

Crisis Management 2.0: Towards a Systematization of Social Software Use in Crisis Situations

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ABSTRACT

In this paper, the authors propose a systematization of social software use in crisis situations, examining different types of cooperation and challenges. The authors discuss how the organizational actors involved in crisis management (police, fire-fighters, organizations, etc.) and the affected citizens are communicating and can communicate and collaborate through the use of social software. After defining the term 'social software,' the authors outline its use in crisis management. They present two case studies where they have examined the use of social software in 2010: first during the disruption of air travel caused by the eruptions of the volcano Eyjafjallajökull in Iceland and second during the mass panic at the Love Parade music festival in Germany. Based on both previous work and case studies, the authors discuss potentials and weaknesses and propose a classification matrix for different types of cooperation as a step toward a systematization of social software use in crisis situations.

Keywords: *Classification, Collaboration, Computer Supported Cooperative Work (CSCW), Crisis Management, Social Media, Social Software, Systematization, Web 2.0*

1. INTRODUCTION

Disasters are large events that last for a considerable time, affect large areas and have widespread consequences on people, values and objects (BSI, 2008). In the last decades many crises came up, not only because of changes in climate. There are not just tsunamis, floods, earthquakes or wildfires: technical accidents such as oil leakages, energy breakdowns or crises caused by humans, e.g., spree killings

and terror attacks, affect both, organizations and people. The pictures of those accidents can be seen always in old and new media: cities in exceptional circumstances, a large number of injured people and often no functioning infrastructure. Those responsible for crisis management may find it hard to obtain essential information to make reasonable decisions and to help the people affected by the crisis. This can be due to a lack of infrastructures for cooperation between people and organizations. Anyway, people are an authentic source of crisis-information and should be included in the

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information infrastructure. Palen and Liu (2007) point out that organizations of formal response may be shaped to “support the new information pathways that will arise”. People often use mobile phones and the Internet to inform their families and friends. Using social software applications, such as social networks, blogs, micro-blogs, photo and video communities, a lot of information is published by everyone.

The aim of this paper is to suggest a systematization of the use of social software in crisis situations, deriving different types of cooperation and develop related requirements. Therefore, we first describe major categories of social software (Section 2) and review the related state-of-the-art (Section 3). Furthermore we enhance it with data from our own case studies in Germany, where we observed the social software use at two major events, particular about the relationship of organization and citizen (Section 4). Based on a discussion on both literature and case studies and the identification of both strengths and weaknesses (Section 5) we suggest a systemization of cooperation in social software use for crisis management (Section 6).

2. POTENTIAL OF SOCIAL SOFTWARE IN CRISIS COMMUNICATION

Social Software is a part of Web 2.0. The term ‘Web 2.0’ is not well defined but describes the innovations of the Internet after the crash of the ‘new economy’ in 2000 (Alby, 2007). At a conference held by O’Reilly, the competences of the surviving companies of the new economy were summarized under the term ‘Web 2.0.’ O’Reilly (2005) defined them in seven characteristics which include the usage of the Internet as a platform to provide different services, the participation of users and a collective intelligence, the consideration of the user generated data as capital of an application, the inclusion of the user in the development using new software development models, the usage of services on different terminals and rich user experience. The term ‘social software’

describes web-based applications, which support the user’s interaction and communication process. In addition to this definition, there are various other considerations. Hippner (2006) defined social software as the possibility to exchange information, manage relationships and communicate in a social context. Besides the exchange of information, Ebersbach et al. (2008) have defined that user-generated content is an essential element of social software. Therefore, the existence of a community is an important pre-condition.

The following characteristics arise from the different definitions and will be used in this paper: Social software encompasses a range of applications from the Internet, which enable different people to contact and interact with each other. A community providing the data is the basis of these applications and they support different activities: the allocation of information, the generation of information, relationship management, communication and self-expression. Different activities are often combined. Based on the definition of these activities, various classes of social software applications can be distinguished (Ebersbach et al., 2008).

Wikis aim at a collaborative accumulation and creation of information and knowledge. They are useful to collect knowledge of a topic based on one’s own research. In a crisis, this activity may be done by people who are not seriously affected by the crisis.

Blogs support the publishing of information and self-expression through an individually owned journal. They are not useful as a fast response as they often contain longer personal entries. *Micro-blogging* is an alternative. These applications use allow entries limited to 140 characters, similar to text messages. The most prominent application is *Twitter*. Users can publish messages (tweets) on their site and tag words (#hashtag) within a message. With the help of these tags, certain messages can be found. It is possible to address other users with the ‘@user’ notation. It is also possible to publish tweets by sending text messages using a mobile phone. Due to the tweet’s text message-

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