

Introduction to the ICT for Crisis and Disaster Management Minitrack Meeting the Challenges of ICT for Crisis Management

Julie Dugdale
University Grenoble-Alps,
CNRS
Grenoble Informatics Lab (LIG)
University of Agder
dugdale@imag.fr

Elsa Negre
LAMSADE, UMR CNRS 7243
Paris-Dauphine University
elsa.negre@dauphine.fr

Murray Turoff
Information Systems Department
New Jersey Institute of Technology
murray.turoff@gmail.com

It seems that disasters are arriving with increasing intensity and frequency, devastating people's lives and causing untold destruction. From the data, there has been a steady increase over the last 70 years both in the number of disasters and in their economic cost (Guha-Sapir et al. n.d). However, the data also shows that the number of deaths from disasters is falling (Coleman, 2006). The question is, are we gradually becoming better prepared and more able to respond to crises and, if so, what are the reasons for this improvement? Some answers may be found in a stronger focus on training and planning in the preparedness phase of disasters; the increase for some countries in the resources devoted in coping with disasters; more open communications between emergency managers and government representatives; a greater awareness on community resilience; or better humanitarian response. However, one thing that we should consider is that a possible increase in effectiveness may be due to successful appropriation of information and communication technologies (ICT) for managing crisis situations. Research in this area is very sparse, but if an increase in effectiveness can be attributed to the successful use of ICT in crisis situation, it can be hoped that we will be able to better manage and respond to future crises. Although this is cause for hope, huge challenges nevertheless remain in developing ICT for this highly complex domain of crisis response and management.

This series of papers, presented at the mini-track on ICT for crisis management at HICSS 2018 explores some of the opportunities for furthering our effectiveness in managing crises. 12 papers were submitted to the mini-track, out of which 6 were selected. The papers were grouped into two sessions and cover all four phases of crisis management cycle from preparedness and response through to recovery, and mitigation. Crisis technologies are developed, used by, and hopefully, save people. Just as there is no crisis without people, there are no crisis technologies without people, and the complex social infrastructure in which they operate plays a key role. So in the study

and employment of ICT for crisis management, people play a crucial role. This focus is apparent in many of the papers in the mini-track which look at the involvement of people from different angles; studying the behaviour of the population in crisis situations; communication between people during and immediately after a crisis, how first responders can adopt new and emerging technologies, and working towards community resilience.

The first paper in the session is by Tony Norris, Jose Gonzalez, Santiago Martinez and Dave Parry and is titled "Disaster e-Health Framework for Community Resilience". These authors report on how new e-health technologies can be used to increase community resilience. Technologies for supporting the health of citizens before, during and after a disaster have not been fully utilised to date. Disaster e-health is a rich and ripe research area that could make huge differences to the way that the health of the population is considered in times of disasters. The paper explores the reasons why the uptake of these technologies has been poor and how disaster e-health should be integrated into a general community resilience approach.

The second paper by Tim A. Majchrzak, Mihoko Sakurai and Nicolas Serrano continues the theme of resilience and reports on "Conceptualizing and Designing a Resilience Information Portal". Here the authors argue that communication and collaboration between cities and between stakeholders and citizens is crucial for a city to build a high level of resilience. The paper provides a solid basis as to how a web-based resilience portal and be designed by explicitly specifying the system requirements and exploring design possibilities. One key issue in increasing resilience is the notion of ownership, where citizens feel that they are actively participating in promoting the resilience of their cities.

There are many cases where excellent technologies have failed to be used in practice. The reasons are not necessarily that the technologies failed, but simply that they failed to be accepted by their users. User acceptance is arguably the biggest issue affecting the uptake of technology. In crisis

situations where minutes may cost lives, users have to be fully behind the technologies and aware of their strengths and limitations. In the paper titled “The Good, the Bad and the Indispensable - Insights into the Practical Potential of Emergency Response Information Systems and Drones for Firefighters” the authors Julian Weidinger, Sebastian Schlauderer, and Sven Overhage explore users perceptions of technologies focusing on more traditional information systems and newer drone technologies.

The focus on people, and in particular their behaviours in crisis situations is the subject of the next two papers in the minitrack. In an “Agent-based Analysis of the Spread of Awareness in the Population in the Prodromal Phase of Bushfires”, Carole Adam and Julie Dugdale explore the potential of computer simulation to analyse communications among citizens. Effective and efficient communication is the key in informing people of danger and what to do. The experimental tool provided by these authors could serve to raise awareness and to help decision makers in their communications strategies.

In "Population Behaviors in Crisis Situations - A Study of Behavioral Factors in the PPI Ineos Emergency Response Exercise", Maude Arru, Elsa Negre and Camille Rosenthal-Sabroux study the reactions of the population of Verdun, in France, during a public safety exercise. The exercise simulated a chemical risk alert, including participation from the population. The analysis of people's reactions during this exercise, based on

interviews and surveys, highlights some important points concerning, for example, the involvement and behaviour of people (whatever their age or socio-professional category). The analysis shows that some information cannot be retrieved via non-human sensors, and that taking populations into account, especially through their behaviour, is of primary importance.

The final paper in the minitrack is “Social Networking Sites in the Aftermath of a Crisis - The Enabling Role for Self-organization” by Diana Fischer. Here the author goes beyond analysing what people post on social networking sites and instead looks at the reasons behind their posting with the goal of understanding group self-organisation. Self-organisation is a central theme in complex systems and the ability of a society to self-organise during that critical period immediately after a crisis event and before standard crisis response procedures are enacted helps to reduce casualties and suffering.

References

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Coleman, L. (2006). Frequency of man-made disasters in the 20th century. *Journal of Contingencies and Crisis Management*, 14(1), 3-11.