

# Wearable Detection Device for UV And Polluted Air Exposure

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## Introduction and Background

Ultraviolet radiation is the primary cause of skin cancer. Air pollution impairs people's health. Therefore, people staying outdoors exposed to direct UV and air pollution need to be notified if they have been exposure to too much UV or air pollution for too long that they are in danger.

Some products in market like a UV- detected wristband called Sunfriend has no wireless communication which means the data cannot be recorded and displayed. Other air-detected devices are too big or heavy to be wearable.

Above all, there is no such a wearable device type which we are working on, or the existing devices are not good enough.



## Goal

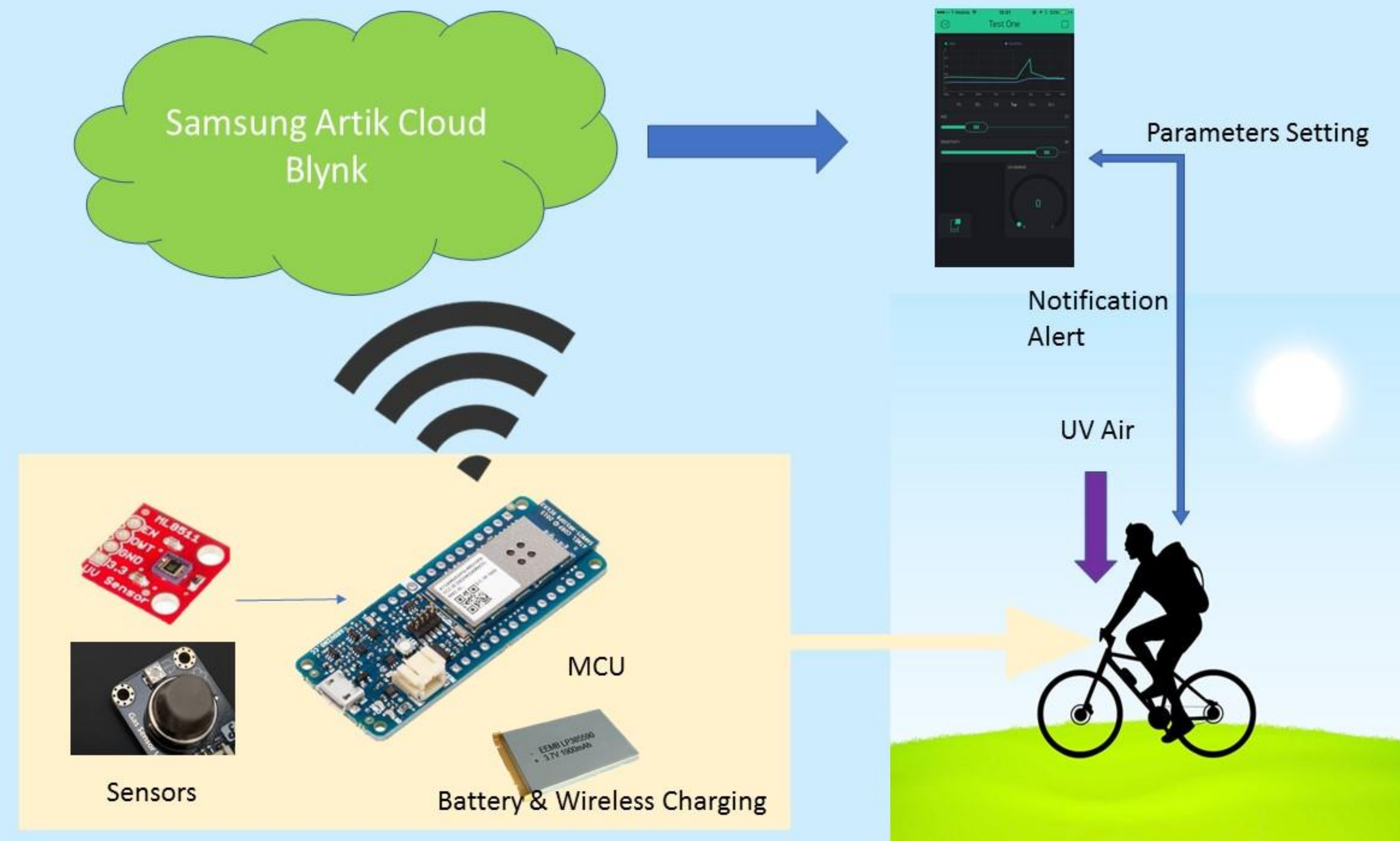
Develop a wearable device:

- To detect the exposure to the Ultraviolet and polluted air of the people who wear this device,
- To alarm when exposed to dangerous amount of UV or air pollution.
- To transmit data collected to smartphones or PCs where data can be organized and analyzed.

## Approach and Innovation

The project is specified into hardware design, mathematical modeling and software design.

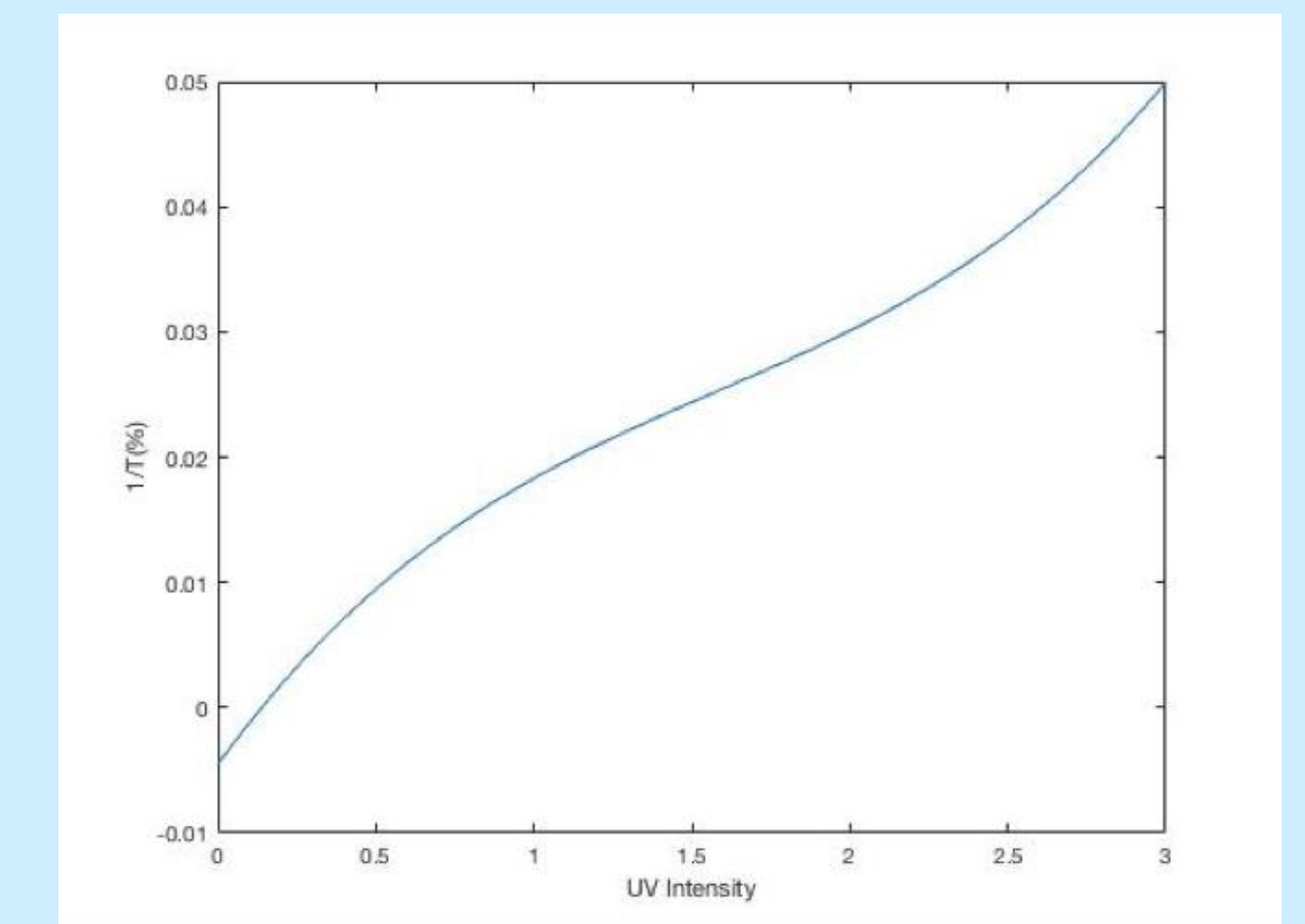
- Hardware includes sensors circuit design, programming on microcontrollers and wireless communication.
- Mathematic modeling includes doing research on human's tolerance to UV and air pollution and building a model to analyze data for alarm.
- Software design is mainly about developing a software interface on phones, PC or Cloud platform for data analysis and display.



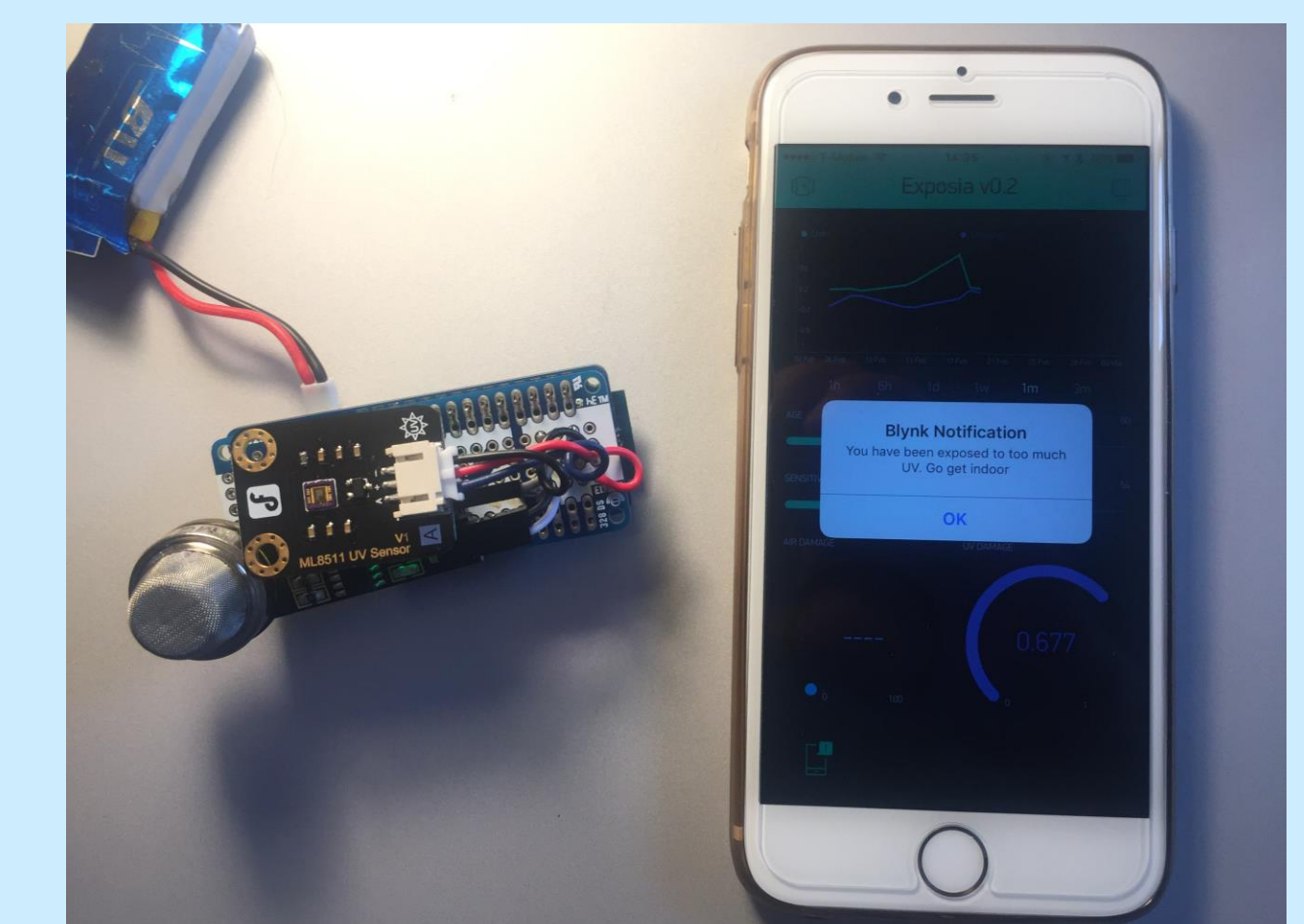
## Progress

Currently second prototype with a 0.2 version App has been developed.

- Size minimised
- UV Sensing and Alert with New model
- Gas Sensing and Alert
- Wifi Communication with Disconnect Failsafe
- Data Display on Artik Cloud and Blynk Phone App
- Wireless Charing with LiPo Battery

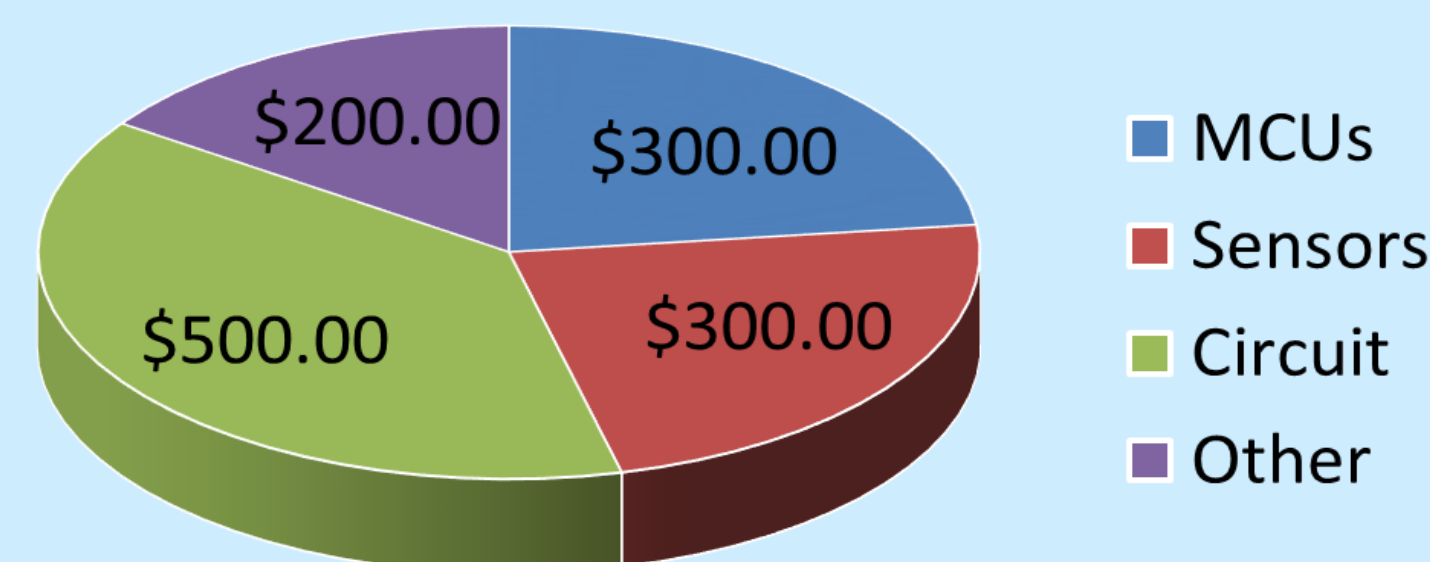


UV damage model

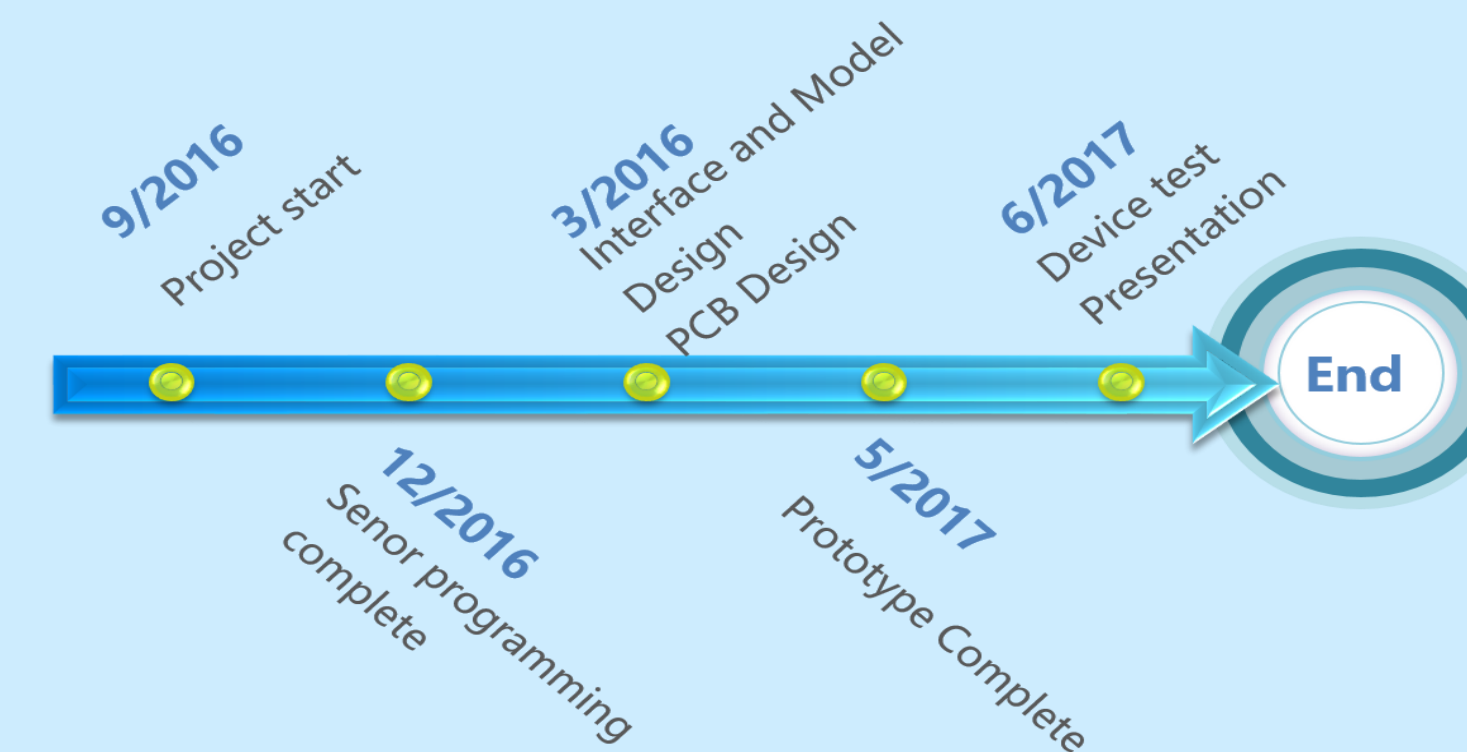


Second Prototype

## Budget



## Timeline



Link for more information

<http://www.ucimaeprojects.com/projects/2016-2017-sensor-based-solutions-to-real-world-problems/>

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