COMPARATIVE REVIEW OF SOCIAL MEDIA ANALYSIS TOOLS (SMAT) FOR PREPAREDNESS

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PROJECT CONTEXT

- **Use of social media (SM) increasingly common (early warning and disaster response) – less widespread for disaster risk reduction (DRR) and preparedness**
  - Amongst the general public and humanitarian organisations
- **Large amounts of social media data**
  - Analysis of this data can aid disaster management processes
  - Social Media Analysis Tools (SMAT) increasingly available but most commonly used for response
  - Need to better understand how SMAT can increase the impact of DRR and preparedness work
- **Comparative review of social media analysis tools for preparedness**
  - Call for research proposals by the Global Disaster Preparedness Center (GDPC)/ American Red Cross
  - Research project awarded to Trilateral Research & Consulting (March – June 2015)

AIMS

- **Provide an overview of currently available commercial and free of charge/low cost SMAT that can be used for DRR and preparedness**
  - Analysis of the functionalities and capabilities of different SMAT
  - Detailed examples of applied uses of SMAT
- **Provide recommendations on how SMAT can be used in DRR and preparedness**
  - Generic: strategy and planning
  - Specific: purposes for which SMAT can be used
- **Suggestions on considerations relating to policy and developments in tools that may impact their future use**
- **Suggestions for cross-organisational activities within the RCRC network that may be drawn upon to support RCRC actors in their use of SM & SMAT for DRR and preparedness.**

RESEARCH QUESTIONS

- 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?
- What are the most suitable tools to meet the needs of this kind of work?

RESEARCH METHODS

- 20 semi-structured in-depth interviews
- Online survey
  - 30 complete responses by RCRC actors
  - 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 pad SMAT, including 14 demonstrations with developers
- Two workshops with RCRC representatives, researchers and SMAT developers (16 external participants in total)

Trilateral received support from Chih-Hui Lai, Assistant Professor at Nanyang Technological University, Singapore with the survey and interviews.

SURVEY FINDINGS: POPULAR USES OF SM BY RCRC ORGANISATIONS & ENGAGEMENT WITH SMAT

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.

36.6% USE SMAT

33.3% DO NOT USE SMAT

30% ARE NOT SURE

Value can be added by engaging with SMAT

SMAT FOR PREPAREDNESS VS. RESPONSE

Response

Increased requirements on tools

- Large volumes of data
- Real-time data
- Data focuses on needs (e.g., water, shelter) & situational awareness
- Rapid response required

Preparedness

Fewer requirements on tools

- Small data sets may be used
- Fewer requirements for real-time data or fast access to data
- Focus on listening to conversations (i.e., monitoring)

SMAT for response: need for more expensive tools as these have access to large volumes of data.

This need is less present when using SMAT for DRR and preparedness.

SELECTION OF SMAT

- Vast amount of SMAT that can be used for preparedness and risk reduction work
- There are differences in the requirements of SMAT used for response vs. preparedness

- Multi-step process to select the SMAT considered most suitable for DRR and preparedness
  - 94 currently available SMAT were examined
    - Desk-based research, interviews, survey, workshop, word-of-mouth
  - SMAT were examined in relation to aims of DRR and preparedness, insight gained through analysing interviews, surveys, and outcomes of the first workshop
  - Selection of 31 SMAT that were analysed in more detail and included in the catalogue of SMAT

	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		•	•	•	•				•		•		•
Microsft Dynamics		•	•	•	•		•	•			•		•
Radian6		•	•	•	•				•		•		•
RepKnight		•	•	•	•				•	•			•
Sprout Social	•		•	•	•		•			•			
SumAll	•		•	•	•	•	•			•			•
Swat.io		•	•	•	•			•			•		
Sysomos Heartbeat		•	•	•	•				•	•			•
Sysomos Map		•	•	•	•				•	•			•
Talkwalker		•	•	•	•				•		•		•
Tint	•		•	•	•		•	•	•	•			•
Topsy	•			•	•	•					•		
Tweetdeck	•			•		•				•			
Tweetreach	•			•	•	•	•			•			•
TweetTracker		•		•	•	•				•			•
Twitter Analytics	•			•		•					•		
uberVU		•	•	•	•				•	•			•

SELECTION OF SMAT

Name of the tool	Key functions	Social media	Approximate Cost ($)	Language of the tools interface	Language of the data the tool can analyse	Accessibility	Usability	Instructions available on website	Online (live) help available	Website
Name & RCRC actors that use the tool	Predominately includes functions considered as relevant by interviewees and survey participants	List of SM applications the tool can analyse & a note of if the SMAT can crawl other sources on the web	Whether the SMAT is free, free+ paid upgrade, or if a paid subscription is required. If information on licenses/user accounts is available this is indicated here.	Language(s) the tools is available in	Information provided by the SMAT developer on the languages that they state that the tool is able to analyse	How easy is it to get an impression of how the tool works? Are there demos or trials available? This is especially relevant for the tools that are not freely available	Usability is presented on a scale of 1-5, where 1 is easy and 5 is difficult. Where possible this information is provided based on the research team trying out the tools, or having received demos.	Whether online instructions (e.g., text based advice, video tutorials) are available.	Whether an online help-desk is available.	The SMAT's website

CATALOGUE OF SMAT

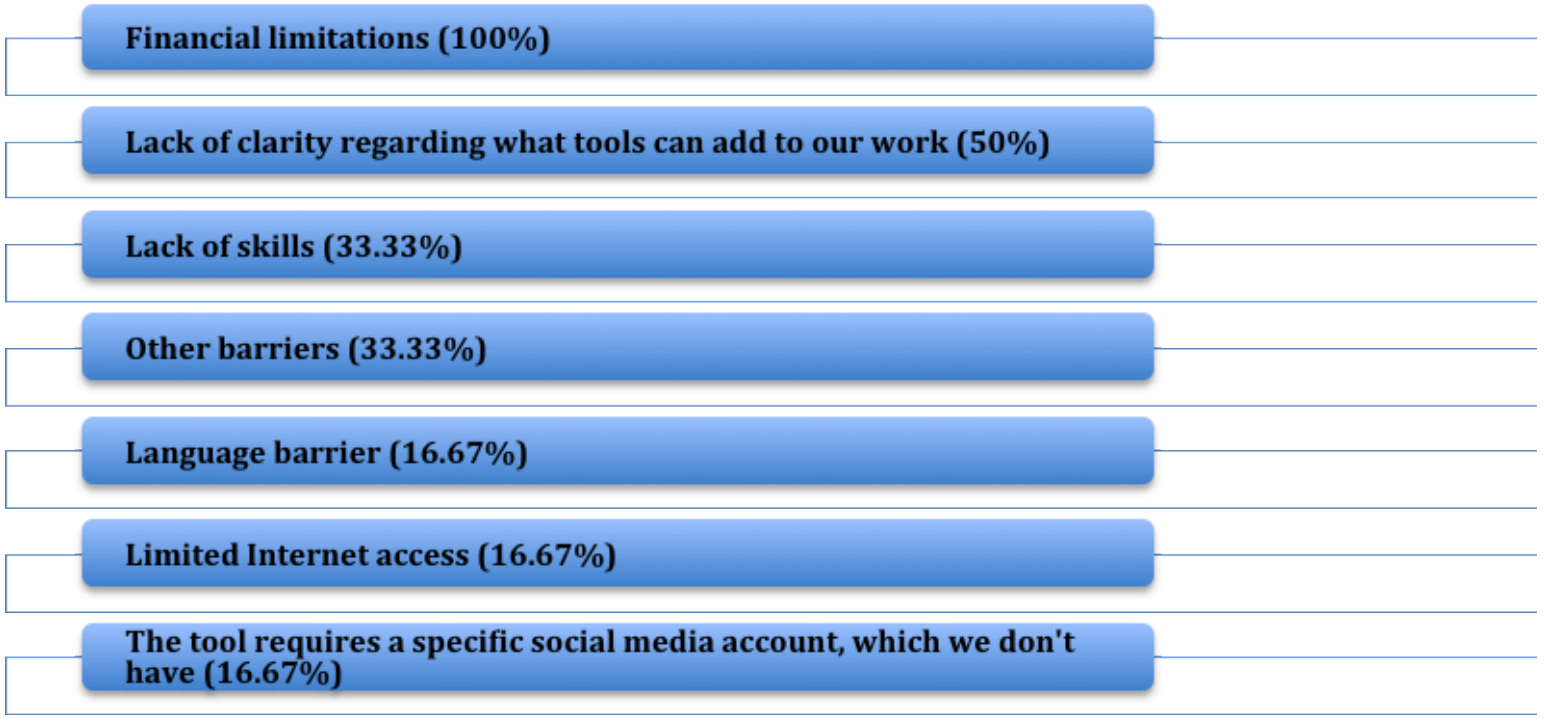
The catalogue can be used as a quick reference that can guide RCRC actors in their selection

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
	This does not necessarily present all functions the SMAT offers		*Free/free+ paid upgrade/ paid subscription*		*Detail is based on information provided by the developer*	*Free limited use, demo, trial*	*Scale of 1-5. 1=easy, 5=difficult*	*Yes, no, or explanation*	*Yes, no, or explanation*	
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/

BARRIERS

- The catalogue is a useful overview of SMAT, however, choosing SMAT is not a straightforward process.

- Variety of factors that shape organisations' choice and use of SMAT
  - User-related barriers
  - Tool and data-related barriers



Barriers to SMAT highlighted in the survey

USER-RELATED BARRIERS

1	Limited/no financial resources
2	Limited human resources and time
3	High staff turnover
4	Limited ICT skills and knowledge
5	Lack of understanding of how to operationalise SMAT data
6	Unsuitable organisational structure
7	Organisational culture
8	Absence of guidelines and frameworks for using SM data
9	Language barrier
10	Value of analysing SM data is not acknowledged
11	Lack of permission and access to use the tool
12	Access to SM applications is blocked
13	Limited understanding of SM and SM sub-language/slang
14	Limited Internet access and bandwidth
15	Lack of trust in the public's SM usage

USER BARRIERS & IDEAS FOR MITIGATION

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.

TOOL & DATA RELATED BARRIERS

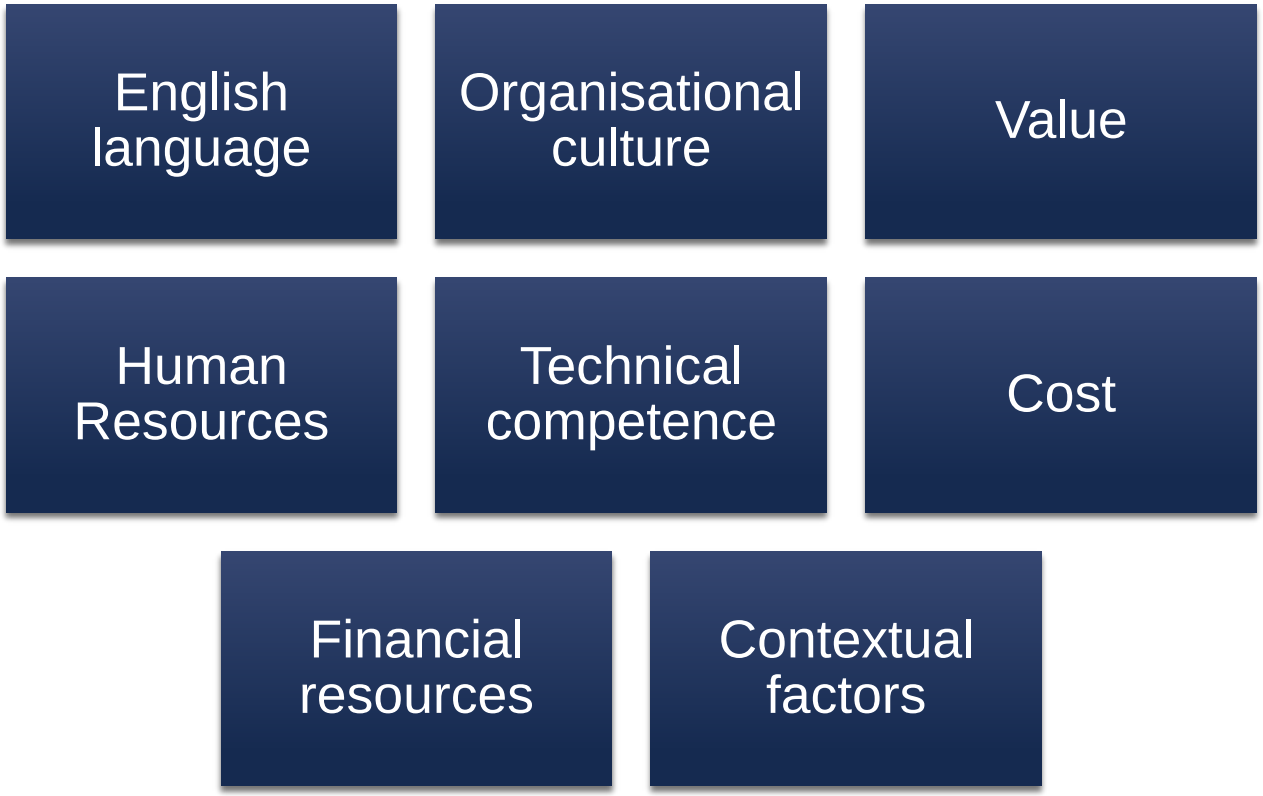
1	Language of the data	13	Insufficient data-retention/lack of data ownership
2	Language of the SMAT	14	Data quality
3	Cost	15	Data accessibility
4	Lack of capacity to handle large amounts of information/data	16	Lack of licenses/limited user accounts
5	Inability to function with low Internet speed	17	Lack of protected access and user roles
6	Lack of usability/ease of deployment	18	Limited compatibility between related tools
7	Not available as a mobile phone application	19	Display capabilities
8	Too many functions	20	Tool does not offer the variety of functions needed
9	Inflexible or prohibitive contract	21	Lack of contextual awareness (e.g., in keyword analysis/natural language processing)
10	Lack of interoperability with other (non-SM) sources	22	Obstacles to capturing data from private networks
11	Quickly changing standards/rules	23	The general public does not have access to smart phones (i.e., limited use of social media)
12	No multimodality/multi-platform analysis	24	The tool is out-dated

TOOL & DATA RELATED BARRIERS & IDEAS FOR MITIGATION

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).

USE CASES

- Four in-depth use cases based on 8 factors.
  - Also based on typical situations experienced by some RCRC actors as found during the study
- Guidance provided on the use cases can be examined based on each of the 8 factors
- Use case includes
  - Key characteristics
  - Impacts
  - Potential solutions
- 8 mini-use cases



EXAMPLE - USE CASE 2

Lack of English language capabilities	• Primary impact: may restrict the choice of SMAT
Limited human resources available	• Primary impact: restrictions in time and effort available to investigate and use SMAT
Organisational culture open to the adoption of new technologies	• Primary impact: Organisation can adapt quickly as technology advances and new SMAT become available • Further impact: The organisation faces few struggles with regard to responding to changes brought about by the use of SM
Organisation acknowledges the value of SMAT	• Primary impact: In combination with the organisational culture, this can facilitate the organisation's use of SMAT

- Solutions
  - Scenario: An organisation may want to spread the news about a preparedness-related campaign far and wide
  - SMAT: free or low-cost SMAT available in languages other than English (e.g., Hootsuite – low cost & available in Spanish)
  - Activities
    - Identify opinion leaders (influential users) for encouraging further sharing & to ensure future interaction

GENERAL RECOMMENDATIONS: PLANNING & STRATEGY

- Develop a SM & SMAT strategy – Prepare to use SMAT for DRR & preparedness. Guidance includes:
  - Identify - who, what, when
  - A code of conduct for acceptable behaviour on the use of SM and SMAT by staff and volunteers
  - Create and enforce a data protection policy for collection & storage of SM data
  - Learn about the local ‘virtual’ audience
  - Reflecting & improving the strategy

- Considerations regarding how SMAT can be used for disaster response
  - Continuation of use of SM & SMAT from preparedness
  - Build capacity by engaging with (digital) volunteer communities (e.g., The Standby Taskforce)

SPECIFIC RECOMMENDATIONS: PURPOSES FOR WHICH SMAT CAN BE USED

- Various purposes for which (free, low-cost, and commercial) SMAT can be used for DRR and preparedness.
  - Based on interviews, the survey, two workshops carried out as part of this project, and literature review on the uses of SMAT for DRR and preparedness.

- Examples of tools (and how they can be used) are also provided for each purpose

Note: Not all recommendations will suit all RCRC actors – this will differ based on their individual activities and interests

SPECIFIC RECOMMENDATIONS: PURPOSES FOR WHICH SMAT CAN BE USED

1	Improve the quality of messages on preparedness
2	Enable an organisation to engage more effectively with communities
3	Analyse which SM account is the most popular application for showing what the organisations disaster preparedness work involves
4	Tailor posts on a Facebook page to specific audiences
5	Tailor Facebook adverts (ads) with preparedness-related information to niche communities that have interests that are in line with the information that the organisation wants to spread
6	Broaden the influence of a preparedness message on SM through targeting influential users
7	Identify popular hashtags or keywords related to the ones the organisation is interested in using, they can then be used in preparedness messages
8	Identify what people are scared of or concerned about and address their concerns in messages
9	Monitor if people are talking about the preparedness information that the organisation provides

10	Schedule preparedness messages in advance
11	Understand the effectiveness of preparedness campaigns via an evaluation tool to monitor impact
12	Reduce the negative effects of rumours that undermine preparedness work
13	Reinforce the positive opinions expressed on an organisation's preparedness work
14	Identify credible sources of disaster-information and highlight them to an organisations followers
15	Get an impression of geographical areas that people use SM - this aids in identifying possible deviations in this pattern during a disaster
16	Monitor developments in areas at risk
17	Detect potential threats (and facilitate a timely response to the threats)
18	Identify networks or groups of citizens to mobilise and facilitate volunteer engagement for preparedness
19	Monitoring what is going on around the world in the disaster community

EXAMPLE

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	Improve the quality of messages on preparedness	Gaining an insight into which SM content on a particular application is most popular can help to enhance the impact of future SM content			Improve the effectiveness of content
A	*YouTube videos*	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 interact with a video can help to uncover important patterns.	YouTube Analytics, Sysomos tools	YouTube Analytics shows line charts of how 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.	

NEXT STEPS & FUTURE CONSIDERATIONS

- Future considerations for RCRC actors
  - Keeping up-to-date with changes in SM policies and their influence on SMAT
  - Changing data protection regulations and their impact on the use of SMAT

- Future R&D
  - Greater awareness of the needs of the humanitarian sector by developers
  - Potential incorporation of private messaging apps (e.g., WhatsApp & Snapchat) & data from other websites (RSS feeds, news comment forms etc.) into existing SMAT
    - Highly dependent on privacy implications
  - Further research into more advanced use of SMAT within the humanitarian sector to draw out good practices

NEXT STEPS & FUTURE CONSIDERATIONS

- Next steps for the wider RCRC network
  - Training on SMAT
  - Development of a working group on SM & SMAT across the RCRC network to help facilitate communication and lessons learnt across the network
    - Could also be used for collective action (e.g., to ensure a lower price with developers for commercial SMAT)
  - Examine the potential to work with research centres to develop new and/or refine existing SMAT
  - Enhancing capacity through engagement with volunteers that can focus on SM & SMAT use

THANK YOU

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