

Exercise 24: Using Social Media for Crisis Response

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Can populations self-organize a crisis response? This is a field report on the first two efforts in a continuing series of exercises termed Exercise 24 or X24. These exercises attempted to demonstrate that self-organizing groups can form and respond to a crisis using low-cost social media and other emerging web technologies.

Plotnick and White (2010) describe social media as generally being attributed to the collaborative applications supported by Web 2.0 technologies. These include, but are not limited to Twitter, Facebook, Myspace, wikis, and blogs. Blogs, wikis, and Myspace were the first applications becoming popular in the early 2000s while Facebook and Twitter are more recent creations. The large number of Facebook users, approximately 750 million, show the popularity of social media. Additionally, as social media became popular, individuals and first responders began to use social media for rapid communication to mitigate the unpredictability of crises and the complexity of crisis response to help themselves. Examples include:

- concerned citizens used a wiki after Hurricane Katrina to organize, collaborate, and rapidly create the PeopleFinder and ShelterFinder systems (Murphy and Jennex, 2006).
- citizens affected by the 2007 San Diego wildfires used a wiki to pool knowledge on which homes burned and which survived when the local media failed to support their needs (Jennex, 2010).
- Mumbai citizens used Twitter to report their status, let others know where to find friends, relatives, etc., and to solicit blood donations following the 2008 Mumbai terrorist attacks (Beaumont, 2008).
- victims trapped by falling debris during the 2010 Haiti earthquake used texting and/or Facebook to alert their friends and family to their location and condition (Boodhoo, 2010).

These anecdotes provide evidence of the value of social media to individuals in responding to crisis. However, is social media useful to organizations in planning and conducting crisis response? Exercise 24, X24, is a series of crisis response exercises testing the formal use of social media and crowdsourcing as tools for organizing humanitarian assisted crisis response (HADR). This article discusses the results of X24 Europe and shows how organizations can create a strategy to incorporate social media into their crisis response activities.



Exercise 24

In September 2010, San Diego State University's (SDSU) VizCenter hosted a two-day virtual HADR event called Exercise 24 (X24) simulating multiple natural disasters on the coasts and desert regions of Southern California and Northern Baja California. The purpose of this exercise was to use online resources to foster the building of collaborative partnerships between various U.S., Mexico, California and San Diego County emergency response organizations. Ultimately, the first X24 exercise involved over 12,700 people from 79 nations and 90 U.S. government, non-government organizations, and public/private partners in a collaborative environment using crowdsourcing, social media, and cloud computing applications. This was the first time a collaborative HADR exercise of this scale occurred online and integrated into real events.

In April 2011 X24 Europe transcended all expectations in its ability to form a collaborative bridge between individuals, communities, and nations with over 49,000 participants from 92 nations. This number included two ambassadors, a U.S. major general military officer, as well as representatives from U.S. European Command (EUCOM), U.S. Northern Command, U.S. Transportation Command, Office of Navy Research, STAR-TIDES at the Center for Technology and National Security Policy from National Defense University, and many others. The scenario was set in the Balkans region and involved a notional seismic event which would generate a tsunami in the Adriatic Sea followed by aftershock damage inland. 78% of participants were from the Croatia, Macedonia,



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and Bosnia and Herzegovina. The United States was fourth on the list for number of participants with 3,419 and Serbia was fifth with 1,958. This is significant in consideration of the challenges experienced in this region.

This inclusive environment was facilitated by an open invitation for participation, which was hosted by the SDSU VizCenter. The openness of X24 challenged traditional exercise structures where events in a scenario, or injects, are associated with specific responses by participants with known capabilities. A complete range of skills and experience participated in this experiment and is similar to actual humanitarian assistance and disaster relief operations. X24 Europe required a considerable degree of leadership agility on the part of the exercise controllers and evaluators. This agility enabled a unity of effort when a unity of command was not possible.

X24 Europe provided an unprecedented opportunity to test, train, and explore leading-edge humanitarian assistance and disaster relief tools, technologies, and methodology with a global community of experts. This dramatically enhanced the knowledge base for all participants and observers. X24 Europe was as much an educational environment as it was an exercise. Injects were intentionally placed in the scenario to teach the global community the process for U.S. Department of Defense Combatant Command (COCOM) humanitarian assistance and disaster relief capabilities to respond to impacted regions within a COCOM Area of Responsibility. This unique opportunity to educate through social media would add considerable strategic and operational value to other COCOMs and U.S. interests, both within and outside its international borders.

X24 Europe provided a no-fault framework where government agencies,

non-government organizations, academia, private industry, and volunteer groups could develop a working familiarity with the evolving tools, technologies, and methodology presently used by the open-source computing community to respond during humanitarian assistance and disaster relief crises. The integration of experienced military officers in the area of operations and logistics identified the improvement need for a time indicator addition to accompany geo-tagging. This will be a part of future analytic mapping for significant events, since the majority of the processing for global disaster mapping occurs at the Immersive Visualization Center.

The purpose of the X24 Europe exercise was to continue to build collaborative partnerships, while testing the use of social media, crowdsourcing and collaboration tools in an HADR scenario on the European Continent. The complex disaster scenario contained simulated seismic events with a resultant tsunami in the Adriatic that caused damage to key resources and critical infrastructure in the five Balkan Countries (Bosnia-Herzegovina, Croatia, Montenegro, Kosovo, and Macedonia).

Lessons Learned

Reaction data to X24 and X24 Europe was collected from participants using surveys, After Action Reports (AARs), and direct solicitation. Overall, the responses received from participants of X24 were optimistic and viewed social media as a valuable and powerful information tool in the future of emergency management. Participants were able to contribute to new topics of discussion for how catastrophe training and exercises can be improved by utilizing available technologies and resources within an international, collaborative model of action. These findings include:

- Social media is a valuable and powerful

information and dissemination tool, but also has potential as a distractive force if data is not managed, analyzed, and acted upon in a methodical, planned manner.

- A hybrid of formal structure response capabilities combined with crowd sourced and informal self-activating capabilities appear to be the best sense of balance for disaster management and response.
- In the pre-exercise and exercise it was clear that training and practice using the technologies and common operational standards are necessary. When these new technologies failed to work, participants reverted to more familiar technologies—in this case email, texting and cell phones.
- Sidebar conversations were highly beneficial, but knowledge dissemination was limited to participants located within these private clouds.
- There was confusion and a need for clarification about who the Point of Contact (POC) was for the various social media applications that were used during the exercise.
- There was an inconsistency regarding the number of preferred chat platforms for participants to use as many felt they were redundant and somewhat overwhelming. On the flipside, users acknowledged that while in a crisis, information should be replicated in a variety of locations since people may be using various social media tools to communicate and gather information. Several suggestions included a "one platform" tool that aggregates the relevant discussions together.

Social Media Discussion

With over 500+ million active users with a Facebook account and another 100+ million followers on Twitter (at the time of the exercises), it is clear why X24 team members decided to select these

two social media outlets to track the flow of data being disseminated across the globe. Over 90% of the participants acknowledged to having either a Facebook or Twitter account. Social media is an excellent tool for reaching out to a large, dispersed audience. However, respondents of X24 found that the amount of unverifiable information in a real-time crisis is generally overwhelming within social media channels. In addition, users felt there was a lot of interesting information, but the social media aspect was un-actionable. In other words, some participants felt their organizational protocols would not allow them to move forward based solely on civilians "tweeting" or "facebooking" alone. X24 Europe addressed this issue with experts through registration, but solutions have yet to be identified for affected populations. There will need to be a considerable amount of research on ways to improve the perceived credibility of messages from the public to responders and vice versa. 65% of respondents felt social media originating from a general member of the public is likely to be inaccurate. This study suggests reliability in social media will need to originate from the accounts of X24, or similar emergency management agencies pushing the message outward while cautiously handling any reports coming inward.

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Incorporating Social Media into Crisis Response

X24 and X24 Europe utilized knowledge and lessons learned to refine the use of these technologies into crisis response, this is a knowledge management approach. Jennex (2010) used the X24 exercises to postulate the use of knowledge management strategy as a method for incorporating social media, cloud computing, and web 2.0 technologies into organizational crisis response and crisis response systems. A crisis response strategy for incorporating social media should include the following:

- **Identifying Users:** Without knowing who is expected to use social media and for what purpose, designers do not know what knowledge or level of context needs to be captured. The organization needs to identify who will be using social media for crisis response. This allows the organization to create access control for twitter feeds, wikis, Facebook, etc. Also, analyzing the roles these users perform aids the organization in identifying what functions social media needs to support.
- **Identifying Trusted Partners Networks:** Establishing a social network of trusted partners, and utilizing existing trusted partner networks, news feeds, blogs, tweets, etc., from multiple sectors can transform the nature, scope, and quality of social media posts. Groups like Humanity Road, Pacific

Disaster Center, Federal Emergency Management Agency, and many more are engaged in social media communication for crisis response and preparedness education.

- **Identifying a Representation Strategy:** Crisis responders need to speak the same language or ontology. Social media tends to be in the moment, connecting users but not enforcing ontology rules nor readily capturing the content of the connections. A representation strategy aids the organization in formulating methods for communicating and capturing crisis response data, information, and knowledge from social media.
 - **Flooding crisis responders with content:** Information overload is a real issue in crisis response. Social media strategy has to identify that data, information, and knowledge necessary to support crisis response decision-making and focus on capturing, storing, and displaying this data, information, and knowledge. Social media is especially susceptible to information overload unless the organization places controls on crisis response postings via Twitter and Facebook and utilizes the content management capabilities of wikis, blogs, and Facebook to control the amount of information sent to crisis responders.
 - **Inadequate search capabilities for crisis response:** Crisis responders need data, information, and knowledge when they need it and cannot be expected to spend much time searching. Knowledge needs to be stored and organized in a format with labels/tags that facilitates search and retrieval. Social media does not automatically have good search and retrieval functions. Social media can be organized for search and retrieval by using ontology for a tagging system and taxonomy to organize wikis and YouTube technology based repositories.
 - **Senior Management Support:** Crisis response needs sensitive data, information, and knowledge that without top management support for encouraging knowledge sharing and for allocating resources, will not be available. A strategy guides the senior management who are identifying and controlling this sensitive data, information, and knowledge as well as specifying policies for conduct and disclosure when using social media. This is critical given the open nature of social media and the propensity of individuals to disclose data, information, and knowledge through social media.
 - **Security:** Crisis response processes need to ensure critical crisis response data, information, and knowledge is secure. Strategy identifies the processes used to identify data, information, and knowledge security requirements including the controls which are needed to be implemented.
 - **Maintaining currency of knowledge:** Crisis response data, information, and knowledge must be accurate and relevant temporally. Strategy provides the process for reviewing and evaluating data, information, and knowledge life cycles and retention periods.
- While addressing the above crisis response strategy issues, special consideration should be given to the following set of issues before the organization adopts social media for



crisis response:

- **What technologies should be used?** (Facebook, Twitter, Wiki, Blog, Youtube, etc.)? Technologies should be adapted based on their ability to integrate/interface with the organization's existing technical infrastructure. Additionally, the organization should conduct a crisis response needs analysis and select technologies that meet that analyzed need and assessed capability of the technology to meet that need.
- **Who should use the technologies?** Knowledge Management processes should be used to identify knowledge sources and users. Social network analysis tools can be used with KM to identify data, information, and knowledge flows. It should be noted that KM analysis usually finds that data, information, and knowledge flows often do not follow organizational hierarchies. While crisis leadership can be appointed as the organization requires, data, information, and knowledge flows work best if they are designed to fit the actual organizational social networks, including the identified knowledge gate keepers.
- **What data, information, and knowledge should be made available for response?** The organization needs to conduct needs analysis to determine what is going to be needed for decision-making. Concern needs to be used to ensure proprietary data, information, and knowledge is released only if absolutely necessary.
- **What is the value proposition for social media in crisis response?** Ultimately organizations need to show value for their investments. This is especially true for crisis response as many organizations consider crisis response preparation a cost of doing business and have difficulty in showing and measuring value in crisis response. Adopting social media needs to be based on a value statement that states the goal for social media and then contrasts costs to benefits of using social media. The goals for social media in crisis response are organizational specific but include the following:
 - improving knowledge transfer among crisis responders
 - improving communication/knowledge transfer with customers and/or victims
 - reducing technology infrastructure costs
 - improved crisis response times
 - improved decision making
 - reduced technology purchase/maintenance costs

The costs of social media include traditional costs such as training, maintenance and support, initial purchase and tailoring, and any switching costs (from previous technology to social media). Additionally, costs associated with social media of loss of control, reliability, and trust. Tangible benefits of social media include possibly smaller initial purchase costs, lower infrastructure costs, lower training costs, lower maintenance and support costs. The value statement needs to include these costs and benefits plus intangible benefits such as scalability, improved connectivity (within the organization and with its customers/responders), improved knowledge transfer and command and control of crisis

situations, faster crisis response times, and improved satisfaction with the crisis response. Intangible benefits are hard to quantify and vary with each organization.

Conclusions

Can populations self organize a crisis response? Exercise 24 has shown this is possible using social media. Can organizations formally incorporate social media into their crisis response efforts? This is much more difficult. Issues such as loss of control and technology infrastructure make this difficult. This article shows how lessons learned from the X24 exercises have been used to generate a strategy approach to incorporating social media into formal crisis response processes.

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