

Draft Proposal for a communication cycle including the different stakeholders in a collaborative mapping project for process work-flow optimization

Melanie Platz¹ and Engelbert Niehaus¹

¹University of Koblenz-Landau, Landau, Germany

platz@uni-landau.de, niehaus@uni-landau.de

Abstract

At the current partially virtual Post-AT6FUI 2016 meeting with FOSS4G Side Meeting at the UN Campus in Bonn, recommendations for collaborative mapping will be derived from proposed requirements and constraints of stakeholders, that become active in an emergency situation. Collaborative mapping is regarded as an instrument to identify the divers of local risk factors and the regional available resources. For risk management and tailored allocation of available resources the input and output of products, data and information by different stakeholders needs to be determined and an appropriate work-flow for the collaborative mapping products has to be identified. Furthermore, interfaces between the different inputs and outputs have to be created if these interfaces are regarded as missing for work-flow optimization. This paper presents first proposals for appropriate communication channels and interface solutions focussing on community integration into the mapping process.

1 Introduction

Collaborative mapping is used in this context for humanitarian risk mitigation strategies (e.g. by Humanitarian Open Streetmap Team (HOT-OSM [<https://hotosm.org/>])). The Openness of an approach is regarded as a requirement, so that risk mitigation strategies can be adapted to heterogeneous societies, divers environmental conditions and regional social constraints.

Open Community is a generalisation of the concept of OpenSource to other collaborative effort. The term “open” for an Open Community refers to the opportunity for anyone to join and contribute to the collaborative effort. The direction and goals are determined collaboratively by all members of the community. The resulting work (“product”) is made available under a free license, so that other communities can adapt and build on them. In this context the “product” of the Open Community is an “improved public health by application of space technologies” [cf. <http://at6fui.weebly.com/open-community-approach.html>].

Beside the openness of the risk mitigation environment the change of the existing situation of people exposed to a certain risks towards a more sustainable situation of lower risk requires the establishment of an innovation process.

The concept of a LivingLab within a Citizen Observatory is proposed as support of user-driven innovation by collaborative mapping results. The concept of openness leads to the application of OpenSource software and delivery of OpenContent and OpenData to support even self-organization of collaborative risk management within communities, that is supported by governmental and non-

governmental tailored allocation of available resources. In Open Communities a LivingLab is a research concept that creates a user-centred, open-innovation ecosystem. The main objective of LivingLabs in the context of the Expert Focus Group – Space & Global Health (EFG-SGH) is that benefits of space technologies should reach the communities and that the research concept quantifies the impact on public health.

This paper is a first draft for the work-flow optimization for collaborative mapping in the context of humanitarian risk mitigation strategies. The proposed communication cycle is regarded as an ongoing optimisation that includes different stakeholders from collaborative mapping support, NGOs, governmental organisations etc. with an open innovation cycle that includes the citizens/ community (user at risk). In the Living Lab concept data analysts, mathematical modellers, health experts, innovation ecosystems experts, mapping experts, ICT experts and other decision makers support the risk mitigation process.

2 Objectives

The Objective of this paper is to suggest a first draft of a collaborative mapping communication cycle for risk management and tailored allocation of available resources.

3 Methodology

The research stance used is pragmatism, the approach is inductive and the strategy is action research with qualitative methods and a longitudinal time horizon, [cf. SAUNDERS et al., 2012].

A communication cycle is suggested by using already existing communication channels and ecosystems and alter selective interfaces and work-flows via the proposed communication circle.

At the current partially virtual Post-AT6FUI 2016 meeting with FOSS4G Side Meeting at the UN Campus in Bonn, the role of the different stakeholders within the cycle will be defined and refined.

4 Proposal for a collaborative mapping circle

4.1 Concept

The following stakeholders contributing to collaborative mapping were identified for the present: the citizens/ community (users at risk), data analysts, mathematical modellers, health experts, innovation ecosystems experts, mapping experts, ICT experts and decision makers.

The following order of events is suggested (see *Figure 1*):

1. The citizens/ community collect geo-referenced data related to risk. A suggestion citizen/community involvement into the mapping process is given in *Section 4.2*. Simultaneously, remote sensed data from satellites is collected. The whole data is stored in a GIS database.
2. The data analysts, mathematical modellers, health experts, innovation ecosystems experts, mapping experts, ICT experts and decision makers map the data, visualize important issues and elaborate risk mitigation strategies, which are presented in the form of recommendations to decision makers.
3. The decision makers decide, which warning and/or decision support is delivered to the citizens/community.

4. The cycle starts from the beginning.

This circle is refined at the current partially virtual Post-AT6FUI 2016 meeting with FOSS4G Side Meeting at the UN Campus in Bonn by identifying the input and output of the different stakeholders and an appropriate communication channel as well as concrete interfaces between the different inputs and outputs.

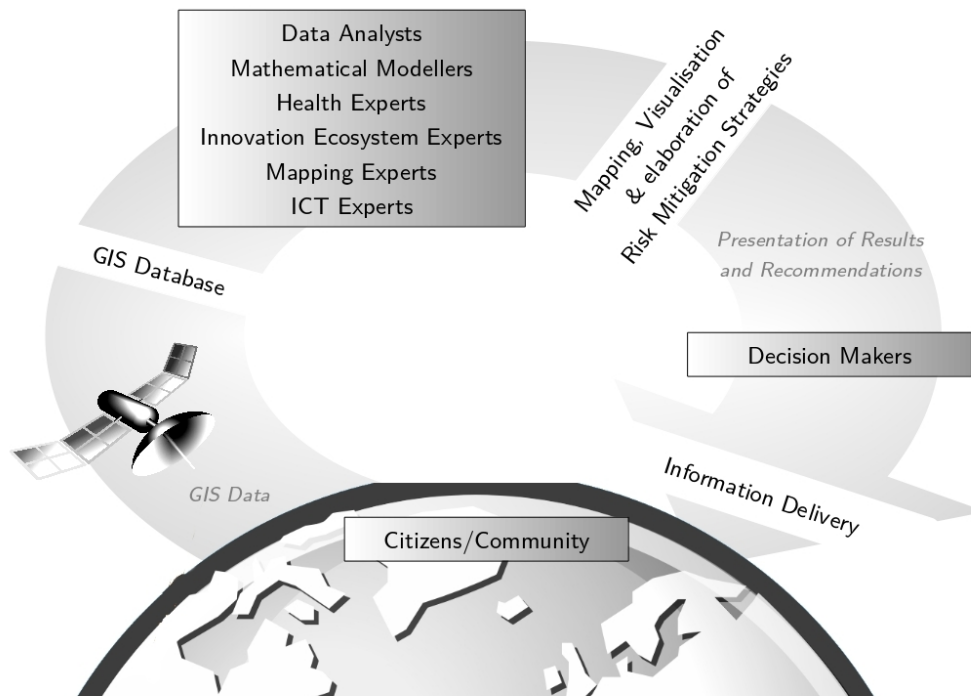


Figure 1: Suggestion for a Collaborative Mapping Cycle

4.2 Community/Citizen Involvement

A citizen observatory, which has proved as a successful concept in several projects¹, could be implemented. Within a citizen observatory, citizens observe environmental conditions, receive a short-term (immediate) benefit and the citizen observatory itself creates a long term positive impact on human health. Such a citizen science approach allows scientists to accomplish goals on ongoing monitoring for observable environmental and educational determinants of risk that would be too expensive to accomplish in a short time span.

Mathematical modelling is applied for the mathematical optimisation of spatial public health using the One Health approach. The data collection of citizens contributes to the generation of risk maps with tailored temporal and spatial information for the citizens. The crowd sourcing approach has the potential to support spatial decisions on activities in health analytics due to events reported to GISs. The analysis leads to spatial decision support for risk and resources tailored to risk exposed users or decision makers, (cf. PLATZ 2014). The risk or resp. resource map is evaluated at the geolocation of the citizen (cf. PLATZ et al. 2014, NAMUYE et al. 2015). The system works similar to the generative

¹cf. e.g. <http://www.citizen-obs.eu/ParticipatingProjects.aspx>

approaches described in (HERSELMAN et al. 2010 & PLATZ 2014). The main requirement in the proposal referring to citizen sciences is, that the citizens must have a benefit for the for crowd sourcing contributions in order to have a sustainable implementation of a citizen observatory. In developed areas, an adaptive Smartphone app could be used in the manner of crowd sourcing. In non-developed areas, another system for data collection and information provision has to be implemented (cf. *Figure 2*), which includes a solution for bridging the last mile problem. (cf. <https://github.com/niebert/COHEN>).

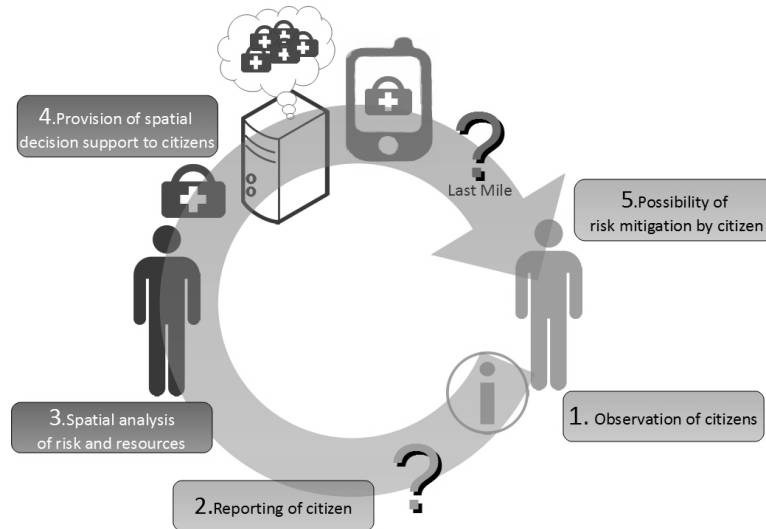


Figure 2: Exemplary Communication Cycle within the Citizen Observatory.
(Source: <https://github.com/niebert/COHEN>)

5 Conclusions

At the current partially virtual Post-AT6FUI 2016 meeting with FOSS4G Side Meeting at the UN Campus in Bonn, recommendations for collaborative mapping will be derived by deriving an order of Stakeholders becoming active in an emergency situation, which requires collaborative mapping for risk management and tailored allocation of available resources. For this purpose, the input and output of the different stakeholders and an appropriate communication channel has to be identified and interfaces between the different inputs and outputs have to be created.

This paper presents first proposals for a communication circle and interface solutions focussing on community integration into the mapping process.

These proposals will be defined at the current partially virtual Post-AT6FUI 2016 meeting with FOSS4G Side Meeting at the UN Campus in Bonn by identifying the input and output of the different stakeholders. Specific Recommendations will be derived within the partially personal and virtual meeting of the stakeholders. Regarding the work-flows in the meeting itself an established communication cycle will be optimized for new challenges and altered requirements for collaborative mapping in the context risk management.

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