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6. Outro: the only field mapping talk on this conference

Hi! I'm one of those people who have «Prefers to go outside and map» wiki badges. My first edits were fixes to cycling roads, after that I hand-drawn my first walking papers and went to collect some points of interest in a rain. I liked OpenStreetMap for it provided incentive to not sit in a dark room, but actually go out. It was like never ending orienteering contest. I constantly searched for ways to improve and speed up data gathering, so in a year I've bought a car, suitable for exploring even grade 5 tracks. To answer the question in the abstract, yes and no: 99% of the time you'll be driving along reasonable good asphalt roads, but once in every trip there is a moment when you're grateful your car is a four-wheel drive — or wishing you had a tractor.

Obviously the first thing I tried was photomapping. Someone drives a car, you as a passenger shoot everything you see. Using a photo of a GPS receiver you then georeference the images, and process one after another. Drawbacks became apparent almost immediately: you can't use photos made in the evening, and sometimes you can't remember what it was you were making picture of. And you cannot photograph linear and virtual properties, like a bridge or road smoothness.

As most russians, I have a dashcam, but videomapping is a myth: it has all the drawbacks of photos times thousand: you would have to spend an hour to process five minutes of a video recording.

Then I have bought a voice recorder. Using it to collect data is great: you just say everything you see. You don't have to look at it, to point it at anything, and it works even at night. Couple of times we were driving in a big company, and I'm just sitting in the corner and whispering: «city limit, bus stop at right here, crossing, bus stop here at left, shop to the right 24-7, city limit».

Processing recorded messages though is not fun. It's hard to get timestamps right, it's hard to synchronize recorder clock to GPS, it's impossible to load anything but WAV files into JOSM, and how will you hate your voice after an hour or two of deciphering your speech and tying it to map locations! I don't use the recorder now, it still stores hours of unprocessed notes.

And a major problem is precision. For photos, it's basically two seconds, plus the unknown distance between marker and an object. For audio, it can go up to five. At 60 kilometers per hour, that's 40 to 90 meters. I like mapping city limits and milestones, and such precision is not good enough; markers should have subsecond timestamps. I'd prefer simplicity of photo processing and information completeness of voice messages in one. And for placing data on the map to take not much longer than collecting it.

It's simple: write it down. Geoference not images, but text messages. A passenger in a car types what they see on a laptop, and messages are correlated to GPS trace. Of course it would work not only in a car, but on bus or

on train. Do you spend hours travelling, just staring in a window or reading? Now you can collect data for OpenStreetMap. There is a way, it is called NanoLog.

All it requires is a laptop. It starts a timer, and pressing a key stops it, with subsecond precision. Then you are in no hurry to finish the description. There are shortcuts for some frequent objects, like bus stops and city limits. Produced is a simple text file with timestamps and messages. A trace is recorded either with a GPS device, or a different program.

As with photos, you would need a couple of points for georeferencing, not to a time though, but to terrain. You open a trace, then open a log, add an imagery. Then look for referencing points, like bridges or intersection, download traces there and align imagery as precise as possible. Finally you shift log points so they match the imagery. The resulting precision is two to five meters, regardless of speed. Those points were taken at 90 kmh, and you see they match bridge bounds pretty closely.

It's quite fun collecting data, as with other methods. First thing I did is taught my wife to press shortcut buttons while I drive. In two years we collected around three thousand kilometers worth of points. It could've been more, if I could use that data — but the JOSM plugin was finished only this Monday. Now nothing can stop me.

Sadly, it turned out most of the time I drive alone, or everyone in the car but me are sleeping. In OpenStreetMap there are no adequate tools for active blind mapping, that is, when you cannot divert your attention from a road, but need to mark points. Now I'm adapting NanoLog for that. First I took a USB numpad and assigned shortcuts to keys. I left the city with nine shortcuts, in ten kilometers there were six left, in fifty — only three. And it wasn't easy to use them either, because when you are not looking, all buttons feel the same.

The idea is to have a few buttons on the wheel. Some of them add frequent objects, like shortcuts in NanoLog, and two are special. One starts voice recording when pressed, and stops when released. Both markers are stored with timestamps. This favours making short notes which you won't have to hear twice. The same button adds precise markers while recording, instead of shouting «HERE». NanoLog already supports this mode — that's what numpad is used for now.

The second button would make a photo, either by a camera or a webcam. It solves the problem of unknown distance: pressing the button makes a photo, releasing marks a spot where the object stands. This system could be used not only by drivers, but by cyclists and other mappers moving at high speed: for example, on a train.

It's obvious this is not just a program and a data format, but a basis of an ecosystem. Timestamp-message format can be extended with attachments (sound and pictures as an example), and you can have presets with tags to speed up putting collected data on a map. You can have an intermediate website to which you upload collected data: unlike photographs, it can be processed by other people, even speaking different language. Some work in this direction was done on OpenSurveyor project.

Finally, by allowing to drag points on a map, by adding coordinates to the format, you can make better walking papers. Coordinates can be relative, or in their own coordinate system: so, for example, when you find yourself in an unmapped place with few hours to spare, you can fire up an app, and without GPS or internet just quickly draw a street grid, and start collecting points of interest and house numbers, like I did here in a notebook. Or update the map, if you have a connection. OpenStreetMap turns 10 soon, and we still print raster tiles for our walking papers, isn't that ridiculous? The principle of not relying on GPS and internet is simple, but I believe, it could change the way we map. Yes, all this came from wanting to map in a car.

So, this is probably the last talk about field mapping at this conference. From now on, it's all routing, geocoding and rendering. Which is strange: of all cities I visited, only Helsinki is mapped well, and even Germany looks rather empty by Finnish or Russian standards. Please remember that OpenStreetMap is about surveying and travelling to new places. You don't even need a car for that, just go outside and map. Thanks.