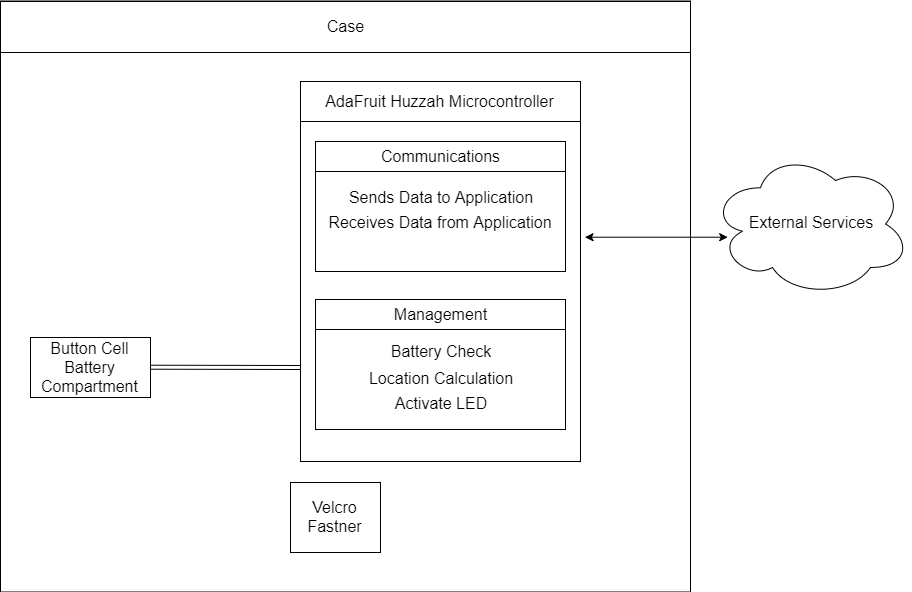
|  |  |
| --- | --- |
| **Group** 27 | Item Tracker |
| **Major:** | **Team members:** |
| CS | Mohammad Aljagthmi |
| EE | Ryan Ly |
| CEG | Jake Manser |
| CS | Donald Taylor |

**System Architecture**

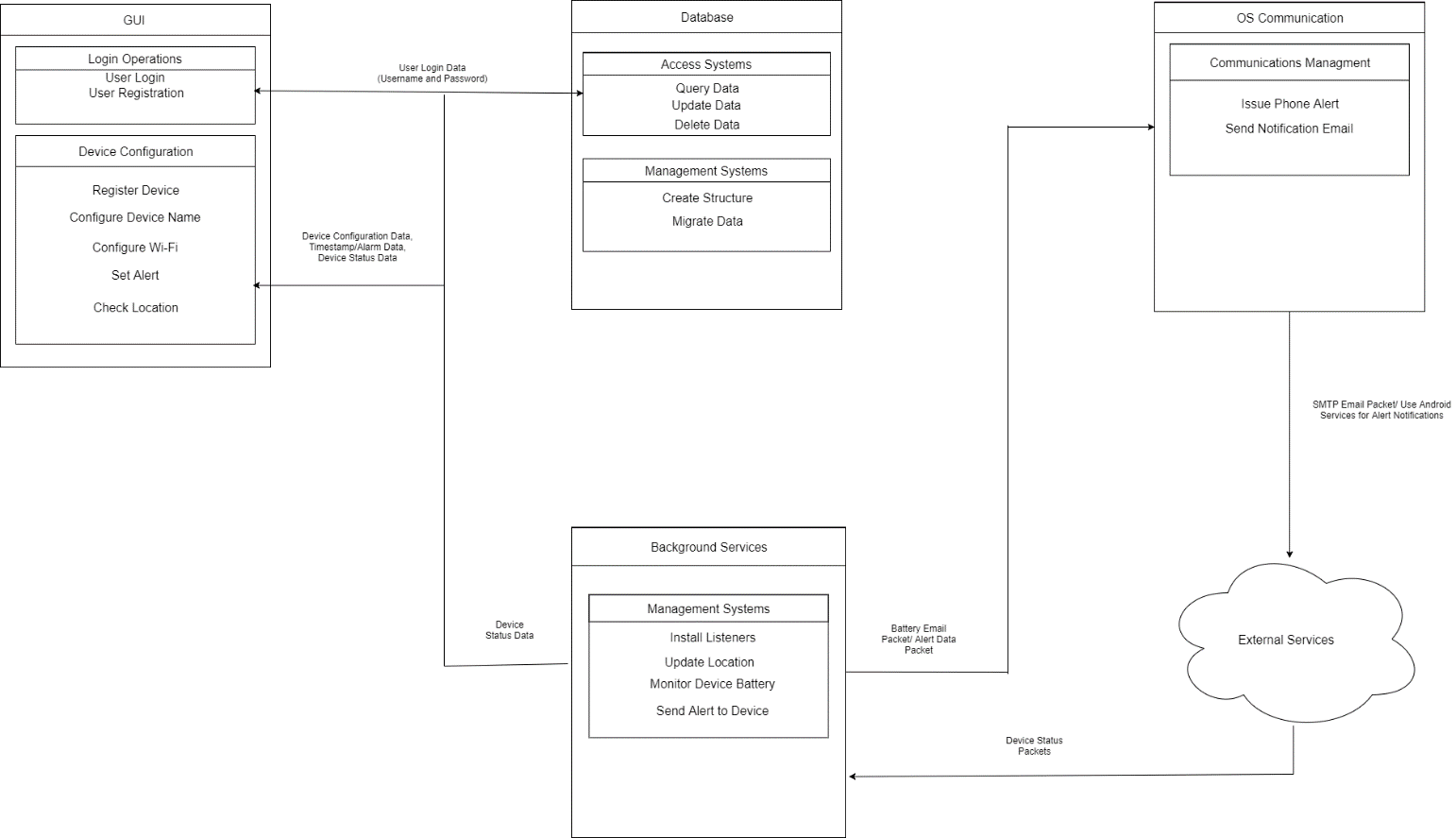
Hardware Architecture



Hardware functional block definitions

1. External Services – Functional unit used to describe external communication means and hardware to interact with the IoT.
2. Case – The container that houses the Adafruit Huzzah Microcontroller and the battery compartment. Designed to protect the hardware from elemental and environmental requirements.
3. Velcro Fastener – Velcro pad used to attach the case to SPI standards A-3, B-1, B-2, B-3, C-1, C-2, C-3 for molded plastic.
4. Button Cell Battery Compartment – The container to hold the button cell battery supply to power the microcontroller.
5. AdaFruit Huzzah Microcontroller – The Arduino microcontroller that is the means for supplying location information and communicating location data back to the application. Contains two subsystems:
   1. Communications – sends and receives data via the internal Wi-Fi antenna of the microcontroller.
   2. Management – collects status data from the battery, accumulates the location footprint data, and activates the LED upon receipt of alert data packet.

Software Architecture



Software functional block definitions

1. GUI – The graphical user interface application designed to allow the user to access and edit data stored in the database. This functional block contains two subsystems:
   1. Login Operations – controls the user access to the application or registration if no user data is found.
   2. Device Configuration – controls configuration, addition, and display of Tracker information from and to the database for the GUI.
2. Database – The storage paradigm for Tracker statistics and configurations. This functional block contains two subsystems:
   1. Access Systems – runs queries against the stored data and returns, updates, or deletes that data according to user defined or system requested inputs.
   2. Managements Systems – controls the database modules construction or migration.
3. Background Services – The subsystems that will need to be launched when the device is started to handle the intermittent communication with the Trackers. This functional block contains one subsystem:
   1. Management Systems – controls the initial setup and controls the behaviors for the listening routes required for intermittent reporting of data by the Tracker.
4. OS Communications – The subsystem to interact with the OS features that allow for external communications from the device. This functional block contains one subsystem:
   1. Communication Management – Issues the mobile alerts, notifications, or email to the user.
5. External Services – Functional unit used to describe external communication means and hardware to interact with the IoT.