

# **Connecting emergency management organizations with digitally enabled emergent volunteering**

*Literature review and best practices*

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## **Abstract**

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Popular online platforms currently provide a virtual site for the convergence of citizens after emergencies. After convergence on online sites to gain information and participate in dialogue about emergencies, citizens may go on to spontaneously assume various online and off-line response and recovery tasks, which we have termed digitally enabled emergent volunteering (DEEV). DEEV represents surge capacity of voluntary labour and other assistance that can contribute to emergency relief and recovery operations in the aftermath of an emergency. The purpose of this research report is to assemble knowledge about DEEV from the fields of disaster sociology and crisis informatics, as well as from case studies, and to present best practices for how emergency management organizations (EMOs) can monitor for, engage with, and leverage this community resource while minimizing risks associated with spontaneous volunteering. Essential organizational elements for EMOs seeking to partner with the online public are a consistent program of social media monitoring and a dialogic approach to social media communications. Other important features of EMOs seeking to leverage DEEV activity to improve emergency outcomes are capacity to manage volunteer assets in the recovery and response phases of an emergency, as well as, flexible emergency management strategies that are open to collaboration with grassroots community groups.

## **Significance to defence and security**

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In the networked world, public communication about crises increasingly occurs in the milieu of social media. Social media is now also the principal site in which the public deliberates upon and undertakes activities of collective coordination during and in the aftermath of crises. Understanding and preparing for the dynamics of the public on social media during and after a crisis is essential for ensuring up-to-date, situationally aware and societally responsive management protocols for every kind of security and safety situation.

## Résumé

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Les plateformes populaires en ligne offrent actuellement un lieu virtuel de rassemblement des citoyens à la suite d'une situation d'urgence. Après avoir convergé vers les sites Internet pour obtenir des renseignements et participer à des dialogues sur les situations d'urgence, les citoyens peuvent spontanément assumer diverses tâches d'intervention et de rétablissement en ligne ou non, ce que nous avons désigné par l'appellation « bénévolat spontané dans un contexte numérique » (BSCN). Il s'agit d'une capacité de mobilisation du travail bénévole et d'autres formes d'aide pouvant contribuer aux opérations de secours et de récupération après une situation d'urgence. Le présent rapport de recherche vise à rassembler les connaissances sur le BSCN (incluant la sociologie des catastrophes, l'informatique en situation de crise et les études de cas) et à présenter les pratiques exemplaires sur la manière dont les organisations de gestion des urgences (OGU) peuvent surveiller, intervenir et mettre à contribution cette ressource communautaire, tout en minimisant les risques associés au bénévolat spontané. Parmi les éléments organisationnels essentiels pour les OGU cherchant à établir des partenariats avec le public en ligne, il y a un programme cohérent de surveillance des médias sociaux et une approche dialogique des communications par les médias sociaux. La capacité de gérer les ressources bénévoles durant les étapes d'intervention et de rétablissement en situation d'urgence et les stratégies souples de gestion des urgences ouvertes à la collaboration avec des groupes populaires sont d'autres caractéristiques importantes des OGU désirant tirer profit des activités de BSCN pour améliorer les résultats en cas de crise.

## Importance pour la défense et la sécurité

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Dans un monde en réseau, les communications publiques sur les situations d'urgence s'effectuent de plus en plus par les médias sociaux. Il s'agit maintenant du principal endroit où la population discute et entreprend des activités de coordination collective pendant et après une situation d'urgence. Il est essentiel de comprendre la dynamique des gens sur les réseaux sociaux à ce moment et de s'y préparer pour avoir des protocoles mis à jour de connaissance de la situation et de gestion adaptés sur le plan social pour tous les types de situations relatives à la sécurité et la sûreté.

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# 1 Introduction

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Social media for emergency management (SMEM) is an element of a larger societal development in which citizens are assuming an increasingly active role in emergency response and recovery through the use of social media platforms and networked communications technology [1]. During and after emergencies, large numbers of people use social networks to share alerts, warnings and preparedness messages, and identify needs or report damage, making the public a significant source of situational awareness information [1]. In April 2013, Defence Research and Development Canada – Centre for Security Science (DRDC CSS) initiated a social media for emergency management (SMEM) project to enhance expertise in the domain of social media and online collaboration within the Canadian emergency management (EM) community [2]. The project assessed the capability of emergency management organizations (EMOs) to use SMEM [3] and led to the Digital Volunteer Supported Recovery Operations Experiment (DVSROE) in November 2014, which tested the use of social media and digital volunteers to obtain situational awareness [1] [4].

One component of situational awareness involving SMEM is alertness to the spontaneous organization of volunteer activities by the public on social media during and after emergencies. After an emergency, the public has a tendency to generate spontaneous forms of collective response and recovery volunteering [5]. Lately, attention has turned to digitally enabled forms of emergent volunteering after emergencies, in particular those initiated on social networking platforms such as Facebook and Twitter. Participation in digitally enabled emergent volunteering (DEEV) is becoming increasingly widespread and sophisticated due to the opportunities for community self-coordination offered by these platforms [6].

With the capacity to support situational awareness enabled by social media monitoring, it is in theory possible for EMOs to observe DEEV activity taking shape during emergencies. This possibility opens up questions about whether, and how, DEEV participants should be engaged as collaborators in official emergency relief and recovery operations. DEEV volunteering capacity, which is self-generating and spontaneous, may be increasingly valuable to tap amidst a wider social context in which affiliated citizen volunteering with Voluntary Service Organizations (VSOs) after emergencies has been observed to be declining [7]. The terms of commitment to VSOs can seem strenuous, time-consuming, or exclusive, whereas DEEV, with its low thresholds for inclusion and commitment, can seem like an accessible and straightforward way for anyone to get involved in the emergency response [8]. Canada's Third Annual Working Group on Disaster Risk Reduction observed a special need for a "culture shift" towards understanding "all individuals have a role in building community resilience" [9].

In general, the approach of agencies in the United States such as the Corporation for National and Community Service and the Points of Light Foundation is to stream unaffiliated volunteers that arise in emergencies into pre-existing volunteer service organizations (VSOs) whenever possible [10; also see Annex A]. Alternatively, disaster sociologists such as Dynes (2006) recommend a coordination approach that would leave the collective forms taken by emergent volunteers intact [11]. A coordination approach to emergent volunteering is congruent with the whole-of-community model of emergency management, which understands grassroots forms of organization and problem-solving to be constructive of social capital and valuable for resilience after the emergency [12]. Canada's Third Annual Roundtable for Disaster Risk

Reduction observed that “[c]ommunities, and networks within them, have the potential for concrete action” on disaster risk reduction and that disaster resilience programs in Canada should “[c]apitalize on social media capacity” [9]. A finding of the SMEM Expert Roundtable was that an EM paradigm shift was desired that would “create an environment that catalyzes citizen participation” and would “empower citizen action groups”; also identified was the need to “create volunteer networks” [2].

The purpose of this report is to draw on case studies as well as theory on emergent volunteering and DEEV in order to analyze the most appropriate strategies to take with respect to spontaneous eruptions of DEEV after emergencies. Some issues reviewed are:

- What are the characteristics of emergent volunteers, and in particular DEEV, that could bear on their value for enhancing community resilience?
- What are the risks and benefits presented to EMOs in collaborating with emergent volunteers, and in particular DEEV, in emergency operations?
- What best practices for identifying and collaborating with DEEV have already been developed or can be elicited from case studies or the literature on DEEV?

The report concludes that a staged approach to anticipating, identifying, engaging, and coordinating DEEV could optimize the opportunities for enhanced relief, recovery, and long-term resilience DEEV offers amidst communities, while minimizing the coordination problems and risks DEEV can present due to its spontaneous and unpredictable character.

## 1.1 Methodology

Due to the currency and quickly evolving nature of the subject matter of DEEV, this report draws on a wide range of sources, including published scholarly research, media reports, and governmental and non-governmental organizational publications, and other types of “grey literature.”<sup>1</sup> It begins by identifying five typical characteristics of traditional emergent volunteering after emergencies as it has been described in disaster sociology, namely *convergence*, *altruism*, *emergence*, *collective intelligence*, *gap-filling*, and *resilience*. It then reviews five cases of DEEV from the past ten years to demonstrate its evolution to the present. These cases were chosen because they are broadly considered to be paradigm shifting events in which citizens improvised new emergency response and relief capabilities using social media tools that were available to them at the time. Considering the evidence of these cases, as well as theory from the field of crisis informatics [13], the report observes similarities between DEEV and traditional emergent volunteering while noting four special characteristics of DEEV that lend it particular importance and potential in the current era of social networking, namely *established user base*, *weak tie networks*, *participatory culture*, and *expectations of instantaneity*. The report then reviews risks and benefits presented by emergent volunteering for emergency management according to theory and case studies. Based on the foregoing analysis and on theories of crisis communication and volunteer management, the report sets out a staged approach to *cultivating*, *anticipating*, *identifying*, *engaging*, *coordinating*, and *evaluating and learning* from DEEV. This

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<sup>1</sup> Grey literature is research produced by government, academics, business and industry in print and electronic formats and typically not peer reviewed (Fourth International Conference on Grey Literature: New Frontiers in Grey Literature, 1999).

staged approach aims to maximize the potential of DEEV to augment emergency resources and resilience while bringing it, as far as possible, under the umbrella of EMO operations.

## **2 Characteristics of traditional emergent volunteering**

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When a community spontaneously organizes response and recovery activity, this form of self-organization is termed emergent or unaffiliated, in contrast with affiliation in Voluntary Sector Organizations (VSOs) [10]. Emergent volunteering activities were once regarded as aberrant, but research on disasters found such activities typically arise after emergencies and contribute significant value [14]. Based on research in disaster sociology, we observe that emergent volunteers demonstrate six characteristic features: *convergence*, *altruism*, *emergence*, *networked intelligence*, *gap-filling*, and *resilience*.

### **2.1 Convergence**

Convergence describes how members of a community tend to traditionally gather in a physical site after a disaster to share experiences and assess damage [15]. Convergence allows people to “mill,” or collectively weigh information about what is happening and what to do [16]. As community members collate their experiences, they frequently discover urgent response and recovery tasks that need to be undertaken in a coordinated way, leading to emergent voluntary activities [11]. The larger the disaster, the more likely emergent volunteering is to arise [17].

### **2.2 Altruism**

Emergent volunteering has typically been associated with a distinctive altruism consistently identified after emergencies, when the obligations of citizenship and the priorities of community survival are heightened [5] [11]. Volunteering allows individuals to come to grips with an emergency, so that victims are often found among the volunteers [13] [18]. Altruistic collective tendencies can be observed in the cooperation and sharing that occur after emergencies far more commonly than hoarding and looting [19], and in relief operations typically initiated by communities, such as search and rescue and the provision of mass shelter [15].

### **2.3 Emergence**

Spontaneous volunteering after emergencies is considered to be “emergent” because it demonstrates collective action by previously uncoordinated individuals, most often without specific expertise in emergency management [15] [20]. Unpredictability and improvisation are other features of emergent volunteering, as it is impossible to know in advance which individuals with what skillsets will get involved, how they will organize themselves, what tasks they will take on, and in what ways, which are often improvised and learned by doing [15] [19].

### **2.4 Collective intelligence**

Despite its spontaneous, unpredictable and improvisational character, emergent volunteering after emergencies is typically not chaotic, but competent and focussed on priorities [11], due to the collective intelligence that frequently arises in emergent volunteer groups [21]. Collective intelligence is most likely to arise in groups bound by a common focus and organized in a

non-hierarchical and relatively egalitarian network [21]. Members of networks can draw on a wide array of skills, resources and information sources and have freedom to learn-by-doing and mutually self-correct [6] [15] [17].<sup>2</sup>

Emergent volunteer groups with networked structures are observed to be particularly adaptive to the quickly altering circumstances characteristic of emergencies [6] [22]. Lacking existing protocols, they are free to improvise in inventive ways that can produce effective solutions to unusual situations and rapidly changing demands [23]. Research suggests that the decentralized decision-making and actions undertaken by emergent groups after an emergency are typically resourceful, self-policing, effective, accurate and more adaptable to shifting circumstances than those of bureaucratic structures [18] [24].

## **2.5 Gap-filling**

Emergent volunteer groups frequently form in response to unmet needs and delays in official response common immediately after an emergency [18] [8]. The gap-filling function of emergent volunteers need not be taken as a mark of the failure of EMOs [22]. Rather, their improvisational style makes emergent volunteer groups especially well-suited to meeting needs in the early and turbulent stages of an emergency, allowing them to fill a void that cannot necessarily be filled by EMOs [17].

## **2.6 Resilience**

Emergent volunteers are considered to reflect positively on the strength of the social bonds and connections within a community, known as “social capital” [25]. Social capital is an integral part of community resilience [26]. Communities with strong social networks and a positive social climate produce more volunteers and cope better with emergencies overall [14] [27] [28]. The cycle of emergent volunteering and social capital is self-reinforcing, with a strong “bottom-up” response to an emergency building social capital that allows the community to rebound more fully afterwards [14] [23] [27].

Volunteering, and especially emergent volunteering, is accordingly seen as essential to the ongoing resilience of communities [29] [30]. Communities with significant levels of emergent volunteering are not passive recipients of emergency aid, but learn to summon their own resources and strengths, prospectively empowering themselves to cope with future emergencies as well [17]. Emergent volunteering may be considered a phenomenon to encourage in keeping with Canada’s priorities of engaging the public as resources and partners in emergencies and of fostering strong and sustainable communities [1] [9].

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<sup>2</sup> Some well-known products of collective or networked intelligence are Wikipedia and open source software [21].

## **3 Rise of digitally enabled emergent volunteering (DEEV)**

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### **3.1 Overview**

A social network is a web of people connected by relationships based on friendship, work, neighbourhoods or other types of social organization [31]. Social media consists of internet platforms where individuals maintain their social networks in virtual space and can mobilize them for functions of mutual value [32]. The possibility of using social media to organize social networks after emergencies is giving emergent volunteering expanded visibility and scale [13] [29]. Anecdotal evidence suggests DEEV is enabling the public to play an increasingly prominent and expansive role during emergency response and recovery compared to when these technologies did not exist [7] [8]. Ready-to-hand, always-on tools of social coordination, and the opportunity to channel boundless networks, appear to amplify civic action [33], in particular during emergencies [34].

Accordingly, discussions on SMEM have shifted from how to use social media for crisis communication to how to use social media to collaborate with communities on emergency response and enhance community resilience [30]. Canada's Third Annual National Roundtable for Disaster Risk Reduction identified social media, and specifically Twitter and Facebook, as among the most important tools for promoting disaster risk reduction goals, including community resilience [9]. The United Nations Office of Disaster Risk Reduction's 2015 *Sendai Framework for Disaster Risk Reduction* recommends strengthening "people-centered [...] emergency mechanisms," including those employing "social technologies" and paying "special attention [...] to the improvement of organised voluntary work of citizens" [35].

The ways social media allow people to communicate are what make it especially good at facilitating disaster resilience through DEEV. Social media's capacities for information exchange across barriers of space and time align well with the needs of collaboration in disaster response [1] [36] [37] [38] [39]. Geographically dispersed individuals share information in multiple directions to obtain an expansive, real-time picture of the emergency [7] [34] [40]. Space for dialogue allows citizens to coordinate themselves on a wide scale in real time while leaving a short term record for others to learn, contribute, or join up at a later point [7]. Social media gives grassroots groups that would have sprung anyways a powerful resource [15] [41], while enabling new styles of volunteering based in the relationships and practices of social media to emerge [13].

### **3.2 Early DEEV: bulletin boards and blogs**

In the early days of social media (2001–2007), DEEV was initiated by tech-savvy early adopters in relatively specialized forms such as bulletin boards and blogs to bridge gaps between available and desired information and services.

### **3.2.1 Hurricane Katrina, 2005**

After Hurricane Katrina in 2005, the Red Cross discouraged donations of goods because of limitations of labour and space for holding, sorting, and distributing them. In response, website owners of small existing blogs as well as larger community forums adapted them into online spaces where people with goods could connect directly with people who needed them, a practice termed “connected giving” [40]. In this early case it was shown how networked systems of innovative volunteers empowered by social media tools are able to fill gaps in the EM capacities of institutionalized EMOs [41].

### **3.2.2 California wildfires, 2007**

During the California wildfires of 2007, official information about the movement of fires was inaccessible or lagging. In response, some individuals developed bulletin boards as well as mapping devices to crowdsource real-time information about fires [18]. In this instance, adaptable social media tools were a powerful resource for socially networked individuals trying to comprehend and communicate the shape of the emergency around them [18] [41].

## **3.3 Recent DEEV**

These early cases of DEEV, described above, show how early forms of social media opened up new possibilities for improvisational volunteering after emergencies. As each of these cases involved substantial amounts of innovation and unfolded on closed social networks of relatively small numbers of blog or bulletin board participants, it would have been difficult for EMOs to anticipate or identify these forms of DEEV in action.

By contrast, since the mid-2000s, the popularity of Facebook and Twitter have provided for the emergence of a more consistent form of DEEV that makes use of these practically ubiquitous social networking sites and their tools. Due to widespread social networking amongst the public, DEEV now has the potential to involve wide swathes of the public. As well, many contemporary instances of DEEV are open forum, in particular those involving Twitter, allowing EMOs to monitor for these activities and engage with them in real-time. The possibility of identifying and engaging with spontaneous DEEV organizations online opens up the opportunity for EMOs to coordinate and collaborate with them to enhance community emergency response as a whole.

### **3.3.1 Christchurch student army volunteers, 2011**

When Christchurch, New Zealand experienced a devastating earthquake in 2011, social media acted as a “gathering point” for citizens, playing a role that would formerly have been occupied by churches [42]. The possibility of online convergence was especially important in the aftermath of the earthquake, as many geographical locations that might have been sites of physical convergence, such as churches and community halls, had been declared unsafe [43]. On social networks people found information on how to obtain survival needs such as fresh water and food and generally remained connected as a functional community [42]. Government officials and emergency responders were also actively involved on Twitter and other social media platforms during the days after the earthquake [3].

Furthermore, a day after the earthquake, a student, Sam Johnson, founded the Student Volunteer Army on a Facebook page to connect citizens of the city who needed help with students who could help them. As Johnson later described, “I saw a need and wanted to help. I wasn't personally affected at all. But there didn't seem to be any way to get large numbers of volunteers working with the existing agencies. There was no volunteer coordination, so I set it up, with key helpers” [42]. Johnson initially drew on his Facebook network of 200 fellow university residents to form the Student Volunteer Army, which snowballed to incorporate 5000 people in the first week after the earthquake and subsequently over 24,000. The original members formed a core group who coordinated neighbourhood teams of between 10 and 100 participants to clean up damage from flooding [43]. Yet it is thought that because the activity of the Student Volunteer Army was unanticipated and there were no policies for engaging with DEEV, that coordination, information sharing, and trust between digital volunteers and emergency officials were lacking, limiting the organization from meeting its full potential to assist the Christchurch community [3].

Nonetheless, the experience of the Student Volunteer Army was transformative for Christchurch, demonstrating how DEEV can contribute to community resilience. Two and a half years later, the Student Volunteer Army remained an active local youth trust performing social service volunteering [43]. The example is also viewed to have been a springboard for other citizen efforts at using social media to form cooperatives and to exchange social support [43].

### **3.3.2 Occupy Sandy, 2012**

Hurricane Sandy was a threshold case in which EMOs began to identify the relevance of social media to emergencies. One third of individuals in affected areas used social media, in particular Facebook, as an ongoing means of communication during the storm [44]. Social media channels were also the primary means by which the 60,000-strong Occupy Sandy volunteer force attracted and mobilized volunteers, identified community needs in real time, and share information amongst each other [8].

Early in the recovery stage when the Federal Emergency Management Agency (FEMA) office in New York was still reportedly closed due to bad weather [45], six former members of the protest group Occupy Wall Street formed Occupy Sandy to provide relief to housing projects they worried could fall through the cracks of official emergency response [8]. As an organizer said, “We had the networks in place and so it was easy to reach out to people” using Occupy Wall Street listserves [8]. To summon returning as well as new participants, organizers used a Facebook account, a Google+ account, and Twitter hashtags. Neighbourhood Occupy Sandy groups in turn set up their own Facebook and Twitter accounts [8]. Occupy Sandy is considered to have been a highly successful endeavour due to its non-hierarchical structure, which allowed members to test out ideas and make quick decisions, and due to its use of social media, where it exerted emotional appeal that drew volunteers [8]. Another element of its success was its ability to embed itself in communities, attracting their trust and leveraging their resources and capabilities [8].

There is disagreement in retrospect about whether the safety risks assumed by Occupy Sandy volunteers were too high. During the recovery phase, the organization partnered with professionals who trained volunteers in skills such as mold remediation, damage assessment, construction, plumbing, and electrical repair [8]. Volunteers in some cases took on specialized tasks for which they were untrained because they were concerned official emergency



management organizations were unprepared to do so and that “if [they] weren’t doing it, it would not get done” [8]. Yet a FEMA representative called the risky behaviour “foolish exuberance” and observed that it was lucky that no lawsuits followed from these decisions [8].

Despite some instances of discord between FEMA representatives and members of Occupy Sandy, FEMA in other cases made efforts to coordinate with them and other grassroots groups. FEMA obtained support from Geeks Without Bounds<sup>3</sup> in bridging communication gaps between formal and informal response efforts, for instance by letting city officials know where to pick up refuse. Occupy Sandy members were removing from houses [3]. Other examples of collaboration were led by FEMA’s Innovations Team, for instance when they adapted a community-based mesh network to enable community WiFi in the town of Red Hook [46].

Overall, it was during the period of Hurricane Sandy that FEMA internalized the importance of collaboration with emergent and other grassroots based community groups. As Frank Sanborn of the FEMA Innovations Team said at the time, “[f]eeding into pre-existing efforts in communities is [...] the vision going forward” for FEMA, even if that “wasn’t clear a week ago” [46]. Likewise, an organizational goal outlined by FEMA after Hurricane Sandy was to “enable government to work in a unity of effort with [grassroots and emergent] groups when the next disaster strikes” [8].

### **3.3.3 YCCHelps, 2013**

In the early days of the Calgary flood of 2013, while the floodwaters were high, Calgarians began using the hashtag #YYChelps to share supplies and information. As community organizer, Brian Singh watched friends offering up rooms on Facebook, he had the idea of starting a “Calgary Cleans Up” Facebook Page and a “YYCHelps” website to organize the post-flood volunteer recovery efforts [47]. He recollected “feeling powerless” because “[t]hese flood waters are going to crest, there’s going to be a lot of damage” [47]. The sites were born when he decided to draw on his personal skills of “getting people together” and “content curation” to fulfill people’s need for “information and need to know where to turn to” [47]. The accounts Singh created with the help of a few local businesses were instantly popular and ultimately hubs for 13,000 volunteers who coordinated to relocate and assist thousands of residents of Calgary [24].

Meanwhile, other individuals with large needs put out calls for skilled volunteers and heavy duty equipment through the open access #YYCHelps Twitter hashtag, drawing hundreds of volunteers for every request [24]. The City of Calgary became aware that #YYCHelps was a hub of emergent volunteering when they used the hashtag in a call for volunteers and it drew 3,000 people in four hours [47]. Upon identifying the value of the #YYCHelps model, Calgary Emergency Management Agency identified the YYCHelp team, helped them to develop a volunteer waiver form, and put them at the helm of volunteer management for the city, resulting in a well-organized and competent flood cleanup [3].

The strength of the YYCHelps model appears to have been its agility at fitting specific and adequate assets to the shifting and diverse needs that arise in emergency recovery. Those who used the #YYCHelps Twitter hashtag could individually crowdsource information and experts

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<sup>3</sup> Geeks Without Bounds is a digital volunteering group that bridges technological capabilities in humanitarian response. <http://gwob.org/about/theory-of-change/>.

rapidly and fulfill requests quickly [24]. The Calgary Cleans up and YYCHelps websites systematically gathered information on and mobilized what volunteers could offer, striking “a chord” with “people who are perhaps not physical workers but [had] access to property materials or specific services,” as Singh explained [47]. The group’s flexible approach of networked volunteering permitted “volunteer duties tailored to the individual needs of the volunteers” [47]. Its emergent and networked character allowed for collective intelligence, as although the organizers weren’t experts in emergency management or volunteer coordination, “they [...] were able to crowdsource information and crowdsource experts rapidly” [47]. Finally, the legitimacy offered to the YYCHelps organization by the City of Calgary, which funnelled volunteers towards it through authorized social media accounts, allowed it to maximize its potential in the recovery process.

The YYCHelps campaigns ultimately channeled community altruism beyond the Calgary city limits. Siksika First Nations reserve was also hit by severe flooding, but reportedly was ignored for some time by first responders and the media [24]. After the reserve posted a call for help on Facebook, a link to their post was shared on Twitter using the #YYCHelps hashtag, and the #YYCHelps network coordinated food, clothing, and temporary shelter for the reserve’s residents [24].

## 4 Digitally enabled emergent volunteering (DEEV): Analysis

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### 4.1 Similarities of DEEV to traditional emergent volunteering

It is evident in the five detailed cases in Section 4 that digitally enabled emergent volunteering (DEEV) expresses many identical characteristics to traditional emergent volunteering, namely *convergence, altruism, emergence, networked intelligence, gap-filling, and resilience*. After this discussion of similarities, Section 4.2 will go on to describe some distinctive characteristics of digitally enabled emergent volunteering.

#### 4.1.1 Convergence

In general, there has been a shift in the site of convergence during emergencies from offline to online spaces, initiating what Patrice Cloutier, Strategic Communications Team Lead at the Ontario Government Ministry of Community Safety and Correctional Services, terms “social convergence” [48]. Currently, when an emergency breaks out, on-site and on-line crisis responses are “simultaneous and intertwined” [49]. Social convergence after an emergency is impelled by many of the same motivations as physical convergence, such as the need for information, connection, and to share experiences [50]. While those who converge on social media during an emergency are typically looking for information or connection, social networking can also lead to practical collective activity [41], including activity off-line [41] [53]. While it has been contended that social networking can dilute the significance of geographical communities in favor of diffuse virtual communities, emergencies have been observed to elevate the importance of local neighbourhoods and communities [41].

Unlike offline convergence, online convergence may initially depend on the initiative of one or a few keen individuals to create a dedicated online “space,” be it a bulletin board, a Facebook group, or a hashtag.<sup>4</sup> Yet once the space is formed, convergence can be boundless and unlimited, giving DEEV the potential to incorporate very large numbers of participants [6] [13]. While there is no aggregate evidence of increased numbers of DEEV participation over and above participation in traditional emergent volunteering, the cases discussed suggest DEEV has the capacity to quickly and massively snowball. With anecdotal evidence suggesting citizen volunteering with Voluntary Service Organizations (VSOs) after emergencies is declining, the large number of human resources available through DEEV and other self-help voluntary formations will likely assume increasing degrees of importance (VSOs) [7].

#### 4.1.2 Altruism

Social network sites provide a fertile medium for the spontaneous altruism that emerges after disasters. Sam Johnson and Brian Singh, founders of the Christchurch Student Youth Army and

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<sup>4</sup> An exception to this requirement for an initiating or coordinating individual would be if all the voluntarism emerged around a hashtag, as a good deal of it (but not all) did in the Calgary #YYCHelps case [24].

the YYCHelps volunteer organizations respectively, expressed the motive of concern to help their communities after the disasters that struck them [42] [47]. Being able to rally social networks through social media empowered them when they could otherwise have felt “helpless” to create mutual aid societies from scratch [47].

Once DEEV platforms were established, other individuals inside and outside of the founders’ social networks were also motivated by altruism to participate. Exchanging help was one of the internet’s first activities [53], suggesting that “connected giving” is embedded in the networked functionality of Web 2.0. The emotionally rich landscape of social media, where people can tell their stories directly and have them shared across diverse connected social networks, is well-designed to draw out altruistic feelings and actions [8]. The boundless nature of online communities [6] may even expand the scope for altruistic feeling across physical distance, as when Occupy Sandy volunteers and YYCHelps volunteers felt compelled to assist in communities beyond their own.

### **4.1.3 Emergence**

Like traditional emergent volunteering, DEEV features signature characteristics of emergence, in particular the loose and unpredictable coordination of previously uncoordinated individuals [20]. Social networking is ideally suited for emergent behaviour after emergencies because it pulls a wide sphere of actors and information into systems where these can be more easily leveraged [15]. This suitability can be seen in the described cases in Section 3, where DEEV brought together people with diverse skills and resources but typically without pre-existing disaster management roles and experience, so diverse and unexpected approaches to problems were taken to solving problems.

### **4.1.4 Collective intelligence**

DEEV’s success in the cases described was due to the contributions of individuals with diverse skills socially connected into networked organizations. The “horizontal structure” of the DEEV groups allowed them to respond with agility to diverse needs and changing circumstances [24]. As Brian Singh suggested, despite how we live in a “risk adverse society moving at the speed of bureaucracy,” in the case of YYCHelps, “the kick-starter of volunteerism [was built] in 3 days” [47]. In Occupy Sandy, networked intelligence thrived, as any member of an organization was empowered to test and to adapt ideas on the ground [8].

In general, intelligence gathering and production on social media self-regulates for accuracy, particularly when official authorities are quick to monitor for circulating disinformation and rumours and to publish corrections on them using their own social media sites [52].

### **4.1.5 Gap-filling**

Initiators of DEEV in the cases described observed or anticipated a shortfall of official emergency management resources to help all individuals affected by emergencies in a timely fashion. The turn to social networks was undertaken to take matters into the community’s own hands and to fulfill unmet needs through the possibilities of innovation and coordination these networks enabled [41]. Widely distributed social networking technology appears likely to give the public

an increasingly important essential role in ongoing effective emergency response, “push[ing] on boundaries between informal and formal rescue and response efforts” [53].

#### **4.1.6 Resilience**

During the early days of social media it was thought online interaction might distract people from community based social activities and diminish social capital [54]. More recently, there has been greater attention paid to the ways social media amplifies real-world social mobilization by making it easier to initiate and realize community-based self-help activity [34] [55]. Especially after emergencies, online social networks enhance resilience by permitting timely contact and support among citizens, and facilitating social cohesion, community self-reliance, and recovery [29] [41] [55]. Even when convergence and coordination are blocked by physical obstacles—as after the Christchurch earthquake [42]—they may be permitted by social media, making it important for resilience. The enhanced informational flow and dialogic communication enabled by social media allows communities to assume agency in their recovery processes [29], helping to realize the overall goals identified by the DRDC SMEM Expert Roundtable of “empowered, engaged, and resilient citizens” [2]. Canada’s Third Annual National Roundtable on for Disaster Risk Reduction dedicated a breakout group to discussing the importance of leveraging social media to build community resilience [9].

Notably, in each of the described cases in Section 3, DEEV activity took off quickly due to its ability to mobilize a pre-existing community, whether a student community, an activist community, or a civic community. The cases demonstrate how it is easier to rally a social network during an emergency if it is already characterized by history and trust [40]. Yet the cases also suggest that once DEEV gains ground in a particular social network, it can go on to increase community social capital by expanding the initial network and potentially offering less connected community-members a way to connect up.

#### **4.2 Special characteristics of DEEV on social networking sites**

The latter three examples of DEEV—namely Christchurch Student Volunteer Army DEEV, Occupy Sandy, and YYCHelps—were initiated on popular social media sites such as Facebook and Twitter and express some key characteristics of contemporary DEEV that give it the ability to rapidly expand and achieve results. These characteristics were identified from a survey the literature on digital social networking in general and on crisis informatics in particular. Two of these characteristics, *established user base* [51] and *weak tie networks* [57], explain why DEEV undertaken on social networking sites is particularly effective at facilitating community coordination in the current age of social media. The remaining two attributes, *participatory culture* [59] and *expectations of instantaneity* [8], explain why many socially networked members of the public may choose to initiate or participate in DEEV during emergencies over other options, such as volunteering with VSOs.

### 4.2.1 Established user base

Contemporary DEEV on social networking sites such as Facebook and Twitter presents significant advantages over earlier forms on blogs and bulletin boards. First, newer instances of DEEV have been able to tap into vast interconnected social networks already in place before the crisis occurs. With 50% of Canadians using Facebook every day<sup>5</sup> and many people connected 24/7 by mobile devices, social convergence after emergencies is no longer a niche phenomenon but potentially inclusive of large swathes of the public.

Secondly, by contrast with earlier forms of DEEV that made use of relatively specialized forms or adaptations of technology, the newer forms make use of widely familiar technology and practices. Facebook and Twitter are “ready staging ground[s]” for the activation of DEEV, which can be initiated by and participated in by practically anybody [51].

Maintaining overlapping memberships in a variety of social networking platforms can further facilitate DEEV effectiveness. Recent instances of DEEV suggest the recipe for success involves combining a closed forum platform such as Facebook, which enables dialogue among cohesive, trusting groups, with an open forum platform such as Twitter, which opens out to an infinite network for expanding the membership and information base. Switching among these platforms helps DEEV initiators and supporters maximize the emotional appeal and functional capacity of their *ad hoc* organizations.<sup>6</sup>

The persistent popularity of Facebook and Twitter suggests forms of DEEV that make use of these platforms will persist for the foreseeable future. As long as these, as well as other social networking platforms such as Youtube and Instagram, remain popular and capable of being monitored to some degree, DEEV may demonstrate predictable forms that EMOs can plan for and engage for “surge capacity.”<sup>7</sup>

### 4.2.2 Weak tie networks

Intensive users of social networks such as Facebook and Twitter maintain regular contact with a wide network of current and past friends and even remote acquaintances, called “weak ties” [57]. Weak ties are effective bases of social mobilization because they link individuals with different skills, affiliations, resources [22] [40]. By means of common acquaintances or “hubs,” social networkers connect up with the networks of others, producing an infinite sphere of weak ties that can be effectively deployed for personal or collective causes. A large number of weak ties correlate with success in finding a new job [57]; likewise, in a study on social networks in disasters, victims obtained most informal support in the recovery phase from individuals outside their core networks [58]. For obtaining information, weak tie networks are advantaged over

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<sup>5</sup> <http://www.ctvnews.ca/canada/10-million-canadians-use-facebook-on-mobile-every-day-1.1693501>.

<sup>6</sup> For more intensive or specialized forms of coordination, DEEV coordinators often move to Skype, YouTube, crisis mapping, or crowdsourcing platforms.

<sup>7</sup> Specialized social networking platforms for use in emergency have been piloted, but these have not caught on, presumably because emergencies are unforeseeable and rare, and so large numbers of people are not likely to build networking habits expressly for them [38][51][56].

strong tie networks of family members and close friends, whose information may be largely redundant [51].

Weak tie networks are particularly effective at coping with turbulent environmental demands involved in an emergency because of how they leverage diverse sources of information, ideas and resources [17] [29]. The cases demonstrate how DEEV mobilizes weak tie networks amidst communities facing emergencies to enable the success of their efforts and enhance the resilience of their communities as a whole.

### **4.2.3 Participatory culture**

Social media has encouraged the development of a participatory culture in which people are drawn to participate actively in events around them [59], including emergency response [60]. In the words of Patrice Cloutier, “[i]t’s not your emergency anymore—audiences want to play a role” [48].

Numerous options exist for socially networked citizens to participate in emergencies, such as digital volunteering [1] or citizen reporting [17]. Also, some citizens may choose to affiliate with on the ground VSOs [10]. However the analyzed cases of DEEV suggest that for certain types of citizens its spontaneity, flexibility, and unhierarchical character makes it an especially viable and attractive option. As Brian Singh from YYCHelps suggested, “some people [...] may not traditionally fit” into VSOs and so may feel more comfortable with looser volunteering structures such as DEEV [47].

As well, the types of flexibility and creativity people are used to participatory culture [59] are well-accommodated by DEEV, which might be one reason participation in VSOs is falling while engagement in disaster relief activities through social networking appears to be picking up the slack [7]. As the Occupy Sandy and #YYCHelps cases both showed, the unhierarchical character of DEEV allows people to bring in their individual skills and resources and to improvise decisions, which mirrors how people express themselves in the participatory culture of social media [59]. VSOs generally do not feature scope for citizens to take on tasks creatively or in keeping with their personal sense of urgency [19].

### **4.2.4 Expectations of instantaneity**

Another reason why DEEV is growing as a phenomenon may be due to expectations of instantaneity conditioned by social networking and by contemporary mass media in general [30]. Emergent volunteering is typically set in motion by perceived or expected lags in official response [6] [18]. The analyzed cases of DEEV suggest when there is an expectation of delays or shortfalls in official rescue and recovery efforts, certain social networkers will not resign themselves to delays and will initiate action amongst their social networks to fill the gap. As well, citizens who want to help immediately may be inclined to participate in DEEV, perceiving that it fast-tracks action and bypasses some of the stages of authorization and orientation typically required by VSOs [8].

## **5 Risks and benefits of digitally enabled emergent volunteering (DEEV)**

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The DEEV cases described in Section 3 as well as research on managing spontaneous volunteers indicate there are risks as well as benefits to the involvement of DEEV participants in emergency response. Many of the risks can, however, be mitigated by an EM strategy that anticipates and engages with DEEV activity in a proactive way, as described in Sections 6.2 and 6.3.

### **5.1 Risks**

#### **5.1.1 Organizational difficulties**

If unanticipated, an influx of DEEV volunteers at a disaster site could cause confusion, distraction, wasted time and resources, blockages, and other impacts contributing to poor delivery of emergency management services [10] [19]. Actions taken by DEEV groups that are uncoordinated with other groups could potentially lead to duplication of efforts, obstructions, and other consequences of an inadequate common operating picture [8].

#### **5.1.2 Safety and security issues**

Spontaneous volunteers who are poorly equipped and inadequately trained could engender safety or security risks to themselves and others [8] [19] [61].

#### **5.1.3 Bad motives**

DEEV participants, like other emergent volunteers, tend to make rapid assessments about whether other participants are trustworthy based on cooperation or completion of tasks rather than on credentials [8]. In rare cases, inadequate vetting may permit people with bad motives to exploit individuals who are vulnerable after emergencies [8] [62].

#### **5.1.4 Liability**

EMOs and VSOs that coordinate with or promote DEEV groups could assume liability for safety hazards assumed by DEEV participants [61], or else may be concerned about doing so, inhibiting collaboration [8].

#### **5.1.5 Authority**

Emergent groups such as DEEV typically operate outside formal authority structures [15]. As such, DEEVs who take on roles and tasks early in an incident may be unwilling to recognize official response leaders when they come on the scene [19]. They may find the structural limitations of bureaucratic EMOs frustrating and believe they can better satisfy the needs of



communities [19] [8]. In turn, communities who initially invest trust and credibility in DEEV groups may be unwilling to shift them to official groups [8].

### **5.1.6 Privacy**

DEEV groups may receive and use crowdsourced or other data that has not been adjusted in keeping with privacy legislation and that may put official organizations at risk of breaching legislation if they access this data [37].

## **5.2 Benefits**

### **5.2.1 Resources**

Spontaneous community-based volunteering such as DEEV augments available manpower, skills, and abilities for emergency management [18]. Accordingly, work is underway in EMOs to develop strategies to maximize the potential of spontaneous community volunteering, with courses such as “Management of Spontaneous Volunteers in Disasters” now offered by state EMOs in the United States.<sup>8</sup> These courses typically advocate processes for routing unaffiliated volunteers after emergencies into established volunteer organizations [10]. However, in some contexts there may not be sufficient VSO capacity to integrate large groups of emergent volunteers quickly and adequately [14].<sup>9</sup> EM systems without capacity to coordinate spontaneous volunteers may face exacerbated risks of poorly integrated volunteers, as described in Section 5.1, and may neglect opportunities to save people or property [19].

As well, the approach of integrating individual emergent volunteers does not provide guidance for what to do when groups spontaneously begin to collectively organize voluntary activities, as in DEEV. In such cases, the United States’ Points of Light Foundation recognizes the need to “manage groups of unaffiliated volunteers [...] with appropriate attention paid to their leadership structure” [10]. Experts on emergent voluntary organization likewise see leveraging emergent groups such as DEEV groups in the forms in which they take shape as preferable to trying to reorganize them [11] [63]. As described in Section 4, DEEV presents many useful and distinctive assets for community collaboration in emergency response. Strategies for leaving established DEEV networks structurally intact and coordinating them as corps may be more constructive for facilitating a powerful community-based volunteer response to emergencies than trying to redistribute them, which are likely to be counterproductive [63].

### **5.2.2 Resilience**

Canada’s Third Annual Working Group on Disaster Risk Reduction called for “building community resilience by advancing discussions about innovative ways government, organizations, the private sector and individuals can reduce the risks and impacts of disaster” [9].

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<sup>8</sup> See, for instance, <http://training.dps.mo.gov/>.

<sup>9</sup> While parts of the United States have a network of Volunteer Organizations Active in Disasters (VOADs), many of them faith-based, other contexts may not all present as fulsome a picture of active and ready volunteer organization after emergencies.

As described in Section 4.1.6 DEEV activity enhances the resilience of communities. DEEV and other forms of grassroots volunteering activities improve the outcomes of emergency operations by introducing the community's capabilities, values, knowledge, and resources while building social capital [51]. In the long term, empowering grassroots community efforts such as DEEV enhances community resilience because it allows communities to form skills and map assets for ongoing use [14].

## 6 Recommendations: Connecting with of digitally enabled emergent volunteering (DEEV)

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### 6.1 Overview

As described in Section 5, involving DEEV in emergency relief and recovery presents distinctive risks but also offers significant benefits from the perspective of the whole-of-community approach to emergency management. There is therefore value in EMOs developing supplementary institutional policies and practices for integrating DEEV into official emergency response when it arises.

Developing such policies and practices is not a straightforward matter. It is widely acknowledged better ways are needed to coordinate DEEV and other emergent volunteers to ensure their activities do not conflict with the formal effort [6] [41] [63]. Yet while EMOs, particularly in the United States, are making headway in developing policies for integrating individual spontaneous volunteers [10], they are still struggling to develop adequate policies for coordinating with emergent volunteer groups such as DEEV, and there remain few examples of successful collaboration.

One reason for the slow progress might be that DEEV and even social media are fairly new phenomena from the perspective of emergency management, such that there are very few available guides or procedures for integration [52]. Another reason might be that existing EMO culture is not optimal for coordinating emergent community resources [14]. The DRDC SMEM Expert Roundtable observed a need for a “paradigm shift” in EM culture towards “agile EM organizations that leverage the public’s potential” and “facilitate new digital forms of collaboration and partnership during emergencies” [2]. Dynes suggests for EMOs to successfully integrate community resources, including emergent volunteers, a shift is needed away from an authority-centralizing culture of “command and control” towards a flexible culture of “collaboration and coordination” [11] [64]. Such EMOs would be prepared to collaborate with diverse, improvisational, bottom-up initiatives from affected communities [14] [23] [30], including DEEV, and to coordinate these initiatives to achieve effectiveness, safety, and legality [3] [11] [25] [64].

Understanding institutional transformations are more likely to be gradual than abrupt, we have envisioned and laid out a practical six-stage process to prepare EMOs for identifying and engaging with DEEV activity. The first stages, *Cultivate* and *Anticipate* would precede an emergency. The subsequent stages *Identify*, *Engage*, and *Coordinate* would be undertaken during an emergency, and the final stage *Evaluate and Learn* would occur after the emergency had passed.

## **6.2 Best practices for connecting with DEEV: Before an emergency**

### **6.2.1 Cultivate**

In general, engaging with organizations and community groups in pre-crisis planning builds EMOs capability for handling emergent groups [19]. Institutions and scholars have proposed more engagement across the society to anticipate and prepare for disasters is essential for nurturing resilient communities that can rely at least partly upon themselves, according to the whole-of-community model of emergency management [12] [29]. Canada's Third Annual Roundtable on Disaster Risk Reduction observed "practicing [Disaster Risk Reduction] should become a way of thinking within communities" [9].

EMOs should ideally familiarize themselves in advance with community organizations [10]. Awareness of neighbourhood, community, ethnic, faith-based, school, university, and Special Needs community associations could be used to prompt these associations to develop community resilience strategies in advance of emergencies [49]. As well, these organizations might have group Facebook pages that could be sites of DEEV organization. These pages cannot generally be monitored during an emergency because they are typically restricted to group members, but having an awareness of them could help EMOs reach out to individuals in charge of key communication channels during emergencies.

In their engagement with communities, EMOs can identify, connect, and support community skills, resources, infrastructure, and training assets in advance, giving these assets greater likelihood of coming together during emergencies [12]. Community mapping can identify and highlight these resources [12]. Letting communities know self-help mechanisms are encouraged in the event of an emergency could spur useful forms of DEEV as well as offline forms of grassroots volunteering into existence when it is needed [7].

At the same time, community members could be encouraged to affiliate themselves with VSOs where they could obtain formal training in emergency management operations, thus mitigating risks from untrained emergent volunteers [10] [61]. VSOs could simultaneously be encouraged and supported to enlarge capacity for integrating and training spontaneous volunteer resources in the event of an emergency [10]. EMOs and VSOs could also facilitate the development of more robust corps of community volunteers, emulating United States organizations such as Citizens Corps Councils, Tech Corps Teams, Community Emergency Response Teams (CERTs), Community Organizations Active in Disasters (COADs) and Voluntary Organizations Active in Disasters (VOADs) [10].

### **6.2.2 Anticipate**

Although DEEV is by its very nature unpredictable, EMOs should plan for its emergence during emergencies [19]. Anticipating DEEV will put EMOs in a better position to support and guide positive instances and also to intervene if activity assumes unsafe or otherwise problematic forms [19] [65]. The following elements should be in place so they can be put into action in case of an emergency:

- **Policies and forms:** EMOs should develop clear operating policies for how they will monitor for DEEV activity on social media and how they will interact with DEEV should it arise. A section on managing emergent volunteers should be developed for inclusion in emergency plans [63]. Volunteer liability issues, laws, insurance policies, and hazard analyses that could affect unaffiliated volunteer utilization should be researched [10].<sup>10</sup> Agreement forms and contracting provisions for use with emergent groups, liability waiver forms for spontaneous volunteers, and protocols for suspending regulations and legal requirements that could interfere with volunteer contributions to emergency relief and recovery could be developed [63] [19]. Disclaimer statements can be prepared to minimize liability for emergent groups or activities that are promoted online [15]. See Annex A for information about how other countries have construed liability issues and developed policies and forms for spontaneous volunteers.

EMOs may wish to pre-design a set of rules for conduct and operation for emergent groups and volunteers, including DEEV. It would additionally be valuable to source just-in-time-training curricula in emergency relief tasks for spontaneous volunteers such as were developed by Occupy Sandy [8] as well as individuals capable of providing this training.<sup>11</sup>

- **Personnel:** There should be a public information officer in the Emergency Operations Centre (EOC) with expertise in social media monitoring and engagement [52] who can be assigned to additionally monitor for DEEV activity. As well, a specific person in the EMO or from a VSO should be assigned to liaise with emergent volunteers and DEEV groups that arise [63]. Ideally this person would have training in emergency management as well as volunteer coordination. Emergency management with specific training in managing emergent volunteers, as is being developed in the United States, is especially desirable [61].<sup>12</sup>
- **Platforms:** EMOs should have internal social media monitoring functionality with monitoring platforms that can help automate monitoring and focus participation in social media dialogues [52]. EMOs might also gain familiarity with online emergency management systems [8] such as Crisis Cleanup<sup>13</sup> that coordinate the activity of volunteer disaster relief groups in relation to needs. Developing a Virtual Volunteer Reception Center on which volunteering opportunities could be posted and registration forms could be provided for unaffiliated volunteers in the event of an emergency could additionally prove helpful.<sup>14</sup>

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<sup>10</sup> Preliminary research suggests the Canadian picture of volunteer liability as well as organizational liability for volunteers is complex and mixed, with different rules set out in different provincial legislations. See [http://www.publiclegaled.bc.ca/wp-content/uploads/2013/07/English\\_Volunteers-and-the-law\\_2000.pdf](http://www.publiclegaled.bc.ca/wp-content/uploads/2013/07/English_Volunteers-and-the-law_2000.pdf) and [http://www.volunteerkw.ca/vac%5Cjobsandmore%5CVolunteers\\_and\\_The\\_Law\\_Stout.pdf](http://www.volunteerkw.ca/vac%5Cjobsandmore%5CVolunteers_and_The_Law_Stout.pdf).

<sup>11</sup> Some excellent brief video training resources are available at Disaster Resistant Communities Group website: <http://www.drc-group.com/>.

<sup>12</sup> See [http://www.nationalservice.gov/sites/default/files/resource/hon-cnsc-msvtd\\_trainer\\_guide.pdf](http://www.nationalservice.gov/sites/default/files/resource/hon-cnsc-msvtd_trainer_guide.pdf).

<sup>13</sup> See <https://crisiscleanup.zendesk.com/hc/en-us>. In our conversation with the developer of Crisis Cleanup, Aaron Titus, he proposed his software could be used in the Canadian context if it had a Canadian sponsor to oversee its use in compliance with Canadian privacy regulations.

<sup>14</sup> See [http://www.handsonnetwork.org/files/virtual\\_volunteer\\_reception\\_center\\_one\\_pager.pdf](http://www.handsonnetwork.org/files/virtual_volunteer_reception_center_one_pager.pdf).

It has been further recommended that EMOs develop information-sharing protocols that could facilitate the expansion of communication networks with partner groups, as well as, open data standards permitting data volunteers to “mash up” incoming data, for instance into mapping applications [18] [8].

- **Social network presence:** For EMOs to be prepared to engage with and leverage DEEV assets during an emergency, a consistent social media presence is necessary [30]. By cultivating a consistent presence on popular social media sites such as Facebook and Twitter in advance of an emergency, EMOs can ensure their pages are widely subscribed and that they have public clout and trust during an emergency [66].

Furthermore, assuming a dialogic manner on social media that habitually listens and responds to citizens is necessary for social media relevance and enhances community confidence and resilience during an emergency [1] [29] [60] [66]. As citizens will request and require information on a real-time basis, EMOs should strive as far as possible to minimize delays entailed in verification of information and the authorization of communications [52]. Conducting exercises in advance to practice the handling of an emergency on social media is recommended [52].

- **Social network relationships:** Social media analytics can be used to determine key community influencers and engagers on social networking sites such as Twitter. Being prepared to channel essential information to influential individuals or “Superspreaders” during an emergency can magnify its impact [1] [67].<sup>15</sup> Individuals who are influential in offline context could become hubs for online DEEV activity during an emergency or be in the position to initiate DEEV under the auspices of the EMO, if desired [7]. If an EMO is concerned about a shortfall of internal capacity to monitor social media during an emergency, a virtual operations support team (VOST) should be consulted in advance for how it may support these tasks [1].

## 6.3 Best practices for connecting with DEEV: During an emergency

### 6.3.1 Identify

During the emergency, EMO staff should be conducting social media monitoring to listen to, influence, and engage the public as resources and partner [1]. Monitoring should encompass not only the EMO’s Facebook and Twitter accounts, but also relevant open source activity on Facebook or Twitter as well as other popular platforms such as Instagram, YouTube, Flickr, and Picasa to obtain a perspective on the “back-channel” discussion of the emergency [68]. Additional help in social media monitoring can be provided by digital volunteers such as VOST teams [1].

An active presence on social media is essential to identifying DEEV activity and being available to DEEV-initiated requests. The social media monitor should be enabled to obtain quick

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<sup>15</sup> The Canadian Red Cross Social Team is an example of an effort to leverage celebrities and other influential social media practitioners to amplify emergency messages. See <http://www.redcross.ca/about-us/newsroom-/the-canadian-red-cross-social-team>.

authorization to respond in a suitable way to requests and repeated inquiries [60], as failure to respond to requests by the public can lead to a loss of trust in official agencies and their communications [19].

### **6.3.2 Engage**

If DEEV activity is discovered, the EMO's social media and/or a volunteer coordinator should attempt to identify and contact the initiators through social media channels, understanding that leadership may be evolving [63]. If possible, cell phone numbers of leaders and volunteers comprising the communication channels should be obtained [63]. Mapping the structure and function of the DEEV organization will further increase the likelihood of being able to integrate it into the overall concept of operations [63]. DEEV groups that remain isolated may not develop their full potential to contribute to the emergency response effort [63]. In the worst cases, they may create a hindrance or assume an adversarial stance, leading to conflict or risks to safety and security [29].

### **6.3.3 Coordinate**

Several alternative approaches may be taken when DEEV or other emergent volunteering is identified. The policy recommended by agencies in the United States such as the Corporation for National and Community Service and the Points of Light Foundation is for municipalities to establish Voluntary Reception Centres (VRCs) where unaffiliated volunteers can register with established VSOs who are experienced at different types of voluntary work and can provide training [10; see Annex A for information on how to set up VRCs]. These agencies do, however, make allowances for the possibility of registering emergent voluntary groups with distinctive leadership structures, presumably in the understanding that the value of emergent groups may be lost if there is an effort to dismantle them [10] [63]. It has been suggested a volunteer coordinator from the EMO or a VSO should attempt "to identify and utilize the existing organizational paradigm" of emergent groups, rather than trying to redistribute their members according to a different institutional model [63]. As seen in the case of YYCHelps, described in Section 3.3.3, an alliance between official municipal organizations and a spontaneous DEEV organization can be highly effective for streaming spontaneous volunteering resources towards urgent community needs.

If the EMO's goal is to support the DEEV in its existing structure, measures should be taken to formalize liability and other agreements with the DEEV using the policies, forms and agreements recommended in Section 6.2.1. At this point, it is also recommended that a representative of the EMO team or a trusted VSO offer his or her services as a volunteer coordinator to the emergent group [63]. The volunteer coordinator could recommend and oversee procedures for vetting and registering volunteers and obtaining signed liability waivers from volunteers, as was seen in the case of YYCHelps [3]. The volunteer coordinator could also attempt to introduce safety protocols and coordinate just-in-time training opportunities of the sorts implemented by Occupy Sandy [8] [63].

Introducing EMO personnel into the DEEV holds numerous advantages, including providing a key communication link back to the EMO, facilitating shared situational awareness and a coordinated concept of operations [63], and reinforcing the leadership of the EMO over the

emergency response as a whole [63]. In the case of Hurricane Sandy, enhancing communication and data-sharing between the EMO and Occupy Sandy improved on-the-ground coordination and the emergency response effort as a whole [8]. Another measure the EMO may take to increase the potential of a DEEV while enhancing communication and coordination is to co-locate a DEEV representative within the EMO operations centre [63]. If a good relationship is established with a DEEV group, the volunteer coordinator may be able to curtail duplicatory or dangerous services being undertaken by the group and to direct the group's efforts towards the objectives that will fit best within the crisis response effort as a whole [63].

If a number of EVOs are arising, a volunteer coordinator could be in the position to stream a range of volunteer assets against needs according to the skills they provide [15]. In this case, the volunteer coordinator is recommended to institute a division of labour, and possibly also to mandate the use of a management system [19] such as "Crisis Cleanup" to distribute and establish accountability procedures for tasks.

## **6.4 Best practices for connecting with DEEV: After an emergency**

### **6.4.1 Evaluate and learn**

After the emergency has concluded, it would be valuable to evaluate the strategies for engaging with and coordinating DEEV and to consider what risks, benefits, and best practices were revealed by the experience [10]. Positive elements of the experience should be publicized and used as bases for defining ongoing practices and cultivating community-based relationships [10]. Negative elements and revealed risks should guide reflection on how protocols and policies should be amended and augmented in preparation for future emergencies [10]. Established DEEV groups may be encouraged to stabilize their identities as community-based resources for emergency recovery preparedness or other services, as occurred in the case of Christchurch's Youth Volunteer Army [42].



## 7 Conclusion

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The cases discussed in the report suggest there is value in taking a positive approach to DEEV and regarding it as an asset for emergency response. While spontaneous volunteering activity such as DEEV presents risks as well as benefits, it will inevitably arise in some forms in emergency situations, and proactively anticipating it is a best practice for mitigating risks while maximizing benefits. Meanwhile, DEEV's public face in open forum social media platforms presents EMOs with excellent opportunities for strategic engagement with what national and international cases suggest can be a well-functioning and highly effective community asset. Connecting with DEEV activity is further in keeping with many EMOs' goals to transition to a whole-of-community approach to emergency management that develops community-based resources for emergency response while enhancing community resilience.

With Canada's highly networked infrastructure and culture, Canadian EMOs could potentially play a more significant role than they have to this point in establishing groundwork for integrating DEEV into official emergency response in ways that build community resilience. Further research is warranted on the probability and predictability of DEEV activity; on whether affiliated citizen volunteering with VSOs is on the decline in Canada and whether DEEV and other types of spontaneous volunteering are, or conceivably could, fill this gap after emergencies; on how EMOs can cultivate and successfully integrate DEEV into concepts of operation for emergency management; and on how Canadian EMOs can leverage whole-of-community organizational models to adjust to a likely future of reduced official emergency management resources and increased diverse grassroots bases of emergency management support.

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# Annex A Recommendations and protocols for managing spontaneous volunteers

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The following documents were revealed through a web search for official or quasi-official recommendations and protocols developed or studied in English speaking countries for managing spontaneous volunteers.

## A.1 International documents

### A.1.1 Guidance for involving volunteers in the response to major incidents (standard in development, 2015)<sup>16</sup>

As of March 2015, Duncan Shaw, Professor of Operations and Critical Systems at Manchester Business School (UK), is writing this standard for the International Standards Organization (ISO 22319). It is intended for use by organizations involved in planning for, or working with, spontaneous volunteers, including governmental agencies and international and non-governmental organizations, and will provide guidelines for a framework for the involvement of spontaneous volunteers (SVs) in incident response and recovery. It will establish a framework for considering whether, when, and how SVs can provide relief for all identified hazards and will help organizations develop their own risk-sensitive frameworks for involving SVs. Shaw indicated in a PowerPoint presentation that countries being consulted on the development of the standard include Japan, Canada, France, Korea, Germany, Russia, South Africa, Sweden, Switzerland, and the UK.<sup>17</sup>

## A.2 National documents

### A.2.1 Australia

#### A.2.1.1 Spontaneous volunteer management resource kit (2010)<sup>18</sup>

Australia's Department of Social Services published a 95-page Spontaneous Volunteer Management Resource Kit whose development was overseen by the Australian Red Cross, funded by the Department of Families, Housing, Community Services and Indigenous Affairs, and incorporated wide consultation across sectors and regions. The approach of the kit focusses on the need to identify skilled SVs and to keep others away from the affected area. The kit accordingly sets out strategies for regions to:

- develop coordinated approaches to the management of SVs, with a coordinating agency and coordinated communication and management strategies;

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<sup>16</sup> <http://utv.isotc223.org/under-development/iso-22319/>.

<sup>17</sup> <http://www.vssn.org.uk/wp-content/uploads/2015/05/2015MayMargaretHarrisDuncanShaw-SpontaneousVolunteers.pdf>.

<sup>18</sup> <https://www.dss.gov.au/our-responsibilities/communities-and-vulnerable-people/publications-articles/spontaneous-volunteer-management-resource-kit-0?HTML>.

- establish criteria for volunteering organizations to which the coordinating agency will refer potential SVs in advance of or in an emergency, such as whether it has insurance and release from liability, which could exclude emergent organizations;
- develop toolkits of resources for the registration, screening, training and deployment of SVs;
- designate an SV coordinator who has an overview of the spontaneous volunteer recruitment and training needs;
- establish a centralized website and registration process for people to register interest in volunteering in advance of, or during, emergencies and to look for opportunities;<sup>19</sup>
- develop processes to identify appropriately skilled and credentialed SVs and to validate their credentials, including fast-tracked police checks;
- establish SV screening, inducting, training, briefing, ID-ing, equipping, supervising, buddying, rostering, logging, debriefing, recognizing, and supporting procedures;
- develop a communication strategy to divert SVs without appropriate skills away from the scene of the emergency and towards other activities such as fundraising, and otherwise to manage public expectations; and
- run an annual simulation to test preparedness of people and systems in managing SVs.

In addition, the kit calls for VSOs to:

- develop organisational sub-plans linked to their mission and fundamental principles for how and whether they will use SVs;
- pre-identify the skills and roles they may need SVs to fill in an emergency; and
- conduct risk assessment and developing strategies for risk mitigation in the use of SVs.

#### **A.2.1.2 Harnessing the power of spontaneous volunteers in an emergency: Manager of spontaneous emergency volunteers (MSEVs) pilot program in the G21 region (2015)<sup>20</sup>**

This study was published in February 2015 to pilot the recruitment and training of Managers of Spontaneous Emergency Volunteers (MSEVs) in the Province of Victoria. It built off a 2012 Victorian Emergency Management White Paper (inaccessible) which recommended the development of strategies to manage SVs during relief and recovery efforts. The role of the MSEV was to supply capacity to municipalities within the first 3–4 weeks of an event with tasks such as handling enquiries from and registering potential SVs; performing reference and background checks; and briefing and debriefing SVs to volunteering roles. Specific objectives were to set up a central register of MSEVs willing to be called on in times of emergency and to develop an online resource centre to support MSEVs in managing SVs in a variety of settings and disaster types. Project outcomes were a community-demand driven SV deployment model ensuring affected communities are assisted and remain in charge; reduced likelihood that personnel from emergency service agencies have to be manage SVs; and enhanced community emergency preparedness, capability and resilience.

<sup>19</sup> See <http://Emergencyvolunteering.com.au>.

<sup>20</sup> [http://www.volunteeringgeelong.org.au/home/documents/MSEV\\_G21\\_Pilot\\_ProgramFinalReport.pdf](http://www.volunteeringgeelong.org.au/home/documents/MSEV_G21_Pilot_ProgramFinalReport.pdf).

## **A.2.2 New Zealand**

### **A.2.2.1 Spontaneous volunteer coordinator (tutorial; unknown year)<sup>21</sup>**

New Zealand used to run this program developed for the Ministry of Civil Defence and Emergency Management. The entity that gave the training program (Fire and Rescue Services Industry Training Organisation) appears not to exist anymore, however. Moreover, it is not entirely clear whom the training was intended for. The training covered how to:

- screen, register, and brief SVs on responsibilities, safety procedures, lines of communication and accountability, and equipment;
- manage SVs during an emergency; and
- debrief SVs and give feedback; provide follow up assessment, on-going assistance, individual referrals to other agencies, and letters of thanks.

## **A.2.3 United Kingdom**

### **A.2.3.1 The paradox of spontaneous volunteering in high hazard environments: Lessons from winter flood episodes in England (2015)<sup>22</sup>**

This PowerPoint presentation by Shaw and Harris was presented at the Voluntary Studies Sector Network meeting in May 2015. Shaw and Harris observe a paradox in that SVs invariably come forth in emergencies and are potentially useful for augmenting emergency response assets, but official responders and other emergency response agencies and organizations lack time and personnel to allocate appropriate tasks to them and supervise them. Some preliminary recommendations they make are to increase the scope for SV involvement by:

- recognising the usefulness of the knowledge, networks, and resources of local SVs and building awareness in the response community of why SVs emerge;
- establishing a working group to develop national and local guidelines for managing SVs;
- anticipating arrival of SVs when drawing up local emergency plans and prepare resources, training, and equipment for them;
- defining acceptable levels of risk for SVs and practices for measuring and reducing risk;
- clarifying issues of liability and insurance;
- tasking organisations to manage and coordinate SVs;
- establishing a communications plan for engaging and a framework for managing SVs;

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<sup>21</sup> <http://www.nzqa.govt.nz/nqfdocs/units/pdf/23702.pdf>.

<sup>22</sup> <http://www.vssn.org.uk/wp-content/uploads/2015/05/2015MayMargaretHarrisDuncanShaw-SpontaneousVolunteers.pdf>.

- filtering SVs by using social and other media to call for specific skills and resources;
- developing centralized sites for registering and allocating SVs; and
- building resilience by pre-training and credentialing individuals as disaster volunteers and by retroactively converting SVs into affiliated volunteers.

## **A.2.4 United States**

### **A.2.4.1 Unaffiliated volunteers in response and recovery (2000)<sup>23</sup>**

This early guidebook for managing SVs was developed in 2000 in Florida for use by its counties. It proposes counties engage and arrange to fund a volunteer coordinating organization, or a volunteer coordinator of a not-for-profit organization, to act as the Coordinating Agency for SVs in the event of an emergency. It proposes the Coordinating Agency develop a public information plan and standard messaging for SVs before and during disasters. It further proposes the coordinating agency appoint a Disaster Response Coordinator who would:

- attend local emergency management planning meetings;
- gather information from volunteer organizations about their anticipated SV needs in disasters;
- build a network of community groups and encourage their members to affiliate and become trained with a local disaster response organization;
- develop a volunteer referral plan and gather supplies and contacts needed to open and resource a volunteer reception center (VRC); and
- recruit, train and orient volunteer staff to help operate the reception center.

The guidebook comes with sample go-kits for stocking VRCs, forms, logs, training guidelines etc.

### **A.2.4.2 Unaffiliated volunteer management: Florida's record-breaking 2004 hurricane season (2005)<sup>24</sup>**

This study was published by Volunteer Florida to evaluate Florida's management system for SVs, above. The study makes recommendations to inform strategic plans for managing SVs, such as to:

- forge relationships between the Coordinating Agency and local officials as early as possible;
- delineate roles and responsibilities of VRC directors clearly as they relate to local Emergency Operations Centres' organizational structures;

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<sup>23</sup> <http://www.volunteerflorida.org/wp-content/uploads/2013/03/UnaffiliatedVolunteers.pdf>.

<sup>24</sup> <http://www.volunteerflorida.org/wp-content/uploads/2013/03/UnaffiliatedVolunteers.pdf>.

- clearly indicate who will determine the location of a VRC and the criteria for mobilizing and demobilizing it;
- recruit and train experienced volunteer coordinators from local government, nonprofits and corporations to help staff the VRC; and
- oversee the selection or development of a suitable software package for managing SVs.

#### **A.2.4.3 Managing spontaneous volunteers in times of disaster: The synergy of structure and good intentions (2005)<sup>25</sup>**

This guidebook was developed by the Points of Light Foundation for use by local emergency management organizations or committees across the United States. It describes how to:

- develop a plan for managing SVs and include it in the local or regional Emergency Operations Plan;
- consult volunteer organizations that can utilize SVs in emergencies on priority roles;
- help volunteer organizations build capacity to absorb and integrate SVs in emergencies;
- research liability issues that affect SVs and encourage organizations that will receive SVs to clarify their limits of liability protection;
- develop standardized public education and media messages to use before, during, and after disaster events;
- form a Volunteer Coordination Team and identify and train a lead for unaffiliated volunteer management;
- conduct training and exercises for managing unaffiliated volunteers;
- build cooperative relationships with organizations such as youth groups, faith-based organizations, community organizations, ethnic organizations, etc.;
- prepare to establish a Volunteer Reception Center (VRC), designate an entity to manage VRC activities, potential sites and funding routes for the VRC;
- develop forms, key documents and “Go Kits” for the VRC and train paid staff and key volunteers to set up the VRC;
- develop registration, screening, and interviewing procedures for SVs;
- provide ongoing contact with volunteers after they have completed their service and maintain a database of volunteers with special skills; and
- capture and document success stories.

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<sup>25</sup> <http://www.cert-la.com/education/ManagingSpontaneousVol.pdf>.

#### **A.2.4.5 Managing spontaneous volunteers (tutorial)<sup>26</sup>**

This is an online tutorial by the Corporation for National Community Service and the Points of Light Foundation that expands on the above guidebook. In addition to the above guidelines, it advises representatives of municipalities to:

- include representatives from local government, nongovernmental organizations and other stakeholders in the Volunteer Coordination Team and give them access to the municipal Emergency Operations Center and Incident Command System organizational structures to ensure that it ties into the response in the event of a disaster;
- forge relationships with first responders;
- form agreements with the local Emergency Management Agency and government on liability coverage for SVs;
- identify potential partners that can be called upon for assistance in managing SVs, such as community associations, faith-based groups, etc.;
- prepare processes to ID and train SVs at the VRCs;
- develop and maintain supervision practices for SVs, such as briefing them on their assignment, watching for signs of stress and fatigue, and debriefing them after shifts;
- debrief volunteers more fully by a trained mental health officer after duty is complete and recognize their work; and
- after the disaster, hold evaluation sessions including disaster, staff, volunteers and members of the Community to share experiences and update the SV management plan.

#### **A.2.4.6 Managing spontaneous volunteers in times of disaster (participant materials)<sup>27</sup>**

This document, published by the Corporation for National Community Service and the Points of Light Foundation in 2006, is the participant materials for the above tutorial. It provides more detail on how to:

- create job descriptions for possible disaster volunteer needs;
- develop procedures for interviewing and screening SVs;
- locate, set up, staff, and equip a VRC;
- develop MOUs with volunteer agencies about accepting spontaneous volunteers;
- develop agreements with local corporations and stores to provide supplies for the VRC;
- pre-draft public messages for a large variety of situations; and
- supervise and recognize SVs and manage risks.

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<sup>26</sup> <http://learning.nationalserviceresources.org/mod/book/view.php?id=3198>.

<sup>27</sup> [http://www.mivolunteers.org/CMDocs/VCM/Resources/Disaster%20Response/Managing\\_Spontaneous\\_Volunteers\\_in\\_Times\\_of\\_Disaster\\_2009\\_UPS\\_HON%20\(1\).pdf](http://www.mivolunteers.org/CMDocs/VCM/Resources/Disaster%20Response/Managing_Spontaneous_Volunteers_in_Times_of_Disaster_2009_UPS_HON%20(1).pdf).

## **List of symbols/abbreviations/acronyms/initialisms**

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CERT	Community Emergency Response Teams
DEEV	Digitally-enabled Emergent Volunteers
DRDC CSS	Defence Research and Development Canada – Centre for Security Science
DVSROE	Digital Volunteer Supported Recovery Operations Experiment
EM	Emergency Management
EMO	Emergency Management Organization
FEMA	Federal Emergency Management Agency
SMEM	Social Media for Emergency Management
SV	Spontaneous Volunteer
VOAD	Voluntary Organizations Active in Disaster
VOST	Virtual Operations Support GT
VRC	Voluntary Reception Centre
VSO	Voluntary Service Organization
YYC	Airport code for Calgary (used as a slang reference for the city)

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Popular online platforms currently provide a virtual site for the convergence of citizens after emergencies. After convergence on online sites to gain information and participate in dialogue about emergencies, citizens may go on to spontaneously assume various online and off-line response and recovery tasks, which we have termed digitally enabled emergent volunteering (DEEV). DEEV represents surge capacity of voluntary labour and other assistance that can contribute to emergency relief and recovery operations in the aftermath of an emergency. The purpose of this research report is to assemble knowledge about DEEV from the fields of disaster sociology and crisis informatics, as well as from case studies, and to present best practices for how emergency management organizations (EMOs) can monitor for, engage with, and leverage this community resource while minimizing risks associated with spontaneous volunteering. Essential organizational elements for EMOs seeking to partner with the online public are a consistent program of social media monitoring and a dialogic approach to social media communications. Other important features of EMOs seeking to leverage DEEV activity to improve emergency outcomes are capacity to manage volunteer assets in the recovery and response phases of an emergency as well as flexible emergency management strategies that are open to collaboration with grassroots community groups.

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Les plateformes populaires en ligne offrent actuellement un endroit virtuel permettant de rapprocher les citoyens en cas de situation d'urgence. Après la convergence sur les sites Internet pour obtenir des renseignements et participer à des dialogues concernant une urgence, les citoyens peuvent spontanément assumer diverses tâches d'intervention et de rétablissement en ligne ou non, ce que nous avons désigné par l'appellation « bénévolat spontané dans un contexte numérique » (BSCN). Il s'agit d'une capacité de pointe du travail volontaire et d'autres formes d'aide pouvant contribuer aux interventions de secours et de rétablissement après une situation d'urgence. Le présent rapport de recherche vise à réunir les connaissances sur le BSCN (incluant la sociologie des catastrophes, l'informatique en cas de crise et les études de cas) et à présenter les pratiques exemplaires sur la manière dont les organismes de gestion des urgences (OGU) peuvent surveiller et mettre à contribution cette ressource communautaire, tout en minimisant les risques associés au bénévolat spontané. Parmi les éléments organisationnels essentiels pour les OGU cherchant à établir des partenariats avec le public en ligne, il y a un programme cohérent de surveillance des médias sociaux et une approche dialogique des communications dans les médias sociaux. La capacité à gérer les ressources bénévoles durant les étapes d'intervention et de rétablissement d'une situation d'urgence et les stratégies souples de gestion des urgences ouvertes à la collaboration avec des groupes communautaires locaux sont d'autres caractéristiques importantes des OGU désirant tirer profit des activités de BSCN pour améliorer les résultats en cas de crise.

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**Volunteering; Emergency Management; Social Media**