

Photos & Notes

An OpenStreetMap app proposal

INTRODUCTION

BACKGROUND

OpenStreetMap [1] is a community driven project that creates and distributes free geographic data for the world. This crowd-sourcing approach has enabled OpenStreetMap to grow quickly to the point where it provides the most detailed maps available in many regions and is even able to compete with established players in developed countries.

The project now has over 1.9 million registered members [2] however it has struggled to convert members into contributors; the total accumulated number of contributors currently stands at 450,000 [3]. As such we have 1.5 million members who have signed up but never contributed. Some of these members may have incorrectly thought that they needed to join in order to view or use our data however many may have wanted to contribute but did not get over the technical hurdle this entails.

Recent attempts to make it easier to contribute have revolved around edits to the main website and the introduction of a new web-based map editor. A feature called *Notes* [4] also enables members to contribute by means of adding a comment to the map instead of editing the raw data. This is best reached via the web interface.

With many people now using smartphones and/or tablets on a daily basis, now is the time to look again at how best to attract new contributors to OpenStreetMap in a way that is familiar to them and sparks their interest to contribute further.

AIMS

By developing a simple smartphone/tablet app that is sponsored by the OpenStreetMap Foundation (that is the app is seen to be part of the core software) this project aims to:

- Significantly lower the barrier to entry to contributing to OpenStreetMap.
- Increase awareness of, and participation in OpenStreetMap.
- Make it possible to contribute during “on the ground” surveys and without the need for a computer.
- Collect high quality geographic data for inclusion in OpenStreetMap.
- Inspire new members to contribute and, over time, learn how to use our web-based (and offline) map editors.

USE CASE: LUCY

Lucy is a 29 year old doctor living and working in Austria. She already knows about OpenStreetMap as it provides the map data used in her favourite hiking app. She would like to contribute back to the project but doesn't have time to learn. Using *Photos & Notes* Lucy is easily able to contribute just by taking photos. Initially she starts with just photos of things she spots whilst out hiking, but as her interest grows she starts to contribute more frequently.

DESIGN OVERVIEW

COMPONENTS

Delivery of this project requires the development of 3 components: the *Photos & Notes* app, an online server to store the images and notes, and plugins for the main OpenStreetMap editors to allow mappers to view the contributed content.



Lucy, and others wanting to contribute in a simple way to OpenStreetMap, start by downloading the app from the relevant app store. No ‘sideloading’ or other difficult installation process is required – just standard iOS App Store or Google Play Store. From there it’s as easy as pointing the phone at something that needs adding to OpenStreetMap and clicking the camera shutter. So simple to use that anyone with a smartphone will be up and running in a matter of seconds.

For our app contributors their involvement ends there. The app uploads the images to an online database either straight away or when back on a wifi connection. The database includes an open API so that it can be accessed by the main OpenStreetMap editors (iD, Potlatch, and JOSM) plus other systems wanting to tap in to the data.

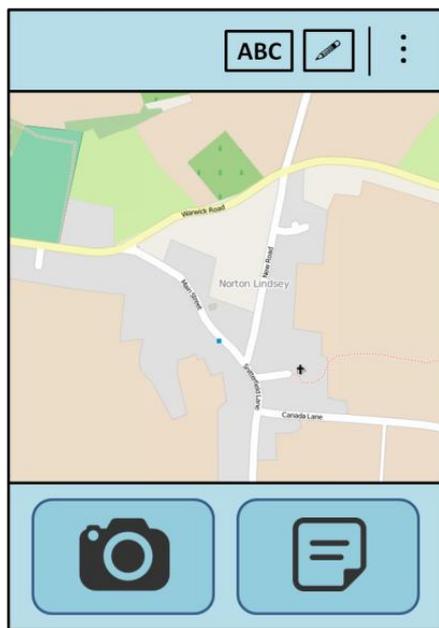
Finally plugins to the OpenStreetMap editors make the collected images available to our numerous contributors who have learnt how to edit the map data. The collected images form a queue of work and once they are processed they are marked as complete (i.e. “closed”).

NAME

To help achieve the aims set out above the app will be made available on the major app stores (Google Play Store and iOS App Store as a minimum) and shall be called *Photos & Notes*. Its developer/organisation will be shown simply as *OpenStreetMap*. This will give the app a sense of “officialness” in the same manner that the default editor on openstreetmap.org has a sense of officialness. It will also mark the beginning of OpenStreetMap's presence in the mobile market beyond the current openstreetmap.org portal.

THE APP

With the aim of greatly reducing the level of entry to OpenStreetMap the app has to be as simple as possible. In the wireframe designs below we see the use case of contributing a photo to OpenStreetMap. It is so simple it only requires 2 screens:



The user is first presented a map view of their current location based on GPS co-ordinates gathered by their phone.

To send a photo to OpenStreetMap the user simply clicks the camera button...

...this turns on the phones live camera view. The user points their phone at whatever feature needs adding to OpenStreetMap and clicks the shutter.

Clicking the tick to accept the photo sends it to the online database along with the GPS co-ordinates and compass bearing.



OFFLINE MODE

Although many smartphone users make use of mobile 3G/4G data on a daily basis there are still strong reasons to include an 'offline mode' in the app; namely data use may incur a cost to the end user, and mobile 'not-spots' mean that a connection is not always possible. To this end the app will include an offline mode.

A menu setting will allow users to opt to only upload the photos when on a wifi connection. Furthermore users can choice to not view a map on the first screen – instead a logo will be showed in its place. An alternate option to use a vector map rather than map tiles would reduce data usage and will be investigated as part of this project.

THE DATABASE

The photos contributed by the app are stored in a database with an open access API so as to not restrict usage to the main OpenStreetMap editors. The notes are uploaded into OpenStreetMap's existing *Notes* feature. The photos database could stand as a separate database to *Notes* or they could be integrated together.

As image files are considerably bigger than the text-only *Notes* data limits will need to be investigated. The following options could be used to keep disk size to a minimum. For reference *Notes* currently includes 305,000 notes of which 219,000 are closed [5].

To minimise disk usage:

- Size limits on either image dimensions or filesize would not only reduce the demand on the server but would also make for quicker uploads. As users are asked to contribute photos of things that need adding to OpenStreetMap images as small as 800x600 or 250kB would suffice (background detail is not necessary).
- Photos could be removed once they have been processed from the queue (i.e. “closed”).
- An interesting option would be to only store photos for 6 months. This has the added benefit of challenging mappers to process them and keep their neighbourhood up to date.

THE EDITORS

The major map editors (iD, Potlatch and JOSM) will need to be adapted to display user submitted photos and notes. Some progress has already been made – for example JOSM is already able to show *Notes* and photo mapping has been demonstrated in iD via a tie-up with Mapillary.

As the key aim is to lower the barrier to entry to OpenStreetMap this project should focus on getting the app right. Basic editor support may be available via an existing JOSM plugin (see below). Specific work to editors could be looked at as part of a later phase of work if needed.

POSSIBLE ENHANCEMENTS

Beyond the basic functionality of the app as described above, there are a couple of possible additional features that could bring added benefit without compromising the ease of use of the app.

The first of these is the addition of a basic drawing mode as indicated by the pencil icon on the app screens above. This enables users to lightly annotate the photo prior to upload (for example to circle the feature they would like adding to OpenStreetMap).

Before contributing images to OpenStreetMap, users may wish to know what is already included in the map database. A second enhancement would be to show details of the map objects closest to their current location. This could be achieved by using a similar technique to OSMfocus (see below).

REVIEW OF EXISTING TOOLS

This section gives a brief review of existing tools and software that have similarities with this project. Where code is available under an open licence this is noted. Any current relationships with OpenStreetMap and the OpenStreetMap Foundation are also captured.

1. **FixMyStreet** by **mySociety** [\[6\]](#)

This is very close to what we are trying to achieve with this project. mySociety provide an app and website which allows users to notify their local authority of issues such as potholes and graffiti that need addressing. Users can add a photo to the report which is uploaded to a database and made available to the relevant local authority.

Several local authorities and other organisations have opted to create a custom app along the same lines. Examples include Love Clean Reading [\[7\]](#), Sort it! [\[8\]](#), and Get Community Payback [\[9\]](#). The later of which was commissioned by an organisation known to the 'Mappa Mercia' OpenStreetMap users group.

The code for mySociety's app is available on github [\[10\]](#) under the terms of the GNU Affero General Public License and mySociety have been a sponsor of State of the Map as recently as 2013.

2. **ScoutSigns** by **Telenav (Skobbler)** [\[11\]](#)

During State of the Map 2014 in Buenos Aires, Telenav presented the beta release of the ScoutSigns plugin for JOSM. The plugin downloads photos of road signs that have been automatically detected and captured via the iOS only 'GPS Navigation, Maps & Traffic – Scout' app [\[12\]](#). The process is similar to this project however where we aim to create an app to allow users to submit photos of anything that needs mapping, the Telenav app is constantly capturing images and automatically extracting just road signs.

Telenav's JOSM plugin is available under GNU GPL v3 and adapting this may provide a suitable solution for the JOSM plugin required as part of this project. Both Telenav and their subsidiary Skobbler have previously sponsored State of the Map.

3. **Mapillary** [\[13\]](#)

Mapillary is a service for crowd-sourcing images of the environment around us. They provide an app for iOS, Android and Windows Phone as well as working with cameras such as Go Pro. Although it is possible to view Mapillary images in iD editor their approach of capturing images of everything (similar to Google's Street View) differs from this project which aims to crowd-source photos of features that need adding to OpenStreetMap and process them as a queue.

There is current interest in building a Mapillary plugin for JOSM [\[14\]](#).

4. **OSMfocus** by **Network42 (Michael Vittrup Larsen)** [\[15\]](#)

OSMfocus is an Android-only app that presents the user with a map view of their locality. It shows the details of nearby objects based on the tags in the OpenStreetMap database. It does not allow you to create or edit any OpenStreetMap data but it is a useful tool when out surveying as it enables you to quickly check what is already in OpenStreetMap.

The app shows map tiles of your nearby area but also includes an experimental 'Internal Vector' version which reduces the amount of mobile data that the app downloads.

5. **OpenCamera** [\[16\]](#)

OpenCamera is a fully featured camera app for Android. It is available under GNU GPLv3 and includes geotagging with compass direction (useful for this project).