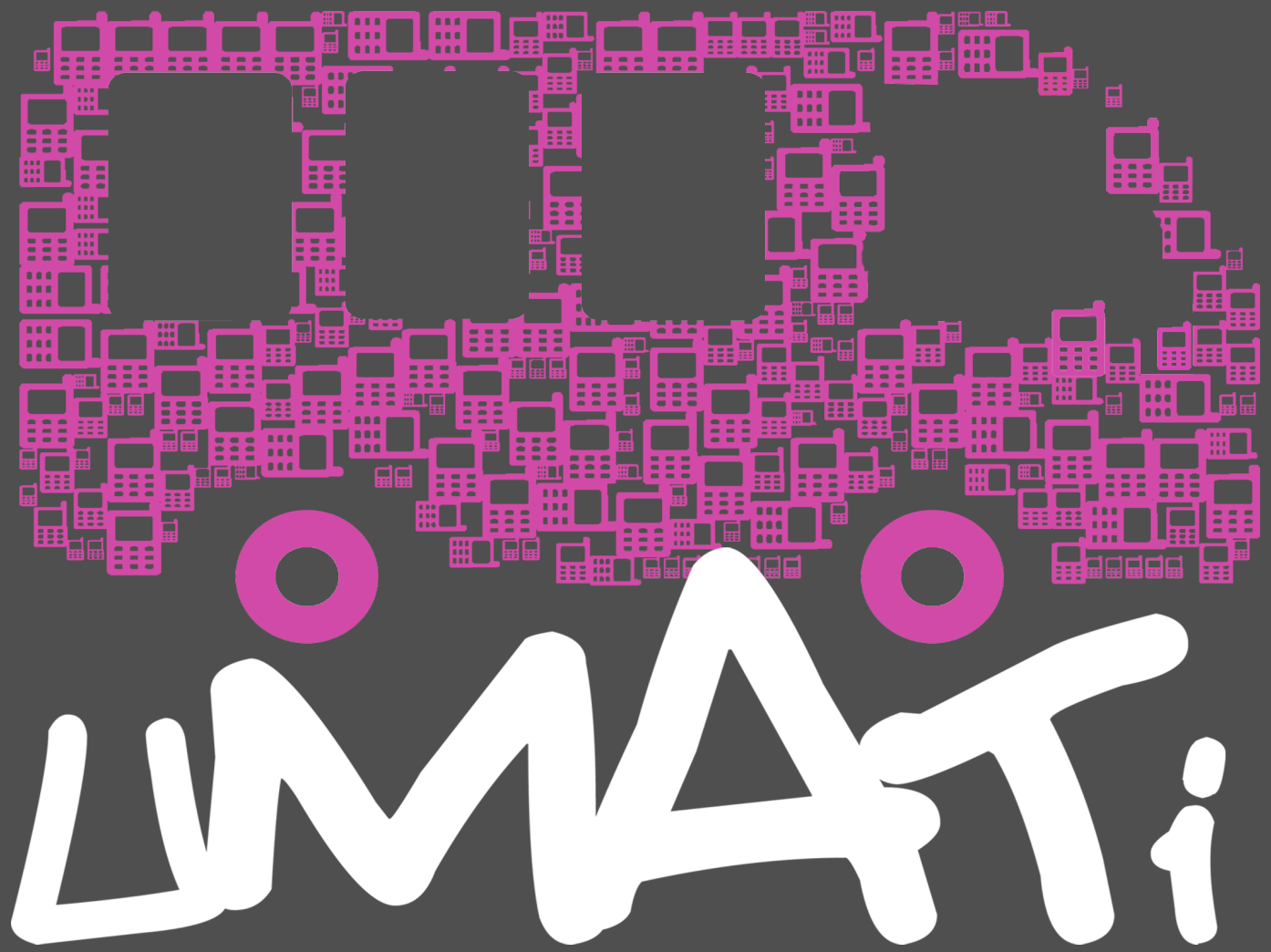


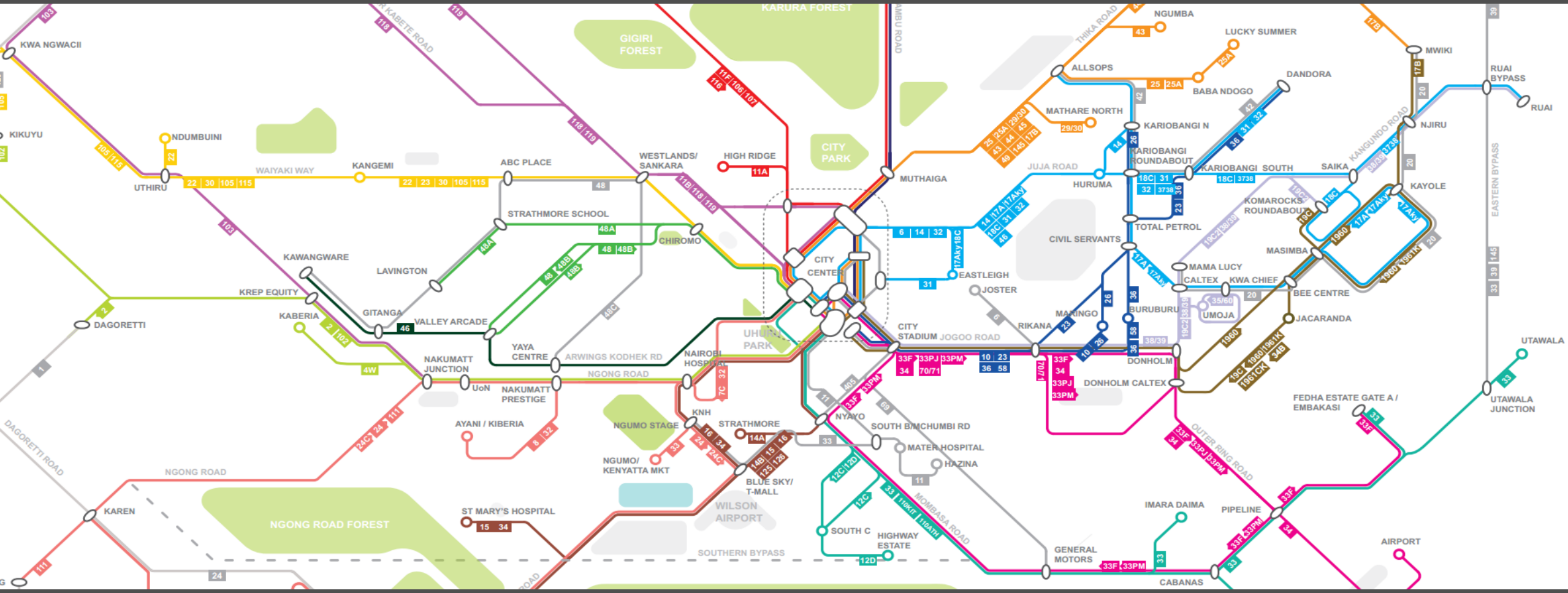
DIGITAL MATATUS CROWDSOURCING APP

11.S938 FINAL PRESENTATION

May 12, 2015

Carolina Morgan, Fei Xu,
Marcel Williams, Rida Qadri

CHALLENGE: Keeping the map accurate and current



CIVIC DATA DESIGN LAB
CENTER FOR REAL ESTATE

SCHOOL OF COMPUTING AND INFORMATICS
UNIVERSITY OF NAIROBI

Center for Sustainable Urban Development

GROUPSHOT

PROPOSAL

users

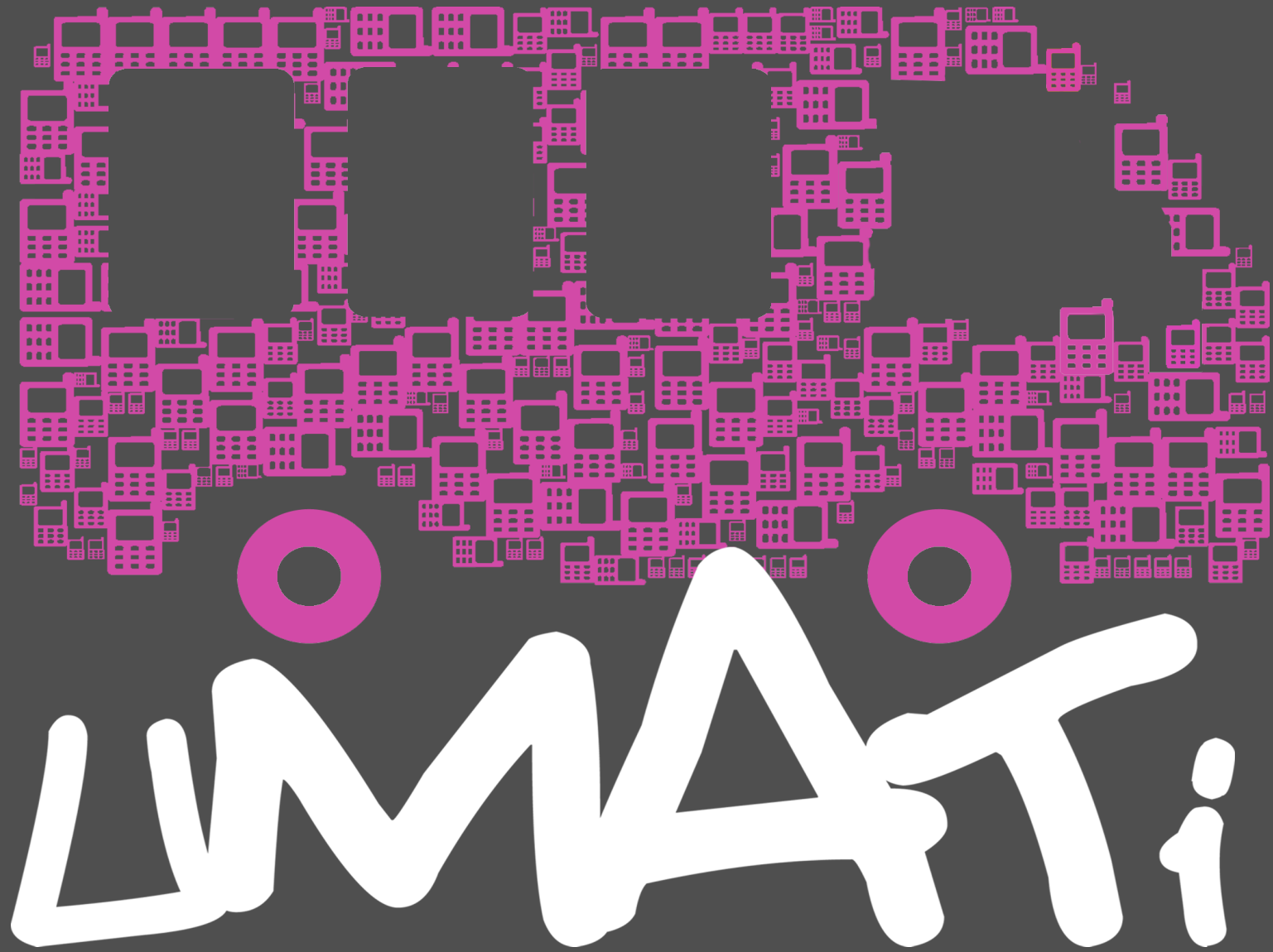
MATATUS RIDERS

device

SMART PHONES

platform

MIT APP INVENTOR
+ FUSION TABLES


UMAT

TECHNICAL CHALLENGES

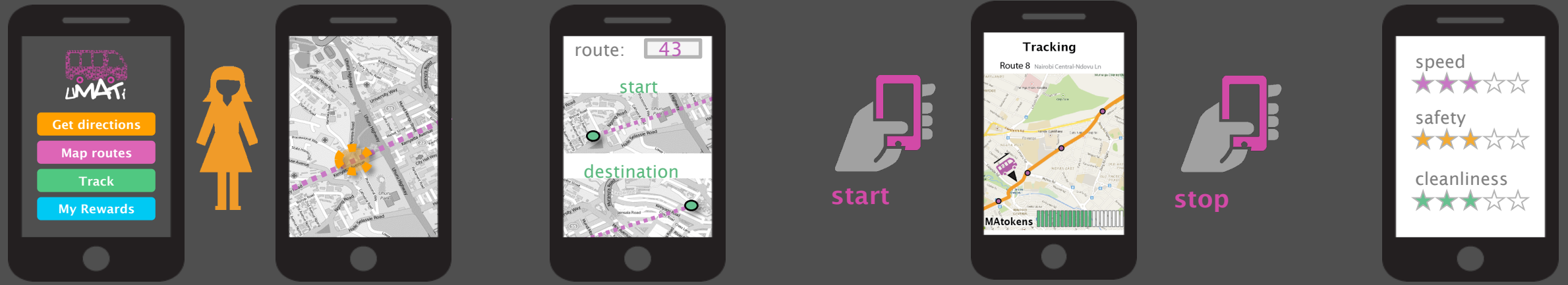
- Need to collect continuous GPS data
- How to know whether user is riding matatus or walking?
- How to know where route change is temporary or permanent?

IMPLEMENTATION CHALLENGES

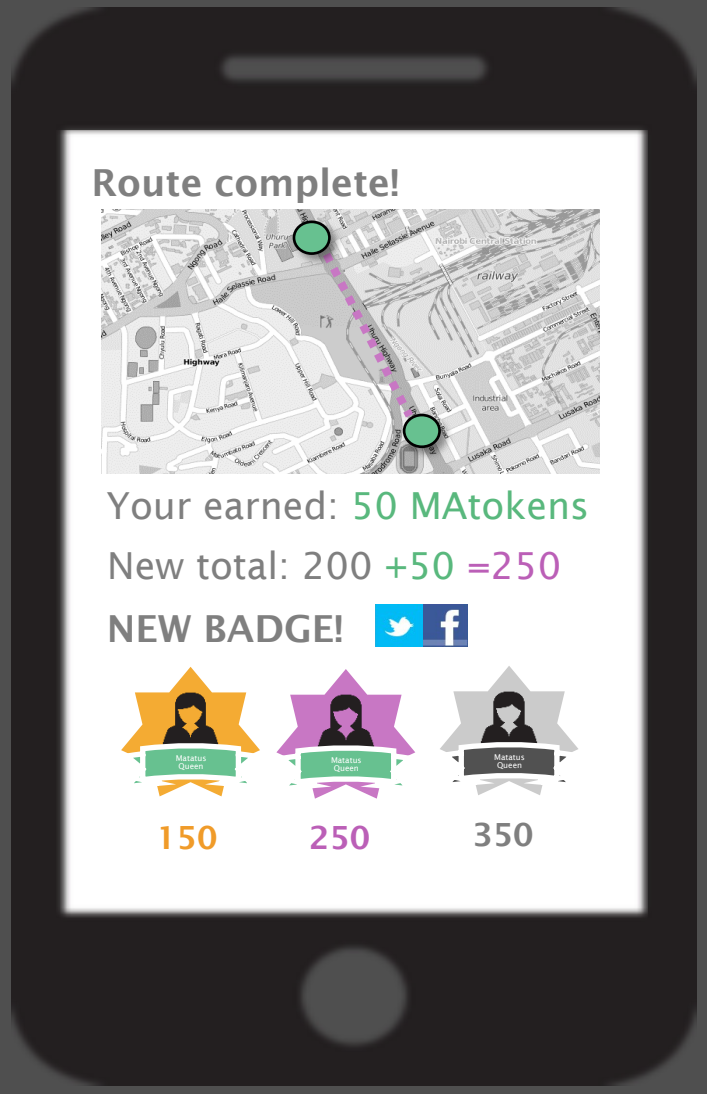
- Data + battery usage
- Incentivize download and usage
- Competition/overlap with ma3route
- Information on the user
  - Map literacy
  - Socio Economic Demographic

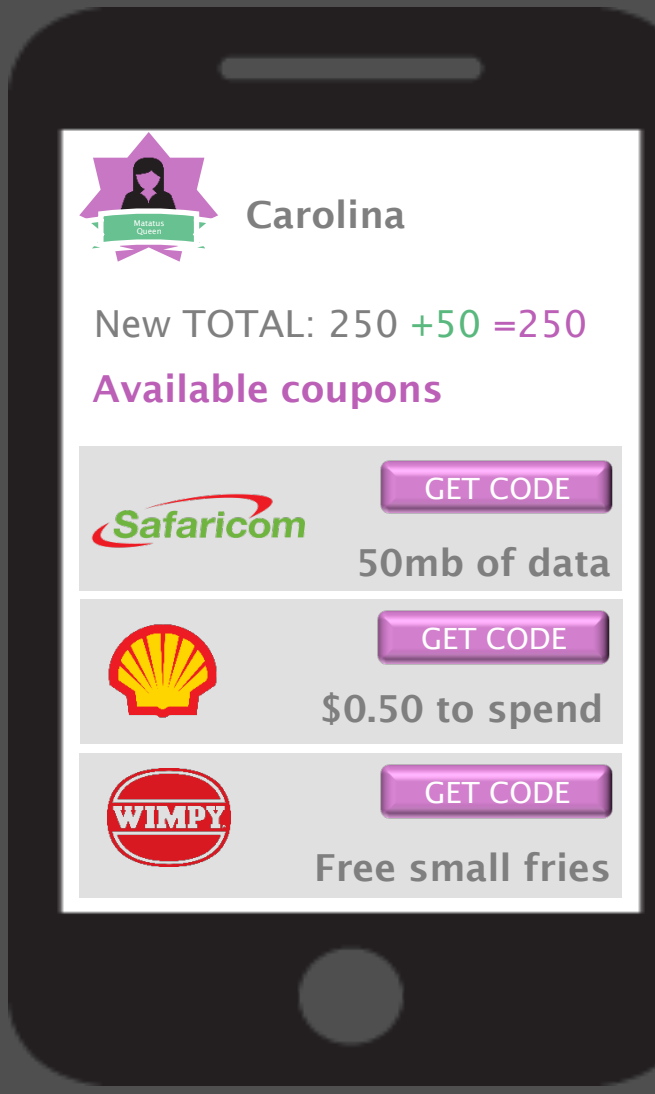
INITIAL CONCEPT: emphasize interface

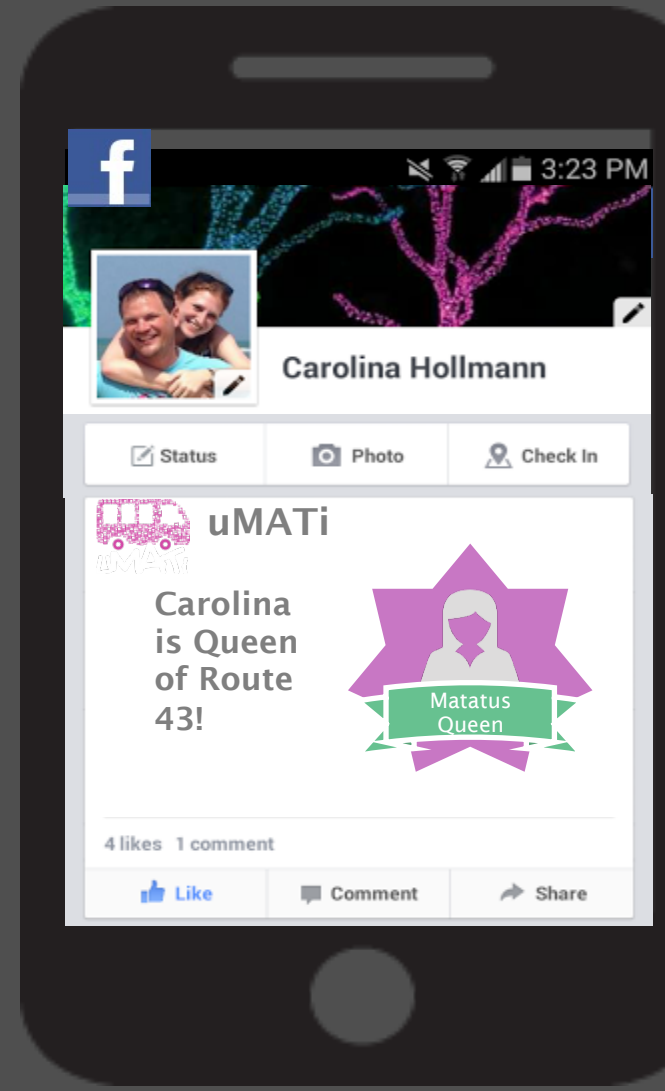
1. Find where to take the bus
2. Record trip
3. Collect MAtokens
4. Rate ride



INITIAL CONCEPT: real world results







Unique Selling Proposition

User Interface

Incentives

Simpler data architecture

FINAL SCOPE

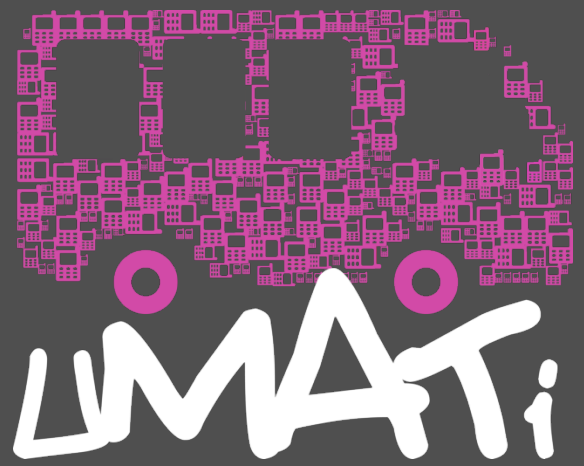
Tracking Functionality

+

Front-End Aesthetics

+

Basic Data Collection



NOT IN SCOPE

Data Synthesis Algorithm

+

Snapping

+

Points

PLATFORM: Fusion Tables

FinalLoc

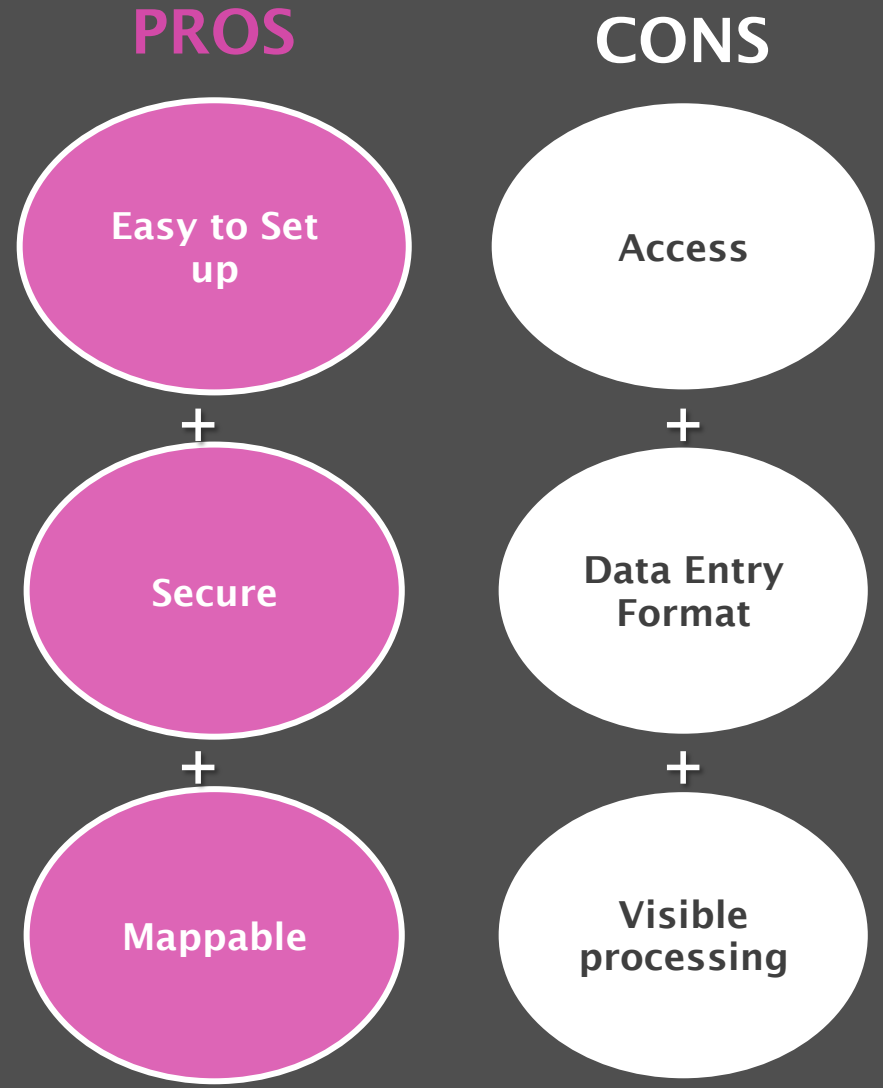
Add Attribution - Edited at 6:55 PM

File Edit Tools Help | Rows 1 | Cards 1 | Map of Location

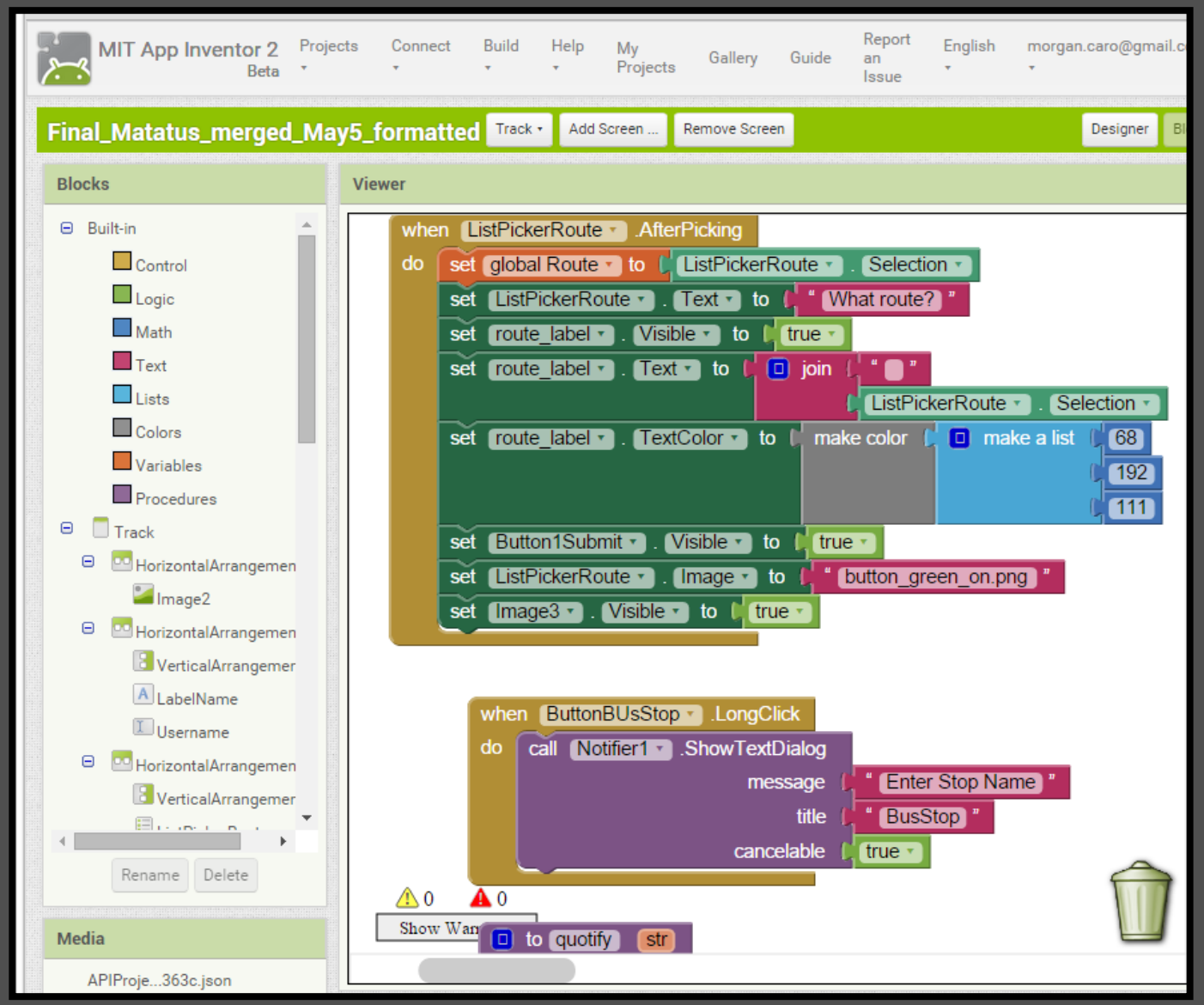
Filter | No filters applied. Sorted by Date

1,001-1100 of 2534

Date	UserID	TripID	Route	Latitude	Longitude	Stop	BusStopID
May 4, 2015 6:44:15 PM	carolina	1430779435762	1	42.35606	-71.09219		
May 4, 2015 6:44:05 PM	carolina	1430779435762	1	42.35606	-71.09219		
May 3, 2015 2:14:09 PM	carolina	1430676473357	1	42.36031	-71.09468	1	84 mass
May 3, 2015 2:14:06 PM	carolina	1430676473357	1	42.36031	-71.09468		
May 3, 2015 2:13:56 PM	carolina	1430676473357	1	42.36031	-71.09468		
May 3, 2015 2:13:46 PM	carolina	1430676473357	1	42.36096	-71.09585		
May 3, 2015 2:13:36 PM	carolina	1430676473357	1	42.36096	-71.09585		
May 3, 2015 2:13:26 PM	carolina	1430676473357	1	42.36096	-71.09585		
May 3, 2015 2:13:16 PM	carolina	1430676473357	1	42.36096	-71.09585		
May 3, 2015 2:13:06 PM	carolina	1430676473357	1	42.36096	-71.09585		
May 3, 2015 2:12:56 PM	carolina	1430676473357	1	42.36096	-71.09585		
May 3, 2015 2:12:46 PM	carolina	1430676473357	1	42.36096	-71.09585		
May 3, 2015 2:12:40 PM	carolina	1430676473357	1	42.3641	-71.10036	1	Albany
May 3, 2015 2:12:35 PM	carolina	1430676473357	1	42.3641	-71.10036		
May 3, 2015 2:12:25 PM	carolina	1430676473357	1	42.3641	-71.10036		



PLATFORM: App Inventor



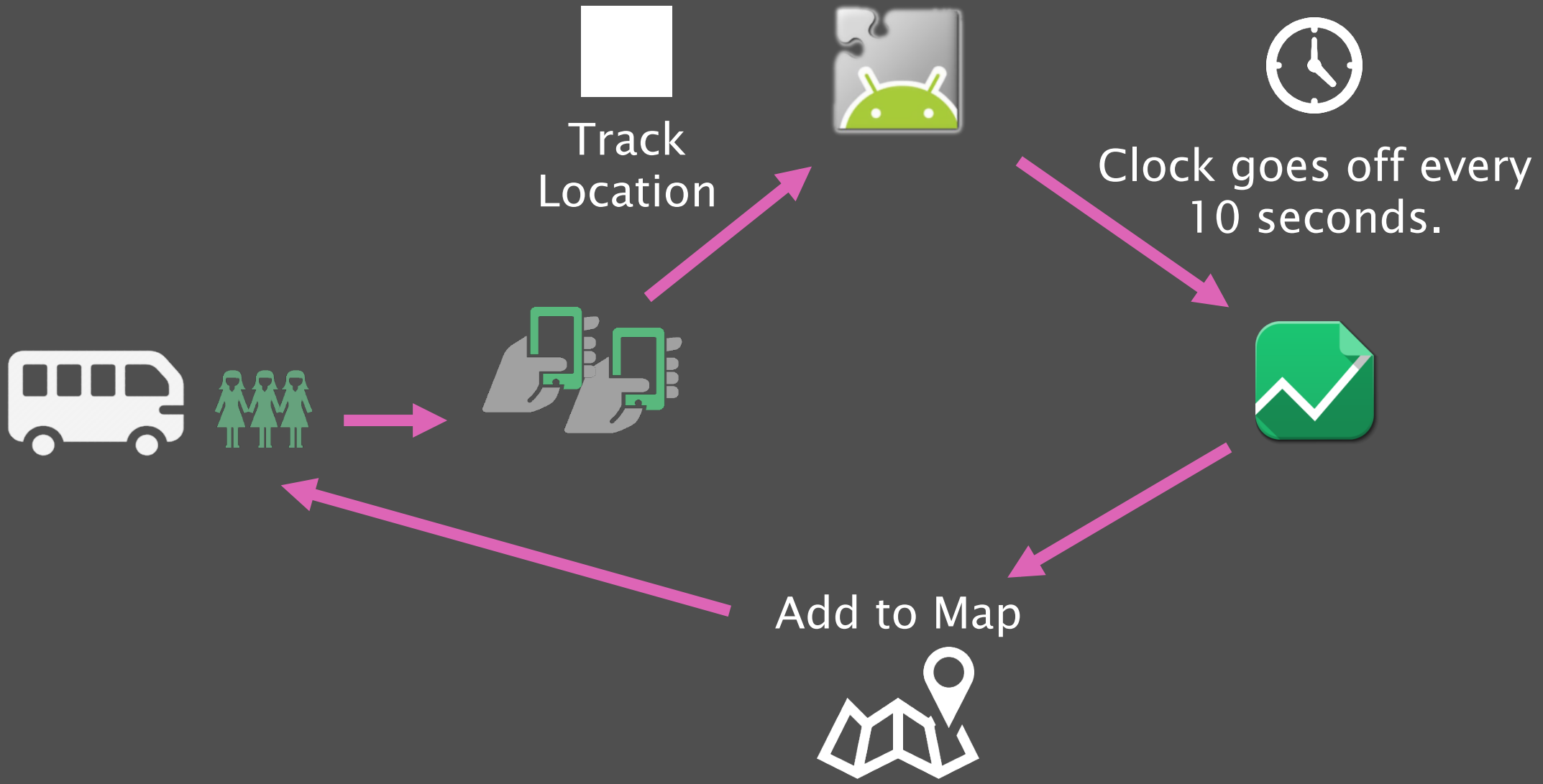
PROS

- No Coding Experience Required
- \+
- Thriving Community
- \+
- Real-time Emulator

CONS

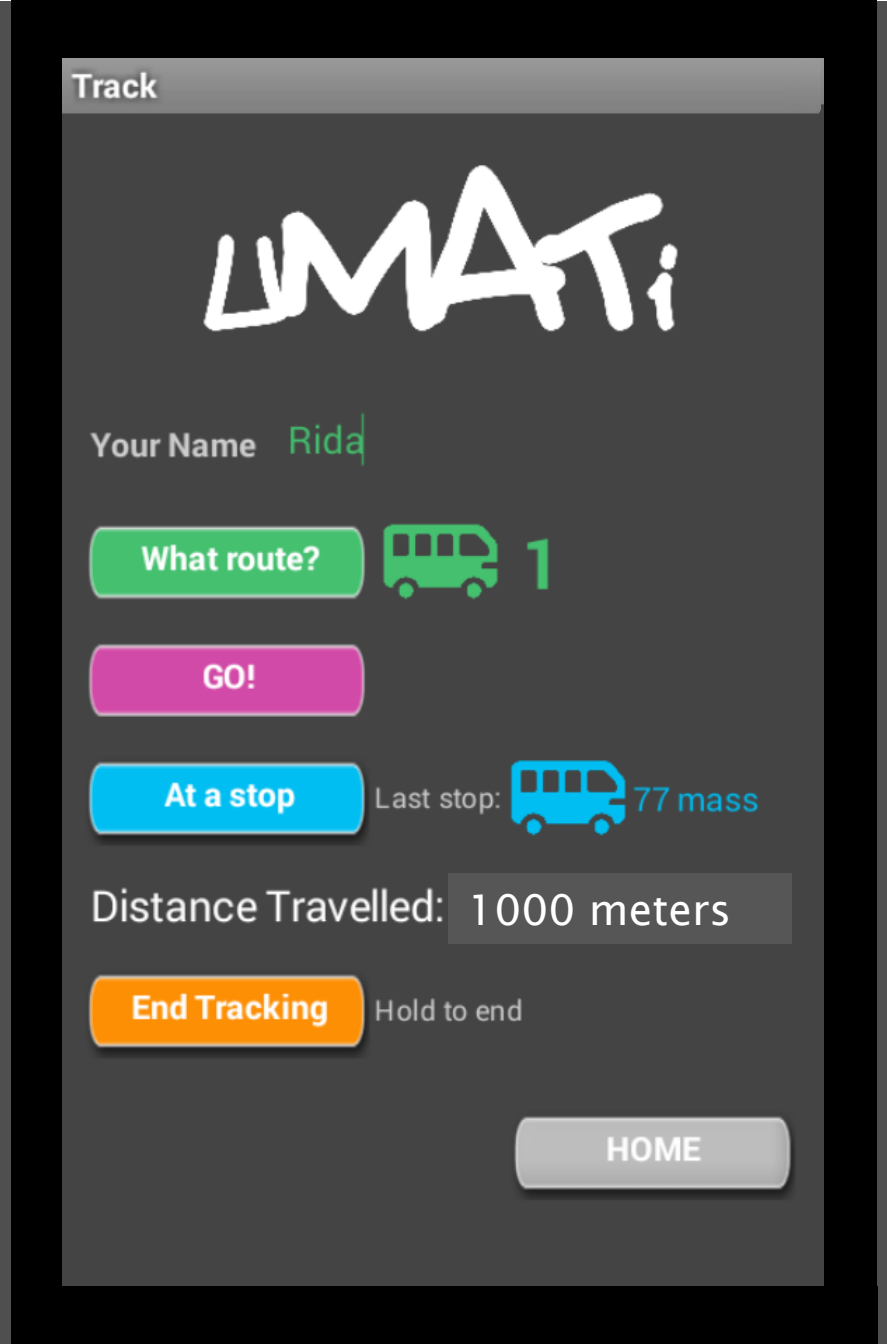
- Limited functionality
- \+
- Difficult to De-bug
- \+
- Heavy apps

INTERACTION



HOW IT WORKS

- Press Track Me
- Enter Your Name
- Select Route
- Press Go
- Record Bus Stops
- Distance traveled
- End Tracking
- Go to Home Screen



HOW IT WORKS

Fusion Table

- Access Rights
- Columns

FinalLoc

Add Attribution - Edited at 6:55 PM

File Edit Tools Help | Rows 1 | Cards 1 | Map of Location

Filter | No filters applied. Sorted by Date

1,001-1100 of 2534

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May 3, 2015 2:13:16 PM	carolina	1430676473357	1	42.36096	-71.09585		
May 3, 2015 2:13:06 PM	carolina	1430676473357	1	42.36096	-71.09585		
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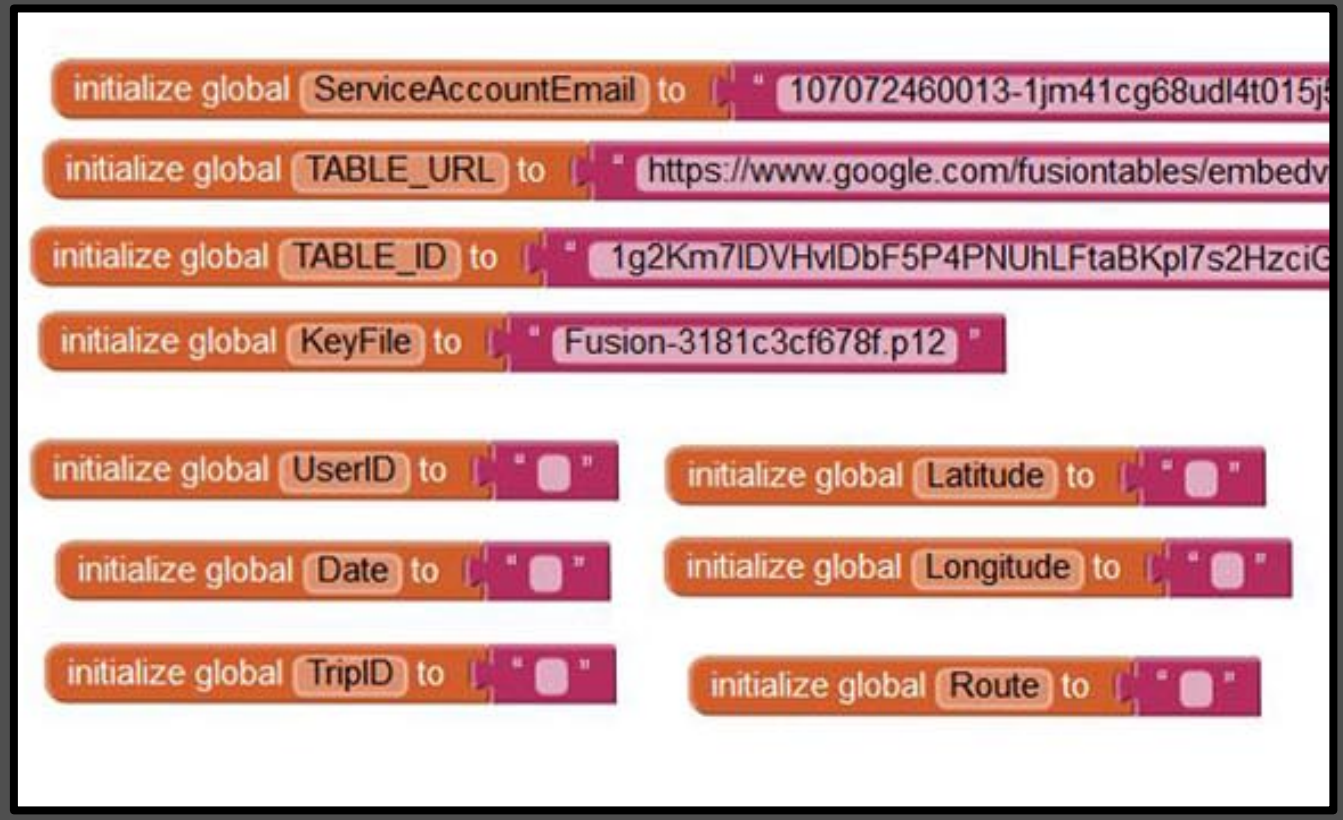
May 3, 2015 2:12:25 PM	carolina	1430676473357	1	42.3641	-71.10036		

HOW IT WORKS

Have App inventor talk to Fusion Tables:

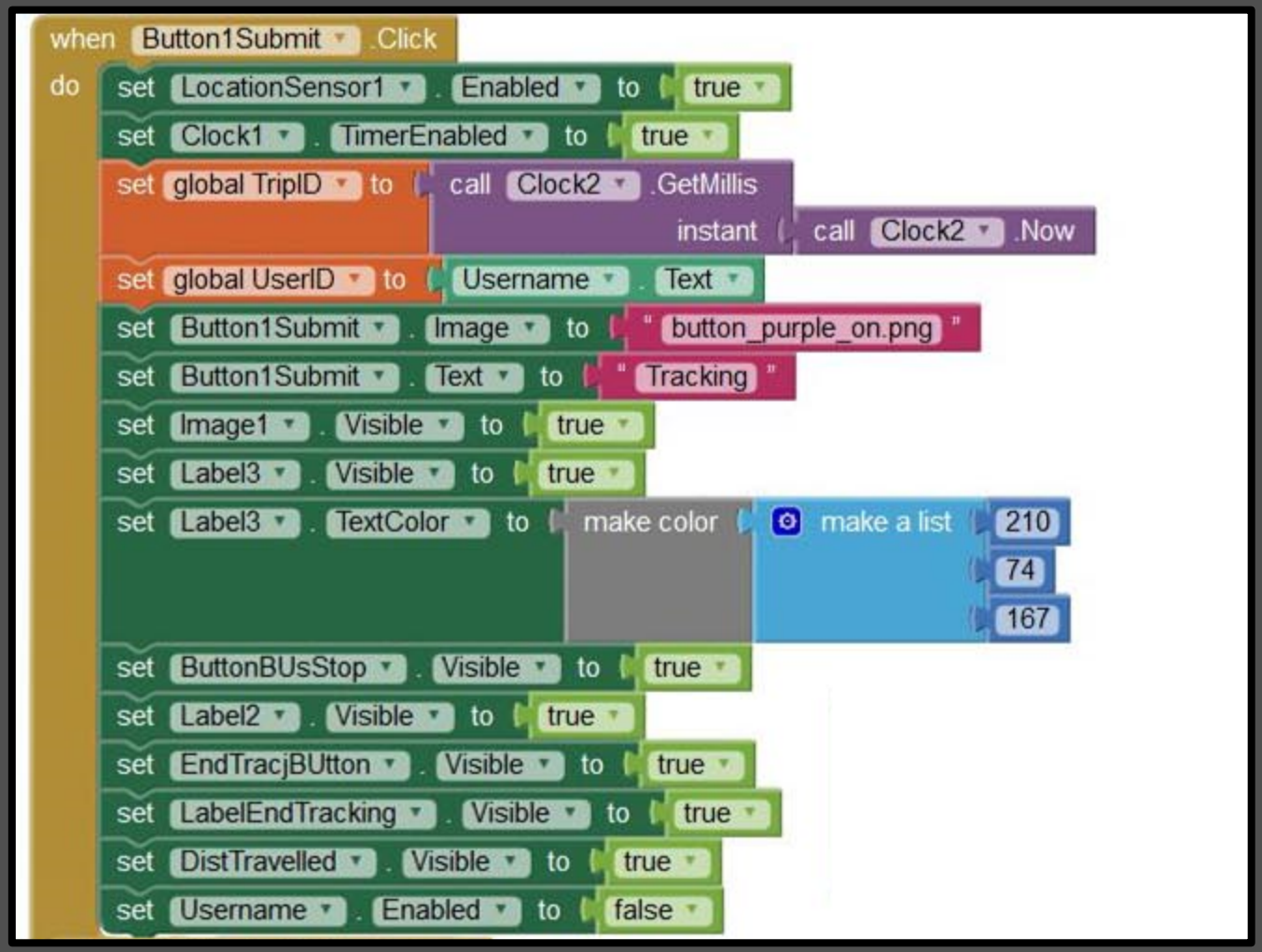
- Set up a Fusion Tables Control
- Create Global Variables
- Call Insert Data
- Create a Query



HOW IT WORKS

After you Press Submit:

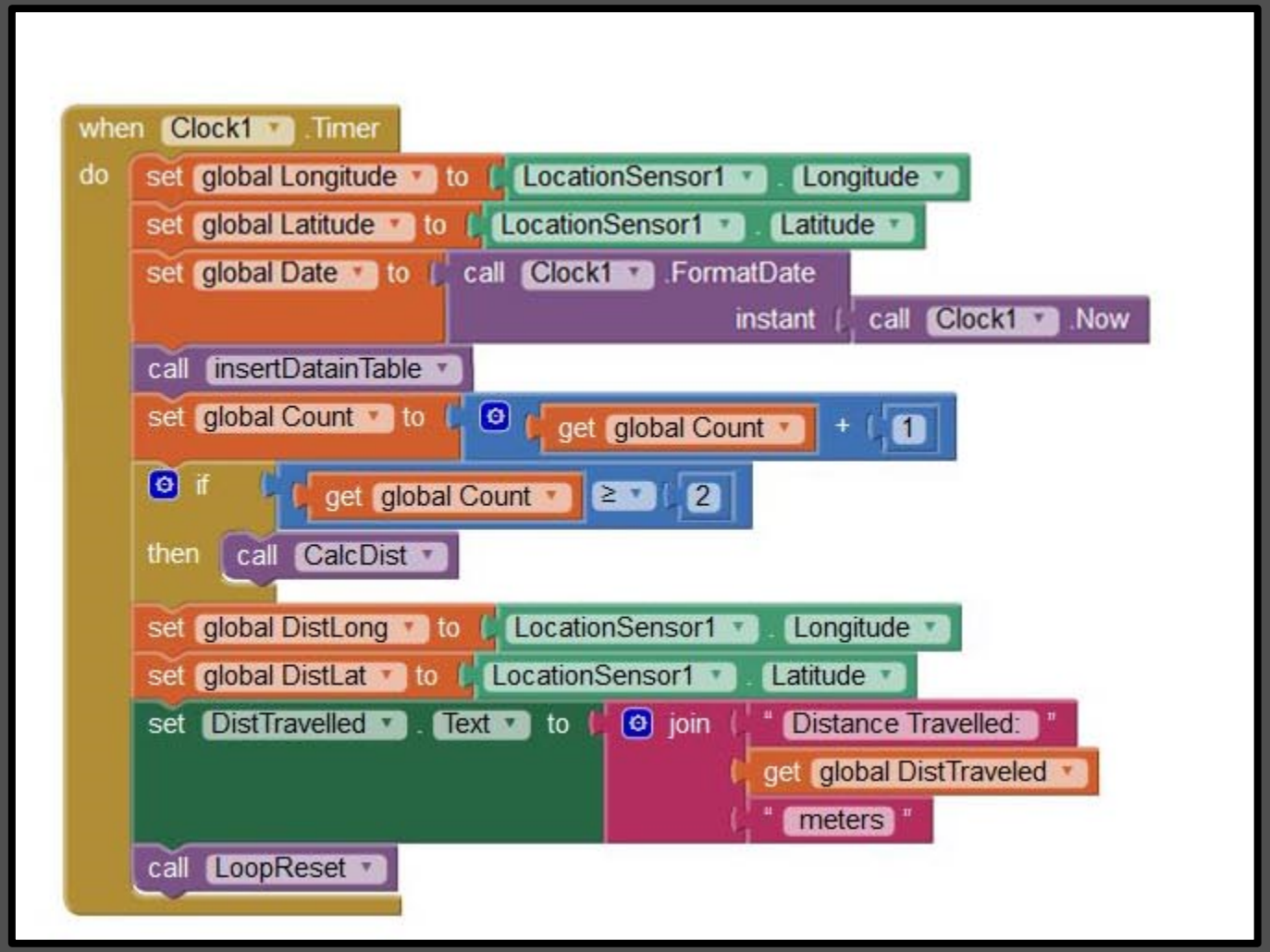
- Timer starts counting
- Location Turns on
- User, Trip, Route ID set



HOW IT WORKS

Every 10 seconds:

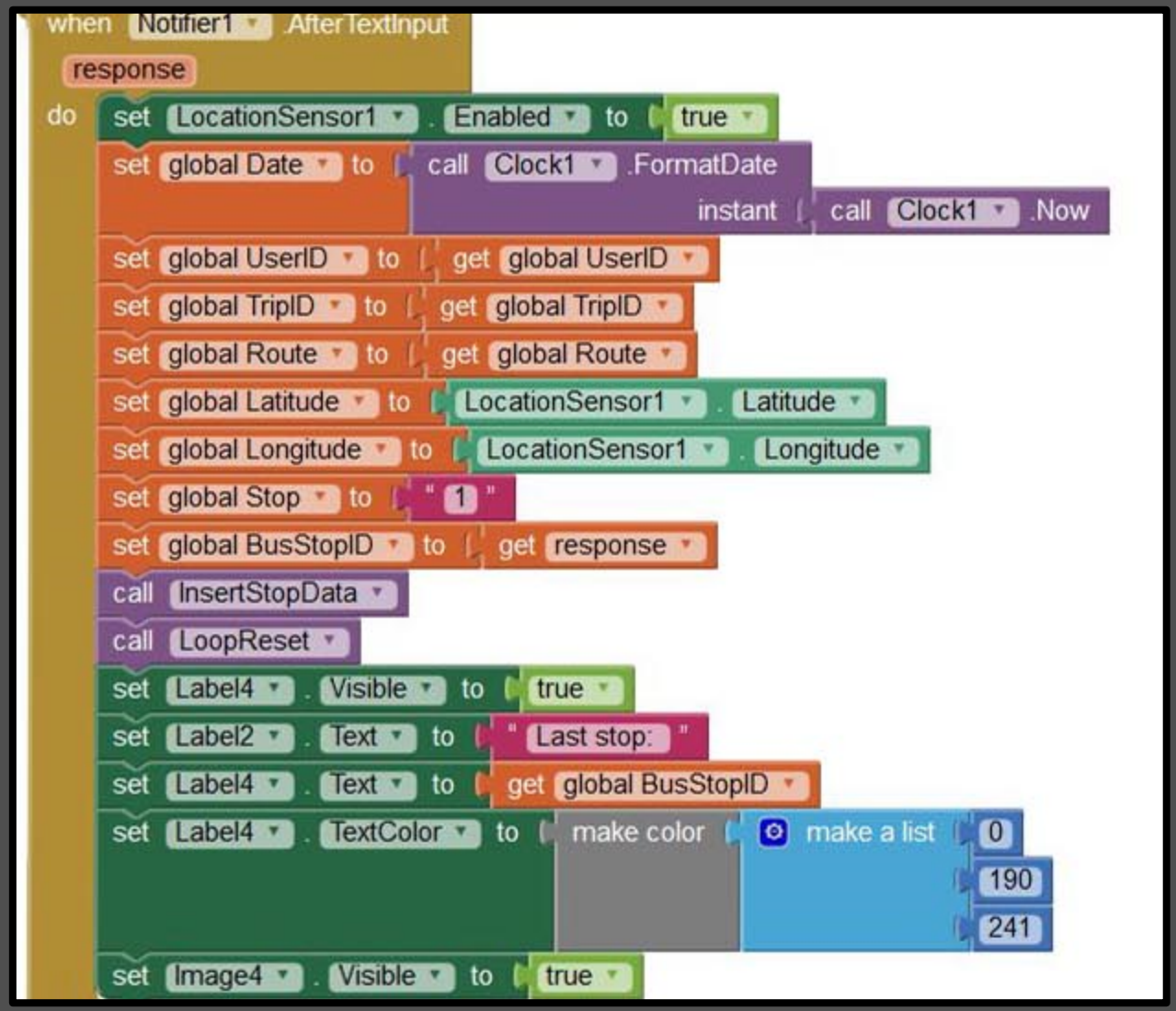
- Location and Date are re-calculated
- Data is entered in to the table



HOW IT WORKS

Hold the Bus Stop Button:

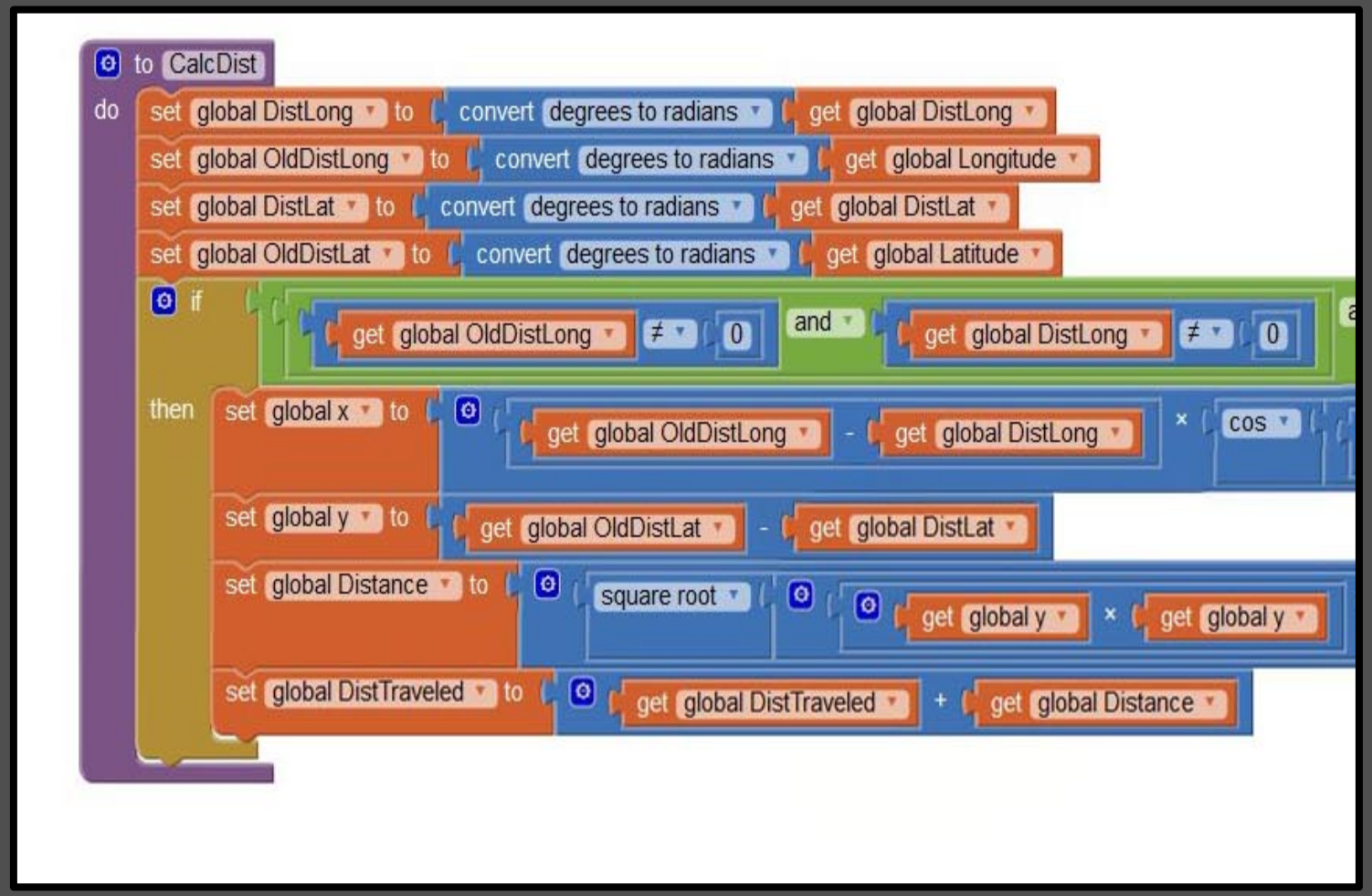
- Force fires the location
- Records information
- Calls the Bus Stop procedure



HOW IT WORKS

Distance calculated:

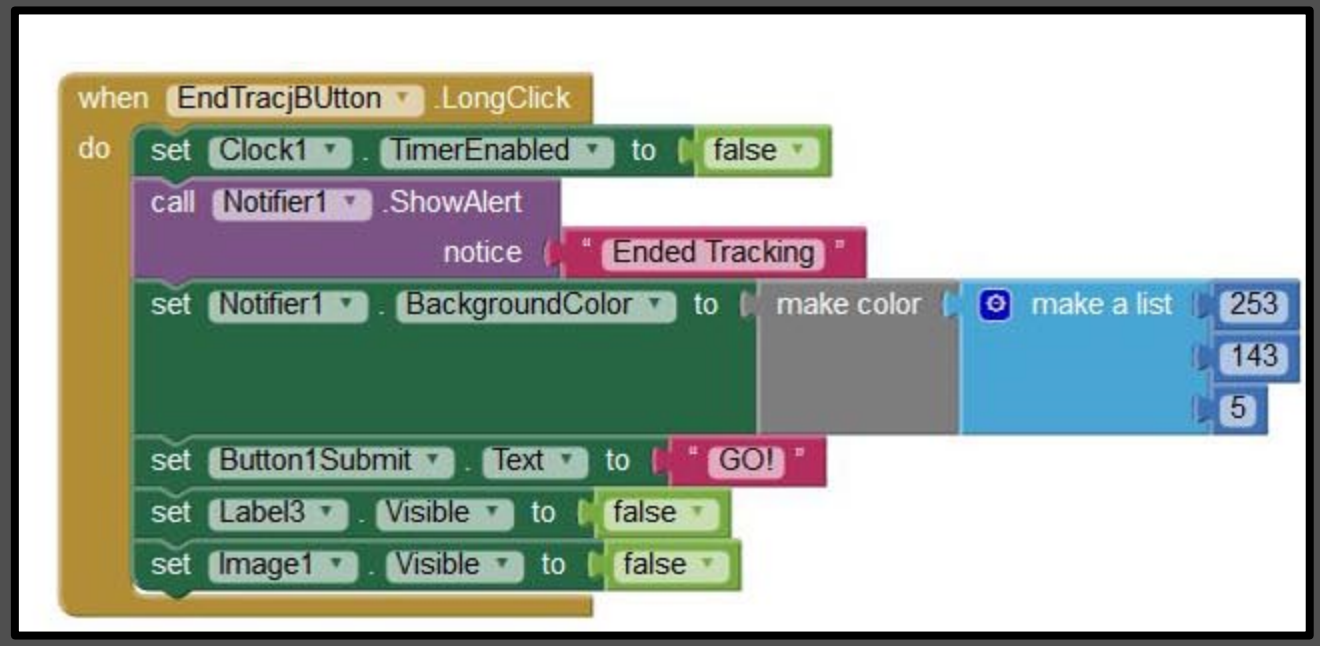
- Calculates the distance between the previous GPS recording and the current one
- Adds new distance to distance already travelled



HOW IT WORKS

End Tracking:

- Turns off the Clock timers and location sensor



TESTING
(April 24)

Functionalities

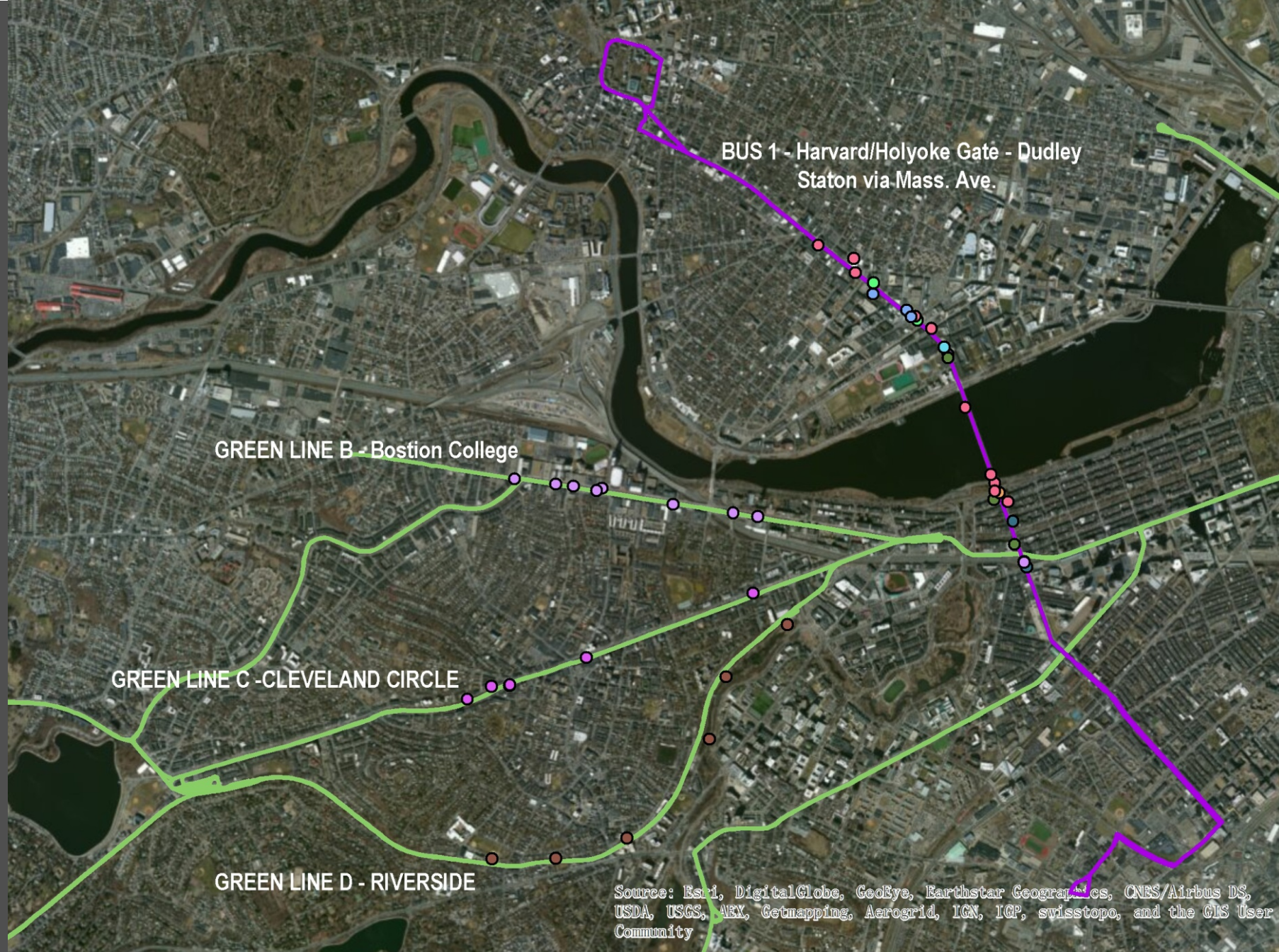
Geo-Tagging

Input to database

Adjustments

Data entry only after hitting “submit”

“End tracking” button



TESTING
(May 4)

Functionalities

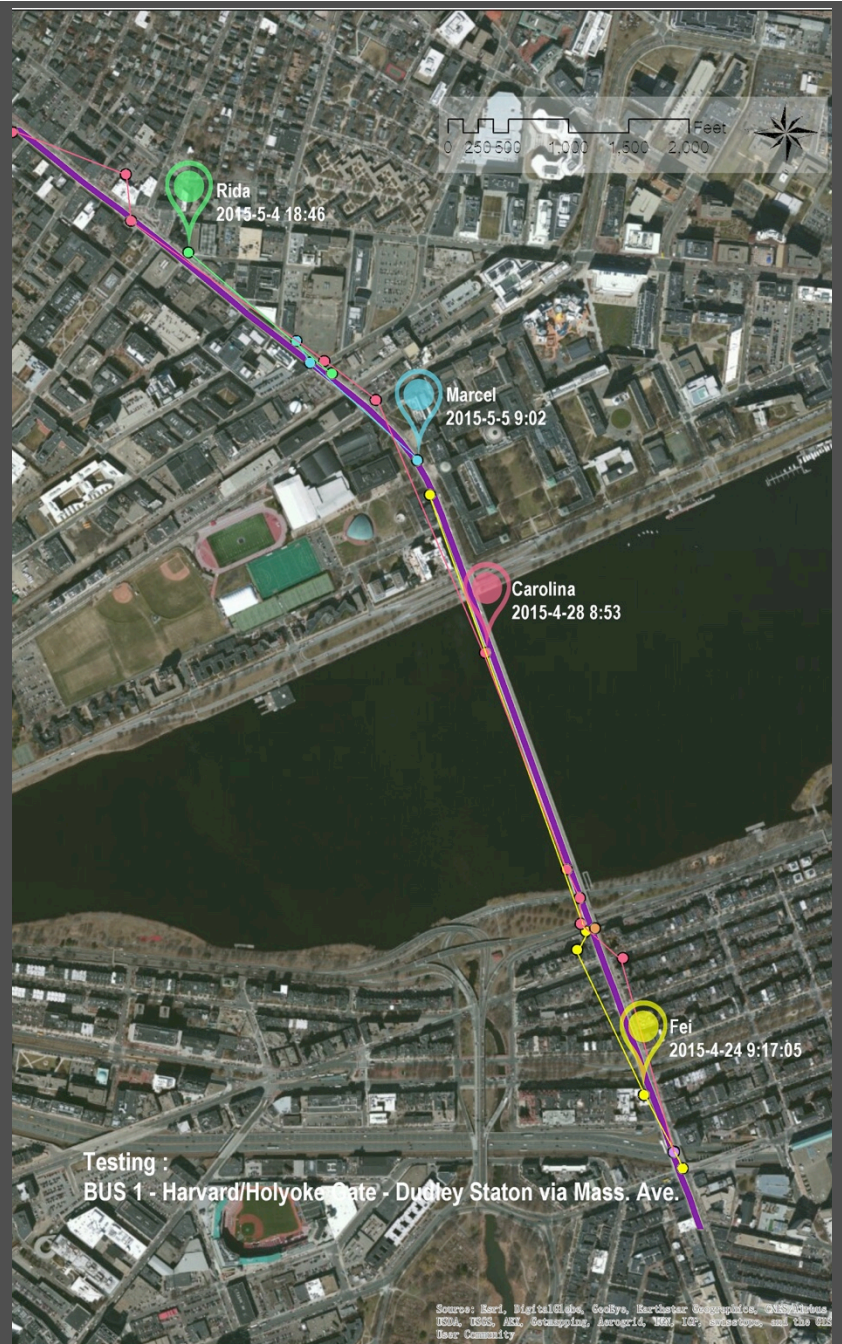
Distance calculator

Trip ID generator

Bus stop recorder

Adjustments

User interface



Remaining Issues

New GPS location identified every>10 seconds.

MANAGEMENT COMPONENTS

BUSINESS SIDE

- Running the marketing campaign
- Troubleshooting
- Software updates
- Managing user accounts
- Checking for system abuse
- Seeking business partners

DATABASE SIDE

- Data quality control and cleanup
- Enforcing consistency in data structure
- Making sure google gets its update once a year
- Other research projects + grants for alternative data uses

TECHNICAL TO-DOs

BASIC IMPROVEMENTS

- User ID Login and password system
- Dedicated server and database to replace Fusion Tables
- Only query server when data collection is finished

ABANDON APPINVENTOR

- Ability to run in the background
- Develop the app as a team in a collaborative space
- More flexibility and options
- Easier to debug and find problems

USER EXPERIENCE

- Link to real-time maps within the app interface

TECHNICAL TO-DOs: BACK END

- Screening Points for Accuracy
- Snapping Points to Roads
- Aggregating Points from Multiple Users
- Comparing Users' Paths to Existing Routes
- Updating Map when Disparities Exist

PARTNERSHIPS

ma3route

- Information on traffic, matatu directions and driving reports
- Widespread Popularity

- Data Sharing
- Better Directional Services
- More Incentives

- Advertisement
- Provides channel and aggregation

PARTNERSHIPS

Chain Stores and services offer discounts or coupons in exchange for MaTokens

Advertisement

Support a cause that universally benefits the citizens of Nairobi

Exposure

Places for people to spend MaTokens

You need it, We've got it.
NAKUMATT
• Quality • Value • Service • Variety • Lifestyle
REGIONAL

CHANDARANA SUPERMARKET
Driving down the cost of living

naivas
saves you money

Safaricom

airtel

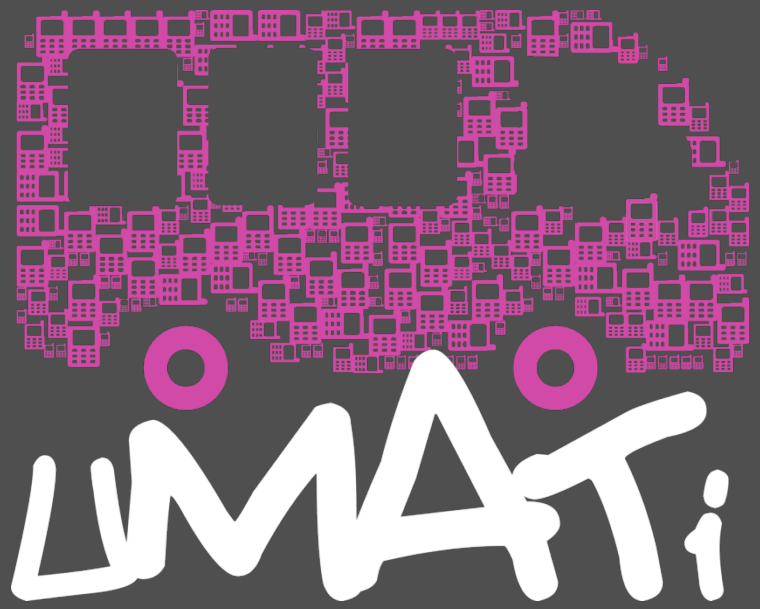
Highwayy Mall

MARKETING STRATEGY

Social Media campaigns targeted at the Tech crowd

Student groups gathering in popular hangouts wearing Umati shirts

Gain a bonus in MaTokens if you refer a friend to the app



QUESTIONS?