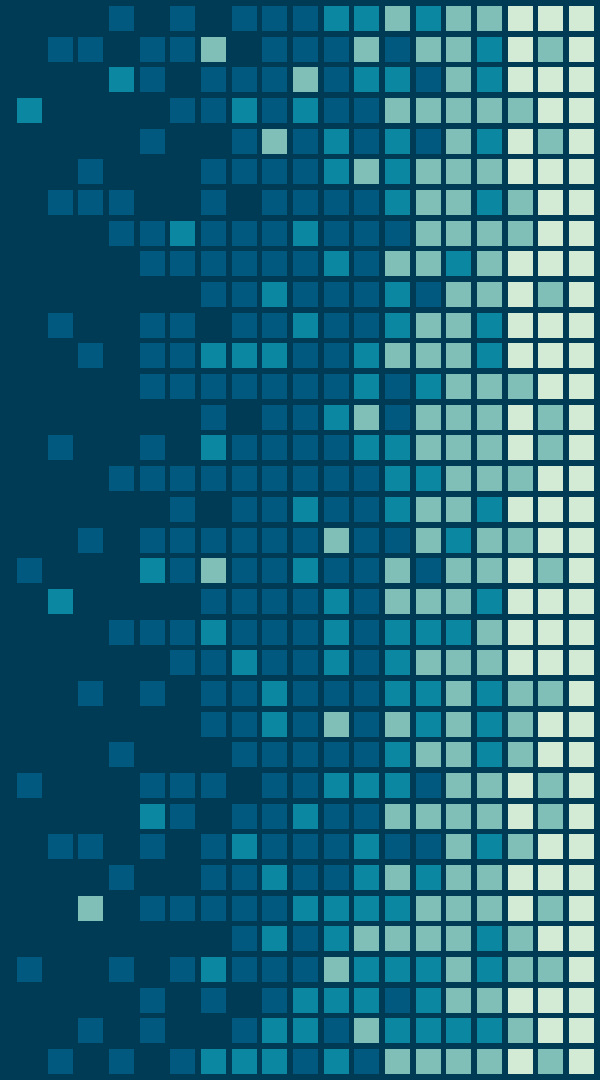


# Critical Design Review Presentation

Firmware

*Spring 2018*

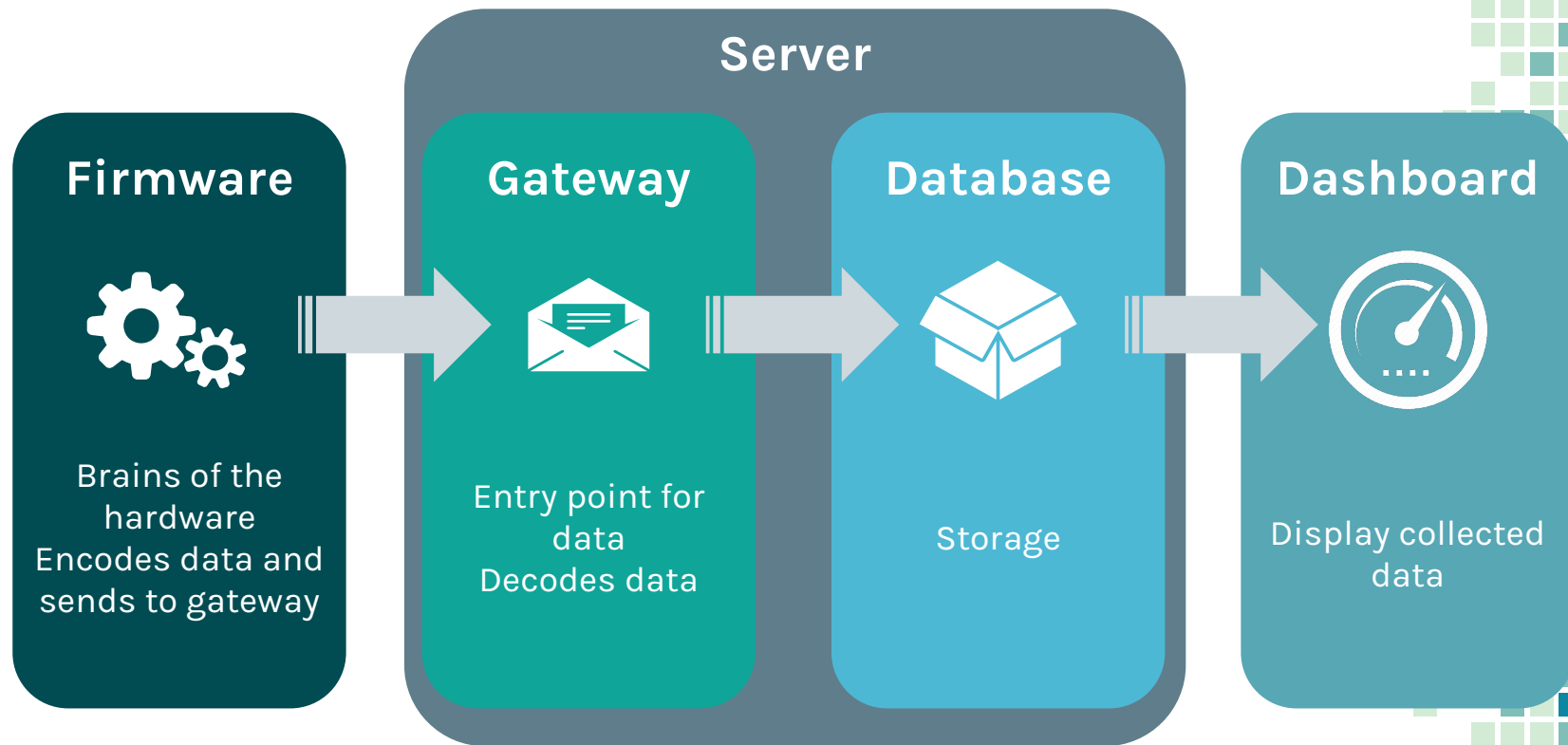


# Overview

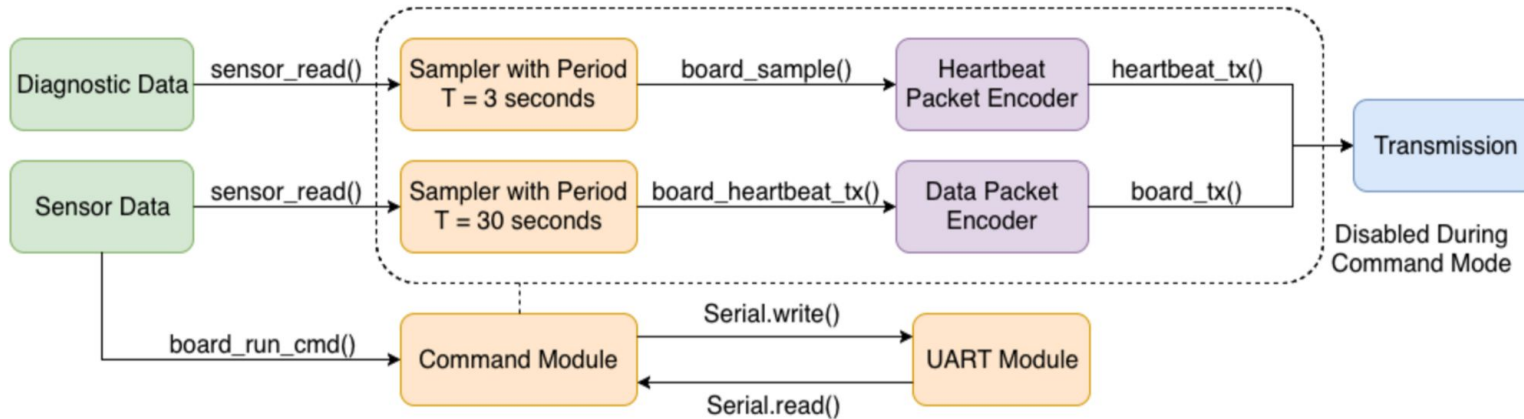
- Block Diagram
- Firmware Pseudocode
- Progress
- Problems / Issues
- Gantt Chart
- Future Goals



# Software Block Diagram

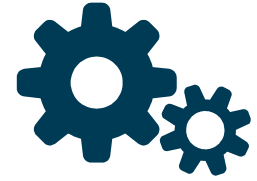


# Firmware Functional Block Diagram



# Firmware Block Diagram





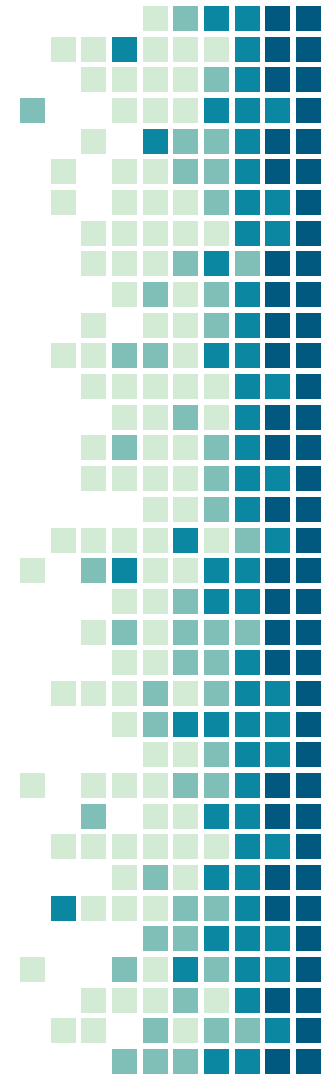
# Firmware Pseudocode

## SETUP

Build based on generation of weatherbox  
Initialize board struct

## LOOP

Check if there's user input  
    If input, enter Command Mode  
Sample Heartbeat Data  
Transmit Heartbeat Packet  
Sample Sensor Data  
Transmit Sensor Packet





# Current Progress

- Transfer packets via XBees with Snapdragon
- Fix all coding errors in Snapdragon
- Implement GPS (MTK3339)
  - For Team Cranberry and Team Apple





# Problems / Issues

- Implementing Snapdragon
  - XBee Communication
  - Debugging Code
- GPS
  - Research:
    - How-it-works
    - Modules







# Future Goals

- Successfully transmit packets via Xbees utilizing Snapdragon
- Finish Implementing Sensors into Code
  - GPS
  - Real-Time Clock
- Assist other teams with Software



# Gantt Chart

| Firmware Gantt Chart                |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
|-------------------------------------|-----------|-----------|----------|-----------|-----------|-----------|----------|-----------|-----------|-----------|----------|----------|-----------|-----------|-----------|-----------|
| Week                                | 2         | 3         | 4        | 5         | 6         | 7         | 8        | 9         | 10        | 11        | 12       | 13       | 14        | 15        | 16        | 17        |
| Date                                | 1/22/2018 | 1/29/2018 | 2/5/2018 | 2/12/2018 | 2/19/2018 | 2/26/2018 | 3/5/2018 | 3/12/2018 | 3/19/2018 | 3/26/2018 | 4/2/2018 | 4/9/2018 | 4/16/2018 | 4/23/2018 | 4/30/2018 | 5/7/2018  |
| <b>Presentations / Final Report</b> |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| Proposal                            |           | 2/3/2018  |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| Preliminary Design Review           |           |           |          |           | 2/24/2018 |           |          |           |           |           |          |          |           |           |           |           |
| Critical Design Review              |           |           |          |           |           |           |          |           | 3/24/2018 |           |          |          |           |           |           |           |
| Demonstration/Final Presentation    |           |           |          |           |           |           |          |           |           |           |          |          |           | 4/28/2018 |           |           |
| Final Repot                         |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           | 5/11/2018 |
| <b>Research</b>                     |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| Overview of Firmware                |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| C++                                 |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| <b>Firmware</b>                     |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| Implement Snapdragon                |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| Implement GPS                       |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| Implement Real-Time Clock           |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| Gateway (Snapdragon)                |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| Gateway (Guava)                     |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |
| Potential New Features              |           |           |          |           |           |           |          |           |           |           |          |          |           |           |           |           |

Questions?

