Date: 2011-09-21
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WhatsUp System design document

1 - Introduction

The WhatsUp application is an android client for viewing and creating annotations with attached data on a global map. All information contributed to the system is public to all users, and distributed via a central server.

1.1 - Design goals

WhatsUp is a client application that will communicate often with the server. This raises several concerns and goals:

- Making sure that relevant and fresh content is shown
- Minimizing the amount of calls to the server
- Minimizing the size of the data sent between the server and the client
- Making sure the system is responsive even when communicating with the server

These goals make the client-server pattern suitable for the app.

1.2 - Definitions, acronyms and abbreviations

Annotation:	A point on the map (set of coordinates) with attached information such as a title, description, category, rating and a set of comments.
Annotation marker:	An object containing the essential information from its corresponding annotation, enough to be displayed on a map or in a list. In practice, an annotation with only coordinates, title, ID and rating.

Reference point:	A location used as a quick-jump point in the map view, and a distance reference in the list view. Reference points can be saved as favorites, and selected from the favorites list. The current location of the device (provided by GPS or equal) is treated as one reference point among the saved points, and can be selected in an equal manner.
Server:	Remote system accessed over the Internet which maintains the user database for authentication purposes, provides the stored annotation information to any requesting device, and handles contributed information (annotations, comments, ratings) from authorized users.
The app:	The front-end of the system, GUI and logic that the user can experience. The app is the first part of the system that is installed and run on the Android platform
Client:	The application, usually in the context of communication with the server.
Data provider:	The local database which correlates to a subset of the server database, concerning annotation/annotation marker information.

1.3 - References
N/A

2 - Proposed system architecture

2.1 - Overview
The android client will show a selection of annotation markers in either a list- or map view. These markers will be fetched from a local content provider (SQLite Database) that keeps up to date through a local service. The service takes care of syncing the database content with the content on the server.

The main design pattern will be the client-server model and almost every activity will either be focused on showing data from the server or submitting data to the server.

2.2 - Software decomposition

2.2.1 - General
The application will be divided into the following modules:
- Activities, various views with view-specific logic.
- Service, the link between the application and the server.
- Model, mostly data carriers.

2.2.2 - Tiers

- Application
- Dataprovider
- Server

2.2.3 - Communication

HTTP communication with REST design between service and server. Java calls between service and app. Binder callbacks will ensure that the activities know when the data they requested is available.

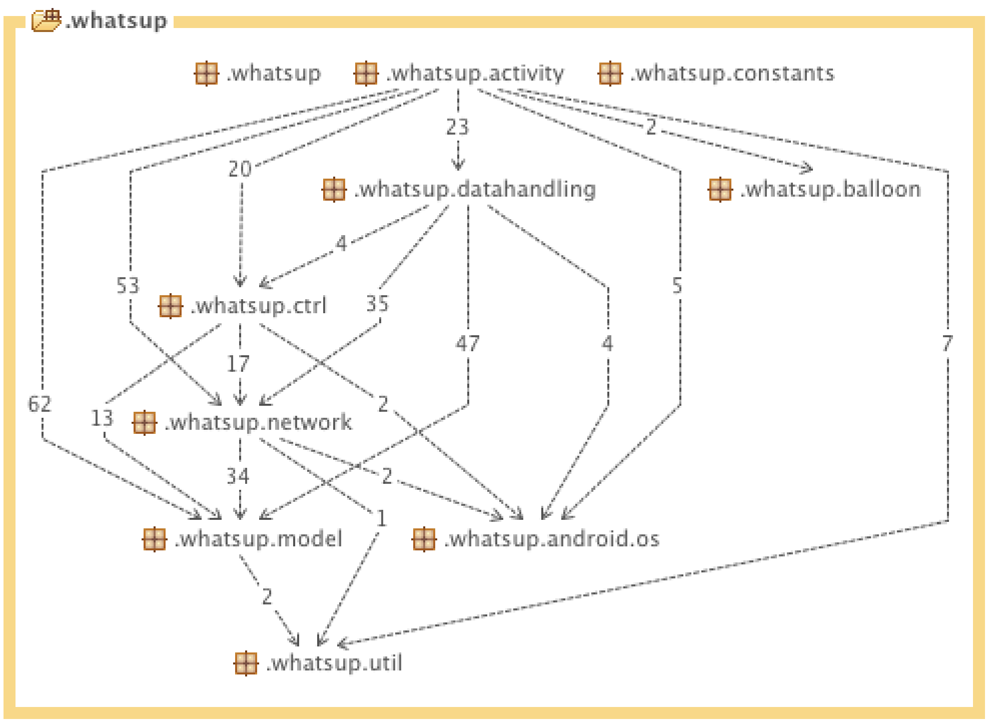
2.2.4 - Decomposition into subsystems

- All activities
- Data provider
- Network layer
- Server

2.2.5 - Layering

N/A

2.2.6 - Dependency analysis



2.3 - Concurrency issues

Server calls has to run in a separate worker thread to ensure the responsiveness of the application.

2.4 - Persistent data management

Settings will be stored in key-value pairs using the SharedPreferences class in the Android API. Cached data will be stored in an SQLite database on the phone.

2.5 - Access control and security

To be able to add content one has to be logged in. Otherwise it’s only possible to view. All traffic to the server will be encrypted and authorized by registered user authentication.

2.6 - Boundary conditions

N/A

2.7 - References

Google I/O Rest Client, 2010, http://www.youtube.com/watch?v=xHXn3Kg2IQE, 2011-09-22

APPENDIX

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