Conflict prevention and peacebuilding relies on information. If accessed on time, well verified, analysed and shared with the right actors, it has the potential to stop violence before it escalates. Traditionally, the processes of information generation and flow have relied on conflict analysis experts, which is not only costly but also time-consuming when it comes to transmission and dissemination for action. Technology is therefore changing the way information is shared and processed; tools, such as mobile devices and social media, allows for information to rapidly be disseminated, analysed and made actionable. As the world continues to move forward at new speeds of information sharing with the likes of Facebook, Twitter and YouTube, such tools increasingly affect the field of peacebuilding and conflict prevention.

This article seeks to initiate policy and practice related discussions on the role that such technologies can play in complimenting traditional peacebuilding and conflict prevention efforts. More specifically, the article explores the role of crowdsourcing as a method for gathering and sharing conflict information for timely and coordinated response. Crowdsourcing uses technology to receive specific information from a crowd of people related.

Above: The voice of people is increasingly communicated through newer media channels such as Facebook, Twitter, blogs, and text messages rather than merely transferred and controlled through traditional media and elected politicians.
Crowdsourcing facilitates the transfer of important information directly from the source in a crisis situation to responsible stakeholders capable of responding and possibly mitigating further escalation.

to targeted topics or issues, and then allows for this information to be geographically mapped. Crowdsourcing has had considerable success in the field of humanitarian action and crisis management. It was used for the first time during the 2008 post-election violence in Kenya to alert authorities of outbreaks of violence, and again in the 2010 Haiti earthquake used to alert rescuers and relief workers of survivors and needs on the ground. With the success of crowdsourcing in crisis management, there is now a need to further explore the ability to add value to conflict prevention by engaging people locally in collaborative efforts for early warning and timely response using crowdsourcing to not just respond to the crises but to prevent violence.

This article explores the role of crowdsourcing as a methodology for gathering and sharing conflict information for timely and coordinated responses. The article outlines the various components of a crowdsourcing system and identifies the factors that are crucial for crowdsourcing systems to compliment conflict prevention efforts.

Technology and Conflict Prevention

The use of technology can localise the warning and response mechanisms aimed at preventing violent conflict and hence give more ownership and responsibility to the people impacted. In 2011 alone the impact of social media in political transition processes was evident, the latest developments in the Arab World and in many African countries testament to this proliferation and impact. The voice of the people is increasingly communicated through newer media channels such as Facebook, Twitter, blogs, and text messages rather than merely transferred and controlled through traditional media and elected politicians. As one activist ‘tweeted’ during the February 2011 protests in Cairo: “We use Facebook to schedule protests, Twitter to coordinate and YouTube to tell the world.”

Innovations in open-source technology and greater affordability and access to digital devices have changed the speed of information sharing and the nature of information, notably with the rise of social media and the spread of services offered via mobile phones. The increase
of mobile phone usage over the past decade has been evident in developing countries. In 2010 there were over 5 billion mobile phone users in the world, with over 80% in developing countries, especially in Sub-Saharan Africa, and the number is growing.\(^3\) Grasping and making effective and constructive use of newer technology tools provides a crucial opportunity to strengthen broader participation and inclusion in political transformation processes and conflict prevention.

Over the past few years crowdsourced information, thanks to extensively expanding access to mobile devices and social media in all parts of the world, has emerged as a complementary tool for early warning. Technology offers the potential to rapidly grasp and react to proximate information – given that the right response system is in place – especially around rapidly changing situations like those related to elections and political transitions. However, in these situations technology also offers the potential to share information by the crowd for the crowd – so called crowdfeeding\(^4\) – via horizontal communication. Crowdfeeding can be used to involve and mobilise communities of action to respond to signs of early warning locally or rapidly share the information to the appropriate response mechanisms.

Crowdsourcing can be used to enhance capacities to respond in an informed, timely and coordinated manner. (When used in a general manner throughout this article crowdsourcing is a word that encompasses not only

During the 2010 Haiti earthquake a platform was quickly created to provide humanitarian aid and emergency relief workers with a map that highlighted emergencies, urgencies, locations of damages, and services. People on the ground could submit an incident via sms, email and other social media to this platform for targeted emergency responses.
Early Warning, Crowdsourcing and Violence Prevention

Early warning systems have advanced concomitantly over time as the knowledge and understanding of conflict and prevention have evolved and new quantitative and qualitative tools have become available. Previous generations of early warning systems that contributed to the efforts of conflict prevention were good at generating information around potential or existing conflict, but they have been heavily criticised for their lack of response to that information. A new early warning system generation seeks to address this gap by linking warners and responders, and by focusing on direct first-responder interventions.\(^5\) While the former generations of early warning systems, that is, the first through third generations, define early warning as ‘the systematic collection and analysis of information’, the latest system draws on the United Nations (UN) Institutional Strategy for Disaster Reduction’s people-centred definition\(^6\) of early warning and response:

“Empower individuals and communities threatened by hazards to act in sufficient time and in an appropriate manner so as to reduce the possibility of personal injury, loss of life, damage to property and the environment, and loss of livelihoods.”

These recent and evolving early warning initiatives draw on crowdsourcing as a methodology to rapidly connect warners and responders by facilitating the quick transfer of information. There is now the capacity for information to be transferred directly from the source to the responsible stakeholders capable of responding. In crisis situations and for conflict preventive purposes, crowdsourcing as a methodology has several advantages. First, **crowdsourcing allows for rapid information sharing.** Rapid information sharing during a crisis is vital for early warning purposes to relevant response systems and actors. Second, crowdsourcing provides for broad involvement of populations in generating ‘state of the moment’ information, which then raises the awareness of affected communities and has potential to foster rapid and timely action. Lastly, crowdsourcing **makes alternative sources of information available for verification, action planning and response.** In this case, pooling information from various channels, such as international and local media, government reports, and now crowdsourced information, allows for much quicker verification of information, facilitating rapid planning and response mechanisms.

**The Crowdsourcing System for Early Warning and Conflict Prevention**

In the previous section the methodology of crowdsourcing and its relevance as a tool for generating conflict information, was introduced and discussed. This section highlights the key components of a crowdsourcing system that has potential to compliment and strengthen peacebuilding and conflict prevention efforts.

**Components of Crowdsourcing: The Call, the Crowd, the Tools**

There are three main components in any crowdsourcing system: the issue being broadcasted (the call), the target audience (the crowd), and the methods (the tools) used to send and receive information to and from the crowd. The call is a way to get a particular audience involved in sharing information. The message to the crowd can be
communicated through many different tools. The call has to be concise and specific and the crowd has to be informed about the means to report and the reason why they should share information. It is important to clearly specify who is running the service, how people should report, what they should report and how the information will be processed, utilised and responded to. The call could prompt a response from the crowd expecting either information about specific needs or about a particular situation. The crowd can be an already identified and ‘trusted’ group (bounded crowd) – consisting of appointed field monitors – or an open crowd (unbounded crowd) – such as a community in a given location.

Having learned significantly from the 2008 Kenya elections and in the build up to the Kenyan constitutional referendum in 2010, the Kenyan government’s National Steering Committee on Conflict Management and Peacebuilding (NSC), with the support of the United Nations Development Programme (UNDP), issued a call to inhabitants of selected communities that were identified as high-risk areas for election violence. They were requested to report any incidences of hate speech from politicians, cases of community militarisation or clan animosity. All these were perceived as potential threats to a peaceful referendum. Incidences were reported through mobile phones where a free SMS short code had been made available. The information generated was managed through an online system dubbed the Uwiano (kiSwahili for cohesion) Platform for Peace. Information gathered was analysed, verified by the NSC team and disseminated for action to various state agencies, civil society organisations and others resulting in a primarily peaceful 2010 election season.

As illustrated in the example above, most crowdsourcing initiatives are either mobile or web based. This requires a slightly advanced technology infrastructure in a country and the crowd ought to have access to at least one form of communication – whether it is the internet, mobile phones or land line telephones. In some developing countries internet coverage is only available in urban centres and not in rural areas, yet mobile network coverage is increasing throughout most developing countries, including rural areas. The use of mobile phones in developing countries has been found to be the best option for crowdsourcing (as opposed to internet based tools like emails, online submissions, or blogging) as mobile network coverage is continually increasing into formerly hard to reach rural locations.

In some cases where the target audience is illiterate or unable to access the needed technology (be it for economic reasons or otherwise), the initiator of the call may choose to target specific field monitors to generate information. This was done in Kenya: where mobile phone coverage was inaccessible a local field monitor was selected and given training and a short wave radio to provide a daily report to the NSC.

**Analysis and Credibility**

Information credibility is a central prerequisite if prevention of violent conflicts is to be achieved. Credible information in this case is verifiable, well analysed and trustworthy. If information is not deemed to be credible, that is, mere rumours, subjective, leads to hate speech or is inflammatory, then there is a likelihood that its dissemination could lead to further violence or even escalate a situation. Credibility of information and information flow processes becomes a core aspect of prevention. Effort and planning in a crowdsourcing system must ensure that credibility of process and information collection is a core outcome of the early warning and prevention effort.

As mentioned earlier, the use of modern technologies should not be seen to replace traditional information
generation approaches like conflict analysis. On the contrary, technology plays a more complementary role, working to strengthen existing mechanisms. In some cases, for example the Economic Community of West African States Early Warning and Response Network (ECOWARN) in West Africa and Kenya’s Conflict Early Warning System, a hybrid system is adopted where traditional conflict analysis methods are intertwined with crowdsourced information.

A hybrid method of using a targeted call to a specific crowd is an important part of accessing and verifying credible information at the local level, and one that is important in creating a functioning early warning system. Irrespective of their title, field monitors, peace or conflict monitors play a central role in ensuring that the information generated is reliable and credible. In most cases the field monitors are locally embedded, meaning that they belong, and in some cases reside, in specific conflict contexts. In this sense they bring a local perspective to an early warning system while also ensuring legitimacy to the information collection process. These field monitors can also be trained in the use of the crowdsourcing systems in addition to conflict preventive actions.

Efficient and credible monitoring systems would therefore rely heavily upon dependable field monitors. These monitors provide a dual role: they link the conflict early warning system to the people at the local level, while also being responsible for the information that is relayed to key decision makers.

When incorporating data gathered through crowdsourcing, especially from an unbounded crowd, the need for a reliable system to analyse and assess the validity of information rapidly is required. More information, often from unspecified sources, does not ease the analysis but rather increases the complexity of analysis. A credible system therefore requires triangulation of information to ensure, to the extent possible, that the information is reliable.

The process of verifying social media data largely requires a two-step process: the authentication of the source as reliable and the triangulation of the content as valid. The underlying assumption is that if we can authenticate the source and find it trustworthy, it may be sufficient to trust the content.

Triangulation of information sources becomes a key basis for enhancing information quality. As in any information generation process, it helps to employ various methods in order to test the reliability of the data. For example, it might be helpful not only to rely on field monitors but to also check with reliable media houses, civil society groups working in respective conflict areas, and rapid assessments generated by other actors. This information can also be
triangulated and verified by primary information collected by reliable conflict and peace monitors (the bounded crowd). In addition, verification can be crowdsourced by using such technology as OpenStreet Map, Ushahidi and new systems such as Swift River - tools that have been developed to triangulate information and create reliability scores.

The Dual Role of the Crowd

The dual role of the crowd is imperative in an early warning and early response approach to conflict prevention. Information on potential violence is received from the crowd and accurate information is also provided to the crowd to empower appropriate responses. Information shared with the crowd can localise the warning and response mechanisms giving more ownership and responsibility to the people impacted. Therefore crowd information is then fed back to a targeted or large group. The feeding back of information received is called crowdfeeding. The role then of the crowd in crowdsourcing is to provide information to credible stakeholders. Therefore, crowdfeeding is to early response what crowdsourcing is to early warning.10

Crowdfeeding involves using the same technologies that are used to gather data and information from the crowd to feed that data and information back to the crowd. Since the crowd is often the first responder on the ground, the more information on potential violence is received from the crowd, the faster an appropriate response can be made. A core characteristic of crowdfeeding is to provide information or intervention to prevent violence and allow the crowd to self-organise grassroots responses. The challenge for any crowdsourcing system is how to adapt appropriate technologies to facilitate the kind of two-way communication with the crowd and/or responder that will help organisations involved in early response deliver information or intervention to prevent violence and allow the crowd to self-organise grassroots responses.

Just as crowdsourcing cannot always be controlled, there is an element of crowdfeeding that cannot be controlled. Currently in Brazil the government is asking Twitter to take down a link that shares information about police roadblocks. The Brazilian police have been working to curb drunk driving, but with the ability to feed and send information in real-time, information on police locations are being shared and quickly avoided. Another example of crowdfeeding comes from the 2011 protests in London where a technology tool called Sukey was developed to share information of police roadblocks and provide real-time police-free routes for protestors to escape. While Sukey states that it is a tool for non-violent protests, this type of information shared in real-time on a smart phone map or via SMS gives violent protestors the same information and can undermine national security and safety.

The Role of Multiple Stakeholders

Another aspect of developing a reliable crowdsourcing system for early warning is to understand the constraints and boundaries of the processes of warning, analysis and response: who can do what, when, and how much can they do to prevent or stop conflict? A core characteristic of response is the role of multiple stakeholders in mobilising response in a coordinated manner and forging action
based on the various types of warnings generated through crowdsourced information.

The prevention of violence is a collaborative process between local (grassroots), district (regional), national and international actors in identifying and ensuring the preparedness of established response mechanisms as part of the given country’s existing infrastructures of peace. These infrastructures include local peace councils and actors supporting local conflict prevention and response efforts and include local communities in the shaping and implementation of response mechanisms.

A reliable crowdsourcing system requires multiple stakeholders fulfilling multiple roles. For example, civil society organisations, the UN, the national government, media and regional bodies play very specific roles in informing, verifying, analysing and responding to conflict. Civil society groups can play a key role in generating ‘grassroots’ information depending on their outreach and area of cover and assistance, and, with crowdfunding they can mobilise ‘grassroots’ responses to conflict. On the other hand, government institutions such as provincial administration, intelligence services or the Ministry of Interior, might have the legitimacy and ability to respond and be more effective in stopping conflict through the use of police and other interventions. Engaging these government institutions in a collaborative manner to mobilise information provides the much-needed legitimacy to the process as well as empowering legitimate institutions with the space for response to the warnings.

The UNDP is currently exploring how to further integrate technology and crowdsourcing into its work on infrastructures for peace and conflict prevention to engage people locally in collaborative efforts for warning and response. During the 2010 constitutional referendum in Kenya, UNDP provided support to the government and civil society in advance of the referendum to implement the Uwiano Platform. UNDP supported a similar system of linking early warning and response using crowdsourcing in Kyrgyzstan’s 2011 elections and is currently supporting the use of technology and local peace committees for early warning and response in Liberia.

As technology begins to help shape new ways of information sharing and response, it appears that crowdsourcing can be a powerful tool for conflict prevention. Organisations are already implementing parts of a complete crowdsourcing system for conflict prevention and observing results. The use of such technology can be especially important in preventing electoral violence and in curbing violent attacks. However, the most crucial part of early warning and response is the collaborative role of multiple stakeholders and generating appropriate and constructive responses from the information received. Through partnerships and technology violence can be prevented.

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Endnotes

1 This article is part of a larger research effort by the authors and is part of a background document for discussion which will lead to further field research and testing. The views expressed in this article are those of the authors and do not necessarily reflect the views of the United Nations or the Global Partnership for the Prevention of Armed Conflict.


6 The United Nations International Strategy for Disaster Reduction’s definition of early warning and response was crafted at the Third International Conference on Early Warning (EWC3).


8 Ibid.


11 Iacucci, Anahi Ayala (2011) op. cit.