VANGUARD

An in-depth analysis of emerging issues and trends

RAHS THINK CENTRE
EXCITE | ENABLE | EXPERIMENT

THE ROLE OF SOCIAL MEDIA IN CRISIS PREPAREDNESS, RESPONSE AND RECOVERY

By

Jason Christopher Chan (RPO)

Executive Summary

In recent years, social media has exploded as a category of online discourse where people create content, share it, bookmark it and network at a prodigious rate. The five key characteristics of social media: collectivity; connectedness; completeness; clarity and collaboration lend itself to be used increasingly to support crisis management functions. This paper examines the various categories of social media tools to understand how they can be utilised to enhance analytical and response capabilities of organisations for crisis management.

The paper identified four main social media functions: (1) information dissemination, (2) disaster planning and training, (3) collaborative problem solving and decision making, and (4) information gathering, which are then mapped onto the three crisis management phases of preparedness, response and recovery to describe how a range of social media tools may be used to enhance crisis communications. Case examples of international organisations and governments using social media for crisis management are shared.

The paper proposes a framework to enhance government use of social media for crisis management that encompasses the need for a mandate, differentiated guidelines and three key capabilities to be developed.

Introduction

1.   Crisis management is a critical organisational function that involves planning and dynamic incident response to situations as they unfold, often in unpredictable ways. The cascading effects of an unfolding crisis can undermine a country's ability to operate effectively and may result in serious harm to its people, structures, assets and reputation.

2.   The advent of a plethora of social media tools has changed the landscape of crisis management considerably over recent years with possibilities for social action now becoming realities. With readily available software tools such as online discussion platforms and news aggregators, organisations can now disseminate, acquire and analyse information more efficiently and comprehensively. While social media has the ability to prevent a crisis from spiraling out of control, organisations cannot ignore its ability to aggravate an unfolding crisis situation.

3.   The UK riot in 2011 was a case in point. The question of how a small protest against apparent police brutality in Tottenham could spark riots and vandalism as far afield as Huddersfield has given rise to the need to examine the interrelated questions of how social media has influenced the UK riots. Social media's role as a catalyst is undeniable as numerous reports attest to the ways in which rioters and onlookers used social media to organize and communicate. Rioters would share with each other where areas were not protected, and would move there in an instance. The speed and impact of the social media initially overwhelmed the authorities.

4.   While social media can impact politics, social movements and the communication of information, the technology alone cannot be blamed for sparking the revolts. Ultimately, social media is a tool, and the same tool that can cause a negative impact, can also bring about positive outcomes by facilitating and accelerating the speed and breadth of communication, if properly utilised. This paper examines the use of social media tools by Governments and non-governmental organisations (NGO) for crisis preparedness, crisis response and crisis recovery, and describes some of the key considerations for social media to be used effectively during the **crisis response** phase. It draws lessons as well as best practices that can be applied to strengthen government crisis management capabilities through the use of social media.

The paper is divided into three sections:

- Section 1 maps out the current social media landscape, highlights the changing application of social media tools and describes how social media tools can be used to augment crisis management capabilities;

- Section 2 outlines the four social media functions involved during crisis management. It focuses on the crisis response phase to highlight the need for social media monitoring and engagement as a basis for effective crisis response;

- Section 3 describes how governments can more systematically deal with crises through the adoption of a coordinated strategic framework using social media to establish trusted networks.

SECTION 1

Understanding the Social Media Landscape

5.   The medium is not always the message. Social media devoid of purpose and content would do little to enable people to prepare, respond and recover in the face of disasters. Generically speaking, social media can be defined as "a form of new media that facilitates social interaction and communication through the use of online internet-based platforms." Within this broad ambit, social media tools can be categorised into the following:

    a.   **Social networks and blogs.** Social networking sites refer to sites that allow people to build their own personal pages to enhance content sharing and communication with other people (e.g., Facebook). Blogs are online journals or discussion sites used to post content and relevant updates (e.g., The Huffington Post);

    b.   **Bookmarking sites.** This refers to websites that help people store, classify, share and search links through the practice of folksonomy[1] techniques on the internet (e.g., delicious.com, digg.com and reddit.com). When people tag and share content on bookmarking sites, the visibility of shared content typically improves across the board;

    c.   **Collaborative projects.** Collaborative projects are communal databases created through user generated content (e.g., Wikipedia);

    d.   **Content communities.** Content communities are online communities where people share various types of content such as photos, audio and videos (e.g., YouTube, Flickr);

    e.   **Social reviews.** This refers to websites that allow people to search, rate and share information as well as provide recommendations (e.g., Google Places). Using social reviews, people are able to vote on content based on personal interest, inclinations and perceived relevance.

6.   In contrast to traditional forms of media, which are typically limited in reach and restricted to the place of performance, social media tools are able to broadly overcome these barriers because of <u>five</u> characteristics that differentiate them from other forms of traditional media:

---

[1] Folksonomy is a system of classification derived from the practice and method of collaboratively creating and managing tags to annotate and categorise content.

a.   **Collectivity.** The collective nature of social media serves to connect people across geographical boundaries and time zones via common platforms, to foster the growth of online communities with similar interests;

b.   **Connectivity**. Unlike other forms of media or communications, social media is able to connect users to other resources through the sharing of web links;

c.   **Completeness**. Social media is able to capture contributions and keep them in a persistent state for others to view and share;

d.   **Clarity.** Content on social media websites is usually highly visible, with participating people aware of each other's activities and content posted;

e.   **Collaboration.** People are encouraged to share and contribute in areas they are interested in, by gathering information and providing feedback.

Harnessing Social Media to Augment Crisis Management Capabilities

7.   Crises are complex in nature, have disproportionate effects and can move at varying speeds. By harnessing the characteristics of the social media tools, organisational capacity to demonstrate resilience in response to crises can be significantly enhanced by creating new avenues for collaboration to help build more resilient communities over time. For example, at the onset of a crisis, information from **social networks and blogs** can be accessed by crisis managers and responders to help identify the source and severity of the crisis and distribute a consistent message to the affected communities. As search links and other relevant resources are tagged and evaluated based on recommendations by people on **bookmarking sites**, crisis managers are better able to search and gather information, and respond to on-going developments as they trend.

8.   Social media tools can also be used in enhancing a community's capacity in anticipating and preparing for crisis. For example, **collaborative projects** may be initiated on social media platforms to empower interested communities with a rich database of content to analyse and validate information that could support intervention opportunities during a crisis. Crisis managers can also monitor **content communities** to identify emerging trends and potential hotspots that could become flashpoints for crisis. Overtime, crisis managers are

also able to mine through databases of tagged content on **social review** sites to identify relevant concerns and themes being expressed online as well as key contributors to insightful feedback for further analysis.

9.   However, for organisations to be effective in utilising social media tools for crisis management, there is a need to shift our paradigm across seven areas:

     a.   **Purpose.** Prior to the advent of social media tools, the use of the Internet was largely confined to informational purposes. With social media tools, people can now share content. However, to truly exploit the capabilities of social media tools, we need to go one step further and find ways to <u>engage people through the use of more creative and interactive social applications to enhance collaboration with like-minded communities</u>;

     b.   **Core Activity.** Effective handling of a crisis situation rests on the ability of crisis managers to gather accurate information on the changing environment and needs of affected populations. To generate actionable knowledge, social media tools of the future will have to be <u>equipped with robust capabilities to support decision-making processes with timely analytical insights</u>;

     c.   **Stakeholders.** Whereas the state has a monopoly of information in the past, this is no longer the case now. The ease by which information can be collected and transmitted to a wider audience using social media tools means that we have to deal with multiple parties, including NGOs and individual citizens. Social media tools allow us to undertake crowdsourcing[2], <u>as a means of gathering a variety of perspectives on existing challenges as well as innovative and effective solutions to enhance the management of crises</u>;

     d.   **Information Content.** The analysis of emerging issues and their cross-cutting effects can be rather complex. The focus on discrete data alone, such as factual information, may not be sufficient to generate useful insights to guide stakeholder response. New social media capabilities can help crisis managers <u>analyse the interdependencies of discrete data and their associated relationships so as to provide a better understanding of emerging issues and their emergent effects</u>;

     e.   **Treatment of Information.** Concerns about privacy, security, and data confidentiality can often result in decisions to reduce the scope of

---

[2] Crowdsourcing refers to the act of sourcing tasks traditionally performed by specific individuals to a group of people or community to solve complex problems and contribute relevant and fresh ideas.

data interchange. The adoption of social media platforms that support information transparency and sharing can help to <u>integrate and streamline crisis management processes to satisfy the information needs of all stakeholders involved, and improve the speed and accuracy of crisis communications;</u>

f.　**Software Tools.** In-house systems typically require a substantial capital investment and possess real limitations to full integration with external systems. Crisis managers need to examine how they can leverage and be plugged into the <u>open-source platforms which can provide a range of flexible tools to gather information, and equip people with the necessary social media and user-generated content management capabilities</u> to enhance analytical processes and work streams;

g.　**Output.** The over-reliance on specialists to provide assessments do not sufficiently take into account the individual's general lack of understanding for the unknown as well as his or her own cognitive biases when conducting research and analysis. A <u>crisis response formulated by considering specialist assessments, stakeholder perspectives and crowdsourced opinions using social media would enable stakeholders to make better decisions</u> within acceptable levels of risk and uncertainty.

Meeting the challenges posed by crisis situations will mean using a much more decentralized, inclusive and interactive process. <u>Table 1</u> (below) summarises the paradigm shift needed from the past and the present to **the future** in the use of social media tools for organizations to effectively exploit their potential.

Table 1: Past, Present and Future of Social Media Tools

	Past	Present	Future
Purpose	To inform	To share	To engage
Core Activity	Gathering information	Tracking issues	Guiding action
Stakeholders	State Actors	State and private Actors	Multiple actors[3]
Information Content	Discrete data	Networks	Relationships
Treatment of information	Data Confidentiality	Privileged information	Transparency
Software tools	In-house capabilities	Commercial analytical tools	Open-source platforms
Output	Specialist assessment [**1**]	**1** + Multi-stakeholder perspectives [**2**]	**1** + **2** + Crowdsourced opinions

---

[3] Multiple actors include stakeholders such as inter-governmental organizations (IGO), non-governmental organizations (NGO) and ordinary citizens.

SECTION 2

Application of Social Media tools across Crisis Management Phases

10.   Crisis management can be broadly divided into three phases: (1) crisis preparedness, (2) crisis response, and (3) crisis recovery:
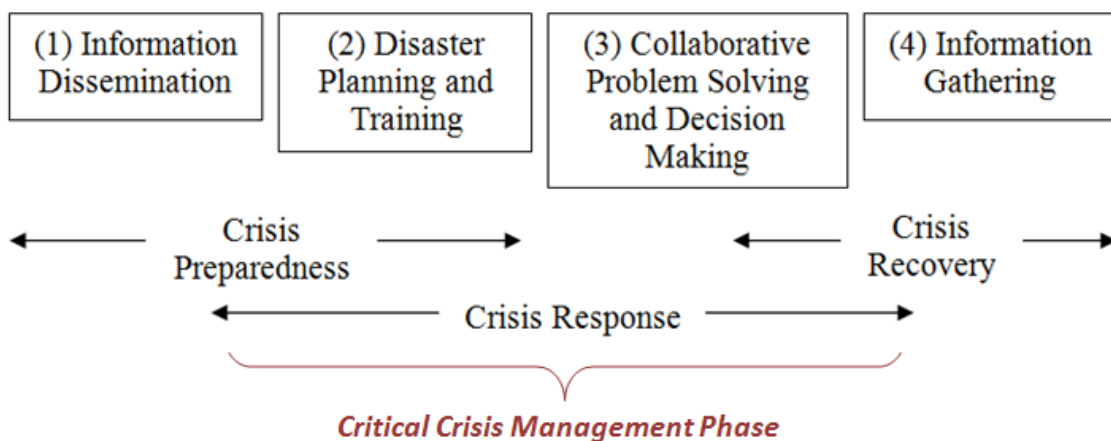
> a.   During the **crisis preparedness** phase, the focus is on preventive activities that seek to reduce known risks that could lead to a crisis. Recognising that not all crises can be averted, there would be an equal focus in this phase on crisis management planning and training of the crisis management team;
>
> b.   During **crisis response**, the focus will be on the speed and effectiveness of the initial response. There will be a need for quick situational awareness to help authorities respond effectively after the crisis hits. The effective use of social media tools will be critical during this phase to engage community networks in order to gather, analyse and disseminate information in a timely manner;
>
> c.   While the immediacy of response has passed, the **crisis recovery** phase requires longer term planning and support to restore the situation back to normalcy.

11.   Across these three stages, social media tools can be used for (1) information dissemination, (2) disaster planning and training, (3) collaborative problem solving and decision making, and (4) information gathering. This is illustrated in Figure 1 and elaborated in the ensuing paragraphs.

Figure 1: Social Media Functions for Crisis Management

a.   **Information dissemination.** Information dissemination through social media tools is an effective means to provide reliable information quickly to the public to enable them to better prepare for and respond to crises. However, the effectiveness is dependent on the reach and penetration of social media platforms across technological know-how, education, age, language and culture. *As an example, the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) is able to provide early warning for rapid response to complex humanitarian emergencies based on information gathered because of OCHA's multimedia platforms such as ReliefWeb and the IRIN news service, which are aimed at providing more detailed analysis to a wider audience;*

b.   **Disaster planning and training**. Gamification[4] leverages social media for disaster planning and training to promote personnel training, scenario planning and collaboration between various crisis management agencies from the public sector, private sector and civil society organizations. Gamification can enhance current crisis management practices through sustained stakeholder training and collaboration. *In this respect, the Kenyan Red Cross and the World Bank bring together disaster relief experts and software engineers to work on identifying key challenges and to develop possible solutions through interactive discussions to overcome a range of possible scenarios related to natural disaster risk and response;*

c.   **Collaborative problem solving and decision making.** Crowd-sourcing using social media facilitates collaborative problem solving and decision making by integrating various streams of information from mobile and web-based technologies to fill the perceived sense-making and information gaps as well as to aggregate, analyse and plot data about urgent humanitarian needs. As the knowledge base grows, authorities become better positioned to manage and respond to a range of possible crisis-related scenarios. *As an illustration, responders from the United States Institute of Peace collect information to improve their situational awareness so as to make more informed decisions on the allocation of resources based on emerging trends;*

d.   **Information gathering.** On-the-scene footage, citizen journalism and disaster assessment are central to information gathering for coordinating crisis response. *Al Jazeera uses a community platform that leverages on email, mobile text messages and smart phone applications,*

---

[4] Gamification refers to the use of gaming mechanics to non-gaming situations to promote desired behaviours and the adoption of appropriate applications to support these behaviours.

to allow the public to voice their concerns, perceptions, and thoughts regarding on-going developments.

12.   Various international organisations and government agencies have used social media platforms and technologies to enhance their capabilities in crisis management. The New York City's Office of Emergency Management for example, uses **Sahana** to manage its all hazards sheltering plan involving over 500 shelters capable of housing over 80,000 persons during a crisis. The **Dutch Government**, on the other hand, operates the www.crisis.nl as a focal point for public dissemination of information during an emergency. **Ushahidi**, a downloadable software that enables people to submit eyewitness reports during a disaster that can then be displayed onto a map has been successfully deployed during the Haiti Earthquake (2010) to crowdsource data from people on the ground to aid relief efforts. **SensePlace 2** is another map-based web application that integrates multiple text sources (news, RSS, blog posts) that can then be translated onto a map to allow emergency responders to easily filter through by place or time, so as to analyse changing issues and perspectives.
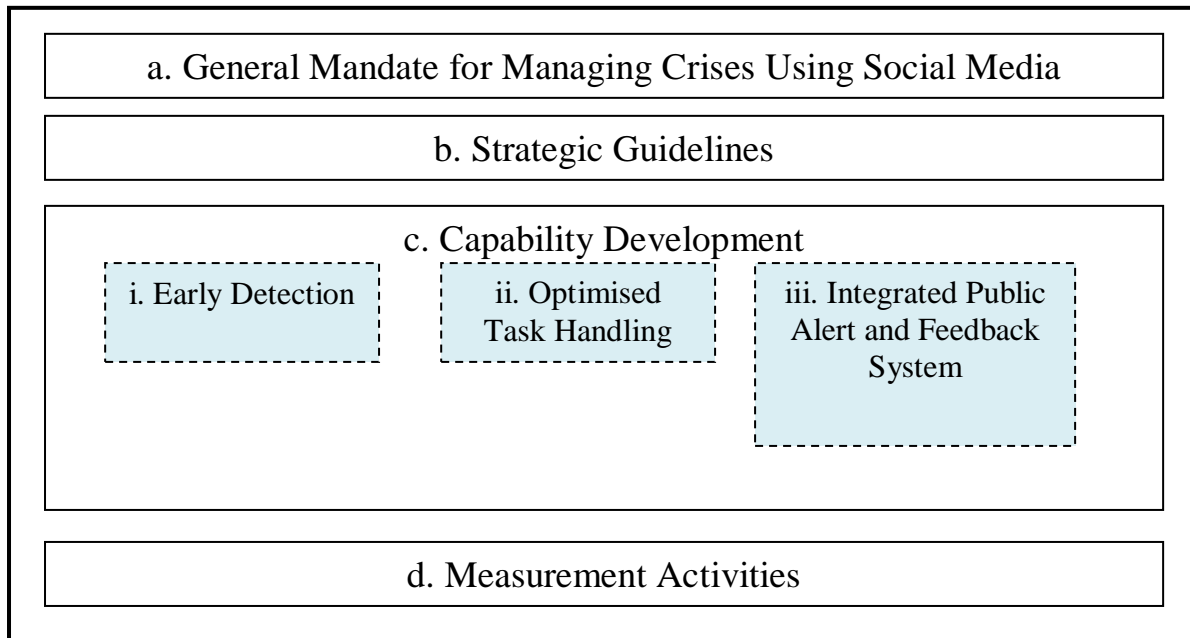
13.   A summary table providing further insights into these tools and how organizations have used them effectively is provided in **Annex A** and elaborated through 6 caselets attached as **Annex B**.

SECTION 3

Framework to Enhance Social Media Capabilities for Crisis Management

14.   To guide the development of capabilities in harnessing social media for crisis management, a framework to foster a more systematic and coordinated approach outlined in <u>Figure 2</u> is proposed.

<u>Figure 2: Framework for Whole of Government Crisis Management using Social Media</u>

a. General Mandate for Managing Crises Using Social Media
b. Strategic Guidelines

c. Capability Development

i. Early Detection	ii. Optimised Task Handling	iii. Integrated Public Alert and Feedback System

d. Measurement Activities

15.   The framework comprises the following elements:

    a.   **General Mandate for Managing Crises Using Social Media.** Obtaining senior management buy-in on the value of harnessing social media tools as a complementary approach to Whole-of-Government (WOG) crisis management is essential to send a strong and consistent message to agencies involved in crisis-related work;

    b.   **Strategic Guidelines.** Establishing clear and consistent guidelines for ministries on the use of social media tools for crisis management are needed. A different and more expedited process may be needed to ensure information is put out onto the social media in a timely manner either for reassurance or to obtain critical intelligence. However, as social media is only one of the channels that may be used in a crisis and do not in any

way replace existing means of communication, such process and protocols need to be harmonised;

c.   **Capability Development.** Three capabilities are identified:

    i.   <u>Early Detection</u>. Pre-emptive and early detection mechanisms need to be in place so that early signs of a brewing crisis can be discovered. This will require an active sense-making platform where social networks, blogs and forums are regularly monitored. Active dialogue and engagement with community and active groups on social media are also needed so that these relationships can be leveraged on during a crisis;

    ii.   <u>Optimised Task Handling</u>. Dedicating resources to support *information dissemination*, *disaster planning and training*, *collaborative problem solving and decision making* as well as *information gathering* within the organisation could help ensure that tasks are handled optimally from the onset of a crisis. The targeted use of social media tools could serve to complement existing analytical processes residing within ministries to enhance crisis preparedness, response and recovery efforts;

    iii.   <u>Integrated Public Alert & Feedback System</u>. An integrated public alert and feedback system that incorporates social media tools that allow for a seamless and straightforward communication from the government to the public and for the public to send relevant information to enhance government operations during a crisis is needed.

d.   **Measurement Activities.** The use of appropriate leading indicators[5] to monitor the application of social media tools can help guide ministries in the evaluation of existing crisis management plans that leverage on social media tools. Developing leading indicators in areas such as *operational efficiency* and *utilization of public perspectives* could provide insights into existing organizational practices and how these may be improved to enhance crisis management. Measurement approaches should be consistent within government to aid benchmarking efforts.

---

[5] A leading indicator may be used to monitor for possible emerging signals before new developments occur.

Conclusion

16.   With increasingly more individuals using their mobile phones to go online worldwide, surpassing time spent on traditional media such as television, radio and print, it would be essential to carefully consider how social media applications can be incorporated into an integrated crisis management platform for effective crisis management. Leveraging social media technologies for crisis management provide citizens with a greater role in preparing for and managing crises which will help build resilient communities. Embracing resilience as a civic value and a social norm should ultimately be the way forward to encourage citizens to take the actions necessary to help themselves and others during times of crisis.

Enclosures

Annex A	Capabilities of Social Media Platforms across Social Media Functions
Annex B	Application of Social Media Tools for Crisis Management

REFERENCES

Augustine, N. R. (1995, November/December). Managing the crisis you tried to prevent. Harvard Business Review, 73(6), 147-158.

Barton, L. (2001). Crisis in organizations II (2nd ed.). Cincinnati, OH: College Divisions South-Western.

Ben Ramalingam and Harry Jones with Toussaint Reba and John Young. 2008. Exploring the Science of Complexity: Ideas and Implications for Development and Humanitarian Efforts. Working Paper 285. Overseas Development Institute.

Benoit, W. L. (1997). Image repair discourse and crisis communication. Public Relations Review, 23(2), 177-180.

Cheung, V. (2007). The Power of Social Networking Sites, CNET Asia. retrieved October 3, 2011 from http://asia.cnet.com/blogs/hktechphooey/post.htm?id=63001502.

Cole, R. (2009). Social Media: What Does it Mean for Public Managers?, Public Management. October, 2009. 8-12.

comScore. (2008). Social Networking Explodes Worldwide as Sites Increase their Focus on Cultural Relevance. 12-August 2008. retrieved November5, 2011 from http://www.comscore.com/Press_Events/Press_Releases/2008/08/Social_Networking_World_Wide.

Coombs, W. T. (2004a). Impact of past crises on current crisis communications: Insights from situational crisis communication theory. Journal of Business Communication, 41, 265-289.

Coombs, W. T. (2007a). Ongoing crisis communication: Planning, Managing, and responding (2nd ed.). Los Angeles: Sage.

Coombs, W. T., & Holladay, S. J. (1996). Communication and attributions in a crisis: An experimental study of crisis communication. Journal of Public Relations Research, 8(4), 279-295.

Cormode,G. and Krishnamurthy, B. (2008). Key differences between Web 1.0 and Web 2.0, First Monday, June 2008, 13(2), retrieved October 3, 2011 from

http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2125/19
72.

Fearn-Banks, K. (2001). Crisis communications: A casebook approach (2nd
ed.). Mahwah, NJ: Lawrence Erlbaum.

Flynn, S and Bates, S. (2011). Connecting America: Building Resilience with
Social Media.

James Mooney and A.C. Reiley, The Principles of Organisation (New York:
Harper, 1939).

Lerbinger, O. (1997). The crisis manager: Facing risk and responsibility.
Mahwah, NJ: Lawrence Erlbaum.

Ludwig von Bertalanffy, "General Systems Theory: a Critical Review," General
Systems 7 (1962): 1 – 20.

Sturges, D. L. (1994). Communicating through crisis: A strategy for
organizational survival, Management Communication Quarterly, 7, 297-316.

Ulmer, R. R., Sellnow, T. L., & Seeger, M. W. (2006). Effective crisis
communication: Moving from crisis to opportunity. Thousand Oaks: Sage.

Weick, K. E., & Sutcliffe, K. M. (2001). Managing the unexpected: Assuring
High Performance in an Age of Complexity

CAPABILITIES OF SOCIAL MEDIA PLATFORMS ACROSS SOCIAL MEDIA FUNCTIONS

Platform	Social Media Functions for Crisis Management			
	1. Information Dissemination	**2. Disaster Planning and Training**	**3. Collaborative Problem Solving and Decision Making**	**4. Information Gathering**
Ushahidi	Data from various sources is filtered, plotted on a map, and shared with the public E.g., The Washington Post	-	Facilitates discussions during a crisis Responders can use the data to improve their situational awareness and make informed decisions (i.e., where are resources needed, what trends are emerging, can further crisis be averted) E.g., United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), Crisis Mappers, United States Institute of Peace	A community platform for the public to voice their concerns, perceptions, and thoughts regarding an event through email, sms, smart phone apps, twitter, and the web E.g., Al Jazeera
Crisis	Information gathered is	Courses are available on	-	Leverages mobile & web-

Mappers	used to provide early warning for rapid response to complex humanitarian emergencies E.g., UNOCHA	crisis mapping related topics to understand the role of crisis mapping and humanitarian technology during crisis response E.g., Harvard Humanitarian Initiative, United States Institute of Peace, ICT for Peace Foundation, Federal Department of Foreign Affairs – EDA, UNOCHA		based applications, participatory maps & crowdsourced event data to gather information and power effective early warning for rapid response to complex humanitarian emergencies E.g., ICT for Peace Foundation, UNOCHA
Sahana	-	Software is used to plan for and manage crisis and evacuation strategies E.g., City of New York/Office of Emergency Management	Enables information sharing across organizations, connecting donors, volunteers, NGOs, and government organizations Provides awareness of all important locations in a disaster response (e.g., shelters, hospitals, warehouses etc) and maintenance of a missing persons/disaster victims	Tracks and manages requests for help from individuals and organizations Tracks organizations and programs responding to the disaster Enables the capture of photos, exchange of data across facilities for use in catastrophic situations E.g., US National Library

			Registry E.g., US National Library of Medicine, City of New York/Office of Emergency Management, Missouri Department of Public Safety, Chengdu Police	of Medicine
Open Streetmap	Maps of countries and their locations are available online for the public to view	-	-	During the Haiti Earthquake, a street map of Haiti was developed from scratch in only two weeks, a project that should have taken about a year as a result of intense information gathering efforts. E.g., Crisis Commons, World Bank, UNOCHA, UNOSAT, International Federation of the Red Cross
CrisisCamps/ Crisis Commons		CrisisCamps allows crisis response professionals to explore new ways of sharing best practices	Volunteers worked together to build tools, search and translate data, and solve unique challenges brought forth by the crisis.	Mobilizing almost 2000 laypeople (mostly technologists) in 25 cities around the world to meet information needs

		CrisisCamps also rallied and provided support, and attracted new volunteers to support response efforts in the Thailand floods and the Gulf Coast Oil Spill	E.g., Haiti Earthquake – Hack to expand long distance wifi connectivity E.g., Random Hacks of Kindness	generated by the Haiti operation. E.g., Open StreetMap
Random Hacks of Kindness (RHoK)	Mobile applications allowing residents to find out where they can use food stamps to purchase local fresh produce	RHoK brings together disaster relief experts and software engineers to work on identifying key challenges to disaster relief, and developing solutions to these critical issues. E.g., Kenyan Red Cross, World Bank	Hacks developed at RHoK #1, the first global RHoK hackathon (Jun 2010), are already being implemented to assess landslide risk in the Caribbean and crowdsource bushfire information in Australia. E.g., Kenyan Red Cross	

<h1 style="text-align:center">APPLICATION OF SOCIAL MEDIA TOOLS FOR CRISIS MANAGEMENT</h1>

1.	Caselets 1 and 2 describe the following social media functions to aid **crisis preparedness**: (1) information dissemination, and (2) disaster planning and training.

CASELET 1: SAHANA

Sahana is a Free and Open Source Software (FOSS) application that provides a comprehensive solution for disaster information management, relief and recovery operations. Sahana includes web-based disaster management applications for inventory management, situation awareness and volunteer coordination. Since 2007, the New York City's (NYC) Office of Emergency Management has used Sahana to manage its all-hazards sheltering plan, which involves 500 shelters capable of housing over 800,000 persons during a crisis. As part of the NYC Coastal Storm Plan, Sahana was used to plan for and manage the evacuation facility structures needed to house the thousands of potential evacuees in the NYC metropolitan area.

In addition, during Hurricane Irene in 2011, Sahana helped the NYC's Office of Emergency Management manage aid and volunteers, and locate missing persons as well as track information for government and non-profit agencies.

Key Learning Points

➤ The effectiveness of Sahana may be attributed to its ability to facilitate resource management and communication during crises, which has allowed the system to be deployed in various countries during different types of natural disasters. To date, the software has been used in over fourteen emergency and disaster relief efforts. The success of Sahana as a disaster management system may also be attributed to the bond between the FOSS philosophy and the humanitarian requirement of disasters.

➤ **FOSS platforms like Sahana present a low cost option for setting up a crisis management system while providing flexibility in terms of technical customization based on the crisis situation. In addition, Sahana's visualization features provide a common and consistent way of tracking and representing information that has been identified to support the early detection of risks and uncertainties.**

CASELET 2: FEMA

Through the use of social media, the U.S. Federal Emergency Management Agency (FEMA) seeks to provide timely and accurate information concerning disaster preparedness response and recovery as well as transparency into the agency's operations through internal and external information exchange using appropriate channels.

FEMA provides valuable information on its main website that range from safety tips on family emergency planning to storm and hurricane forecasts. Public forums are used to promote interaction with crisis management organizations during a crisis. Another site by FEMA, *challenge.gov*, allows FEMA and other federal agencies to pose questions on specific challenges such as healthcare and energy conservation, to gather public feedback. FEMA is currently working with Apple, Google and Microsoft to improve communication between citizens, first responders, volunteer groups, the private sector and various levels of government through the use of YouTube and Twitter.

[Similar to FEMA, the Dutch Government has also developed an emergency preparedness website, *http://www.nederlandveilig.nl/noodsituaties/*, to educate people by providing a list of sites that deal with emergency preparation. In addition, 'NL-Alert' is used to reach out to people in the immediate vicinity of a crisis by mobile phone to disseminate updates and offer timely assistance. Another site, *www.crisis.nl*, is intended to be the focal point for the public dissemination of information during an emergency.]

Key Learning Points

➢ The use of social media tools has allowed FEMA to tap on the best ideas from online communities to better deal with crisis-hit areas by promoting communication using email and Web 2.0 technologies that allow people to receive regular updates across 86 topical areas such as storms, floods and earthquakes.

➢ The application of social media tools such as Facebook and the deeper integration of social networking practices into FEMA's communications plan through online GIS data and automated RSS feeds, has enabled the agency to prepare for, respond to and recover from disasters by enhancing internal collaboration and facilitating dialogue between employees and external partners.

➢ **FEMA operates by using the approach of a single focal point to communicate with the public on crisis-related matters. FEMA's growing use of Web 2.0 tools and third party social networking sites have also improved the quality of content being posted, and enhanced the overall end-user functionality of its website.**

Application of Social Media Tools for Crisis Relief

2.   Caselet 3 describes the application of the following social media functions to aid **crisis response**: (1) information dissemination, (2) collaborative problem solving and decision-making, and (3) information gathering, while Caselet 4 describes the application in the area of (4) information dissemination, (5) disaster planning and training, (6) collaborative problem solving and decision making, and (7) information gathering.

CASELET 3: USHAHIDI

Ushahidi is a downloadable software that enables people to submit eyewitness reports during a conflict or disaster. This information is then displayed onto a map to augment further analysis.

Ushahidi Haiti was deployed during the Haiti Earthquake (2010) to crowdsource data from people on the ground. Using social media tools and mobile text messages, information gathered was crystallized to support coordination efforts of the humanitarian relief services, which comprised human aid organizations including InSTEDD and the Red Cross. The crowdsourced information, which came in the form of reports, helped to improve organisational situational awareness of crisis-related events occurring at various locations, and enhance decision-making in issues pertaining to aid and resource.

Key Learning Points

➢ The effectiveness of Ushahidi may be attributed to its ability to establish itself as a credible source of information. The site provides accurate information by conducting checks and verifying reports received from a range of external sources. In addition, NGOs are invited to provide credibility ratings on reports uploaded to the Ushahidi website to validate and organise information for wider use among various human aid organizations.

➢ **Ushahidi has allowed communities to collect, filter and extract relevant information such as comments and feedback to supplement official information with public content. The use of crowdsourcing for crisis management could provide a credible means of systematically analyzing and visualizing information for crisis managers to respond effectively to a crisis.**

CASELET 4: CRISIS MAPPING

Crisis mapping is a growing field that seeks to leverage mobile platforms, computational models, geospatial technologies, crowdsourced data and visual analytics to power effective early warning for rapid response to complex humanitarian emergencies.

Crisis Mapping ecosystems were used as the central mechanism for coordinating imagery and mapping activities during the Haiti Earthquake in 2010. Through the use of web-based applications, participatory maps and crowdsourced event data, organisations were able to gather information quickly and provide their assessments of locations which may have required relief the most.

Post Haiti, crisis mapping and humanitarian technologies are being explored by Humanitarian Assistance and Disaster Relief (HADR) organisations, government organizations and NGOs to augment crisis relief. In terms of training, there are also a growing number of courses being conducted on crisis mapping to educate crisis managers on complementary tools that may be used to analyse and manage crisis information.

Key Learning Points

➢ The effectiveness of Crisis mapping may be attributed to its diverse community of members, which comprise international experts, practitioners, policymakers, technologists, researchers, scholars and skilled volunteers with a keen interest in crisis mapping and technology, and their impact on humanitarian crises. To address the challenge of verifying crowdsourced information posted by the public, people within the crisis mapping community have built up a reputation based on the history of how they have been reporting information.

➢ In an era of data deluge, there is a need for better tools and training for analyzing crisis information. The development of a few simple, shared analytic tools and training sessions, such as crisis mapping tools and capabilities, could create greater value from information extracted from various sources.

➢ **Crisis Mapping highlights the importance of training and developing relevant expertise in staff working in crisis functions. Speaking a common language and sharing a robust set of skills within crisis management communities are key prerequisites of any effective crisis management plan that seeks to augment human networks with suitable technologies and know-how.**

3.   Caselets 5 and 6 describe the application of the following social media functions to aid **crisis recovery**: (1) collaborative problem solving and decision-making, and (2) information gathering.

CASELET 5: SensePlace2

SensePlace2 is a map-based web application that collects essential information to allow for swift communication between government and citizens during an emergency. The application, which is developed by the GeoVista Center at Penn State University (U.S.), allows for a more complete analysis of information from Twitter by capturing, locating, and displaying extracted data.

SensePlace2 has been designed to integrate multiple text sources (e.g., news, RSS, blog posts), which are then translated onto a map to allow emergency responders to easily filter through data by place or time, so as to analyse changing issues and perspectives.

SensePlace2 supports an understanding of spatial and temporal patterns of activities, events, and attitudes that can be identified through the analysis of its geo-located Twitter database. A key goal for this interface is to support the analyst's ability to explore, characterize, and compare the space-time geography associated with topics and authors in Tweets.

Key Learning Points

➢ SensePlace2 supports overview and detail maps of tweets by using a crawler to collect tweets containing topics of interest. Each tweet is then processed and key information (e.g., locations, organizations, persons, hashtags, URLs, etc.) is extracted to describe the geographic content associated with tweets as well as the locations where Tweets were reported by users.

➢ **The SensePlace2 interface, which includes a query window, map, time-plot control, relevance-ranked list of tweets, and a task list, supports the analysis of social media inputs based on geography. The SensePlace2 architecture and user interface also reflect user input from a structured survey of emergency management practitioners to enhance situational awareness and overcome crises.**

CASELET 6: REBUILDJOPLIN.ORG

The town of Joplin (Missouri, U.S.), which recently suffered a tornado in 2011, provides a good example of how recovery has become increasingly social. In the immediate days following the tornado, the majority of communication that was happening within the city occurred almost entirely through social media, as it was easier to post messages on Facebook and Twitter than to try and make a phone call or send a mobile text message. As the effort moved into the recovery phase, the communication and problem solving mechanisms were subsequently formalized and strengthened through the use of the *RebuildJoplin.org* website.

RebuildJoplin.org is designed as a collaborative platform and is linked to a Facebook page of the same name. Using the platform, affected community members are able to quickly search and retrieve crisis-related information based on content that has been gathered and archived over time.

Key Learning Points

➢ RebuildJoplin.org is more about the relationships that are developed as a consequence of using the platform, rather than simply the tool itself. RebuildJoplin.org also has a Facebook page with over 7,000 fans. Their presence is open, allowing anyone to post to their page on topics ranging from community recovery events to donations.

➢ **The relative ease of using readily available social media tools, as in the case of RebuildJopolin.org and its Facebook page, show how low-cost technological solutions may be harnessed to support human practices in the areas of information gathering and problem solving during a crisis.**

➢ **The emphasis going forward could be to explore how organisations can foster better community engagement before the onset of a crisis, so as to tap on its knowledge base and potential capabilities, where possible, to improve crisis response.**