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Social Media for Emergency Management Expert Roundtable Workshop: Summary of Findings

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IMPORTANT INFORMATIVE STATEMENTS

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Introduction

Background

On October 22 and 23, 2013 Defence Research and Development Canada (DRDC) Centre for Security Science (CSS) in partnership with the Calgary Emergency Management Agency (CEMA) hosted a workshop on Social Media for Emergency Management (SMEM) that brought together 12 subject matter experts from amongst emergency management (EM) officials, first responders, virtual volunteers and non-government organizations (NGOs). The complete list of participants is presented in Annex A. The event was intended to provide a forum for an objective-based dialogue between the different stakeholder groups with the goal of identifying common objectives and developing a collaborative approach for a way forward for SMEM in Canada. The methodology followed at the workshop was to elicit expert input and discussion, through the use of various interactive facilitation exercises. The results of the workshop will inform the investment decisions of the Canadian Safety and Security Program (CSSP) and help achieve the program's strategic outcomes of building strong communities and enabling improved connectivity for practitioners, thus increasing resilience, both at the community and the national level. The analysis of the discussion and facilitated exercises conducted at the workshop are presented in this report. This workshop is a part of a two-year SMEM targeted investment project (CSSP-2013-TI-1034) and therefore represents only a part of the comprehensive research that is being conducted on this topic. A brief overview of the project is presented in the form of a quad-chart in Annex B.

1.1   Results and Discussion

The first facilitated session at the workshop focused on discussing the goals and objectives of SMEM. Given the diversity of stakeholders, there were a variety of goals ranging from the broad goal of using SMEM to provide an additional way for the public to participate in and take ownership of EM (preparedness, prevention, response, recovery) to the specific goal of using social media as an additional channel for the communications function in the EOC to push messages out to the public to prompt desired behaviours.

However, most agreed that with the public (e.g., virtual volunteers) becoming an increasingly active participant in SMEM, one has to determine how to best use this situation to achieve the ultimate common goal of partnering with the public to build and leverage their capacity to prepare for, respond to and recover from crisis.

Further to the shared common goal, other points of consensus towards achieving it included the need to:

•   Keep it simple – the tools and processes have to be simple for the public to engage;

•   Develop solutions collaboratively – to avoid duplication and fragmentation;

•   Build relationships and trust ahead of time – not during a disaster;

•   Keep the dialogue open and continually learn – to promote innovation,

1.1.1   SMEM Activities

The workshop participants also participated in an interactive exercise of providing ideas of specific SMEM-related activities under the different pillars of EM. The participants were shown a poster-sized version of the diagram presented in Annex C, which had been developed by the research team, provided with sticky notes, and asked to submit their ideas on what other SMEM activities could fit under the pillars of prevention, mitigation, preparedness, response and recovery. The exercise began with a discussion about the perceived need for a paradigm shift in the culture of EM and the

inadequacy of the traditional EM pillar model when discussing innovative, technology-aided approaches to improving EM operations and reaching community resilience.

Some of the participants expressed the view that, much like the concept of resilience, rather than being bounded, many of the SM objectives span across all of the pillars of EM. With this in mind, the participants then provided activity ideas, most of them spanning the whole spectrum of EM, along with associated suggested actors. The research team sorted and grouped related activities under several objective "themes". The results of this exercise are summarized in Table 1.

Table 1: Objectives and activities of SMEM – results of workshop exercise.

Objective	Activities	Actors				
		EM	VTCs[1]	NGOs	Gov[2]	Public
New way of doing things (EM paradigm shift)	Standardize (certain aspects of) the information collection process for situational awareness	X	X		X	
	Leverage common tools and platforms, establish partnerships with global players, government, major platforms (Facebook, Twitter, LinkedIn, Google)	X	X		X	
	Embed SM communications in government - reengineer government websites to integrate social media and mobile communications				X	
	Stay open and strategic, create rapid response with networked local teams	X	X	X		X
	Remove barriers to effective communications, redesign communications hierarchy	X			X	
	Create an environment that catalyzes citizen participation	X	X	X	X	X
	Empower citizen action groups and engage and collaborate with vetted citizen groups				X	
Reputation management	Identify threats to reputation through social media listening	X			X	
Rumor/misinformation management	Myth-busting, monitoring for misinformation		X	X		
	Rumour control	X				
Cooperation, coordination	Innovative problem solving, volunteer management, community mapping	X	X	X		X
	Create volunteer networks, call to action to get involved before needed		X	X		
	Reduce staff stress during crisis management	X				
Public Information	Communication channel - share and spread	X		X	X	X
	Push out context-dependent messages that communicate risk effectively and motivate a specific behaviour (e.g. shelter-in-place, road closures, self-assessments);	X				X
	Preparedness messaging: push information, converse and dispel bad information (triangle of life);	X	X	X	X	
	Educate public (via YouTube, Twitter, Facebook)	X		X	X	
	Response: provide service, push info on what's available, monitor for needs, EOCs,	X		X		
	Create the virus - spread of message (viral messaging)	X	X	X	X	X
	Recovery: push information on status of what's being done, inform	X	X	X		

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[1] VTCs refers to virtual technical communities, i.e. organized virtual volunteer groups.
[2] Gov refers to government agencies at either the federal, provincial/territorial or municipal level.

Category	Item					
	public of available services and programs, share plans to reduce anxiety	blue	purple	orange		
	Reduce traffic to website & email, while informing	blue				
Citizen participation, engagement, mobilization	Build communities online pre-incident to create trusted group/space	blue	purple	orange	red	teal
	Preparedness education and information			orange	red	
	Request business/private sector support prior to event	blue		orange	red	
	Data preparedness - compile list of services and (open data) resources		purple			
	Recruit volunteers, connect with other groups on social media			orange		
	Pinpoint specific needs during an emergency, micro-tasking			orange		
	Encourage citizens to self-inform			orange	red	
Situational Awareness (Public and EM)	Use crowd-sourcing to monitor social media and process the information		purple			
	Monitor and route calls for help	blue	purple	orange		
	Motivate and provide instructions for citizen reporting	blue				
	Disseminate emergency information and monitor for effectiveness	blue				
	Gather data on emerging event, monitor	blue	purple	orange	red	
Mapping	Encourage and use crisis mapping: consider developing and using dedicated apps	blue	purple			teal
	Build a crisis map to merge (publicly available) information: integration and progression		purple			
	Support situational awareness post-event (e.g. did you get wet? Pin where u live!): info/data collection & storage for access post-event			orange	red	
Verification	Validate information (accept as formally complete and useful)	blue	purple			
	Verify information (confirm as true)		purple			
Interpretation and Analysis (incl. communication of results)	Use plain language for all to understand - educate/train staff	blue			red	
	Determine information's purpose, work with activating body on pros and cons of sharing (or not sharing) of volunteer-sourced information		purple			
	Include social media in post-event situational analysis, variety of reports based on context		purple	orange	red	

1.2   Maturity Model

The second facilitated exercise engaged the participants in interactively populating a proposed SMEM maturity model intended to serve as a "roadmap" for developing an effective SMEM capability. The concept of the maturity model was introduced by the research team followed by a practical example of how it can be used for a retrospective analysis of a SMEM capability based on the example of the 2011 earthquake in Christchurch, New Zealand. The participants were subsequently provided with sticky notes and a poster-sized, blank version of the maturity model, and asked to submit their ideas on what volunteer-supported basic, intermediate and advanced SMEM capabilities would look like under the four dimensions of people, governance, technology and implementation. Following the workshop, the proposed maturity model was amended based on the feedback gathered from the participants and it is presented in Annex D.

Discussion among the participants during this session also indicated the need to focus the model on a specific user group or audience given the wide range of motivations for and objectives of exploiting social networking tools. The consensus was that the model should most usefully be aimed at municipal-level emergency management organizations, rather than the federal government, the virtual volunteer community or the public.

Another common theme of discussion throughout this session was that the intended outcomes, with the overall goal of empowered, engaged, and resilient citizens and agile EM organizations that leverage the public's potential, should be incorporated in the model. As a result of this feedback the outcome column was added to the model.

The first day of the workshop concluded with a roundtable discussion of the challenges that need to be overcome before an effective volunteer-supported SMEM capability can be developed and implemented across Canada. The barriers to implementation that were mentioned fell into one of eight of the following themes:

1. The intrinsic culture of emergency management not being open to volunteer-supported SMEM – there needs to be investment in establishing a level of trust between the two groups and building a culture of innovation;

2. The decision makers being (generally) not aware of the value of SMEM – the value proposition of SMEM needs to be clearly communicated including demonstrating benefits with quick wins;

3. Low tolerance for failure – we have to be open to failure as often there is more one can learn from failure than from success and experimentation enables innovation;

4. Scarcity of academic research in the SMEM domain – research in SMEM should be promoted and academia should be a stakeholder providing an evidence base;

5. Lack of policy cover for SMEM – existing plans, programs and standard operation procedures need to include the use of social media and new policy specific to SMEM needs to be developed;

6. Reliable, constant server space not being available – cloud space for community collaboration as well as fail-proof housing and back-up space for emergency systems and data needs to be established;

7. Limited availability and accessibility to open data (including infrastructure data) – volunteers need access to open data since everything they produce is based on open data sources;

8. Unavailability of training for both EM officials as well as volunteers – skillsets, expertise and credentials need to be established in order for the field to advance.

1.3   Action Items and the Way Forward

The second day of the workshop started out with the research team formulating a concise "problem definition" based on the results of the previous days' discussion, which included the following summary:

A. There is great, innovative work being done on the use of technology-mediated social networking for emergency management and disaster relief in the (virtual) volunteer community, but how can this be effectively tapped into by the EM community and enabled by governments?;

B. We are currently focusing mostly on response and recovery –what are the opportunities for engaging the whole spectrum of EM (including prevention/mitigation and preparedness)?,

C. What are the action items and priorities in SMEM?

With respect to the last question, the workshop participants were asked to write down three action items on a piece of paper and substantiate their choices during the following roundtable discussion. The participants were asked to be specific enough in the descriptions of their priorities so that they could readily be translated into actionable project ideas. The list of action items contained in Table 2 was generated through the collation, aggregation and grouping of all suggestions made by the workshop participants. The action items in Table 2 appear in no particular order (i.e. they are not prioritized) though they are grouped according to the four main dimensions of the maturity model.

Table 2: Action Items identified by the subject matter experts at the SMEM Expert Roundtable Workshop.

People
Broaden the SMEM stakeholder base by reaching out to businesses and academia • Involve the business community to amplify messages, identify and provide resources (particularly for CI) • Exploit academia as "force multipliers" and in a foresight capacity
• Survey EMOs to develop an "as-is" national picture of capacity and interest in SMEM • Map the community, identify tools and skills available (catalogue of SMEM expertise and resources).
• Designate regional liaison persons for SMEM • The designate would fulfill a broker role between EMOs and other SMEM stakeholders and serve as a regional hub of information on SMEM resources and activities
• Embed volunteer staff in the EOC for training exercises and operations.
• Establish A SMEM community of interest/practice comprised of EM officials, volunteers and other stakeholders • Conduct a virtual meeting (once a month) to share information and practices • Provide a national, virtual collaboration portal for experimentation and information exchange.
• Facilitate face-to face interaction (including meetings and workshops) between different SMEM stakeholders to build relationships and trust
Governance

Integrate social media into emergency management policy
   • Develop SMEM-specific processes, programs and SOPs (integrated into CONOPS);
   • Develop a SMEM policy framework and guidance on how to integrate SM into Incident Command Structure

Research and communicate the legal framework for use of virtual volunteers

Create awareness and educational material for political and EM decision-makers
   • Vision statement, one-pager, video, business case, webinar presentation and slide deck that municipalities can use
 	
   • Advocate for SMEM in front of municipal, provincial/territorial and federal officials (Federation of Canadian Municipalities, Senior Officials Responsible for Emergency Management, etc), present case studies, prompt the leaders to act

Develop and distribute a SMEM guide aimed at municipalities:
   • Document and share best practices
   • Step-by-step on how to develop an effective SMEM capability

Develop a (nationally recognized) accreditation process for volunteers   • Different levels of accreditation for volunteers (various levels of trust depending of sensitivity and complexity of tasks)
Technology
Create a centralized open data repository   • Include all government held geo-data and private sector data
Create a (geo-tagged) database of SMEM capacity and capability in Canada   • Develop a virtual volunteer inventory including credentials, skillset, expertise and verification status
Develop a community mapping capability   • Use community members to map and share local resources and infrastructure
Develop and uphold data standards so that information (input/output) can be shared between platforms (focus on open standards)
Develop and deploy a rapid verification capability/tool for volunteers
Incorporate SM into the existing Public Alerting systems   • The goal should be systems interoperability such that one input can go out on multiple channels/platforms
Integrate a SM feed into MASAS   • Data input process for MASAS needs to be simplified in order to integrate SM - currently too many forms needed to be filled out
Organize "hackathons" to promote the development of technology solutions specific to SMEM
Create national and provincial content calendars (listing important EM dates, events and campaigns) to contextualize and amplify prevention/preparedness messaging
Implementation

Develop and provide training courses for both EM practitioners and volunteers
   • Educate EM practitioners on the benefits and risks of SM and volunteers on how to share, monitor, amplify information and assist EM officials
   • Provide technical training on how to use various SM tools
   • Provide awareness training for the tri-service community

Create a national calendar of events so that information (prevention, mitigation, preparedness);can be pushed out on SM at appropriate times
Identify barriers to SMEM followed by ideas on of how to bring them down   • What are the barriers to mixing of public (crow-sourced) and authoritative data in the EOC?
Promote SMEM on various fora (including events which traditionally focus on SM)
Set up a Canadian version of the Red Cross model of the trusted agents who can push out (multiply) messaged and have cyber clout

Following the discussion of action items the group considered and discussed the idea of participating in a functional exercise designed to test and evaluate the coordination, integration and interaction between different SMEM stakeholders before, during or after a fictitious disaster event, in a simulated environment. The research team discussed the Canada–US Enhanced Resiliency Experiment Series (CAUSE Resiliency) which is being planned for 2014. CAUSE is an on-going experiment series that demonstrates the Canada–US commitment to jointly improve cross-border coordination of emergency responses during bi-national disasters by using integrated situational awareness tools and, where possible, sharing best practices. For CAUSE 2014 a social media vignette which would involve the virtual volunteer and EM communities is being planned.The group expressed a strong interest in exploring the possibility of a joint exercise including CAUSE 2014 and provided some items for consideration for the design:

- The SM content of the exercise needs to be closed/private as there is high potential for misinformation and confusion;
- The best practices from other functional exercises (e.g. 2011 Exercise Watermark) should be implemented;
- The exercise should be used to flesh out SMEM plans and procedures for specific objectives;
- The disaster scenario should overwhelm the EOC so that they are forced to reach out for external (volunteer) help;
- A "hackathon" and/or crisis camp could happen in parallel to an exercise;
- Piggy-backing on an existing exercise would be ideal.

The workshop concluded with a final round-table discussion, where participants were encouraged to provide their overall impressions of the event. Most participants commented on the event being a great opportunity to learn and make connections, with representatives of the volunteer community particularly highlighting the importance of EM officials taking an interest in the idea of engaging volunteers to support traditional EM functions. Many saw the meeting as a first step towards initiating a necessary culture change towards more open innovation and collaboration with the public which will enable a way forward for SMEM in Canada.

1.4   Text Analysis of Workshop Notes

As an alternative means of extracting key topics and themes of the discussions at the workshop, a "word cloud" was generated from the raw notes taken by the research team throughout the workshop. The result, generated via Wordle.net, is shown in Figure 1. Word clouds are a simple form of text analysis with the words that appear more frequently in the source text given greater prominence in the cloud. The word cloud thus provides a means of quickly, visually identifying the most prominent data terms. Unsurprisingly, the term social media (SM) features most prominently in the text, followed closely by "volunteers" and SMEM. The prominence on "people" and "data/information" during the discussion is also evident, as is "training" and "community". These are consistent with what was featured in the action item list and other analysis presented herein.

Figure 1: A word cloud created from the raw notes taken by the scribe at the workshop.

Conclusion

The Social Media for Emergency Management Expert Roundtable Workshop hosted by DRDC CSS and CEMA represents an important milestone in building the Canadian SMEM capability. The event marked the first time that Canadian EM officials and the virtual volunteer communities came together to discuss a way forward for SMEM. The findings presented in this report are the outcome of an objective-based dialogue and collaborative thinking of subject matter experts from amongst EM officials, first responders, VTCs, and NGOs. The high level of engagement from all the participants at the workshop demonstrated their interest and commitment towards building a sustainable, successful, and collaborative SMEM capability. The findings of the workshop, and particularly the consolidated list of action items, will help inform the investment decisions of the CSSP and contribute towards developing a "roadmap" for SMEM in Canada.

In order to advance this initiative and maintain the momentum generated through the workshop, the following next steps will be undertaken by the research team:

1. Complete the work committed to under the SMEM targeted investment project (CSSP-2013-TI-1034), including case study research in the successful application of SMEM and the publication of a comprehensive research report;
2. Develop a functional exercise to demonstrate and test the effectiveness of SMEM;
3. Investigate the potential development of a SMEM training course;
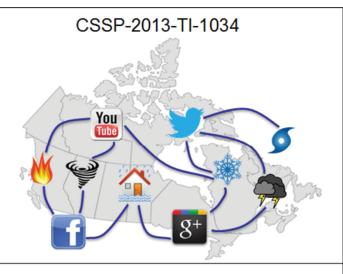4. Facilitate a monthly webinar to continue the dialogue between the workshop participants;

The following recommendations emanate from the findings summarized in this report:

1. It is recommended that the maturity model be further fine-tuned, through another round of consultations with the SMEs;
2. It is recommended that the action items be prioritized and potential leads for each item be assigned in order to inform CSSP investments;
3. It is recommended that the workshop participants be engaged in the development of the functional exercise to ensure that it is of benefit to the community which they represent;
4. It is recommended that a SMEM community of interest be formed and expanded through the core participant group.

Annex A   Participants of the SMEM Expert Roundtable Workshop.

Name	Affiliation
1. Jason Cameron	Calgary Emergency Management Agency (CEMA)
2. Benjamin Morgan	City of Calgary
3. Brian Singh	ZINC Research, YYCHelps
4. Greg Furlong	Canadian Interoperability Technology Interest Group (CITIG), Ottawa Paramedic Service
5. Patrice Cloutier	Canadian Virtual Operations Support Team (CanVOST), Ontario Ministry of Community Safety and Correctional Services
6. Janice Babineau	Canadian Red Cross
7. Tim Burrows	Toronto Police Service
8. Melissa Elliott	Standby Task Force
9. Amy Romanas	City of Richmond, BC
10. David Black	CrisisCommons
11. Pascal Schuback	CrisisCommons, University of Washington
12. Tim Trytten	Alberta Emergency Management Agency

Annex B The quad-chart of the SMEM targeted investment project.

CSSP-2013-TI-1034

Social Media in Emergency Management (SMEM)

Lead Organization: DRDC CSS

Partnership: Public Safety (PS) Canada, Canadian Red Cross, Calgary Emergency Management Agency (CEMA), Canadian Interoperability Technology Interest Group (CITIG)

Start-End: May 2013 – March 2015

Funds: CSSP $240,000 In-Kind $20,000

Total $260,000

Objectives:

- To exploit social media for enabling disparate groups and individuals to not only connect and communicate, but also to cooperate and innovate to support real-time problem-solving across the full spectrum of EM;
- To provide best practices for the EM community;
- To hold an objective-based dialogue with the EM, first responder and virtual volunteer communities in order to develop an SMEM "Roadmap" for Canada.
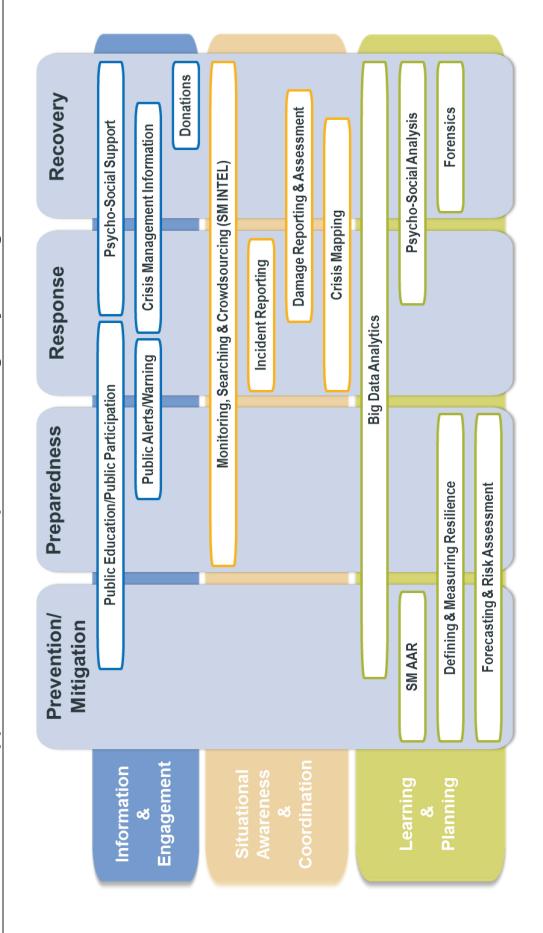
Impact on Outcomes:

The use of SMEM can build **strong communities** and increase resilience to disasters through:
- Increasing the information exchange and improving situational awareness;
- Building social capital though facilitating connectedness and community building;
- Increasing risk awareness and encouraging preparedness and mitigation activities;
- Identifying most vulnerable populations, hazard zones, and community capacities; and
- Connecting survivors with family members and aid resources.

Canada

Annex C   SMEM opportunities within the pillars of emergency management.

The chart maps SMEM opportunities across four emergency management pillars (Prevention/Mitigation, Preparedness, Response, Recovery) and three functional groups.

Information & Engagement
- Public Education/Public Participation
- Public Alerts/Warning
- Psycho-Social Support
- Crisis Management Information
- Donations

Situational Awareness & Coordination
- Monitoring, Searching & Crowdsourcing (SM INTEL)
- Incident Reporting
- Damage Reporting & Assessment
- Crisis Mapping

Learning & Planning
- Big Data Analytics
- SM AAR
- Defining & Measuring Resilience
- Forecasting & Risk Assessment
- Psycho-Social Analysis
- Forensics

Annex D The SMEM Maturity Model amended based on workshop feedback.

Dimension	Essential Element	Basic	Intermediate	Advanced	Outcome
People	Stakeholders Culture Expertise	EM officials and public Closed, reactive Awareness	Volunteer engagement Open, learning Interaction, monitoring	Whole of society Innovative, experimental Analytics, automation	Networked and resilient society
Governance	Leadership Policy & Legislation Cooperation	Not assigned Limited guidance No coordination	Assigned Policy and plans Experimental	Distributed Implementable, functional Fully coordinated	Equitable treatment and collaboration
Technology	Tools & platforms Data Development	Dedicated accounts Unstructured Rely on companies	Multi-platform Structured Hacks and apps	Interoperable Open and standardized Open, experimental	Accessible data, standards and tools
Implementation	Training Activity Best Practices	Self-taught Alerting Not implemented	For EM officials 24/7 monitoring & alerts Awareness	Standardized Continuous interaction Tested and followed	Trained and accredited stakeholders

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Emergency Management; Social Media; First Responders; Connected Communities