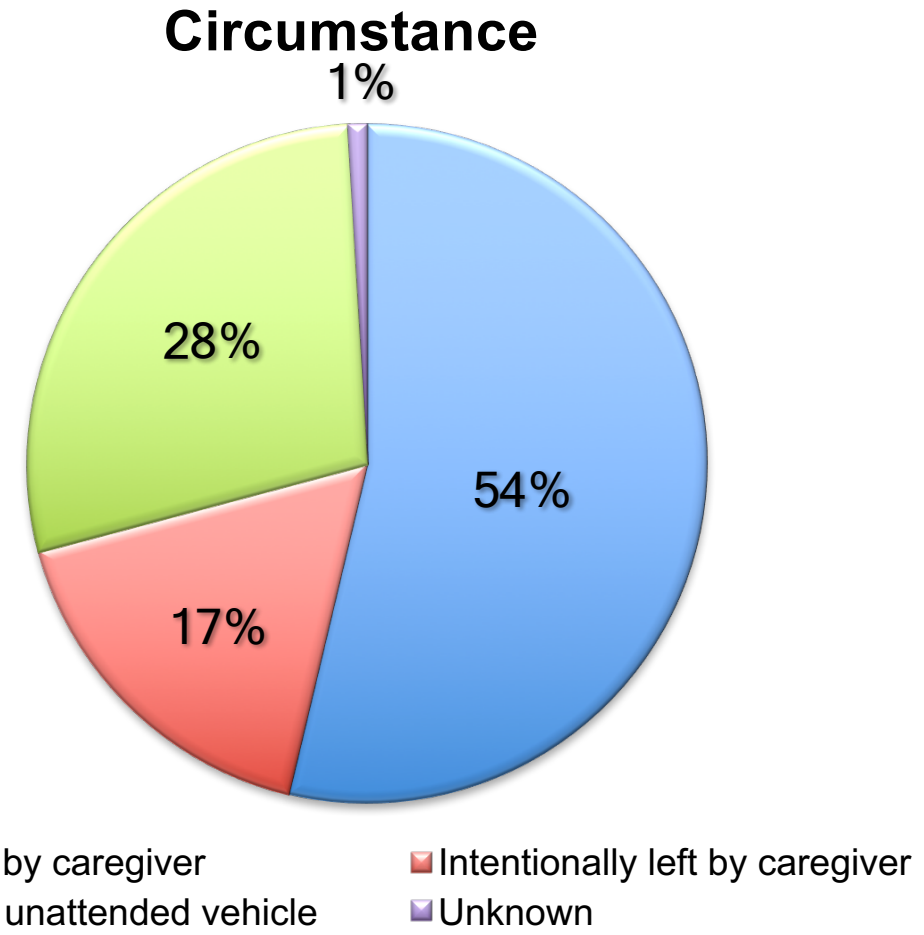
Background

Focusing on:

"Forgotten by caregiver"

"Intentionally left by caregiver"

71% of all cases



Project Scope

➢Develop a device that detects a child left in an unattended vehicle that is subject to dangerous conditions

➢Primary goals:

- Reduce infant fatalities
- Develop prototype
- Device needs to have Universal Adaptability
- Must be suitable for given environment

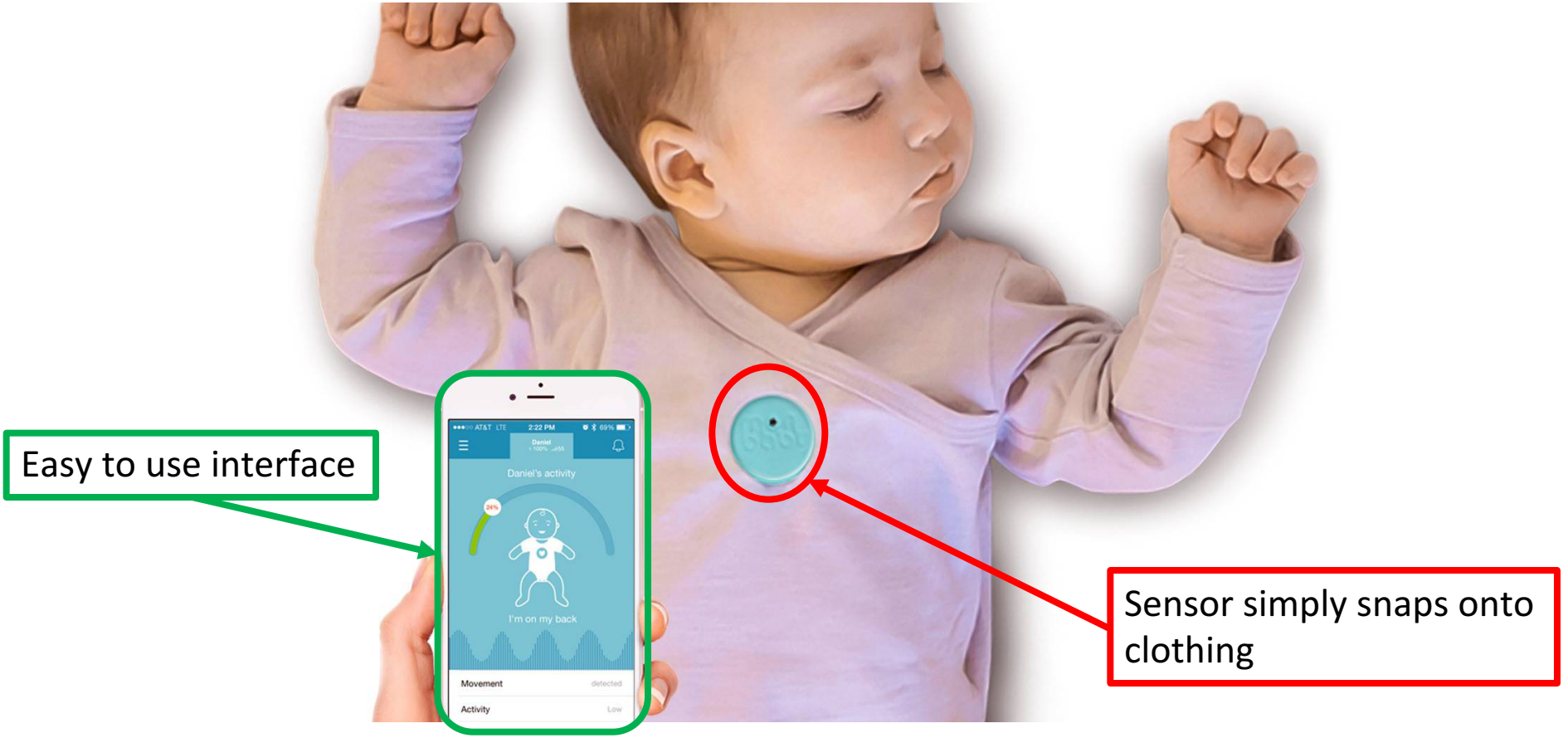
Project Scope

- Primary Market:
  - Parents who have children that are newborns up into the age of five.
- Secondary Market:
  - Car seat manufactures, potentially cars manufactures, and other baby device manufacturing companies

Customer Needs

- Developed after researching best-selling SIDS detection devices and baby monitors
- Recurring needs across multiple products included intuitive user interface, reliability, and adaptability
- Personas considered during the development of the needs

Customer Needs



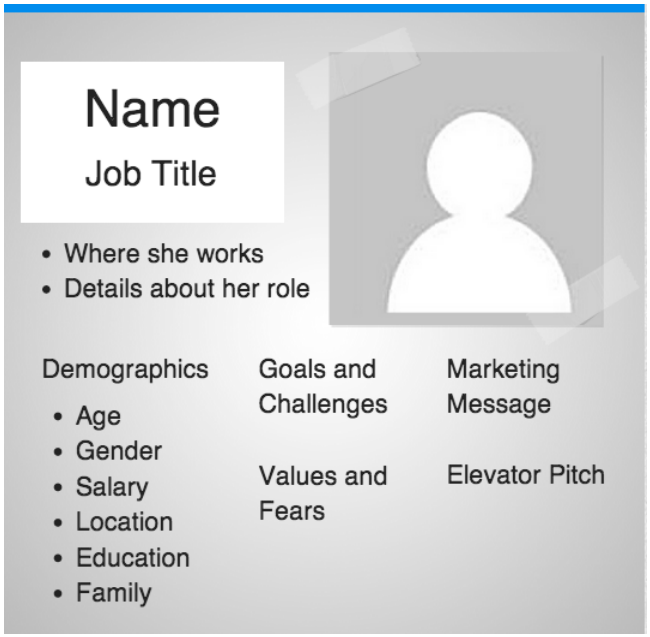
MonBaby Smart Button Baby Monitors

Customer Needs

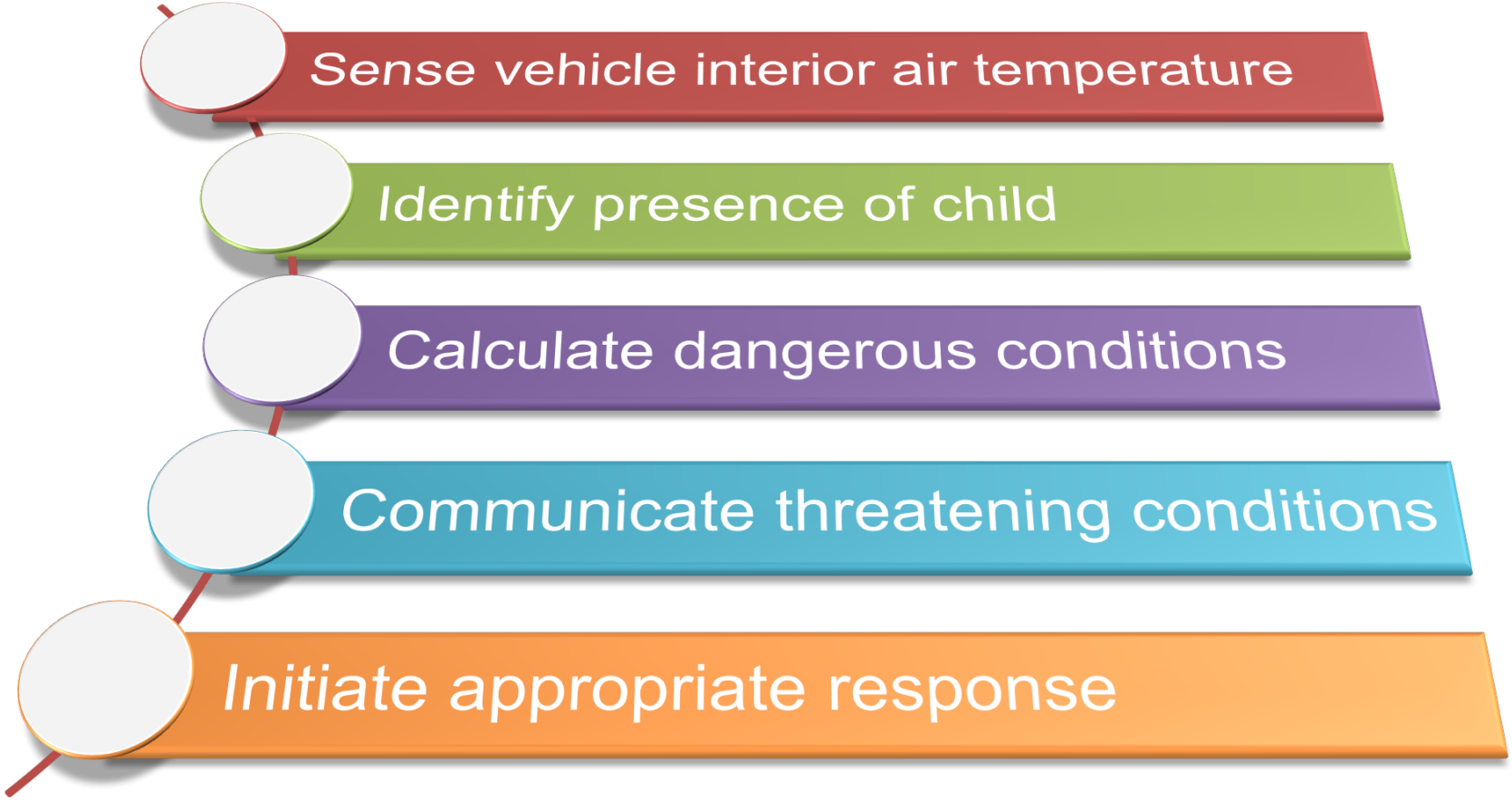
- Interpreted customer needs include:
  - Detect if a child is in the vehicle
  - Determine if air temperature is dangerous
  - Notify outside parties to respond
  - Aftermarket application
  - Compatible with mobile device
  - Incorporate with OEM technology

Customer Needs

- Currently in early stages of persona development
- Creating 3 primary user profiles
  - Single Mom
  - Stay-at-Home Dad
  - Soccer Mom



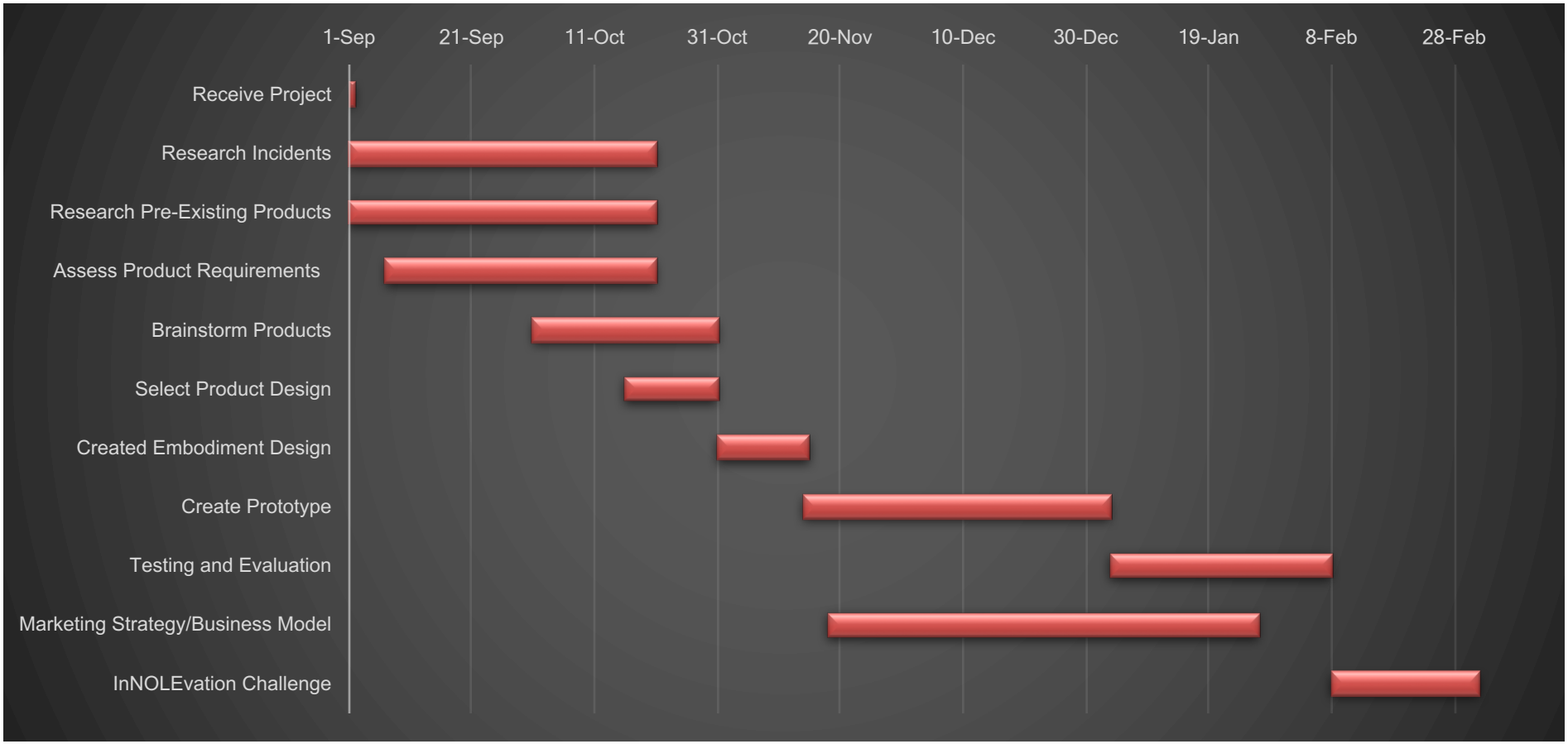
Functional Decomposition



Conclusion

- Thank you to…
- Dr. Michael Devine
- Dr. Shayne McConomy
- FSU College of Engineering
- Jim Moran School of Entrepeneurship

Conclusion


1-Sep
21-Sep
11-Oct
31-Oct
20-Nov
10-Dec
30-Dec
19-Jan
8-Feb
28-Feb
Receive Project
Research Incidents
Research Pre-Existing Products
Assess Product Requirements
Brainstorm Products
Select Product Design
Created Embodiment Design
Create Prototype
Testing and Evaluation
Marketing Strategy/Business Model
InNOLEvation Challenge

References

- *[]* Heatstroke Deaths of Children in Vehicles. (n.d.). Retrieved October 5, 2017, from http://noheatstroke.org/
- *[] Graco Convertible Car Seat. https://www.target.com/p/graco-174-contender65-convertible-car-seat/-/A-17273415*
- *[] MonBaby Smart Button Baby Monitors. (n.d.). Retrieved October 10, 2017, fromhttps://www.target.com/p/monbaby-smart- button-baby- monitor-pink/- /A-50768511*