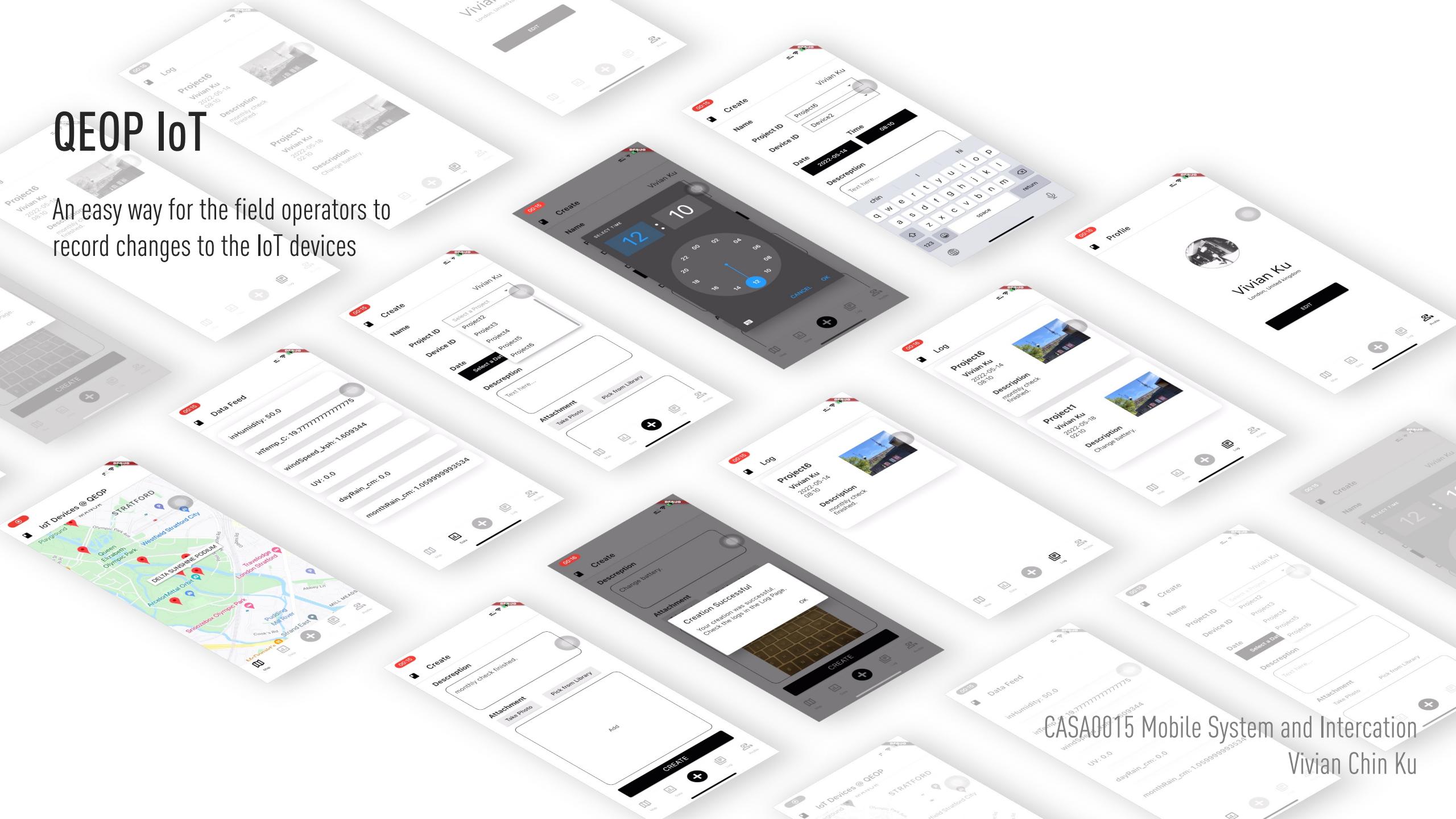


# QEOP IoT

An easy way for the field operators to record changes to the IoT devices



CASA0015 Mobile System and Interaction  
Vivian Chin Ku

# Current Issues



Field managers use multiple digital notebooks to record which only allow access by themselves

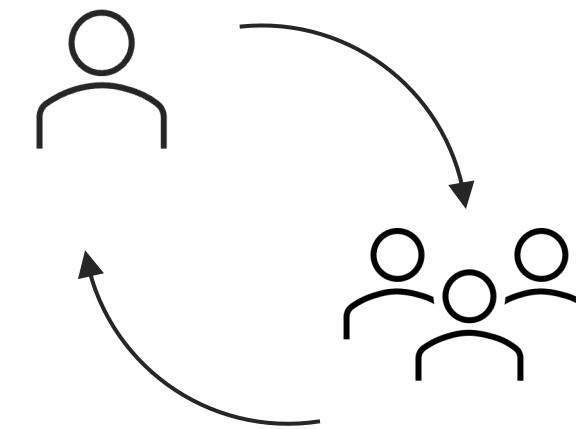
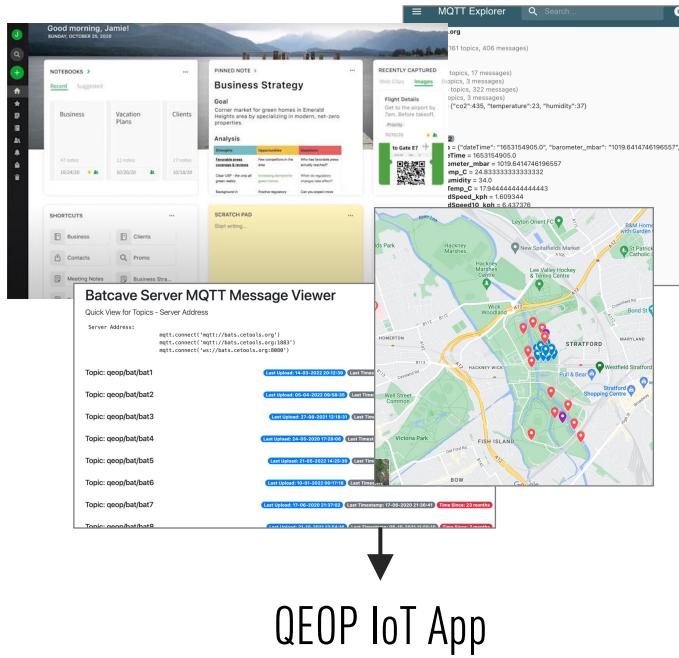


Records lack unified formats and the shared platform for the long-term use



Live data is presented in different websites / MQTT brokers

# Benefits

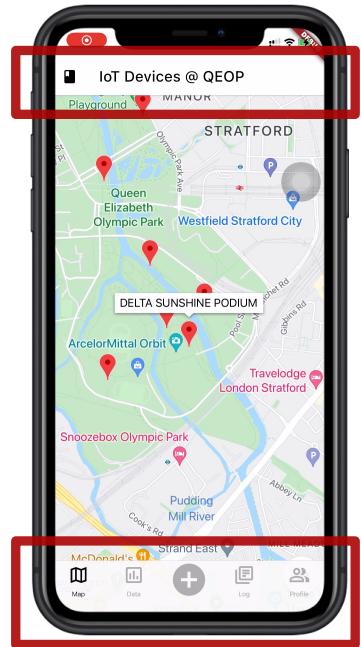


Save your time in switching between different websites and software

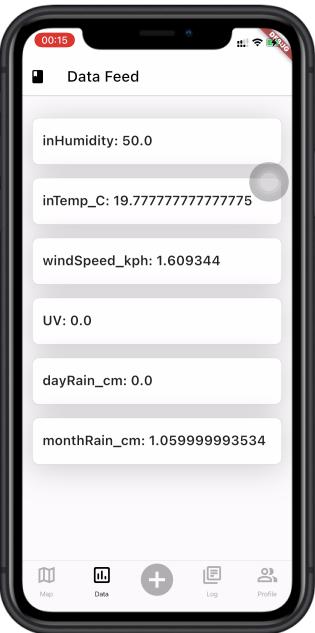
Share your records with the team

# Wireframe Design

Top Bar

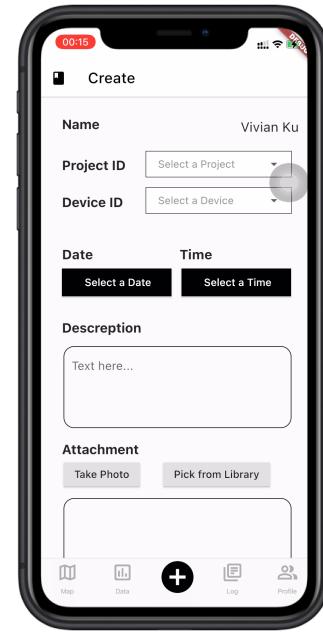


Bottom Navigation Bar

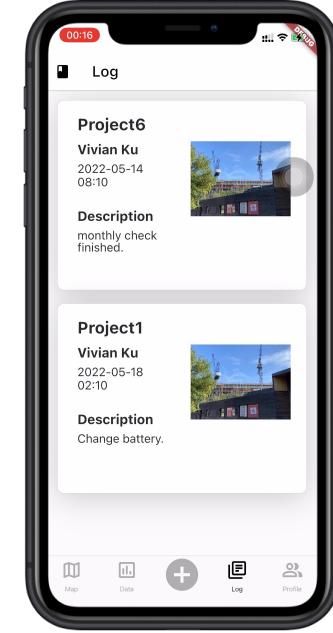


Page 1- Map

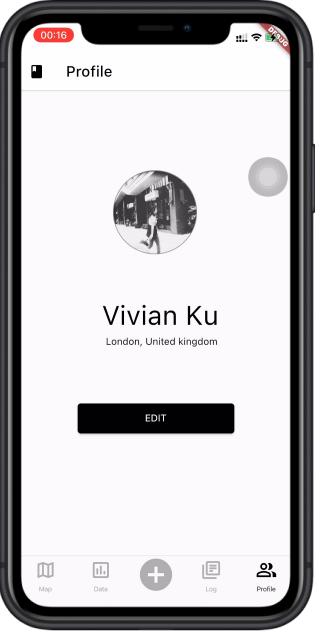
Page 2- Data Feed (MQTT)



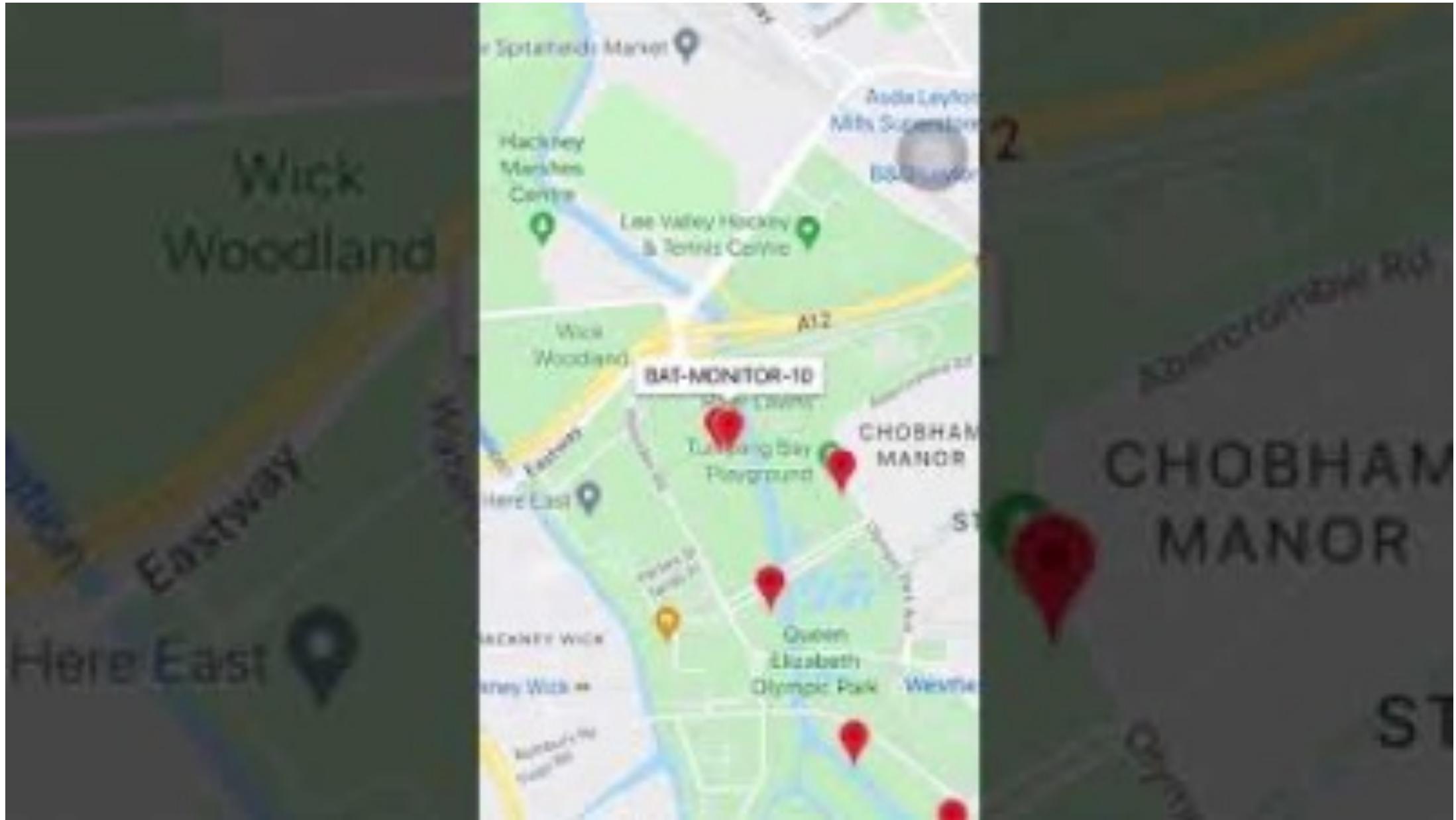
Page 3- Create log



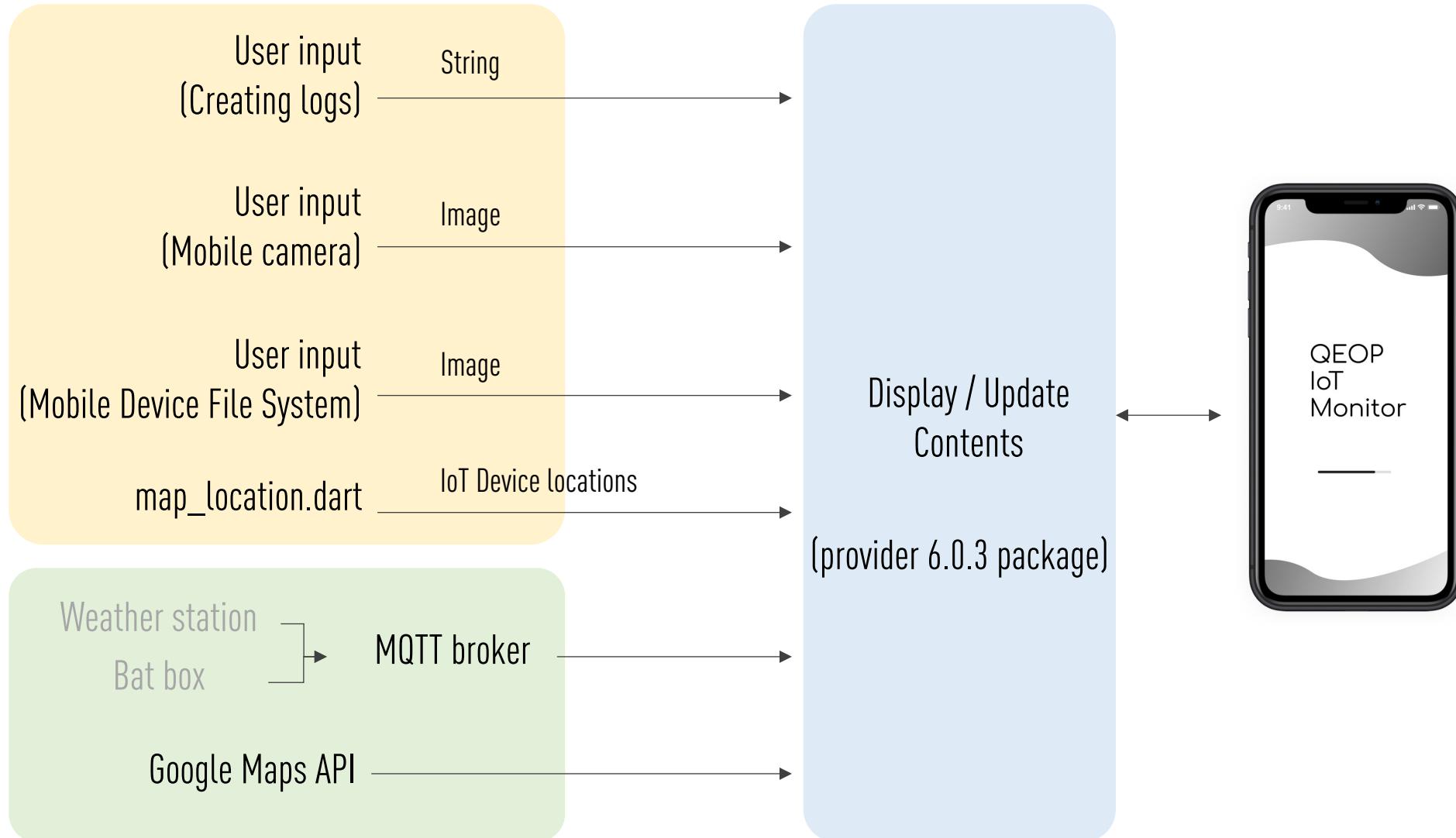
Page 4- Logs



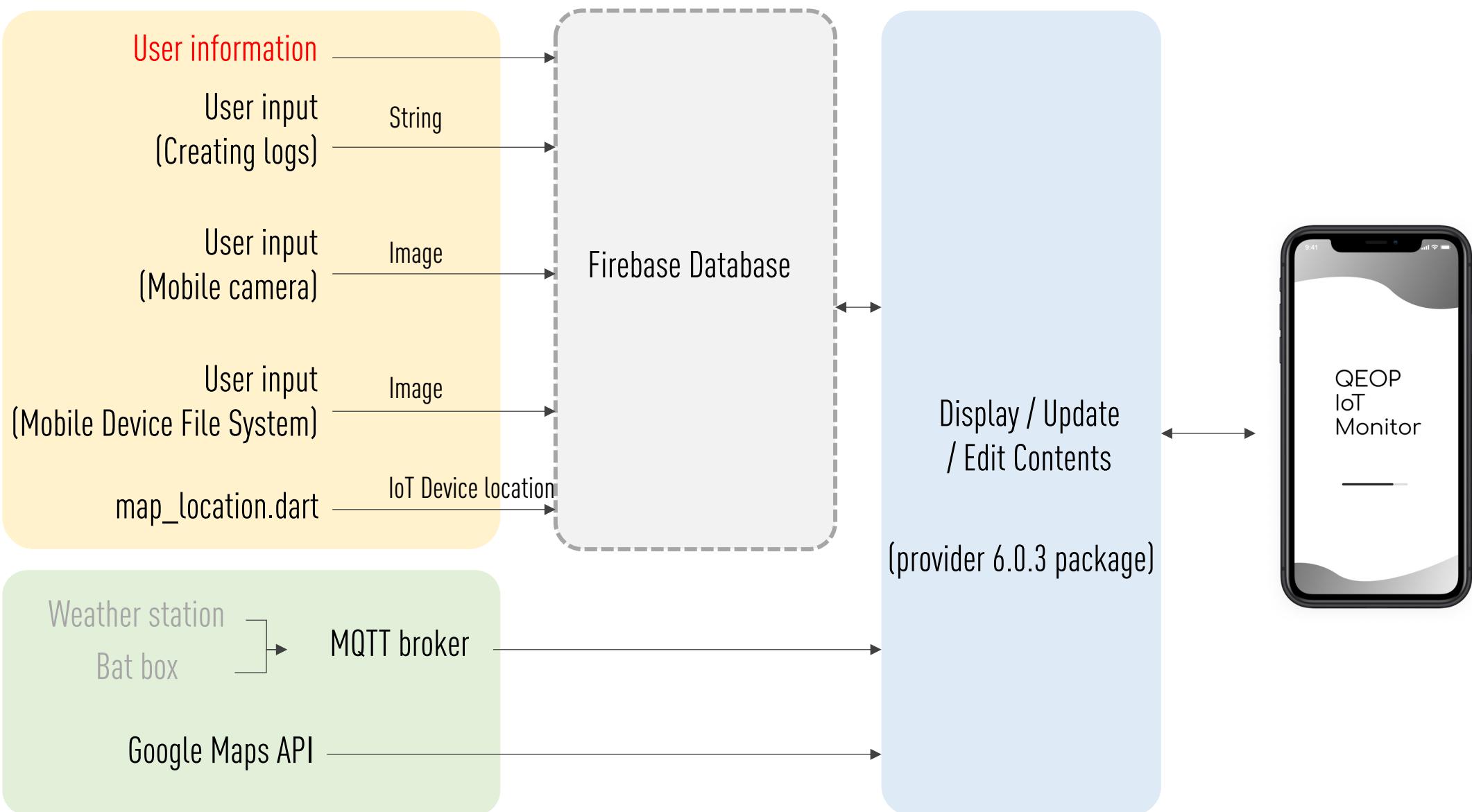
Page 5- Profile



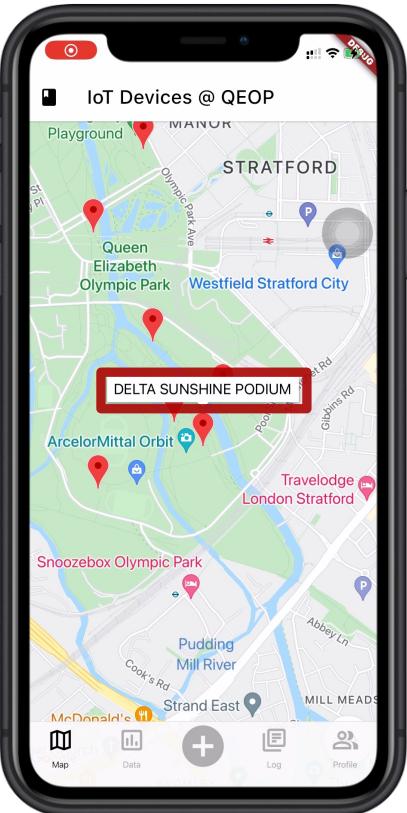
# Data Flow



# Data Flow (Future work)

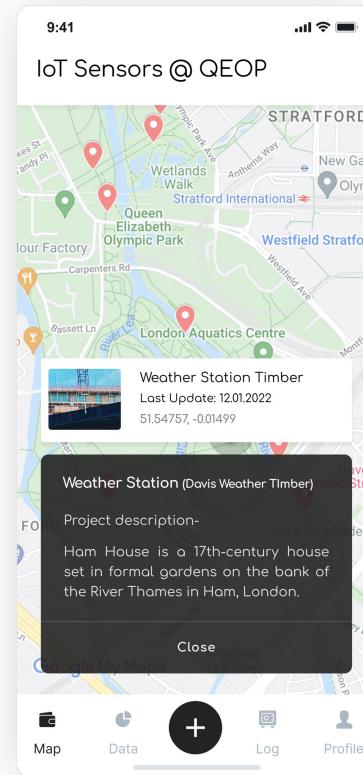


# Function- Map



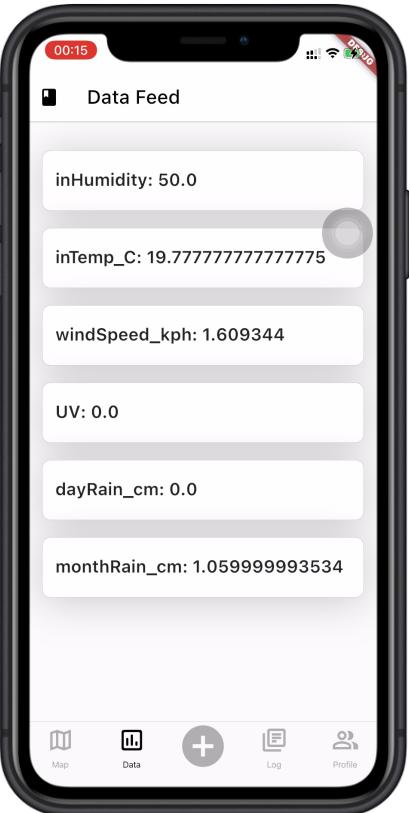
Final Design

- **Interactivity:** Allow users to...
  - Find the location of each device
  - Make sure the device ID they are working with
- **Challenge:**
  - How to allow users to add markers to the map from the App interface OR to add markers by linking to the cloud database that have the device list including coordinates
- **Future work:**
  - Add the locator of the user
  - Display project information when users tap markers
  - Display the latest updated date in the information box
  - Add a button linking to Log Page in the information box



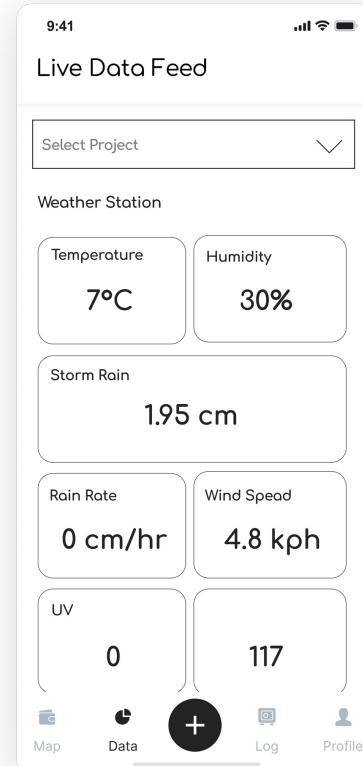
Initial Design

# Function- Data Feed



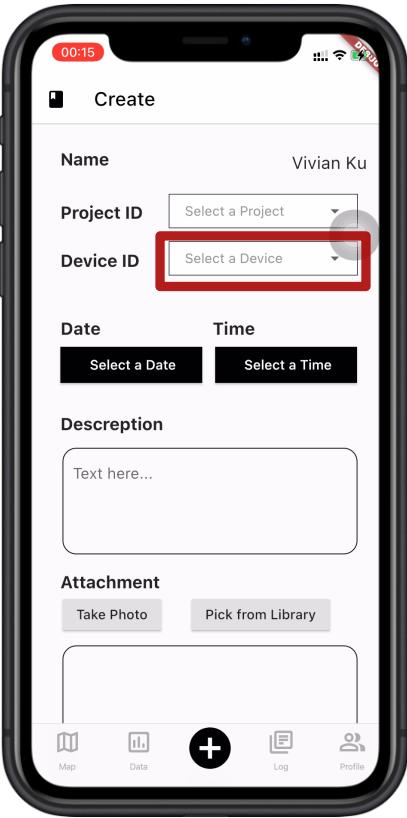
Final Design

- **Interactivity:** Allow users to...
  - Check the real-time data feed connecting to the MQTT brokers
- **Challenge:**
  - Need to wait for MQTT feed
- **Future work:**
  - Add the 'Select by ProjectID' function
  - Add the 'Select by DeviceID' function
  - Allow users to customise the order of MQTT topics



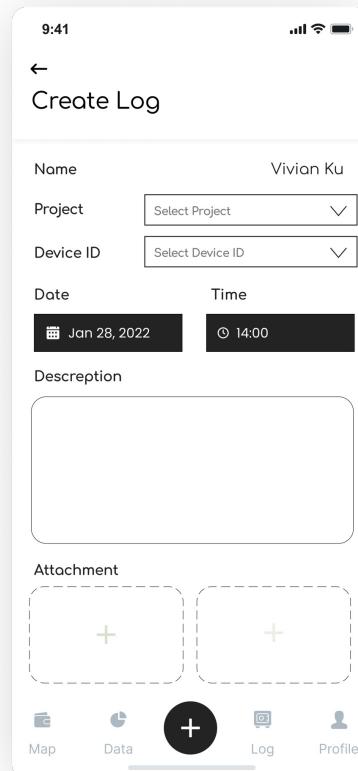
Initial Design

# Function- Create Logs



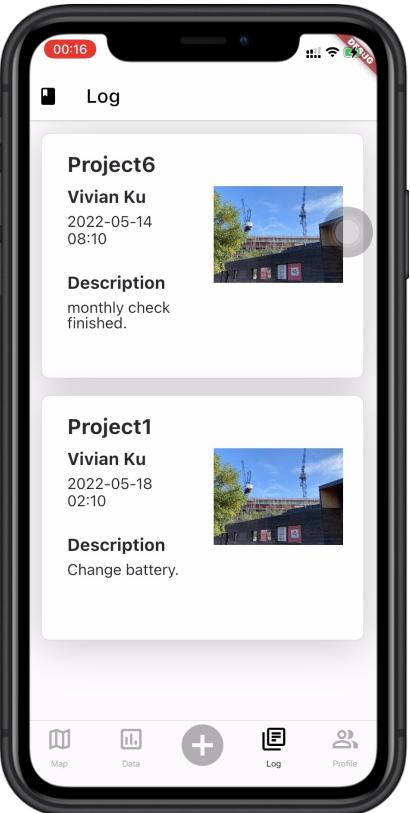
Final Design

- **Interactivity:** Allow users to...
  - Add new logs to record the maintenance, changes, or testing users have made for the specific device
  - Any detail regarding project ID, device ID, date, time, description, and attachment can be uploaded here
- **Future work:**
  - Store log information in the Firebase Real-time Database
  - Change the selections of ProjectID and DeviceID from 'drop-down list' to 'multiple choices list'
  - Allow users to add 'customised tag' (e.g. 'battery', 'monthly check', 'connectivity')



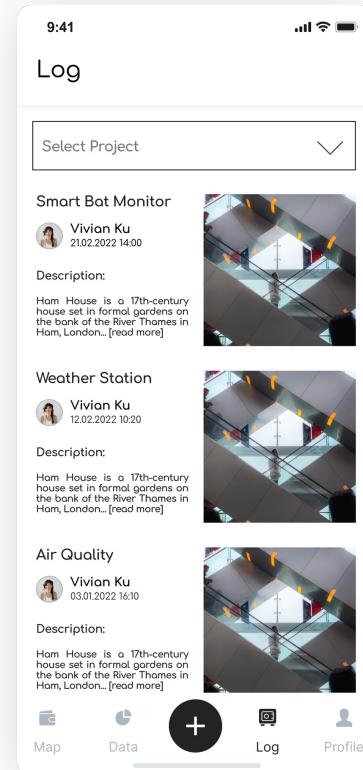
Initial Design

# Function- Logs



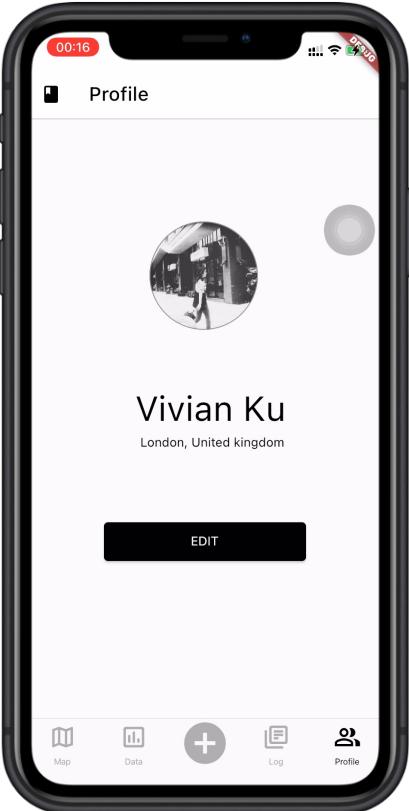
Final Design

- **Interactivity:** Allow users to...
  - Display the created logs in reverse chronological order
- **Challenges**
  - Hard to create subpages to show log detail without a database
- **Future work:**
  - Connect to Firebase Real-time Database
  - Add 'Detail Page' providing 'Edit' and 'Delete' functions when users tap the card
  - Add 'Search' function



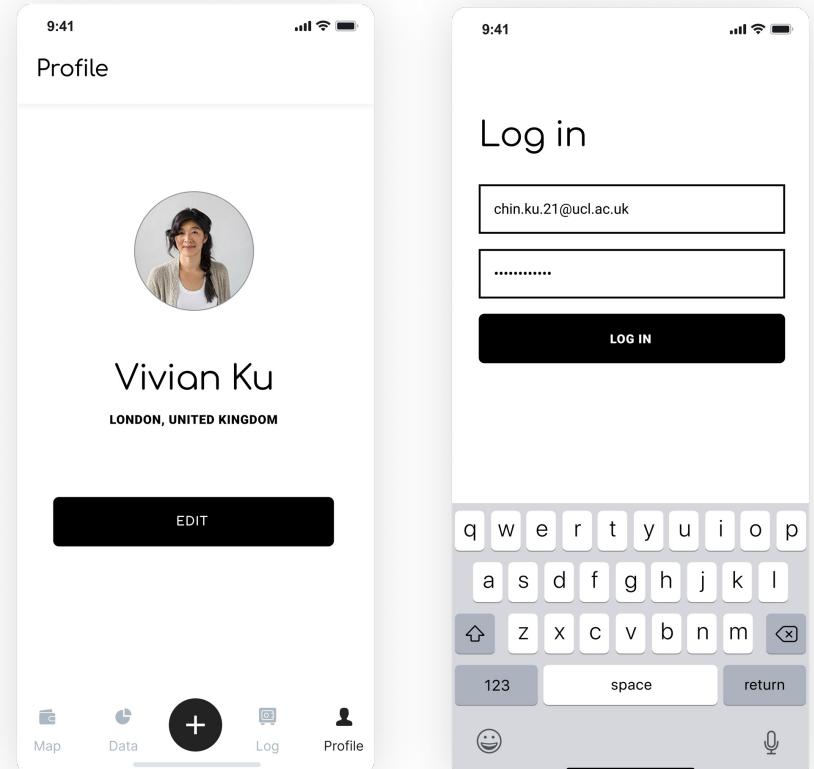
Initial Design

# Function- Profile



Final Design

- **Interactivity:** Allow users to...
  - Log in and out
  - Manage the authentication of the app's functions
- **Future work:**
  - Add Firebase Authentication function and Admin SDK to manage users' information including authentication and authorisation



Initial Design

# Dependencies

```
flutter:  
    sdk: flutter  
  
mqtt_client:  
dropdown_button2: ^1.4.0  
datetime_picker_formfield: ^2.0.0  
intl: ^0.17.0  
image_picker: ^0.8.5  
provider: ^6.0.2  
custom_navigator: ^0.3.0  
google_maps_flutter: ^2.1.5  
path: ^1.8.0  
path_provider: ^2.0.10
```

# Packages and Workshops

1. Google, Adding Google Maps to a Flutter app, Available at: <https://codelabs.developers.google.com/codelabs/google-maps-in-flutter#3>.
2. Flutter.dev, google\_maps\_flutter, Available at: [https://pub.dev/packages/google\\_maps\\_flutter](https://pub.dev/packages/google_maps_flutter) (Accessed: May 2022).
3. Dash-overflow.net, provider 6.0.2, Available at: <https://pub.dev/packages/provider> (Accessed: May 2022).
4. Darticulate.com, mqtt\_client, Available at: [https://pub.dev/packages/mqtt\\_client](https://pub.dev/packages/mqtt_client) (Accessed: May 2022).
5. Unverified uploader, dropdown\_button2, Available at: [https://pub.dev/packages/dropdown\\_button2](https://pub.dev/packages/dropdown_button2) (Accessed: May 2022).
6. Defylogic.dev, datetime\_picker\_formfield, Available at: [https://pub.dev/packages/datetime\\_picker\\_formfield](https://pub.dev/packages/datetime_picker_formfield) (Accessed: May 2022).
7. Flutter.dev, image\_picker, Available at: [https://pub.dev/packages/image\\_picker](https://pub.dev/packages/image_picker) (Accessed: May 2022).
8. Dart.dev, path, Available at: <https://pub.dev/packages/path> (Accessed: May 2022).
9. Flutter.dev, path\_provider, Available at: [https://pub.dev/packages/path\\_provider](https://pub.dev/packages/path_provider) (Accessed: May 2022).

# Q&A

