Realizing the full potential of (infra-)structures for inter-agency communication before, during, and after disasters using the example of APAN (All-Partners Access Network)

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I. VISION ABSTRACT

Given its success in coordinating information-sharing efforts among numerous relief and military organizations during the 2010 Haiti Earthquake and the 2011 Japan Earthquake, DoD's All Partners Access Network (APAN, https://community.apan.org/hadr), has proven that it can be a crucial communication platform for humanitarian assistance and disaster response (HA/DR). While the platform is widely-known within military and government-based agencies [1], it is unknown to many volunteer organizations, unaffiliated communities, and other first responders that might be able and willing to provide assistance in times of disaster. Using this example, we propose the need to bridge the gap between agencies, organizations, and communities within and outside the bounds of government to collaboratively prepare for, respond to, and recover from disasters. With the current functionalities in-place from APAN that span from discussion posts, to group chats, and emails within the "HADR" community site, APAN could be beneficial to initiatives and organizations at all local, state, federal, and volunteer levels. Members may sign up for an access account and get approved to join a group created for a certain anticipated event (e.g., 2017 Hurricane Maria) ahead of time, and may begin to exchange data and information in the Preparation phase. Separate pages for Response and Recovery are set up, with specific tasks listed under different discussion post topics. As a supplement or alternative to a "top-down" and hierarchical communication architectures [2], platforms like APAN enable flat or non-hierarchical communication (infra-)structures in which all organizations can interact with one another and are given the same functionalities on the platform. We acknowledge that a flat structure might be out of sync with national and local disaster management plans, such as FEMA's Emergency Support Functions (ESF), which mandate some hierarchical and sequential processes. Furthermore, prior research in social computing has shown that during a crisis, people may bypass formal hierarchies when communicating [3]. Researchers from organizational science have also discovered that some level of hierarchy can be needed to make organizations robust and efficient [4], and that even informal organizations may feature or move towards some degree of hierarchy [5]. These insights lead to a bigger question for improving HA/DR operations: What socio-technical design, more specifically, what mix of hierarchical versus flat capabilities, is most appropriate for facilitating interactions among the different stakeholders involved in HA/DR? This question gains momentum as ordinary citizens are not only first responders due to their initial presence on-site, but connect increasingly to DR efforts through social media technologies; making them a major stakeholder in HA efforts. Ultimately, we hope that with an improved understanding and implementation of such communication platforms, more collaborations across agencies ranging from military organizations to volunteer groups will arise. Such collaborations can substantially improve situational awareness [6], timely response, and more effective allocation of resources and efforts to save lives and property in the face of disaster.

Keywords—disaster management, humanitarian assistance, inter-agency communication, organizational collaboration.

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