

Comparative Review of Social Media Analysis Tools for Preparedness

Short Report – 31 July 2015

Trilateral Research & Consulting

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Consulting**



Global Disaster
Preparedness Center

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For more information, please contact:

Trilateral Research & Consulting
72 Hammersmith Road
Crown House
London
W14 8TH
info@trilateralresearch.com

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EXECUTIVE SUMMARY

This report outlines the findings of a Comparative Review of Social Media Analysis Tools (SMAT) for Preparedness undertaken by Trilateral Research & Consulting and funded by the Global Disaster Preparedness Center (GDPC)/American Red Cross (ARC). The project, which began in March 2015, was designed to support Red Cross Red Crescent (RCRC) actors and other humanitarian actors in their selection and use of SMAT for disaster preparedness and disaster risk reduction (DRR). The information presented in this report is provided to assist the RCRC network and other humanitarian actors in understanding how the communication on social media (SM) applications can be better leveraged and integrated into their DRR and preparedness work.

The findings and recommendations are based on a multi-method research approach that involved desk-based and primary research with RCRC actors, researchers, and SMAT developers. The research team conducted 20 in-depth interviews with RCRC actors and representatives of organisations involved in disaster preparedness work to map their use of SMAT and the characteristics of this use. In addition, 30 RCRC actors completed an online survey, and two workshops were held to validate the research findings. In parallel, desk-based research, demonstrations and personal use of SMAT were undertaken to determine the suitability of different SMAT.

The report first outlines the value of SM and SMAT for DRR and disaster preparedness. In addition to being able to communicate effectively with the vast number of people already on SM, the additional benefits of using SM and SMAT for DRR and disaster preparedness are presented. Benefits include highlighting the value of SMAT in terms of an organisation learning about how communities are using and engaging with SM in order to adapt their SM strategies accordingly, thereby maximising the effectiveness of the strategy. Furthermore, using SMAT enables organisations to identify the added value and impact of community engagement activities relating to DRR and preparedness on SM.

The findings relating to the state-of-the-art in SMAT for disaster preparedness are presented in Chapter [II](#). The chapter begins by examining the characteristics of DRR and preparedness in order to understand the key differences and implications for the use of SMAT for DRR and preparedness (e.g., listening and engagement) compared to disaster response (e.g., real-time data for rapid response). It continues by providing an introduction to a catalogue of 31 SMAT that were identified as being most suitable for DRR and preparedness based on the primary and desk-based research conducted. This catalogue is presented in [Annex B](#). Each SMAT is reviewed in terms of a number of characteristics, including key functions, the SM analysed, cost, the language that the interface is displayed in, the languages of data sets that it can analyse, accessibility (e.g., whether a demonstration or trial is available), usability (i.e., ease of use) and whether instructions and online help are available.

Chapter [III](#) provides insight into the different types of barriers that influence the selection and use of SMAT amongst RCRC actors. Drawing upon the findings of the interviews, survey and workshops, barriers related to the user (e.g., limited financial resources and time) and tool (e.g., difficult to use, cost) are described. For each barrier, an explanation of the barrier is accompanied by ideas for how the barrier may be mitigated in order to overcome the barrier and facilitate the use of SMAT. The final section of this chapter presents four use cases that provide RCRC and other humanitarian actors with guidance on how they can overcome some of the key barriers (e.g., financial limitations, language) in their selection and use of SMAT. The use

cases highlight how the selection of SMAT is complex and based on a combination of multiple factors that act to either facilitate or restrict the user's selection of SMAT. Before presenting the use cases, the eight key factors that were identified as influencing the selection of SMAT are explained. These include the user's English language capability, organisational culture, available human resources, technical competence, cost of the SMAT, the value placed on SM and SMAT, available financial resources and contextual factors (e.g., the use of SM in a country). In addition to the use cases, an overview of more specific, yet less detailed, mini-use cases that are focused on use of the English language, financial resources and organisational capacity are presented to provide further insights and guidance for selecting suitable SMAT.

Chapter [IV](#) proposes recommendations on how to use SMAT for preparedness and risk reduction. It comprises two sections beginning with general recommendations and strategic advice on how to prepare for the use of SM and SMAT within DRR and preparedness activities, before moving on to provide specific recommendations on the variety of purposes that SMAT can be used for related to DRR and preparedness. The specific recommendations include the use of SMAT for:

- **Improving the effectiveness of preparedness communications.** SMAT can be used to generate analytical data that can aid in enhancing preparedness-related communication between a humanitarian actor and its network.
- **Increasing the reach of preparedness communications.** Identifying and targeting influential users can achieve this. These users may then be able to further share the initial message.
- **Evaluating the effectiveness of preparedness content.** Gaining an insight into the extent that content is regarded as effective (e.g., a particular campaign) is crucial when it comes to improving future content.
- **Scheduling the posting of messages to increase their relevance.** Preparedness messages can be scheduled in advance to be posted in a particular period or date.
- **Managing the organisation's reputation.** This includes both reducing the negative effect of rumours by correcting misperceptions identified by keyword searches and alerts, and by reinforcing positive opinions by further sharing these messages.
- **Remaining up-to-date and sharing public preparedness information, news and activities.** SMAT can be used to stay up-to-date with the latest news and approaches to preparedness, by performing keyword searches and/or monitoring conversations related to preparedness.
- **Preparing to enhance response.** SMAT can be used to identify SM trends and activity during 'normal' periods in order to highlight any changes that may indicate a potential disaster.
- **Early intervention.** Using SMAT to perform keyword searches and monitor conversations can provide information regarding potential risks that SM users are discussing.

- **Identifying community networks that can be mobilised before a disaster occurs.** Organisations can use information about the areas in which people are talking about preparedness to encourage the development of community preparedness networks.

Chapter [V](#) outlines future considerations and next steps for the RCRC network and humanitarian actors relating to policy, developments in tools that may impact their future use, areas of research and development, and next steps for the RCRC network. The chapter begins by highlighting how SM providers changing their policies and procedures may impact upon the future use of SMAT and how attention should be paid to developments in the availability and functionality of SMAT together with changes in data protection regulations. A number of areas for future research and development are highlighted, including increasing the awareness of the humanitarian sector's needs amongst the SMAT developer community and incorporating data from mobile messaging applications (e.g., WhatsApp and SnapChat) and web-based material into existing and future SMAT. The final section of this chapter provides next steps for the RCRC actors, including:

- **Training on the use of SMAT for DRR and preparedness**
- **The potential to share licences among RCRC actors**
- **The development of a working group on SM & SMAT across the RCRC network**
- **Enhancing capacity through the engagement and use of volunteers**

The report ends with the conclusion, Chapter [VI](#), which brings together the previous chapters and provides a summary of the key points raised. It presents an overview of the research conducted and the key findings generated throughout the study. As this study has shown, while, SM and SMAT are predominantly used for disaster response, much less is known on how SM and SMAT can add value for DRR and preparedness. This study has therefore aimed to increase RCRC actors' knowledge and understanding in this area and support humanitarian actors in their work.

I. INTRODUCTION

The use of Social Media (SM) during a disaster has significantly advanced in recent years and is acknowledged for its role in supporting response efforts, particularly in enhancing situational awareness. However, its use for disaster preparedness and disaster risk reduction (DRR) is significantly less developed. Disasters such as the 2015 Nepal earthquake generated vast amounts of SM data – digital volunteers mapped and verified over 5000 images and 7000 tweets (Meier, April 2015). Within the humanitarian sector, an increasing number of organisations are taking the time and effort to engage with SM for disaster response, even going so far as employing Social Media Analysis Tools (SMAT) in order to derive greater efficiency from their SM activities. Yet this use of SM and SMAT within DRR and disaster preparedness is less developed. For the Red Cross/Red Crescent (RCRC) network and the wider humanitarian network to harness the value stemming from engagement with SM and the analysis of SM data, the current study, funded by the Global Disaster Preparedness Centre (GDPC)/American Red Cross (ARC), has been designed to support the RCRC network and other humanitarian actors in their selection and use of SMAT for disaster preparedness and DRR.

Within this study SMAT concerns those tools that can be employed to make sense of the interaction taking place on SM, as well as to listen, monitor and analyse the information that is circulated via SM applications (e.g., Facebook, Twitter and YouTube). As this report will show, in relation to DRR and preparedness, SMAT can be used for a variety of purposes ranging from examining engagement with awareness raising activities and knowledge transfer initiatives, to the monitoring and identification of opinion leaders (i.e., influential SM users) active on SM. To support humanitarian actors in their selection of suitable SMAT for DRR and preparedness this study has been guided by two research questions:

- 1. How can the use of SMAT help to increase the impact of the GDPC, actors within the RCRC network, and other humanitarian actors' work with regard to DRR and preparedness?**
- 2. What are the most suitable tools to meet the needs of this kind of work?**

In order to respond to these questions, a multi-method research approach was employed:

- I. Primary research via semi-structured interviews, an online survey, and workshops with representatives engaged with SM use across the RCRC network, as well as those involved in developing and researching SM use and SMAT. This research involved mapping the SMAT used by humanitarian actors, along with the characteristics of this use and whether existing SMAT met current and future needs as expressed by those representatives that took part in the study;
- II. The use of desk-based research, demonstrations and personal use of existing SMAT from both the commercial and research sector in order to determine the suitability of SMAT for DRR and preparedness activities and to identify potential barriers to the use of SMAT.

Throughout this study, extensive efforts were taken to ensure that the research was conducted in an ethically responsible manner. Researchers followed standard and widely accepted ethical protocols in line with current standards established by the British Sociological Association (2002). This included ensuring that all participants were informed, consenting adults, with the option to withdraw from the study at any time.

RESEARCH METHODS

- 20 semi-structured in-depth interviews
- Online survey
 - 30 complete responses by RCRC actors¹
 - 7 incomplete responses by RCRC actors
- Desk-based research: preliminary identification of 94 tools
 - Narrowed down to 31 tools for further in-depth investigation and included in the catalogue
 - Use of free and paid SMAT, including 14 demonstrations with developers
- Two workshops with RCRC representatives, researchers and SMAT developers (16 external participants in total)

In order to ensure that the findings from the study are accessible and can be re-used by third-parties, where permission was granted, anonymised versions of interview transcripts and survey responses will be made accessible via the GDPC website and open access repositories (e.g., Zenodo²).

It is important to note that the availability and functionality of SMAT is rapidly changing; the recommendations included in this report are based on the availability and functionality of SMAT from the time period: March – June 2015. As reiterated in our recommendations (see Chapter IV), it is advisable for those wishing to engage with SMAT for DRR and preparedness to be aware of future developments in SMAT and how they may continue to support and reduce the amount of effort taken to fully engage with SM as an effective medium of communication and community engagement. Currently, there is not a single source of information on developments in SMAT. However, there are several online blogs and question-and-answer websites discussing SMAT, and more recent ones include tools that are new players on the market.³ In addition, many SMAT that currently exist have upgrades planned to safeguard their position in the market. Hence the tools providers are valuable sources of information. Prior to proceeding with the findings of the study, it is necessary to consider why SM and SMAT are of value to DRR and preparedness.

Value of SM & SMAT for DRR & preparedness

A common question for humanitarian actors considering whether to use SM and SMAT for DRR and preparedness lies in what value they provide to them. As time has progressed so too have the ways in which it is possible to communicate. No longer restricted to press releases, telephone calls and web-pages (among other forms), today, as illustrated in Figure 1, a vast number of people are using SM and thus it is a suitable means of reaching out and communicating with an organisation's target audience.

¹ The respondents to the survey consisted of individuals in a variety of positions within RCRC organisations and associated bodies (e.g., IFRC and the GDPC). Positions ranged from Director General to communication and resource managers.

² Zenodo: <https://zenodo.org>

³ An example of a blog post includes Pamorama's (2015) '9 of the Best Free Social Media Analytics Tools'. A question-and-answer website that hosts discussions on SMAT is Quora (www.quora.com).

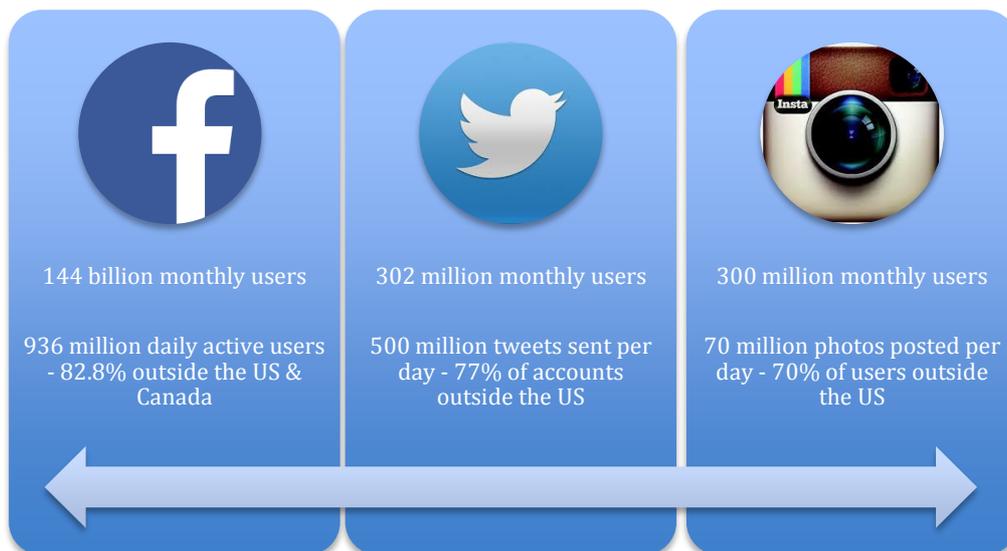


Figure 1: Global SM use⁴

In order to fully realise the value of SMAT, it is first necessary to consider the benefits to humanitarian organisations for engaging with SM:

- ✓ Offers forms of one-way and two-way communication with an organisation's target audience and across the humanitarian network
- ✓ SM applications are free to use (*Note: an Internet ready device & connection is required to access SM*)
- ✓ Enables an organisation to liaise with other humanitarian organisations, news agencies, infrastructure providers, public authorities, etc.
- ✓ Communities of users interested in similar topics (e.g., first aid training) can be built
- ✓ Responses to the latest DRR and preparedness information on SM can be made available much quicker than through traditional media

Within the current study, while the sample size for the survey was limited to 30 participants from across the RCRC network, and is therefore limited in terms of its representativeness, the findings do suggest that for some, SM is seen as a valuable tool for communication. As illustrated in Figure 2, of those that completed the survey, 96.7% are already engaged with using SM. Other SM used not listed in the survey included: LinkedIn, Storify, Vine, Izlesene, WhatsApp and blogs.

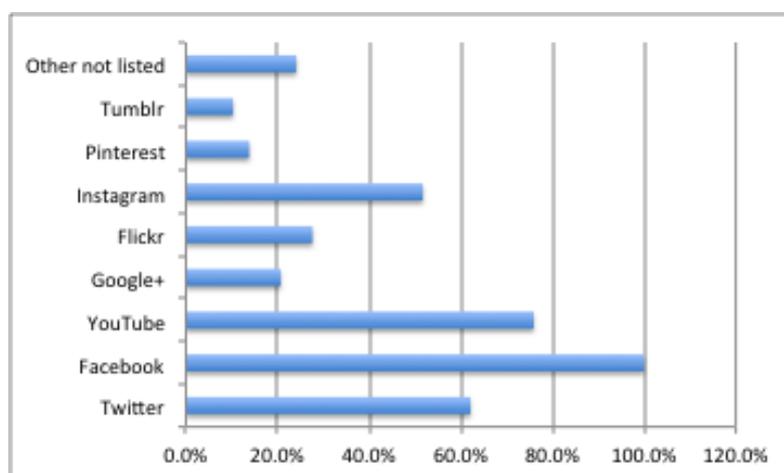


Figure 2: SM applications used by RCRC organisations

⁴ Facebook (2015), Twitter (2015) and Instagram (2015).

Not only is it evident that the majority of survey respondents are using SM, but the findings indicate that they are doing so on a regular basis. To illustrate, 19 out of 29 respondents (65.5%) use Facebook on a daily basis and 12 out of 20 respondents (60%) use Twitter on a daily basis. Table 1 presents an overview of popular uses of SM – ‘popular uses’ were examined based on the disaster cycle, as well as other potential uses of SM for DRR and preparedness more generally:

Table 1: Popular uses of SM by RCRC actors

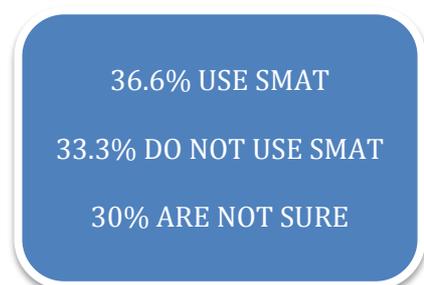
	Twitter	Facebook	YouTube	Instagram
Fundraising following a disaster	54.1%	100%	45.8%	37.5%
Communicating with the public regarding disaster preparedness	61.5%	100%	42.3%	30.7%
Communicating with the public during disaster response	62.9%	100%	48.1%	29.6%
Communicating with the public during disaster recovery	59.2%	100%	59.2%	33.3%
General community engagement activities	53.5%	100%	35.7%	21.4%
Monitor messages by the public	66.6%	95.8%	4.1%	25%
Monitor messages by other humanitarian organisations	72.7%	86.3%	18.1%	22.7%
Monitor messages by public authorities	77.7%	77.7%	5.5%	0%
Communicate with other organisations involved in disaster management	72.2%	88.8%	0%	5.5%
Detect early warning messages	82.3%	64.7%	0%	5.8%

*Note: The selection of SM in this table represents the most popular SM used by organisations for the majority of these purposes.

Other uses included, but are not limited to, volunteer recruitment, advocacy work (providing information about the organisations services), engaging with the community over other issues (e.g., health, first aid), reputation management and community building. Thus, findings from the survey suggest a range of suitable ‘uses’ for SM within the humanitarian sector.

Though it is evident from this study that engaging with SM and SMAT can place increasing pressure on the resources of an organisation, it is advisable to consider SM as an extension to an organisation’s DRR and preparedness communication strategy in order to maintain and build relationships across the target audience, particularly if this audience is active on SM. However, communicating alone is not enough. In order to truly capture value from communication and participation on SM, it is necessary to listen, monitor and analyse community engagement within this medium to understand the effectiveness of the SM strategy being employed. Furthermore, as will be expressed in Chapter V, it is important for organisations to continue to build upon their SM strategy to improve community engagement activities relating to DRR and preparedness. In order to adequately measure and analyse SM engagement, the use of SMAT is required.

The online survey used within this study suggests that 36.66% of RCRC actors that completed the survey use SMAT, 30% are not sure and 33.33% do not – this may be a reflection that those who completed the survey may not be fully knowledgeable of ‘what’ the organisation is using. For those that are using SMAT, reasons for doing so included: to gauge the effectiveness of posts and to see a return on investment, to learn about the habits of audiences in order



to adapt their social media strategy, for monitoring purposes (*please note: no indication was given as to what was being monitored*), threat assessments, to show the added value of communication on SM to senior management, to determine the reach of communication activities, and for fundraising purposes. Accordingly, as SMAT use varies across organisations, it is worth an organisation considering how SMAT may support DRR and preparedness activities, and what SMAT could be used for based on their requirements; which is precisely what this study has aimed to do.

This report

The report is split into six chapters. Following on from the present chapter, Chapter [II](#) focuses on providing an overview of the state-of-the-art in SMAT for disaster management, and thus to consider the relationship between the use of SMAT and the aims of DRR and preparedness. The chapter also provides an overview of the (current) state-of-the-art in appropriate SMAT for DRR and preparedness. Chapter [III](#) highlights the barriers to using SMAT found through interviews, the survey and the workshops, as well as a series of use cases to support RCRC actors and other humanitarian networks manage such barriers. Drawing on the findings from previous chapters, Chapter [IV](#) provides a series of generic and specific recommendations. Chapter [V](#) highlights considerations for future use and collaborative opportunities across the RCRC network in order to drive greater engagement with SMAT for DRR and preparedness in the future. Lastly, Chapter [VI](#) consists of a conclusion, providing an overview of the key findings of the study.

II. SOCIAL MEDIA ANALYSIS TOOLS FOR DISASTER MANAGEMENT: STATE-OF-THE-ART

The number of SMAT that exist is constantly evolving. Identifying SMAT that can be used for DRR and preparedness is very much shaped by what is available at the point in time in which these SMAT are examined. As a first step in this research, 94 tools were identified and examined with regard to various factors, including, but not limited to, the functions they fulfil, cost, usability, and what SM applications they analyse. This list is presented in [Annex A](#). Subsequently, based on an examination of literature on the use of SMAT for DRR and preparedness, in-depth interviews, a survey and a workshop, this list was expanded before being narrowed down to the selection presented in this chapter. One of the considerations put forward by the analysis of the interviews is the significant difference in the use of SMAT for disaster response compared to its use for DRR and preparedness. Although both are part of disaster management, and activities that humanitarian organisations engage in, the different nature of the processes has a noticeable impact on how SMAT are used. For this reason, this chapter first addresses what is understood by DRR and preparedness, including a brief discussion of the differences in the uses of SMAT for response, and DRR and preparedness.

Disaster risk reduction & preparedness

As DRR and disaster preparedness are fundamental concepts guiding this study, it is important that it is clear how these concepts are understood in this context. How the terms are understood in this study is explained below.

Disaster risk reduction: Risk refers to the expected or anticipated losses (lives lost, people injured, property damaged, and economic activities or livelihoods disrupted) from the impact of a hazard on a given element at risk over a specific period of time. Various factors contribute to placing people at risk of disaster. The International Federation of Red Cross and Red Crescent Societies (IFRC) identifies eight major factors: poverty, increased population density, rapid urbanisation, changes in way of life, environmental degradation, lack of awareness and information, war and civil strife, and people's perception of risk (IFRC 2000: 7). DRR refers to the efforts taken to reduce the damage of potentially disastrous events, whether they are natural or man-made. Analysing and reducing the causal factors of disasters are a central part of this (United Nations International Strategy for Disaster Reduction (UNISDR), no date).

Disaster Preparedness refers to measures taken to prepare for and reduce the effects of disasters. That is, to predict and—where possible—prevent them, mitigate their impact on vulnerable populations, and respond to and effectively cope with their consequences. Disaster preparedness encompasses the following objectives (IFRC 2000a: 8, 9): a) Increasing the efficiency, effectiveness and impact of disaster emergency response mechanisms at the community, national and Federation level, b) Strengthening community-based disaster preparedness through National Society programmes for the community or through direct support of the community's own activities, and c) Developing activities that are useful for both addressing everyday risks that communities face and for responding to disaster situations, for example, health, first aid or social welfare programmes that have components useful for disaster reduction and response.

It is of foremost importance that measures aimed at reducing the risk of a disaster and enhancing disaster preparedness are embedded in everyday practices. As SM is increasingly

part of everyday life in many countries for both humanitarian actors and the general public, it is a (logical) next step to bring the two together, and use SM for DRR and preparedness work. Managing and analysing engagement and the amounts of SM data this produces can be facilitated by the use of SMAT.

Using SMAT for preparedness vs. using SMAT for response

SMAT can provide insights into SM data that can aid humanitarian actors' work in disaster management. However, the ways in which SMAT are used for disaster response can differ from those for DRR and preparedness. This implies that different SMAT could be used for different purposes. Currently SMAT are more widely used for purposes related to disaster response than preparedness and risk reduction activities. For example, in one of the interviews carried out for this study, the use of SMAT for the operational response to the 2011 London Riots was addressed. SM conversations containing the words 'London' plus 'Riots' were monitored using Brandwatch. The SMAT's alert system sent the organisation an email alert after detecting a peak in the use of these words, after which the operational team that had volunteers on stand-by was notified. An important element of the nature of the use of SMAT during disaster response is that of analysing large volumes of real-time SM data from affected people: messages that express the need for food, water or shelter- messages that are sent to reach out for help and require rapid action. In order not to neglect these people affected by a disaster, it is important that the SMAT used during disaster response have quick access to as much real-time data as possible. These could be SMAT that have access to such data either through direct agreement with social media applications such as Twitter (Sysomos is an example of this) or where the data is purchased from data providers such as GNIP. As large data sets are a commodity, there is commonly a greater price tag attached to such data access. Free SMAT, or free versions of SMAT with paid upgrades, usually do not provide access to such large data sets.

The use of SMAT for preparedness commonly concerns monitoring activity and 'listening' to conversations on SM in order to identify how to engage with SM users more effectively. The need to have fast access to large sets of real-time data is less present, as preparedness does not involve timely responses to matters of life or death. Additionally, there is less of a need to engage in large-scale and instant two-way communication with citizens using SM. This implies that the use of SMAT for preparedness has fewer requirements for quick access to large volumes of data for analysis. For example, SMAT can be used as part of preparedness in the sense of identifying and addressing rumours that concern the reputation or preparedness work of the organisation. These rumours are unlikely to have a similar volume as the amount of data generated during a disaster. Therefore, using SMAT for preparedness opens up opportunities for the use of tools that work with smaller data sets. Although there are restrictions on the amount of data that these tools can analyse, they can still be relevant for simple analytics relating to preparedness efforts. As they are commonly low in cost, this makes the use of SMAT more accessible for humanitarian actors where the availability of financial resources may form a barrier. In addition, smaller volumes of real-time data places less pressure on bandwidth utilisation, opening up possibilities for the use of SMAT for users with bandwidth restrictions. Thus, it is important to consider that the use of some SMAT that are unable to manage large volumes of data may be unsuitable across particular phases of disaster management.

Catalogue of SMAT for preparedness and DRR

As this report demonstrates, there are vast amounts of SMAT that can be used for DRR and preparedness however, selecting the most appropriate SMAT takes a lot of time, a resource that many humanitarian organisations do not have. This study involved a multi-step process to select the SMAT considered most suitable for DRR and preparedness. First, a comprehensive list of available SMAT (see [Annex A](#)), including 94 tools, was generated through desk-based research, interviews, the survey, and word-of-mouth (e.g., at the 12th Information Systems for Crisis Response and Management (ISCRAM) conference).

This list included an examination of each SMAT's functions, cost, their use in disaster management and/or humanitarian work, and their limitations and advantages. In order to refine the list and ensure that the most suitable SMAT were selected, each one was reviewed in relation to how it could be used for DRR and preparedness. The findings of this analysis were presented to experts in the fields of SM analytics in a workshop. This aided the further refinement and validation of the list of tools – including the addition of new tools. The next step involved examining RCRC actors' use of SMAT in relation to how the tools are currently, and could potentially be, used for DRR and preparedness. In order to include SMAT not currently used by the RCRC actors that participated in this research, but that are similar to SMAT that they are using, tools used by RCRC actors were examined in a comparative light. For instance, similar to the tools Radian6 and Brandwatch are the Sysomos tools, which were subsequently included in the selection of tools. This process resulted in the selection of SMAT listed in the catalogue presented in [Annex B](#). As highlighted in the catalogue, each SMAT was assessed against multiple criteria resulting from the research objectives, the feedback from workshops participants, and the requirements of interviewees and survey respondents.

How the catalogue works:

The catalogue is designed to be a quick go to reference guide for those interested in selecting SMAT for DRR and preparedness. Where permission has been granted, or public information is available, the catalogue includes a reference to any RCRC actors that have used the different SMAT. The catalogue contains 11 columns with the name of the SMAT listed in the first column and the table's remaining columns containing the following information:

Column 2: The functions of SMAT. Whereas some SMAT are limited in their functionality, others can perform a wide range of functions. This column predominately includes functions considered as relevant by interviewees and survey participants.

Column 3: Social media applications the SMAT can analyse. Recognising that the popularity of different social networks varies across countries, tools have been selected that analyse SM data from different social networks, including, but not limited to, Facebook, Twitter, Google+, YouTube, Instagram, Weibo and Flickr. The interviews and survey data indicate that Twitter, Facebook, Instagram, and YouTube were the most popular SM used by RCRC actors, as their use of SM applications is partly shaped by what SM the public uses. Additionally, the more expensive SMAT crawl other sources across the web, including, but not limited to, blogs, forums, wikis and news sources. This is indicated in the table by 'crawls the web'.

Column 4: Cost. As the cost of purchasing SMAT may act as a barrier to its use, tools of varying costs have been included to account for a variety of actors, ranging from those with larger budgets (and that can finance commercial SMAT such as Crimson Hexagon) to those with limited/no financial resources (and who might consider using tools such as Twitter Analytics, Tweetdeck, or Topsy). The cost of tools has been changed to US dollars based on exchange rates (26 June 2015). Where possible, this column also includes basic information on the number of

licenses/user accounts included with the subscription. For paid tools this number commonly increases as more expensive upgrades are purchased.

Column 5: Language of the tool's interface. This column indicates the language that the tool operates in. The inclusion of tools available in languages other than English is extremely important in terms of its use by humanitarian actors in non-English speaking countries. Providing examples of tools that are available in other languages increases the access to using SMAT and enables a higher number of humanitarian actors to be able to use the tools for their work.

Column 6: Language of the data that the tool can analyse. This column provides information provided by the SMAT developer on the languages that they state that the tool is able to analyse.

Column 7: Accessibility. The research team found varying degrees of ease in trying to use, trial, and receive a demonstration to get an impression of how each SMAT works and what functions it can perform.

Column 8: Usability. In order to support humanitarian actors in accessing and using SMAT, information has been included on the usability of the tools. Usability is presented on a scale of 1-5, where 1 is easy (the tool appears to be clear, intuitive and relatively straightforward to use) and 5 is difficult (it appears to be unclear what exactly the tool can do, or it is overly complicated in the sense of how it works). Where possible this information is provided based on the research team trying out the tools, or having received demos.

Column 9: Instructions. This column indicates whether online instructions (e.g., text based advice, video tutorials) are available.

Column 10: Online help. This column indicates whether an online help-desk is available.

Column 11: Website. The SMAT's website is listed in this column.

It is important to acknowledge that although the vast majority of the tools are SMAT in the sense that they allow the user to analyse SM data based on their requirements, and provide insights based on this analysis, some tools are of a slightly different nature. For example, some would consider tools such as Hootsuite and Tweetdeck to be SM monitoring tools, or SWAT.IO, to be a SM scheduling tool, as their capacity to analyse data is minimal. Additionally, although 'tools' such as Facebook Insights are not as comprehensive in their analysis, they have been included in the table as they provide insights similar to those that might be provided by SMAT.

The number of SMAT that exist constantly evolves, and the list of SMAT presented in the catalogue in [Annex B](#) is by no means a complete overview of all tools that could be used for preparedness and DRR, rather, the catalogue can be used as a quick reference that can guide humanitarian actors in their selection. For example, a humanitarian actor that has no experience of using SMAT and has a limited budget can use the table to examine options for the use of low-cost SMAT that appear easy to use, and have instructions or an online helpdesk. In terms of recommending tools to use, it should be acknowledged that the functions offered vary across each tool. For instance, many free or low-cost tools typically provide limited functions. However, the data collected from RCRC actors highlighted the popular usage of free or low-cost tools, including Topsy and Hootsuite; research participants also mentioned Tweetreach, Sprout Social and the advanced search capability on Twitter.

Table 2 provides an overview of the 31 tools included in the catalogue according to the availability of information of key features.

Table 2: Overview of the catalogue

	Functionality		SM analysed			Cost				Language of the tools interface		Language of the data the tool can analyse	
	Basic	Comprehensive	Facebook	Twitter	Other	Free	Up to \$2K p.a	\$2K-7K p.a	>\$7K p.a	Single	Multiple	Single	Multiple
Brandwatch		•	•	•	•				•		•		•
Cision		•	•	•	•				•		•		•
Crimson Hexagon		•	•	•	•				•		•		•
Crowdbooster		•	•	•			•	•		•			•
CrowdSense		•	•	•	•						•		•
Facebook Adverts	•		•								•		
Facebook Insights	•		•			•					•		
Followerwonk	•			•		•	•			•			
Geofeedia		•	•	•	•					•			•
Google Analytics	•		•	•	•	•					•		
Hashtagify	•		•	•	•	•	•			•			•
Hashtracking.com	•			•	•	•	•						
Hootsuite	•		•	•	•	•	•				•		
Keyhole	•			•	•	•	•			•			•
Meltwater buzz		•	•	•	•				•		•		•
Microsoft Dynamics		•	•	•	•		•	•			•		•
Radian6		•	•	•	•				•		•		•
RepKnight		•	•	•	•				•	•			•
Sprout Social	•		•	•	•		•			•			
SumAll	•		•	•	•	•	•			•			•
Swat.io		•	•	•	•			•			•		
Sysomos Heartbeat		•	•	•	•				•	•			•
Sysomos Map		•	•	•	•				•	•			•
Talkwalker		•	•	•	•				•		•		•
Tint	•		•	•	•		•	•	•	•			•
Topsy	•			•	•	•					•		
Tweetdeck	•			•		•				•			
Tweetreach	•			•	•	•	•			•			•
TweetTracker		•		•	•	•				•			•
Twitter Analytics	•			•		•					•		
uberVU		•	•	•	•				•	•			•

III. BARRIERS AND REQUIREMENTS TO THE USE OF SMAT

Examining the obstacles that prevent organisations from using SMAT is important for identifying the main barriers that influence the use of SMAT amongst humanitarian actors. Additionally, it can provide insight into how these barriers can be overcome and how the widespread use of SMAT can be facilitated. For instance, if an organisation lacks the financial resources to invest in SMAT, it might welcome suggestions for low-cost and freely available SMAT that can be used such as, Twitter Analytics and Tweetreach. Accordingly, this chapter focuses on the barriers to the use of SMAT identified from the interviews, survey and workshops. These barriers are organised in two tables (Table 3 – User-related barriers and Table 4 – Tool and data-related barriers). At times a barrier could be placed in both tables. For example, when a French-speaking organisation is unable to use a SMAT only available in English, this could be listed as a user-related barrier (the user does not speak English), but could also be listed as a tool-related barrier (the tool is only available in English). To avoid confusion, such barriers are placed in both tables, although different wording is used. In both tables each of the identified barriers is paired with an explanation and short suggestion for overcoming the barrier.

Key points and practical implications

Barriers that received explicit attention in the survey include, limited financial resources, lack of clarity concerning what tools can add to their work, lack of skills, language barriers, limited Internet access, and the tool requiring the use of SM that the organisation is not using. These are all listed in Figure 3, along with the percentage of survey respondents that mentioned this barrier. Other barriers identified in the survey included: 'Radian6 is robust and very useful to us - but because of the level of complexity, has not been widely adopted by other teams that would probably find it useful' and that 'There isn't a perfect tool that meets all our needs - some are too expensive, some don't offer the flexibility we need, some are difficult to learn and adopt as a team'. Additionally, findings from the interviews pointed to common barriers including a lack of time and manpower, and the value of analysing SM data not being acknowledged (in relation to the organisational culture hindering the use of SMAT). Also commonly addressed in interviews, the survey, and the workshops were barriers related to the complexity of using the tool, as well as the SMAT being unable to store, save, and export data.

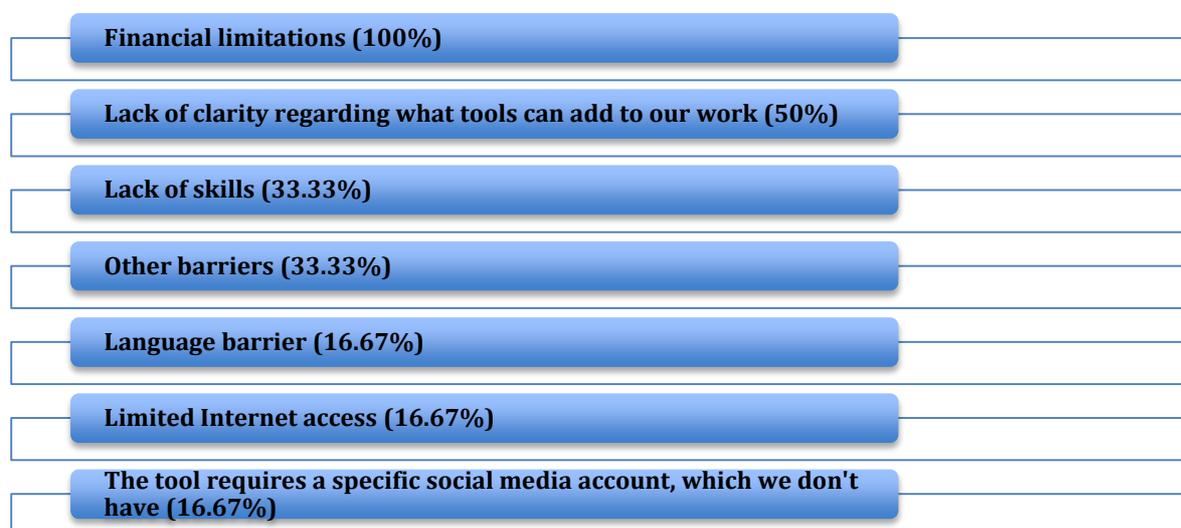


Figure 3: Barriers to the use of SMAT as expressed in the survey

User-related barriers

Table 3 presents an overview of 15 user-related barriers. These are not listed in order of importance, but rather in terms of their relationship. For example, financial resources are related to human resources as an organisation with a lot of money but little time, could hire a SM and SMAT specialist, sub-contract work, invest in training, or purchase a more expensive SMAT that requires less in terms of man-hours. Each of the barriers is accompanied by a short explanation and idea for mitigation. Where possible examples of tools are included.

Table 3: User-related barriers

No.	User-related barriers	Explanation & ideas for mitigation
1	Limited/no financial resources	The organisation has limited or no financial resources to invest in SMAT, to pay someone for their time to use SMAT or to investigate which SMAT might be useful. Ideas for mitigation: Use SMAT that are low in cost (e.g. Tweetreach), or make a strong case (i.e., explanation) as to how a more expensive SMAT (e.g., Brandwatch) would aid the organisation and look for alternative sources of funding, possibly within the RCRC network.
2	Limited human resources and time	The organisation has a lack of knowledgeable people available who are capable of working with SMAT and/or who can devote their time to researching or using SMAT (relates to barriers 1, 3, 4, and 5 in this table). Ideas for mitigation: Training from other National Societies, use an easy to use SMAT (e.g., Hashtracking.com), or SMAT with an accessible helpdesk (e.g., Swat.io) or the recruitment of specialised personnel if financial resources permit this.
3	High staff turnover	High staff turnover means that the skills and knowledge that employees have gained in using SMAT may be lost by the organisation and that resources will need to be invested again in training new employees in using SMAT. Ideas for mitigation: In the first instance, focus on training staff that have been with the organisation for a significant period of time. As a backup mechanism it would be good to save copies of training manuals or videos.
4	Limited ICT skills and knowledge	The organisation faces difficulties when it comes to knowing how to use SMAT and for what purposes SMAT can be used. Ideas for mitigation: Provide training on the use of SMAT and/or reference materials on using SMAT, or recruit personnel with these skills.
5	Lack of understanding of how to operationalise SMAT data	Without the technical knowledge and understanding regarding how to use SMAT and their data, the data cannot be used and the organisation may feel overwhelmed with the information that they have available. Ideas for mitigation: Coordination/collaboration/knowledge sharing across multiple agencies, courses on SM management for emergency management staff (e.g., offered by universities).
6	Unsuitable organisational structure	For example, the organisation does not have a communications team or has a poor understanding of communication in general. Ideas for mitigation: communication training or short-term international support from another National Society.
7	Organisational culture	A long-standing organisational culture or 'the old way of doing things' can limit the adoption of new technologies. There may also be a lack of a strong organisational commitment to using SM. Ideas for mitigation: Demonstrate the value of SM and SMAT via the presentation of a successful case study to management in order to gain their support and encouragement for these initiatives. SMAT that include case studies of non-profit organisations on their website include Brandwatch.
8	Absence of guidelines and frameworks for using SM data	The organisation may have concerns regarding the use of SM data in the absence of frameworks as they fear that they will be liable for (lacking) certain actions (e.g., a data protection policy) based on the information that they have available. Ideas for mitigation: Development of legal/policy frameworks for the use of SM in organisations.

9	Language barrier	The language spoken in the country and organisation is not the language that most SMAT are available in (i.e., English). Ideas for mitigation: use SMAT that are available in the appropriate language (e.g. Crimson Hexagon is available in Japanese), or SMAT with multi-lingual translation capabilities (quality can be an issue).
10	Value of analysing SM data is not acknowledged	In comparison to organisational and role-related priorities, analysing SM data may not be considered a priority as it is not fully understood what its added value is. Ideas for mitigation: Share information across the RCRC network or wider humanitarian network and engage in discussions on the value and purposes of analysing SM data.
11	Lack of permission and access to use the tool	An organisation may restrict its employees' use of SMAT as the value of the tools is not acknowledged. Ideas for mitigation: Trials with limited numbers of employees could be used to identify the value of using SMAT, before initiating the adoption of SMAT across the organisation. Alternatively, information sharing across the humanitarian network on the value of SMAT could be considered (see barrier 10 in this table).
12	Access to SM applications is blocked	An organisation can block access to SM applications or add them to restricted websites so they cannot be accessed from the office. This has implications not only for the use of SMAT, as they rely on SM data, but also for the organisation's online presence and interaction with the public in general. Ideas for mitigation: Allow unrestricted access to SM, at least for the people in the communication team (this relates to barrier 13 below).
13	Limited understanding of SM and SM sub-language/slang	Not understanding how SM is used can complicate the adequate analysis of data produced by SM. Not understanding the language people use on SM is part of this (e.g., FTTB meaning For The Time Being). Ideas for mitigation: humanitarian actors could work closer with online communities to understand the meaning of sub-language/slang used on SM, or could search the web for commonly used abbreviations and slang on SM.
14	Limited Internet access and bandwidth	The organisation faces issues with limited Internet access or bandwidth issues to be able to use SMAT. Ideas for mitigation: Tools that can passively download. The tool does not have to be online at busy use times.
15	Lack of trust in the public's SM usage	The organisation feels that the public's intentions related to the use of SM are not always transparent. Ideas for mitigation: Learn about how SMAT can be used to engage with members of the public who support and promote the organisation's mission and aims.

Tool and data-related barriers

In addition to user-related barriers, there are also those barriers relating to the actual tool and being able to access/use the data that the tool requires. Similar to Table 2, in Table 4 these barriers are not listed in order of importance, rather they are grouped according to those barriers that they relate to. Where possible examples of tools are included.

Table 4: Tool & data-related barriers

	Tool & data-related barriers	Explanation & ideas for mitigation
1	Language of the data	The tool cannot analyse the country's language used on SM (e.g., Sinhala). Ideas for mitigation: Look for a tool that provides the ability to analyse SM data in the particular language required (i.e., a tool that supports different alphabets), for instance the Sysomos Heartbeat tools can analyse data in multiple languages including, but not limited to, Sinhalese.
2	Language of the SMAT	The tool is not available in multiple languages, or at least not in the language desired by the humanitarian actor. This relates to barrier 7 in the user barriers table. Ideas for mitigation: Research which tools are available in the applicable language or in a language that could be used. For instance, Meltwater buzz is available in 29 languages.

3	Cost	The cost of tools varies significantly, ranging from free to use to several thousands of US dollars a month. The latter can present a barrier to humanitarian actors' use of the tool. This relates to entry 1 in the user-related barriers table. Ideas for mitigation: Select and use a tool that is in line with the budget that is available or that has options for upgrades (e.g., Hootsuite), or make a good case to senior management as to how a more expensive SMAT would be of use. Where applicable, look for alternative sources of funding, possibly within the humanitarian network.
4	Lack of capacity to handle large amounts of information/data	The SMAT crashes when trying to handle large amounts of data and therefore is unreliable. Ideas for mitigation: Consider working with smaller data sets if applicable. Alternatively, this entry could refer to the gathering and analysis of data at a central level, e.g., one tool that can be used by multiple humanitarian actors in a given network across different countries that makes the data analysed accessible to all. Ideas for mitigation: In partnership with another RCRC organisation, use a tool that provides multiple licenses, for instance Crimson Hexagon.
5	Inability to function with low Internet speed	In countries with a low Internet speed the use of certain SMAT may not be possible, or may be slow. Ideas for mitigation: use SMAT with pages that are not slowed down by heavy analytics processes running in the background, or the possibility to stop these processes. In general, use SMAT that offer fewer functions and that are less comprehensive (e.g., Tweetdeck).
6	Lack of usability/ease of deployment	It is not clear how the tool could be used. The functions are not laid out clearly, and there is little help available in the sense of manuals or a helpdesk, making the tool difficult to use. Ideas for mitigation: Choose a tool that has manuals, training, detailed instructions and/or an online helpdesk available, for instance Tweetreach.
7	Not available as a mobile phone application	A mobile phone application could facilitate the use of the SMAT when the user does not have access to their computer. Ideas for mitigation: Use a tool that has a mobile phone application, for instance Hootsuite.
8	Too many functions	The tool has so much to offer that the user cannot clearly identify what the main functions are that the tool provides. This can leave the user confused or unsure where to start when it comes to using the tool. Ideas for mitigation: Select SMAT that have been used for disaster management and preparedness in particular, for instance Brandwatch. The helpdesk can then (possibly) provide more tailored information on functions that could be useful.
9	Inflexible or prohibitive contract	Contracts between the sellers and users of SMAT may also involve restrictions (e.g., on access to data). Ideas for mitigation: Review the terms and conditions of contracts with the providers of SMAT carefully to ensure that it is suitable.
10	Lack of interoperability with other (non-SM) sources	The tool is not able to draw in and use related information from sources other than the SM applications, so does not take into account forums, blogs, or the web in general. Ideas for mitigation: Select a tool that is able to analyse data from a variety of different sources including web pages, for instance Sysomos MAP tools.
11	Quickly changing standards/rules	What the tool offers changes. For example: the tool has an agreement with a data provider to have access to the full Twitter firehose (i.e., all tweets dating back to when Twitter started). When the nature of this agreement changes, this has implications for the data access the user of the tool has. Ideas for mitigation: Not much can be done about this. Try to stay up-to-date with changes in tools.
12	No multimodality /multi-platform analysis	The tool addresses one or a limited number of SM applications. Ideas for mitigation: use a tool that is able to analyse across multiple applications, for instance Hootsuite or Crimson Hexagon.
13	Insufficient data-retention/lack of data ownership	The tool is unable to store/save data in a continued manner after first accessing it, or does not allow the user to export it. This complicates running data analysis over a longer period of time. Ideas for mitigation:

		check what the SMAT's policies are with regard to this.
14	Data quality	As data may be accessed through a data provider, there is the potential for the data to be of low quality and that the data may not accurately represent what it is supposed to represent. For example, words can be misrepresented, or data includes duplicate retweets or messages from robots. Ideas for mitigation: examine the SMAT's noise/spam filter: a noise filter filters out irrelevant SM messages, for example messages not relevant to the topic (e.g., those that mention a location's name in an irrelevant manner, such as 'The New York Times' when looking for messages on New York), or duplicate messages. Crimson Hexagon trains filters according to standards set by the user.
15	Data accessibility	The tool does not provide adequate access to the required data. The tool may only provide access to a small percentage of SM data (e.g., 1%) or only provide limited historical data (e.g., for the past 30 days). Ideas for mitigation: Select a tool that meets requirements regarding the percentage of data analysed and the time frame that the data covers. More expensive tools such as Radian6 analyse a larger percentage of data than free tools such as Hashtagify.
16	Lack of licenses/limited user accounts	The tool only provides one or a limited number of licenses/user accounts. Ideas for mitigation: Select a tool that provides the number of licenses/user accounts that are required. Brandwatch for example, offers unlimited licenses.
17	Lack of protected access and user roles	The tool does not provide protected access to data (i.e., anyone can access the data) and does not provide the ability to place different access/restrictions on different users within the same account. Ideas for mitigation: Select a tool that meets the organisation's requirements in terms of user access to data. In Swat.io, for example, it is possible to create different categories of users.
18	Limited compatibility between related tools	Different SMAT cannot be used in combination with each other. For example, the data sets produced and used by one tool cannot be used by another tool, or the tools are not able to operate in a compatible manner, e.g., they cannot analyse both SM data and web-based data. Ideas for mitigation: Use tools that can integrate data from other sources, for instance the Sysomos MAP tool integrates Google Analytics data.
19	Display capabilities	The tool is not able to produce graphics of visualisations of the data analysis, or cannot export these visualisations. This may also include the lack of the ability to customise the display, e.g., a customisable dashboard. Ideas for mitigation: Select a tool that can do this, for instance Hootsuite.
20	Tool does not offer the variety of functions needed	Cheaper tools commonly offer a limited set of functions. Ideas for mitigation: Consider using a couple of low cost tools (e.g., Twitter Analytics and Sprout Social) that (combined) cover the functions required or, if possible, a more expensive tool as these commonly cover a wide range of functions.
21	Lack of contextual awareness (e.g., in keyword analysis/natural language processing)	Tools do not have the capacity to recognise the similarity between terms used in natural language, for example they do not know that 'The Big Apple' is 'New York'. Ideas for mitigation: Consult libraries/ gazettes of critically and geographically specific terms, or select a tool that is more advanced in this field, such as Sysomos MAP.
22	Obstacles to capturing data from private networks	Closed groups or private networks (e.g., Whatsapp and Snapchat) can provide important information for humanitarian actors but the data generated by private networks is currently inaccessible. In terms of mitigation, limited suggestions can be offered. The data can only be used if the applications make their closed groups' data public – however, this is likely to have severe implications for an individual's privacy and thus may not be a suitable source of data.
23	The general public does not have access to smart phones (i.e.,	Limited use of SM has implications for the use of SMAT as it means that SM data may be unavailable from particular geographic and demographic groups of the public. Ideas for mitigation: It is recommended that SM

	limited use of SM)	should not be the sole method used to communicate with target audiences. In order to engage with groups that may not use SM, use a variety of different communication channels that enable two-way communication (e.g., workshops).
24	The tool is out-dated	The tool does not keep up with developments that are relevant to their use for data analytics. Ideas for mitigation: Stay up-to-date on the latest developments in SM and SMAT by conducting research online and subscribing to relevant websites and/or newsletters.

Use cases

This section provides guidance to RCRC actors and other humanitarian organisations on how to manage some of the more overarching barriers as highlighted in the interviews and survey. This guidance is presented in the form of four in-depth uses cases and eight mini-use case scenarios. Eight barrier-related factors (listed below) were used to design the four use cases. These factors were selected based on the interview, survey and workshop findings.

1. **English Language:** Many SMAT are developed and the interface is only available in the English language or in a limited set of other languages. SMAT available solely in English or in a limited number of other languages can obstruct the use of SMAT by organisations that do not speak English fluently and are unable to understand the SMAT interface in English.
2. **Organisational culture:** The organisational culture in this context refers to the attitude and values in an organisation that encourages or prohibits technological innovation and the adoption of new technologies such as SMAT.
3. **Value:** Related to organisational culture, whether an organisation understands and acknowledges the value stemming from engagement with SM and the use of SMAT can influence their adoption.
4. **Human resources:** This refers to the time and manpower an organisation can, or is willing to, invest in the use of SMAT. This can be related to financial resources, i.e., if an organisation has limited funds it may be unable to invest this in additional human resources to use SMAT.
5. **Technical competence:** While organisations may be interested in using SMAT, they may be hindered by a lack of knowledge on: which tool to use - the organisation may not have the capacity to carry out a thorough evaluation of SMAT and know how to use a SMAT.
6. **Cost:** Although free and low-cost SMAT are available they are limited. Low cost tools commonly do not offer the comprehensive range of functions that more expensive tools offer, such as the ability to store and report data. Additionally, access to large data sets is commonly not possible in free or low-cost tools, which means that their use can less easily be integrated into response-related work. Hence, despite the availability of low-cost tools, cost is an important barrier.
7. **Financial resources:** Organisations may have adequate financial resources but may or may not be willing to invest budget on SMAT or additional personnel to use SMAT.
8. **Contextual factors:** Contextual factors include those other factors that may restrict an organisations engagement with SMAT. These include: Internet access, use of SM by the target audience, a highly transient population (e.g., in large cities with high numbers of tourists).

These factors have been combined in various ways, resulting in the development of four use cases. In order to support humanitarian actors in selecting the use case(s) that best match their organisation, the following figure (5) provides a guide for use case selection:

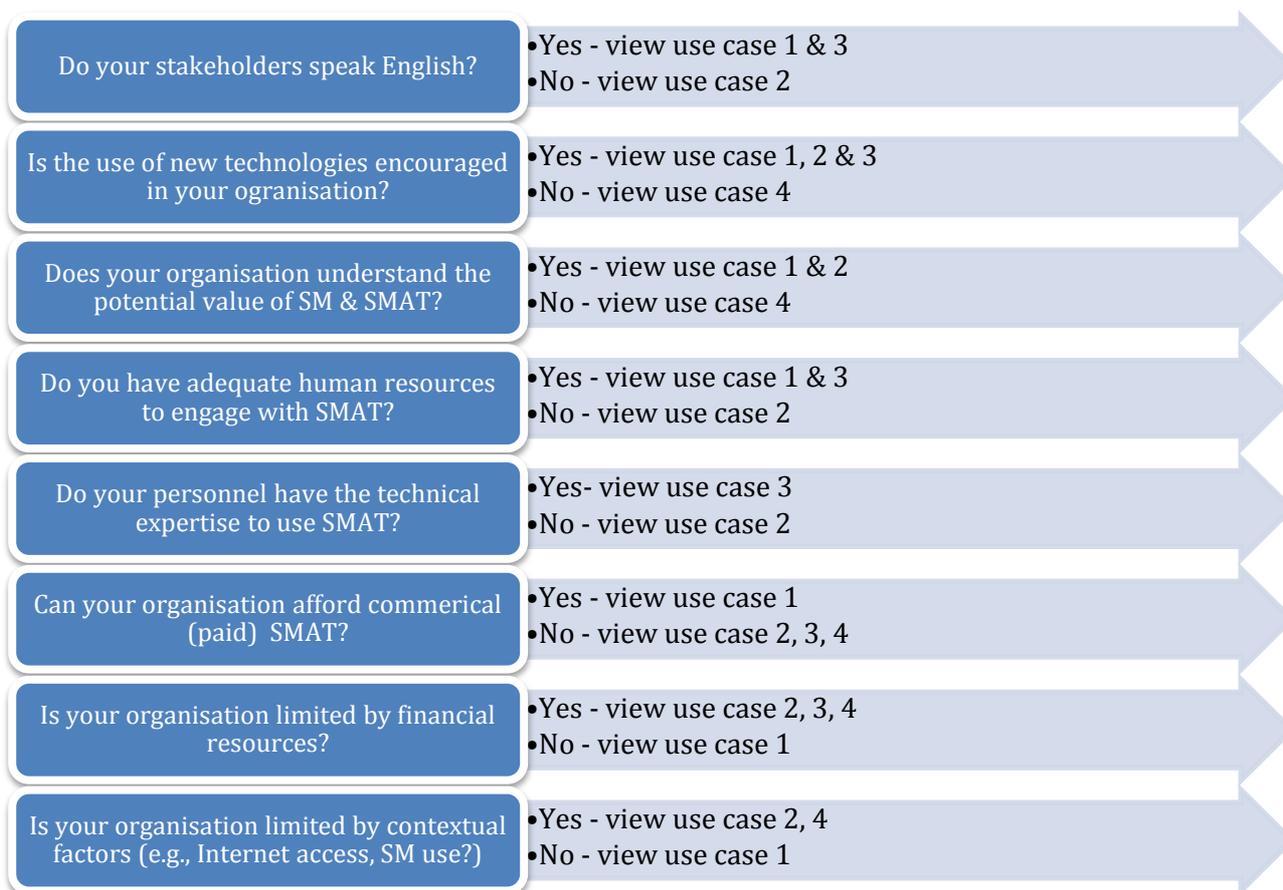


Figure 4: Suitability of use cases based on restrictive factors

Use case 1

The following use case is typical of National Societies or other humanitarian actors with the following characteristics:

- The RCRC actor is comfortable using a SMAT in the English language
- The organisational culture is open to the adoption of new technologies
- The organisation has sufficient human resources to invest in using SMAT
- The organisation acknowledges the value of SMAT for its work, is willing to spend financial resources on SMAT, and can afford to pay the higher cost of a SMAT with a more commercial price tag
- A contextual setting in which the use of SM (e.g., Facebook and Twitter) amongst the general population is relatively widespread

These characteristics influence and shape the organisation's selection and use of SMAT. Primary impacts and further subsequent impacts are identified in Figure 5.



Figure 5: Characteristics and impacts associated with use case 1

As the use of SM is relatively widespread in the geographic area that the organisation operates in, it is likely that SM plays an important role in the communication between the organisation and the public, both when preparing for disasters and during response. Additionally, in some of the organisation's partner countries SM may play an increasingly significant role during disaster response, and the organisation may need to play a supporting role in order to deal with the increase in SM messages as part of the response. For instance, the British Red Cross played a large role in managing the Nepal Red Cross Society's SM accounts in the immediate aftermath of the 2015 Nepal earthquakes. Being able to work with and analyse large amounts of real-time data is essential when using SMAT for response, which would therefore require the use of SMAT that have access to large data sets. These more commercial SMAT encompass a wide range of functions, generally include all of the functions that free or low-cost tools provide, and can be useful both for preparedness and response. Therefore, when considering using SMAT in the long-term and across different phases of disaster management, these commercial SMAT have potential to be used in a sustainable way. Considering the well-developed and growing engagement with SM in the context that the organisation operates in, the sustainable use of such SMAT could be recommended.

SMAT examined in this study that would fall into this category include: Brandwatch, Crimson Hexagon, the Sysomos tools, and Radian6. It is important to keep in mind that these tools are relatively time-consuming to set up and to learn how to use, but once completed, they can collect and analyse data in a way that does not require a lot of on-going staff time in comparison to many of the cheaper tools. One reason for this is that the commercial tools automatically store the data for which there are established search streams, as well as being able to generate reports, whereas some of the cheaper SMAT do not offer this option, or it needs to be done manually. Another important factor to consider is that the SMAT has resources that facilitate the organisation's staff investing their time as efficiently as possible. Choosing a tool (e.g., Crimson Hexagon) that has sufficient instructions on its website, as well as an online helpdesk available, could contribute to this. One of Crimson Hexagon's strengths is the possibility to 'train' posts to monitor public opinion (e.g., to identify rumours). For example, if an organisation wants to monitor how the general public perceives its work, it can

create a number of categories that it wishes to measure and then add 10-20 example posts to the categories to 'train' the algorithm (see Figure 6).

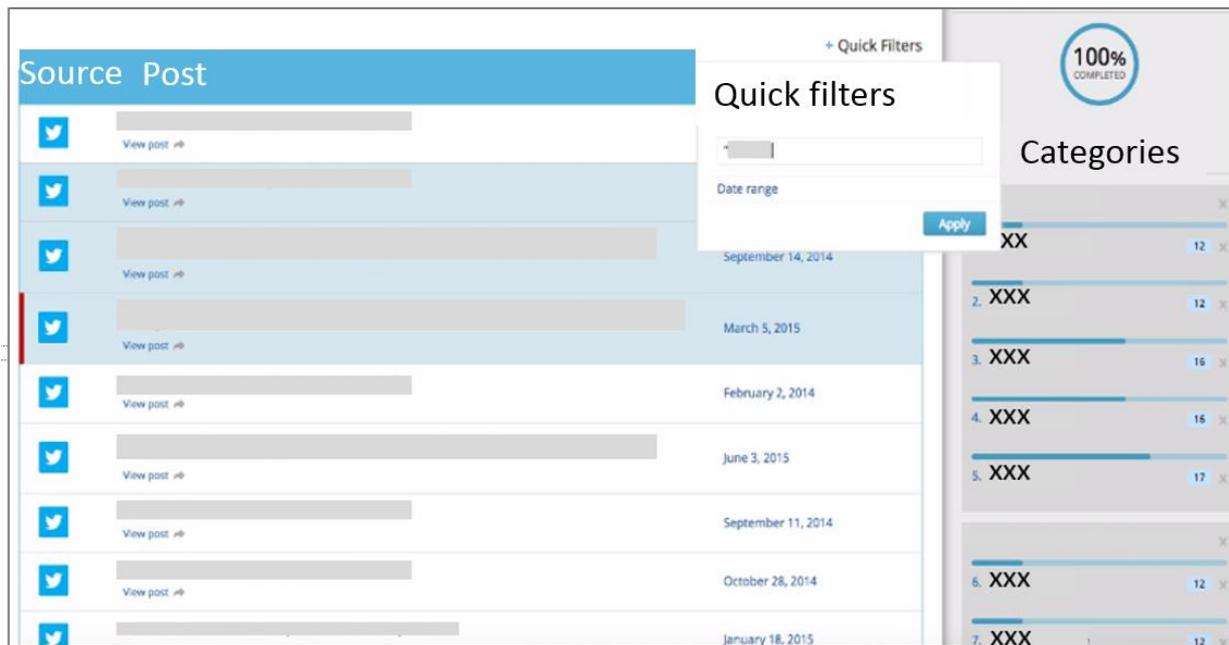


Figure 6: Impression of how to train filters in Crimson Hexagon

Furthermore, if the organisation encounters irrelevant examples, it can remove the posts from the data by 'training' them as irrelevant. This process is sped up with features such as quick filter, which basically implies that by manually coding the algorithm the tool is trained to recognise the types of posts that should be associated with each category. This is particularly valuable when considering the long-term use of the tool. When running the analysis, this then produces results that have a high correlation with human-coded results, while using fewer human resources.

Although the price tag of some commercial tools is relatively high, many offer significant discounts for registered charities or are open to discussing pricing options. Although the commercial tools encompass many similar functions, each of them is slightly different when it comes to their user interface and the way they are set up. Therefore, it is recommended that the organisation interested in using such tools schedules a demonstration of the tool, and if possible a trial, so that it can get an impression of which tool is best suited to its needs.

Use case 2

The following use case is typical of National Societies or other humanitarian actors characterised by the following features:

- The humanitarian actor is not comfortable using a SMAT in the English language.
- The organisational culture is open to the adoption of new technologies.
- The organisation has insufficient human resources to invest in using SMAT, and their personnel have a limited technical understanding of SMAT.
- The organisation understands that SMAT can add value to their work, but has limited financial resources and is concerned with spending money on a SMAT with a commercial price tag.

- A contextual setting in which the use of SM (e.g., Facebook and Twitter) amongst the general population is on the rise but not as widespread as the contextual setting presented in use case 1.

These characteristics influence and shape the organisation’s selection and use of SMAT. Primary impacts and further subsequent impacts are identified in Figure 7.



Figure 7: Characteristics and impacts associated with use case 2

As the organisation struggles with financial resources, and the use of a relatively expensive SMAT would not be sustainable, the use of commercial SMAT is not recommended unless one of these tools is used by a National Society that the organisation has ties with and could partner with to get a license or user account. This means that its options are predominately in the area of free or low-cost SMAT that are available in languages other than English. However, as the use of SM is on the rise, it is worth considering choosing a SMAT that can be used in the long-term or for which upgrades are available, as this enhances the sustainability of using SMAT. To illustrate, consider an example of a National Society that operates in a Spanish-speaking country in Latin America. SMAT presented in the catalogue (see [Annex B](#)) that are available in Spanish include: Brandwatch (but this tool is not within budget), Hootsuite, Meltwater Buzz, Topsy, Google Analytics, and the built-in analytics as part of Facebook Ads and Facebook Insights. Which tool the organisation prefers to use depends on what it needs it for.

For instance, an organisation may want to spread the news about a preparedness-related campaign far and wide, and has been working on a press release that it plans to send to a large number of people. SMAT could facilitate reaching these and other people. Hootsuite is an example of a SMAT that is relatively low-cost and is available in Spanish. In Hootsuite the organisation can set up a search on the topic of its campaign, for example, a Twitter search on the words ‘preparación ciclones’ (i.e., preparation cyclones). This then displays a list of tweets on this topic. As illustrated in Figure 8 the organisation can restrict the messages to the geographical area that it operates in and can archive these messages if it upgrades to Hootsuite Pro.

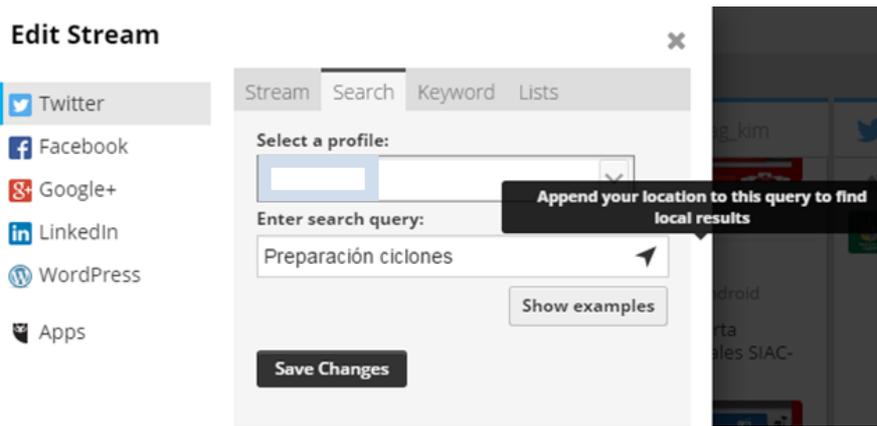


Figure 8: Setting up search streams restricted to geographical areas in Hootsuite

It is possible to see the Twitter user’s Klout score for each of these tweets: a high Klout score is an indicator of that user’s significant online influence. This allows the organisation to identify influential users (or opinion leaders) that tweet on the topic of its campaign, after which it can start following them, and retweet their tweets etc., in other words: engage with them. This can add value to the organisation’s work in the sense of reaching people with news on its campaign in a couple of ways. For example, once the Twitter user follows the organisation back, the organisation’s tweet will show up in the user’s newsfeed. Considering that this user has already expressed an interest in the topic of the campaign, they might very well retweet the message to their followers. Alternatively, the organisation could ask the Twitter user directly if they can retweet the message. In both cases the reach of the message is widened.

Use case 3

This use case represents National Societies or other humanitarian actors that display the following characteristics:

- The humanitarian actor is able to use SMAT in the English Language
- The actor has some knowledge and expertise on how to use SMAT and the purposes that SMAT may be used for
- The value that SMAT can provide to their work is acknowledged
- Limited financial resources and the cost of particular tools restricts the SMAT that the actor is able to use
- The organisational culture has not been highlighted as restricting the use of SMAT

Figure 9 highlights how these characteristics can impact upon the actors’ selection and use of SMAT.

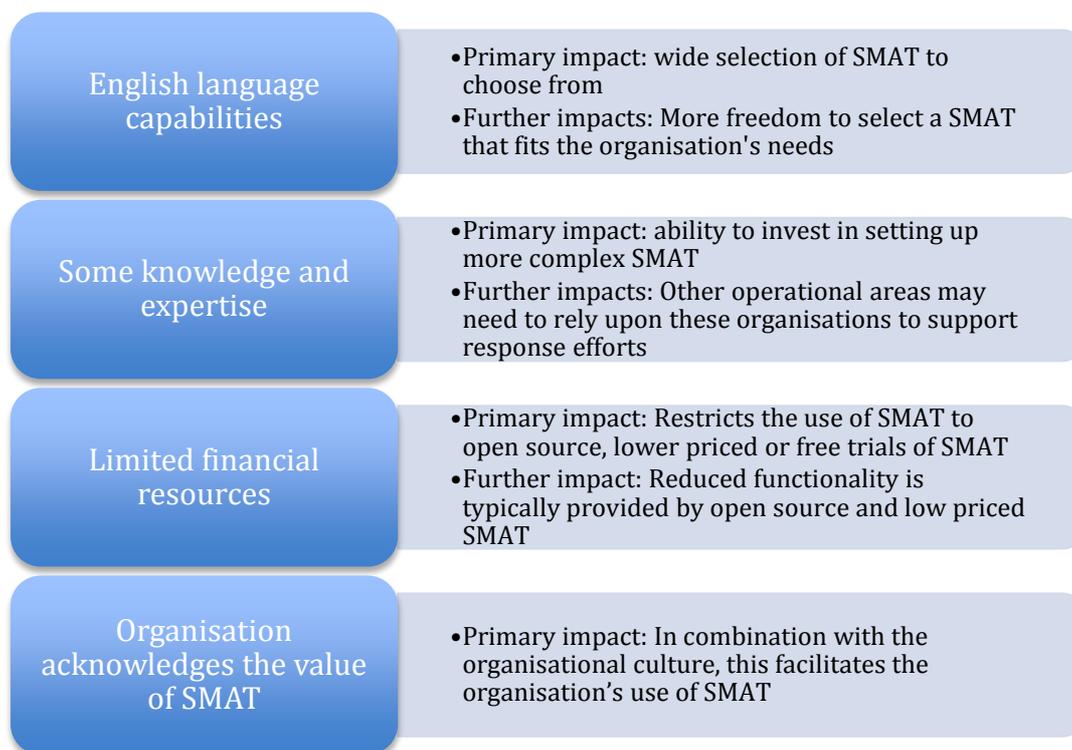


Figure 9: Characteristics and impacts associated with use case 3

As the humanitarian actors are able to understand English and have some knowledge and expertise on the purposes that SMAT can be used for, the primary factor influencing their selection of SMAT is their limited financial resources. The more commercial SMAT (e.g., Radian6, Brandwatch, Crimson Hexagon), which are considered to offer a wider range of functions, are not suitable due to their cost and the limited budget that these actors have available. Rather, lower priced SMAT that provide a wide (but perhaps not full) range of functions can be selected. It is important to note that these SMAT commonly have access to smaller data sets. Examples of lower priced SMAT outlined in the catalogue in [Annex B](#) include, but are not limited to: Sprout Social, Crowdbooster and Hashtracking.com. Sprout Social is currently available from 59 USD per month and enables actors to:

- Monitor the growth of multiple accounts
- Compare themselves to competitors and other organisations
- Compare engagement with their messages across different accounts
- Identify influential people, reach, the demographics of SM users, the countries that these users are coming from and the application that they are using to browse SM

However, this tool does not offer users particular functions that humanitarian actors may benefit from, such as the ability to monitor the number of people using a particular hashtag, meaning that if humanitarian actors are interested in this particular function they will need to use additional (free or low-cost) SMAT such as Keyhole or Hashtracking.com. As illustrated in Figure 10, Hashtracking.com (a free SMAT) provides information on the activity, exposure, most influential user, and the user tweeting the most, related to a particular hashtag.

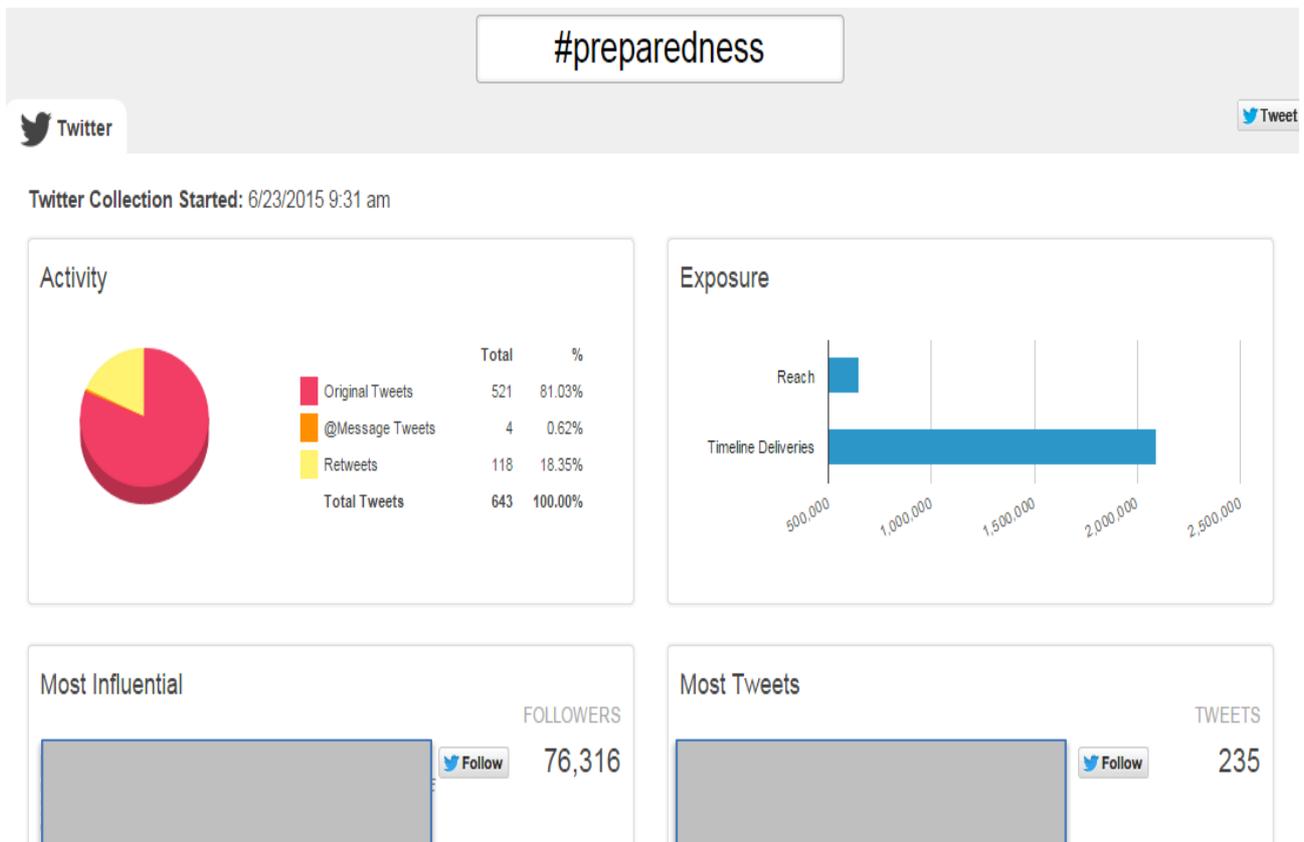


Figure 10: Tracking the hashtag #preparedness using Hashtracking.com

Additionally, certain SM applications including Twitter and Facebook provide their own free analytics tools that enable users to identify trends in their SM activity and the engagement with their activity (e.g., likes, retweets, mentions). Although free trials are an option that would enable humanitarian actors to experience and test the different functionalities of SMAT, they are only typically offered on a short-term basis (e.g., seven days) and would not necessarily be suitable for analysing SM in the long-term, which is the focus of preparedness and DRR.

Use case 4

This use case represents National Societies or humanitarian actors characterised by the following features:

- The humanitarian actor is able to use SMAT in the English language, however, there is a highly transient population which means that in addition to English, many languages are spoken by the organisation’s volunteers
- The actor has some knowledge and expertise on how to use SMAT and the purposes that SMAT may be used for
- The organisation has a limited budget and cannot afford to pay for a more expensive commercial tool
- The organisational culture does not support the use of SMAT as they do not recognise the value in SM and SMAT

Figure 11 highlights how these characteristics can impact upon the actor’s selection and use of SMAT.

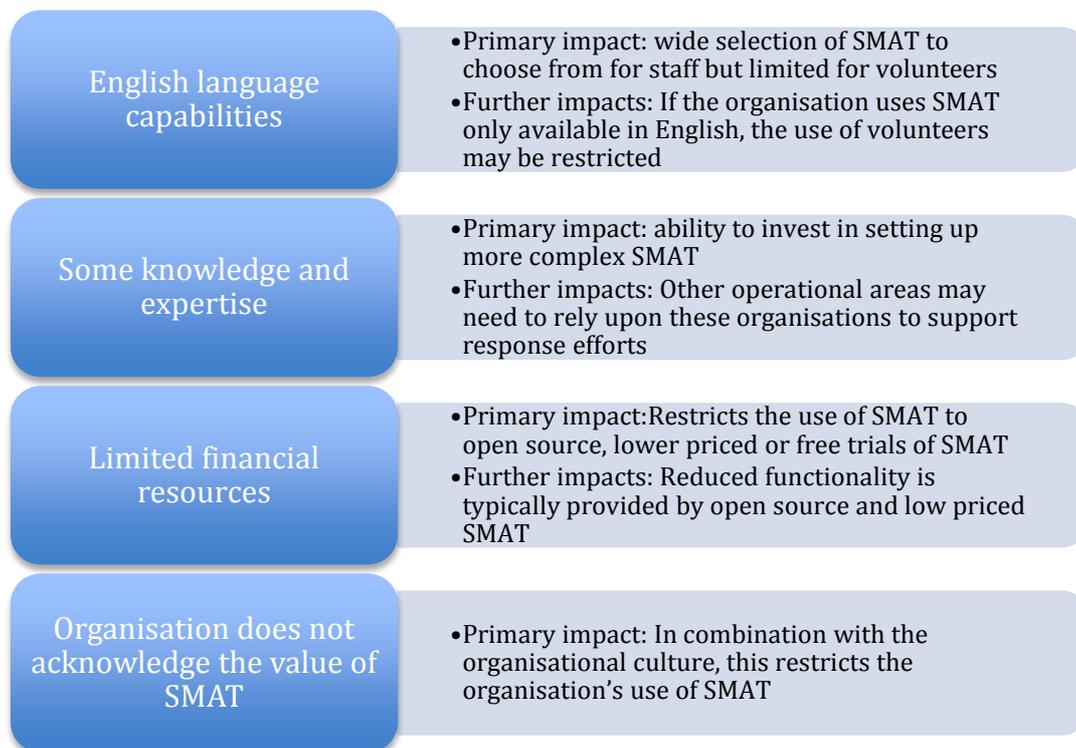


Figure 11: Characteristics and impacts associated with use case 4

This use case demonstrates how a particular combination of different characteristics can make the selection of SMAT very difficult for an organisation. For instance, whilst the core staff of an organisation may be able to use the SMAT available in English, volunteers who speak English as a second language may not be able to use the SMAT. If the organisation does not have budget available for tools with more comprehensive functionality that provide the interface in multiple languages (e.g., Radian6, BrandWatch, Meltwater buzz), there are some free tools available in additional languages to English (e.g., Hootsuite, Facebook Insights, Topsy). For instance, as illustrated in Figure 12, Hootsuite is available in German. It is also available in English, Spanish, French, Portuguese, Indonesian, Italian and Chinese, and provides a free version of the tool, in addition to more comprehensive paid versions.

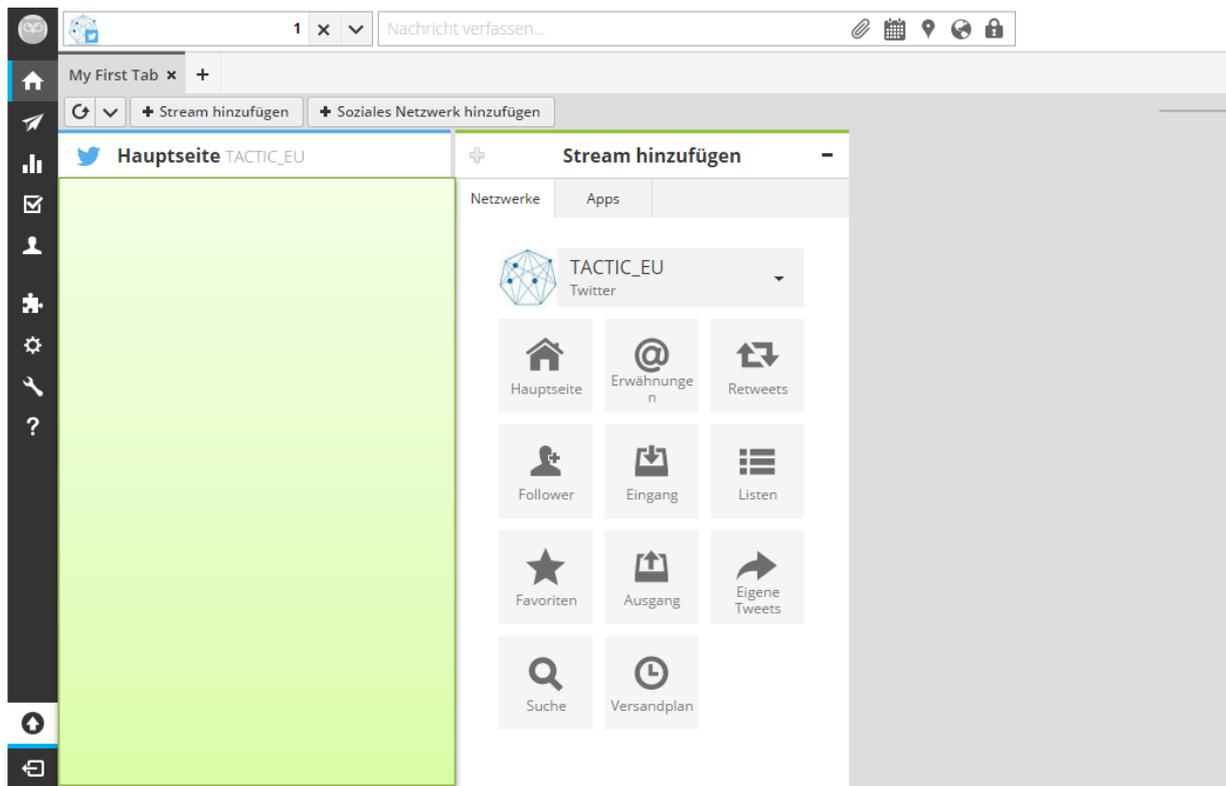


Figure 12: Hootsuite available in German

Enabling volunteers that do not speak the national language fluently to use SMAT in their own language would provide humanitarian actors with an opportunity to use the volunteers to analyse and engage with preparedness conversations on SM in other languages to increase the reach of the organisation’s preparedness campaigns.

As there is limited budget available and the organisational culture does not fully recognise the value of SM and SMAT, free tools (e.g., Twitter Analytics, Tweetdeck, Facebook Insights, etc.) can be used to analyse SM information and to illustrate the value of SMAT to management. This can be done by showing management how the information gathered from SMAT was used to continuously inform the development of a campaign in order to increase its reach and impact. Using free tools, rather than free trials with a limited time period, enables users to demonstrate the long-term value of SM and SMAT. For instance, Twitter Analytics provides a summary of engagement with an account over a number of months.

Although the selection of use cases (above) is not exhaustive, they provide detailed guidance on how organisations can manage specific barriers, particularly those that are not restricted to the use of the English language, financial resources and capacity – but rather are compounded by other factors (such as the perceived lack of value given to SMAT by an organisation). In contrast, an overview of more specific, yet less detailed mini-use cases that are focused on the use of the English language, financial resources and organisational capacity are presented in the table below and may provide further insights and guidance for humanitarian actors in their decision-making process when selecting suitable SMAT.

Table 5: Mini-use cases

Use of English language	Financial resources	Capacity (Personnel & time)	Use of SMAT
✓	✓	✓	Use a more expensive tool, such as Radian6, or a range of cheaper tools, such as Tweetreach or Topsy. More expensive tools typically have more automatic features that save time and have the advantage of being more suitable for use in other aspects of disaster management, as they have access to large amounts of (historical) data. The latter are more labour intensive, but aid in further developing personnel skills in using SMAT.
✓	✓	X	As financial resources are not restricted, but the organisation is pressured for time and personnel that can use SMAT, a more commercial SMAT, such as Brandwatch, may be suitable. The organisation can benefit from its advantages (e.g., access to data, automatic report generation) and it does much of the work for you.
✓	X	✓	Use a range of low cost tools that are suited to the purposes for which SMAT will be used. This requires more capacity in terms of the time it takes to examine which tools are more suitable, and time to actually use the tools, but as capacity is available this should not be an issue. For example, use Followerwonk to analyse the activity of a Twitter handle, and Hashtagify to search for popular hashtags.
✓	X	X	Use (a combination of) tools that are intuitive, easy to use, and have an online helpdesk. Although the use of free tools is generally more labour-intensive, this should be in part compensated by the availability of real-time guidance. Additionally, with regard to preparedness activities of a temporary nature, you can consider using tools with a free trial (e.g., Hashtracking.com).
X	X	X	Use a small combination of tools that are intuitive and easy to use, or that have an online helpdesk. Pay attention to choosing tools that are available in languages other than English (e.g., Hootsuite or Topsy). Additionally, with regard to temporary preparedness campaigns, consider using tools that have trial versions.
X	✓	X	Use a more expensive tool that is available in languages other than English, for instance Brandwatch is available in Spanish and German. The organisation is able to benefit from its advantages (e.g. access to large amounts of data, automatic alerts) and it does much of the work for you.
X	✓	✓	Use a more expensive tool (e.g., Brandwatch), or a range of cheaper tools (e.g., Topsy) as long as they are available in languages other than English. The latter tools are more labour intensive, but as capacity is available it is an option to further develop personnel skills.
X	X	✓	Use a range of low cost tools that are available in the required language. This requires more capacity in terms of the time it takes to look into which tools are most suitable and the time to actually use the tools.

Having provided a series of use cases and scenarios of how to manage certain barriers relating to the selection and use of SM and SMAT for DRR and preparedness, the subsequent chapter provides further guidance to humanitarian actors on engaging with SMAT for DRR and preparedness.

IV. RECOMMENDATIONS ON HOW TO USE SMAT FOR PREPAREDNESS & DRR

Based on the analysis of available SMAT and current opportunities for using SM data associated with this, this chapter provides recommendations on the use of SMAT for DRR and preparedness. The subsequent sub-section provides recommendations of a general nature, providing strategic advice on overall preparation for the use of SM and SMAT within DRR and preparedness activities. This is followed by specific recommendations, presenting in detail for what purposes SMAT can be used in DRR and preparedness.

General recommendations

Generic advice on considering what SMAT to use for preparedness and DRR involves encouraging organisations to:

- a) Develop a strategy to prepare to use SMAT for DRR and preparedness;
- b) Considerations for selecting SMAT, and;
- c) Considerations regarding how SMAT can be used for disaster response.

[Annex C](#) includes a printable checklist that can be used as a support tool by the RCRC network and other humanitarian actors in their pursuit of engaging with SMAT.

Develop a SM & SMAT strategy – Prepare to use SMAT for DRR & preparedness

In order to implement SM and SMAT in a complementary manner within DRR and preparedness activities, it is necessary to incorporate a strategy that is specifically focused on the use of both SM and SMAT.⁵

The SM strategy should work alongside the envisioned use of SMAT within an organisation; the strategy ought to incorporate:

- **Who** in the organisation should be responsible for SM and SMAT related activities?
- **Who** in the target audience should communication be aimed at?
 - *SMAT can then be tailored to monitor certain groups and influential individuals.*
- **What** information/content should be communicated via SM?
 - **What** messages that have been communicated via SM should be monitored and measured via SMAT?
- **When** should SM be used?
- **When** should SMAT be used?



The strategy should link to the organisation's internal policies and procedures to ensure the ethical and socially responsible use of SM and SMAT. Considerations specific to SM and SMAT that could be taken up in policies include:

- **A code of conduct for acceptable behaviour on the use of SM and SMAT by staff and volunteers** – this will encourage a climate of accountability within the organisation, and will help to build the transparent use of SM and SMAT that will in turn help to build trust with the target audience. This code of conduct should include:
 - What content should be shared on SM (this ought to be based on the SM strategy of the organisation)

⁵ Recommendations for further reading on developing a SM strategy can be found in [Annex E](#).

- How negative communication from the public should be responded to
- How to re-use material gathered from others (e.g., acknowledging the owner of a photograph when re-sharing the image)
- How to safeguard PII (personal identifiable information) (e.g., use of Anonymisation techniques)
- Communicate clear information to the target audience (via the organisations' website and SM profile – if space permits) on how SM is being used – e.g., will it be monitored, how can they get in touch?
- Create and enforce a data protection policy when collecting, storing and sharing social media data for data analysis use
 - Check and seek support from national authorities on national (and any International) requirements for data protection regulations and ensure that appropriate measures are in place:⁶
 - Consider organising an independent Privacy Impact Assessment that will identify any privacy-related risks (e.g., storing personal data), evaluate an organisation's data protection policy and provide recommendations on how to improve data protection policies of an organisation.
 - Ensure measures are in place to securely store data. Considerations include:⁷
 - What will be collected (text, images, video etc.)?
 - How will it be stored?
 - How long will it be stored for?
 - Who will have access to this information?
 - Who will this data be shared with?
 - Ethical considerations
 - Be transparent: Make it clear to the target audience and volunteers what SM and SMAT will be used for in relation to disaster preparedness and DRR – this is key for building trust between an organisation and target audience
 - Consider advertising the organisations' SM & SMAT use (e.g., on their website, in brochures) in order to increase awareness of their presence on SM and what SMAT will be used for.

In order to develop this strategy, a number of initial background research activities should be considered to strengthen it:

- Spend some time to understand the SM use of the local 'virtual' audience that the organisation is targeting
 - The SM strategy should consider what SM applications the organisation's target audience is already using. This background information can ensure that the organisation is reaching the correct audience via the channels that they are active on – this will also ensure that any SM analysis activities are not wasted on a non-participating or non-engaged audience
 - Remember – not all members of the community are active on SM, this should form one component of an organisation's disaster preparedness and DRR communication activities – traditional methods of communicating (e.g., radio, leaflets, face-to-face communication) are also important.

⁶ For instance, within the European Union, each Member State has a National Data Protection Authority they can consult with if they have any questions relating to data protection. Further information can be found here: http://ec.europa.eu/justice/data-protection/bodies/authorities/eu/index_en.htm

⁷ Recommendations on further reading material and guidance can be found in [Annex E](#).

- **Where possible, develop metrics for measuring impact and engagement** – although difficult, it may be useful to consider outlining some metrics or goals for successful engagement. This is of particular importance for National Societies as their target audience is an ever-growing population on SM in the country in which they operate.
 - Examples could include: number of new followers, number of retweets, number of favourites, number of likes on Facebook, Instagram, Pinterest and/or LinkedIn, number of comments received to posts, the number of clicks on a post.
 - Note: The goals that an organisation sets (e.g., 50 new followers by December 2015 or 50 retweets of a preparedness message) should be based on the organisation’s target audience – thus understanding the target audience (what percentage is online, etc.) will be crucial to outlining and meeting realistic goals.

- **Consider establishing SM standards that will aid the organisations’ use of SMAT⁸**, i.e., hashtags and keywords that the organisation plans to use. Agreeing on which hashtags will be used (e.g., during a campaign) can aid the monitoring of these hashtags from the first moment they are used. Examples include:
 - #Prepare
 - Region/state name in combination with the category of the potential disaster (e.g., #WAVX for weather related warnings in the state of Virginia)
 - City & Country name (e.g., #CanterburyUK)
 - Hazard type (e.g., #Flood)
 - Humanitarian organisation’s name (e.g., #philredcross)
 - Campaign name (e.g., #silentdisasters, #FridayFirstAid)

Encourage others (e.g., members of the public and volunteers) to use and monitor these hashtags to help enhance their own preparedness and risk awareness.

 - Communicate these standards to the organisations’ target audience – be transparent.

Lastly, take the time to **reflect upon and improve the SM & SMAT strategy on a periodic basis**; consider what has worked and what has not worked. Factors that may impact the strategy include:

- SM and SMAT developments over time – it is important to consider the impact of these changes on the strategy.
- Continue to monitor the needs of the organisation and whether SMAT are fulfilling these needs – this may lead the organisation to require the use of a different SMAT.

The confidence in an organisations’ employees and volunteers’ use of SM and SMAT will also change over time and may impact the strategy.

Basic considerations for selecting SMAT

Selecting a suitable SMAT to use for DRR and preparedness involves careful consideration of the organisation’s needs and restrictions. The following points may be of use when making this decision.

- When selecting SMAT consider the **organisation’s needs** (i.e., do the functions offered by the tool enable it to do what they want it to do?) and the **organisation’s skill sets** (i.e., tailor the selection of SMAT to meet the expertise that is available).
 - Language - consider local language requirements in the use of SMAT – it may be necessary to engage with local employees/volunteers for support

⁸ An example of hashtag standards can be found in [Annex E](#).

- Confidence with data analytics and the availability of ICT skills within the organisation
 - Budget: should money be spent on personnel or a more complex tool? Or perhaps both?
 - Time: how much time does the organisation have to spend on SM analytics? If time is restricted, consider which functions of a tool are most relevant and invest time in working with those instead of a wide range of functions.
 - Internal regulations: is there any software that the organisation is not allowed to use or webpages they cannot access?
- Consider whether the organisation's preferred SMAT provides them with **technical support and training/guidance**.
 - When selecting SMAT think about **what SM applications the organisation wants to monitor** - not all tools enable the analysis of data from all SM applications.
 - When selecting SMAT consider the **long-term goals of the organisation's SM & SMAT strategy**; learning to use a complex tool or a tool with a limited trial that the organisation cannot afford in the long-term may be a waste of resources.
 - Consider **how many licenses and/or user accounts the SMAT comes with** and if this number can be expanded as the organisation's needs may change.
 - Consider whether the tool will be of use in the **response stage** of a disaster (i.e., will it be able to provide access to and manage the vast increase in data to analyse?).
 - **As the organisation's confidence with SMAT grows, consider what additional functions other tools may have to offer** – this works hand in hand with reflecting upon the SM & SMAT strategy and enhancing it over time.

Consideration for using SMAT for disaster response

As this study has revealed, presently, SM and SMAT are more widely used for the response stage of a disaster than for DRR and preparedness. Although the aim of this study has been to focus on DRR and preparedness, within this section it is important to highlight some considerations for preparing to use SMAT for disaster response, as this could be seen as part of disaster preparedness. Additionally, an organisation's choice of SMAT for DRR and preparedness may impact its use for response and vice versa. Depending on the goals of the organisation, it may be more appropriate to use a tool that provides the appropriate functionality for both stages. The following points can be considered when preparing for the use of SMAT during response:

- **Think about what SMAT will be used for in the response stage.** Incorporate this into the SM & SMAT strategy – applying the pointers outlined above for DRR and preparedness.
- **Continue to use standard hashtags and keywords in times of disaster** – and communicate these to the target audience. Initiate monitoring of these hashtags as soon as a disaster strikes.
- Consider **what other hashtags, keywords and abbreviations the target audience are using** and initiate the monitoring of them during a disaster. Utilise these hashtags and keywords to reach out to the target audience (*Please note: these may differ by types of SM*).

- Consider what other (relevant) organisations, community groups, news organisations (national and local), influential SM users etc. the organisation should be monitoring and engaging with to enhance the organisation's situational awareness and response activities.
- Consider if the organisation needs to collect data (e.g., text, images, video and geo-location information) and whether the SMAT being used enables this. A vast amount of data will be available during the disaster response phase and some SMAT may be unable to access and handle this data.
- Consider drawing on digital volunteer communities to support the organisation in their SM and SMAT related activities. Where possible seek out information about these communities prior to a disaster occurring. Visit the Digital Humanitarian Network for further information (a group that bring together various Volunteer and Technical Communities to help support collaboration between professional humanitarian organisations and digital volunteer groups): <http://digitalhumanitarians.com>

Specific recommendations

Based on the interviews and surveys this research has led to the identification of several purposes for which SMAT can be used for DRR and preparedness. These purposes are discussed in more detail in [Annex D](#) and were grouped using the categorisation presented below.

Improving the effectiveness of preparedness communications. SMAT can be used to generate analytical data that can aid in enhancing preparedness-related communication between a humanitarian actor and its network. For example, SMAT can extract data on characteristics of particular groups of people, such as their age or interests. This data can then be used to tailor messages to communities' information needs or to tailor content to particular target audiences. For example, messages on 'Baby and Child first aid' can be sent only to young parents.

Increasing the reach of preparedness communications. Identifying and targeting influential users can achieve this. These users may then be able to further share the initial message. For example, certain SMAT can show influential users in relation to a particular hashtag, which can give an impression of the relevant users to engage with.

Evaluating the effectiveness of preparedness content. Gaining an insight into the extent that content is regarded as effective (e.g., a particular campaign) is crucial when it comes to improving future content. For example, SMAT can be used to identify the number of SM users having conversations or sharing information about a campaign.

Scheduling the posting of messages to increase their relevance. Preparedness messages can be scheduled in advance to be posted in a particular period or date. For example, preparedness-related information can be planned to be sent out in the period leading up to seasonal hazards. Alternatively, preparedness messages can be scheduled in advance to be posted on a relevant date such as the anniversary of a well-known earthquake, reminding people that preparation can save lives.

Managing the organisation's reputation. This includes both reducing the negative effect of rumours by correcting misperceptions identified by keyword searches and alerts, and by reinforcing positive opinions by further sharing these messages through retweets, likes, etc. As outlined by one interviewee in this study, 'rumours and misinformation is a significant enemy of preparedness'. During the interview, an example was provided as to how the use of SMAT aided in identifying and correcting rumours on the Red Cross injecting people with Ebola.

Remaining up-to-date and sharing public preparedness information, news and activities. SMAT can be used to stay up-to-date with the latest news and approaches to preparedness, by performing keyword searches and/or monitoring conversations related to preparedness. For example, certain SMAT can provide insight into how active particular Twitter users are in producing content on this topic. Active users are more likely to be informed users and can be followed to keep informed of preparedness-related news.

Preparing to enhance response. SMAT can be used to identify SM trends and activity during 'normal' periods in order to highlight any changes that may indicate a potential disaster. For example, if people in an area with a high use of SM in an everyday situation suddenly appear not to communicate via SM (with each other or to your organisation), this could be an indication of there being something wrong in that area. This information could then be used to facilitate response.

Early intervention. Using SMAT to perform keyword searches and monitor conversations can provide information regarding potential risks that SM users are discussing. Certain SMAT can subsequently send out alerts to the organisation that has set up the keyword searches, warning organisations of such impending risks. For example, if there is a sudden increase in a hashtag set up to monitor floods in the UK, it would be valuable to receive a notification of such an increase.

Identifying community networks that can be mobilised before a disaster occurs. Organisations can use information about the areas in which people are talking about preparedness to encourage the development of community preparedness networks.

Each of the overarching categories of purposes is further addressed in the table presented in [Annex D](#), which provides detailed examples of specific recommendations for the use of SMAT according to the categorisation presented above. The table identifies specific ways in which SMAT can aid DRR and preparedness work. This is further explained with the inclusion of a detailed description of exactly how this can be done, as well as an indication of the tools that can be used to do this. The table also includes an example of the use of a tool for this specific purpose.

The specific recommendations presented are based on the interviews, survey and workshops carried out as part of this project, as well as desk-based research involving a literature review on the uses of SMAT for DRR and preparedness. It is important to keep in mind that the interviewees and survey respondents comprised various RCRC actors, ranging from National Societies across the globe (and that work in different contextual settings and under different circumstances) to regional IFRC Communications Managers representing large geographical areas. Whereas some recommendations are likely to be applicable for the majority of RCRC actors and even wider humanitarian actors, others may be valued more by particular actors within the RCRC network.

V. FUTURE CONSIDERATIONS & NEXT STEPS

In terms of the long-term use of SMAT for DRR and preparedness, it is important to take into account 1) future considerations for the RCRC network and other humanitarian actors relating to policy, developments in tools that may impact their future use, 2) areas of research and development, and 3) next steps for the RCRC network – i.e., cross-organisational activities within the RCRC network that may be drawn upon to support RCRC actors in their use of SM and SMAT for DRR and preparedness. These points are addressed in more detail below.

Future considerations for the RCRC network and other humanitarian actors

The following points are useful for an organisation to consider when reflecting upon and changing their SM and SMAT strategy.

- Over time SM providers may change their policies and procedures (e.g., the nature of the public API for Facebook) – this may impact the use of SMAT. It would therefore be beneficial, especially if data is being collected, to monitor such developments.
- The availability and functionality of SMAT are constantly developing – so too is an organisation’s use and engagement with SMAT. It may therefore be useful to reflect upon the use of SM and SMAT to consider whether there are gaps in activities that new tools may meet. This should inform part of the reflection process for updating the SM and SMAT strategy (as discussed in the [General recommendations section](#)).
- Over time data protection regulations may change, and it is therefore important to keep up-to-date with national and regional requirements with regard to data protection. For instance, under EU law, data protection has been acknowledged as a fundamental right.⁹ The European Union’s forthcoming reform on Data Protection¹⁰ places further emphasis on strengthening online privacy rights, which will accordingly have an impact on the need for a data protection policy for those organisations operating within the European Union.

Areas for future research & development

The primary research undertaken with humanitarian organisations in this study has put forward a number of areas of research and development to be considered in future expansions of SMAT that may be utilised by the humanitarian community.

- Greater awareness on behalf of the SMAT developer community of the humanitarian sector’s needs (e.g., clear guidance on how to use a tool, technical support) and barriers (e.g., time and money). This includes, but is not limited to:
 - Partnerships between developers and humanitarian organisations
 - The possibility for discounted subscription offers for the humanitarian sector
 - Real-time technological support in situations where time restraints are evident
- Depending on privacy and data protection implications, the development or incorporation of mobile messaging applications’ data into existing and future SMAT.

⁹ For a comprehensive overview of European data protection law, see the European Agency for Fundamental Rights, Handbook on European data protection law, Publications office of the European Union, Luxembourg, 2014.

¹⁰ “REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL on the protection of individuals with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation)”, European Commission, COM(2012) 11 final, 25 January 2012. Note on further developments: [http://europa.eu/rapid/press-release MEMO-14-186_en.htm](http://europa.eu/rapid/press-release_MEMO-14-186_en.htm).

- The incorporation of other web-based material that the humanitarian sector may be using into existing and future SMAT: news media websites (e.g., BBC news – including comment forms on news websites), humanitarian news feeds (e.g., Prevention Web), RSS feeds and blog posts. Some SMAT (e.g., Brandwatch and Crimson Hexagon) already do so.
- Further research that exclusively engages with those more advanced in their use of SMAT in order to draw out further guidance, training material and illustrative examples for less advanced users.

Next steps for the wider RCRC network

A key outcome of this study is the need for further coordinated activities across the RCRC network to help support and facilitate engagement with SM and SMAT for DRR and preparedness. Next steps include:

- Online and face-to-face training on the use of SMAT for DRR and preparedness.
 - Consider the possibility of sharing SMAT licenses among RCRC actors – particularly National Societies in an existing partnership.
 - Development of a working group on SM & SMAT across the RCRC network to help facilitate communication and lessons learnt across the network. This could also be valuable for the wider humanitarian network. Such a group could share good and bad practices in SM & SMAT use, including:
 - What works? What does not work?
 - Examples, demonstrations & case studies - especially by those that are more advanced in this type of work.
 - If further technology needs were to be identified as being valuable to working group members, it would be useful for the working group to take a coordinated approach to collectively reach out to developers in order to strengthen the possibility for gaining a positive response and future support from SMAT providers.
 - A collective approach could be taken to negotiating a suitable price for use of commercial SMAT with developers.
- Measures that could support such a working group include:
- Identification of working group leaders to help facilitate the group
 - Dedicated mailing list for those wishing to be part of the group
 - Dedicated resource library within the GDPC online platform
 - Identification of SM and SMAT champions across the RCRC network – this can help to ensure the most appropriate people are involved
 - Dedicated times for online chats and meet-ups
- Examine the potential to work with research centres to develop new and/or refine existing SMAT. For example, MITRE (a US based research centre) has developed a range of tools, including (but not limited to), CoFi (Comment Filter), which clusters topics and MeMeME which groups tweets of a similar theme. Similarly, the Qatar Computing Research Institute in collaboration with the Office for the Coordination of Humanitarian Affairs (OCHA) has developed AIDR (Artificial Intelligence for Disaster Response) which filters tweets. There is potential to see how these tools can contribute to DRR and disaster preparedness (with further development).
 - Enhancing capacity – organisations should consider the value behind engaging with volunteers to gain their support in the use of SM and SMAT for preparedness and DRR.

VI. CONCLUSION

Social media increasingly forms part of our contemporary lives and provides a valuable means for the humanitarian sector to prepare for and respond to a disaster. The vast usage of SM by citizens and emergency management and humanitarian communities almost naturally puts forward the question of what to do with the data produced by SM and how to more effectively use SMAT to enhance community engagement for DRR and preparedness. This research examined this issue by addressing the following two questions: 1. How can the use of SMAT help to increase the impact of the GDPC, actors within the RCRC network, and other humanitarian actors' work with regard to DRR and preparedness? 2. What are the most suitable tools to meet the needs of this kind of work? These questions were addressed via primary and secondary research, including desk-based research, semi-structured interviews (with predominately RCRC actors), an online survey completed by RCRC actors, and two workshops with representatives from the RCRC network, SMAT developers and researchers.

SMAT are currently more widely used for disaster response than for preparedness and DRR. The requirements of SMAT for disaster response are of a different nature than those for DRR and preparedness. For instance, the response to a disaster requires tools that provide quick access to large amounts of real-time data. Such data sets are associated with the more expensive SMAT and therefore the SMAT most commonly used for disaster response are of a more commercial nature. Examples include Radian6 and Brandwatch. The use of SMAT for preparedness and DRR does not demand the same requirements, which opens up opportunities for the use of less expensive tools that work with smaller data sets. However, these tools commonly do not include the comprehensive range of functions that more expensive SMAT include. Whereas commercial SMAT may be used across the different phases of disaster management, many cheaper SMAT are not suitable for responding to a disaster.

Considering the variety of organisations that form the RCRC and wider humanitarian network, and the different purposes for which they may wish to use SMAT, a wide variety of tools were examined in this study, including those that are free of charge, low-cost, and commercial. An initial list of 94 SMAT, generated through desk-based research, the interviews and survey, and word-of-mouth (e.g., through recommendations from contacts), was examined with regard to their functions, cost, their use in disaster management and/or humanitarian work, and their limitations and advantages. Subsequently, each tool was reviewed in relation to how it could be used by RCRC and other humanitarian actors for DRR and preparedness. A variety of SMAT were listed in the catalogue presented in [Annex B](#) in order to address the variations across humanitarian actors with regard to barriers faced in selecting SMAT. For each tool the following information was provided: its key functions, SM applications it addresses, cost, language(s) of the tool's interface, language of the data that it can analyse, accessibility, usability, whether there are instructions available on the tool's website, and whether it has online help available. These criteria resulted from the research objectives, the feedback from workshops participants, and the requirements expressed by interviewees and survey respondents. The catalogue is designed to serve as a go-to-guide for humanitarian actors who want to gain a better understanding of the variety of SMAT that exist, and which SMAT meet the variety of requirements that humanitarian actors may have. In this way, the catalogue can support humanitarian actors in their pursuit of selecting suitable SMAT.

Whilst the catalogue highlights suitable SMAT currently available, selecting the right tool is not a straightforward process. There are various factors that shape organisations' choices and

uses of SMAT. As outlined in Chapter [III](#) understanding the barriers preventing the use of SMAT is an important part of facilitating the use of analysis tools across the RCRC network and beyond. This study revealed 15 barriers inherent to the organisation. Those most commonly expressed in interviews and the survey include the organisation's limited financial resources, a lack of time and manpower, and the value of analysing SM data not being acknowledged within the organisation. However, barriers can also be inherent to the SMAT or the SM data that the tool analyses. The complexity of SMAT was identified as an important barrier in this context, in addition to the tool being unable to save, store, and export data. Each of the barriers addressed were accompanied with brief ideas for their mitigation. However, it must be acknowledged that some barriers are harder to overcome than others, and that not all actors interested in using SMAT have the means to address all of the barriers that they face. Furthermore Chapter [III](#) presented four use cases and eight short scenarios to illustrate the variety of barriers to the selection and use of SMAT in different situations. These use cases were developed by combining barriers commonly expressed in interviews and the survey in various ways, making the use cases reflective of humanitarian actors in different parts of the globe.

Chapter [IV](#) took the findings from the previous chapters into account to provide recommendations for using SMAT, including a checklist that can be used as a support tool by the RCRC network and other humanitarian actors in their pursuit of engaging with SMAT (see [Annex C](#)). The general recommendations addressed four overarching considerations that can be of value for organisations to consider: 1) The development of a strategy for using SM and SMAT that addresses policies and codes of conduct, 2) The importance of understanding the audience an organisation wishes to engage with, 3) the importance of metrics and standards, and 4) Regularly reflecting on the organisation's SM and SMAT strategy. Furthermore, considerations for selecting SMAT were described, followed by considerations regarding preparing to use SMAT for disaster response. Specific recommendations provided insight into the applied ways in which SMAT can aid DRR and preparedness work. Nineteen specific recommendations were discussed in detail in [Annex D](#) by explaining how each identified purpose can aid organisations' work, listing examples of tools that can be used for each purpose, and providing a detailed example of how to use a particular tool for this purpose. Both free of charge, low cost, and commercial SMAT were included in order to provide a variety of humanitarian actors with ideas on how SMAT can add value to their work.

Chapter [V](#) outlined future considerations for the RCRC network and other humanitarian actors' use of SMAT as well as areas for future research and development, and next steps. Areas that should be further considered related to SM providers changing their policies and procedures, developments in the availability and functionality of SMAT, and changes in data protection regulations. A sample of considerations where future research and development would be of benefit included heightening the SMAT developer community's awareness of the needs of the humanitarian sector and incorporating data from mobile messaging applications (e.g., WhatsApp and SnapChat) and web-based material into existing and future SMAT. Recommended next steps specifically for the RCRC network included providing SMAT training, investigating the potential to share licenses across RCRC networks and enhancing capacity through the engagement and use of volunteers.

In summary, this study has aimed to serve as a starting point for supporting RCRC actors and other humanitarian organisations in their pursuit of engaging with SM and SMAT to enhance their DRR and preparedness activities. Further efforts are required both within industry and within the humanitarian sector in order to truly gain value from SM and SMAT in disaster management activities.

REFERENCES

- British Sociological Association, "Statement of Ethical Practice for the British Sociological Association", March 2002. [Online] <http://www.britsoc.co.uk/about/equality/statement-of-ethical-practice.aspx> (Accessed 1 March 2015).
- Facebook, "Facebook News Room: Stats", *Facebook Newsroom Website*, 2015. [Online] <http://newsroom.fb.com/company-info/> (Accessed 22 June 2015)
- IFRC, Risk Reduction. *Disaster Preparedness Training Programme (module 3)*, 2000. [Online] <https://www.ifrc.org/Global/Risk.pdf> (Accessed 6 April 2015)
- IFRC, Introduction to Disaster Preparedness, *Disaster Preparedness Training Programme (module 1)*, 2000a. [Online] <https://www.ifrc.org/Global/Publications/disasters/all.pdf> (Accessed 6 April 2015)
- Instagram, "Instagram: Our Story", *Instagram Website*, 2015. [Online] <https://instagram.com/press/> (Accessed 22 June 2015)
- Meier, P. "A Force for Good: How Digital Jedis are Responding to the Nepal Earthquake (Updated)", *iRevolutions*, 27 April 2015. [Online] <http://irevolution.net/2015/04/27/digital-jedis-nepal-earthquake/> (Accessed 22 June 2015)
- Meier, P. *Digital Humanitarians: How Big Data Is Changing the Face of Humanitarian Response*, CRC Press, Florida, 2015.
- Pamorama, "9 of the Best Free Social Media Analytics Tools" [Online] <http://pamorama.net/2015/02/21/9-free-social-media-analytics-tools/> (Accessed 22 July 2015)
- Twitter, "About Twitter: Company", *Twitter Website*, 2015. [Online] <https://about.twitter.com/company> (Accessed 22 June 2015)
- UNISDR, What is disaster risk reduction?, no date. [Online] <http://www.unisdr.org/who-we-are/what-is-drr> (Accessed 8 April 2015)

LIST OF ACRONYMS

Acronym	Full title
ARC	American Red Cross
CoFi	Comment Filter
DRR	Disaster Risk Reduction
GDPC	Global Disaster Preparedness Center
IFRC	International Federation of Red Cross and Red Crescent Societies
ISCRAM	Information Systems for Crisis Response and Management
NGO	Non-Governmental Organisation
OCHA	Office for the Coordination of Humanitarian Affairs
p.a	Per annum
p.m	Per month
RCRC	Red Cross/Red Crescent
SM	Social media
SMAT	Social Media Analysis Tools
UNISDR	United Nations International Strategy for Disaster Reduction

ANNEX A: PRELIMINARY LIST OF SMAT

	Name	Website
1	AIDR	http://aidr.qcri.org/intro
2	Addictomatic	http://addictomatic.com/about
3	Alterian/SDL (became SDL in 2012)	http://www.sdl.com/
4	BlueJay	http://brightplanet.com/bluejay/
5	Blurr Live platform	http://www.blurr.co.uk/home.php
6	Brandwatch Analytics	http://www.brandwatch.com/brandwatch-analytics/
7	Buffer	https://buffer.com/business?utm_campaign=landing_page
8	BuzzStream for Digital PR	http://www.buzzstream.com/social-media
9	Cision (bought Visible Intelligence/Visible Technologies in 2014)	http://www.cision.com/uk/
10	Coosto	http://www.coosto.com/en/
11	Crimson Hexagon	http://www.crimsonhexagon.com/
12	Crisees	http://www.gla.ac.uk/media/media_330053_en.pdf
13	Crisis Tracker	http://ufn.virtues.fi/crisistracker/
14	Crowdbooster	http://crowdbooster.com
15	Cyfe	http://www.cyfe.com/
16	Disaster.com	https://www.disaster.com/free-open-source-tool-analyze-twitter/
17	DiscoverText	http://discovertext.com
18	Echosec	https://www.echosec.net/
19	Engagor	https://engagor.com
20	ESA	http://www.csiro.au/en/Research/DPF/Areas/The-digital-economy/Disaster-management/ESA
21	Facebook Adverts	https://www.facebook.com/business/
22	Facebook Insights	https://www.facebook.com/help/336893449723054/
23	FalconSocial	http://www.falconsocial.com/
24	Firehose	https://dev.twitter.com/streaming/firehose
25	FirstToSeeEmergency Support System	http://firsttosee.org/news/
26	Followerwonk	https://followerwonk.com/
27	Gawk/awk	https://www.gnu.org/software/gawk/
28	Geofeedia	http://geofeedia.com/
29	Gephi	http://gephi.github.io
30	Google Analytics	http://www.google.com/analytics/
31	Hashtagify	http://hashtagify.me
32	Hashtracking.com	https://www.hashtracking.com
33	HootSuite	https://hootsuite.com
34	HubSpot	http://www.hubspot.com/
35	IoTA by AGT International	https://www.agtinternational.com/iot-analytics/iot-analytics/
36	Keyhole	http://keyhole.co/aboutus
37	Klout	https://klout.com/home
38	Leximancer	http://info.leximancer.com
39	Meltwater Buzz	https://www.meltwater.com/social-media-monitoring-tool-trial/
40	MemeME	http://www.mitre.org/research/technology-transfer/technology-licensing/mememe

	Name	Website
41	Mention	https://en.mention.com/
42	MicroMappers	http://micromappers.org/
43	Mozdeh	http://mozdeh.wlv.ac.uk
44	MutualMind	http://mutualmind.com
45	NodeXL	http://nodexl.codeplex.com
46	Opinion Tracker	http://www.opiniontracker.net/en/tour/
47	ORA	http://www.casos.cs.cmu.edu/projects/ora/
48	Project EPIC - Tweak the Tweet	http://epic.cs.colorado.edu/?page_id=11
49	PULSAR TRAC	http://www.pulsarplatform.com/#product/TRAC
50	Quintly	https://www.quintly.com/
51	Radian6	http://www.exacttarget.com/uk/products/social-media-marketing/radian6
52	Repknight	https://www.repknight.com
53	Rshief	http://r-shief.org
54	Scanigo	A tool used by Humanity Road - No website available
55	Semantria	https://semantria.com/
56	SensePlace2	http://www.geovista.psu.edu/SensePlace2/
57	Sentimedir	http://www.mitre.org/research/technology-transfer/technology-licensing/sentimedir
58	SentiStrength	http://sentistrength.wlv.ac.uk
59	Simplify360	http://simplify360.com/
60	Smyzer	http://www.smyzer.com/
61	Social mention	http://www.socialmention.com/
62	Social sensor	http://www.socialsensor.eu/
63	SocialAI	http://www.socialai.gatech.edu
64	SoDash	http://www.socialcustomerservice.co.uk/
65	SparkCentral (formerly Twit Spark)	http://www.sparkcentral.com/index
66	Sprout Social	http://sproutsocial.com/insights/events/
67	SumAll	https://sumall.com/
68	SWAT.IO	https://swat.io
69	Synthesio	http://synthesio.com/corporate/en#home
70	Sysomos - Heartbeat	http://sysomos.com/products/heartbeat
71	Sysomos - Map	http://sysomos.com/products/map
72	Talkwalker	http://www.talkwalker.com/uk/social-media-intelligence/
73	TEDAS	http://www.tobiaslei.com/Homepage/papers/tedas.pdf
74	ThinkUP	https://www.thinkup.com/
75	Tint	https://www.tintup.com/about
76	Topsy	http://topsy.com/analytics
77	Trackur	http://www.trackur.com/
78	Tweak-the-Tweet	http://epic.cs.colorado.edu/?page_id=11
79	Tweetdeck	https://about.twitter.com/products/tweetdeck
80	Tweetmap	http://worldmap.harvard.edu/tweetmap/
81	Tweetreach	https://tweetreach.com
82	Tweettracker	http://tweettracker.fulton.asu.edu/
83	TweetXplorer	http://tweettracker.fulton.asu.edu/TweetXplorer/
84	Twitcident / CrowdSense	http://crowdsense.co/
85	Twitinfo	http://db.csail.mit.edu/pubs/twitinfo-cameraready.pdf
86	Twitris+	http://twitris.knoesis.org

	Name	Website
87	Twitter Analytics	https://analytics.twitter.com/about
88	Twitterbeat / Tweetbeat	http://www.sgi.com/go/twitter/
89	UberVu (this is now part of HootSuite)	https://www.ubervu.com/
90	Ushahidi Swiftriver (support and development on Swiftriver was stopped Jan 2015)	https://wiki.usahidi.com/display/WIKI/SwiftRiver
91	ViralWoot	http://viralwoot.com
92	WebLyzard	https://www.weblyzard.com
93	Webometric Analyst 2.0	http://lexiurl.wlv.ac.uk
94	WeKnowIt	http://www.weknowit.eu/

The following tools were added as a result of the desk-based research and during the course of the primary research activities subsequently to the initial list (above) being developed.

	Name	Website
1	Facebook for Business	https://www.facebook.com/business
2	Microsoft Dynamics	http://www.microsoft.com/en-gb/dynamics
3	Twitter Advanced Search	https://twitter.com/search-advanced?lang=en
4	YouTube Analytics	https://www.youtube.com/analytics

ANNEX B: CATALOGUE OF SMAT

Name of the tool	Key functions include	Social media	Approximate Cost (\$)	Language of the tool's interface	Language of the data that the tool can analyse	Accessibility	Usability	Instructions available on website	Online (live) help available	Website
	<i>This does not necessarily present all functions the SMAT offers</i>		<i>Free/free+ paid upgrade/ paid subscription</i>		<i>Detail is based on information provided by the developer</i>	<i>Free limited use, demo, trial</i>	<i>Scale of 1-5. 1=easy, 5=difficult</i>	<i>Yes, no, or explanation</i>	<i>Yes, no, or explanation</i>	
Brandwatch (Used by: British Red Cross)	Comprehensive range of functions, e.g., identify influencers, track hashtags, set alerts.	Twitter, Facebook Weibo Instagram Crawls the web	Paid From \$3150 per month (p.m) - you get unlimited licenses, but pay for data consumption. 25% off for charities.	English German Spanish	27 languages	Demo & short trial. The trial has a limited set of functions.	3	Limited information on this as a non-customer. Access to training & support as a paying customer.	No It is possible to get an account manager.	https://www.brandwatch.com
Cision	Mentions on SM, unlimited keyword search, filtering, e-mail alerts, schedule posts, sentiment toning, recommended influencers to follow & content to engage with, visualisation.	Facebook Twitter YouTube Flickr Blogs Forums Comments Reviews	Paid \$1023 per annum (p.a) for each license. Discount for charities.	English Chinese German French Spanish Italian	The tool searches double byte characters & can pick up tweets in multiple languages, including Arabic, Japanese, Chinese & Sinhalese.	Demo on request.	1	No, but training is available.	No A dedicated solutions consultant & account manager are provided.	http://www.cision.com/us/pr-software/media-analysis-reporting/social-media-analytics/
Crimson Hexagon	Comprehensive range of functions, e.g., create smart filters, identify influencers, reporting.	Twitter Facebook Google+ Instagram Weibo. Crawls the web	Paid packages start from \$10,000 p.a up to 70% off for charities. Introduction	English Japanese	The tool is language independent; as long as the user can speak the language, the platform can work	Demo	1	Yes	Yes	http://www.crimsonhexagon.com/

Name of the tool	Key functions include	Social media	Approximate Cost (\$)	Language of the tool's interface	Language of the data that the tool can analyse	Accessibility	Usability	Instructions available on website	Online (live) help available	Website
			packages come with unlimited user licenses.		with that language.					
Crowdboost (Used by: New Zealand Red Cross)	Metrics (e.g., number of comments, likes, retweets), recommendations on when to post, who to engage & scheduling tweets & posts.	Twitter Facebook	Paid Packages ranging from \$9-\$119+ p.m. 50% discount for non-profits.	English	The tool can pull in tweets in any language in the 'analyse' tab.	30-day trial. Trial is free, but credit card details need to be provided first.	It gives the impression it is relatively easy to use. No trial was used as part of this research.	Limited information as a non-customer	Yes	http://crowdboost.com/product/
CrowdSense	Search & filter social networking sites. User-based library of information filters. Maps, reports, alerts via e-mail, call or SMS.	Twitter Facebook YouTube Instagram & more	Paid Prices are available on request.	Dutch English French German Portuguese Spanish	Has a language filter that supports multiple languages.	Demo available on request.	1	Yes	No E-mail & phone support is available.	http://crowdsense.co/
Facebook Adverts (Used by: Icelandic Red Cross and others)	Facebook does its own analysis in terms of people's demographics, interests, behaviours, connections & location. This information is available to use when advertising is used.	Facebook	Paid Various options	Multiple	N/A - Insights are available for a specific page. This is not a SMAT in the sense of analysing content.	The description of the service is easy to understand, but as it is an advertising service, a demo or trial does not apply.	1	Yes	No	https://www.facebook.com/business/products/ads/ad-targeting/
Facebook Insights (Used by: Red	Provides metrics on the number of people the post on a Facebook page	Facebook	Free But only available after at least 30	Multiple	N/A - Insights are available for a specific page. This is not a SMAT in	All insights are freely accessible.	1	Yes	No	https://www.facebook.com/help/336

Name of the tool	Key functions include	Social media	Approximate Cost (\$)	Language of the tool's interface	Language of the data that the tool can analyse	Accessibility	Usability	Instructions available on website	Online (live) help available	Website
Cross EU Office, Canadian Red Cross, Kenya Red Cross, Sri Lanka Red Cross Society, Tonga Red Cross Society, GDPC)	reached & the number of people who clicked, commented, shared, & liked the post. It is also possible to see demographic data on the people who liked a page.		people like a page.		the sense of analysing content.					893449723054/
Followerwonk (Owned by Moz – SEO consultancy company)	Provides insight into followers & influencers of Twitter handles.	Twitter	Free & paid upgrades Paid upgrades from \$99 - part of a pack with more Moz tools.	English	N/A - this SMAT mainly regards the analysis of followers, not the analysis of messages. Language is therefore not applicable.	Free trial	2/3	Yes	No	https://followerwonk.com/
Geofeedia	Monitor real-time social media content. Filter searches by keywords, users, date, time, etc. Visualisation using different options. Analyse trends related to keywords, time & users.	Twitter (Firehose) Instagram Facebook YouTube Flickr Picasa YikYak Sina Weibo	Paid Based on number of users & number of locations by month. Discount for humanitarian organisations & charities	English	40+ languages	Demo available on request	1	Yes Training manuals, videos & webinars are available.	No A dedicated customer manager is provided.	https://geofeedia.com/
Google Analytics (Used by: GDPC)	Provides insight into engagement with a websites content via social media, audience's interests, valuable	Twitter Facebook Google+ & more	Free	Multiple	N/A - this concerns more traffic than the analysis of messages.	Directly accessible	3/4	Yes	No	http://www.google.com/analytics

Name of the tool	Key functions include	Social media	Approximate Cost (\$)	Language of the tool's interface	Language of the data that the tool can analyse	Accessibility	Usability	Instructions available on website	Online (live) help available	Website
	combinations of interaction strategies, & more.									
Hashtagify	Provides insight into a given hashtag with regard to related hashtags, top influencers, & usage patterns.	Twitter Facebook Google+	Free & paid upgrades. Upgrades from \$9.99 p.m	English	Any language.	Free version readily accessible, upgrades each have a 10 day free trial.	1	Yes	No	http://hashtagify.me/
Hashtracking.com (Used by: Kenya Red Cross)	Tracking & comparing hashtags, identify influencers, generate reports.	Twitter Instagram	Free (basic insights) + paid upgrade. Upgrades from \$29 p.m - price increase is paired with number of hashtags tracked.	English	Any language.	Free insights readily accessible, upgrades each have a free 30 day trial.	1	Yes	No	https://www.hashtracking.com/
Hootsuite (Used by: American Red Cross, Canadian Red Cross, ICRC, IFRC, Turkish Red Crescent)	Monitor keywords/hashtags, schedule messages, generate reports.	Facebook Twitter Instagram Flickr LinkedIn Google+ & more	Free + paid upgrade From \$6.00 p.m A max of 3 SM applications in the free version	English, German, Spanish, French, Portuguese, Indonesian, Italian, Chinese.	Not known- UberVu (part of Hootsuite) states that it can work with any language	30 day free trial and demo on request	1/2	Yes	Yes	https://hootsuite.com/
Keyhole (Used by: Kenya Red Cross)	Search & track (in real-time) topics, identify influencers, trends, popular hashtags, generate reports.	Twitter Instagram	Free & paid upgrades Upgrades from \$129 p.m	English	Multiple languages.	Basic version freely accessible & free trial for upgrades.	2	Yes	No	http://keyhole.co/
Meltwater buzz	Monitor conversations	Twitter Facebook	Paid + upgrade (\$10,500 p.a.	English Chinese	Multiple (29+) languages	Demo on request	2	No	No	http://www.meltwater.com/

Name of the tool	Key functions include	Social media	Approximate Cost (\$)	Language of the tool's interface	Language of the data that the tool can analyse	Accessibility	Usability	Instructions available on website	Online (live) help available	Website
(Used by: The Red Cross EU Office for a campaign in the past – the tool is no longer in use)	(volume, themes, trends), sentiment analysis, reports, schedules messages, identifies most active contacts & engaging content, & map sconversations by location.	Google+ blogs, YouTube Weibo & more.	for listening, engagement & reporting tools). Discount for charities.	Danish Mandarin Spanish French (29 languages in total).				An account manager provides training.		water.com/
Microsoft Dynamics	Search topics including the most mentioned words in the search topics, identify key influencers, visualise location data, & alerts.	Twitter Facebook LinkedIn Blogs News posts	Paid (Options available at \$75 per user p.m, \$125 per user p.m, \$200 per user p.m)	English Spanish French German Portuguese	English Chinese Danish French German Japanese Spanish	30 minute trial	1/2	Yes	Yes	https://www.microsoft.com/en-gb/dynamics/crm-social.aspx
Radian6 (Used by: American Red Cross, Canadian Red Cross, ICRC)	Spam filtering, historical data, alerts, reports, schedule posts, identifies some demographic data.	Twitter Facebook YouTube Forums news articles Blogs Crawls the web.	Paid & upgrade. Basic package is \$1260 p.m, Pro is \$5040 p.m & Corporate is \$15,120 p.m. (Up to 50% discount available for charities).	English French Italian German Simple Chinese Russian Swedish, Dutch Spanish, Portuguese Korean Japanese	26 languages (& a further 22 partially)	Demo on request.	1	No A support team & e-learning is available.	Yes	http://www.exacttarget.com/uk/products/social-media-marketing/radian6
RepKnight	Searching, filtering (e.g., time, keyword, data sources, etc.), sentiment analysis,	Instagram Twitter YouTube Facebook	Paid \$3150 p.m for one license and 2 million	English	All languages that use the UTF-8 character set	Demo on request	2	Yes	No A support line &	https://www.repknigh.com/

Name of the tool	Key functions include	Social media	Approximate Cost (\$)	Language of the tool's interface	Language of the data that the tool can analyse	Accessibility	Usability	Instructions available on website	Online (live) help available	Website
	top topics, top authors, frequent hashtags, geo-location, influence analysis, export data and reports.	Flickr Tumblr VK Word Press Dark web	messages. Discount is available on over 15 licenses.						dedicated Account Manager is provided.	
Sprout Social (Used by: Kenya Red Cross).	Follower analysis, scheduling posts, reporting	Twitter Facebook LinkedIn Google+ Feedly	Paid From \$59 p.m	English	Same language support as Twitter	Free trial	4	Some	No	http://sproutsocial.com/
SumAll	Tracking engagement (retweets, mentions) & potential reach. Provides reports, & recommendations on when to tweet, best performing content, etc.	Twitter Facebook Instagram Google+ Vimeo Blogs	Free + Paid upgrades. Tracking is free. Reports is \$59 p.m for 10 applications & is available for Facebook, Twitter, Instagram & Google Analytics. Insights is \$99 p.m for 4 applications & is currently only available for Twitter.	English	Multiple	Free but limited use. Trial available.	1	Blog & question area.	Yes	https://sumall.com/
Swat.io (Used by: Austrian Red Cross, German	Workflow management, i.e., managing incoming social media posts, social media	Twitter Facebook Google+, Instagram YouTube	Paid From \$279 p.m this gives you two user accounts	English German	N/A – Swat.io is for workflow management of one's own SM, less so for analysing	Demo & followed by free trial (approx. 14 days).	1	Limited information as a non-customer.	Yes	https://swat.io/

Name of the tool	Key functions include	Social media	Approximate Cost (\$)	Language of the tool's interface	Language of the data that the tool can analyse	Accessibility	Usability	Instructions available on website	Online (live) help available	Website
Red Cross)	content planning, analytics on user engagement with social media, reporting.	WordPress Comments	which can address a maximum of five SM applications.		other SM accounts.					
Syomos Heartbeat	Monitoring, reporting, engagement (e.g., influencer identification), long-term searches, trend analysis, alerts, reporting, and workflow management- focus on searching the knowns. Has direct access to Twitter Firehose.	Twitter Facebook Google+ Instagram YouTube Tumblr Flickr Crawls the web.	Paid From \$8600 p.a - cheapest package gives you five user accounts that can be used at the same time. Possibilities for discounts for charities.	English	186 languages	Case-by-case demos and trials.	Tool could not be trialled as part of this research.	Limited information as a non-customer.	No When purchasing the tool a 'social media specialist' is provided to enable direct contact.	http://syomos.com/
Syomos MAP	Analysis & research, including brand perception, influencer identification, topic analytics- focus on searching the unknowns. Has direct access to Twitter Firehose.	Twitter Facebook Google+ Instagram YouTube Tumblr Flickr Crawls the web.	Paid From \$36000 p.a - basic package includes five user accounts - one can be used at a time. Possibilities for discounts for charities.	English	186 languages	Case-by-case demos and trials.	Tool could not be trialled as part of this research.	Limited information as a non-customer.	No When purchasing the tool a 'social media specialist' is provided to enable direct contact.	http://syomos.com/
Talkwalker	Keyword analysis, identify related hashtags, find influencers, report generation. Has direct access to	Twitter Facebook Google+ Instagram YouTube & more.	From \$700 p.m. – unlimited user accounts.	187 languages	All languages	Demo on request.	Tool could not be trialled as part of this research.	Limited information as a non-customer.	Yes The user gets an account manager.	http://www.talkwalker.com/

Name of the tool	Key functions include	Social media	Approximate Cost (\$)	Language of the tool's interface	Language of the data that the tool can analyse	Accessibility	Usability	Instructions available on website	Online (live) help available	Website
	Twitter Firehose.	Crawls the web. Can analyse radio & TV.								
Tint (Used by: IFRC)	Aggregate, curate and display social media feeds.	Twitter Instagram Facebook Youtube Flickr Pinterest Tumblr Google+ LinkedIn WeChat	Paid Packages range from \$100 - \$1,000+ p.m	English	Multiple	Free 7 day trial	3	Yes	Yes	https://www.tintup.com/about
Topsy (Mentioned by: IFRC)	Count mentions of a term, find influencers.	Crawls the web (large focus on Twitter).	Free & paid upgrades	English Spanish French Chinese Dutch Russian	No reply	Currently no trials accepted	3	Not much	Only with a Pro account.	http://topsy.com/
Tweetdeck (Used by: ICRC)	Set search streams for hashtags or Twitter handles, schedule tweets. You can do this for multiple Twitter accounts. Does not do analytics.	Twitter	Free	English	Same as Twitter Analytics.	Instantly available through Twitter account.	3	No	No	https://tweetdeck.twitter.com
Tweetreach (Used by: IFRC)	Provides insight into the reach, contributors, influencers & retweets of a twitter handle. Can generate reports.	Twitter Tumblr Instagram	Free & paid upgrades Basic version is free, upgrades from \$99 p.m.	English	27 languages	Demo (on request)	1	Yes	Yes	https://tweetreach.com/

Name of the tool	Key functions include	Social media	Approximate Cost (\$)	Language of the tool's interface	Language of the data that the tool can analyse	Accessibility	Usability	Instructions available on website	Online (live) help available	Website
TweetTracker (Used by: Humanity Road Inc.)	Real-time keyword search, filtering by time, visualisation, location of tweets, export and translate tweets.	Twitter Instagram YouTube Vkontakte	Free (Additional computer hardware would be required for large datasets).	English	Any	Demo (on request)	2	Yes Video instructions are available.	No	http://tweettracker.fulton.asu.edu/
Twitter Analytics (Used by: The Red Cross EU Office, Canadian Red Cross, IFRC, The Thai Red Cross Society, GDPC/ American Red Cross)	Provides engagement with Tweets (Top Tweet), mentions, top follower & how these change each month. Twitter Cards provide information on URL clicks	Twitter	Free & paid upgrades	Multiple	N/A – Twitter Analytics are available for a specific account. This is not a SMAT in the sense of analysing content.	Instantly available through Twitter account.	1	Not much	No	https://analytics.twitter.com/about
uberVU (part of Hootsuite)	Real-time listening, filter down conversations, metrics (mentions by application & time), analytics, sentiment analysis, reporting, visualisation, Notifications	Twitter and Facebook (100% of the data) YouTube Google+ Instagram (& others) Blogs Forums News sites	Paid. Is not based on licenses but on the number of topics. 10 topic streams with unlimited mentions/users is \$17,000 p.a.	English	Any	Demo (on request)	1	Not much for non-users. Video tutorials are available.	Yes	https://www.ubervu.com/

ANNEX C: PREPARING TO USE SM & SMAT- CHECKLIST

✓	Develop a SM and SMAT strategy	Your comments/notes
	Develop a SM & SMAT strategy: who, what, when	
	Develop a code of conduct for acceptable behaviour by staff & volunteers	
	If collecting and storing data from SM – ensure a data protection policy is in place	
	Get to know the ‘virtual’ audience of the organisation	
	Develop metrics for measuring impact and engagement on SM	
	Develop SM standards that will aid the use of SMAT	
	Reflect and update the SM & SMAT strategy	
✓	Considerations for selecting SMAT	Your comments/notes
	The organisation’s needs	
	The organisation’s barriers (language, time, money, skills, internal regulations)	
	Whether technical support and training/guidance is available?	
	What SM applications ought to be monitored?	
	The long-term goals of the organisation’s SM and SMAT strategy?	
	How many licenses/user accounts does the SMAT come with?	
	Is the tool suitable for the response stage of a disaster?	
	Changes in SMAT skills and experience within the organisation	
✓	Considerations for preparing the use of SMAT in disaster response	Your comments/notes
	Prepare to use SMAT in a disaster	
	Continue to use standard hashtags and keywords – and communicate these to the target audience	
	Consider what other hashtags, keywords and abbreviations the target audience are using and initiate monitoring of them	
	Consider what other (relevant) organisations, community groups, influential SM users, news organisations (nation and local) etc. ought to be monitored and engaged via SM & SMAT	
	Consider what kind of data needs to be collected and whether the SMAT selected is suitable for this purpose.	
	Consider drawing on digital volunteer communities to support SM & SMAT related activities.	

ANNEX D: PURPOSES FOR WHICH SMAT CAN BE USED

In what ways can SMAT aid work on disaster preparedness and risk reduction?		Further information	Examples of tools that can be used for this purpose	Example of the use of the tool	Main purpose
1	Evaluate and improve the quality of messages on preparedness	Gaining an insight into which content on a particular SM application is most popular can help to enhance the impact of future SM content produced.			Evaluating the effectiveness of preparedness content
A	<i>YouTube videos</i>	YouTube videos on preparedness and DRR can be powerful visual means of reaching communities at risk. They can be important in enhancing people's awareness and preparation, especially for silent disasters such as droughts. However, videos on disaster preparedness are only effective if people at risk actually watch the videos. Knowing how audiences engage with a video can help to uncover important patterns.	YouTube Analytics, Sysomos tools	YouTube Analytics shows line charts of how analytical data relating to a particular video changes over time. It can display how many people have watched the video and for how long they have watched it. The report on Absolute Retention shows which parts of the video people are watching and/or abandoning. This can provide actionable insights contributing to the development of future videos.	
B	<i>Twitter</i>	Within the same campaign on preparedness, which tweets were retweeted a couple of hundred times, and which ones were not? The topic of the tweet matters and influences how many times a tweet is retweeted, but if tweets are on the same topic (the same campaign), gaining insight into why one particular tweet was very popular, whilst another one was not, is important. This information can be taken on board to enhance the impact of future tweets. It could be that the tweet was presented in an accessible way, had visuals, or:	Crowd booster, SWAT.IO, Brandwatch, Crimson Hexagon, SumAll Insights, Sysomos tools, uberVU	SumAll Insights analyses what type of content the audience is engaging with most and provides information on the most engaging content type from different types of content, including images, links, video, text only and music. Alternatively in uberVU the user can authenticate the Twitter account and add it as a stream. They should go to the 'Your tweets' section in the left menu of the Twitter stream and subsequently view the number of tweets and see which ones have more retweets.	
		- Had a popular hashtag	Keyhole, Hashtagify, Sysomos Heartbeat and Sysomos MAP	When searching for a hashtag with Keyhole, it presents a word cloud of related popular hashtags. It also shows the trends in the use of the hashtag entered into the search box. In the free version this is limited to the last five days.	

In what ways can SMAT aid work on disaster preparedness and risk reduction?		Further information	Examples of tools that can be used for this purpose	Example of the use of the tool	Main purpose
		- Was tweeted at a time that followers are most active on SM	Followerwonk, Crowdbooster, Sysomos Heartbeat and Sysomos MAP	Followerwonk breaks down the hourly Twitter activity of the followers of a particular SM account. Go to Followerwonk.com, click on 'Analyse', type in the username you want to analyse, and select 'Analyse their followers'. Scroll down for a chart that gives an impression of the times that their user's followers are most active.	
2	Enable an organisation to engage more effectively with communities	The use of SMAT can enable an organisation to communicate more effectively with communities by identifying gaps in community knowledge and providing information that fills the gaps. For example, SM can be used to ask communities questions (e.g., 'Do you know what goes into your hurricane preparedness kit? Reply using the hashtag #RCHurricanePrepKit') and then SMAT could be used to identify the gaps in knowledge expressed through communities answering questions. The organisation's subsequent actions could then be based on communities' answers.	Tweetdeck, Hootsuite, Radian6, Sysomos Heartbeat, Sysomos MAP Crimson Hexagon, Brandwatch	Using Tweetdeck, search streams can be set up. For example, it is possible to set up a search for a particular hashtag (e.g., #RCHurricanePrepKit), possibly in combination with the items that should be included in the hurricane preparedness kit. Alternatively, it is possible to set up a search stream for a hashtag in general to identify incorrect perceptions of what should be included in the kit.	Improving the effectiveness of preparedness communications
3	Analyse which SM account is the most popular application for showing what the organisation's disaster preparedness work involves	Twitter and Facebook are both applications that can be useful to show what kind of work an organisation does and how an organisation works with and amongst communities at risk. The behaviour of followers on these SM applications can be analysed, including their engagement with pictures and messages. This is valuable information that can be used to make the most of communication efforts with the outside world. For example, if the same message or picture gets many more shares on Facebook than it gets retweets, it is likely that an organisation's followers interact more with Facebook than with Twitter. This information can be used to adapt the use of SM to the population the organisation wants to reach.	Hootsuite, Brandwatch, Crimson Hexagon, Radian6, SWAT.IO, Sysomos Heartbeat and Sysomos MAP	SMAT that allow cross-application (across multiple SM) analysis can be useful for this. Free or low cost tools (such as Hootsuite) provide relatively basic functions in comparison to the commercial ones. For example, on Hootsuite it is possible to add a stream for the Facebook page of the American Red Cross, and a stream for its Twitter handle (Click 'add stream', click 'search', enter 'from:@RedCross'). Information is displayed in a single window, allowing for comparisons to be made.	Improving the effectiveness of preparedness communications Increasing the reach of preparedness communications
4	Tailor posts on a	Organisations that have a Facebook page can use Facebook	Facebook Insights	Consider the example of an organisation	Tailor posts to

In what ways can SMAT aid work on disaster preparedness and risk reduction?	Further information	Examples of tools that can be used for this purpose	Example of the use of the tool	Main purpose
	<p>Insights to gain insight into the audience that is interacting with their Facebook page. This information can be used to target posts with preparedness-related information to specific populations or geographical areas.</p>	<p>for your Facebook page</p>	<p>operating in a country where people speak specific languages in specific regions, and that one of these areas is at risk of seasonal flooding. By using Facebook Insights, it is possible to reach out to the people in that particular area by writing a post in their specific language and then only selecting the geographical area that they live in. Only the people in that particular area will see your post. This aids in reaching people at risk more effectively than could be done with a generic message.</p>	<p>particular target audiences</p>
5	<p>Advertisements with specific information can be tailored to a specific group of SM users. For example, it is important that information on 'Baby and Child first aid' reaches Facebook users who are mothers. This sub-group can be targeted by tailoring Facebook Ads so that they only address this group. Only Facebook users that are identified as mothers will see the advertisement (which shows up on their newsfeed). Another example is the case of tailoring information aimed at preventing the spread of HIV/Aids to a particular age group that is considered to be at high risk. The reporting tools allow the organisation to see which ads do well, and if the target audience responds. The ads can then be adjusted or revised to improve their performance. Similar advertisement options are available on other SM applications, such as Twitter.</p>	<p>Facebook for Business</p>	<p>When creating an advert on Baby and Child first aid, with the aim of targeting parents, it is important to ensure that the most relevant group is addressed. From the pull-down menu it is possible to select 'Parents-all', or select parents with children in particular age groups. In this case 'Parents (child: 0-3 yrs.)' would probably be most suitable.</p>	<p>Improving the effectiveness of preparedness communications</p>
6	<p>To increase the reach of preparedness and risk reduction messages, it is important to know who influential users in an organisations network are so that they can be targeted. This is particularly relevant when the preparedness information concerns re-occurring or seasonal disaster risk, as influential users can then be targeted on multiple occasions. Identifying influential users can be done in various ways. It is advisable</p>			<p>Increasing the reach of preparedness communications</p>

In what ways can SMAT aid work on disaster preparedness and risk reduction?	Further information	Examples of tools that can be used for this purpose	Example of the use of the tool	Main purpose
	to use a combination of the three ways identified below.			
A <i>Identify influential users by looking at the user's number of followers</i>	If an organisation is aware of certain people or organisations relevant to their work who have a lot of followers on Twitter, these people and organisations' twitter handle can be mentioned in a Tweet (e.g., @XXX). The message then shows up on this person's feed, meaning that it is more likely that this person re-tweets the message, which enhances the reach and impact of the message. Alternatively, if the person is already following the organisation on Twitter, it is then possible to reach them via a direct message, asking them to retweet your tweet. A recent example is that of the British Red Cross directly addressing their tweet on first aid for parents to @TheBabyShow, who then retweeted the message the same day.	Hashtracking.com, Tweetreach, Sysomos Heartbeat, Sysomos MAP	The free version of Hashtracking.com shows the 10 most influential users (in the sense of the number of followers) in relation to a particular hashtag. This can be a hashtag an organisation created or used, and that is considered valuable or relevant. A search for #hurricaneprep on Hashtracking.com shows the most influential users of the hashtag over the last two days, which gives an impression of the relevant users to engage with.	
B <i>Identify influential users by looking at the number of retweets related to your account</i>	If an organisation tweets a message about preparedness, it would be useful to know who has retweeted that message. Moreover, it is good to know how many people in the network of that person/organisation further retweeted the message. By analysing this information, it can be possible to get an impression of how interested that follower's group is in the messages being shared. This can give the organisation an insight into how influential the organisation that retweets the message is. This information could be used to target that organisation in future tweets, for example by including their username in a tweet or by sending them a private message.	Tweetreach, Hootsuite, Brandwatch, Crimson Hexagon, Radian6, Sysomos tools, Crowdbooster	Tweetreach: In the free version it is possible to enter a twitter handle in the search box and analyse the last 50 tweets that relate to the account (tweets that either mention or retweet messages from that account) going back a maximum of seven days. Under 'Top Contributors' it is possible to see which organisation generated the highest number of retweets relating to that account. The paid version does the same but with up to 1500 tweets over the last week.	
C <i>Identify influential users by looking at who mentioned a particular hashtag the largest number of times</i>	This concerns which user is the most active in using a hashtag that an organisation considers to be valuable. This is related to the power of the repeated use of a hashtag, which cannot be observed when only looking at which users have the highest number of followers, as this says very little about how often the user employed the hashtag.	Topsy, Keyhole, Hashtracking.com, Brandwatch, Crimson Hexagon, Radian6, Sysomos Heartbeat, Sysomos MAP	Topsy: After searching for a hashtag on Topsy, click on 'Influencers'. Topsy then shows the 5 top users who used a particular hashtag the most. For every user it is indicated how often they used the hashtag in tweets.	

In what ways can SMAT aid work on disaster preparedness and risk reduction?	Further information	Examples of tools that can be used for this purpose	Example of the use of the tool	Main purpose
7 Identify popular hashtags or keywords related to the ones that the organisation is interested in using, they can then be used in preparedness messages	It is good to know what the popular keywords and hashtags are that are used in relation to the hashtag an organisation uses to share disaster preparedness information. Wordclouds can give an impression of related keywords and hashtags. With this knowledge the organisation can tailor SM posts to reach a wider audience. For example, when looking for the hashtag #hurricaneprep in May 2015, it was observed that related or similar popular hashtags were #itonlytakesone and #hurricaneseason. Including these hashtags in tweets is likely to increase the reach of messages. Additionally, it is possible to examine which organisations use particular hashtags. This information can be used in relation to examining which organisations are considered trustworthy, and which organisation's hashtags could be valuable to use.	Keyhole, Hashtagify, Crimson Hexagon, Keyhole, Sysomos MAP	Hashtagify gives an impression of the top 10 hashtags related to the hashtag that is entered in the tool's search box. It provides information on how popular each of these hashtags is. The findings are presented in a spider diagram.	Evaluating the effectiveness of preparedness content
8 Identify what people are scared of or concerned about and address their concerns in messages	Knowing what people are scared of when it comes to disasters, what questions they ask in a particular area, or what they wonder about, can help in drafting preparedness messages that are more effective and that can engage with people better. Preparedness messages can be tailored to respond to a particular question that people in a specific area have.	Radian6, Hootsuite, Crimson Hexagon, Sysomos MAP, uberVu, Brandwatch, Geofeedia	Using Geofeedia it is possible to type in a location, expand or narrow down the area, and by selecting 'Collage' view the messages in a particular area. Additionally, it is possible to create a 'recording' where the user can specify keywords, for example rain, worried, scared, and then receive alerts based on mentions of these keywords.	Improving the effectiveness of preparedness communications.
9 Monitor if people are talking about the preparedness information that the organisation provides	If an organisation is running a campaign on disaster preparedness and/or DRR, or are using a particular hashtag in their communication on disaster preparedness, they may want to gain insights into the number of conversations that directly address their campaign/information (e.g., an organisation posts a message regarding hurricane preparation on their Facebook page during hurricane season). The organisation can examine if the overall number of conversations discussing their preparedness information are increasing. Using a specific hashtag in the messages	Hootsuite, Topsy, Keyhole, Mention, SWAT.IO, Sysomos Heatbeat, Crowdboost	Topsy's 'Social Search' allows the user to search for a particular hashtag. It gives an impression of how many tweets used that hashtag in a timeframe of one hour, 1 day, or 6, 7, or 30 days. By clicking on 'View trends on Topsy Analytics' it is possible to see a graph of the change in number of tweets over that time period. Clicking on 'Influencers' enables the user to see which 5 users used the hashtag the most.	Evaluating the effectiveness of preparedness content

In what ways can SMAT aid work on disaster preparedness and risk reduction?	Further information	Examples of tools that can be used for this purpose	Example of the use of the tool	Main purpose
	<p>makes it easier to track the conversations as people are likely to use that hashtag again. For example, it is possible to analyse if people are sharing this information (and hashtag) with others, if they adopt the hashtag in other posts related to the topic of hurricane preparedness, or how the overall number of conversations changes: there may be a week-long increase in the use of the hashtag. The insights gained can be used to plan the timing of additional preparedness-related messages.</p>			
10	<p>Schedule preparedness messages in advance</p> <p>It can be useful to schedule messages in advance for a particular event or period of risk that is expected to take place at a specific time. For example, several tweets covering various Red Cross Societies' activities on urban risk reduction were scheduled to be sent during the International Seminar on Urban Disaster Risk Reduction and Management in Iran. This enables National Societies (many of which were present at the seminar) to learn about each other's work in this area. Alternatively, messages on disaster preparedness related to seasonal events could be scheduled to be sent out at the beginning of the period in which the risk of seasonal events increases.</p>	<p>Tweetdeck, Crimson Hexagon, Hootsuite, SWAT.IO, Sysomos Heatbeat, Crowdbooster</p>	<p>SWAT.IO is a tool aimed at making it easier to manage an organisation's SM profiles in a team setting. One calendar presents the team with an overview of scheduled posts for different SM applications, including those that have been scheduled in the past and have since been posted. There is a colour coding system for planned posts, including the option to make them suggested posts (that can be reviewed by another member of the team) or approved posts. Posts can be assigned to various team members, and all internal communication regarding a post can be quickly accessed. It is also possible to duplicate posts to be used again or on other SM, or create automatic reply templates.</p>	<p>Scheduling the posting of messages to increase their relevance</p>
11	<p>Understand the effectiveness of preparedness campaigns via an evaluation tool to monitor impact</p> <p>SMAT can provide numerical metrics on a campaign's rate of contact with its audience (e.g., how many people/households have been reached with a preparedness campaign). This provides information on the effectiveness and impact of a campaign, as the metrics may include monitoring information on engagement with messages (e.g., retweets, likes, mentions). This information can be used to inform further preparedness campaigns.</p>	<p>Radian 6, Twitter Analytics, SWAT.IO, SumAll, Tweetreach, Crimson Hexagon, Brandwatch</p>	<p>Twitter Analytics enables the user to understand the effectiveness of a campaign. For instance, if the user tweets about an event to recruit volunteers, they can click on the 'Analytics' option to gain a general awareness of the impact that the tweets have had in terms of reach by looking at changes in the number of tweet impressions, mentions, profile visits and followers. By clicking on 'Tweets' information on</p>	<p>Evaluating the effectiveness of preparedness content</p>

In what ways can SMAT aid work on disaster preparedness and risk reduction?	Further information	Examples of tools that can be used for this purpose	Example of the use of the tool	Main purpose
			the number of impressions and engagement is provided for each tweet.	
12 Reduce the negative effects of rumours that undermine preparedness work	Rumours related to the perception and reputation of an organisation can have a negative effect on the work they do, and it is therefore important to address them. Three main categories of rumours are addressed below.			Managing the organisation's reputation
A <i>Rumours about an organisation</i>	Rumours spread on SM can contribute to the spread of incorrect perceptions that people may have of an organisation or its reputation. As perception and acceptance of an organisation play a great role in people being able to come to the organisation if they need help, the organisation may want to reduce the incorrect perceptions that people have. Regarding perceptions expressed on SM, organisations can set-up a keyword or hashtag alert and monitor the stream of messages it displays. For example, there can be rumours on a Red Cross Society being a Christian organisation. When such rumours occur in a country where Islam is the main religion, they can greatly undermine the credibility of the Red Cross Society.	Tweetdeck, Hootsuite, Topsy, Sysomos tools, Crimson Hexagon, Radian6, Brandwatch,	In Sysomos Heartbeat the user can set up alerts to be notified by e-mail of a change in the streams of words being monitored over time. They can set this up in 'Edit Email Subscription', where they can indicate the frequency of the alert. This works best when the user has set up a search stream ahead of time, and therefore works best for recurring rumours. For example, one of the rumours that reoccurs is that the Red Cross banned Christmas. As this myth reoccurs on a regular basis, it is possible to set up a stream to monitor 'Red Cross' and 'Christmas' and set an e-mail alert if there is a sudden peak in the use of the combination of these words.	
B <i>Rumours on the (preparedness) work that an organisation does</i>	Rumours spread on SM can contribute to the spread of information contradicting the preparedness guidance an organisation provides and ultimately undermines the organisation's work. To reduce the risk of this happening it is possible to set-up a keyword or hashtag alert and monitor the stream of messages it displays.	Tweetdeck, Hootsuite, Topsy, Crimson Hexagon, Sysomos tools	Brandwatch can be used to create an alert, for example for the combination of the words 'Ebola' and 'Red Cross'. By monitoring messages using this combination of keywords, the user can identify related rumours. For example, one of the rumours identified by a National Society was that the Red Cross had Ebola vaccines but were not giving them to people. By tracking down the main person who started these rumours the National Society was able to reverse the rumour: a direct message was sent to the person, and the person in turn reposted this message to their followers, explaining that there is no vaccine	

In what ways can SMAT aid work on disaster preparedness and risk reduction?	Further information	Examples of tools that can be used for this purpose	Example of the use of the tool	Main purpose
			against Ebola.	
13 Reinforce the positive opinions expressed on an organisation's preparedness work	In addition to identifying and addressing rumours, SMAT can also be used to identify and increase the reach of positive messages on (the preparedness work of) an organisation. This can be done by setting up search streams for certain keywords. By reposting these positive messages they also reach the general public. This enhances the public's positive perception of the organisation and will ultimately strengthen its reputation.	Radian6, Tweetdeck, Hootsuite, Topsy, Crimson Hexagon, Sysomos Heartbeat, uberVU	When using uberVU, select the 'Mentions' option under 'Signal' and you will receive e-mail notifications of all the mentions of the organisation. To reinforce the positive opinions expressed about the organisation, it is possible to increase the reach of positive mentions by further sharing (e.g., retweeting, liking) each positive message.	Managing the organisation's reputation
14 Identify credible sources of disaster-information and highlight them to an organisations followers	In the case of disasters that commonly occur in a specific area, it is worth checking what the most reliable sources of information and updates are. For example, during seasonal flooding, an organisation can use SMAT to create a notification for a particular keyword, and use this to see who the reliable sources of information provision are (e.g., local news or weather channels). This information can be communicated to the organisations' followers. An example of a Non-Governmental Organisation (NGO) that encouraged their followers on Twitter to follow official channels that provide disaster information is Humanity Road.	Keyhole, Topsy, Crimson Hexagon, Sysomos Heartbeat	Sysomos Heartbeat can give SM users an 'authority score'. This does not just give the organisation using the tool an idea of who retweeted or reposted things on a particular topic, but provides insight into how active these users are in producing content on the topic. Active users are more likely to be informed users.	Remaining up-to-date and sharing public preparedness information, news and activities
15 Get an impression of geographical areas where people use SM - this aids in identifying possible deviations in this pattern during a disaster	Knowing where in a country or area of operation people use SM and to what extent they use it is not a means of preparedness or DRR on its own. However, having a baseline scenario of how people use SM in everyday life can help an organisation to identify deviations in the use of SM during a disaster situation. For example, if people in an area with an average use of SM in an everyday situation appear not to communicate via SM (with each other or to your organisation) during a disaster, this could be an indication of there being something wrong in that area. This information could then be used to facilitate response.	Geofeedia, Sysomos Heartbeat, Sysomos MAP, Meltwater buzz	Geofeedia enables SM data to be captured and stored from particular geographic locations. First a search is conducted by entering the desired location, which can be further refined using a visual perimeter. The data can then be filtered by date, source, keywords and/or hashtags. The search results can then be archived for future use or streamed in real-time.	Preparing to enhance response
16 Monitor	If, in a certain area, there is the risk of an impending disaster,	Hootsuite,	Hootsuite: The user can create a tab of streams in	Early

In what ways can SMAT aid work on disaster preparedness and risk reduction?	Further information	Examples of tools that can be used for this purpose	Example of the use of the tool	Main purpose
developments in areas at risk	it is valuable to monitor what the local people or community in that area are expressing with regard to the situation. For example, if there is a tornado warning in the state of Virginia, an organisation can monitor SM messages from Virginia that concern the weather in Virginia. Due to privacy settings the geolocation of the tweet cannot always be traced, unless the geolocation was activated by the person who sent the tweet. Alternative ways of trying to identify which tweets are from Virginia and which ones simply discuss tornadoes in general, include setting up an alert for the state abbreviation hashtag #VA. Local people are more likely to use this hashtag than people from outside of Virginia. Also, it is possible to combine this with the hashtag #WX, which means 'weather', or even make it #VAWX. This example illustrates the importance of doing some research into the language used on a particular SM and the locally relevant hashtags.	Tweetdeck, Topsy, Radian 6, Sysomos Heartbeat	which they carry out multiple searches for a hashtag, keyword, or combination of keywords on several SM. This means that the user can monitor the same word, or combination of words, across various SM applications in one place. This can be done for up to approximately nine days in the past.	intervention
17 Detect potential threats (and facilitate a timely response to the threats)	During large scale events Red Cross National Societies might have teams of volunteers on stand-by in case the situation escalates. During such cases it can be good to monitor what the people attending the event are doing and anything they may be saying on SM. This can be done by using SMAT that enable the user to set a keyword or hashtag alert. This presents a stream of messages containing the hashtag (or a combination of hashtags) for which an alert can be set. Some tools (e.g., Crowdbooster, Brandwatch, Crimson Hexagon, the Sysomos tools) will send the user an e-mail alert if there is a rapid increase in the use of a particular keyword.	Crimson Hexagon, Brandwatch, Radian6, Tweetdeck, Topsy, Sysomos MAP, Hootsuite, Crowdbooster	In Brandwatch the user can create signals and alerts. Signals automatically alert the user to potential crises or emerging trends, as soon as they begin. It analyses data in real-time, and sends an e-mail alert to specified recipients as soon as it detects significant or sudden changes in data, such as trending stories and authors, or shifts in sentiment. Custom Alerts are e-mail alerts triggered by specific changes in data, defined by triggers and thresholds set by the user, which can be as broad or refined as desired. For example the user can be alerted every time there is a sudden increase in volume, or only when there are occurrences of specific keywords by specific authors.	Early intervention
18 Identify networks or groups of	As social connectedness is one of the biggest indicators of preparedness, SMAT can be used to analyse and visualise	RepKnight	On the 'Geolocation' tab of RepKnight, the user can visualise where anyone who has a geo-tag is	Identifying community

In what ways can SMAT aid work on disaster preparedness and risk reduction?	Further information	Examples of tools that can be used for this purpose	Example of the use of the tool	Main purpose
citizens to mobilise and facilitate volunteer engagement for preparedness	social networks. The information can be used to identify, organise and mobilise community networks before a disaster occurs that will assist humanitarian organisations in the response to a disaster.		talking about particular keywords (e.g., preparedness). It includes information on the number of users that are mentioning the keyword. If there are multiple users in a particular area discussing preparedness, these users could be engaged with to form a community preparedness network.	networks that can be mobilised before a disaster occurs .
19 Monitoring what is going on around the world in the disaster management community	Using keyword searches enables an organisation to stay up-to-date on what is going on in the disaster management community and learn from others. For example, it can identify trends in terms of what other organisations are talking about and find new people/organisations to collaborate with.	Radian 6, Twitter Analytics, Brandwatch, Crimson Hexagon,	Brandwatch can be used to set up searches for other SM users. Setting up such searches for several other organisations working in similar areas enables easily staying up to date with what those users are talking about. For example, they may be using a specific hashtag related to a particular area of preparedness. This is valuable information to consider and include in SM content.	Remaining up-to-date and sharing public preparedness information, news and activities.

ANNEX E: FURTHER READING

Use of SM

- A wide range of social media related resources are available on the GDFC website – please use the search term ‘social media’. <http://preparecenter.org/resources>
- Humanity Road, *A Guide to Social Media Emergency Management Analytics*, 2014. [Online] <http://humanityroad.org/smemanalyticsguide/> (Accessed 25 June 2015)
- DSTL, *Using Social Media in Emergencies: Smart Practices: Smart Tips for Category 1 Responders using Social Media in Emergency Management*, 2012. [Online] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/85946/Using-social-media-in-emergencies-smart-tips.pdf (Accessed 22 July 2015)

Information and data security

- UK Information Commissioners Office, *Information Security*, 2015. [Online] <https://ico.org.uk/for-organisations/guide-to-data-protection/principle-7-security> (Accessed 25 June 2015)
- Office of the Australian Information Commissioner (OAIC), *Guide to securing personal information*, 2013. [Online] <http://www.oaic.gov.au/privacy/privacy-resources/privacy-guides/guide-to-securing-personal-information> (Accessed 25 June 2015)

Developing hashtag standards

- UNOCHA, *Hashtag standards*, 2014. [Online] <http://www.unocha.org/node/117960> (Accessed 25 June 2015)