Proposal: Better Offline Mobile Maps

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1 Vision

We propose a mapping application that runs on mobile devices and works without internet access. The application would offer public transit directions and would protect its users' privacy.

Problems solved Many mobile mapping applications are available. However, most of them require internet access to operate. Applications that work without internet access do not have transit planning features. Applications that are not open-source may share users' locations with third parties for targeting advertising.

Target users

- People in areas where cellular data is not available
- Travelers who do not want to pay for roaming cellular data
- Users of tablets and other devices with no cellular connectivity
- People who care about their privacy and are willing to sacrifice some mobile device functionality

Differentiation This mobile mapping application would provide an open-source solution for offline mapping. It would provide a combination of offline functionality, transit planning, and privacy protection that no existing application can offer.

2 Software architecture

The application would make extensive use of third-party data and libraries. It would use map data from the OpenStreetMap project and transit route and schedule data from various transit agencies. It would need to store all necessary data on the device.

The application can be divided into the following modules:

- Map data management
- Transit data management
- Map rendering (Mapsforge library)
- Road/Bicycle/Foot routing (GraphHopper library)
- Transit routing



Figure 1: A possible user interface for the application

3 Challenges

The main challenge in developing this application would be managing complexity. Mapping applications can have many features. If the scope of the project constantly expanded, finishing the project in the available time could easily become impossible.

This challenge can be mitigated by clearly defining all features before the start of programming. The features would specifically exclude turn-by-turn navigation. New features could be added only if all existing features were finished and thoroughly tested.