

Secure Traveler

Preliminary Design Review
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The Team



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The Problem

- We forget things, lose things, divide our limited attention, and make choices we later regret.
- Traveling tourists are prime suspects for theft.
 - 33% of travel insurance claims are for lost/stolen possessions.
 - Each day an estimated 400,000 pickpocket incidents occur around the world.
- Our antiquated methods need to be improved as size decreases and price increases.
 - Retracing your steps
 - Asking others and security
 - Assuming you forgot to bring it
 - Hoping for a good samaritan to find it

Statistics on the Problem

- Lost items cost Americans \$5,591
- The average American wastes 55 minutes a day looking for things they own but can't find.
- Average Americans spends two years of their life looking for lost or misplaced items.



Effects of the Problem on Individuals

- Time Loss: Time is the most valuable resource. Why use it inefficiently?
- Memory Overload: Extra Stress when sleeping and during the morning from an Age old issue
- Price: We could all use a personal secretary for daily life but the budget has cobwebs



Calm down and Relax

- Extra safety in public allowing greater focus on work or important tasks
- Stop writing lists that you have to check everytime you leave the house
- Have more information when making decisions on lost items
- A friend to find items that are lost



Requirements Analysis: Specifications

- Effective communication range between device and phone of less than 100m
- Communicate device position with server
- Periodic location updates
- Respond in under two seconds
- Small and lightweight

Requirements Analysis: Inputs and Outputs

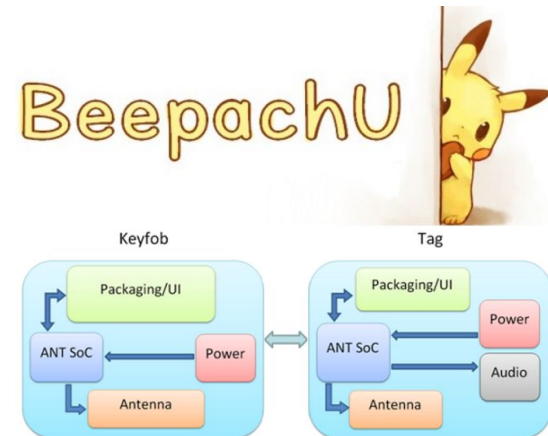
- **Inputs**
 - Device/Phone
 - Bluetooth
- **Outputs**
 - Smartphone
 - Location
 - Push notification
 - Device
 - Sound

Design Alternatives

- StuffTracker
 - RFID
 - ItemID, ItemName, Location
 - Database
 - Microsoft Access
 - PC/smartphone
 - Google Maps
 - Last known location
- Beepachu
 - Transmitter/Receiver
 - Hot/cold



Figure 3: Sample application map view with "umbrella" marker highlighted

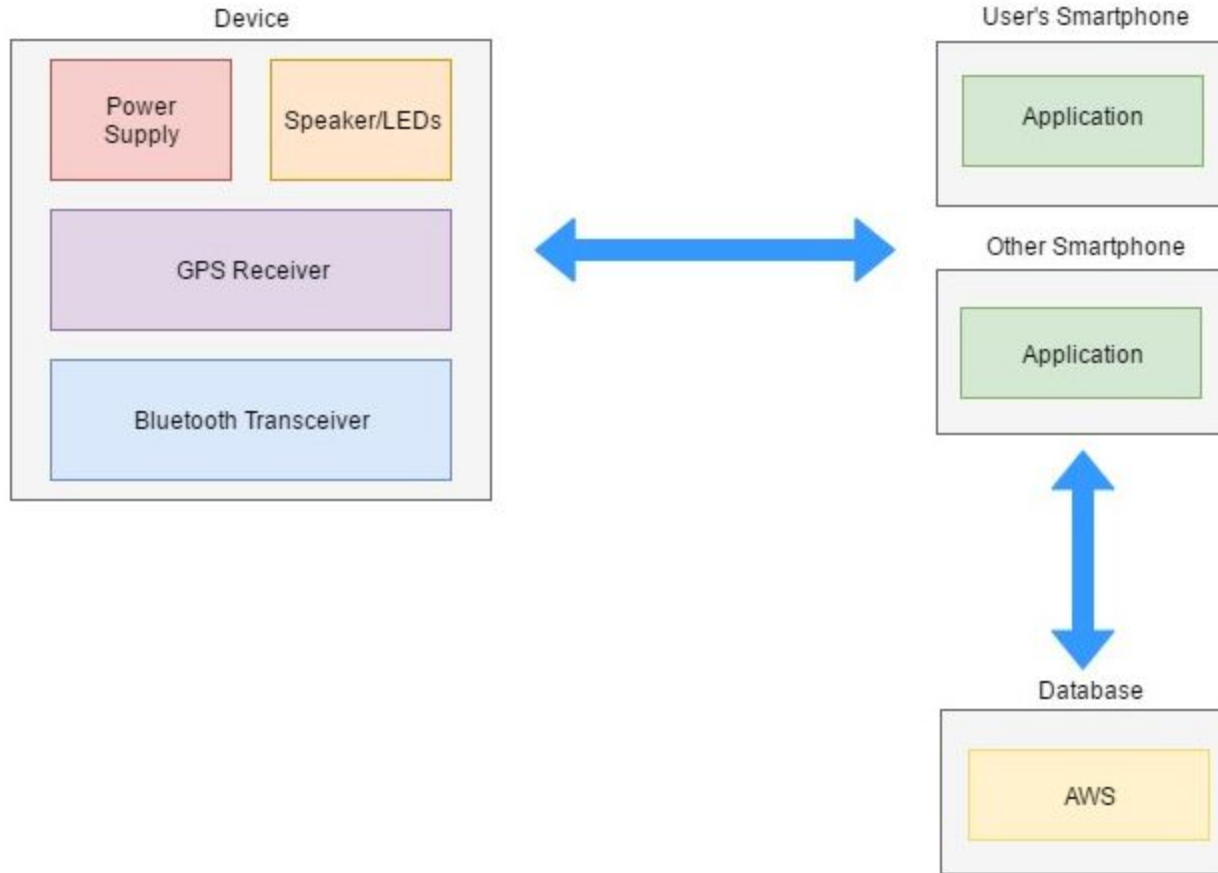


Our Solution

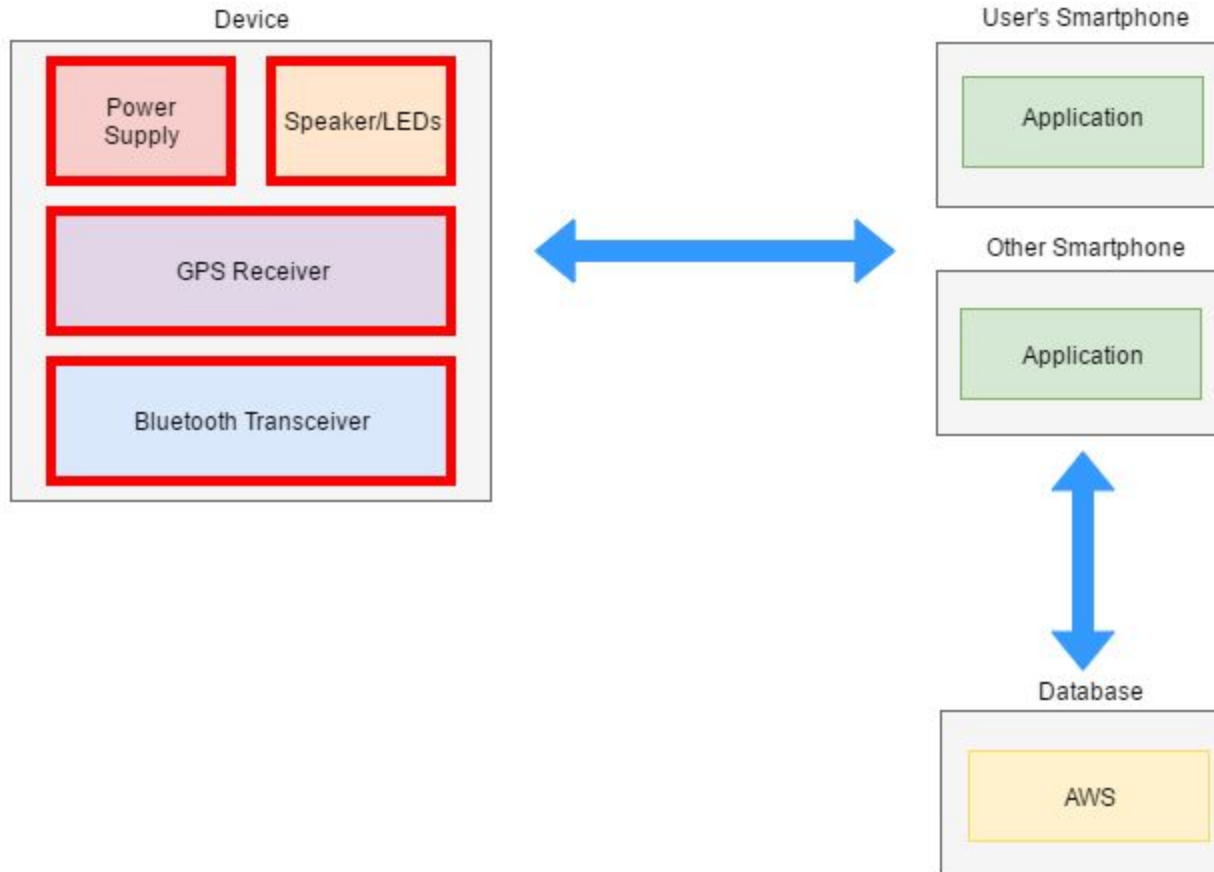
- Secure Traveler
 - Device
 - Smartphone
 - Application
 - Database
 - Amazon Web Services
- PCB
 - GPS
 - Bluetooth
 - Power
 - Audio/LEDs
 - WiFi (Security alternative)



Block Diagram



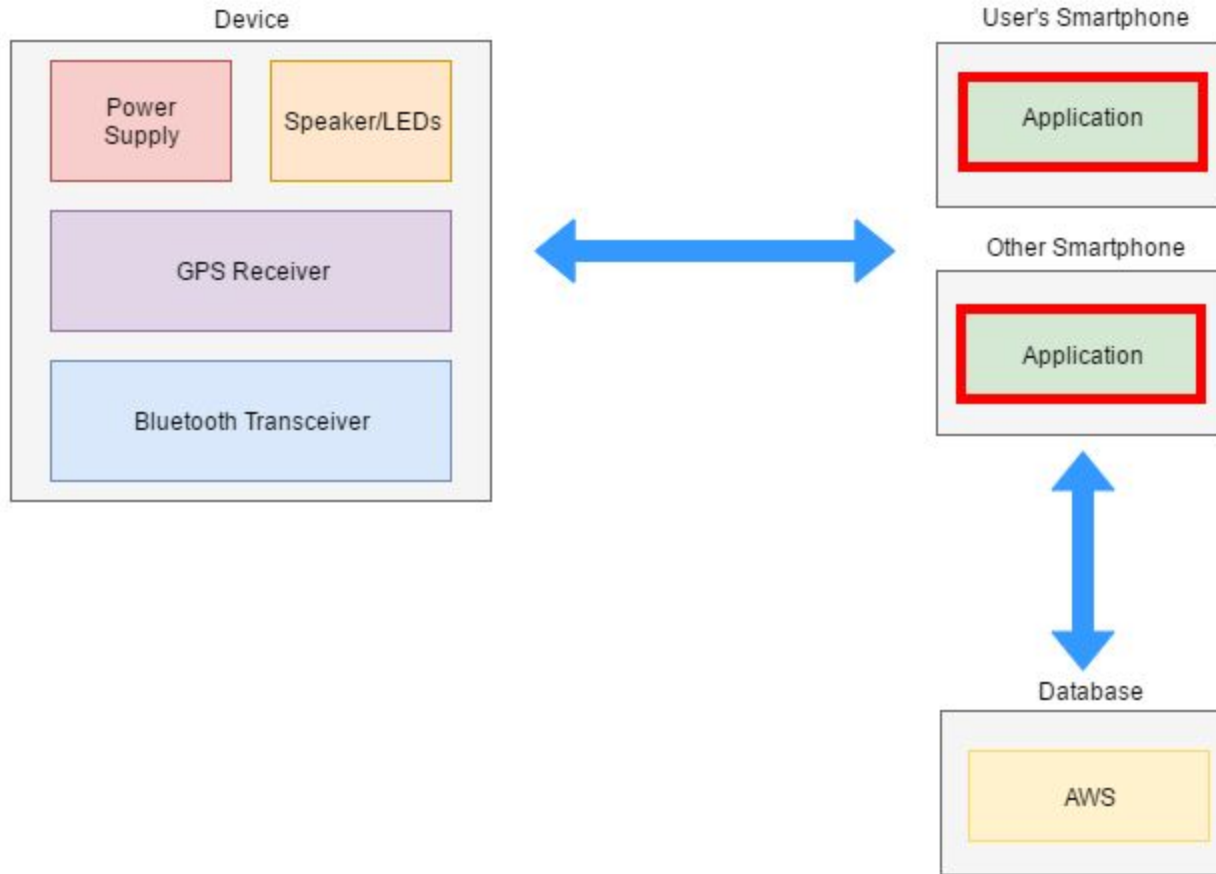
Device



Device

- GPS Receiver
 - Requirements
 - Accurate
 - Low power
- Bluetooth Transceiver
 - Requirements
 - Reliable
 - Implementation
 - Bluetooth
 - Range < 100m
 - Low power
- Speaker/LEDs
 - Requirements
 - Low power
- Power
 - Requirements
 - 5 V

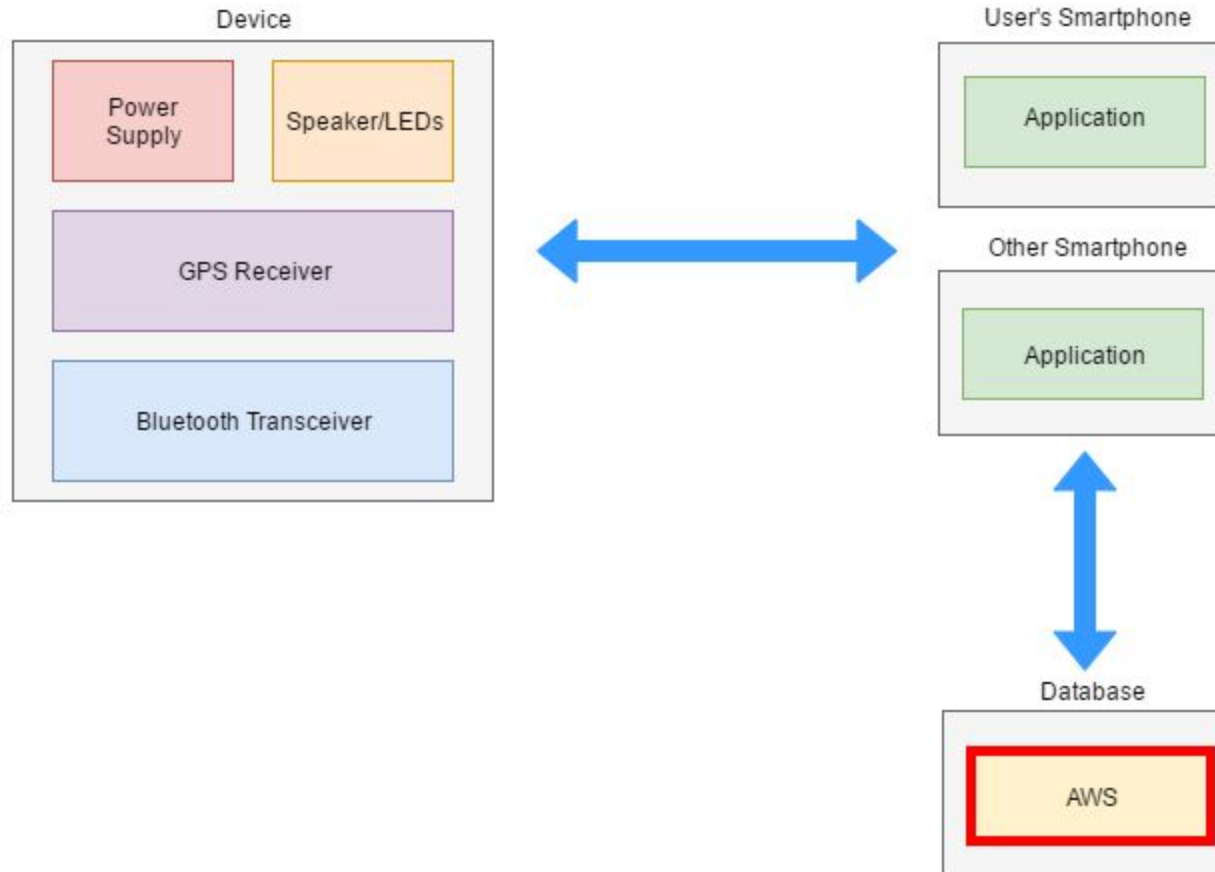
Smartphone



Smartphone

- Application
 - Send device coordinates to server
 - Social Networking capabilities for lost devices
 - Google Maps API
 - Determine device location
 - User Interface
 - Display device location
 - Enable/Disable device speaker
 - Push Notifications
 - Reminders
 - Settings
 - Enable/Disable push notifications
 - Set distance

Database

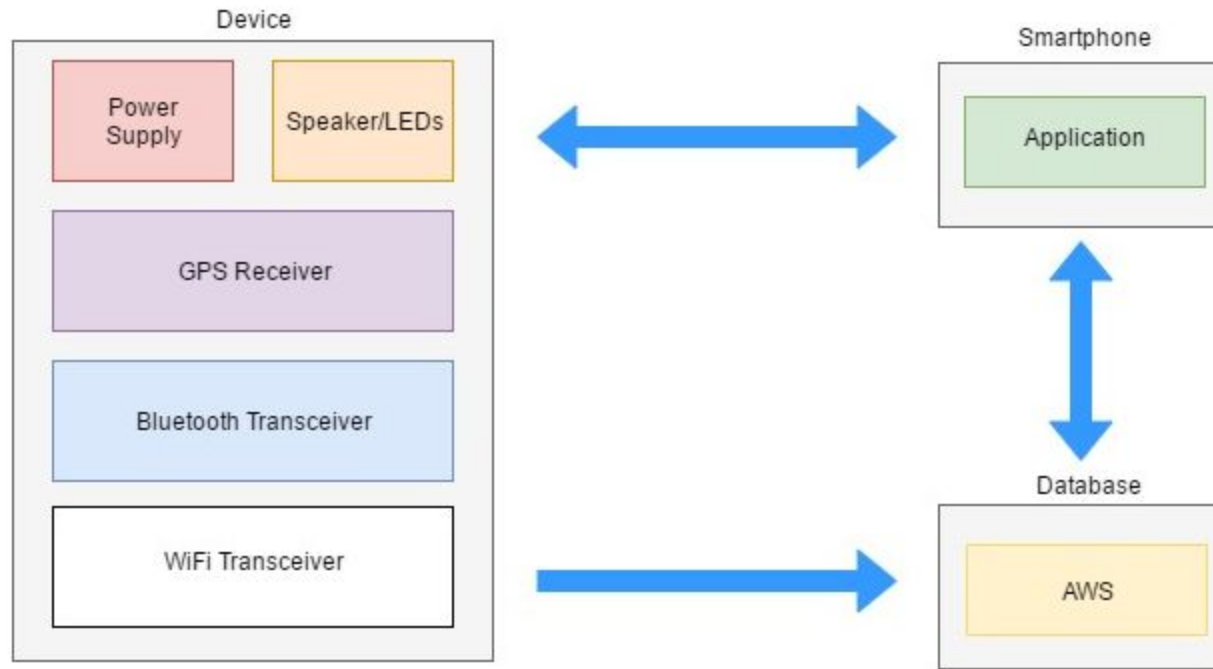


Database

- **AWS**
 - Store/manage data
 - Location
 - User Profile
 - Settings
 - Requirements
 - Fast, reliable, and secure
 - Implementation
 - Swift 3.0 and/or Java



Block Diagram: WiFi Alternative



Expansion

- Diversifying the device
 - A lightweight version with cheaper parts
 - A higher power, higher accuracy device
 - A more impact resistant version

- Security Features
 - Wifi features to expand the range for locating devices
 - Communication features with other users
 - Alert authorities upon being reported as missing/stolen
 - High end version with camera for added security

Moral Implications

- **Security**
 - The connection if not secure would allow other users or hackers to access item or user locations.
 - The connection if able to be hijacked could result in audio being used against the user.

- **Trust**
 - An option for fast location of stolen devices could rely on other users.
 - Another option is to connect stolen devices to security forces through a higher level authentication.

Proposed MDR Deliverables

- Demonstration of communication between device and application via Bluetooth
- Demonstration of location data storage
- Demonstration of Google Maps integration for displaying location data retrieved from server

Individual Responsibilities

- James McNaney
 - Power Management + Board Layout
- Manjot Chahal
 - Server Management + Communication
- Cameron Adams
 - Audio Communication + User Interface
- Sam Tang
 - Application Design + Team Coordinator

Gantt Chart



Questions?
