contribute house numbers to OpenStreetMap
Themes

- Why should I map house numbers and addresses?
- Which data models are used for house numbers and addresses in OSM?
- History of the Keypad-Mapper
- Software features
- Backend support for the house number mapper through ENAiKOON OSM services
- Byproduct: contributions to the open source project opencellid.org
- Future developments
Why map house numbers and addresses?

- Many applications that use geospatial data require house numbers / addresses:
  - navigation programs
  - telematics solutions
  - geo-coding applications
  - reverse geo-coding
Opinions

- **Steve Coast (OSM founder)**
  November 2012: once there are enough addresses in OSM there will be no reason to continue using proprietary maps

- **Frederik Ramm (OSMF Board Member)**
  December 2012: “I still don’t think that addresses are of paramount importance. But I think I’ll carry on recording them on the side, and occasionally involving friends and family as I did, and I hope that a few others will join me in that endeavour – if only to prove wrong the sentiment that “we can never get enough addresses through crowdsourcing”.
  http://osm.gryph.de/2012/12/1000-addresses/#more-172

- **Taiwanese OSM community**
  October 2012: after the SOTM in Japan, a competition was held with the goal to map more addresses
  http://wiki.openstreetmap.org/wiki/WikiProject_Taiwan/2012_Competition

"Today OSM is a great display map. It’s routable too if you squint. But it’s essentially not geocodable, you can’t turn an address into a location. If we fix that then there’s really not a whole lot of point to ever using a proprietary map ever again.”
Data models

• Relations

In a relation, individual elements are brought together by describing relationships between these objects.

✓ smaller database
✓ no redundant data

– the mapper needs experience with relations
– not recommended for novice mappers
– high risk for accidentally corrupting relations
Data models

- Karlsruher Model
  - easy to understand, even for novices
  - easy to process for the evaluation software
  - not susceptible to inadvertent destruction of data
  - redundant data in the database -->
    - risk of discrepancies
    - bigger database
  - requires greater effort to change information on street names and postal codes

Keypad-Mapper 3 uses the Karlsruher Modell
History of the Keypad-Mapper

- **Version 1**
  published at the end of 2010 by Nic Roets (South Africa)
  nroets@gmail.com

- **Version 2**
  published in the middle of 2011 by Cobra (Germany)
  cobra_osm@yahoo.com

- **Version 3.0**
  published February 2013 by ENAiKOON
  msemm@enaikoon.de

- **Version 3.1**
  published June 2013 by ENAiKOON
  msemm@enaikoon.de
App details

- Platform: Android
- Active users: > 2,600
- Download at:
  Google Play, ENAiKOON Server
- OSM wiki page:
  German, English, Spanish, Italian, Latvian, Dutch, Russian, Ukrainian
- Wish list for new enhancements: on the wiki page
Features: house number recording

Actual street and postal code
Input box for house numbers
Menu bar
  • undo
  • GPS “freeze”
  • display GPS / compass
  • photo with GPS coord. in EXIF
  • sound notification with GPS coord.
Keypad
  (layout depends on your screen size)
Help
History:
  last 3 house numbers
Input field for additional notes
Features: address information and GPS accuracy
Configurable settings

**Supported languages:**
- German
- English
- French
- Greek
- Dutch
- Italian
- Polish
- Russian
- Spanish
- French
- Greek
- Dutch

**Measurement systems**
- metric
- imperial

**Data can be sent as an e-mail attachment**

**Reports bugs of the app to the developers**

**Usage of compass for heading calculation instead of GPS at low speed**

**Distance of the address nodes at right angle to the direction of movement**

“Standby Mode” of the display can be averted

**GPS power saving mode**

**JOSM .wav file folder adjust**

Delete the collected data after the data has been processed
Backend

- NOMINATIM
  - reverse geocoding for the calculation of street names / area codes
  - the app recalculates every 10 seconds
  - 4 individual NOMINATIM servers
  - regular data updates via DIFF files

- ENAiKOOK resource editor
  - more than 100,000 text resources (up to 18 languages)
  - more than 10,000 graphic resources that are language dependent
  - server-based resource management
Further ENAiKOON backend capabilities

- **TIREX tile server load balancer**
  3 individual tile servers with TIREX load balancers

- **OSRM Server**
  3 individual OSRM servers with load balancers

- **Offline vector map data for MapsForge library**
  3 individual servers for generating vector data
  OpenGL implementation of MapsForge is currently under development
opencellid.org

- GPS positions from cell phone towers
- Complementary to OpenStreetMap
- OpenSource
  Download the database at: www.opencellids.org/en/download/
- The largest OpenSource CellID database world wide
  - 2,700,000 known CellIDs
  - 400,000,000 measurements
  - over 1 million new measurements and 1,500 new cells every day

- Maintainer
  Since March 2013, ENAiKOON is the maintainer of the project and owner of the domain
opencellid.org

Why is OpenCellID integrated with Keypad-Mapper 3?

- valuable data source: house numbers are often recorded in residential roads where opencellid data is urgently needed
- GPS is already active
- mapper will not become confused from these extra features: no interference with the app’s operation
3 main features in future version 3.2

Planned completion date: Christmas 2013

- list of missing house numbers including false positive database
- configurable buttons on the keypad display
- POI editor
- configurable menu bar
- integration of geoChat
- UI improvements
New feature 1: List of missing house numbers

- show streets around your position
- define the radius
- all streets with missing house numbers are shown in a list
- clicking on a street opens a list with the missing house numbers
- record a house number by clicking on the left or right arrow
- Hide a “missing house number” from the list if it does not exist and save it in a false positive database to avoid, that other mappers will search for it again
New feature 2: Configurable buttons on keypad

- define your own icons including multiple tags per icon with constant or variable value
- key:value pairs will be saved with the house number
- switch between different icon levels by tapping on a customisable shortcut
- export and import icon levels → the community can share icon level
New feature 3: POI editor

- create multiple levels – activate and change sequence of levels
- arrange POIs to your preference
- editable keys + values
- values can be entered while mapping the POI
- Use your own icons
- export and import POI levels
- use POI levels of other mappers
UI improvements

- New menu options
  - missing house numbers
  - POI list
  - flash light on/off

- additional features
  - switch flash light on/off
  - configure screen rotation independent from phone settings
Future developments: Version 3.3

Planned completion date: Summer 2014

- Gamification: more fun through
  - team building
  - challenges
  - ranking list

- Map integration: reach additional mappers through
  - display of the current position on a map
  - display of the total distance covered
  - display of the missing house numbers on the map
  - Precise positioning of the POI on the map

Gamification: more fun through team building challenges ranking list

Map integration: reach additional mappers through display of the current position on a map display of the total distance covered display of the missing house numbers on the map Precise positioning of the POI on the map

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How can I contribute?
Step 1: Read the OSM Wiki page

Keypad-Mapper 3

Keypad-Mapper 3 is an Android application dedicated to the rapid mapping of house numbers and address nodes.

This app is an enhanced version of KeypadMapper2, which is based on the original KeypadMapper published by Nic Roets in 2010. ENAIKOON would like to express their gratitude to Nic, who supported them during the implementation of the app's latest version with his ideas and patience.

Step 2: Find an area with missing addresses

http://overpass-api.de/hausnummern.html
Step 3: Start mapping and have fun!