

# TagSwarm

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# TagSwarm Presentation Outline

- Overview
- Requirements
- Design
- Walkthrough
- Known Issues
- Future



# TagSwarm Overview

- Help organizations crowdsource tasks involving geolocation
  - Infrastructure improvement
  - Disaster response
  - Crime solving
- Create Tag with
  - GPS coordinates
  - Picture
  - Textual details
- Android OS



# TagSwarm Requirements

- Choose username
  - Create tag with geo-coordinates from GPS
  - Name the tag
  - Fill in tag details
  - Auto-associate unique device ID with tag
  - Auto-associate creation time with tag
  - Associate picture with tag from camera
  - Update tag
  - View list of tags and select from it
- Native Android app
  - Direct install
  - No interference with normal phone ops
  - Prompt user to enable GPS
  - Limit size of pics

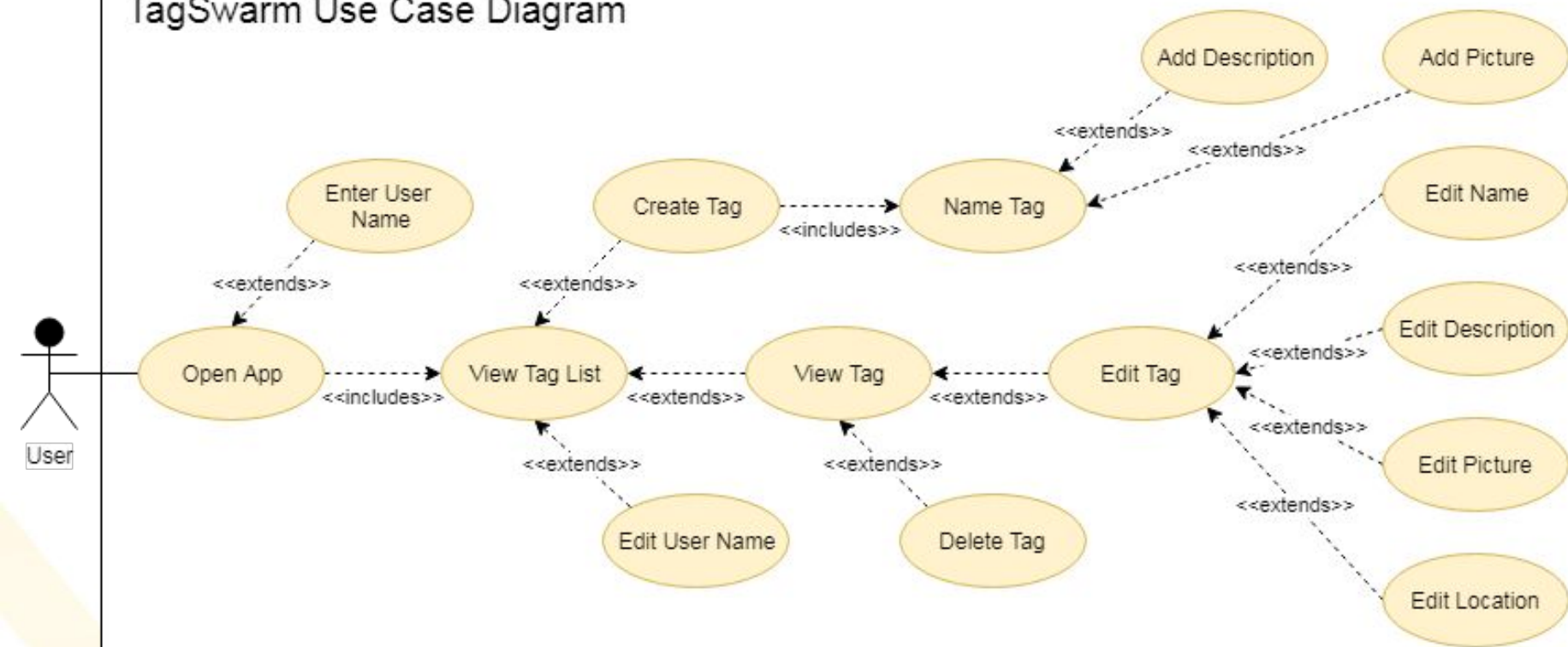
Requirements



# Design

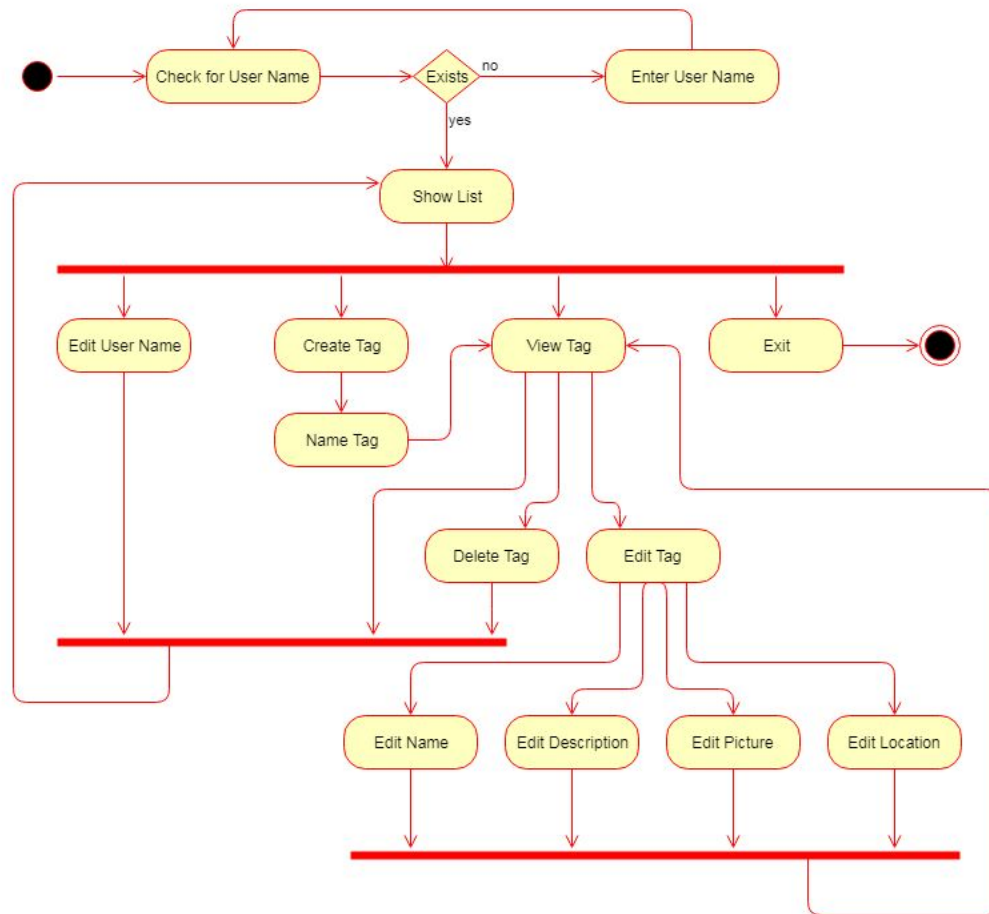


## TagSwarm Use Case Diagram

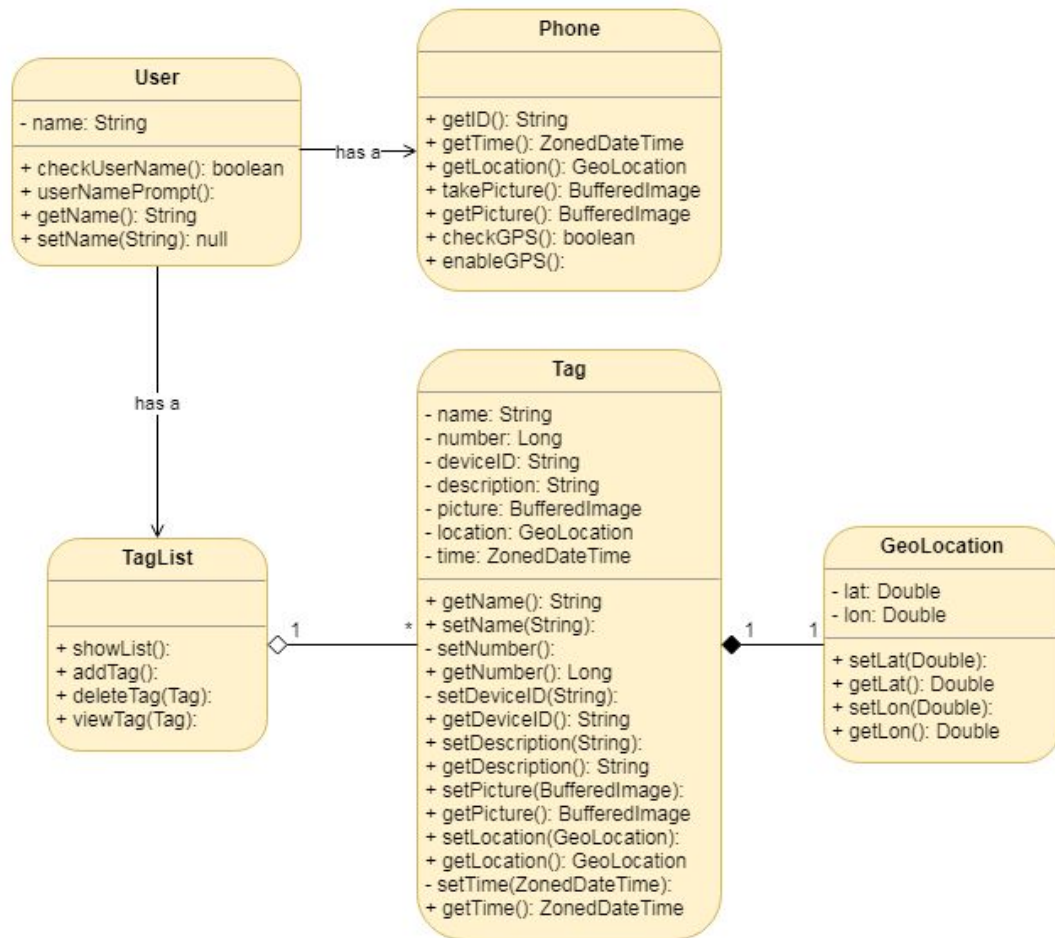




## TagSwarm Activity Diagram



## TagSwarm Class Diagram

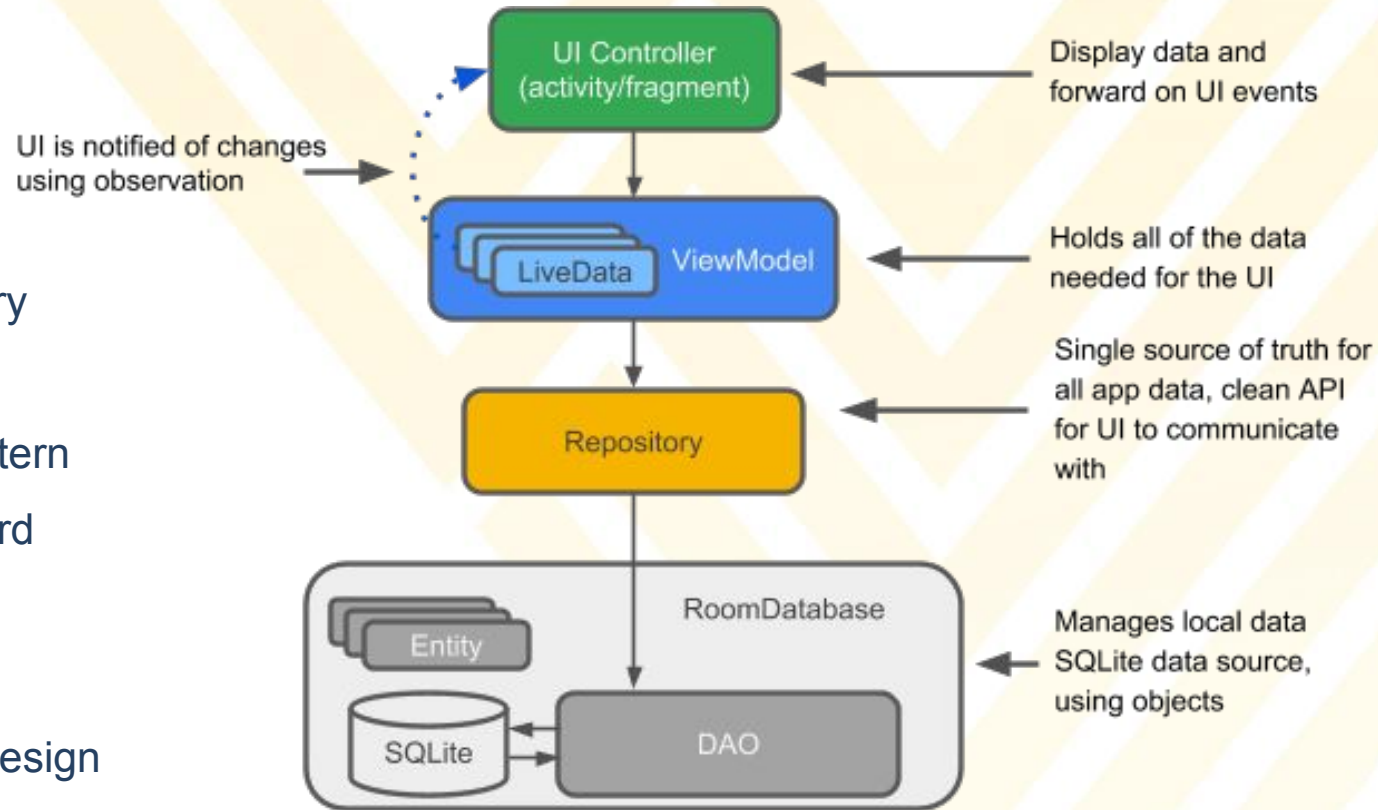


- Initial hack at class diagram
- Prior to good understanding of Android
  - Architecture
  - Design Patterns
- **DRASTICALLY** changed in implementation



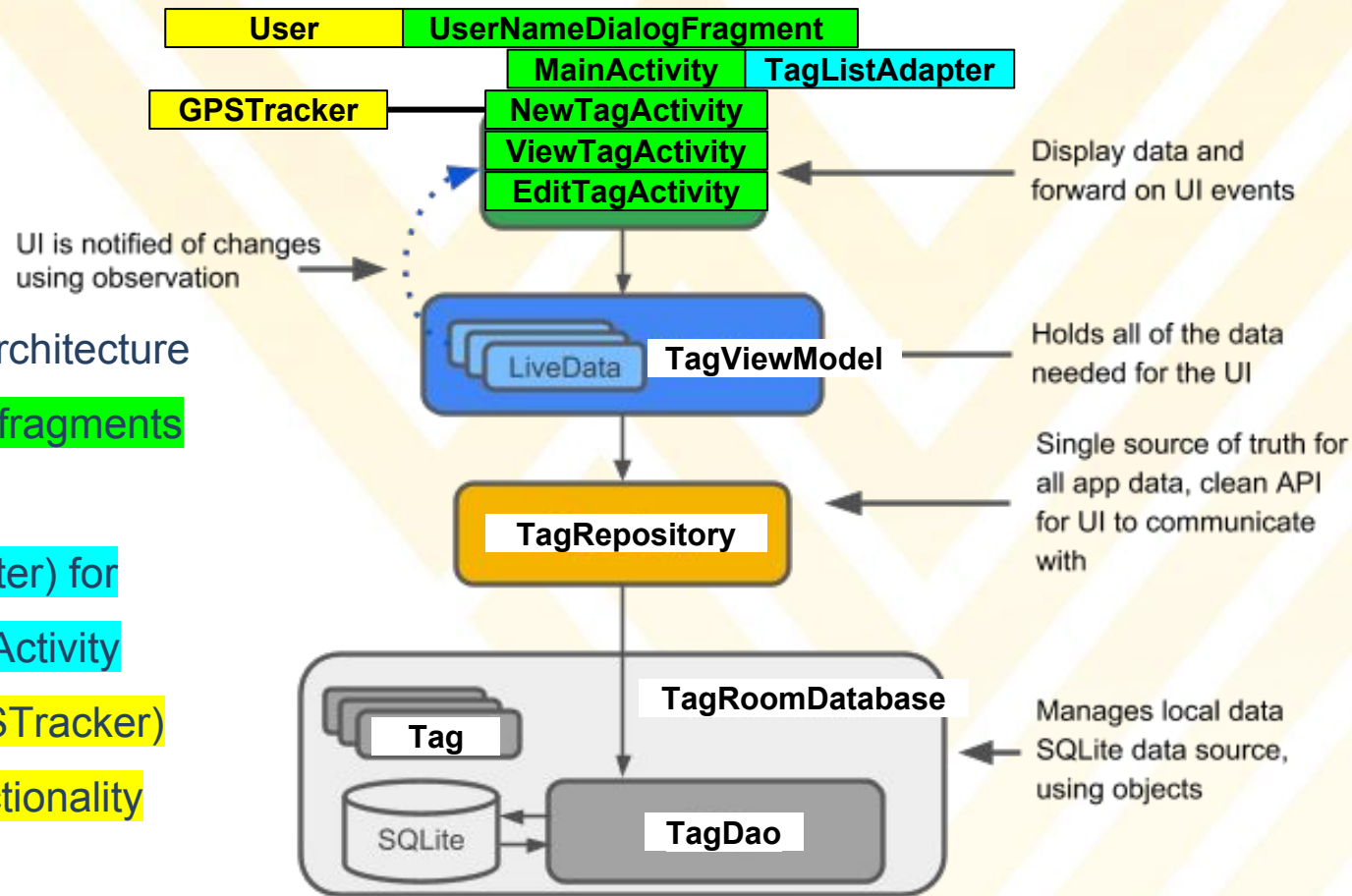
# Android Room

- Data persistence library
- Wrapper for SQLite
- Associated design pattern
- Integrates with standard Android architecture components
- Basis for TagSwarm design



# TagSwarm Architecture

- Overlaid on Room architecture
- Multiple activities and fragments for UI components
- Adapter (TagListAdapter) for RecyclerView in MainActivity
- LocationListener (GPSTracker) for separate GPS functionality
- User singleton



# Walkthrough



## App permissions



TagSwarm

Location ON

Phone ON

Storage ON

## TagSwarm

Please enter a user name.

Username...

OK

## TagSwarm

Username is set to Erik



29° 97% 2:34 AM

## TagSwarm

Tag name...

Tag description...

Latitude:

Longitude:

Time:

GET GPS READING

TAKE PICTURE

SAVE TAG

38° 100% 4:59 AM

## ← TagSwarm

Hotel

This is a picture in my hotel room

Latitude: 39.78496077

Longitude: -84.11832575

Time: Fri Nov 09 04:59:33 EST 2018

GET GPS READING

TAKE PICTURE

SAVE TAG



## TagSwarm

This is a picture in my hotel room

Latitude: 39.78496077

Longitude: -84.11832575

Time: Fri Nov 09 04:59:33 EST 2018

GET GPS READING



TAKE PICTURE

SAVE TAG

## TagSwarm

Hotel



## TagSwarm

Tag Name: Hotel

Tag Description: This is a picture in my hotel room

Latitude: 39.78496077

Longitude: -84.11832575

Time: Fri Nov 09 04:59:33 EST 2018



Created by: Erik

EDIT TAG



## ← TagSwarm

Latitude: 39.78496077

Longitude: -84.11832575

Time: Fri Nov 09 04:59:33 EST 2018



Created by: Erik

EDIT TAG

DELETE TAG

RETURN TO LIST

## TagSwarm

Hotel

grocery

has station

home

school

work



## ← TagSwarm

Tag Name: grocery

Tag Description:

Latitude:

Longitude:

Time:

Created by: Erik

EDIT TAG

DELETE TAG

RETURN TO LIST

## TagSwarm

Hotel  
has station  
home  
school  
work

grocery deleted



## ← TagSwarm

Tag Name: school

Tag Description:

Latitude:

Longitude:

Time:

Created by: Erik

EDIT TAG

DELETE TAG

RETURN TO LIST

## ← TagSwarm

Tag Name:

school

Tag Description:

I have been here for four weeks

Latitude:

Longitude:

Time:

UPDATE GPS READING

UPDATE PICTURE

Please enable GPS

SAVE CHANGES

CANCEL

## ← TagSwarm

Tag Name:

school

Tag Description:

I have been here for four weeks

Latitude: 39.78492553

Longitude: -84.11851508

Time: Fri Nov 09 07:54:24 EST 2018

UPDATE GPS READING

UPDATE PICTURE

SAVE CHANGES

CANCEL

## ← TagSwarm

Tag Name: school

Tag Description: I have been here for four weeks

Latitude: 39.78492553

Longitude: -84.11851508

Time: Fri Nov 09 07:54:24 EST 2018

Created by: Erik

EDIT TAG

DELETE TAG

RETURN TO LIST

## TagSwarm

**Hotel**

**has station**

**home**

**school**

**work**

school updated



# TagSwarm Known Issues

- Able to bypass username entry
- Persisting the username
- Phone rotation
- No confirmation dialog for deletion
- Able to bypass saving updates with back button
- No install prompting for location, phone, and storage permissions



# Future TagSwarm Requirements

- Map integration and tag selection
- Synch with cloud DB
- Admin view and update from web
- Admin create user groups
- Users join one or more user groups
- Users see others' tags in group
- Users comment on others' tags
- Export .kml file for use in other mapping apps
- Unique codes to join groups
- Authentication
- Core tag details only editable by creator and admin
- Google Play Store distro
- iOS App Store distro
- Mobile website version with authentication



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