



**Australian Government**  
**Australian Civil-Military Centre**



**THE UNIVERSITY  
of ADELAIDE**

# Complex Emergencies in a Digital World

**A Rapid Guide**

## Acknowledgements

The author would like to acknowledge Paul McAllister, Anuradha Mundkur, Caitlyn McKenzie, Celia Hevesi, Ivan Kovacic, Zoe Moses, Colonel Jim Burns and Michelle Lovi of ACMC who provided research support and critical feedback during the development of the outputs. In addition, I would like to thank Lieutenant Colonel Jason Logue of the Australian Defence Force, Roger Lye of the Australian Government Crisis Management Branch and Darren Cutrupi of the ACT Emergency Services Agency, all of whom provided valuable insights into the role of new ICTs in emergencies.

## Disclaimer

The views and opinions expressed in this article are those of the authors and do not necessarily reflect the official policy or position of the Australian Civil-Military Centre or the Australian Government.

This paper is published under a Creative Commons license, see <http://creativecommons.org.au/learn-more/licences/version3>. All parts of this publication may be reproduced, stored in retrieval systems, and transmitted by any means without the written permission of the publisher.

ISBN: 978-1-921933-27-1

Published May 2019



Complex Emergencies in a Digital World:

A Rapid Guide



## The Communication and Complex Emergencies Project

The Communication and Complex Emergencies Project is a multi-phase collaboration between the University of Adelaide's Applied Communication Collaborative Research Unit (ACCRU) and the Australian Civil-Military Centre (ACMC). The current phase of the project focuses on a range of new information and communication technologies (ICTs) and digital platforms and their role in supporting emergency and humanitarian relief and assistance processes during complex emergencies.

### About the Australian Civil-Military Centre (ACMC)

The Australian Civil-Military Centre was established in November 2008, in recognition of the growing importance of civil-military interaction and is evidence of Australia's commitment to sustainable peace and prosperity in the Asia-Pacific region and beyond. The Centre's mission is to support the development of national civil-military capabilities to prevent, prepare for and respond more effectively to conflicts and disasters overseas. At its core is a multi-agency approach, with staff from a number of Australian Government departments and agencies, the New Zealand Government and the non-government organisation (NGO) sector. Applying this collaborative approach to working with other government agencies, the United Nations and other relevant stakeholders, the Centre seeks to improve civil-military education and training, and develop civil-military doctrine and guiding principles. Through its research program, the Centre seeks to identify best practice responses to key lessons learned - important for developing doctrine and facilitating training programs - to contribute directly to the ability of the Australian Government to develop a

more effective civil-military capacity for conflict prevention and disaster management overseas. For more information contact:

E-mail: [research@acmc.gov.au](mailto:research@acmc.gov.au)

Web: <http://www.acmc.gov.au>

### About the Author

This paper was researched and written by Professor Andrew Skuse of the Applied Communication Collaborative Research Unit (ACCRU), University of Adelaide. He is Head of the Department of Anthropology and Development Studies at the University of Adelaide and his work focuses on how low-income populations interact with information resources and how these resources affect areas such as livelihoods, health, education, peace-building and social equity. Professor Skuse has undertaken research and consultancy on communication for development (C4D) in the developing world for a wide range of international development agencies, including ADB, AusAID, DFID, EU, UNICEF and WHO. For more information contact:

E-mail: [andrew.skuse@adelaide.edu.au](mailto:andrew.skuse@adelaide.edu.au)

Web: <http://www.adelaide.edu.au/accru/>



# Contents

<b>Chapter 1 Introduction: Complex Emergencies in a Digital World</b>	<b>1</b>
Introduction	1
Complex Emergencies and Communication	2
Target Audience	2
<b>Chapter 2 Short Messaging in Complex Emergencies</b>	<b>3</b>
Introduction	3
Using SMS and App-based Messaging in Complex Emergencies: Strengths and Weaknesses	3
‘Top Tips’ for Using SMS and App-based Message Services in Emergencies	5
Short Messaging	7
Advice, Warning, Emergency and Behaviour Change Messages	7
Emergency Message Construction	9
Principles for Developing Effective Emergency Messages <sup>10</sup>	10
Key Resources	10
<b>Chapter 3 Crowdsourcing and Crisis Mapping in Complex Emergencies</b>	<b>13</b>
Introduction	13
Using Crowdsourcing and Crisis Mapping in Complex Emergencies: Strengths and Weaknesses	13
‘Top Tips’ for Using Crowdsourcing and Crisis Mapping in Emergencies	17
Crisis Mapping and Crowdsourcing Software Resources	20
Key Resources	21
<b>Chapter 4 Social Media in Complex Emergencies</b>	<b>23</b>
Introduction	23
Using Social Media in Complex Emergencies: Strengths and Weaknesses	23
‘Top Tips’ for Using Social Media in Emergencies	26
Social Media Policy Considerations	28
Key Principles for Designing a Social Media Strategy	28
Key Resources	29
<b>Chapter 5 Wikis and Knowledge Management in Complex Emergencies</b>	<b>31</b>
Introduction	31
Using Wikis for Knowledge Management in Complex Emergencies: Strengths and Weaknesses	31
‘Top Tips’ for Using Wikis in Emergencies	33
Managing Knowledge in Emergencies	34
Key Resources	36

Complex Emergencies in a Digital World:  
**A Rapid Guide Chapter 1**



# Chapter 1

## Introduction: Complex Emergencies in a Digital World

### 1. Introduction

1.1 This guide examines the application of a wide range of new information and communication technologies (ICTs) in the context of complex emergencies. New ICTs such as Internet-capable mobile phones, short messaging services (SMS, Twitter, WhatsApp), social media platforms (Facebook, YouTube) and knowledge sharing tools (Wikipedia) have radically altered the way the world connects, communicates and shares. A digital transformation is underway that is rapidly reshaping our world and what we understand about it. Importantly, this transformation is leading to new program and service delivery possibilities for agencies and organisations that are mandated to respond to complex emergencies, including:

- Emergency and disaster preparedness and community mobilization;
- Data gathering for increased situational awareness;
- Creating, managing and sharing knowledge or lessons learned;
- Communicating critical life saving messages to vulnerable populations during emergencies;
- Promoting behaviour-change messages to reduce risk;
- Promoting dialogue between emergency and humanitarian organisations and increasing accountability to affected communities; and
- Promoting recovery, reconstruction and development in the post-emergency period.

1.2 In examining the critical functions that new ICTs and digital platforms can support during complex emergencies this guide examines four key areas:

- Short Messaging;
- Crowdsourcing and Crisis Mapping;
- Social Media; and
- Wikis and Knowledge Management

1.3 Each of these areas is organised into a dedicated section within this guide that addresses a number of common themes, including:

- The broad role that each can play in a complex emergency;

- A summary of key strengths and weaknesses associated with their use;
- The provision of a series of ‘top tips’ for emergency and humanitarian responders that are designed to help new ICT adopters to avoid potential pitfalls associated with the technologies;
- Practical implementation advice that centres on a specific activity. For example, developing short messages or a social media policy and strategy;
- Key resources that practitioners can refer to for further information. Additional supporting references are detailed in footnotes where necessary.

## 2. Complex Emergencies and Communication

2.1 The World Health Organisation (WHO) defines complex emergencies as resulting from a combination of factors, including 'conflict with large-scale displacements of people, mass famine or food shortage, and fragile or failing economic, political and social institutions. Often, complex emergencies are also exacerbated by natural disasters'.<sup>1</sup> Such emergencies cause social dislocation, disruption and place pressure on government systems to deliver key services. Countries or regions experiencing complex emergencies may require assistance to help deal with displaced people, provide food, water, shelter and basic health or education services. During complex emergencies the breakdown of law and order can increase people's vulnerability to harm and violence, as well as placing pressure on the delivery of assistance.

2.2 The humanitarian response to complex emergencies is concerned with reducing conflict, violence and vulnerability in support of paving the way to peace. This may be achieved through UN-mandated stabilisation mechanisms, a sustained focus on state building, better governance and adherence to the rule of law. In addition, both chronic and rapid onset natural disasters are key contributors to complex emergencies and can lead to severe dislocation, unrest and open conflict and such disruption may require an international response. Natural and man-made disasters span events such as cyclones, flooding, earthquakes, droughts, terrorist events and environmental degradation.

2.3 Communication is critical to addressing complex emergencies and to reducing risk and vulnerability for affected populations. Using multiple communication channels to convey consistent and timely messages can help 'at risk' groups prepare for emergencies, deal more effectively with them when they occur and recover more quickly once they have passed. The role of communication is central to the emergency response and plays a critical role in: (i) inter-organisational coordination and knowledge

management; (ii) raising awareness of threats, as well as risk reducing behaviours; (iii) directing communities towards relief services; and (iv) data gathering for increased situational awareness.

2.4 Emergencies tend to occur in stages that often equate to: (i) the preparatory phase (if dealing with a regular emergencies like cyclones); (ii) the acute phase, when the emergency is occurring and is at its height; (iii) the intermediate phase, when the threat is reducing and new challenges are emerging; and (iv) the recovery phase, when things are getting back to normal and reconstruction and development are prioritised. For the purposes of this guide, these stages can be further simplified into three categories of direct relevance to the provision of assistance:

- Before the emergency;
- During the emergency; and
- After the emergency.

These broad categories are used to subdivide and clarify the practical 'tips' that are presented within each subsection of this guide.

## 3. Target Audience

3.1 This guide targets a readership concerned with utilising new ICTs and digital platforms in a wide range of emergency and humanitarian responses. This readership includes Australian government and state agencies mandated to provide emergency or humanitarian assistance such as the Department of Foreign Affairs (DFAT), Department of Defence (DoD), Australian Defence Force (ADF), the Attorney-General's Department (AGD), Emergency Management Australia (EMA) and the Australian Federal Police (AFP), the Australian Civilian Corps (ACC) and the Australian Council for International Development (ACFID). In addition, this paper is of practical relevance to bilateral, multilateral, non-government and civil society organisations delivering emergency and humanitarian assistance at the local, national, regional and international levels.

# Chapter 2

## Short Messaging in Complex Emergencies

### 1. Introduction

1.1 This chapter examines the use of mobile phone enabled messaging services and messaging applications such as SMS (short message service), WhatsApp, Facebook’s Messenger and WeChat during complex emergencies. SMS and app-based messaging are very widely used and access to mobile phones has reached saturation levels in many parts of the world. This makes the use of short messaging a very direct and important mechanism for communicating with ‘at risk’ populations before, during and after emergencies. This chapter:

- Examines the relevance of the SMS and app-based messaging services to complex emergencies;
- Addresses the strengths and weaknesses of SMS and app-based messaging services as a channel of emergency communication;
- Provides a series of relevant ‘tips’ to humanitarian and emergency communication practitioners;
- Offers advice on the types of messages that SMS and app-based messaging services are most effective at delivering.

### 2. Using SMS and App-based Messaging in Complex Emergencies: Strengths and Weaknesses

2.1 SMS and app-based messaging services (WhatsApp, Facebook’s Messenger and WeChat, etc.) are some of the most commonly used forms of communication associated with mobile phones. Mobile phones with short messaging capability allow emergency and humanitarian support organisations to send messages directly to large numbers of people in real time, i.e. immediately. Short messaging is of increasing relevance to emergency and humanitarian responders who are tasked with communicating with ‘at risk’ populations in a clear, concise and timely manner. During emergencies, the information needs of affected populations increases and mobile phones are good at grabbing users’ attention, i.e. when an SMS notification alert sounds, short messaging can have a very direct impact.

2.2 Historically, SMS has dominated the messaging market, though app-based services are

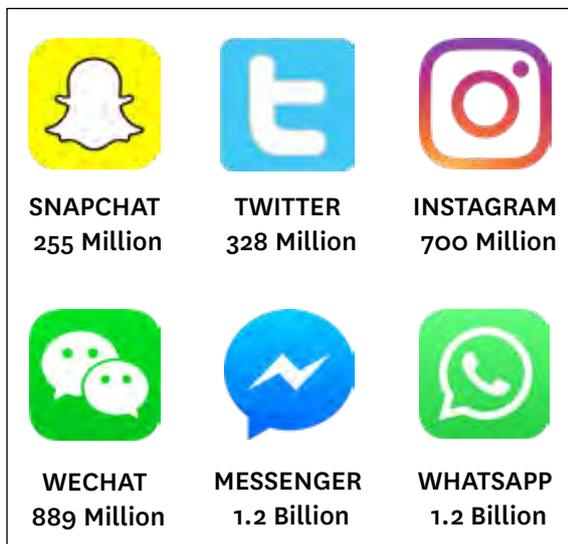
quickly outstripping SMS as the preferred channel for messaging (see Figure 1 below):

‘People sent three times as many messages on Facebook’s Messenger and WhatsApp in 2015 as they did via SMS. Facebook has revealed that its two messaging platforms process 60 billion messages a day, almost three times the 23 billion SMS messages that are sent. WhatsApp outstripped SMS just over a year ago, when Facebook announced that the messaging app handled 30 billion messages every day, compared to 20 billion sent through SMS’.<sup>2</sup>

2.3 However, because local mobile network operators with a local customer base facilitate basic SMS it tends to be most widely used in emergencies, especially in the developing world. Here, Internet access via mobile phones is limited by lack of smartphone ownership or expense and this can make app-based messaging less relevant to a localized emergency response. App-based messaging services are often integrated into wider social media platforms, such as Facebook and

Google+ and tend to rely on group membership, i.e. users signing up to a government emergency site or linking to friends. While governments or humanitarian organizations can message dedicated groups (i.e. to individuals that subscribe) through app-based services they may lack the ability to send all users an emergency message. However, app-based messaging services are useful for peer-to-peer messages, i.e. for family or friendship groups, and especially for letting networks know people are safe.

Figure 1: Global Social Media/Short Message Monthly User



2.4 **The following strengths and weaknesses are associated with SMS and app-based messaging services** and their use in emergencies:

**Strengths:**

- Useful in contexts where there is a high mobile phone ownership rate;
- SMS can work in contexts with a relatively weak network signal or when a network is congested;
- SMS has a predictable cost for the user;
- App-based messaging has very low or no cost;

- SMS is very effective at communicating with a large number of people/subscribers, as well as peer-to-peer;
- App-based messaging services are more effective in peer-to-peer communication;
- Effective means of broadcasting short and simple messages to all network users;
- Can disrupt routine activity, i.e. an SMS message tends to be read because it distracts phone owners with an alert sound or vibration;
- Appeals to youth and young adults;
- Is timely, i.e. can be used for advice, warning, emergency warning or behaviour change messages;
- Can be used for specific information addressed to specific risk groups; and
- Can generate basic dialogue, with text back services

**Weaknesses:**

- Requires a functioning mobile phone network;
- Requires access to or ownership of a mobile phone;
- App-based messaging requires an internet-capable phone and access to the Internet;
- Mobile networks and therefore the Internet are susceptible to damage during periods of conflict or natural disasters;
- Mobile networks often lack the capacity to deal with increased demand during emergencies;
- Requires a reliable power source to maintain the network and devices;
- Mobile networks can be shut down and are susceptible to government control;
- Requires literacy and e-literacy (technical knowledge) to use effectively;
- May have cost implications for users who use SMS to communicate; and
- May have cost implications for emergency services, as well as for the user.

### 3. 'Top tips' for using SMS and App-based Message Services in Emergencies

3.1 If considering using **SMS and app-based messaging** as part of an emergency response the following 'top tips' will help identify some of the most important things to consider to ensure success. Tips are broken down into three broad categories of relevance to the provision of emergency and humanitarian assistance, notably: (i) before the emergency; (ii) during the emergency and (iii) after the emergency.

#### Before the Emergency

1. Pre-emergency assessment of the communications environment will inform a decision about the relevance and potential of mobile phone facilitated message-based options. Mobile phone ownership levels need to be high, and if using app-based messaging services, Internet capable smart phone ownership levels need to be significant. Unlike mobile phone network providers it may be harder to work with app-based services due to their internationalization and lack of local representation.
2. Effective coordination mechanisms tend not to emerge in the emergency itself, they require intensive preparatory work and partners need to familiarize themselves with each others' work culture to ensure that expectations are managed and outcomes are achieved. Developing partnerships between mobile phone network operators, governments and humanitarian organisations is critical to ensure 'at risk' populations have access to timely and potentially lifesaving information. Preparing to utilise SMS before an emergency and have a clear and agreed plan in place will help partners meet their expected outcomes.
3. Working with governments and communication-focused organizations on effective regulation and licensing promotes stronger public and 'pro-poor' access to new ICTs by making them cheaper and ensures basic public service commitments from mobile network providers to promote

messages through channels such as SMS during emergencies.

4. Effective bilateral and multilateral partnerships can also help ensure the mobile infrastructure backbone is maintained and capable of dealing with increased public demand for services during times of emergency. There should be enough redundancy in the operator's system so that network failure does not occur.
5. Working with national emergency response mechanisms and structures should be prioritized to avoid duplication of initiatives and a clear messaging strategy. Governments are often trusted sources of information and may have the best situational awareness due to the depth and breadth of their local networks. They also may have significant stakes in mobile network operations or the ability to influence commercial operators via regulatory conditions that require them to support certain no cost or low-cost public service commitments.
6. Mobile phone network operators have experience communicating simply and effectively with their clients and both governments and humanitarian organisations can draw on such skills when developing partnerships that support and promote emergency communication.
7. Mobile phone network operators have less experience in understanding the nature of emergencies, few mechanisms to increase their situational awareness and are therefore reliant on humanitarian organisations and governments to advise them effectively of the kind of information that needs to be communicated. Effective partnerships and coordination mechanisms can help establish clear lines of communication, as well as roles and responsibilities.
8. Decide whether the service will be able to respond to network users. Many direct messaging initiatives are 'one way' channels of communication, while more sophisticated

initiatives are able to enter into a dialogue and respond to users with new advice and messages. Entering into a dialogue requires significant capacity. All initiatives should be capable of putting out new messages that address the changing situation as the emergency evolves because risks may change rapidly

### During the Emergency

1. Ensuring that all information communicated via SMS or app-based messaging to 'at risk' populations is accurate, timely and responsible is important to all parties because public trust can be quickly eroded if incorrect information is provided; i.e. promotion of the availability of services that are not yet in place.
2. Mobile phone network operators may themselves be acutely affected by emergencies and can face significant human resource demands to restore services and deal with the customer base. Effective planning and thorough organizational risk assessment can help emergency communication partners to identify potential risks and how they will be overcome during disasters.
3. Understand what limitations mobile-based messaging has for populations who are 'at risk'. Messages should be simple direct, relate to an immediate danger, an action that needs to be taken or a service that is available. Messages need to be accurate and timely. Dialogue with partners will help to ensure that alternative or inaccurate messages are not promoted because this can lead to confusion amongst the public.
4. A SMS or app-based messaging initiative is likely to be part of a wider set of communication options being used to promote awareness, reduce risk and change behavior. Direct messaging plays an important role as part of wider emergency communication strategies. It is important to consider whether establishing dialogue

through other communication channels is likely to be more effective than short message-based channels, i.e. through social mobilization by on-the-ground emergency workers. Formative work on the media uses and preferences of disaster-prone or affected populations help determine which communication channels to utilize.

5. Sending messages to large population groups has cost implications that need to be considered. Often mobile network providers will undertake such communication as part of their public service or corporate social responsibility commitments. Cost implications should be discussed prior to emergencies so that partners are aware of who is paying and what costs are involved. During emergencies, it is important that messaging is not restricted by cost concerns and that messaging is maintained for as long as significant threats are present. Once major threats have passed alternative forms of communication may be more effective at raising awareness or changing behaviour

### After the Emergency

1. In contexts that experience regular emergencies, such as cyclones, there is potential to learn from previous or current work to identify key messages that can be communicated to 'at risk' populations during a future emergency. Understanding the key phases of an emergency and likely implications for the messaging strategy is important. Emergencies have clearly defined phases and direct messaging may not be appropriate to all of them, i.e. post-disaster recovery. Direct messaging is often most effective in the immediate lead up to an emergency and during its initial acute phase.
2. It is important to understand the impact of a messaging initiative. Such initiatives are usually part of wider campaigns or strategies. Understanding the impact of the messaging, whether messages were clear and concise or promoted an action that could reasonably

be taken is important to future use of the technology/approach. Working with partners to understand impact and problems is important to build knowledge, identify lessons learned and establish sustainable partnerships for the longer term.

#### 4. Short Messaging

4.1 When using short messaging to communicate about emergencies it is important to create trust with people who are affected and 'at risk'. Trust is built when emergency messages are: (i) timely, (ii) correct and (iii) promote action. Direct messages can focus on a very wide range of areas and issues of relevance to reduce risk, enhance protection, increase safety and promote access to assistance. However, they are most effective when used to give real time warnings or direct messages that alert populations to an immediate threat or require populations to take some form of protective action. For example, SMS and app-based messaging services can be used to:

- Issue warnings;
- Promote prevention and protection measures
- Reduce risk and harm;
- Promote evacuation procedures;
- Alert populations to conflict proximity; and
- Raise awareness of service availability.

4.2 Complex emergencies have multiple phases and the information needs of affected populations may constantly change as new problems arise. Because of this, it is important to think about how short messaging can support different phases of an emergency situation:

- **Before the emergency** - short messaging may be concerned with cyclone readiness, preparing for power disruptions, ensuring the availability of prescription medicines, evacuating areas in the path of the cyclone, staying safe in one's home, worker safety in a power outage, risk of carbon monoxide poisoning due to failure of venting systems, flood readiness, electrical safety, preventing heat-related illnesses, hand hygiene, coping

with traumatic events and emergency wound care.

- **During the emergency** - short messaging may be concerned with raising awareness of the imminence of the threat, reducing risk and promoting protective measures, re-entering flooded homes or workplaces, cleaning a flooded home safely, worker safety after a flood, preventing injuries during the removal of debris, managing acute diarrhoea, sanitation practice after an emergency, keeping food and water safe, protection from animal or insect hazards, electrical safety, infection control and prevention, preventing violence and dead animal disposal.
- **After the emergency** - short messaging may be concerned with reconstruction and community rehabilitation work such as control of rodents, trench foot or immersion foot prevention, environmental health, respiratory protection for residents re-entering previously flooded areas or homes, suicide prevention, mould removal from flooded homes, mould allergies and a focus on reconstruction and development.

#### 5. Advice, Warning, Emergency and Behaviour Change Messages

5.1 While short messaging can be applied to many issues during the various phases of an emergency, they are most often used to:

- Make 'at risk' populations aware of imminent threats, i.e. conflicts or natural disasters;
- Prepare communities to take action, i.e. prepare to evacuate; and
- Promote life saving actions, i.e. move to a shelter.

5.2 Often situations do not escalate into acute emergencies. But sometimes, they do. During an emergency, direct messaging of the type facilitated by SMS or app-based messaging services can be used to help 'at-risk' populations understand when a threat is escalating or de-escalating. Because emergencies evolve over

time, a wide range of implications or risks can result. Performing routine practices such as breastfeeding, immunizations, using safe water, or feeding animals can lead to health crises. Emergencies may also result in increased levels of community violence or abuse, and this can lead to acute psychological stress and trauma. Because emergencies are complex and evolve in often dynamic and unpredictable ways, it is important to promote timely, concise and accurate messages that help communities and those at 'risk' make informed decisions about the actions they need to take (see Figure 2). Timely, concise and accurate short messages can help save lives.

Figure 2: Run, Hide, Tell Tweet from Metropolitan Police during 2017 Terror Event in London



5.3 Direct short messaging in emergencies, of the type supported by SMS and app-based messaging services, typically focus on four types of message, including:

**Advice messages:** These messages are used to make communities that are 'at risk' aware of a potential threat. They advise communities to 'keep an eye out' for an event or danger. Such messages are for early use, although they can also be used to downgrade an existing threat.

**Example 1** (warning, escalation): A tropical storm is developing that may turn into a cyclone. Bad weather is likely over the next 48 hours. Monitor news for more information.

**Example 2** (warning, de-escalation): Bad weather has passed. Further storms are unlikely. It is safe to go outside or return home. Monitor news for more information.

**Warning messages:** These messages let 'at risk' populations know they are likely to be in danger, to prepare to take action, to protect themselves and to listen for further warnings.

**Example 1:** A cyclone is likely to hit the city in the next 24 hours. Get ready to go to a shelter. Monitor news for more information.

**Example 2:** Civil unrest is likely to occur in the city in the next 24 hours. Do not travel to the southern suburbs and stay indoors. Monitor news for more information.

**Emergency messages:** These messages advise populations to take action, to evacuate and to protect. They are used when an emergency is about to strike or is occurring. When a threat has passed, advice messages can be used to communicate de-escalation of the threat.

**Example 1** (evacuation): A cyclone will bring dangerous conditions in the next 12 hours. If you can, go to an emergency shelter now. Monitor news for more information.

**Example 2** (too late to evacuate): Armed conflict is occurring within the city. Stay inside and do not go out until advised. Monitor news for more information.

**Messages:** These messages should be used sparingly because other forms of communication can be more effective at changing behaviour, i.e. face-to-face or peer communication. However, they can be usefully used to highlight critical problems that need to be addressed. They are used to maintain or adopt critical behaviour or promote a desirable action. They help affected communities protect themselves and reduce risk.

**Example 1:** Do not drink dirty water. Drink only bottled, boiled or treated water. Free water is available at all local schools, government offices and hospitals.

**Example 2:** Red stones or markings indicate that landmines are present. Heed the warnings and do not risk crossing into mine fields.

5.4 The short message examples above are simple and direct and all have 160 characters (including spaces) or less, which is the length of a standard SMS message. App-based messaging services have higher character limits, though it is worth remembering that constructing concise, clear and reliable messages is critical to effective communication and building trust with communities affected by emergencies.

## 6. Emergency Message Construction

6.1 The construction of simple and clear messages is important when considering the use of SMS or app-based messaging services. While such messages are direct, they have to be part of a wider communications approach that utilises other media channels, such as radio, television or press, as well as community mobilisation or outreach. SMS or app-based messaging services require significant 'back-end' capacity to enable an effective dialogue to occur with 'at risk' populations, because of this, such channels are often not used as tools of dialogue in many

developing world contexts (unless information is being solicited to promote crisis mapping in aid of enhanced situational awareness). Some clear principles are associated with direct messaging of the type supported by SMS or app-based messaging services.

These include:

- Direct messages are not used to command communities, but rather to seek community cooperation;
- Divorced from other supporting communication channels providing consistent messages, SMS or app-based messaging services alone are unlikely to have the desired impact;
- Communities may take time to respond to warnings and may seek verification through other media channels or from peers before deciding to take action, this underscores the value of a multi-channel emergency communication strategy;
- Accuracy, consistency and timeliness are critical when crafting and sending direct messages. A community will be unable to act on unclear information, will become distrustful of the source if information is incorrect, or be placed in danger if the message is too late;
- Communities experiencing emergencies are traumatised and this may affect their ability to process information. Therefore clarity and accuracy of messages is key; and
- Literacy levels vary and certain populations may have different language needs. Specific messages should be tailored to different language groups.

6.2 Depending on the medium used and constraints faced, such as character limits, it is useful if emergency warnings contain some or all of the following features:

- The name or title of warning, i.e. cyclone or conflict proximity warning;
- Who is issuing the warning, i.e. Chief of Police, Community Leader, Government Minister;

- The type of threat (and preferably a description), i.e. open conflict, flooding;
- How likely it is that it will happen, i.e. highest risks should be communicated first;
- How bad it is expected to be, i.e. level of severity;
- Where the threat is greatest, i.e. low-lying areas or a particular urban area;
- Who will be most affected, i.e. specific risk groups, occupational groups;
- When it is expected to happen;
- What to do, i.e. what actions can be taken to reduce the risk and increase protection; and
- Contact details for more information or for affected populations to report events.

### 7. Principles for Developing Effective Emergency Messages

7.1 When developing short messages for use in an emergency the following principles will help identify some of the most important things to consider:

1. Never assume what messages participant groups need. Verify the relevance and appropriateness of messages through formative research.
2. Consider the 'voice' that will be used to persuade participant groups - for example, a peer or an authority figure. Think about whether or not the voice is credible.
3. Ensure the message is clear and available through multiple channels. Participant groups often need to confirm messages from an alternative source before they take action.
4. Make sure messages are specific, consistent and accurate. Ensure that information contained in messages is verified and validated by authorities.
5. Whenever the situation allows, understand how a message was received and whether it needs to be adapted or adjusted to have greater impact.

### 8. Key Resources

8.1 The following resources can provide more extensive information on both short messaging and short message development for emergency communication:

#### **Global System for Mobile Communications Association (GSMA) Disaster Response - Towards a Code of Conduct: Guidelines for the Use of SMS in Natural Disasters (2013)**

This resource provides a useful summary of the utilisation and potential of SMS in emergencies. It is written from the perspective of mobile network providers and encourages them to engage and partner with the humanitarian and emergency sectors.

<http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2013/02/Towards-a-Code-of-Conduct-SMS-Guidelines.pdf>

#### **Australian Government - Emergency Warnings: choosing your words (2008)**

This resource addresses the provision of emergency warnings in the context of rapid onset disasters in Australia. The guide begins by setting out a number of principles associated with emergency messaging. Subsequent sections look at how to structure an emergency message and what kind of language to use.

<http://www.em.gov.au/Emergency-Warnings/Documents/ergencyWarningsChoosingYourWordsEdition2.pdf>

#### **Communicating with Disaster Affected Communities (CDAC) Network - Library of Generic Emergency Messages**

The CDAC Network library of generic messages provides a very useful resource of hundreds of generic messages that cuts across a range of thematic areas relevant to complex emergencies, including: (i) Health; (ii) WASH; (iii) Nutrition; (iv) Food Security; (v) Protection; (vi) Education; and Camp Coordination and Camp Management (CCCM). These broad categories can be searched and refined using a range of filters including



issues, threats, risk groups and participant group/ intended audience. The message library provides an excellent starting point for communication practitioners needing to respond quickly to a specific emergency. Messages include a focus on alerts, awareness, self-care and service delivery, which reflect the different types of messages that may be required as an emergency evolves.

<http://cdac.trust.org/tools-and-resources/message-library/>

**Pacific Humanitarian Protection Cluster (PHPC) - Quick Guide to Communication on Protection in Emergencies and Sample Key Messages for Protection (2012)**

This useful resource provides a 'quick' guide to messaging for protection during emergencies. The guide provides sets of messages that can be used during the initial acute phase of an emergency.

[http://www.globalprotectioncluster.org/\\_assets/files/field\\_protection\\_clusters/South\\_Pacific/files/PHPC\\_Quick\\_Guide\\_Communication\\_Key\\_Protection\\_Communication\\_Messages\\_EN.pdf](http://www.globalprotectioncluster.org/_assets/files/field_protection_clusters/South_Pacific/files/PHPC_Quick_Guide_Communication_Key_Protection_Communication_Messages_EN.pdf)



# Chapter 3

## Crowdsourcing and Crisis Mapping in Complex Emergencies

### 1. Introduction

1.1 This chapter examines the use of crowdsourcing and crisis mapping during complex emergencies. Crowdsourcing is a process facilitated by new information and communication technologies (ICTs), social media platforms and dedicated software programs. It literally seeks the help of ‘the crowd’, volunteers or the general public, to complete a series of specific tasks such as data collection, reporting, document contribution and so on. Crowdsourcing is important in emergency situations because it allows for a critical link to be forged between those affected by an emergency and those who are responding to it. Crowdsourcing is often used by news organisations to gather information, i.e. citizen journalism, as well as by organisations concerned with emergencies and humanitarian aid, i.e. International Committee of the Red Cross, the Standby Task Force and CrisisCommons. Here, crowdsourced data on voting practices and electoral violence, as well as the witnessing of human rights contraventions are helping to improve accountability and transparency in fragile or conflict-prone states. Equally, crowdsourcing facilitates the sharing of individual and collective experiences, the gathering of specialized knowledge, the undertaking of collective mapping tasks and the engagement of the public through ‘call-outs’ for information.<sup>3</sup>

1.2 Crowdsourcing can help to increase real time situational awareness and the information derived is often used to map certain events, risks or the emergency response using a range of widely used software applications such as Google Maps or Open Street Map. Crisis mapping enables organisations to visualise emergency information in a low cost manner. In turn, visualisation is an accessible and often user-friendly way to share data and increase situational awareness. In examining crowdsourcing and crisis mapping practices in emergencies this chapter:

Focuses on their broad relevance to complex emergencies;

- Addresses the strengths and weaknesses of crowdsourcing and crisis mapping practices;
- Provides a series of ‘top-tips’ of relevance to humanitarian and emergency workers that can help them to avoid some common pitfalls associated with its use; and
- Provides further resources and links to key crowdsourcing and crisis mapping tools and organizations.

### 2. Using Crowdsourcing and Crisis Mapping in Complex Emergencies: strengths and weaknesses

2.1 Poor data collection and information management practices can result in ineffective humanitarian and emergency action in times of crisis.<sup>4</sup> During emergencies getting access to reliable and accurate information quickly is critical to understanding how the emergency is unfolding, who it is affecting and what needs are arising. New information and communication technologies offer new ways to collect, correlate and analyse the significant amounts of information that can be generated during emergencies. New ICTs are extending the reach and ability of emergency and humanitarian response organisations to forge a two-way exchange of information or dialogue with affected populations.

2.2 Crowdsourcing is typically deployed in two distinct ways:

- As a public-wide open call for information, the reporting of a specific task, a particular type of documentation or images; and

- A restricted call that relies on a targeted group of individuals or organisations to provide the necessary data. Often this type of crowdsourcing is called ‘bounded’ crowdsourcing in which trained individuals collect and collate information from the public for feedback.

Regardless of the type of call-out that is employed, crowdsourcing creates new kinds of relationships with communities that are more dynamic, dialogue-based, democratic and responsive than previous forms of communication or data collection.

2.3 Crowdsourcing, be it of information, data, images or documents tends to be put to a number of well-defined ends during emergencies. These include:

- **Raising situational awareness:** For emergency responders, regardless of affiliation, crowdsourcing has the potential to greatly inform their understanding of emergencies. Because emergencies evolve and change, crowdsourced information can play a sustained role in emergency planning and in the wider humanitarian response. For example: (i) in the preparedness phase prior to an emergency occurring, crowdsourcing helps responders to address potential risks and understand the success of previous work; (ii) crowdsourced data allows humanitarian response strategies to adapt in real time. It can help responders to understand who is affected and where, as well as how the emergency is changing and what challenges and risks are evolving; and (iii) crowdsourcing during the recovery phase of an emergency can help humanitarian and development organizations understand community needs in the weeks and months following the initial emergency.
- **Citizen journalism:** During an emergency such as a cyclone or a conflict, citizens have the potential to inform both national and international news media of important events that are affecting their communities via new ICTs, such as Internet-capable mobile phones.

Many news organisations actively seek content such as information, videos, audio or images directly from the public, especially from contexts in which access for journalists is difficult or dangerous. Community contributed news content has an active role to play in raising wider awareness of suffering, deprivation, human rights abuses and discrimination. Citizen journalism can play an important role in enhancing accountability and transparency of not only government actions, but also wider accountability, i.e. of emergency response organizations to disaster-affected populations.

- **Election monitoring:** Crowdsourced data has been highly influential in bringing attention to voter fraud, voter safety and violence during elections. Either through open or closed/bounded call-outs, crowd supplied data is helping to reveal unfair voting practices such as intimidation and helping civil society organisations hold governments to account over their electoral practices. When citizens have the ability to feed back data on such issues, the scale of voting malpractice can become fully visible. In turn, crowdsourcing can help to ensure that elections are both free and fair. The not-for-profit Kenyan-based software social enterprise Ushahidi (‘Testimony’ in Swahili) has pioneered election monitoring using a range of software tools such as SwiftRiver to collate and analyse comments from online sources such as Twitter and Facebook concerning issues such as hate speech and electoral violence.
- **Witnessing:** Witnessing is critical to the realisation of human rights and to protecting against human rights abuses. Crowdsourced data can play an important role in fragile contexts, conflict situations, periods of post conflict stabilisation and in complex or humanitarian emergencies. Where social dislocation occurs on a wide scale, human rights infringements often follow. In the wake of the 2010 Arab Spring, during which political unrest swept across North Africa and the Middle East, witnessing played an important

role in the conflicts. Via the posting of blogs, vlogs (video blog) and videos on social media sites such as Facebook and YouTube, as well as on mainstream and alternative news sites, citizens were able to speak out (often at their peril) against the abuses of powerful groups such as governments, the military and various militia groups.

- **Sharing:** Traditionally, most information about emergencies or humanitarian disasters has been handled, collated, analysed and communicated by intermediaries such as media organisations, news services, NGOs, INGOS, bilateral organisations, multilateral organisations and governments. However, new ICTs enable individuals to create and share information with their peers, free from mediation by third party organisations. Citizen generated social media thematic sites, such as those created on Facebook, have enabled spontaneous groups to form to share crowdsourced data on topics such as weather-related events, health scares and humanitarian emergencies. Citizen-created platforms that share crowd-supplied data can rapidly emerge in the wake of a crisis, but may be prone to distortions, abuse and tend not to have the checks and balances in place that support the ability to verify data;
- **Technical sourcing:** Humanitarian and emergency organisations may also use crowdsourcing to address technical questions or issues that they face in the provision of emergency assistance. Specific call-outs to technical specialists in areas such as water and sanitation, communicable diseases and engineering have the potential to yield high-quality data or analysis that emergency workers can utilise in the field. This type of highly bounded crowdsourcing relies on interaction between on-the-ground emergency organisations and international crisis volunteer groups such as the Standby Task Force and CrisisCommons.

2.4 While crowdsourcing takes many forms, it is clear that the ability of affected populations

to contribute data that helps to shape the emergency response also brings with it a number of problems. These include issues such as the potential for data overload, poor data quality, accuracy and veracity, in addition to issues associated with differential access to new ICTs and the technical capacity required to effectively run a crowdsourcing operation. **The following strengths and weaknesses are associated with crowdsourcing during emergencies:**

#### **Strengths:**

- Can be very effective in contexts with widespread access to new ICTs such as mobile phones;
- Can be employed in areas with low ICT connectivity via emergency workers/facilitators, i.e. closed/bounded call-outs;
- Closed/bounded call-outs are often more reliable because information is verified by on the ground facilitators;
- Allows affected communities to inform situational awareness in a direct way;
- Allows for real time communication with disaster-affected communities;
- Appeals to young people with high e-literacy rates;
- Can create a dialogue between affected populations and emergency workers; and
- Established crowdsourcing channels can be used to seek information, as well as provide information.

#### **Weaknesses:**

- Often requires high levels of new ICT access, literacy and e-literacy;
- May exclude groups without adequate access to new ICTs, such as women, minorities, the elderly, low-income populations and those in remote communities;
- Often requires ICT infrastructure to survive the emergency, i.e. weather events or conflict;
- Open call outs tend to rely on Internet connectivity or SMS access;

- Open call-outs can lead to information overload, as well as the collection of irrelevant or biased information;
- Crowdsourcing is not integrated very well into government emergency management planning or actions;
- Requires significant labour to filter or moderate inflows of information/data;
- Unverified and inaccurate information/data can lead to distortion and manipulation entering the emergency response and negatively affect situational awareness;
- If bias affects situational awareness service delivery may not reach the most affected populations that are in the greatest need; and
- May leave citizens open to reprisals by governments that are capable of tracing crowd contributions if no encryption tools are used to protect identity.

2.5 Like crowdsourcing, crisis mapping reflects a complex web of human activity and interaction between online and offline worlds. Crowdsourced data derived from open or closed/bounded call-outs made through a range of channels (social media, SMS, researchers) is often manually analysed by volunteer crisis mapping communities or automatically by analytical software programs (i.e. SwiftRiver) prior to being plotted on to a digital map. Increasingly, crisis maps are finding their way into mainstream organisational

practice through use by governmental and inter-governmental bodies. Crisis mapping often takes the form of a ‘mash-up’ in which data is plotted via applications, such as Google Maps from data secured from the ‘crowd’.<sup>5</sup> Mash-ups are useful to responders because they can be created quickly, often with global volunteer labour, and can be used to disseminate information to partner agencies with access to the mash-up or map very efficiently. The visualisation of data as a crisis map helps to raise situational awareness in a very direct way.

2.6 Once crowdsourced data is plotted using a mapping tool such as Open Street Map, users are able to search or ‘drill into’ the data using search terms or by clicking on ‘events’ or hot spots, which are typically highlighted using red circles. Multiple events may occur in one place and give rise to bigger hot spots. This visualisation helps to provide users with an immediate sense of where things such as conflict are occurring, where food is in short supply and where injured people need assistance. The Libya crisis map (2011) provided below was produced by the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), the United Nations Operational Satellite Applications Programme (UNOSAT) and NetHope in collaboration with CrisisMappers, Standby Task Force, CrisisCommons, Open Street Map, and the Google Crisis Response Team. The map reflects conflict and humanitarian events occurring across Libya.

Figure 1: Libya Crisis Map



2.7 The following strengths and weaknesses are associated with crisis mapping during emergencies:

**Strengths:**

- Can lead to engagement with large quantities of data;
- Helps to visualise complex data in a way that is accessible for users;
- Crisis maps are searchable;
- Informs situational awareness;
- Can be completed with the assistance of globally networked volunteers, which helps to free up the valuable time of emergency responders working at the local level;
- Is supported by organisations such as Google, Facebook and Twitter which provide strong leverage for the integration of new ICTs and software tools into humanitarian and emergency practices; and
- Appeals to the desire of globally concerned individuals to volunteer and ‘take part’ in the crisis response.

**Weaknesses:**

- Requires ICT infrastructure to survive the emergency;
- Requires high levels of ICT access, literacy and e-literacy;
- Relies on crowdsourced data that may be inaccurate, biased, gender insensitive and not reflective of the experience of the most vulnerable members of society;
- Can lead to volunteer organisations being overwhelmed with data;
- Plotted crowdsourced data can have very low reliability and is often unverified;
- Prone to bias and distortion due to lack of data verification; and
- Citizens contributing to crisis maps may be open to reprisals, as governments can easily trace non-encrypted Internet or mobile phone use.

### 3. ‘Top tips’ for using Crowdsourcing and Crisis Mapping in Emergencies

3.1 If considering using **crowdsourcing** as part of an emergency response the following ‘top tips’ will help identify some of the most important things to consider to ensure success:

**Before the Emergency**

1. Crowdsourcing activities can help support all phases of an emergency, from preparedness, to the acute phase of a crisis, to the post-crisis recovery and reconstruction period. Because the nature of emergencies is fluid, emergency responders need to ensure that information/data flows from affected populations in a systematic way. Developing a crowdsourcing approach or strategy will help when considering issues such as human and financial resource implications, logistics, the type of call-outs to use and the type of data, information or expertise to seek from the crowd.
2. Emergency and humanitarian organisations engaged in crowdsourcing need to consider issues associated with who is and who isn’t included or able to contribute. Vulnerable groups’ voices may not be gathered or heard in crowdsourcing exercises by virtue of the fact that they may have inadequate access to ICTs. Developing strategies for including women, low-income populations, the elderly, children, as well as ethnic and linguistic minorities in crowdsourcing is important as this may help correct any bias that enters the process due to higher ownership and access to ICTs by more affluent groups. Bounded or closed crowdsourcing is a useful approach that can help overcome such concerns. It relies on local fieldworkers to collect data from affected communities, after which the data is sent or uploaded for processing and assessment. Such fieldworkers can act as intermediaries between affected populations and emergency and humanitarian organisations.

3. While crowdsourcing has the potential to improve situational awareness as an emergency unfolds, its use raises critical technical and human resource issues for emergency organisations. Investment in new capacity and skills, new software tools, new ways of working and new partnerships may be required if crowdsourcing is to yield its full potential. Organisational assessment of the relevance and value of crowdsourcing to existing knowledge acquisition strategies should be undertaken prior to the adoption of crowdsourcing as a strategy.

#### During the Emergency

1. Crowdsourcing can yield large quantities of data and its assessment is a labour-intensive process that requires thought about what information is being requested and from which populations; i.e. the general public in affected communities (open call-out) or emergency workers working in affected areas (bounded/closed call-out). Decide early on what kind of call-out to use. Closed or bounded call outs for information and data utilise local facilitators who relay data back to humanitarian organisations or crisis mappers. Closed call-outs yield data with a higher veracity. Open call-outs can have low veracity; in some instances as little as 5-6% of data may be verified.
2. Crowdsourced data can suffer from issues associated with unreliability, trust and bias. Public call-outs for information may lead to significant quantities of information and if facilitated via new ICTs, information provision may be skewed towards more affluent sections of society that have access to the technology used to report data, i.e. mobile phones. This is especially relevant to the developing world where access to new ICTs is rapidly increasing, but access is far from universal. It is important that assessment of media access, uses and preferences is undertaken, even if such an assessment is rapid. It is also important that humanitarian actions are based on verified information. Sharing data between humanitarian organisations through platforms such as wikis can help ensure that distortions do not enter the aid delivery process.
3. Think about how to 'triage' crowdsourced data. Systematic processes need to be put in place to sort data, decide on its veracity, whether it will be prioritised, have a lower value placed upon it or if it will be rejected. Triage should focus on both the needs of vulnerable populations, and the organisational needs of humanitarian agencies. For example, accurate and timely security information is vital for emergency response personnel and the rapid analysis of crowdsourced data reports can help identify early warning signs of conflict. If working with crisis mapping organisations it is important to understand how they deal with data and decide what is important what is not. It is useful to think of verification practices at this point.
4. Crowdsourcing carries risks for contributors of information/data. Governments can actively monitor Internet use and the activities of humanitarian agencies. Data provided from the 'crowd' can potentially be traced and contributors may be open to reprisals. A key part of any crowdsourcing strategy undertaken in an emergency situation should concern the potential risks to ground-level data collectors (i.e. conducted closed/bounded crowdsourcing) and to the wider public. The promotion and use of encrypted e-mail or messaging platforms (Proton, Wickr) can help protect those who contribute crowdsourced data. In addition, humanitarian agencies can ensure more effective local participation in crowdsourcing by putting in place privacy policies that help to protect the identity of contributors.
5. Crowdsourcing works best when information is reciprocated to communities. Information

provision by affected communities may be difficult to maintain if no information is given back by emergency responders, i.e. data collected in order to raise situational awareness for responders can be communicated back to affected communities in the format of situational updates and emergency messages that focus on risk and vulnerability reduction.

### **After the emergency**

1. Like all emergency and humanitarian assistance activities, it is important that lessons are learned. Learning lessons, especially about how the data derived from crowdsourcing was managed, analysed and used is important, as it will help to inform future crowdsourcing practice. Disseminating lessons to partners further boosts future partnering and coordination potential.
2. Once lessons have been learned revisit the crowdsourcing and crisis mapping strategy and discuss what changes might need to be implemented to ensure that practice in this area improves and partnerships remain effective.

3.2 If considering using **crisis mapping** as part of an emergency response the following 'top tips' will help identify some of the most important things to consider to ensure success:

### **Before the Emergency**

1. Mapping does not need to wait until an emergency has occurred. Greater efforts can be put into establishing resilient crowdsourcing and mapping networks before emergencies occur through the development of clearly defined strategies and partnerships.
2. Crisis mapping requires significant coordination, leadership and technical capacity (i.e. software competency) if it is to be successful. As mapping becomes more commonplace, complex and longer-term, it is likely that the volunteer interest may wane or be reserved for the highest profile

events. Humanitarian and emergency-focused organisations that value crisis maps and deploy them in numerous contexts need to consider building long term in-house capacity.

3. It is critical to decide on what is important during a crisis. Organisations should clearly define their role, the types of data they seek and the criteria or principles that will be used when engaging in crisis mapping. The most pressing risks or needs faced by affected populations are a good place to start.

### **During the Emergency**

1. Crisis mapping draws upon crowdsourced data, and in turn both draw upon the desire of affected populations and concerned individuals to share information and contribute to humanitarian/emergency solutions. Because of this, crisis mapping can play an important role in increasing organisational accountability and transparency of the aid response, especially to affected populations.
2. Think about whether to build a map using available software tools or whether to partner with one of the volunteer mapping communities. If partnering with a crisis-mapping organisation, it is important to think about the criteria that your organisation requires are brought to bear on crowdsourced information for mapping, i.e. its accuracy and veracity.
3. Deciding on the scale of the map is important. Crisis maps can vary between local street-level maps, to broad national maps. While it is possible to 'drill' into all crisis maps, consider whether the scale of your map should match the scale of your organisation's remit or service delivery, or whether it should address a wider area. Wider coverage brings with it more data to be plotted and more work.
4. Think about how and with whom maps will be shared. Crisis maps have the potential to

become dynamic resources when fed back to the crowd. ‘Crowdfeeding’ can help generate more information from affected communities and serve to improve accountability, accuracy and veracity.

5. Crisis mapping should not expose mappers or contributors to risk. Establish whether the local environment is benign, or if it carries risks related to citizen-led communication practices such as crisis mapping. If it does carry risks, consider alternative forms of communication or end-to-end encrypted platforms, such as the Proton e-mail service or the Wickr messaging service.

### After the Emergency

1. After the emergency has passed establish what lessons can be learned from the experience of engaging in crisis mapping. Learning lessons about how useful the crisis map was in enhancing situational awareness and service delivery is critical; as is understanding how effective partnerships were in delivering timely updates to maps. Also consider how well the crisis map was disseminated, which organisations had access to it, how did it support local partnerships and what did it help your organisation and its’ partners achieve.

## 4. Crisis Mapping and Crowdsourcing Organisations and Software Resources

4.1 The following table details some of the most significant crisis mapping organisations, as well as crowdsourcing and mapping software tools available:

Crisis Mapping Organisations	Crowdsourcing and Crisis Mapping Software Resource
<p><b>Standby Task Force (SBTF)</b> - is a volunteer platform and a shared space to assist crisis-affected communities through the use of technology. SBTF focuses on information collection, visualisation, analysis and response and operates along a modular approach, with a total of ten teams each with a specific focus area or responsibility. These teams provide support for mapping activities via the collection of geo-location data and crowdsourced messages from SMS, social media, e-mail, media and voice messages. Source: <a href="http://blog.standbytaskforce.com">http://blog.standbytaskforce.com</a></p> <p><b>CrisisMappers</b> - leverages mobile and web-based applications, participatory maps, crowdsourced event data, aerial and satellite imagery, and geospatial platforms to power effective early warning for rapid response to complex humanitarian emergencies. With more than 5000 members working in over 162 countries, and with more than 3000 member and affiliate organisations, CrisisMappers is the largest community of experts and practitioners engaged in crisis mapping. Source: <a href="http://crisismappers.net">http://crisismappers.net</a></p>	<p><b>Ushahidi</b> - is a non-profit technology company that specialises in developing free, open source software such as SwiftRiver and Crowdmap for information collection, visualisation and interactive mapping. Originally developed in 2008 to map reports of post-election violence in Kenya, Ushahidi has now been used in a variety of context including the reporting of human rights violations, monitoring elections and disaster response. Sources: <a href="http://www.ushahidi.com">http://www.ushahidi.com</a>, <a href="http://swifly.org">http://swifly.org</a>, <a href="http://crowdmap.com">http://crowdmap.com</a></p> <p><b>Google Crisis Response</b> - uses online technology to reach people in need and for use during internal operations during a crisis. Google Crisis Response uses a number of tools including web pages with relevant and up to date emergency information, a person finder web application to find missing persons, as well as online crisis maps using Google Earth to display geographic information, storm warnings, shelter locations and power outages. Source: <a href="http://www.google.org/crisisresponse/">http://www.google.org/crisisresponse/</a></p>

Crisis Mapping Organisations (cont)	Crowdsourcing and Crisis Mapping Software Resource (cont)
<p><b>Crisis Commons</b> - aims to advance and support the use of open data and volunteer technical communities to provide innovation in crisis management. Through a global community of over 3000 volunteers and participants, CrisisCommons works to build and use technical tools to help respond to disasters and improve resilience to crisis. CrisisCommons utilises their mailing list and a wiki tool to collect notes, plan projects and capture and share information.</p> <p>Source: <a href="http://crisiscommons.org">http://crisiscommons.org</a></p> <p><b>Digital Humanitarians Network (DHNetwork)</b>- leverages digital networks in support of humanitarian response with the aim to form a consortium of volunteers and technical communities and provide an interface between formal international and humanitarian organisations and informal volunteer organisations. DHNetwork offers real-time media monitoring of both mainstream and social media, rapid geo-location of event and infrastructure data, creation of live crisis maps, data development and cleaning, satellite imagery tagging and tracing, and web-based research.</p> <p>Source: <a href="http://digitalhumanitarians.com">http://digitalhumanitarians.com</a></p>	<p><b>Sahana Foundation</b> - provides information management solutions that enable organisations and communities to better deal with disasters. The Foundation builds free open-source software supported by volunteer contributors. Sahana reunites separated families by registering missing and found persons, tracking and managing requests for help from individuals and organisations, tracking organisations and programs disaster response, tracking the distribution and transparency of aid and enabling information sharing across organisations.</p> <p>Source: <a href="http://sahanafoundation.org/">http://sahanafoundation.org/</a></p> <p><b>UN Global Pulse</b> - UN Global Pulse is an initiative that explores how new digital data sources and real-time analytic technology can help policy makers to understand human well-being. The initiative aims to mainstream the use of data mining into development organisations and promote awareness of the opportunities that such data presents for relief efforts and data sharing.</p> <p>Source: <a href="http://www.unglobalpulse.org">http://www.unglobalpulse.org</a></p>

## 5. Key Resources

5.1 The following resources can provide more extensive information on both crowdsourcing and crisis mapping in emergencies:

### **Onouha, M., Pinder, J. and Schaffer, J. - Guide to Crowd-sourcing (2015)**

Produced by the Tow Center for Digital Journalism, this resource provides a useful summary of the role of crowdsourcing in journalism and the various ends to which crowdsourced material is put. There is a strong focus on accuracy and veracity issues relating to crowdsourced data.

<http://towcenter.org/research/guide-to-crowdsourcing/>

### **Center for Security Studies (CSS) - Analysis in Security Policy (2011)**

This resource examines the recent phenomenon of crisis mapping and reflects on some of the issues and challenges faced by humanitarian organisations in their engagement with the wider crisis mapping community.

<http://www.css.ethz.ch/content/dam/ethz/special-interest/gess/cis/center-for-security-studies/pdfs/CSS-Analysis-103-EN.pdf>

**Inter-Agency Standing Committee -  
Accountability to Affected Populations (2013)**

This resource is an operational framework that promotes greater accountability in the delivery of emergency and humanitarian assistance. There is a specific focus within the framework on communication and on the need for better integration of communication into relief initiatives to promote awareness of aid delivery objectives, as well as on the scaling up of emergency and risk reduction communication.

[http://www.fao.org/fileadmin/user\\_upload/emergencies/docs/IASC%20AAP%20Operational%20Framework%20March%202013.pdf](http://www.fao.org/fileadmin/user_upload/emergencies/docs/IASC%20AAP%20Operational%20Framework%20March%202013.pdf)

# Chapter 4

## Social Media in Complex Emergencies

### 1. Introduction

1.1 This chapter examines the use of social media during complex emergencies. Globally, social media use occurs on a massive scale. In 2017 there are close to 2 billion Facebook, 1.3 billion YouTube, 600 million Instagram, 467 million LinkedIn, 375 million Google+, 313 million Twitter and 166 million Snapchat users. While social media use is extensive in the developed world, it is also rapidly extending to developing world contexts as cost barriers to accessing Internet-capable mobile telecommunications are steadily lowered. The role that social media can play in complex emergencies is significant, accordingly this chapter:

- Examines the broad relevance of social media to complex emergencies;
- Addresses the strengths and weaknesses of social media as channels of emergency communication;
- Provides a series of 'top-tips' of relevance to humanitarian and emergency workers;
- Identifies the organizational importance of building a comprehensive social media policy;
- Explores a range of key principles associated with developing effective social media initiatives; and
- Provides further resources and links that enable wider exploration of the topic.

### 2. Using Social Media in Complex Emergencies: strengths and weaknesses

2.1 Social media use is a routine and everyday occurrence for many people across the globe. Popular social media platforms such as Facebook, Twitter and YouTube have changed the way ordinary people communicate with each other, with their friends, relatives and peers, with groups that have similar interests, as well as with organisations that utilise social media, i.e. governments, humanitarian organisations and community organisations. Unlike traditional media such as radio or television, which is vertical and one way, social media platforms allow for real time 'horizontal' communication to occur in an open and democratic way. Anyone with access to a social media account and Internet connectivity can post an extremely wide range of content from simple text-based comments and conversations, to audio and video material covering a wide array of themes and issues.

2.2 In the context of complex emergencies social media is of particular importance because it

allows for a real-time dialogue to occur with affected communities who may be experiencing significant hardships and exposure to risk. Social media platforms also extend the potential for organisations working in humanitarian and complex emergencies to gather information and therein enhance situational awareness. Social media can play a critical role in helping organisations to keep their own staff aware of a situation, as well as provide a platform through which staff can interact and share lessons learned. Most importantly, social media presents such organisations with an opportunity to communicate with disaster-affected populations about impending and immediate risks, and the actions they need to take to offset them. In this respect, social media can play an important role in raising awareness and in changing behaviour. Equally, social media provides an autonomous platform for peers to communicate with each other about unfolding events, and a means to support each other before, during and after an event.

Figure 1: The most popular social media platforms

Social Media Platform	Description	Emergency Application
	<p>Facebook is a social media platform that allows users or 'friends' to connect with each other through dedicated and personalised 'pages'. It has a wide range of functions including news feeds, status updates, e-mail, real-time chatting and media sharing.</p>	<ol style="list-style-type: none"> <li>1. Enables users to post about their status, if they are affected or safe;</li> <li>2. Has one-button 'I'm safe' functionality;</li> <li>3. Enables real-time dialogue;</li> <li>4. Because 'sharing' is a key function of Facebook, useful information can be shared widely across numerous networks.</li> </ol>
	<p>Twitter is a social networking and micro-blogging site that enables users to network with others and receive 'tweets' of up to 140 characters in length. The platform is used extensively to exchange short messages and news updates in real time. It is good for pointing users to more in-depth material, i.e. websites. The information in tweets is organised via hashtags (#), i.e. #earthquake, which are searchable.</p>	<ol style="list-style-type: none"> <li>1. Real-time communication gets important information to users immediately;</li> <li>2. Tweets are short and simple to read and are good for advocating action;</li> <li>3. Tweets have the ability to be 'mined' for data to help organisations build situational awareness;</li> <li>4. Can generate a dialogue that is clear and concise, due to the character limitations on tweets.</li> </ol>
	<p>YouTube allows registered users to upload and share video content with anyone who has access to the YouTube platform. Individuals, groups, organisations and governments may upload content. Billions of videos can be found on YouTube and links to videos can be shared to networks via Tweets. YouTube allows users to comment on videos and engage in a dialogue about the content.</p>	<ol style="list-style-type: none"> <li>1. Enables individuals to upload video footage of key events, emergency conditions, rights abuses and recovery activities that help raise awareness of critical situations or recovery;</li> <li>2. YouTube is easily searchable through keywords, but requires quite specific searches to access relevant content, i.e. 'Nepal earthquake 2015' versus 'earthquake';</li> <li>3. YouTube uploads can take up a lot of bandwidth and in contexts where there is poor Internet/3G connectivity this can be problematic.</li> </ol>

2.3 Social media democratises communication to the extent that citizens are now empowered - often via powerful multimedia capable smartphones - with the means to capture a wide range of content from audio, images and video. This content can be used to inform or support a range of important processes that help underpin humanitarian assistance, conflict reduction and peace building activities. Social media has become an important platform for witnessing and citizen journalism, specifically of human rights abuses, electoral and peace monitoring, and for wider networking and building communities of interest.<sup>6</sup> It has also become central to rapid-onset emergencies with the platforms supporting a wide range of emergency functions from short-term event specific 'pages' promoted by emergency support organisations and affected communities to functions that let friends and relatives know a person is 'safe', such as Facebook's safety check function.

Figure 2: Facebook's Safety Check Function



2.4 While social media platforms have great potential, it is important to recognise that the distribution of access to Internet-capable mobile phones is not equal, especially in the developing world. Digital divides still exist between rich and poor and it is important to remember that social media is just one of many potential communication channels that might be available, including face-to-face and peer communication, radio, print, television, film, theatre and SMS. Multi-channel communications providing consistent and accurate messages have the greatest impact in emergencies.

3.5 The following strengths and weaknesses are associated with the use of social media during emergencies:

**Strengths:**

- Quick and easy to set up and relatively cheap to use;
- Appeals to youth and young adults in particular;
- Can extend the reach of emergency communication activities to new audiences;
- Can provide real time communication to a wide range of communities or groups in a variety of formats;
- Useful medium for communicating official warning or emergency messages;
- Helps reduce exclusive reliance on traditional mass media such as print, radio or television;

- Allows users to engage in dialogue and communicate needs and opinions;
- Allows engagement with communities of users who are experiencing a specific problem or issue, i.e. flooding, conflict;
- Enables vulnerable populations to communicate with a community of peers experiencing similar problems;
- Can help to counter inaccurate information and rumours circulating within a specific context; and
- The dialogue it can foster helps increase situational awareness for the public, as well as emergency and humanitarian organisations.

**Weaknesses:**

- Requires infrastructure, electricity and access to computer or Internet-capable mobile phones;
- Requires literacy;
- Requires e-literacy;
- Can be used negatively to promote abuse, hate and rumours that may affect the delivery of emergency assistance;
- Requires significant moderation if posts are to be monitored for offensive or harmful content;
- Can be very time-consuming to assess social media for useful information that may positively impact situational awareness; and
- User generated social media content can vary significantly in quality, reliability and veracity.

**3. ‘Top tips’ for engaging with Social Media in Emergencies**

3.1 If considering engaging with **social media** as part of an emergency response the following ‘top tips’ will help identify some of the most important things to consider to ensure success:

**Before the Emergency**

1. If utilising social media, it is important to know the audience and be flexible. Emergency communication requires good preparation, having an understanding of the audience and integrating adaptive capacity into the social media approach if it is to be responsive to

the shifting dynamics of the emergency and the issues with which social media users are concerned.

2. While social media platforms are useful during emergencies, they are also important channels for communication, community building and for community organisation before an emergency occurs, i.e. in the preparedness phase, as well as in the post-emergency period when concern has turned to recovery. Social media platforms can play an important role in stirring community participation and action in a wide range of areas of relevance to emergencies, risk reduction, reconstruction, conflict prevention, disarmament, peace-building and reconciliation.<sup>7</sup>
3. Increased access to Internet-capable mobile telecommunications is leading to rapid growth in social media use in the developed and developing world. Prior to an emergency, working to ensure that essential infrastructure such as telecommunications is robust enough to cope with emergencies or can be repaired quickly to get communities back on-line is an essential component of preparedness and recovery. The market has worked steadily to lower cost barriers for social media users through cheap access to mobile telecommunications networks. Supporting the development of pro-poor telecommunications access can also help to lessen digital divide constraints

**During the Emergency**

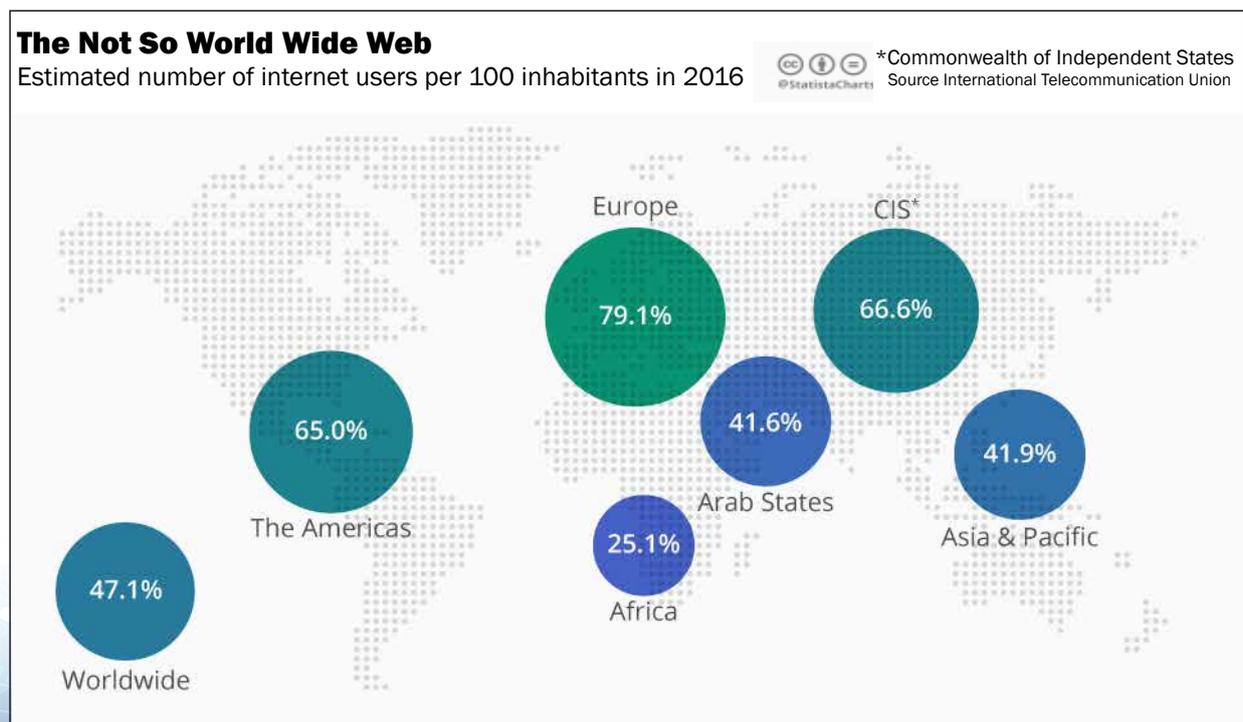
1. Social media relies on engagement to be effective. It is a ‘social’ medium. Using social media as a platform for ‘broadcasting’ one-way messages or announcements is unlikely to be effective without engaging in some form of supporting dialogue or interaction with affected communities.
2. When entering the field of social media engagement for the first time it is useful to start small, perhaps with a highly targeted intervention, and learn from the experience. Determine what lessons can inform future engagement.

- Engaging in social media may increase 'listening capacity' and the ability to gather insights from communities affected by complex emergencies. Because social media creates a dialogue it is possible to 'do and learn' at the same time. Through social media it is evident if messages and dialogue are making a difference, if there are any problems and if messages create distortions in understanding or promote rumours.<sup>8</sup> Engagement with social media users through evaluation mechanisms can help identify problems and rectify them as communication work moves forward.
- It is worth remembering that social media 'voices' may not be representative of wider society. Affluent members of society may contribute more posts or media content if there is a significant digital divide between rich and poor, men and women, literate and illiterate. This may skew situational awareness and therefore service delivery in areas and populations who are in less need than others. Because of this, it is important to not rely on social media alone for either raising awareness or generating situational

awareness. Additionally, poorer and lower-educated populations may have less literacy and e-literacy capabilities, which further limits social media access, especially in the developing world (see Figure 3 below). Social media may constitute just one of many potential communication and data acquisition channels available. If an approach is holistic it will have more of an impact and create a better understanding of the situation.

- Care needs to be taken to protect contributors if your organisation is engaging in social media activity and is relying on users to post sensitive information or media content that speaks to situational awareness or to an issue such as human rights abuses. Because social media use can be traced easily, ensuring user anonymity for those supplying sensitive material is important. Consider if social media is the best platform in such instances and what level of protection various platforms afford to their users. If it is decided that there are genuine risks for the engaged communities, then an alternative form of information collection or dissemination may be preferable, i.e. face-to-face or via encrypted e-mails.

Figure 3: The Global Digital Divide



6. The quantity of social media content is significant and in some instances can be overwhelming. Pages may be flooded with posts, and organisations seeking to utilise social media to build situational awareness may be faced with problems concerning where the information has come from, who has posted it, whether it is accurate and verified or whether it is misinformation. The quality of social media content can often be low and inaccurate. Having in place means to verify information is important, i.e. through locally situated emergency workers who can verify that a specific emergency is unfolding in a specific place. Verification can help defuse rumours that may negatively affect overall communication efforts.

#### After the Emergency

1. Learning from initial social media practice will help to understand the scale of human and financial resources required to build a more comprehensive social media approach and presence. Be prepared to ask for help from organisations of experts with more experience in the social media field if your organisation intends to increase its' technical capacity.
2. It is useful to revisit the social media strategy and policy after engaging in an emergency. Reflecting on lesson learned may lead to changes in both strategy and policy that need to be implemented.

#### 4. Social Media Policy Considerations

4.1 Effective social media work is often framed by organisation policies that centre on its use. Social media policies and protocols define who will be responsible for your organisation's social media work, i.e. information or media officers, as well as what rules are associated with social media use. Policies and protocols will help define the quality of the social media practice, and consider risk, the legal ramifications of misuse and how to deal with negative public engagement. Key organisational social media policy and protocol considerations include:

- **Effective policies emerge from good teamwork:** The development of an organizational social media policy should be a collective effort. Ensure that all staff with a stake in the communication work are involved from Head of Mission to Information Officers and the numerous roles in between.
- Build a learning culture that is creative and adaptive: A social media policy should target the creation of an organizational culture that is learning oriented and adaptive. Defining who is on the social media team, how regularly to meet, how to learn from practice, the challenges faced and how to make changes to practice is critical to building a culture that is responsive to the communities with whom your organisation engages.
- **Social media policies should have a broad focus and be principle-based:** Examine staff roles and responsibilities, what can and cannot be done from a legal or branding perspective and why it is being done, i.e. what principles will be adopted. Principles might include targeting specific 'at risk' communities, developing clear and concise materials and messages, learning f through evaluation, committing to meaningful dialogue with audiences and feeding back the learning to communities to increase accountability.
- **Build organizational capacity through training:** Understanding how to use social media and avoid some of the risks associated with the medium is important to the sustainability of any specific strategy that may be developed. Training in appropriate social media cyber-behaviour and cyber-safety can help protect staff when engaging in a wide range of social media practice, i.e. from professional to personal. In addition, building the competencies of media or communications staff to engage effectively in social media is critical. Social media communication can inform and stimulate dialogue, so understanding the key principles associated with effective communication in emergencies can help staff to become more effective communicators.

- **Review and refresh:** Social media is an extremely fast moving field. Because of this it is wise to regularly revisit the social media policy to ensure it stays relevant and up to date. If there is a culture of learning firmly embedded within your organization it will be easy to identify issues that require further policy consideration. Policy should be a living rather than static resource.

## 5. Key Principles for Designing a Social Media Strategy

5.1 Engaging in social media requires a significant amount of preparation. A clearly defined set of policies, procedures and practices need to be considered and put in place if social media work is to be effective and sustainable. The following principles will help identify some of the key issues to consider when developing a social media engagement strategy:

- **How to use social media.** Social media can be used to: (i) communicate important information to affected communities; (ii) link communities to useful resources or services; (iii) monitor public social media activity in order to increase situational awareness of emerging events; and (iv) support staff to exchange experiences and lessons learned. Consider the specific approach to employ. Will it be comprehensive and take account of all phases of an emergency from preparedness to recovery, or will it focus exclusively on acute events? Will it target specific ‘publics’ or interest groups? There are clear human and financial resource questions associated with the type and duration of engagement that is sought through social media.
- **Ensure that the necessary human and financial resources are in place** to develop and implement the social media strategy. Appropriately trained social media staff, as well as funding to develop content, undertake evaluation and effective inter-organisation coordination are all critical to success.
- **Appropriate planning and preparation** will enable a quick rollout of social media

work. Previous experience of working in emergencies will provide an idea of what worked in the past and what did not work. Engaging in formative research with target audiences or ‘publics’ will help to better understand their information needs. Any existing messages or content can be used or adapted. Previous versions of social media sites that have been used before may need to be reactivated or a temporary Internet ‘splash-page’ may need to be activated that over-rides your organisation’s Internet home page with information about an unfolding emergency. This page can point users to other credible sources of information or to your own organisation’s social media pages. Remember, different audiences have different needs. Some audiences want information, some want dialogue and some want both. The multiple communication channels used should reinforce each other and ‘point’ to each other, i.e. Twitter is useful for pointing to sources that contain more information such as websites.

- **Setting objectives and specific outcomes** for social media engagement will help to assess if the work has been successful or has missed the mark.
- **Working with partners for enhanced cooperation and coordination** will increase situational awareness of the emergency and ensure that key messages and dialogue promoted through social media are consistent with other organisations.
- Understanding which groups your organisation is trying to reach with social media work is important to creating impact. Social media content and dialogue may target specific communities who are at risk, the wider public or specific interest groups such as emergency workers or influencers. When engaging social media communities, try to build on what people already know about emergencies and recognize their strengths and desire to protect and rebuild their communities.

- **Identifying specific content to communicate, dialogue to create or information required** will help to sharpen the strategy. Also consider if your organisation's work will cover all phases of an emergency from before the emergency, to during it and afterwards.
- **Undertaking monitoring and evaluation (M&E)** of your social media work will help determine if the messaging has had the desired impact. M&E results will tell show if the messaging reached the target groups, what went well, what went wrong and what might be changed in future. M&E helps to learn lessons that inform future implementation, and the social media policy and protocols.

## 6. Key Resources

6.1 The following resources can provide more extensive information on the use of social media during emergencies and on developing a comprehensive social media strategy:

### **The Defence Science and Technology Laboratory (DSTL) - Smart Tips for Category 1 Responders Using Social Media in Emergency Management (2012)**

This quick and easy guide identifies how best to utilise key social media platforms such as Facebook and Twitter during emergencies. Information is presented in graphical format and details different approaches for effective community engagement.

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/85946/Using-social-media-in-emergencies-smart-tips.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/85946/Using-social-media-in-emergencies-smart-tips.pdf)

### **Local Government Association of South Australia - Managing Social Media During Emergencies Guide (2016)**

This resource examines how social media can be used during an emergency, how organisations can prepare for a crisis, what they should do during a crisis and after. It provides some useful information on developing a social media strategy and creating a website splash-page for use in emergencies.

[https://www.lga.sa.gov.au/webdata/resources/files/2016\\_LGA\\_SocialMediaDuringEmergencies\\_Guide\\_V4.pdf](https://www.lga.sa.gov.au/webdata/resources/files/2016_LGA_SocialMediaDuringEmergencies_Guide_V4.pdf)

### **European Centre for Disease Prevention and Control - Social Media Strategy Development (2016)**

This document provides a comprehensive overview of how to create a social media strategy, and a series of tips for using popular platforms such as Twitter, Facebook, YouTube and LinkedIn.

<http://ecdc.europa.eu/en/publications/Publications/social-media-strategy-guide-for-public-health-communication.pdf>

### **The United Nations Children's Fund (UNICEF) - Social Media in Emergencies: Guidelines for Communication and Public Advocacy (2012)**

This comprehensive guide examines the use of social media in emergencies and explores how such channels can be used to link to a wide variety of groups from other emergency organisations, to the public, to journalists and to influencers (for advocacy). The guide gives practical advice on how best to utilise some of the most popular social media platforms.

<http://www.unicef emergencies.com/downloads/eresource/docs/3.1%20Media%20and%20Communications/socialmediainemergencies-communicationsguidelines-120518144234-phpapp02.pdf>

# Chapter 5

## Wikis and Knowledge Management in Complex Emergencies

### 1. Introduction

1.1 This chapter examines the use of wikis for enhanced knowledge management, lesson learning, situational awareness and communication during complex emergencies. Access to wiki software platforms facilitated by Internet connectivity or network access is helping collaborators and co-workers to generate, manage and disseminate knowledge in new ways. Collaborative tools such as wikis help emergency and humanitarian responders to better understand the situation that they face. They also help to reduce duplication in situational knowledge creation work and in aid response efforts. Wikis provide emergency and humanitarian organisations a level of access to collaborative opportunities, often when emergency response teams are geographically dispersed, that has previously not existed. Because of this, they will make an increasingly important contribution to future emergency and humanitarian aid delivery and practice. This chapter:

- Examines the use of wikis in complex emergencies;
- Addresses the strengths and weaknesses of wikis as a tool for collaboration, knowledge creation, knowledge management and enhanced situational awareness;
- Provides a series of ‘top-tips’ of relevance to humanitarian and emergency practitioners; and
- Offers advice on best practice for knowledge management in emergencies.

1.2 While wikis are an effective tool for knowledge creation and management, more broadly it is critical that all emergency and humanitarian organisations manage knowledge effectively. This is because knowledge management can help them to:

- Avoid repeating mistakes and identify challenges;
- Highlight good practice;
- Increase relevance and effectiveness;
- Influence policy and strategic thinking;
- Make lesson-learning a sustainable process within partnerships or clusters; and
- Develop stronger networks.<sup>9</sup>

### 2. Using Wikis for Knowledge Management in Complex Emergencies: strengths and weaknesses

2.1 Wikis are websites or ‘pages’ that allow users to contribute material to and adapt in real time. Derived from a Hawaiian term meaning ‘quick’, wikis have become synonymous with everyday

Internet use through popular resources such as Wikipedia. A wiki is a tool that allows its users to contribute, collaborate by contributing information or analysis to a common site that is accessed by users to collate, collect and comment on content, therein creating knowledge. Some wikis can be freely accessed, used and adapted by the general public, while others are limited in their access to particular groups with specific thematic or technical interests. In essence, wikis are simple collaborative spaces for writing and reading. Ramos and Piper note that wikis allow:

‘... a process of bottom up editing, where the expertise is not in the hands of the few, but rather emerges from the combined efforts of the many. The ease with which new information can be introduced and/or challenged by a community of users can lead to the creation of authoritative, comprehensive documents, as well as rapid responses to breaking situations such as natural disasters and war-time reporting’.<sup>10</sup>

2.2 Platforms such as Wikipedia are highly familiar to millions of people across the globe, but behind the knowledge that such sites publicly promote lay processes of sharing, verification and refinement that are geared towards building knowledge credibility, accuracy and trust. Credible and accurate knowledge can help first responders and humanitarian workers to increase their situational awareness of the emergency and ensure that support flows to those most in need in a timely manner. Wikis are tools that can help users to collectively collate flows of information, so that they can quickly determine and update the available knowledge on the kind of crisis they face.

2.3 Sitting behind the public face of wikis are various software platforms that facilitate the knowledge creation process. For example, Wikipedia is underpinned by the MediaWiki software platform, which is the world's most widely used wiki tool. Other platforms such as MoinMoin and the dedicated Emergency 2.0 Wiki perform similar functions and allow users to engage in either closed access (private) or open access (public) forms of knowledge co-creation.<sup>11</sup> Most wiki software tools facilitate basic contributions to or editing of existing wiki 'pages'. After a dedicated 'page' has been created and given a title it is simply a case of contributing and sharing content. The community with access to the wiki 'page' can view this content and make any necessary changes. Wiki software typically allows users to compare different versions of edited text and such tools are useful in assessing the chronology of knowledge production for a given topic. Links to key wiki software tools are provided in the Key Additional Resources section below.

2.4 Emergencies place demands on both victims and responders. During emergencies information is a critical commodity for those seeking guidance on where to obtain humanitarian aid and those trying to deliver it. Traditional approaches to knowledge creation and management in emergencies have relied on organizational partnerships or clusters, as well as desk or liaison officers who collect and collate data as a discrete activity for subsequent sharing:

'In the past, responders have relied on information systems that manage knowledge in silos with the rationale that consolidating unique disaster circumstances, reconciling it with existing organizational knowledge, and presenting a useful summary for decision makers required specific expertise'.<sup>12</sup>

2.5 Tools such as wikis present new opportunities, but they also create a unique set of problems for humanitarian and emergency-focused organizations. Such organisations face significant challenges and risks associated with 'information overload' if knowledge co-creation and management practices become too open and too public. In turn, this may have damaging consequences, including organizations and partnerships being overwhelmed with in-flows of unverified information that may distort situational awareness, i.e. too open a network may lead to inaccurate or biased information being collated into knowledge that then affects service delivery. Another clear risk is that certain perspectives, such as those of low-income populations, the elderly and women and minority groups without access to new ICTs are either lost in the informational deluge or are not included because their marginality creates barriers that restrict their ability to engage with wiki platforms. This places a clear onus on the parallel need for localised face-to-face data collection mechanisms that can help to address issues of social exclusion, while also enhancing overall accuracy and veracity.

2.6 While using wikis may help to democratize and decentralize collaborative knowledge generation beyond the constraints associated with traditional knowledge management in emergencies, like all practical tools there are both strengths and weaknesses associated with their use in emergencies:

**Strengths:**

- Can be used in contexts with access to Internet or location-specific networks;
- Can be accessed remotely and support collaboration that would otherwise be impossible;



- Can be private and ‘closed’ or ‘open’ and public;
- The software that supports wiki creation is free or low cost;
- Wiki software is accessible, stable and easy to use;
- Multiple co-workers can work on a common wiki ‘page’ or issue at the same time in ‘real time’, i.e. knowledge contributions and editing are collaborative;
- Can be updated and corrected continually, i.e. they are a ‘living’ knowledge resource;
- Wikis are easy to search, use and are very familiar to regular users of the Internet;
- Can help to build communities of practice in both specific and broad thematic areas, i.e. wikis on a broad emergency such as a cyclone versus specific pages relating to issues arising from specific disease outbreaks;
- Enhances ownership over and transparency of knowledge; and
- Works best when integrated into robust and reliable local data collection mechanisms.

#### **Weaknesses:**

- Wikis requires literacy and a reasonable degree of e-literacy of software tools;
- Requires connection to an Internet service provider or context specific network, i.e. an office network;
- May not be an effective or manageable knowledge creation tool if open to too many users;
- May be subject to abuse if not carefully monitored;
- Maintaining the technology necessary to facilitate wiki-based knowledge contribution may be difficult in certain contexts, especially where communications infrastructure has been affected; and
- Do not work well if not supported effectively by local data collection mechanisms.

### 3. ‘Top tips’ for using Wikis in Emergencies

3.1 If considering using wikis to enhance knowledge generation, management and situational awareness during an emergency the following ‘top tips’ will help identify some of the most important things to consider to ensure success:

#### **Before the Emergency**

1. Humanitarian and emergency-focused organizations need to routinely assess knowledge creation and management practices as part of their routine work in order to understand whether they are appropriate, geared towards supporting partnerships, efficient and timely. Wikis support existing knowledge creation and management efforts; they do not replace them.
2. Wiki-enabled knowledge management systems help to span organisational boundaries by allowing knowledge to be translated, consolidated and transferred from one organisation to another. Engaging key partners through wikis helps support existing partnerships or clusters, face-to-face dialogues and enhances decision-making.
3. Organisations utilising wikis need to decide whether all emergency workers can contribute to knowledge co-creation or whether access should be limited to certain groups, contributors or occupation types (i.e. emergency responders). Limiting access may help focus knowledge co-creation efforts and any subsequent dissemination of the knowledge generated will help to increase wider situational awareness of the emergency for partners.
4. Wikis are produced via specific software platforms and more highly skilled workers who are familiar with such tools have a key role to play in ensuring that co-workers become familiar with any wiki knowledge creation tools to be used.
5. Organisations utilising wikis should ensure that staff understand very clearly how to contribute to the knowledge co-creation

processes, what constitutes good information and bad information and that any information contributed to a wiki needs to be accurate, verified and supplied in a timely manner if it is to be useful during emergencies.

6. In order for wikis to be effective, clear organisational knowledge management strategies and objectives need to be set concerning the purpose of the collaborations, the type of knowledge being sought, who should be involved in creating it and how it will be accessed and used by co-workers.

#### During the Emergency

1. Limiting access to wikis and to knowledge creation processes can help reduce large influxes of data or excessive editing. Selected contributors act as filters discarding unhelpful information and prioritising important findings. Building local networks of contributors to wikis helps to ensure that effective information filtering occurs.
2. Wiki contributors have a duty to ensure that any information provided is accurate and verified, i.e. the event is known to have occurred. If information is not accurate or verified there is a real possibility that knowledge generation will be imperfect and aid delivery potentially biased towards areas that are not in as much need as others.
3. Wiki-based collaborations are always more effective if they are supported by an experienced moderator. Moderators can help a collaboration stay focused and on track by ensuring contributions conform to the initial goals set for the exercise. 'Wiki-wars', where contributors are in conflict and edit out each other's material, can be avoided with good moderation.
4. It is useful to 'seedcorn' a wiki by having some initial text available for users to engage with and to get it going. It is more difficult for users when presented with a blank 'page'. Wikis

work best when they are championed by individuals who seek inputs from a dedicated community of users.

#### After the Emergency

1. Learning lessons from the experience of using wikis to strengthen knowledge and situational awareness is critical. Knowledge management strategies should be assessed and their strengths and weaknesses discussed with partners and clusters. Learning lessons about how wikis supported the delivery of humanitarian and emergency aid is important to improving future practice.
2. Wikis are an effective tool for collaboration, but they are just one part of often-complex mechanisms designed to elicit information from affected communities, turn that information into knowledge and then apply it to enhance situational awareness and aid delivery. Think carefully about where and how wikis will fit into future knowledge generation and management structures.

#### 4. Managing Knowledge in Emergencies

4.1 During emergencies the manner in which knowledge is created, managed and disseminated is critical to the success of the response:

'In any complex humanitarian emergency, there are certain questions that humanitarian aid organizations want answered. Certain background and situational information is needed by all humanitarian organizations: NGOs, UN agencies, governments and donors. Other types of information are more specifically needed by different personnel within these aid organizations. For example, humanitarian organization policy makers want 'big picture snapshot' analysis in order to understand the issues, to make decisions on providing assistance, and to be alerted to problems and obstacles. Field personnel and project and desk officers in aid organizations, on the other hand, need more detailed

operational and programmatic information in order to plan and implement humanitarian assistance and reconstruction programs'.<sup>13</sup>

Traditional 'on-the-ground' information officer roles in which individuals are given the sole responsibility for collecting and collating knowledge are starting to give way to more hybrid and democratic knowledge management systems (KMS) in which new collaborative tools such as wikis are complimenting and transforming existing knowledge structures.

4.2 While wikis are changing the way knowledge is created and shared, effective knowledge management is reliant upon some core principles that help to ensure that the knowledge generated through tools such as wikis is put to the best possible use. 'Top tips' for effective knowledge management include:

1. Knowledge management generation and management systems are most sustainable when developed in conjunction with key partners or clusters. Input from locally situated emergency or humanitarian workers is critical to the data collection process, increased situational awareness and ensuring the accuracy and veracity of information. Strategies for how information will be collected and what tools or processes will be applied to transform it into situational knowledge need to be put in place prior to emergencies occurring. This places a clear emphasis on partner and cluster dialogue in the preparedness phase of emergencies.
2. Establishing an advisory group across partnerships and clusters with a role to define knowledge generation and management approaches and strategies will help to ensure that knowledge concerns are not ignored, evaporate or become an ad-hoc secondary thought during emergencies. Developing clear terms of reference for such a group, including goals and approach, can help formalize the 'knowledge' work of such groups.

3. Effective knowledge generation and management structures can help humanitarian and emergency workers at the local level make more timely decisions and increase the effectiveness of aid. Effective knowledge generation and feedback systems, such as wikis, play an important role in helping local workers contribute to increased situational awareness and the prioritization of aid to areas in the greatest need.
4. The outputs from knowledge generation and management structures should be clear and concise to ensure ease of access and engagement for users. Wikis allow easy knowledge contribution and access, but may not be feasible in contexts where infrastructure has been destroyed. Whatever means of collating, managing and disseminating knowledge is utilised, timeliness, accuracy and veracity are critical criteria to be applied to knowledge processes.
5. Learning from experience is essential if knowledge generation and management structures and practices are to improve. Understanding what worked and what did not in terms of the way information was collected, how it was collated and communicated to inform situational awareness is of utmost importance. All knowledge management strategies should include provisions for learning exercises to drive future improvements. In this respect, setting goals and measurable indicators around knowledge generation and management approaches and strategies is useful for assessing effectiveness, i.e. timeframes for information provision, the number of briefs or wikis developed, the number of times the content was accessed and used. Learning lessons concerning knowledge generation and management practices requires that such lessons are communicated to partners and clusters at all levels in an appropriate manner. Establishing effective feedback mechanisms for learning can enhance wider knowledge capacity.

## 5. Key Resources

5.1 The following resources can provide more extensive information on knowledge management, the use of wikis and on mechanisms for generating situational awareness:

### Developing Online Teaching Skills (DOTS) Guide to using Wikis

Though focused on teaching where wikis are used extensively as tools of student collaboration, this short guide provides a basic introduction to using wiki software.

[http://ict-rev.ecml.at/Portals/1/documents/Wiki\\_offline.pdf](http://ict-rev.ecml.at/Portals/1/documents/Wiki_offline.pdf)

### King, D. 2005 - Humanitarian Knowledge Management. *Proceedings of the Second International ISCRAM Conference*

This useful resource details broad knowledge management issues in relation to humanitarian emergencies, and especially in terms of what organizations need to know to make humanitarian aid delivery effective.

<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.455.913&rep=rep1&type=pdf>

### United Nations Development Program (2007) - Knowledge Management Toolkit: for the crisis prevention and recovery practice area

This guide comprehensively covers issues associated with knowledge management practices in humanitarian emergencies. It details the process of transforming knowledge into knowledge outputs such as briefing papers.

<http://reliefweb.int/sites/reliefweb.int/files/resources/p%26i%20to%20post.pdf>

### Wikipedia Guide to Wiki Software

This wiki page highlights the variety of wiki software currently available and the various sectors in which wikis are employed. Different software platforms are dominant in different sectors, i.e. social and enterprise.

[https://en.wikipedia.org/wiki/Wiki\\_software](https://en.wikipedia.org/wiki/Wiki_software)

## REFERENCES

1. See [http://www.who.int/environmental\\_health\\_emergencies/complex\\_emergencies/en/](http://www.who.int/environmental_health_emergencies/complex_emergencies/en/)
2. McGoogan, C. 2016. End of SMS? WhatsApp and Facebook messages outstrip texts by three times. The Daily Telegraph, 22nd April 2016. See <http://www.telegraph.co.uk/technology/2016/04/22/end-of-sms-whatsapp-and-facebook-messages-outstrip-texts-by-thre/>.
3. Onouha, M., Pinder, J. and Schaffer, J. 2015. Guide to Crowd-sourcing. Tow centre for Digital Journalism, Columbia School of Journalism, New York.
4. UNOCHA. (2013) 'Humanitarianism in the Network Age: Including World Humanitarian Data and Trends 2012', UN.
5. Bellucci, A., Malizia, A., Diaz, P. and Aedo, I. (2010) 'Framing the design space for novel crisis-related mashups: the eStoryS example', Proceedings of the 7th International ISCRAM Conference, Seattle, USA.
6. Comninos, A. (2011) Twitter Revolutions and Cyber Crackdowns: User-generated content and social networking in the Arab Spring and beyond. Association for Progressive Communications (APC), Melville, South Africa.
7. Borges, M. and Vivacqua, A. (2012) 'Taking advantage of collective knowledge in emergency response systems'. Journal of Network and Computer Applications, 35(1): 189-198.
8. BBC Media Action. (2012) Still left in the dark? How people in emergencies use communication to survive - and how humanitarian agencies can help. Policy Briefing No. 6, BBC Media Action, London.
9. Ramos, M. and Piper, P. 2006. Letting the grass grow: grass-roots information on logs and wikis. Reference Services Review, 34(4): 570-574.
10. UNDP. 2007. Knowledge Management Toolkit: for the crisis prevention and recovery practice area. UNDP, New York, USA.
11. See <https://moinmo.in> and <http://emergency2owiki.org>
12. Yates, D. and Paquette, S. 2010. Emergency knowledge management and social media technologies: a case study of the 2010 Haitian earthquake. International Journal of Information Management, 31(2011): 6-13.
13. King, D. 2005. Humanitarian Knowledge Management. Proceedings of the Second International ISCRAM Conference. Brussels, Belgium.



**Australian Government**  

---

**Australian Civil-Military Centre**



**THE UNIVERSITY**  
*of* **ADELAIDE**