

Towards Bridging the Gap between Demand and Supply in Humanitarian Geodata Use

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INTRODUCTION

In humanitarian practice, high-quality and context-specific geodata is crucial to come to informed decisions and to efficiently coordinate and conduct humanitarian activities. While humanitarian actors also make use of internal resources to collect various kinds of geodata, they mostly rely on external geodata providers. This is mainly due to a lack of own resources, appropriate expertise, and the complexity of humanitarian contexts. However, both research and practice show an imbalance between the geodata provided and humanitarian actors' needs and requirements (cf. Gralla et al. 2015; Van den Homberg et al. 2018), which leads to less efficient use of geodata in humanitarian activities.

The main aim of the work is to close this gap through a methodological approach that enables structured communication of these needs and requirements of humanitarian actors - to enable better understanding and in consequence, to facilitate geodata creation and sharing with a better fit for humanitarian purposes.

METHODOLOGY

The communication and identification of humanitarian geodata needs are addressed through a multi-tiered approach that was developed in the scope of the first research phase. This methodological approach begins with a comprehensive literature review and includes theoretical and practical activities as well as empirical analyses. As part of the literature review, on the one hand, conceptual spaces and perception, as well as insight and survey methods were elicited to acquire a thorough understanding of the current state of the art around knowledge extraction, which can consequently be put to use to gain an understanding of humanitarian actors' mindsets and perceptions. On the other hand, the literature review also focused on geodata quality as well as geodata use in humanitarian contexts. This part was extended with a review of reports from own projects of the authors with humanitarian actors, which further illustrate current geodata usage and related humanitarian practice. Based on these efforts, an introductory survey was developed through which participants can provide insights about their background, previous experiences, and lessons learned as well as perceived limitations related to geodata usage in their current tasks. Building on this introductory survey, two additional approaches were developed to get a deeper understanding of the participants' needs and requirements as well as current hindrances in geodata use: the first approach is based on the concept of the Analytic Hierarchy Process (AHP) (cf. Saaty 1980, 2013), the second one is based on Design Thinking (cf. Plattner 2013).

The AHP is a Multi-Criteria Decision Making (MCDM) method that was included in the methodology to enable prioritization of geodata characteristics by humanitarian geodata users. In this survey-structured approach, participants are asked to conduct pairwise comparisons of geodata characteristics, based on their insights provided in the introductory survey, to learn about their main needs and requirements around humanitarian geodata use. Likewise to the AHP, the Design Thinking tools enable information gathering, but furthermore allow sympathizing and empathizing with participants. These tools are utilized to receive deeper insights about the humanitarian geodata users' perception and to assess, why they address their tasks the way they do. For this

second approach, small groups of participants join Remote Design Thinking Workshops, in which they discuss their previously provided insights, again building on results from the introductory survey. As both methods can be applied in remote scenarios, they consequently allow for involving humanitarian actors in their oftentimes remote work locations. However, both approaches are yet to be assessed regarding their suitability for the communication and consequently the identification of the main needs and requirements of humanitarian geodata users.

RESULTS

Humanitarian actors and representatives of national and international humanitarian organizations, as well as scientific institutes, already supported the presented work through their active contribution in the introductory surveys, Remote Design Thinking Workshops, and AHPs. They hereby provided insights about their current approaches and challenges all around humanitarian geodata use. The AHP provided insights about more and less important geodata characteristics and related reasoning, the Remote Design Thinking Workshop furthermore allowed participants to discuss their perspectives, and to develop ideas towards related improvements. Initial results indicate that, on the hand, accessibility, availability, and accuracy of geodata seem to be of greater importance compared to usability, completeness and the geodata being up-to-date. On the other hand, participants also reported about the current limitations in geodata use. These include lack of standardization and metadata, which both seem to pose a major challenge for efficient geodata use. Additionally, limited geodata sharing, which is partially also related to these previous factors, was discussed to hinder geodata use and to moreover affect geodata availability and accessibility. Trustworthiness was furthermore mentioned as being of great importance and at the same time, lack of trustworthiness as being a great hindrance in current geodata use.

CONCLUSIONS AND FURTHER WORK

The main aim of the presented research is to enable structured communication of the needs and requirements of humanitarian actors to close the gap between demand and supply in humanitarian geodata use. First results of the methodology already showed the potential for the communication of needs and requirements as well as current limitations and thus for knowledge gathering around humanitarian geodata use.

Further workshops, as well as AHPs, are already planned to get a more comprehensive sample and to evaluate findings gathered from the initial participants. Results will furthermore be assessed to evaluate the suitability of the two approaches in comparison to each other.

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