Editorial

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Paolo Ciancarini is a Professor of Computer Science at the University of Bologna, Italy, where he lectures on software architecture and engineering. He is the Director of the Italian National University Consortium for Informatics (CINI). His research interests include collaborative technologies for organisations and enterprises, coordination languages and models, agent-oriented software engineering, formal methods for software architectures, advanced web technologies for groupware and digital documents, entertainment computing and artificial intelligence for games. He has published more than 40 papers in international journals and more than 100 papers in international conferences.

1 Introduction

1.1 Overview

Crisis response and management require a rapid and effective collaboration among a wide number of actors that can be named 'stakeholders of the emergency'. The main stakeholders generally include institutions, citizens, companies, traders and even other unpredictable actors who should or could be involved in crisis response activities. Often, these actors do not share the same Information Technology (IT) infrastructures and are organised in very different ways. Besides the issues related to decision making by stakeholders, there are also many challenges in the way citizens and volunteers can

take part in response to any emergency. For instance, implicit knowledge about the territory, specialist professional competencies and casual feedbacks on the crisis evolution are all very useful pieces of information that are not easily captured by centralised and closed emergency response systems.

A number of social networking platforms can be used to support the collaboration among the stakeholders in a crisis management. They are usually lightweight platforms that provide powerful and easy to use collaborative environments without requiring particular needs to be deployed and used by stakeholders. Systems like wikis, Content Management Systems (CMS), social networks and messaging platforms can be exploited as structural components of an emergency response infrastructure or defined *ad hoc* for a specific emergency. All knowledge about an emergency can be effectively managed by means of these instruments that provide a uniform architectural platform to the institutional stakeholders and an open communication environment for the most involved emergency stakeholders, like citizens and volunteers.

The platforms can be based, for instance, on wikis, CMS, mobile telephone messaging, forums, blogs, video sharing websites, 3D virtual worlds, internet messaging systems and generic social networks. Those 'lightweight' social software technologies are easy and quick to deploy, understand, use and maintain. They are currently used by millions of people and thus can be exploited for a widespread participation in any phase of emergency management, for instance, to acquire more detailed real time information about the emergency requirements by means of citizens' online collaboration and to help institutional and noninstitutional stakeholders to rapidly define a collaboration infrastructure in order to overcome their organisational and technological heterogeneity.

2   Papers in the special issue

The papers presented in this special issue have been selected from the *Information Systems for Crisis Response and Management (ISCRAM) 2009 International Conference*. The ISCRAM community (http://www.iscram.org) is a worldwide community of researchers, scholars, teachers, students, practitioners and policy makers interested or actively involved in the subject of information systems for crisis response and management.

The papers address the stakeholder collaboration problem from different perspectives. They present interesting results in the application of new social network technologies to emergency management.

Hughes and Palen report a statistical analysis on the use of Twitter microblogging service during crises. They observe how the usage of the social network evolves in such situations, becoming more than a simple information-sharing platform.

Camarero and Iglesias describe the usage of the web 2.0 technologies in the development of a web portal for emergencies. The developed portal can be exploited as a decentralised management system for an emergency. All involved stakeholders can integrate and share information about disasters by means of the portal.

De Rubeis *et al.* present an internet-based system for the social macroseismic survey. Their system is based on voluntary collaboration of a thousand nonspecialist earthquake observers. The acquired data are analysed in order to infer earthquake intensity and to display an almost continuously updated maps of macroseismic intensity.

Bergstrand and Landgren explore how the usage of the mobile devices' video capabilities improves information sharing and situation awareness in emergency response. In particular, they highlight the advantages of describing situations by means of images rather than words in the decision-making processes.

Malizia *et al*. exploit ontologies for the generation of a structured knowledge base aimed at linking all the dimensions of the alert notifications information space. The presented prototype system generates emergency alerts accessible to different kinds of people. The system pays special attention to more vulnerable collectives, like impaired people, by adopting alerts to different devices.

Abeti *et al*. present a business-oriented approach to the development of service-oriented systems in complex organisations. They describe how this method has been applied to a case study in civil protection where a wiki-based collaborative environment has been used for the reengineering of emergency management business processes.

Van Santen *et al*. analyse the decision-making processes during a crisis. They expose the issue of information negotiation among in-the-field stakeholders and bureaucratic political stakeholders. The authors conclude that the best way for crisis decision-making teams in a bureaucratic political context is to follow an integrative negotiation approach, for instance, the shared mental model of decision making.

Reuter *et al*. describe a prototype of a collaborative training tool. The aim of such a tool is to develop skills to deal with unanticipated events by integrating stakeholders also from other organisations. Interorganisational trainings allow improving the mutual understanding of communication practices and information needs of other stakeholders.

White *et al*. present the results of an exploratory research on the adoption of the social network paradigm to emergency management. They provide a critical evaluation of the use of social networks for information dissemination and communications.

3 Conclusions

This special issue presents the following:

- some experiences in the usage of social software during crises by a wide range of stakeholders

- some studies on the processes adopted by stakeholders to collaborate in emergency management activities

- two critical evaluations of some stakeholders' behaviour in the use of social networks during emergencies.

All the presented papers highlight the opportunities of improving the quality of emergency management by means of collaborative technologies. Indeed, the proposed tools and methods allow a more effective sharing of information and the involvement of a wide range of stakeholders in decision-making activities.

We thank the authors for their contributions and look forward to future results in this research area.