

Hardware design changes & improvements

- Multi-Tag detection capabilities. In theory up to 65,000 devices
- Improved system design so each beacon is independent of each other (somewhat)
- Beacons wireless communication capabilities via WiFi - UDP
- Integrated design assembled onto perfboards
- Devices are more portable and are battery powered
- Re-designing for casing for beacons and id tags to be 3D printed

Software Design changes & improvements

- Wireless communication capabilities via WiFi
- Ability to send and receive command/data wirelessly
 - start/end tracking
 - Health checks - ping
 - Recovery - reboot
- UI usability improvements

Risk

- Adding more components increase risk of beacon failure
 - Redundancy
 - Recovery mechanisms
- Increased power usage
 - Back up batteries
- External/Environmental risk
 - Casing design prone to fire, water, dust, smoke, structural damage
 - Casing design must be optimized further to protect beacon internal components
- By adding Wi-Fi and casing, ranging accuracy is affected
 - Antenna/environment calibration and optimization

Usability

- Maintenance/Serviceability - HW/SW
- Better handle of beacon failures
- Beacon casing - lid can slide and open to allow easy access
 - Able to be Locked to prevent tampering
- ID tags will be screwed together to prevent tampering
- Usability - HW/SW
 - Universal and intuitive UI elements for better usability
 - UI Feedback to indicate action response and various system status

Future Work

- Further Refinement HW/SW for Final version
 - More streamlined and usable UI
 - More reliable HW - more recovery mechanisms
 - Make everything look nice
- Integrated PCB design (out of scope of project timeline)
- Environmental hazard proofing (out of scope of project timeline)
 - Look into fire resistant material
 - Ingress Protection (IP) rating
 - Water/Dust proofing