Wireless Inventory Tracking

Northwestern University EECS 395: Internet of Things

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INTRODUCTION

Businesses such as food suppliers and grocery stores need a way to closely monitor inventory for day-to-day operations. Currently, humans are required to scan inventory to make sure shelf supplies are properly managed. This manual process is inefficient, however, as it is both costly and time-intensive.

Our project aims to resolve these issues by employing concepts of Internet of Things to provide timely and accurate information of inventory supplies wirelessly and autonomously. By using weight sensors and a WiFi-enabled microcontroller, we are able to notify re-suppliers of low stocks and provide rich data for future optimization of inventory.

ARCHITECTURE

- SCALE
- LOAD CELL AMP.
- MICROCONTROLLER & CLOUD
- OUTSIDE SERVICES

EQUIPMENT

Weight Sensing
- WH-B05 electronic scale
- HX711 load cell amplifier
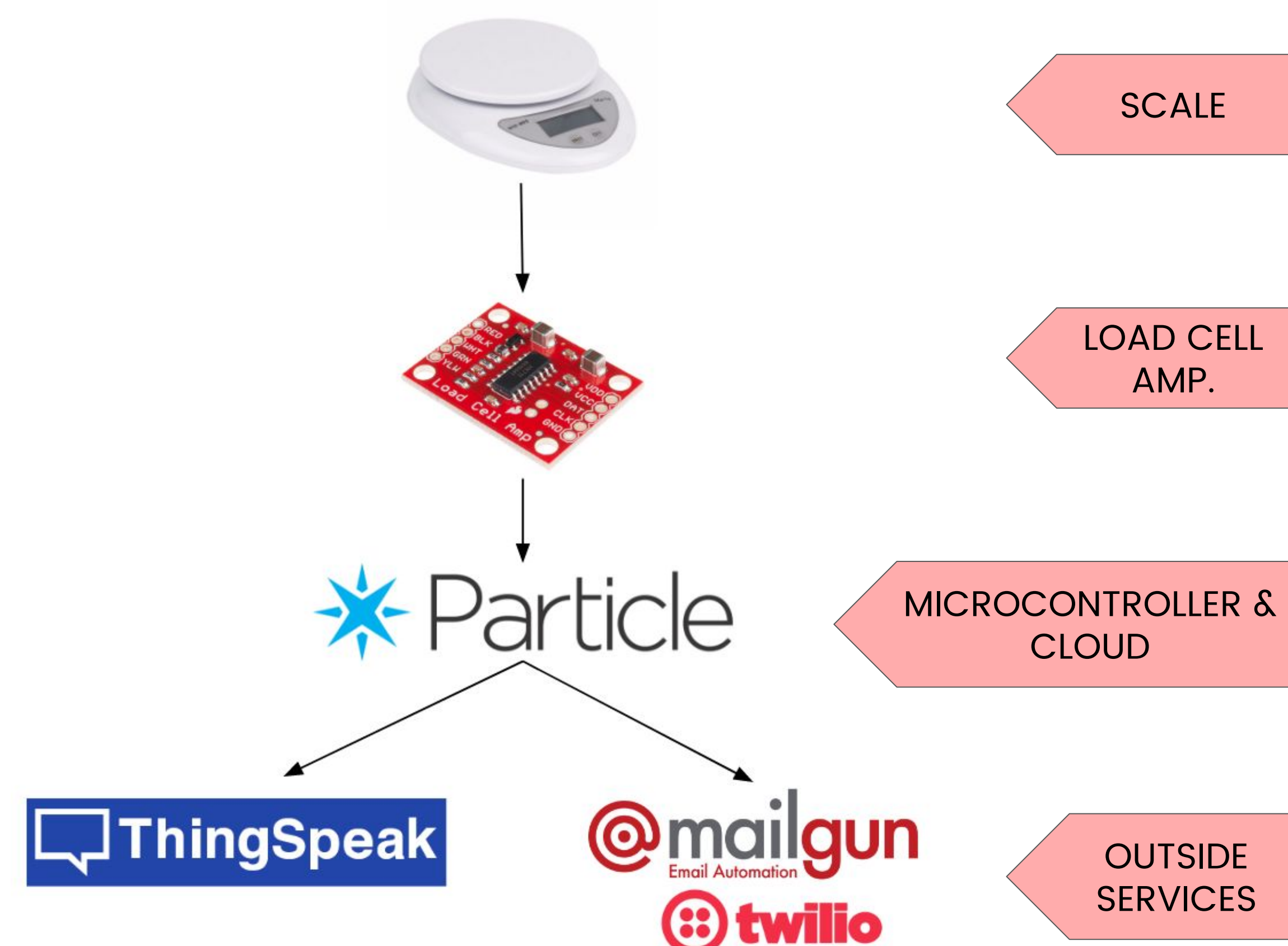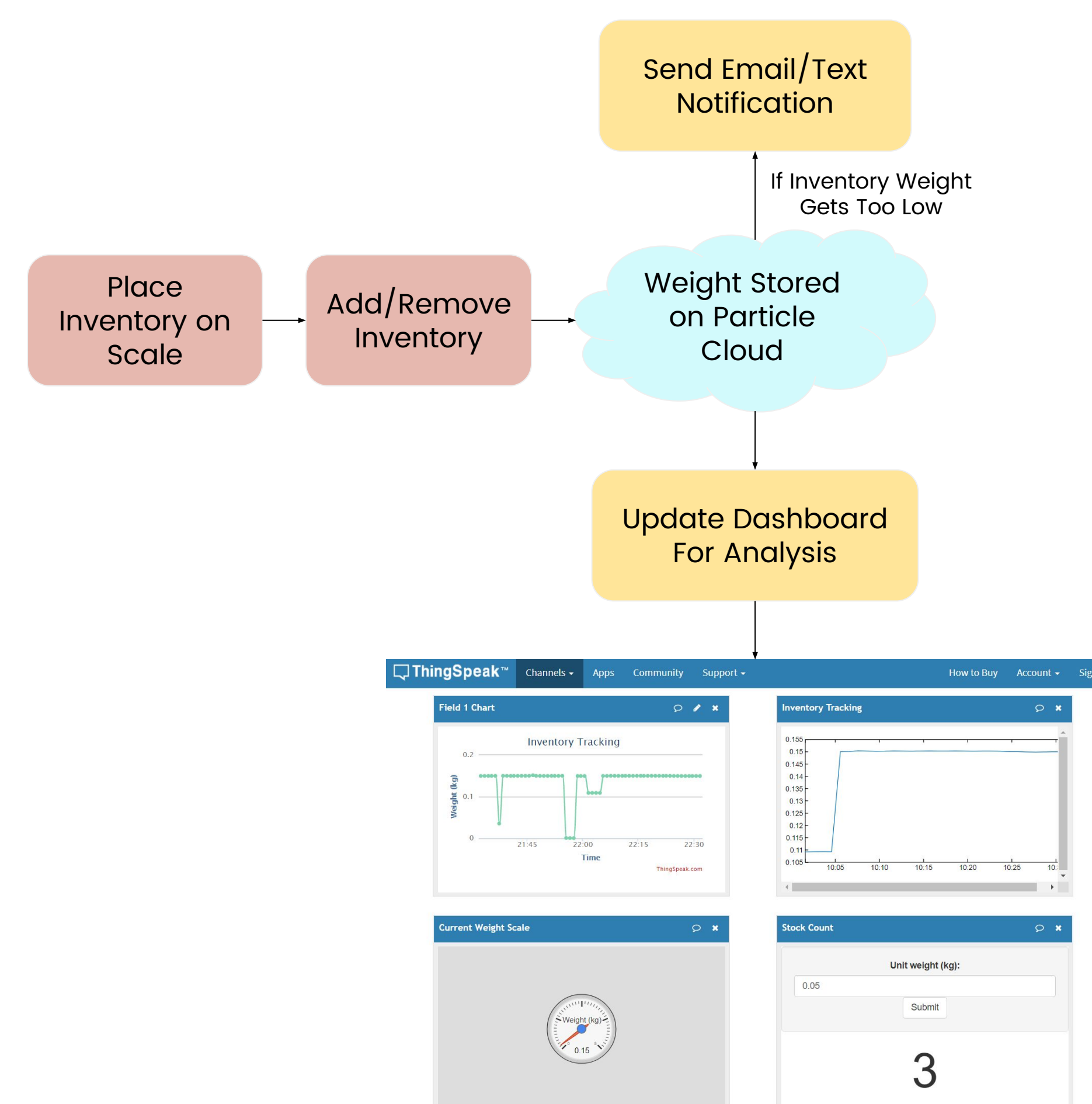
Microcontroller
- Particle Photon

PROBLEM

Efficient inventory management is important in order to ensure customers have the right products and the right amount of product at all times. If shelf inventory data is not accurate, businesses may lose money by not having what customers want to buy. The current process of humans manually tracking items makes it impossible to effectively track stock and provide timely information for resupplying.

WORKFLOW

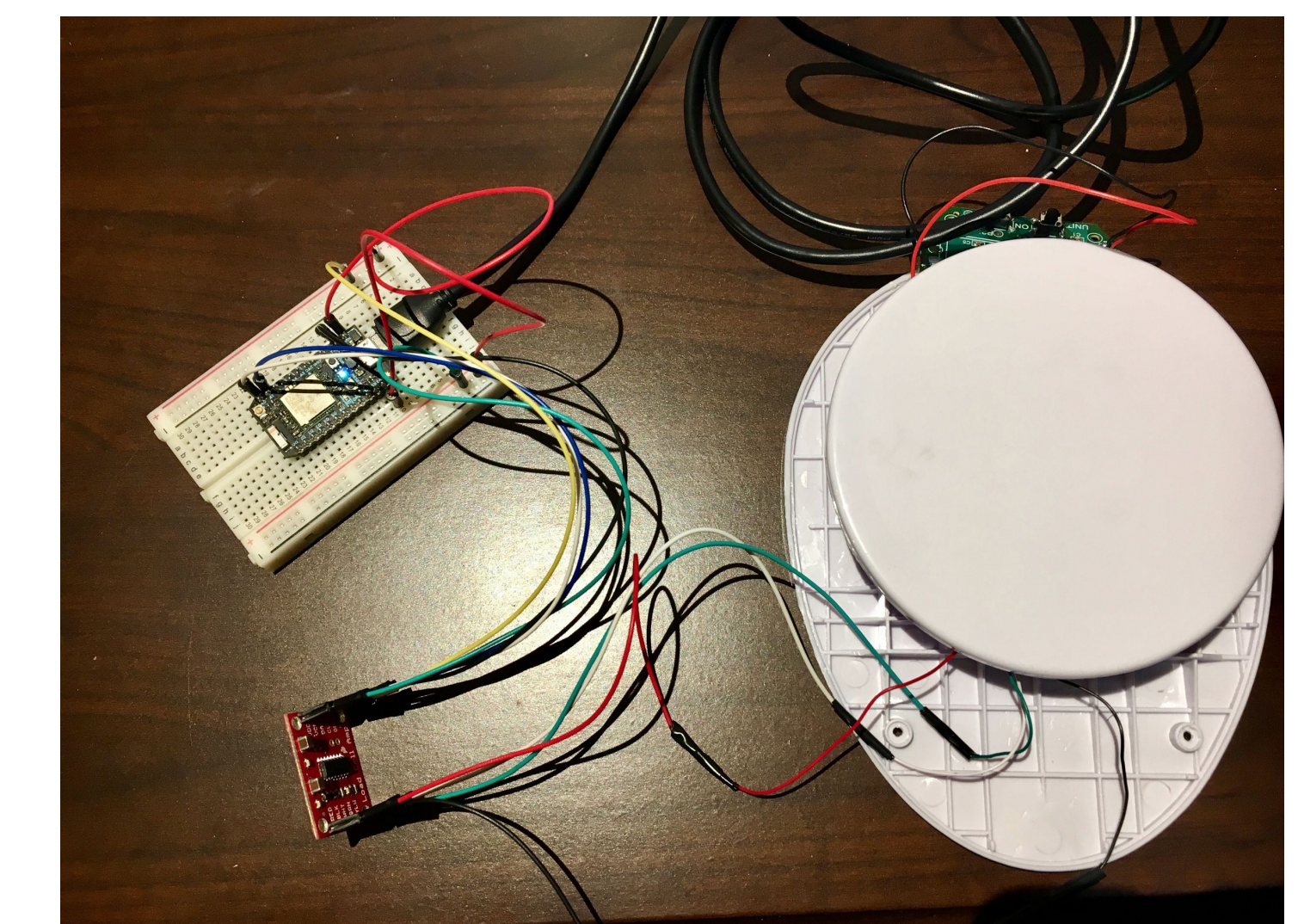Send Email/Text Notification

If Inventory Weight Gets Too Low

Place Inventory on Scale → Add/Remove Inventory → Weight Stored on Particle Cloud → Update Dashboard For Analysis

FUTURE WORK

Dashboard
- Allow users to manually set bottom weight cutoff to send notifications
- More extensive unit inventory analysis to optimize future inventory management
- Cross-platform monitoring: mobile/tablet interfaces for use in the warehouse

Inventory Tracking
- Increase scale size to accommodate larger inventory loads
- Redesign into easy-to-implement form factor
- Combine weight sensing with other types of sensors to provide more info