COST Action CA15212

**Citizen Science to promote creativity,
scientific literacy, and innovation throughout Europe**

Training School

Quality Control of OpenStreetMap Data

Final Report

Host Institution: Institute for Systems Engineering and Computers at Coimbra
(INESC Coimbra)

Venue: University of Coimbra – Portugal

Dates: 17-19 of June, 2019

Objectives

The main objectives of the training school were to prepare the trainees to:

- Understand the main aspects of spatial data quality;
- Experience the pros and cons of the available tools to collect and edit OpenStreetMap (OSM) data (by using both image interpretation and in the field experience);
- Use available tools to help identify data quality issues and errors in existing OSM data, and subsequently how to fix these problems,
- Learn how to organize and structure OSM mapping events which supports the collection of high-quality data.

Event description

The training school took place between the 17th and the 19th of June 2019, at the facilities of the Mathematics Department - Faculty of Sciences and Technology - University of Coimbra, namely room 0.2 (at the computation laboratory) and room 4.3. Table 1 shows the program of the training school, which lasted three full days (stating on the 17th at 9 a.m. and ending on the 19th at 4 p.m.).

Table 1 – Training school program

Day	Time	Topics
17th of June	9h – 12h30	• Opening session and reception of the participants • Overview of the OSM project • Elements of spatial data quality
	12h30 – 14h	• Lunch
	14h – 17h	• Testing of tools for the creation and editing of OSM data
18th of June	9h – 12h30	• Testing of tools for the creation and editing of OSM data • Testing of tools to identify errors or low-quality data
	12h30 – 14h	• Lunch
	14h – 17h	• Mapping event
19th of June	9h – 12h30	• Examples of OSM accuracy assessment • Analysis of the data collected during the mapping event
	12h30 – 14h	• Lunch
	14h – 16h	• Examples of using OSM for diverse types of applications and the importance of OSM data quality • Discussion and conclusions reached with the activities undertaken during the training school

Participants

The trainners were:

- Cidália Fonte, University of Coimbra / Institute for Systems Engineering and Computers at Coimbra, Coimbra, Portugal
- Luca Delucchi, Fondazione Edmund Mach, S. Michele all'Adige, Italy
- Maria Antonia Brovelli, Politechnico di Milano, Milan, Italy
- Peter Mooney, Maynooth University, Ireland

The local organization was made by:

- Cidália Fonte, University of Coimbra / Institute for Systems Engineering and Computers at Coimbra, Coimbra, Portugal
- José Paulo Almeida, , University of Coimbra / Institute for Systems Engineering and Computers at Coimbra, Coimbra, Portugal
- Alberto Cardoso, University of Coimbra / Centre for Informatics and Systems, Coimbra, Portugal

A total of 31 applications were received. A selection of 20 participants was made considering their CV and letter of motivation, aiming to achieve a balanced representation of profiles, disciplines, gender and countries, with emphasis on applicants from COST Inclusiveness Target Countries. From the 20 selected only 17 attended, one of these only in the first day (some selected candidates could not participate due to either personal reasons or for not being able to get a visa on time to travel to the event). The list of final participants consisted of 7 females and 10 males from nine countries, namely Portugal, Italy, United Kingdom, Estonia, Romania, Turkey, Check Republic, France and Greece.

Description

The training school included theoretical sessions, which were accompanied by the presentation of slides by the trainers, and practical work. All slides and materials used in the training school were made available to the participants. The organization also included in the program space for social events, in order to increase the opportunity of interaction between the participants and to facilitate the establishment of collaborations. For this aim coffee breaks were offered during all mornings and afternoons, and at the end of days one and two (at 17h30 p.m.) guided visits were offered to the participants, respectively, to the historical premises of the University of Coimbra (725 years old and UNESCO world heritage since 2013) and the University of Coimbra Science Museum. The option of participating in group dinners was also provided to the participants.

First day (17th of June)

On the first day an overview of the OSM project was made by Maria Antonia Brovelli, including its characteristics, how to contribute and download data. Specific projects related to OSM were also presented, such as the "Humanitarian OSM Team (HOT)" and "Missing Maps". After a coffee break, an explanation was made by Cidália Fonte on elements of Spatial Data Quality, which quality aspects are harder to analyze in OSM data, and which aspects should be taken under consideration when creating data in OSM. After lunch several tools for OSM data collection were presented by Peter Mooney and Luca Delucchi. At this phase the students could test the tools and edit data in OSM, and also identify problems in the existing data.

Second day (18th of June)

On the second day additional tools for editing OSM data were presented and tested, including the iD editor (by Maria Antonia Brovelli and Cidália Fonte) and JOSM (by Peter Mooney and Luca Delucchi). After the morning coffee break tools for the identification of errors in OSM were presented by Luca Delucchi, and tested by the participants. A presentation on how to visualize, explore and analyse OSM historical data was also presented to the participants (by Luca Delucchi and Peter Mooney). In the afternoon the TeachOSM tool was presented to the trainees and used to prepare the mapping party that took place afterwards. Unfortunately it rained during the afternoon, and therefore the amount of planned field work using field papers and Mapillary had to

be reduced and partially replaced by indoor editing. The collected data was then inserted in OSM and analyzed.

Third day (19th of June)

The third day started with the presentation, by Maria Brovelli, of case studies were the accuracy of OSM data was analyzed in several parts of the world. Then, an analysis of the data collected in the previous day was made using QGIS software, by analyzing both the geometry and attributes of existing OSM features and comparisons were made with available official data. In the afternoon several examples were presented where the OSM data is used to extract additional data about building functions and to generate Land Use Land Cover maps. A final discussion was then made with the participants, and they were asked to give their opinion about the training school.

Conclusions

The participants in the training school learned how to contribute to OSM in several ways, using different tools and approaches (namely with field work and image interpretation), the importance of creating high quality data and how to achieve that. They were also trained on how to organize a mapping party and how to insert the collected data in OSM.

The participant's opinion about the event was very positive, in terms of content but also concerning the interaction with the other participants, with different backgrounds and experiences. Overall, the participants improved their insight on the potential value of OSM data and the importance of contributing with high quality data.