

# **The Emergence of Volunteer Technical Communities in Crisis Mapping: A Case Study of the Standby Task Force Verification Team**

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New opportunities and challenges are emerging as the public use pervasive information and communication technologies (ICTs) like social media to respond to disasters. In the aftermath of the 2010 Haiti earthquake, members of the Crisis Mappers Network use open source platforms and social networking technologies to share time-sensitive geographic information, such as post-impact satellite imagery and locations of health care facilities (Meier 2010). What also emerged around this loosely connected network of crisis mappers were volunteered mapping efforts within the OpenStreetMap, the Ushahidi-Haiti, and the GeoCommons communities (Zook et al 2010). The improvisational use of these ICTs by online volunteers led to the formation of what some have termed “volunteer technical communities” (VTCs) and subsequently the innovative practices around volunteered geographic information (VGI) in the crisis domain.

Geospatial data sharing practices and crowdsourcing efforts are quickly evolving in the disaster domain since the 2010 Haiti earthquake. My larger research project examines the evolution of VTCs engaging in crisis mapping activities since the 2010 Haiti earthquake. The goal is to understand how VTCs are beginning to formalize these crowdsourcing efforts to better interface with official emergency responders. To unpack some of the crowdsourcing practices, this research applies the *socially-distributed curation* theoretical model (Liu 2011) to better understand the information management challenges emerging in crisis mapping. Curation is broadly defined here as activities related to collecting, organizing, verifying, editing, displaying, and juxtaposing. The socially-distributed aspect of curation means that these activities are conducted in a participatory and distributed way through social networking technologies. Here, I focus on the distributed curatorial activities of VTCs associated with verifying VGI.

The initial phase of this research employs ethnographic methods of informally interviewing different stakeholders and conducting participant observations in multi-stakeholder meetings. Approximately 80 informal interviews were conducted in New York City and the Washington, D.C. area with various stakeholders (i.e., intergovernmental organizations, national governments, state and local responders, nongovernmental organizations, non-profit organizations, geospatial companies, technology companies, mainstream and local media outlets, academic researchers, and volunteer technical communities). Participant observations also took place at disaster exercises, experiments, and trainings.

For the purposes of this workshop, I discuss the evolution of a specific VTC called the Standby Task Force (SBTF) and discuss how this online volunteer network engages in distributed curatorial activities that influence the credibility of VGI generated during crisis situations. SBTF emerged from learning the lessons of the crisis mapping and crowdsourcing activities during the Haiti earthquake. This online volunteer network was launched at the 2010 International Conference on Crisis Mapping as a way of formalizing the online volunteering activities during crises. The Task Force consists of 700+ volunteers from 70+ different countries trained to provide live mapping support to formal emergency organizations. SBTF has a modular team structure consisting of 11 coordination teams, one of which is called the Verification Team. What this VTC offers is an iteratively designed model of crowdsourcing workflows, protocols, and best practices that support information processing of VGI during the emergency period of a crisis, typically for two weeks post-impact of a crisis.

The ways in which the SBTF Verification Team validates crowdsourced reports goes beyond just determining whether a report is true or false. SBTF volunteers are trained to crowdsource the verification process through a set of best practices that have been laid out in the SBTF training materials. Their task is to cross-check reports using different sources. For instance, information received from the general public is often cross-checked with reports coming from trusted media sources. If similar reports from different sources are coming from the same area, then the reliability of those sources is thought to increase. SBTF volunteers also verify reports from social media sites like Twitter and Facebook by checking the authenticity of the accounts that produced the reports. This could be done by asking other social media users if they know or trust these accounts, by looking at previous posts made in these accounts, by examining the social network following these accounts, and by doing a general online search of these accounts. They also cross-check reports by liaising with diaspora networks that can provide local knowledge, as well as trusted contacts in the field that can ground truth the information in the reports. Thus, to improve this distributed verification process, it becomes important to have a system in place that allows volunteers to easily track this process for the benefit of other distributed volunteers.

VGI and other forms of crowdsourced data come from a mix of sources and processed by different types of stakeholders. Most forms of crowdsourcing during a crisis are bounded in some way by the scale and type of crowd that are not entirely made up of random strangers. What tends to happen in practice during an emergency is *netsourcing* and *expertsourcing*, which involve using pre-existing social ties bounded by a trusted network of friends, colleagues, and/or subject matter experts to voluntarily provide data or some type of service. Therefore, the veracity of VGI also depends on the trustworthiness of the source, the context in which it was produced, and the ability of the online volunteers to accurately verify these reports in a comprehensive way.

While credibility of VGI is often seen as the primary challenge to fully embracing these emerging online data streams, the credibility of VGI tends to vary depending on the temporal circumstances in which it is being used. During crises, currency may often trump accuracy. Having some information of the current situation using real-time data sources may be more valuable to certain stakeholders than waiting for reports from trusted sources using official channels that take time to verify. Thus, it is important to consider the level of credibility needed to act on VGI as well as the tradeoffs with waiting for it to be verified.

Focusing on the crowdsourcing practices and issues with verifying VGI is one aspect of a larger discussion around the social, technical, organizational, and political interface challenges with integrating VGI with official data sources. Assessing the many dimensions that encompass the credibility of VGI generated in the crisis domain can provide technology design and policy-related implications applicable to geographic information science, the emergency management domain, and the human-computer interaction community.

## References

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