UDC 004.4'236

PRINCIPLES OF SOCIAL MEDIA APPLICATION IN EMERGENCY MANAGEMENT

Dimiter G. Velev
Department of Information Technologies and Communications
University of National and World Economy, Sofia, Bulgaria
e-mail: dvelev@unwe.acad.bg

1. Introduction

Recent emergency situations in the world show the tendency that the occurrence frequency of natural disasters (heavy rainfalls, floods, hurricanes, earthquakes, tsunamis, etc.) is expected to increase in future. Therefore new approaches for emergency management need to be developed based on the latest IT developments. When it comes to natural disasters, modern technology is making it easier than ever to take control by creating own emergency management system through the application of social media.

2. Emergency Management and Social Media

Emergency management is the generic name of an interdisciplinary field dealing with the strategic organizational management processes used to protect critical assets of an organization from hazard risks that can cause disasters or catastrophes, and to ensure the continuance of the organization within their planned lifetime. Assets are categorized as either living things, non-living things, cultural or economic. Hazards are categorized by their cause, either natural or human-made. The entire strategic management process is divided into four fields to aid in identification of the processes. The four fields normally deal with risk reduction, preparing resources to respond to the hazard, responding to the actual damage caused by the hazard and limiting further damage The field occurs in both the public and private sector, sharing the same processes, but with different focuses [1].

Until recently emergency managers have relied on traditional media such as radio, newspapers, posters, brochures and television to announce risk messages to the public. With the advent of the Internet, they have begun to modernize their communications channels and to adopt first-generation social media tools, including e-mail, Web sites and online instant messaging as a connecting means.

With the Web 2.0, emergency managers adapt to a changing society of social media consumers who not only seek information, but also generate information of their own on sites such as YouTube, Flickr, and MySpace, substantially contributing new content. Therefore emergency managers should consider the impact of blogs, RSS feeds, wikis, online and mobile video, podcasts and other new media networks and communications as critical components of their emergency and crisis preparedness, response, and recovery strategies. Although social media channels such as YouTube, blogs and podcasts are considered by most as a means for delivering entertainment and personal opinions, emergency managers should also consider their relative importance in reaching their audience segments during an emergency.

Social media are media for social interaction, using highly accessible and scalable communication techniques. Social media is the use of web-based and mobile technologies to turn communication into interactive dialogue. Social media as is defined as a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, which allows the creation and exchange of user-generated content. A common thread running through all definitions of social media is a blending of technology and social interaction for the co-creation of new value structures [2].

Social media applications fall into the following main categories:

- Communication – blogs, miroblogging, location-based social networks, social network sites, information aggregators, online advocacy and fundraising;
- Collaboration/authority building - wikis, social tagging, social news, social navigation, content management systems, document managing and editing Tools;
- Multimedia - photo sharing, audio sharing, video sharing, livecasting, presentation sharing, etc.

3. Social Media Application in Emergency Management

There are essentially two types of listening to social media – passive and active [9].

- In the case of passive listening information is generated in advance and it alerts systems and users after some event has occurred.
- Active listening, in the absence of a crisis, it could include answering questions about preparedness and mitigation through the various platforms the emergency organization uses, talking to people that reside in a given community. The aim of social media campaigns are only to get people to listen to any type of information.

Listening during a crisis can be both active and passive.

During crises social media can be used to communicate directly with disaster impacted residents, their families, reporters and volunteer organizations. Rumor and false information control becomes easier with an established presence on social media, as the public can turn to the corresponding organization for its validation since it provides the capability of publishing information on the fly [3].

After the crisis social media tools are able to bring the community together and everyone can talk with each other instead of to each other. Information about help can be disbursed and then shared by anyone who wants to pass along the information. Information from partner agencies to assist residents can be shared such as road openings/closings, shelter location/availability, and energy outages. Pictures of damaged areas can be published. If individuals have questions, they are able to direct them in a familiar format.

Benefits of using social media in emergency management could result in [5, 8]:

- Official social media accounts created by governmental agencies can become a leading hub for sharing critical information. Victims and those interested in helping them, are eager to find reliable sources of information, especially where they can share their own information or requests. Social networks have become the primary forum for sharing information.
- Social media beats traditional media in reporting news first; people turn to social networks in time of crisis; social media provides information before traditional media or relief workers can get to the scene of a disaster
- Social media networks are dynamic: the content can be updated in real-time, from diverse users, to share the latest information about real needs and progress. Disaster victims can use social media disaster-recovery sites to inform disaster responders to real needs, not imagined ones. Relief parties can use social networks to keep updated victims on supply deliveries, information on when utilities or other essential services will be restored. Social networks are ideal for dynamic information sharing.
- Social networks can be used to direct victims on where to go to put forward their claims and seek assistance. Social network pages set up by official disaster response agencies can help eliminate the guesswork as to where victims should go to file claims. They can be used to include required forms that can downloaded and brought to the sites to quicken the processing of claims. Updating assistance center locations and hours is also helpful.
- Social networks can be used to enlist, direct and inspire volunteers. The need for volunteers has always been a constant in occurred disasters. Social media can be used to enlist

volunteers for a variety of tasks. It can also provide the information volunteers need to safely and efficiently serve. Photos and videos of the work of volunteers can be used to inspire those volunteering their talents, as well as others who might be interested in helping too.

- Social media covers the major story and its developments when a given media chooses is unable to provide the information. Social networks can fill the breach with real-time information.
- Social networks are reliable mediums for conveying important information over a long distance. An important message could even be targeted geographically. Geographic targeting could also be gauged by the sort of content regularly shared by the contributor. The end result of such targeted messaging is the message delivered to over a million other accounts worldwide.
- Geotagging by social network users provides important context to the information being shared. Activation of geotagging, a service that allowed network users to share their location on the network. Geotagging is an option users must enable to activate. The location-based information is available to third-party developers who are already putting the location-based information to use. This would allow rescuers to pinpoint with precision the location of users sending out requests for help. This is also the very sort of scenario and option emergency responders should be considering as part of their responsibility to educate the public in advance of a disaster.

According to Federal Emergency Management Agency, the best way to avoid significant damage during a disaster is to prepare an emergency response plan in advance. Its Web site (http://www.fema.gov) offers a comprehensive checklist of items that should be considered when defining a rescue plan - escape routes, family communications, utility shut-off and safety, insurance and vital records, special needs, caring for animals, and safety skills [4].

However the corresponding emergency management authorities must prepare a social media application plan to meet any occurring disasters. There are many topics that should be considered, such as [8, 10] :

- Information resource identification;
- Type of resources that will be needed to handle the additional information flow from social media channels;
- Type of messaging control;
- Potential risks of revealing confidential personal or company information;
- False or incorrect information spreading;
- Necessary level of training for a successful implementation;
- Type of most efficient social media platforms and tools.

Based on the research conducted and practical experience by real systems a short list of principles for social media application in emergency management can be defined 6, 7, 11]:

- Collection of crowd generated data is a need. People expect to learn from each other from the social media platforms. Hence, a free flow of information in one's own managed online communities must be provided in order to people to exchange information.
- The received data should be structured using text mining techniques, as well as extracting named entities, locations and important points in time.
- Shortcomings in the collected data and the inferred structure should be identified, as well as tasks and seek answers must be formulated through a dedicated crowd-sourcing platform.
- The new knowledge, that will be provided by the crowd, must be integrated into and existing knowledge base.
- Aggregated and structured data must be presented back to the community, consisting of emergency response professionals, affected members and others.
- A system for spreading messages must be implemented to provide information/situational awareness in the affected areas.

- Wherever possible, the direct interaction between users of the presentation layer and the original information providers must be provided.

Following such principles could help establish an efficient emergency management by application of existing social media and its tools.

4. Conclusion

The advent of social media has changed profoundly the way people communicate and gather information about important topics. This change has affected additionally the way emergency managers must interact with the public and media during emergencies. By applying defined in advance principles of social media application in the emergency management plan, any organization should have a better chance of communication messages, informing the public and media and effectively managing a crisis situation.

References

1. Emergency Management,http://en.wikipedia.org/wiki/Emergency_management.
2. Social Media, http://en.wikipedia.org/wiki/Social_media.
3. Social Media and Your Emergency Communication Efforts, Issue 1, August 20, 2008 http://www.bt.cdc.gov/ercn/documents/RCNewsletterIssue1.pdf.
4. FEMA, http://www.fema.gov/areyouready/why_prepare.shtm.
5. Gilmore, G., 10 Reasons Social Media Is Important in a Real Crisis, http://socialmediavoice.com/2010/05/10-reasons-why-social-media-is.html.
6. Owyang, J., How Municipalities Should Integrate Social Media Into Disaster Planning, http://www.web-strategist.com/blog/2008/12/01/how-municipalities-should-integrate-social-media-into-disaster-planning/.
7. Rogstadius, J., et. al., Towards Real-time Emergency Response using Crowd Supported Analysis of Social Media, http://crowdresearch.org/chi2011-workshop/papers/rogstadius.pdf.
8. Stephens, K., Using Corporate Social Media Lessons for Emergency Management “Marketing”, http://idisaster.wordpress.com/2011/02/17/using-corporate-social-media-lessons-for-emergency-management-marketing/.
9. Stephens, K., Social Media and Emergency Management, http://idisaster.wordpress.com/2011/05/12/passive-vs-active-social-media-listening/.
10. Thomas, S., 15 ways social media can assist in a crisis, http://www.999socialmedia.com/fire-service/15-ways-social-media-can-control-a-crisis/.
11. Vandor, M., HOW TO: Prepare for Disasters Using Social Media, http://mashable.com/2010/03/09/prepare-disaster-social-media/.