Unified Butterfly Recorder: iOS

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Background

- Butterfly population is an effective indicator of habitat quality in a region

- Surveys are conducted to gather population data
  - Unique protocols

- Data is uploaded to an organizational database

Problems

- Community is using pencil and paper surveys

- Location granularity is limited
  - Cost of GPS devices

- Data is fragmented by unique collection standards

Unified Butterfly Recorder (UBR)

- Standardize data collection
  - Automate when possible

- Simplify data extraction

- Expand surveyor community

UBR: Android

- 2013 team creates an Android application (app)

- App is developed working closely with members of the community
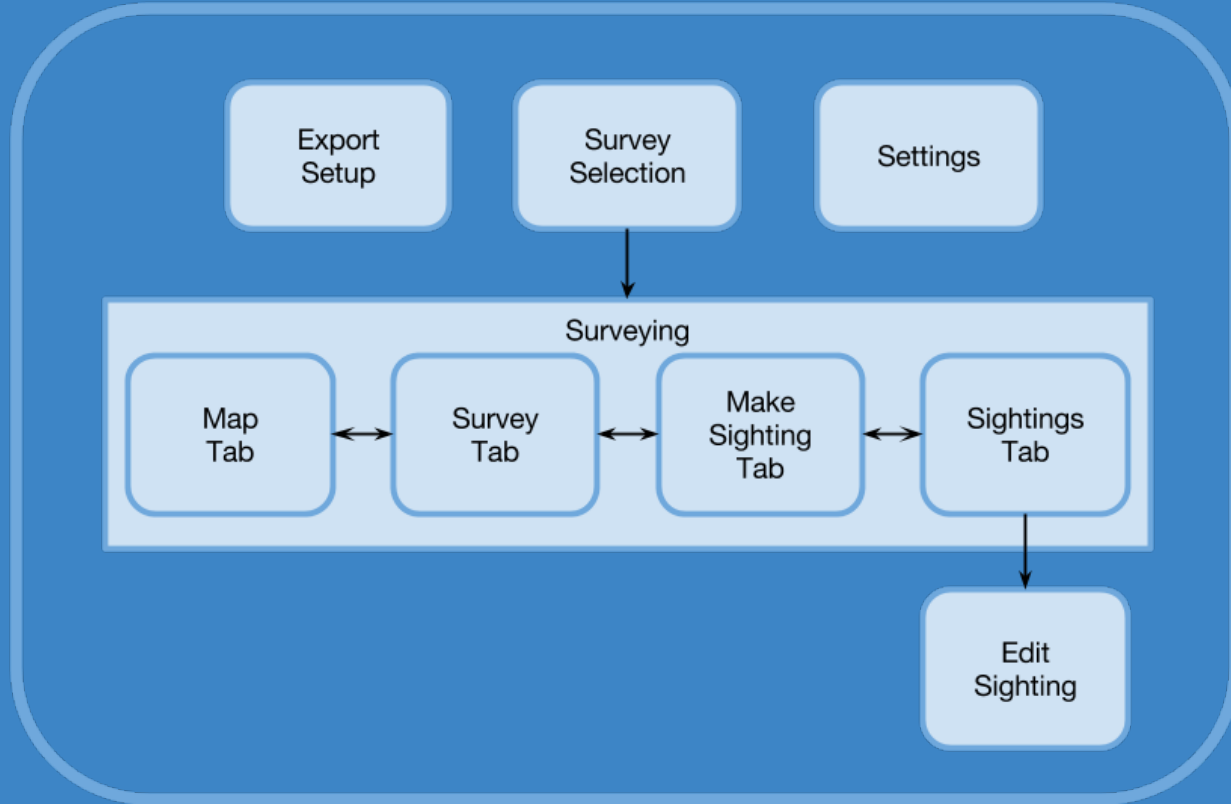
- App is available on the Play Store

UBR: iOS Goals

- Create an iOS application to mimic Android functionality

- Store data on a server as a backup

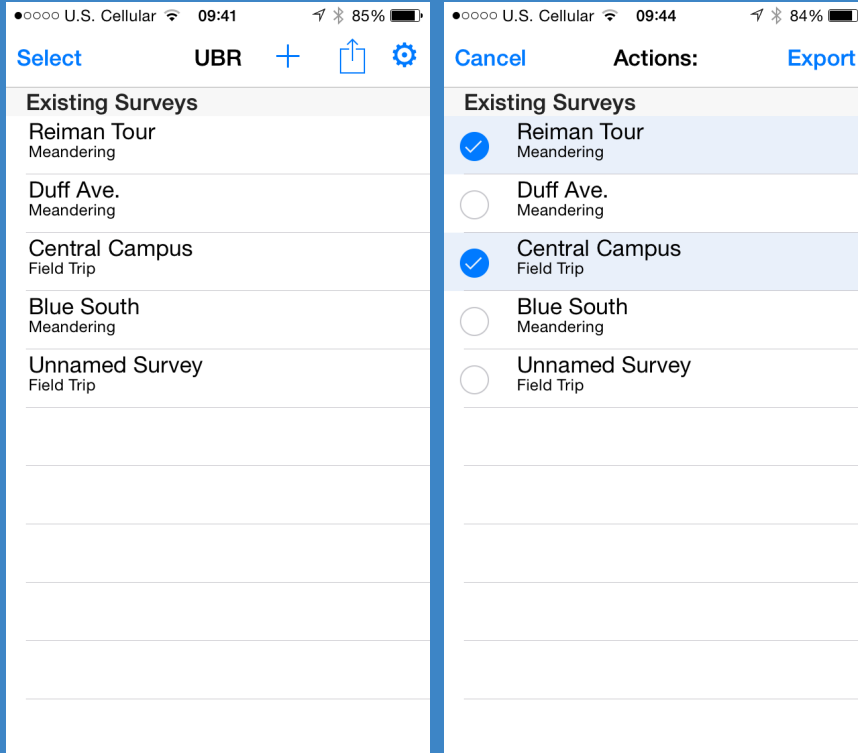- Attempt to interface with external organizations

iOS Screenflow
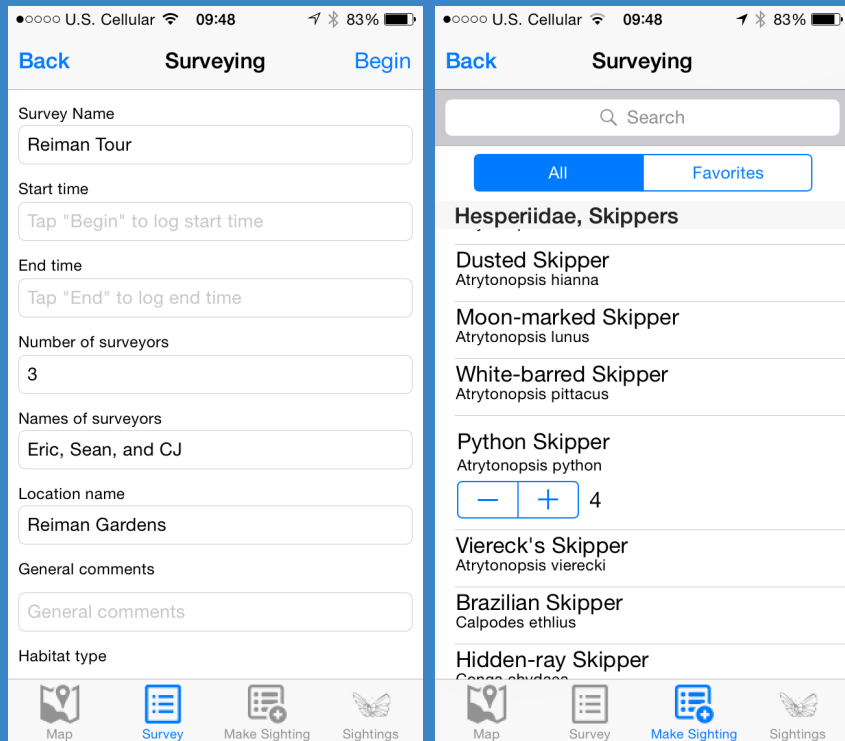
Implemented Functionality

Survey Selection

- Survey Manipulation
  - Create new survey
  - Delete unwanted surveys
  - Export survey
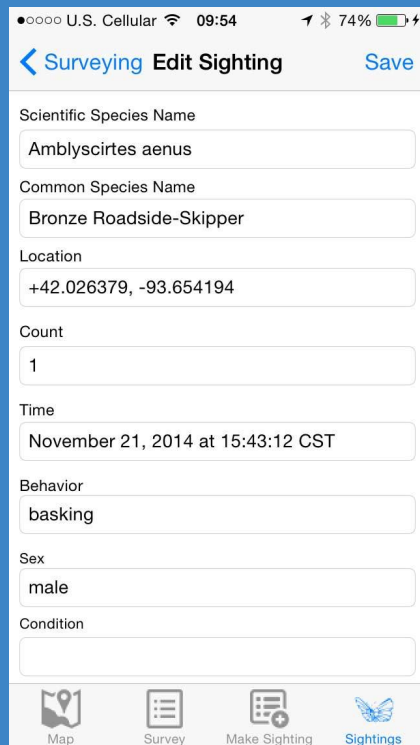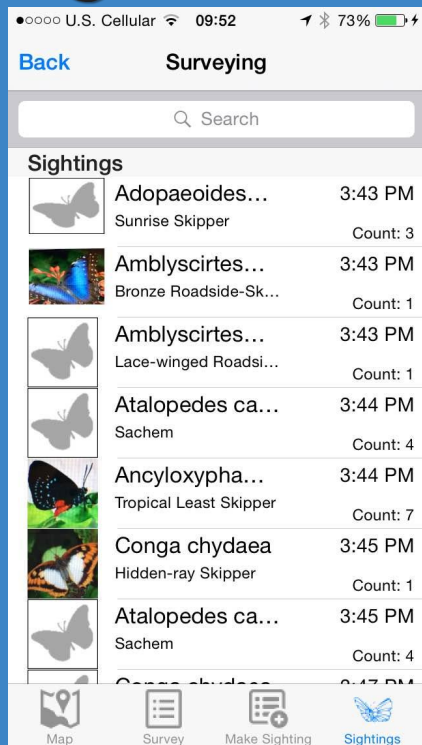
Implemented Functionality

Surveying

- Survey information
  - Add surveyors, general comments
  - Begin/End survey
- Make sighting
  - Tap row to expand
  - Add multiple individuals
  - Add favorites
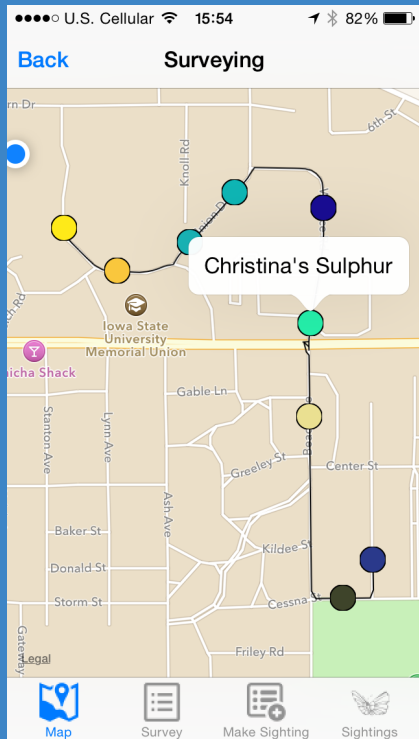
Implemented Functionality

Sightings

- Sightings
  - View list of sightings
  - Search/delete
- Update sighting
  - Add details like gender, condition
  - Take picture
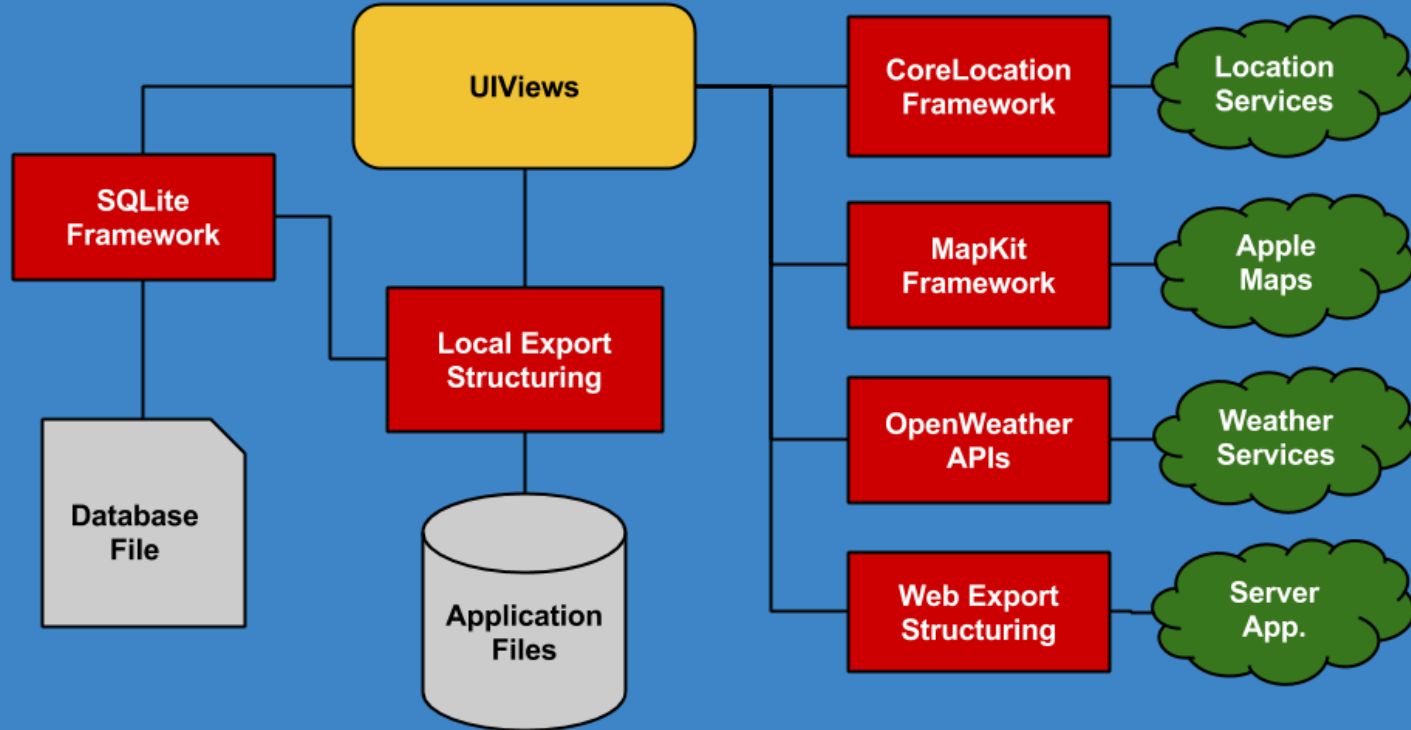
Implemented Functionality

Map

- Sightings plotted on map
  - Annotations color-coded
  - Include information callouts
- Route tracing
  - Breadcrumb sampling during survey

Architecture Diagram

Major Design Challenges

- Platform compatibility
  - Android functionality
  - iOS style

- Unavailability of location services
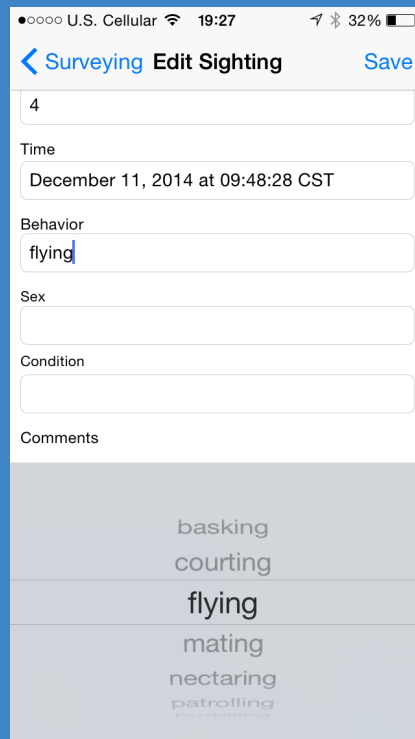
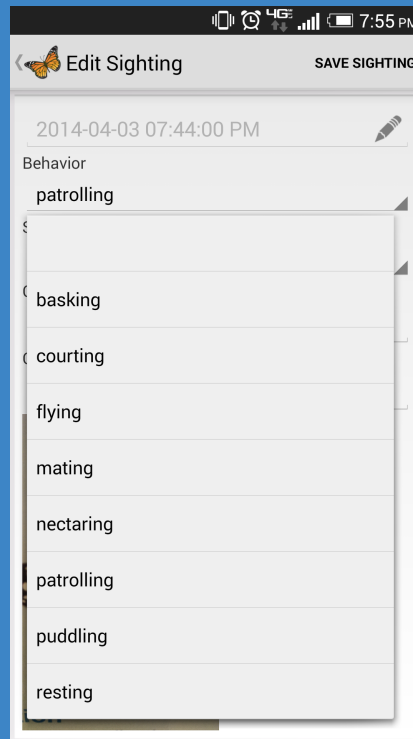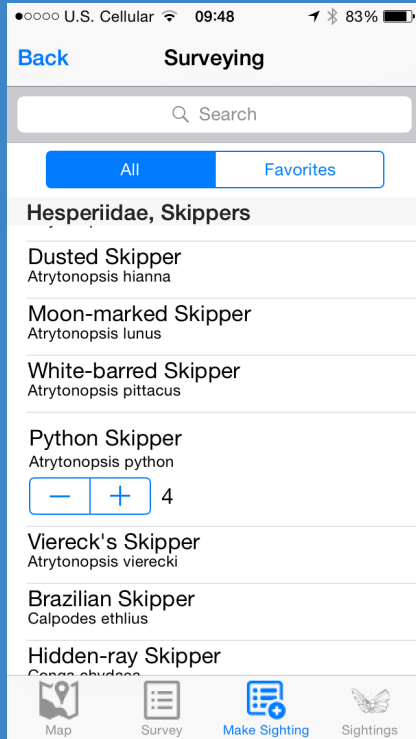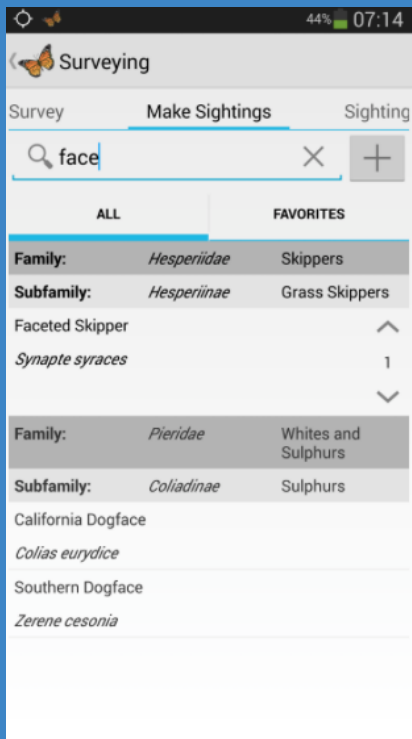- Interfacing with external organizations

iOS vs Android Development

- Cross platforming solutions?

- Porting Android to iOS is **NOT** trivial
  - Software
    - Framework communication
    - Transitions
  - Devices
    - Sensors
    - Internal storage

Compatibility Examples

Tab Bar vs. Swiping

Predefined Lists

Location Services

- Survey conditions are remote
  - Likely no WiFi, spotty cellular networks
- There are device limitations
  - Android vs. iOS hardware
  - WiFi vs. cellular models
- Scenarios can arise that limit location availability
- Possible solutions are complicated

Sharing the Collected Data

- Establishing shared objectives with organizations
- Matching unique protocols
  - One interface, many unique repositories
  - Distinct authentication methods
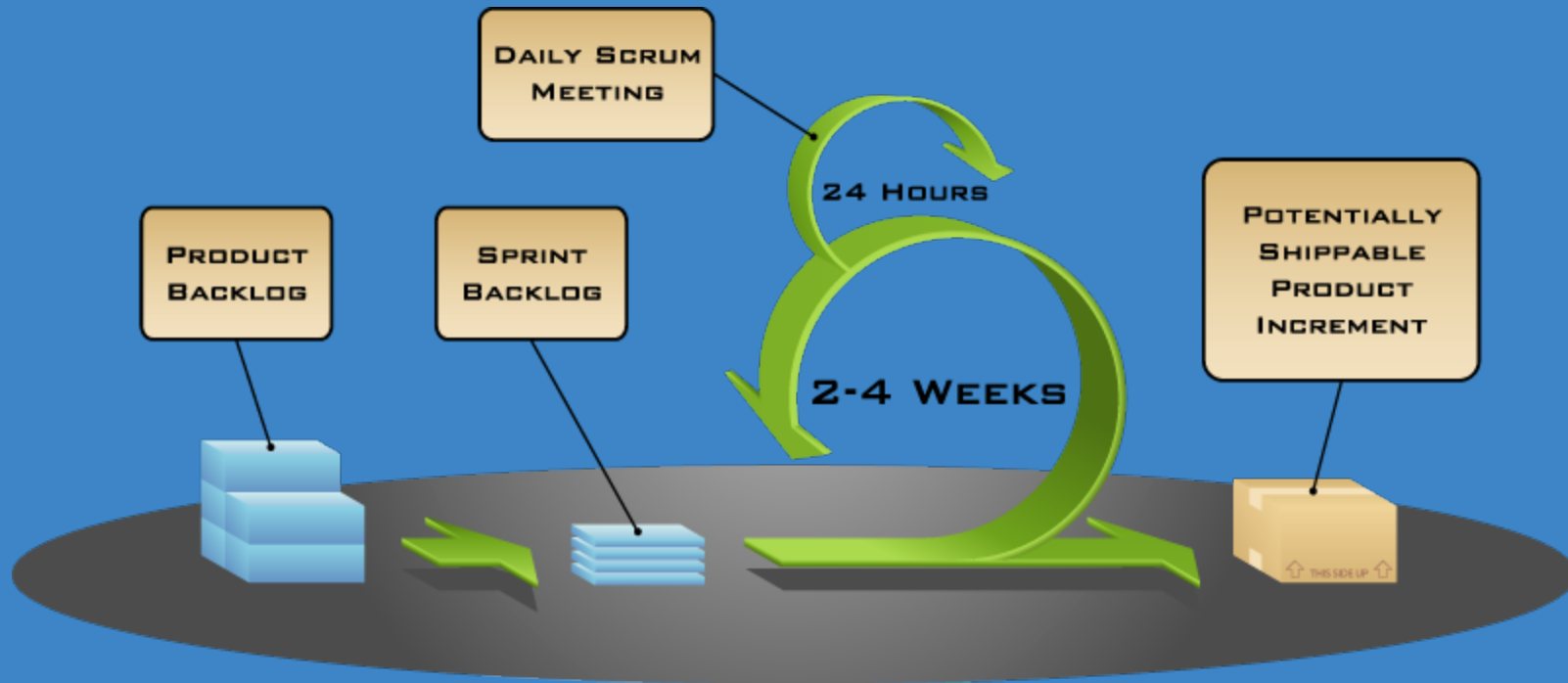 - Extending organization support
- Avoiding loss of data

Solving the Challenges

- Extensibility
  - Each organization will get a script that modifies our ORM object to their data desired

- Data Loss
  - Storing data on a server until someone wants to own it

- Authentication
  - Allow organizations to manage keys that would identify the organization uniquely
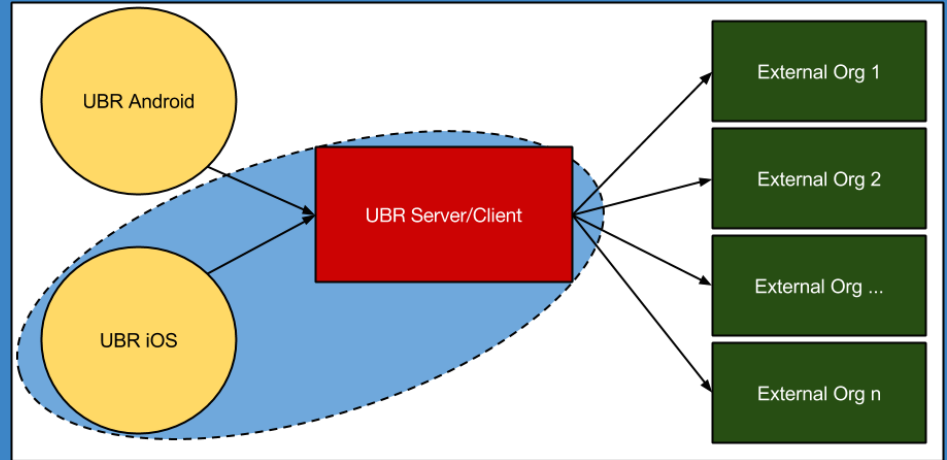
Staying Agile

Testing

- Field Testing using TestFlight App
  - Available for private use only
  - Release notes
  - 15 users granted beta testing access
    - 4 organizations
    - Clients
    - Ourselves

Current State of UBR Platform

- iOS and Android apps are completed

- Need to complete interfacing with orgs

- Make a web app for users to view their data?
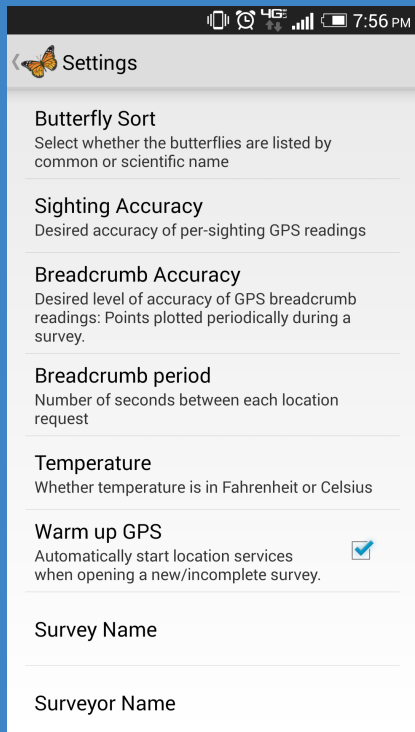
Future Forward

- End goal
  - Release on the App Store
- Continuation options
  - Release under ISU developer profile
  - Release under private Reiman Gardens profile
    - Keep code private
    - Make code open source
- Maintenance
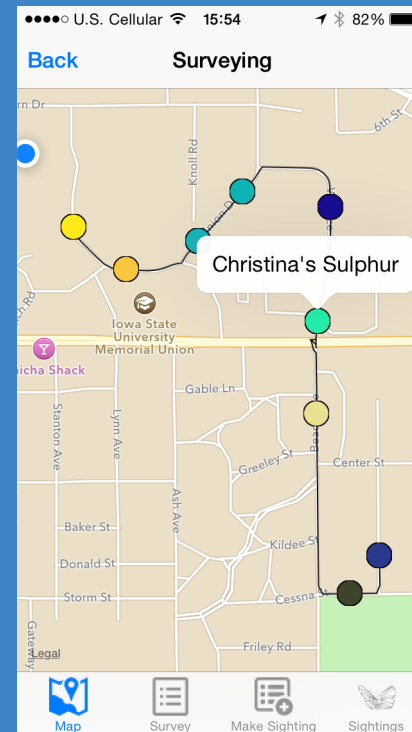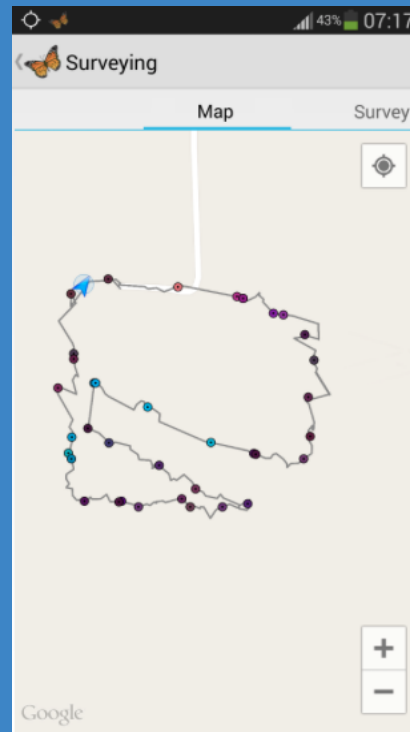 - Dependent on client choice
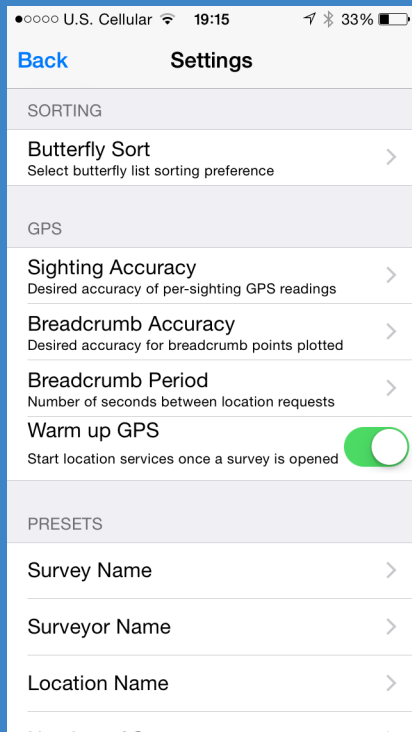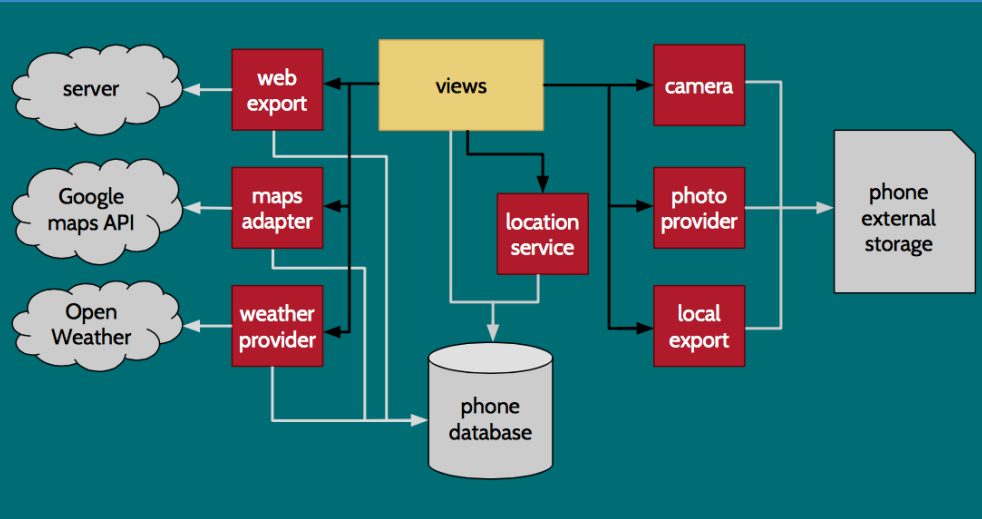
Questions or Comments?
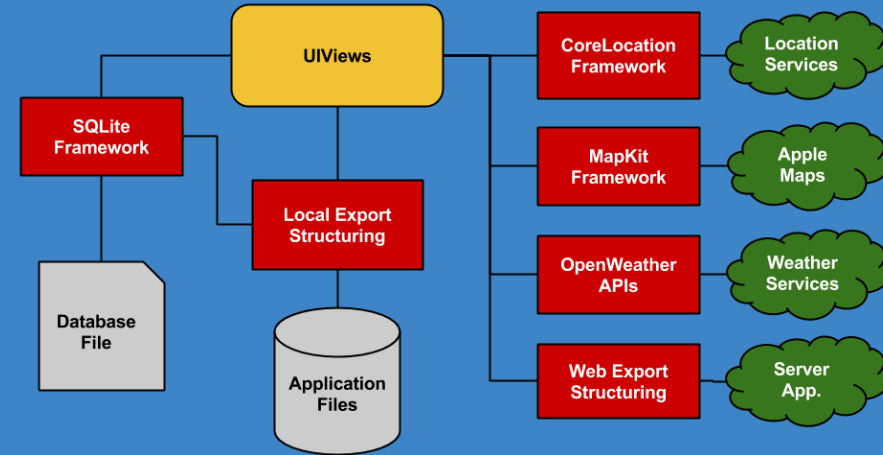
Compatibility Examples

Settings Location

Mapping Annotations

Architecture Comparison

Android

iOS

*Photo taken from documentation for senior design team 08, December 2013
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