Peacebuilding in the Information Age

Sifting hype from reality

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Table of contents

Preface

Martti Ahtisaari, Nobel Peace Laureate and former President of Finland

I am a firm believer in the huge potential of Information and Communication Technology as a means through which to improve crisis information management, crisis response and post-conflict state-building. Many factors contribute to the effective use of ICTs, none more critical than responsible leadership and buy-in from all levels of the UN system, humanitarian organisations, civil society and the military. Without leadership championing, prioritizing and fully supporting the implementation of new ICT policies and practices, there is little chance of interoperable networks emerging to support the timely exchange of critical information we all know saves lives in crisis situations.

I strongly believe that ICTs can and have already demonstrated the potential to:

- reduce loss of life;
- provide access to critical, real-time information, crucial in timely and appropriate decision-making in crisis situations;
- enable the Government of recipient countries to make well-informed decisions regarding allocation of resources and a means through which victims can give feedback regarding aid promised and received;
- create institutional memory of crisis management operations which are often characterised by a rapid turnover of staff;
- improve the safety and security of all personnel in crisis areas and
- improve situational awareness and create opportunities for early-warning on threats.

Unfortunately, despite the huge potential benefits listed above, ICTs in the field do not always work as promised or expected due to technical problems, the reluctance of individuals to share information and complex information management architectures that severely impede vital information flows. It is therefore critical that those in leadership positions, especially during a crisis, actively support the sharing of information at all levels both within their organisations and with other actors involved in humanitarian response and crisis prevention, mitigation and recovery. The UN system in particular is very active in all these areas, which makes it imperative that it takes the lead in the design and implementation of ICT solutions that strengthen timely information sharing.

In light of the increasing complexity of humanitarian operations, the technological advancement of the ICT tools being used and the massive information overload facing most humanitarian organisations, the development of effective training programs for relevant personnel must also be a key priority for leadership both within the UN family and other relevant humanitarian organisations. This year alone in Haiti, Chile, Kyrgyzstan, and with the Gulf oil spill, we have witnessed an explosion of new ICT platforms and tools to manage and respond to crises. It is imperative that the UN embraces these new technologies and integrates them into their systems and processes. In an age of increasing interconnectivity and information overload, effective leadership is all the more important. ICTs are only as good as those who know how to use them effectively, understand their importance and leverage them to enhance the efficiency and effectiveness of humanitarian aid and response.

The Role of the UN: ICTs in Crisis Response, Peacekeeping and Peacebuilding

Dr. Choi Soon-Hong, Assistant Secretary-General and Chief Information Technology Officer, United Nations

As in society at large, new information technologies and new media solutions have woven themselves into the fabric of what we do from all sides - whether it is social engagement, economic development, humanitarian assistance, or even the UN's peacekeeping mission. The UN is making good progress in not just recognizing, but institutionalizing the power of information technology. Never before has information technology been as visible and well positioned as a driver for change within this global institution. The challenge for the UN and its stakeholders is now to find a way to harness the power of both traditional and new solutions to better serve, to better inform, and to better protect people, especially in times of crises.

Often, this means providing the right information at the right time, whether it is during a natural disaster such as the earthquake in Haiti or the need to help internally displaced people in a flooded Pakistan. In any such scenario, having access to timely and reliable information will save lives and allow governments, UN organisations, NGOs, the media, and others to achieve better results.

The reality, however, is that many organisations involved in crises often develop what we call "point solutions", instead of "integrated solutions", to manage crisis information. This is of course a product of a long history of organic growth of these organisations and the necessity among many of the organisations operating across multiple countries and regions to respond to varying situations. However, advances in technology and improvements in our ability to communicate with one another have provided the opportunity to collaborate more effectively and, more importantly, to begin developing more integrated approaches to leverage information to prevent, respond to, and recover from crises.

My office, in collaboration with the ICT4Peace Foundation, is currently leading an initiative with our key stakeholders in the field, and at headquarters, to formulate such integrated approaches that will produce significant improvements in the overall crisis information management capabilities of the international community. A stocktaking exercise of current situations was conducted and we have since convened a group of information management and technology specialists to develop the integrated approaches. Toward this end, we will be focusing on four main fronts: (1) information architecture work to define and gather a set of data critically needed during a crisis, (2) technology development initiatives to create interoperable systems and tools, (3) capacity building activities to enhance the international community's overall human resources and technical capacity to deal with crises, and finally (4) outreach efforts to increase support from a broad spectrum of stakeholders in both public and private sectors for these new integrated approaches.

The success of such an endeavour will have incredibly far-reaching implications for the UN and other actors in the field. For example, streamlining and standardizing the way we collect and share critical information prior to and during a crisis could lead to more effective decision-making and timely delivery of essential services to those in need of help. The availability of more credible, accurate, complete and timely information could also contribute to improving public communications and journalistic reporting. With improved quality of information, fund-raising

efforts that depend upon broad public awareness and support could produce better results. Finally, with more complete and accessible data, post conflict event reporting and evaluation could be facts-based and transparent.

Furthermore, incorporating integrated strategies means that citizens, the media, and organisations can both use and "feed-in" important real-time data during crises as well. The UN has been working with a non-profit organisation, Ushahidi, to enhance real-time situation reporting based on crowdsourcing. The Ushahidi website has been deployed as a tool in response to the earthquake in Haiti, the 2009 elections in India and the H1N1 virus epidemic, among others. Establishing an environment, where innovation such as that of Ushahidi can be leveraged more broadly and easily, is one of the goals of the UN integrated approach.

Examples like this one are increasingly frequent as more and more people gain access to the Internet and mobile technologies in remote areas of the world. At the same time, it is also important to note that traditional communications channels, such as sirens and radio, are still very much part of how information is communicated during a crisis in some parts of the world. The UN's integrated approaches to crisis information management described above will attempt to support a range of solutions both high and low-tech, as well as for challenging environments where high network bandwidth is not available.

As noted in the Status of implementation of the information and communications technology strategy for the United Nations Secretariat, Report of the Secretary-General (A/65/491) tabled at the 65th Session of the UN General Assembly, my Office is deeply interested in and committed to Crisis Information Management Strategy (CiMS). I have noted that in times of crisis, whether natural or man-made, the CiMS aims to ensure effective information sharing across the UN system and among Member States. Further, my office is working closely with other Secretariat offices and departments, several UN agencies and other entities such as the ICT4Peace Foundation on developing and implementing CiMS.

It is the UN that can, and should, play a critical role in uniting disparate actors and solutions across various sectors of society in an attempt to improve the use and effectiveness of ICTs in crisis response, management and recovery.

Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | 5

Introduction

Barbara Weekes

On the occasion of the first anniversary of the devastating earthquake in Haiti on 12 January 2010, we are continuing to witness a tectonic shift in the use of ICT in crisis response, peace-keeping, conflict resolution and state-building. Moving from a rigid traditional top-down hierarchical approach, the humanitarian community and the military are increasingly relying on mobile, inclusive, interactive tools, building on a wealth of information gathered from locals and those outside traditional humanitarian communities. This transformative switch to a more bottom-up and waterfront approach, focusing on the individuals in crisis areas, means encouraging communities and individuals to be prepared, self-sufficient and reliant in times of crisis and conflict.

ICT is a huge enabler and source of empowerment, allowing individuals to take some, albeit limited, control of their own destiny within the chaotic framework of a crisis, natural disaster or post-conflict situation. From the SMS/text messages of Haitian earthquake victims and refugees in Darfur to Rwandan farmers checking grain prices on-line, ICT provides a tool with which individuals can share and obtain information. In some cases this can mean the difference between life and death, economic survival, or abject poverty. In turn, the compilation of all these pieces of data on crowdsourcing platforms and other databases provides an overall picture of a given situation, which can be very useful to humanitarian responders and governments in times of crises, war, conflict and state-building.

This new approach to humanitarian relief, with an increasing emphasis on ICT, brings with it hope for a better future but at the same time significant challenges. The most important challenge is perhaps the problem of information overload. How can the humanitarian community and other actors physically assess the mountains of data that come in? There is very little time in crisis situations and even less time for reading thousands of emails and text messages. What steps do humanitarian organisations need to take in order to manage this process? How can the accuracy of the information coming into a given platform be validated, in particular in conflict situations where misinformation is often used as a weapon?

Another important series of issues also need to be discussed about the responsibility of technology providers. What responsibility do technology platform providers have? What happens when collected information cannot be acted on? How can the links between the information gathering and implementation be improved? How can responders ensure that new systems uphold the "do no harm" principle of the humanitarian community?

At the end of the day, the question remains as to whether or not we will be able to use improved ICT in such a way so as to significantly improve the situation for victims of crises. This Paper Series aims to reflect on what we have learned to date and define what actions still need to be taken. What experience have we gained from the Haitian earthquake response? Can these lessons be applied in other emergency response situations? Does increased ICT ability and use really mean progress and reduced loss of life? To date, the jury is out but at a minimum new technology provides an opportunity to re-think how we respond to crises, how we prepare communities for disasters and how we manage conflict and post-conflict situations.

Are we up for the challenge?

ICTs and Crises: Linking Research and Implementation to Collectively Maximize Learning and Impact

Urs Gasser, Michael Best, Colin Maclay

This series is a reflection of both our observation and our hope that Information and Communications Technologies (ICTs) are playing an important role in crisis information management, crisis response and post-conflict state-building and have the potential to be even more fundamental, powerful and positive in these settings. Enthusiasm over ICTs, however, is not new. It stretches back more than a decade to the Internet boom, and was preceded by excitement and grand hopes of deep societal change for everything from satellite, television and the radio, to the bicycle (the 1900 U.S. Census reportedly said that, "It is safe to say that few articles ever used by man have created so great a revolution in social conditions as the bicycle"). Alas, this exuberance has not always been borne out in practice.

At this fairly early stage, we have seen many examples of the opportunities and challenges for new media in crisis settings and the contributing authors have begun to explore these themes in greater depth. Thus far, we have collectively sought to process what we have seen and heard, some doing so more methodically, while others have formed their conclusions more organically. But as we consider the sanctity of human life, the scarce resources available to respond to crises, and the importance and arduousness of the resulting decisions, we must be reflective and demanding when we consider what we can actually say about using ICTs in crisis situations.

While in some cases, it may remain largely hypothetical (whether due to resource constraints or tradition), as part of its quest to create, disseminate and utilize knowledge, the university community offers a site for invention, the capacity to conduct and analyse experiments both natural and controlled, an impartial source of analysis, a neutral ground for convening disparate parties, and much more. Thematically, the university can support the development and implementation of research agendas uniquely suited to the interaction of ICTs and crises, doing the arduous and essential work of cutting across disciplines and topics from computer science and networking, to law and public policy, social sciences, public health, systems dynamics, organisational behaviour, and much more.

Through our practice on these topics over the past decade-plus, we have sought to explore precisely these sorts of public interest questions, not following the idealized path of the ivory-tower academic focused on writing for journals and for posterity, but endeavouring to produce scholarship with impact. We are not alone in the drive to conduct rigorous research and to share valuable, relevant and timely findings; fortunately, it has characterized much of the work around ICTs. This approach may not be unique, however, but nor is it widespread (hopefully it will be soon).

The appeal of this non-traditional approach within academia and with our collaborators outside it may be due to a variety of component factors including: the way in which nuanced understanding and effective action necessarily touch multiple sectors and disciplines; naturally occurring experiments and an abundance of data (well, potentially); the mode and ethos of the space, in which participation, experimentation, innovation, collaboration, and pragmatism are practiced and valued; and underlying all this lies our hope that in ways modest and not, new

technologies can help improve lives. Of course, there are many other related factors, including the origins of the Internet, from building, to governing and funding, which align with these traits.

Both a body of academic research and our field experience suggest that this collaboration supports a level and character of understanding - and efficacy in implementation - that is eminently useful to practitioners and would be unattainable by any single sector. Looking broadly at the research spaces such as internet and society and ICTD, for instance, Ernest Wilson's "quad" model of interactions among business, government, civil society and academia provides insight into the role of each sector, and the value of integrating them. With activities such as invention, experimentation, evaluation, refinement, implementation/commercialization, and regulation comprising a rapid, overlapping and on-going cycle of innovation, we learn that each sector has specialized skills. From another perspective, Lawrence Lessig's four forces of regulation (norms, laws, markets, architecture) suggest the diverse relevant factors affecting our use of new media, and thus the need to consider the interests and capacities of the actors involved.

As a network of networks, the Internet is in many aspects and demands a divergence from past organisational practice. In crisis situations, where effective communications and coordination within and among responding organisations are always among the most critical and most elusive capabilities, the integration of new technologies in these situations is tremendously powerful and every bit as complex. Long frustrated by our own shortcomings, whether in terms of accessing real-time information, avoiding duplication, and engaging the public and other potential contributors, for instance, there is natural temptation to see a solution ahead.

While many of us do believe that ICTs are an essential element of that solution set, it should be abundantly clear that we would not find the path to it without a concerted, thoughtful and inclusive effort to assess what we know now, to determine what we need to learn, and to go out and learn it. While it may feel that we have no time for research because these are pressing matters and lives are at stake, it is precisely in light of those imperatives that we must develop and share knowledge. For better and worse, along with each new crisis and each response, another research opportunity presents itself.

By integrating research into these situations, with a combination of advance planning, simultaneous deployment of research instruments, and follow up over time, we can develop an integrated approach to research that complements and situates actual experiences within on-going and reflective practice. By conducting these activities in conjunction with the universe of responding organisations, from funders to international organisations on the ground, to the technology companies whose tools we depend upon, we can develop a multi-dimensional understanding of the challenges we face, explore potential responses, evaluate their effectiveness and devise means to implement them appropriately. This suite of activities will help us to move toward a shared goal of understanding which, when and how ICTs can best be used in crisis situations, and to continue to refine that knowledge over time as the crises, technologies and responders change.

Haiti and beyond: Getting it Right in Crisis Information Management

Sanjana Hattotuwa and Daniel Stauffacher

The massive earthquake that struck Haiti on 12 January 2010 shattered the foundations of the entire country. By 23 January, a little less than a fortnight after the earthquake, the Haitian government declared an end to the search-and-rescue phase for survivors of the earthquake. Only 132 people were found alive in the rubble. At last count, over 230,000 were confirmed dead, equalling the number killed across South Asia from the Boxing Day tsunami in 2004.

Just hours after the earthquake struck, there were signs of a global effort to leverage existing web, Internet and mobile technologies, including social networking platforms, to help aid and relief work. Ushahidi (a platform first used in Kenya that allows anyone to gather distributed data via SMS, email, or web and visualize it on a map or timeline) was the first to deploy its platform to ascertain the urgent needs of victims and other relief and aid requirements on the ground. Sahana (a Sri Lankan engineered web-based collaboration tool designed to address common coordination problems amongst actors involved in relief work) was also quick to deploy its platform in Haiti. Sahana helped, for example, in plotting the location of medical infrastructure by asking volunteers around the world to help in discerning their precise coordinates from raw data. Commonly called crowdsourcing, this was a key feature of Ushahidi as well, which used an army of volunteers based in the US to sift through thousands of SMS messages in order to prioritise and categorise incoming information from the ground. The US-based non-profit media outfit Internews and Thomson Reuters Foundation's Emergency Information Service (EIS), developed by InSTEDD, helped humanitarian agencies communicate directly with those affected through a local network of radio stations and SMS feedback from victims. The UN, through its OneResponse platform managed by the Office for the Coordination of Humanitarian Affairs (OCHA), also served as a vital portal for important and regular situation reports, updated contact information and mapping data. Almost all relief agencies, UN agencies and military actors including the US Southern Command embraced Twitter, Facebook, wikis, websites and mobiles in their work, to coordinate, collaborate and act upon information from the ground generated by victims. The ICT4Peace Foundation's own wiki[1], established a day after the earthquake, ultimately linked to over 120 sources of vital information and in some cases, rendered more easily accessible the critical data locked inside closed databases and proprietary formats.

Clearly, significant advances in web, Internet and mobile technologies underpinned the Haitian relief effort – from the generation of funds to the coordination of humanitarian action and collaboration between aid workers. Many, as a result, have pointed to Haiti as a turning point in the use of ICTs for aid work. In the US alone, an unprecedented number of donations via SMS to the Red Cross for Haiti exceeded 31 million dollars. CrisisCommons, itself a volunteer-driven web-based initiative, within days created the most comprehensive and up-to-date maps of the country through a site called OpenStreetMap. Thousands of volunteers from around the world contributed to the rapid creation of these maps, using sources as diverse as situation reports, proprietary databases and satellite imagery. What ultimately came to be known as Project 4636 - a single SMS number to which Haitians could SMS their location and urgent needs to - required an incredibly complex and unprecedented mobile telecommunications back-end in Haiti that was engineered and deployed in a matter of days, with multiple local and international actors including the US military. Global volunteer efforts, primarily through Ushahidi, but also through

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[1] ICT4Peace Inventorisation Wiki, "Haiti Earthquake – January 2010," http://wiki.ict4peace.org/Haiti+Earthquake+-+January+2010.

other Ning-based social networks, emails, Skype and even ham radio, disseminated and worked on vital information generated from Haitians on the ground regarding urgent needs.

Despite this progress, a number of critical challenges remain. However innovative they are, ICTs that operate as islands and silos impede relief efforts and cost lives. Early on in the Haiti relief effort for example, there were multiple websites and systems for registering and locating missing persons, set up by international media, web-based social networks and UN agencies. Until a standards-based repository was established based on the PFIF (People Finder) format, each system was an island of information, leading to unnecessary duplication, fragmentation and significant frustration. Even after Google established a standards-based repository, some international media and UN agencies refused to share information with it or use it. Based on the experience of curating the ICT4Peace Foundation's wiki on Haiti, the myriad of data sources and proprietary formats from which information was captured suggests an increase in data fragmentation and lock-in. As noted by Ushahidi's Patrick Meier, the challenges that materialised in the response to Haiti included the management and negotiation of heightened expectations, the lack of a formal complaint mechanism, absence of downward accountability and challenges over coordination and clarity of messaging.[2] The ICT4Peace Foundation in 2008 conducted a comprehensive stocktaking of the UN's crisis information management capabilities. A report of this stocktaking was released in 2009.[3] It is particularly telling that a number of the observations regarding crisis information management amongst the international community and the UN system remain unaddressed, including but not limited to:

- Pre-planned information-sharing policies robust enough to handle severe crises in a timely manner. This includes policies to leverage crisis-related information generated from outside the UN system and the development of robust data models and data dictionaries that can be shared on demand;
- An emphasis on standards-based information capture and exchange and
- Harmonisation of significant variance in agency approaches to and capacities of information management during crises, including human resource management and data-sharing policies.

Haiti is seen by many as a turning point in the use of ICTs in disaster response, and rightfully so. However, vital lessons for humanitarian aid and first response clearly identified in the Asian Boxing Day tsunami response remain unheeded, along with points regarding aid work and the use of ICTs enumerated in the UN OCHA +5 symposium report, of which the ICT4Peace Foundation was a key partner. Disaster-affected communities remain largely passive recipients of information, having to deal with, amidst significant trauma, competing information on aid delivery and services. Beyond the hype, the majority of those affected by the Haitian earthquake were off the radar of ICTs. Compounding this, Haiti receded from international media and global attention, though significant long-term humanitarian challenges on the ground persisted. It is unclear how the ICTs first deployed in the country will be sustained over the long term, and in particular international crowd-sourced platforms relying on volunteers. Significant problems of coordination, collaboration and aid delivery dogged the disaster response effort. The Head of UN OCHA, Sir John Holmes, in a strongly worded email in February expressed his frustration over the UN's aid effort in Haiti, noting that "only a few clusters have fully dedicated cluster coordinators, information-management focal points and technical support capacity" and adding that the disjointed effort is casting doubts on the UN's ability to effectively provide relief. Beyond the UN, significant concerns were raised over the coordination and collaboration between civil and military actors, and the international community as a whole.

Much more can and must be done to strengthen disaster preparedness and crisis information management. There are no longer excuses for ill-preparedness or haphazard aid response. We already know much of what needs to be done and going forward requires requisite funding coupled with the political will of the UN system and international community. Some key ideas and suggestions in this regard are:

[2] Patrick Meier, "Haiti and the Tyranny of Technology," iRevolution, March 2, 2010,
http://irevolution.wordpress.com/2010/03/02/haiti-tyranny-technology.
[3] Download from http://ict4peace.org/updates/interim-report-stocktaking-of-un-crisis-information-management-capabilities.

- The accelerated development and population of easily accessible datasets with essential information shared across UN and other aid agencies, to help identify, prepare for and mitigate disasters;
- Developing ICTs that work better in, and are more resilient to austere, traumatic environments;
- Significantly improving interoperability across all systems between UN agencies and other key platforms outside, including UN OneResponse, Ushahidi, Sahana and the Emergency Information Service (EIS) with technical input from InSTEDD;
- Using endogenous technologies to help communities develop their own capacities and capabilities for disaster early warning, prevention and resilience, is vital;
- Greater cooperation between governments and NGOs, based on standard operating procedures governing information sharing to help aid work;
- Global and local business, as we have seen in Haiti, also has a key role to play in generating and sustaining financial inflows and strengthening aid. They need to be partners in crisis information management and
- The development of a comprehensive crisis information management preparedness and assessment toolbox, including appraisal mechanisms, especially in and for disaster prone regions and countries.

In order to realize these goals, the ICT4Peace Foundation is actively supporting the Chief Information Technology Officer of the UN Secretariat in New York and leading actors, including key UN agencies and departments in Rome, New York and Geneva, to develop a coherent crisis information management strategy, addressing procedural, organisational and technological challenges that impede efficient and effective aid delivery today.

Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | 11

Early Warning Systems and the Prevention of Violent Conflict

Patrick Meier

A major review of conflict early warning systems recently concluded that the "humanitarian community is in no better position today to prevent another Rwandan genocide than we were in 1994" (OECD 2009). The report explained that "an external, interventionist and state-centric approach in early warning systems fuels disjointed, top-down responses in situations that require integrated, multilevel action." This characterizes the vast majority of operational conflict early warning initiatives, which are often labelled as first or second-generation systems. These systems typically fail to leverage the potential of new information and communication technologies (ICTs). To this end, the OECD report noted the exciting development of micro-level responses to violent conflict by "third generation early warning systems" which tend to favour the application of new ICTs. Third and fourth-generation conflict early warning systems seek to empower local stakeholders directly so the latter can prevent violence and/or to get out of harm's way.

This two-page overview provides a brief introduction to early warning systems and summarizes the latest developments in the field, focusing primarily on information services, empowerment, technology, peace indicators and preparedness. These latest developments represent fourth-generation (4G) conflict early warning initiatives. First and second-generation early warning systems represent state-centric, institutional and top-down approach to conflict early warning and rapid response. Third generation conflict early warning systems are located in conflict countries and are often run by national NGOs, sometimes collaborating with an INGO, often using proprietary software. In contrast, 4G initiatives make use of free, open-source software and mobile technology. More importantly, these initiatives are people-centred: they are not for an "outside" organisation but run by the community, for the community. 4G initiatives could also be called "tactical conflict early warning and response networks" because they are less about advocacy and more about direct, first-responder intervention. This overview concludes by highlighting the challenges that still remain and require further research/analysis in the use of ICTs in conflict early warning and rapid response.

Functional Overview
As the UN Secretary-General's 2006 Report on Early Warning Systems notes, "A complete and effective early warning system comprises four interrelated elements: risk knowledge, monitoring and warning service, dissemination and communication, and response capability. A weakness or failure in any one part could result in failure of the whole system." Risk knowledge comprises the systematic collection of data and the production of risk assessments. Monitoring and warning entails the development of hazard and early warning services. Dissemination and communication means the communication of risk information and early warnings. Lastly, response capability involves building national and community response capabilities.

Information Service
The systematic collection of data has typically been extractive rather than service-based. The purpose of first and second-generation conflict early warning systems was to extract conflict data from faraway conflict zones to satisfy Western interests. In contrast, third- and fourth-generation systems favour the democratization of information collection and access. These systems therefore tend to be more service-based. In other words, conflict early warning systems should

increasingly be thought of as information service systems for at-risk communities. The purpose of these information systems is to provide demand-driven information services for vulnerable communities so they can make more informed decisions on how to increase their resilience. This distributed, bottom-up approach stands in stark contrast to the model followed by first and second-generation conflict early warning systems.

Empowerment

The disaster management community has largely recognized the limits of centralized modes of disaster response. To this end, they have sought to "explore the capacity of disaster-affected communities to 'bounce back' or recover with little or no external assistance following a disaster" (Manyena 2006). This shift towards people-centred disaster management also reflects the recognition that local communities have consistently evolved sophisticated yet flexible strategies to manage the constant threat of vulnerability in their lives (Bankoff, Frerks and Hilhorst 2004). This approach is more sustainable in the medium and long run than traditional "forest fire" strategies to disaster response. Unfortunately, the conflict prevention community is only now slowly shifting towards a people-centred approach, as noted by the 2009 OECD Report.

Empowering communities at risk is by definition the purpose of early warning and rapid response systems—as stated in the UN Secretary General's Survey of Global Early Warning Systems. This official UN document defines the purpose of people-centred early warning as follows: "to 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" (UN 2006). Clearly, the discourse here shifts away from the conventional top-down division of labour between the "warners" and "responders" to one of individual empowerment and agency. To this end, people-centred early warning "seeks to inculcate a situational or security awareness within high-risk communities as it builds on local capacities to address and reduce their vulnerabilities in a sustainable way. [...] This approach differs from the traditionally more 'remote' and 'vertical' monitoring..." (Bond and Meier 2006).

Technology

First- and second-generation conflict early warning systems have primarily made use of expensive and proprietary technology that emphasises the exchange of datasets rather than rapid, distributed communication. The 2009 OECD report on "The Future of Conflict Early Warning and Response," concluded that despite technological advancements, "most inter-governmental and non-governmental systems [...] have not gone beyond the use of email and websites for dissemination, and communication technology for data collection. Governmental and some inter-governmental systems do benefit from access to and resources for satellites and GIS in their analysis and reporting. However, access to technology remains very unequal among systems and the field of conflict early warning lags far behind in the use of innovative technologies and Web 2.0 applications."

In contrast, third- and fourth-generation initiatives tend to employ free and/or open source technologies that leverage cheap, distributed, and mobile communication systems. This is particularly true of 4G initiatives as these typically employ everyday, consumer-based technologies like mobile phones. These are used as two-way information services to disseminate and crowdsource crisis information. In addition, communication technologies like mobile phones can empower at-risk communities by enhancing their immediate situational awareness, allowing them to make more informed decisions about how best to get out of harm's way. Naturally, these same technologies can also be used by repressive regimes to orchestrate violent conflict. However authoritarian states are hampered by their highly centralized bureaucratic structures that may prevent them from being as innovative in their application of ICTs compared to more distributed networks.

Peace Indicators
Traditional conflict early warning systems typically focus on monitoring and documenting violent conflict. However, there are always pockets of cooperation no matter how dire a conflict is. Even in Nazi Germany and the Rwandan genocide we find numerous stories of people risking their lives to save others. The fact is that most people, most of the time, in most places, choose cooperation over conflict.

If only indicators of war and violence are monitored, that's all that will be documented. Conflict early warning systems that focus exclusively on the "dynamics of war will only provide half the picture." It is vital that indicators of peace and cooperation also be monitored. By identifying positive initiatives that exist before and during a crisis, one can automatically identify multiple entry points for intervention and a host of options for conflict prevention. Moreover, if conflict early warning systems monitor cooperation indicators, they will help reveal who in the area might be best placed to intervene.

Preparedness
Training and minimum preparedness measures are pivotal to empowering vulnerable communities with the ability to respond. These should build on existing local coping capacity, mechanisms and ingenuity. To be clear, "early warning should not be an end in itself; it is only a tool for preparedness, prevention and mitigation with regard to disasters, emergencies and conflict situations, whether short or long term ones. [...]. The real issue is not detecting the developing situation, but reacting to it" (Kuroda 1992).

The disaster management community cannot prevent earthquakes or the vast majority of natural hazards. But they can prevent hazards from becoming disasters by providing local training in contingency planning and preparedness. Millions would die if the disaster management community's early warning efforts were exclusively focused on prediction. Obviously, most hazards like earthquakes occur regardless of whether we model them or not; hence the disaster management's explicit focus on preparedness, which empowers local communities to survive disasters.

Similarly, third and fourth-generation conflict early warning systems emphasize preparedness. This means being prepared to interrupt potentially violent conflict at the tactical, interpersonal level. Perhaps the best example of training and preparedness for violence interruption is the CeaseFire program in Chicago. This program has directly prevented hundreds upon hundreds of killings in the past few years alone. In addition, planning, preparedness and tactical evasion are central components of strategic nonviolent action. Getting out of harm's way and preparing people for the worst effects of violence requires sound intelligence and timely strategic estimates, or people-centred early warning. In sum, people-centred conflict early warning works, albeit in fields that most conflict prevention "experts" are not familiar with.

Conclusion
The technology community is increasingly experimenting with the application of new ICTs for disaster response. This is evidenced by the technologies deployed after the 2010 earthquake in Haiti and during the 2010 floods in Pakistan. The application of ICTs in areas of conflict, repression and political volatility present more pronounced challenges, however. As already noted, new ICTs can—and are—increasingly used by repressive regimes to block, monitor, censor or interrupt communication. Local networks engaged in 4G initiatives need to learn how to communicate more securely in non-permissive environments. This is not only a question of mastering new technologies but also of learning effective off-line tactics to remain safe. More research is needed on what precisely the conflict early warning community should be learning from digital activists, disaster management and the field of strategic nonviolent action.

Finally, the conflict early warning community needs to implement preparedness programs for conflict prevention and integrate appropriate ICTs. These preparedness measures should be built on local capacity and knowledge. Preparedness is a cornerstone of disaster risk reduction, but it is virtually absent from the field of conflict early warning and rapid response. To this end,

Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | **14**

significantly more research is needed to document how at-risk communities prepare for and survive in conflict zones and what technologies they use. For example, an international compendium of survivor testimonies in times of war should be compiled and shared between local communities across the world. This should become a training manual for all 4G initiatives.

Protection of Civilian Populations in Conflicts and Other Situations of Violence: The Challenges of Using ICTs

Andreas Wigger, ICRC

1. The effects of contemporary conflicts and other situations of violence on civilians

Today, the question of civilian immunity and civilian suffering in situations of war is riding high in political and public consciousness, in part due to increased awareness via both traditional and new media channels. Conflicts and other situations of violence in modern society are debated mainly in terms of what they will signify with regard to the number of civilian casualties. Civilians are not only increasingly directly caught up in conflicts, but control over the civilian population is often one of the stakes in contemporary conflicts. The development of this situation can be attributed, *inter alia*, to increased inter-communal, ethnic and religious tensions, the collapse of State structures, fighting for control of natural resources, the widespread availability of weapons, the rise of acts of terror and the proliferation of so-called asymmetric armed conflicts. ICTs can play both a constructive role in trying to empower civilians caught in conflict, but can also be used by actors to disseminate distorted information. In addition to direct attacks, killings, destruction of properties and forced displacement, civilians caught in conflict also often suffer massive psychological trauma, a loss of assets and livelihood options, and poor access to essential goods and services. The social fabric of households and communities is sometimes shredded, and violence, exploitation and abuses often escalate in an environment of impunity. This is in stark contrast to the idea of a limited approach to war that encourages reasonable use of force and compassionate conduct towards the unarmed enemy.[4] It is also in violation of the international legal instruments protecting civilians, which were developed after the widespread civilian atrocities and genocide of the Second World War. Together with The Hague Laws, the UN Convention against Genocide and the statutes of the International Criminal Court, the Geneva Conventions and their additional Protocols provide extensive legal protection for civilians in both international and civil wars. Providers of new media and ICT platforms also need to consider their responsibility to civilians in crisis situations.

2. Challenges faced by humanitarian actors in their attempts to protect civilians

To effectively respond to the need for civilian protection during a crisis, a broad range of both humanitarian and human rights actors can be found in practically all hot spots around the globe, as well as in critical situations outside the spotlight of the global media. The International Committee of the Red Cross (ICRC) recently took the initiative to establish, through an extensive consultative process, standards and guidelines for protection work for all humanitarian and human rights actors. These should ensure that their protection work is as safe and effective as possible.[5] But what is protection? The concept of protection

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[4] See for a discussion about this notion: Slim H., Killing civilians. Method, Madness and Morality in War. London, 2007
[5] See: Professional Standards for Protection work carried out by humanitarian and human rights actors in armed conflict and other situations of violence. ICRC, October 2009.

encompasses "all activities aimed at ensuring full respect for the rights of the individual in accordance with the letter and the spirit of the relevant bodies of law, i.e. human rights law, international humanitarian law, and refugee law. Human rights and humanitarian organisations must conduct these activities in an impartial manner (not on the basis of race, national or ethnic origin, language or gender)."[6] This approach to protection, typical for a humanitarian organisation such as the ICRC, is rooted in the idea that protection is a set of legal obligations, but operationally it is also about promoting the application of these obligations. More specifically, in the midst of on-going hostilities, the ICRC aims to work directly with all parties to the conflict to remind them of their obligations to respect and protect civilians. The aim of this work is to influence armed actors to stop, prevent, and avoid recurrent of violations of the law.

What are the main elements of this approach and the associated challenges?

2.1. Proximity: be close to the civilians and establish a dialogue with all armed stakeholders

Proximity to the civilians affected by the conflict is essential for gaining an accurate understanding of the circumstances and assessing their needs. The first objective of humanitarian actors is therefore to make contact and establish an adequate dialogue with those state and non-state actors, which have effective control over communities or individuals. The aim is to negotiate for security guarantees and gain physical access to the affected populations. Once this access is established, careful efforts are then made to cultivate this dialogue and direct it increasingly towards issues concerning the respect and protection of the civilian population. The humanitarian principles play a critical role in this. Humanitarian action is, by definition, founded on the principles of humanity, non-discrimination and impartiality, or response according to urgent needs. Indeed, the protection effort involves careful documentation of the causes and circumstances of alleged violations, with the aim of understanding who did what to whom and what were the civilian consequences, in order to make recommendations for changes in the policy and practices of the armed actors.

However, discussing reported violence, abuse, and exploitation with the alleged perpetrators is a sensitive undertaking. Not surprisingly, armed actors often seek to reduce the feasibility of protection activities, trying to reduce the humanitarian response effort to material assistance. This is why the victim-centric approach to protection is so important. When opportunities for protection dialogue are limited, direct action with those at greatest risk may be the only opportunity for achieving a protection impact.

2.2. Help people to help themselves: strengthen the resilience of people at risk and provide access to ICTs

People caught in armed conflict also need direct support. Thus, a further dimension of every protection approach includes so-called 'victim-centric' activities designed to help people at risk to reduce their exposure to the threats. Such activities can be very diverse and might include for example paying transport fees to help an 'at-risk individual' flee targeted harassment; or providing livelihood options as a means of increasing independent options to keep individuals safe. Individuals or groups with special vulnerabilities, such as children, women, the disabled, the wounded and ill, the elderly, and internally displaced people will need specific care.

The victim-centric approach assumes that the communities and individuals at risk are themselves critical actors in the protection process. Protecting and promoting their rights, dignity and integrity is essential for the effectiveness of the work. They should play a key role, influence decisions, and make practical recommendations based on their intimate understanding of the nature of the threats, violations and abuses to which they are exposed.

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[6] Idem, page 16.

Any effective coping mechanisms established among affected communities or individuals should be strengthened. It is therefore important that they are in permanent contact - whether directly in the field or by means of communication tools - with those striving to increase their protection. The presence of protection actors in the field is optimal for any holistic assessment of the civilian situation. But this is often not possible due to insufficient safety guarantees for protection workers. This may oblige agencies to use - in the extreme - operational mechanisms for remote management of their programmes. In such an instance, temporary or more permanent communication tools may be the key for a continuous dialogue between the community and the protection actor. It may be the same for the dialogue with non-state actors that are hiding or on the run and not available for in situ conversations. In a more modern environment, all stakeholders in a protection situation will use communication technology spontaneously. This may contribute to a substantial improvement of the situation, also because of the time that can be saved, which in turn speeds up the response. In the domain of restoring family links between separated members, family link websites have proven to have an added value in recent conflicts or natural catastrophes,[7] in particular in situations where the normal communication means, such as phones, were disrupted for more than just a few days.

2.3. Implementation: ensure the necessary resources and coordinate with the other humanitarian actors

The implementation of protection activities on behalf of a civilian population requires adequate operational means (human resources, infrastructure, logistics and ICT), a field presence corresponding to the scope of the objectives, and a network of contacts for collecting, processing and speedy transmission of information via various ICT tools. Experience shows that successful implementation of protection activities also requires a commitment over time. The people in charge of the programmes in the field must be adequately trained, also in the use of new media, and motivated. While implementing its protection activities each organisation should also proactively seek 'field-based' and 'action-oriented' complementarities with other humanitarian actors, to ensure the most comprehensive response and therefore the greatest chance of making a difference in the lives of the people at risk. ICT can play an important role in this process. For many actors, an independent multidisciplinary approach is often not feasible. Furthermore, complementary collaboration is an important factor for each agency to consider so that it may avoid duplicating the work of others, and limit gaps in response. Numerous other stakeholders such as intergovernmental organisations, NGOs, and peacekeeping forces often play a role in protection activities.

3. Challenges for the use of Information and Communications Technology in Civilian Protection

In order to optimize the use of mobile phones, satellite phones, the various platforms offered by Internet communication, radio and television broadcasting, and others used in protection situations, a number of considerations should be taken into account:

- In situations of armed conflict and other situations of violence, any conversation with protection actors can put people at risk not only because of the sensitive nature of the information collected, but because mere participation in a protection process can cause these people to be stigmatized or targeted. The risks they incur can range from physical violence to social marginalization, and are often unknown to the one soliciting the information, and sometimes also by the person providing it. In particular in areas with scarce means of communication, people with mobile phones, sat phones as well as users of Internet are easily detectable and therefore may be exposed to danger. It is therefore advisable for any organisation that collects information linked to individuals or incidents for protection purposes, to manage the risks associated with this process. Chapter 5 of the above-mentioned Professional Standards for Protection work addresses critical

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[7] See for example Haiti earthquake 2010, in: http://www.icrc.org/familylinks

Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | 18

issues, such as humanitarian intent, non-discrimination, and informed consent. It provides 16 standards and guidelines to ensure that the collection of potentially sensitive protection information, and its subsequent handling, is undertaken in a professional manner.[8]

- Protection actors in remote contact with communities or individuals through ICTs may face difficulties in assessing possible threats to the persons providing information. However, according to the above Standards, the burden of assessing and managing, to the extent possible, the risks associated with the process resides with the seeker of the information, who is obliged to ensure that the choice to participate is made voluntarily, in awareness of the potential risks.

- Discrimination and bias can distort the collection and the analysis of information. Bias can be defined as any systematic distortion of information, whether intentional or not. It can be due to a range of factors, among others limited coverage, when the collector is unable to access all sources of information, or obtain a representative sample. Communication with a community through a tool, such as phones or Internet may well privilege the voices of those who are communication literate and have the tools available and discriminate against other groups that are less fortunate, such as women in particular contexts, the elderly, handicapped, and others.

To sum up, ICT is today in many ways instrumental in substantially improving the rapid and effective protection response to communities and individuals in need. In order to respect the "do no harm" principle, however, all users need to be aware of the responsible management of sensitive protection information. They also need to constantly take into account the specific risks associated with the geographical distance between the sender and the receiver and the possibility of manipulation of the protection actor on the one hand and over-exposure to inadvertent risks of the civilian on the other hand. Finally, only a careful analysis of the risks and opportunities regarding information management in each specific context will lead to the responsible use of ICT in conflicts and other situations of violence.

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[8] See: Professional Standards for Protection work, cited above, pages 55 -67.

ICT Support to Peacekeeping

Jacques F. Baud

A changing environment

Since the end of the Second World War, intrastate conflicts have been the most frequent form of conflicts, and although their number has not significantly varied over the past 60 years, a closer analysis shows that major qualitative changes in their pattern have occurred. From the rigid and localized structures of Marxist insurgencies of the Cold War, conflicts have moved toward unstructured and cross-border forms of violence with a lack of identifiable doctrines or ideologies, evasive and unclear leaderships, unclear political objectives and overlap of tribal, ethnic, political and criminal issues. In such a context, peacebuilding and peacekeeping have become complex processes, where understanding the conflict environment itself has become a key challenge.

Crises in Information-Rich Environment (IRE)

The World Wide Web has turned a world divided by a wall into a world linked by networks. But this evolution has gone beyond technology to reach more cultural, philosophical and political dimensions, calling for more transparency and information sharing as a prerequisite for better governance and greater effectiveness. The information revolution the world has experienced in the last two decades has profoundly impacted the perception of conflicts and our relation to them.

Today, events or incidents that would have been unnoticed a few decades ago come almost instantly under the scrutiny of international opinion and may prompt strategic decisions at the international level. Abundance and redundancy of media resources, providing instant and massive availability of information in crises situations, is a positive evolution but may have perverse effects.

First, sudden "peaks" of information may "suffocate" networks, information managers, analysts and decision-makers. Further, as it is almost impossible to verify every piece of information, quantity may often be taken as a substitute to the quality of information ("If everybody says it, it must be true!"). For instance, the commonly given figure of 300'000 victims of the Darfur conflict is barely challenged, although it is virtually impossible to document it beyond speculation.

Second, the multiplicity of actors with potentially conflicting interests can open the door to disinformation and manipulation. Paradoxically, openness has deepened what Clausewitz used to call the "fog of war". As a matter of fact, all major post-cold war conflicts were initiated through disinformation campaigns aimed at deceiving the international community and the UN Security Council, thus generating mistrust and suspicion with deep implications. In Sudan, a Special Representative of the UN Secretary General was accused of "waging psychological warfare" and subsequently declared "persona non grata" by the Sudanese government, leaving the UN Mission in Sudan (UNMIS) without leadership for some ten months, after he published unconfirmed information on his personal blog.

Third, the commonality of communication platforms and the rise of informal networks have resulted in sharing un-hierarchical information. In simple words, the soldier has the same information level as the general and vice versa. On the positive side, this fits the idea of empowerment, in line with the globalized promotion of democratic values and open approach to problems, striving for good governance and accountability. On the negative side however, it

Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | 20

makes it more difficult to prioritize information and to focus decision-making especially in acute crisis situations.

Complex Crisis Management
The real challenge in complex emergencies and crises is often more about understanding the scope of the problem than its actual management. Managing the flow of incoming information and extracting its relevant part to visualize the "big picture" is the epicentre of a good crisis management. It is the key for strategic effectiveness and simultaneously the biggest vulnerability of crisis management systems.

Peacekeeping missions operate usually in environments where distortions, omissions, exaggerations, or bias are common and may affect substantially the "big picture" on which decisions are based. It is therefore essential to have a clear idea of the quality of the information input.

Despite the apparent wealth of resources, obtaining the best available information may not be as easy as it seems. How many individuals of the international community have actually witnessed armed violence against populations in Darfur and are able to provide first hand and impartial account about their perpetrators? Probably few, if any. This is the fundamental reason for the Sudanese government to disagree with the International Criminal Court.[9] Knowing that we don't know, or being able to assess the quality of what we know is the key for decision-making.

However, assessing situations in acute crises, under the pressure of events, suffering individuals and of international opinion, with almost no time to crosscheck information, is a considerable challenge for international actors and decision-makers.

Finally, sharing information is a challenge in itself. What kind of information do we share? Should we share unconfirmed information at the risk of prompting wrong decisions, or should we confirm it at the risk of not responding timely to suffering? This is far from a trivial question, with no "one-size-fits-all" answer to it.

Conclusions
Ultimately, managing modern crises is about reducing suffering and striving to restore "normality". Regardless of the cause of the trouble, keeping the overview is an essential key. Peacekeeping and peacebuilding offer an additional problem with the presence of "spoilers", giving decision-making a political dimension with significant importance.

The inherent complexity of modern crises combined with the difficulty to capture essential information has made crisis decision-making more difficult. At the end of the Cold War, the challenge was sharing information. Today, the challenge is sharing the right information.

Discriminating useful information from "noise" is today's challenge for crisis information management. This requirement is not new, but gains in importance as international operations become more complex and the information environment increasingly rich. The UN has identified the need for peacekeeping missions to have enhanced analysis capability, and has provided each mission with a Joint Mission Analysis Centre (JMAC) designed to provide Heads of Mission with systematic and professional situation assessment for decision-making.

Establishing a clearinghouse and professional analytical capability for information was a decisive step forward. The issue now is twofold: we need to improve the quality of reporting from the field and the ability to collate information rapidly regardless of the communication platform. Improving reporting is not just about getting "better information", but also about knowing better

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[9] Sudanese President Omar al-Bashir was indicted by the International Criminal Court on July 14th, 2008. A first arrest warrant was issued in March 2009 for crimes against humanity and war crimes, and a second warrant was issued in July 2010 for genocide.

Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | 21

the value of the information received. Knowing at headquarters that a specific information is just rumour and has little value is also important in terms of decision-making.

To improve reporting means facilitating analytical work and increasing traceability and accountability of decisions. This requires training and the use of adequate technology. Both are the core of current cooperation between the ICT4Peace Foundation and the United Nations and are instrumental to improve multidimensional crisis management.

Intelligence of the Masses or Stupidity of the Herd?

Eric Gujer

The Internet plays an increasingly important role in catastrophes and conflicts[10]
Television, through live broadcasts from war zones in the nineties, fundamentally changed our perception of conflicts and disasters. The Internet, cell phones and satellites are the next stage in this media revolution.

Three days after the earthquake in Haiti, the first shipments of food, medicine and tents, reached the devastated country. But international aid workers, functioning in the midst of chaos in a country without a functioning government or infrastructure were not always aware where the need was greatest. Where should the valuable cargo be taken first, and who should get it? During natural disasters and conflicts there is not only a deficit of material goods, but also of information. Internet platforms, that collect and disseminate the reports of victims and aid workers, assist in directing aid to where it is most urgently needed. On the 12th of January, the day on which the earthquake occurred, a website called Ushahidi.org started posting incoming messages received via SMS, email or Twitter, such as: "the inhabitants of the Rue St-Martin in Port-au-Prince need food," "the Albert Schweitzer Hospital has not been destroyed" and "relatives are searching for Esther Loresca and eight other residents of a collapsed house." For months after the quake, this electronic stream of calls for help and small success stories did not run dry.

The masses as a source
Ushahidi is Swahili and means witness. The organisation was founded in Kenya during the civil war like conditions that followed the 2007 elections. It collected news of violence and destruction and showed them on a Google map. Ushahidi made it possible to track exactly at which locations in Kenya the most serious problems and conflicts were occurring. Here, too, the sources of information were individuals who sent their observations directly to the Ushahidi website; which leverages what is now known as *crowdsourcing*. The traditional information retrieval system in times of crisis has been reversed. It is no longer aid agencies, which report incidents to command centres for integration into reports, but rather the victims themselves who are coming forward to speak. This process has the advantage of transparency. Anyone who clicks on the Ushahidi website receives information with very little time delay. The disadvantage is that many messages cannot be checked carefully or verified.

Ushahidi and other platforms were made possible by the digital revolution in the 1990s. Internet and mobile phones are now commonplace, especially in developing countries where traditional infrastructure such as wired telephone networks are in poor condition. In Africa, even though still far fewer people have a mobile phone than in Europe, the continent has, according to the International Communications Union, the highest growth rates for mobile phone contracts. New services have emerged such as Facebook, YouTube, and Twitter, which can easily disseminate videos, messages and text messages to a potentially unlimited number of persons.

Communication no longer takes place exclusively on fixed lines between a well-defined sender and receiver, but interactively with a wider audience on different channels. This revolution means the democratization of mass communication, but at the same time the uncontrolled growth and devaluation of individual pieces of information due to the endless maelstrom of bytes

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[10] This article was first published in the *Neue Zürcher Zeitung*

and bits of news. CNN supplied a taste of how modern media can change our understanding of crises and disasters during the Gulf War in 1991, with its grey-green images of Baghdad at night. The viewers could watch live, as the missiles and bombs shot from allied planes honed in on their targets. In many cases, the viewers had more real time information than the generals and politicians in their bunkered command centres. In the meantime, viewers can also see, through sites like Wikileaks, images normally denied to the public because of the risk that they disturb the official version of events. *Crowdsourcing* goes significantly further, however, giving the audience the possibility to take action and intervene in the events themselves.

Dissidents and Dictators

After the controversial elections in Iran in 2009, authorities hindered the work of foreign correspondents in an effort to suppress reports about the street protests in Tehran. But within days, groups had formed on Facebook including "100 million members for Democracy in Iran" with 150 000 members, which produced over 100 000 entries. Cell phone recorded videos of the demonstrations circumvented the censors and Twitter spread the news about the arrest of opposition members in almost real time. At the same time the democracy movement in Iran was the first real credibility test for these new forms of media. A Twitter message (Tweet) spread like wildfire, in which it was reported that 700 000 protesters had gathered outside a mosque in Tehran - in reality there were about 5 000 protestors. The image of Neda, a dissident allegedly killed by the militia, also spread over the Internet. The picture showed, however, another Iranian woman of the same name. And when and where the Internet does provide relatively accurate information, it repeats it ad nausea. At least a quarter of Tweets about Iran had been previously mentioned in other Tweets. The Internet is therefore also a victory of chatter above original thinking.

The downside to the apparent ubiquity of information is a barely manageable flood of information. During the height of the Haiti operation, the UN office for humanitarian affairs received an email every minute. Ushahidi received a total of 80 000 reports. Increasingly, it is the actual information processing requiring time and personnel, which is creating a bottleneck. Moreover, a large proportion of the messages are either, as in the case of the Iran-Twitter, a repetition, or "white noise", meaning useless chatter. It is estimated that 90% of the information during the Haiti crisis fell into this category.

Technical and political initiatives have developed to increase the reliability of these new information channels. The ICT4Peace Foundation strives to disseminate the knowledge of UN organisations on the proper use of these instruments. The UN also launched in 1996, a website called Relief Web, which sifts information about each crisis area and posts it in a clear way on the their website. Ushahidi is also looking, via its Swift River project, for software solutions to evaluate the content generated by users and to identify trusted sources of information. In particular with respect to political conflicts, the filter provided by traditional media sources is still the most valuable, as traditional media operate with the rules of journalistic due diligence while incorporating pieces of news found on the Internet.

Facebook and other social networks are still new and are therefore used more by younger people. During political crises this may lead to distortions because the views of the users are not always representative of the whole population. Online information also blurs the contrast between inside and outside, between the population in the country and observers from abroad. During the riots in Tehran, the Iranian Diaspora in the United States and Britain used new media zealously, expressing often more radical views than the home population directly affected by repressive measures. Once again, the expertise of traditional media and think tanks was required to put the information into a wider context.

Manipulated Information

Information on the Internet can be manipulated intentionally. Even the Iranian security apparatus Tweets and spreads disinformation and official government propaganda over the Internet. The Kyrgyz government sent, during the recent riots, their point of view by SMS to the

Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | 24

population. Intelligence agencies of all colours are using *Open Source Intelligence,* gathering information about people and regional developments from social networks and sites like Ushahidi. In the past, aid agencies tried to ensure neutrality and distance from government offices. This new culture of transparency means that the humanitarian organisations and their websites are becoming against their will, information gatherers for member states and institutions. The Internet alone does not create a better, safer and more democratic world. It is only a tool that can be used just as well by dissidents or the henchmen of an authoritarian regime.

Satellites for everyone
The potential of the Internet during crises and conflicts is not confined solely to crowdsourcing. The Joint Research Centre, a research body of the EU, has developed a monitoring system that scans 1 600 news portals per day on the Internet, searching 80 000 articles in 40 languages for relevant keywords. This can help identify which issues are important at an early stage of a crisis. If you search, for example, for racist or discriminatory slogans, this will provide an indication of impending ethnic conflict. The software also recognizes patterns, such as networks of relationships between the people who are mentioned in the news articles.

This kind of *Data Mining* is not limited to texts. Whereas during the Cold War, high-resolution satellite imagery was reserved for the superpowers, today good quality commercial satellite photographs are available at a reasonable cost. The UN uses satellite imagery software to assess damage on the ground in affected areas, after earthquakes or hurricanes. Maps, satellite images and satellite positioning (GPS) merge on the Internet to create hybrid structures, which are much faster than any text in answering key questions such as: Who is providing what kind of aid and where? Interactive maps are much clearer than texts in many situations. Conversely, the strength of texts is in their description of complex situations, including the political background to a given situation. The accelerated data flow including more and more information, maps and graphs can therefore also mean a loss of differentiation. Again, this is a paradigm shift occurring as a result of the Internet: a culture of literacy gradually transforming into a visual culture.

Cross-fertilisation of UN Common Operational Datasets and Crisismapping

Sanjana Hattotuwa and Daniel Stauffacher

As defined in the IASC Guidelines Common Operational Datasets (CODs) in Disaster Preparedness and Response draft circulated to the Inter-Agency Standing Committee (IASC) Task Force on Information Management in June 2010:

> Common operational datasets are predictable, core sets of data needed to support operations and decision-making for all actors in a humanitarian response. Some of the CODs, such as data on the affected population and damage to infrastructure, will change during the different phases of the response and therefore will need to be frequently updated and maintained. Other CODs, such as rivers and village locations, are likely to remain the same throughout the response. The CODs are proactively identified and maintained prior to an emergency as part of data preparedness measures and made available by the United Nations Office for the Coordination of Humanitarian Affairs (or pre-agreed in-country alternate) within 48 hours of a given humanitarian emergency. All CODs must meet minimum criteria for format and attribute information in accordance with national standards.

The Inter-Agency Standing Committee (IASC) is a unique inter-agency forum for coordination, policy development and decision-making involving the key UN and non-UN humanitarian partners. The IASC was established in June 1992 in response to United Nations General Assembly Resolution 46/182 on the strengthening of humanitarian assistance. General Assembly Resolution 48/57 affirmed its role as the primary mechanism for inter-agency coordination of humanitarian assistance. Under the leadership of the Emergency Relief Coordinator, the IASC develops humanitarian policies, agrees on a clear division of responsibility for the various aspects of humanitarian assistance, identifies and addresses gaps in response, and advocates for effective application of humanitarian principles. Together with Executive Committee for Humanitarian Affairs (ECHA), the IASC forms the key strategic coordination mechanism among major humanitarian actors.[11]

Seven CODs have been identified in a process that took over two years.

Dataset	Recommended Governance	Mandatory Data Characteristics
Humanitarian Profile (disaggregated by admin level and populated place)	- Guardian: OCHA - Sponsor: OCHA - Source: Government, Assessments, UNHCR	- Internally Displaced[12] - Non-displaced affected - Host family/resident community affected - Refugee[13] - Dead

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[11] See http://www.humanitarianinfo.org/iasc/pageloader.aspx?page=about-default
[12] As defined in the UN Guiding Principles on Internal Displacement UN Doc. E/CN.4/1998/53/Add.2
[13] As defined in Refugee: Article 1, The 1951 Convention Relating to the Status of Refugees

		- Injured - Missing
Population Statistics	- Guardian: OCHA - Sponsor: UNDP,OCHA,UNFPA - Source: Government	- Total population by admin level (Individuals) -Total population by admin level (Number of Households) - Age - Sex - Average family size by admin level - Unique identifier
Administrative Boundaries (Geographic)	- Guardian: OCHA - Sponsor: UNDP, OCHA - Source: Government	- Unique identifier (P-Code) - Name
Populated Places (Geographic)	- Guardian: OCHA - Sponsor: UNDP, OCHA - Source: Government	- Unique identifier (P-Code) - Names - Size classification - Population statistics - Status if capital of administrative division - Type (Village, spontaneous settlement, collective centre, planned settlement)
Transportation Network (Geographic)	- Guardian: OCHA -Sponsor: Logistic Cluster -Source: Government	- Roads (Classified by size) - Railways - Airports/helipads - Seaports
Hydrology (Geographic)	- Guardian: OCHA - Sponsor: UNDP, OCHA - Source: Government	- Rivers (Classified by size) - Water bodies
Hypsography (Geographic)	- Guardian: OCHA - Sponsor: UNOSAT - Source: Remote sensing, Government	-Elevation -Resolution

Three key factors contributed to the ICT4Peace Foundation's expansion of these CODs in June 2010.

1. Crises this year, most notably Haiti in January, demonstrated clearly that actors outside the UN system are today, with their own sophisticated technology platforms and an approach to distributed work called crowdsourcing,[14] vital first responders producing, disseminating and archiving information before and often despite the UN and governmental actors. Though as yet embryonic, warts and all, this movement now broadly called crisismapping, affords an opportunity to link up the comparably slow-moving crisis response platforms and processes of the UN and Governments with more responsive, dynamic, intuitive, mobile device friendly, ground-truth centric, locally implemented and owned systems.
2. Challenges within the UN system to respond to crises of this scale. The Head of UN Office for the Coordination of Humanitarian Affairs (OCHA), Sir John Holmes, in a strongly worded email in February expressed his frustration over the UN's aid effort in Haiti, noting that "only a few clusters have fully dedicated cluster coordinators, information-management focal points and technical support capacity" and adding that the disjointed effort is casting doubts on the UN's ability to effectively provide relief.
3. The creation and curation of the ICT4Peace Foundation's Crisis Information Management (CiM) wikis[15] for Haiti, Kyrgyzstan, the Gulf Oil Spill, the Chilean earthquake and the Pakistan floods engaged with hundreds of data sources for each wiki, both within the UN system and outside it. Sources like local new and social media and mainstream media on the web in particular stood out as vital resources, along with examples such as the development of the

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[14] http://en.wikipedia.org/wiki/Crowdsourcing
[15] http://wiki.ict4peace.org

People Finder Interchange Format (PFIF) to aid the cataloguing of missing persons and information generated by, disseminated via and archived on the platforms developed by Ushahidi, Sahana, CrisisCommons, OpenStreetMaps and InSTEDD in particular.

4. Importantly, the Foundation's CiM wikis demonstrated that even for COD datasets, key information after a sudden-onset crisis often came from sources outside the UN and official Governments channels – for example with mapping and GIS information, health infrastructure related information, ground conditions and ad hoc Internally Displaced Persons (IDP) camp locations. The wikis also flagged a central issue with some key COD datasets – that even though there was agreement about what needed to be shared before a crisis, actual information population showed great variance.

Based on the Foundation's experience, an expanded framework, connecting the IASC CODs to external resources and sources was distributed to CiMAG members in June 2010.

In addition to this, at the retreat of UN Crisis Information Management Advisory Group (CiMAG) on 5 October 2010 at IBM Palisades in New York, the ICT4Peace Foundation underscored the point made in the IASC draft document on CODs that *"some of the CODs, such as data on the affected population and damage to infrastructure, will change during the different phases of the response and therefore will need to be frequently updated and maintained."* Even without an expansion of the existing CODs, the Foundation's submission was that **crisismapping could and should feed into the updating of UN datasets after a crisis occurs, complementing timely efforts by UN agencies and the cluster leads to update this information**.

One useful metaphor for this exercise came from The International Network of Crisis Mappers (CM*Net) conference in Boston, held from 1–3 October. Following the keynote address at this conference by Dr. Soon-hong Choi, the UN Chief Information Technology Office (CITO), many crisis mappers called for an 'API' between the UN system and crisismapping community, an idea more than just a technical bridge seen as a way to cross-translate and cross-populate information especially after a sudden onset disaster or crisis. We proposed that the 'API's envisioned under the CiM strategy for information sharing and interoperability *within* the UN system – on a purely technical level and with slight modifications – could be leveraged for this purpose.
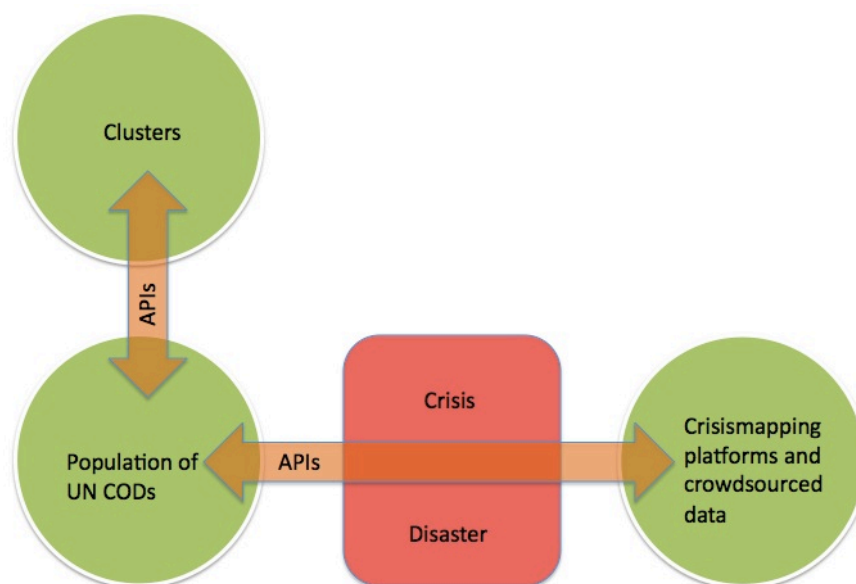
A rough map of data sources for such an API would be, for the datasets that will need to be updated the most after a crisis:

COD dataset	Possible technical APIs to bridge data	Crisismapping data sources
Humanitarian Profile (disaggregated by admin level and populated place)	OpenGeoSpatial[16], Simplegeo[17], OpenGeo[18]	DesInventar[19], Relief and Information Systems for Earthquakes Pakistan[20], Ushahidi instance, CrisisCommons[21], Google PFIF[22], Global Voices Online[23], HaitiVoices[24], Google Resource Finder
Populated Places (Geographic)	*Ibid*	OpenStreetMap, GeoCommons[25], FrontlineSMS[26], Grassroots mapping[27], Ushahidi instance, Google[28]
Transportation Network (Geographic)	*Ibid*	OpenStreetMap, Sahana instance, CDAC/Internews based community feedback[29]

It is also possible to look at the post-crisis population of the hydrology and hypsography CODs with data from Google and other providers of information, not strictly falling into the crisismapping community, but increasingly tailoring their output to meet key demands of actors and platforms outside the UN system (e.g. Google Resource Finder for Pakistan[30]).

Key challenges
Key challenges to the establishment of a technical API include the harmonisation of data gathering to UN defined standards, the process and yardsticks through which crowdsourced information is vetted and verified, the points of entry into the CODs which have to be mandated by the UN and IASC and the points of contact amongst the crisismapping community in charge of liaising with the UN.

The 'API' also needs to be more than just a technical bridge. The constituent members and cultures of the crisismapping community, the UN system and Government are fundamentally different, requiring those within the UN to reach out to the crisismapping community as partners in progress and reciprocally, those in the crisismapping community to be more patient than they generally are with bureaucracy, to acknowledge more fully the indispensable role of the UN in humanitarian response and relief work and to realize that without verifiable information, the mere population of maps and platforms does not meaningfully help concerted aid and relief efforts.

Once a working relationship between key persons and platforms in both communities and a suitable process of verification or taxonomy for crowdsourced information is established, crisismapping can also help in prevention, risk reduction, and long-term recovery processes of the UN.

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[16] http://www.opengeospatial.org/
[17] http://simplegeo.com/
[18] http://opengeo.org/
[19] http://www.desinventar.net/
[20] http://en.wikipedia.org/wiki/RISE-PAK
[21] http://wiki.crisiscommons.org/wiki/Main_Page
[22] http://haiticrisis.appspot.com/developers
[23] http://globalvoicesonline.org/specialcoverage/haiti-earthquake-2010/
[24] http://www.haitivoices.com/
[25] http://www.geocommons.com/
[26] http://www.frontlinesms.com/
[27] http://grassrootsmapping.org/
[28] http://www.google.com/relief/haitiearthquake/imagery.html
[29] http://crisescomm.ning.com/
[30] http://pakistan.resource-finder.appspot.com/?lang=en

Champions of greater and importantly, more meaningful collaboration and learning – be they individual or organisational - need to be identified and empowered in the UN system and crisismapping community. This will be difficult to sustain without institutional support, which in turn will be anchored to perceptions of reciprocal gain on account of this collaboration and minimising risk. On this last point, the management of expectations will be important, since existing institutional investments into IT and Information Management (IM) training and platforms, plus the very identity of the UN system may be perceived to be at risk through the introduction of or interface with new crisismapping systems.
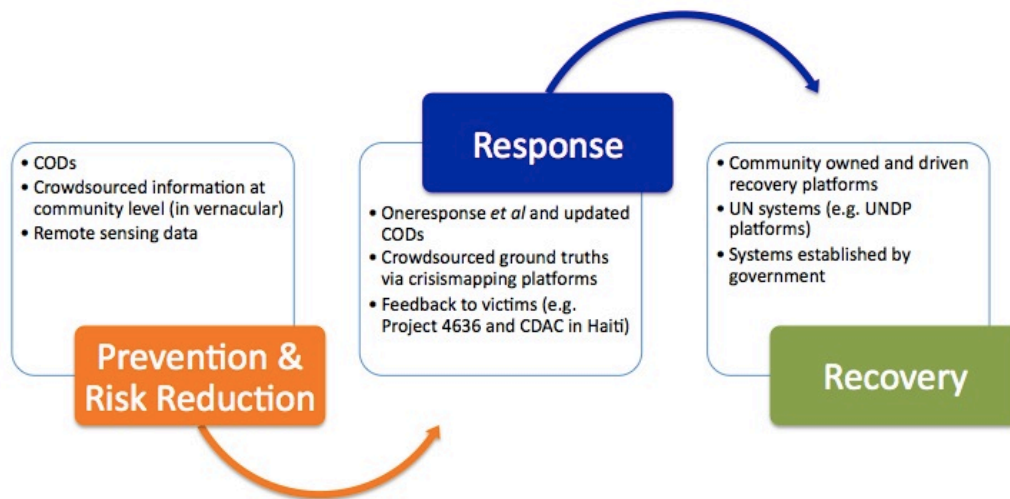
Under the UN CiM strategy, a key UN driver of this information exchange needs to be identified, which by design can engage more easily and robustly with the crisismapping community and its key actors, and by virtue of its location within the UN system, also act as a catalyst to appropriately populate key UN platforms, including the CODs, with crowdsourced information.

As noted in the diagram above, if existing IASC CODs are better populated from within the UN clusters as well as from sources outside the system in a manner that does not risk the UN's data integrity and standards, it stands to benefit not just the UN but also the crisismapping community as well as governments that can use this information and platforms for disaster risk reduction and prevention, better crisis response and more robust, sustainable, long-term recovery.

Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | 30

Managing the Accelerating Complexity of Humanitarian Response

Results of the ICT4Peace Foundation Workshop at the World Summit on the Information Society 2010, Geneva

ICTs in crisis management: Recommendations and areas for future research

Where is the wisdom we have lost in knowledge? (TS Eliot, 1937)
Where is the knowledge we have lost in information? (Sanjana Hattotuwa, 2010)

In the context of the World Summit on the Information Society 2010, hosted by the International Telecommunication Union in Geneva, Switzerland, the ICT4Peace Foundation held a workshop focusing on the role of information and communication technology in crisis management. The goal of the workshop was to identify some of the key challenges remaining in the effective use of ICT in crisis management, which would benefit from further research (please see list below). In addition to identifying areas in need of further research, the workshop also developed many concrete recommendations to improve the effectiveness of ICT in crisis management.

Workshop framework

Haiti is seen as a turning point in the use of ICTs in Crisis Management but many lessons remain unheeded from previous disasters such as the 2005 South Asian tsunami. Indeed, there is an expectation that ICTs themselves can revolutionize crisis management and provide a "quick-fix" in solving intractable, complex situations often in politically unstable locations around the globe. However, the framework in which the ICTs operate is often just as critical, if not more so, than the technology itself. How can we improve interoperability between UN agencies and other aid agencies to ensure the quick, reliable sharing of information both in crisis situations and disaster mitigation? How can we properly assess the impact of ICTs in Crisis Management to date? What works? What doesn't? Are we investing in the right technologies keeping in mind that they need to function primarily in very difficult environments? Is the humanitarian community setting the right priorities in the development of Crisis Information Management tools? What about capacity building in local communities?

The new players: crowdsourcing platforms and social networks

The Haiti earthquake and ensuing relief efforts made the broader global community more aware of the "crowdsourcing" movement, which has been developing for some time, and social networking platforms like Facebook and Twitter. Crowdsourcing platforms, such as Ushahidi, InSTEDD's RIFF,[31] and Sahana provide unique tools, which the local and international community can take advantage of in crisis response and recovery. Of particular importance is that these new platforms are not owned by one agency or government but rather constitute an open process, allowing for, and encouraging, broad participation. These new platforms also provide an opportunity to change outmoded views on established information sharing policies and practices by bringing new information and crisis management tools to the table. Platforms such as

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[31] http://www.instedd.org/our-work/technologies/riff

Ushahidi, RIFF, and Sahana can empower communities by strengthening community resilience, preparedness and response potential without external intervention.

Crisis response, management and information overload: we need to move away from a concept of tools and products and toward a concept of services.
There are a growing number of tools that can help the humanitarian community respond to crises. How can this entire process best be managed? Is there a danger of focusing on the individual elements and neglecting the big picture? How can we move toward a comprehensive and harmonized services concept? How can we develop a meaningful "rapid needs assessment process"? How to manage information overload? How to coordinate all the different actors?

What are the key challenges facing the humanitarian crisis response community?
In the mid-1990s, the humanitarian community relied on coded cables to communicate. Key questions were: Where is the information? How do we capture it? How do we disseminate it? How do we make contact lists?

In 2010, the same problems still exist despite the rapid rise of ICT and new tools to gather and exchange information. In parallel to the rise of ICT platforms, there has also been an explosion of actors who respond to disasters and crises around the globe, including humanitarian response organisations, businesses, civil society actors, governments, NGOs, and private individuals. As a result, the challenges in implementing a coordinated response have also grown.

Despite the changing dynamics of disaster response, the humanitarian community is essentially using the same paradigms as 10-20 years ago. How can this community be better prepared and trained to deal with innovation?

Areas requiring further research
1. The technology community needs to examine the possible misuse of their platforms (e.g. Radio Milles Collines in pre-genocide Rwanda) and develop a "do no harm" policy (like the humanitarian community). More robust accountability and monitoring mechanisms should also be considered.
2. Examine how to improve data-preparedness and the preparation of "data-sets";
3. Analyse civil-military cooperation mechanisms;
4. Improve interoperability and avoid "information islands";
5. Examine how to best integrate new systems and ICT solutions into existing processes and systems. The new systems often work outside traditional mechanisms and don't necessarily support member states and humanitarian actors.
6. Analyse how to manage the risk of too much information;
7. Assess how to align ICT with business processes;
8. Work on technology acceptance issues, drawing from research to date on how people use computers, information technology, new media tools;
9. Examine and analyse complex systems;
10. Examine how data can be used later during reconstruction;
11. How to manage the risk of too much information? Linda Stone of Microsoft coined the phrase "continuous partial attention"; the more we are connected the less we are aware of what is happening.
12. Examine how to sustain interest beyond initial crisis phase;
13. Develop systems that are sustainable, repeatable and predictable;
14. Examine how to deal with new technology in areas where humanitarian workers don't have access to Internet and have to deal with high latency connectivity to the web.
15. Examine how to sort out important data during crises (during the Tsunami the OCHA team received 100 emails per day; during Nargis, 3 000 - 4 000; and in Haiti, one email per minute) and
16. Analyse how to effectively coordinate massive number of actors on-site.

Recommendations

- Keep ICT systems and responses simple (the more complicated the system the more that can go wrong.)
- Develop ICT systems locally or in cooperation with local communities and end users, including victims of trauma and disasters;
- Recognize the importance of political processes and country-specific situations (in Haiti the borders were open to foreign aid and the humanitarian community whereas in many other crises this is not the case);
- Share "datasets" on the ground between senior management on all sides (except in situations where security issues take priority, with more efficient and effective measures on how best to judge this);
- Encourage the constructive engagement of the private sector;
- Reserve short codes that would allow victims to send SMS messages out of disaster zones and
- Improve training of crisis responders in the use of ICT, complex systems and innovation.

Participants in the workshop included

Lin Wells, Distinguished Research Professor & Force Transformation Chair National Defence University, USA; **Daniel Stauffacher**, Chairman, ICT4Peace Foundation, Switzerland; **Juliana Rotich**, Co-Founder and Program Director, Ushahidi, Kenya**; Patrick Gordon,** Deputy Chief a.i., Information Technology Section; Head, ITS Field Support Unit (FSU), OCHA, Geneva**; Bartel Van de Walle**, Assistant Professor, Information Systems and ISCRAM Chair, University of Tilburg, The Netherlands**; Sanjana Hattotuwa**, Special Advisor, ICT4Peace Foundation, Switzerland**; Barbara Weekes,** Senior Advisor, ICT4Peace Foundation, Switzerland**; Ed Girardet,** Media21 Programme Coordinator & Author, Switzerland**; Kimberly Roberson**, Chief of Section, FICSS, Division of Operational Services, UNHCR Geneva; **Nigel Snoad,** Microsoft, USA; **Paulo Gonçalves**, Associate Professor of Management at USI & Academic Director, Advanced Master in Humanitarian Logistics and Management, University of Lugano, Switzerland**; Dag Nielsen**, Board Member, ICT4Peace Foundation and Former Director, Ericsson Response, Sweden.

Information Management on the Ground During a Response: 20 Uncomfortable Flashes from the Reality

Nigel Snoad, ICT4Peace Foundation[32]

The sudden blossoming of volunteer and community technology initiatives in response to the Jan 2010 Haiti earthquake has been described by many, particularly in the media, as a "game-changer" in the humanitarian information environment.

Initiatives like Project 4636's SMS gateway and translation workflow grew seemingly out of whole cloth in those first few days and weeks after the devastating earthquake, and were tied to pre-existing but relatively recent initiatives like the Thomson Reuters Foundation's Emergency Information System, Crisis Camps and new uses of existing tools like the Tufts Fletcher School's deployment of the Ushahidi platform. At the same time longstanding volunteer projects like Sahana and Open Street Maps deployed and responded to perceived gaps in the information environment.

While the direct impact of particular projects might be questioned, there's no doubt that the diversity and enthusiasm of the response has energized the volunteer technical community and generated a welcome debate and engagement from the "traditional" humanitarian sector of UN Agencies, NGOs and Governments.

As a sometimes participant in some of these initiatives, and a long term proponent of volunteer and community engagement in crisis information tools like wikis, open data standards and SMS reporting and broadcast, I was excited to see the enthusiasm and creativity that was brought to these activities. But as someone who's played an information management and operational role in the field in several major emergencies ranging from Iraq to the 2004 Tsunami and the Sudan I can see that there's a lot of misunderstanding about how a large-scale humanitarian response actually works on the ground. There are immense information and coordination challenges faced by affected populations and governments, and by local and international (fly-in) humanitarian actors. Judging by the number of "why don't they just…[insert someone's version of the right and obvious thing]" conversations I've had this past year most of these challenge are under-estimated or even unrecognized by many new actors in the humanitarian information space.

There are already many sources of information about the roles and mandates of the "formal" humanitarian community, and in the interests of moving beyond this I've attempted to outline below an anecdotal and only slightly tongue-in-cheek "cheat sheet" for those wondering what happens on the information management front during a large-scale response like Haiti or the Indian Ocean Tsunami. It's by no means comprehensive, or even representative (a non-representative Ushahidi-appropriate sample if you will), but accords with my experiences over

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[32] This article reflects the personal opinion of the author and does not reflect the views or policies of his current or previous employers.

the years, and those of many colleagues. Several bloggers and other writers have written extensively (and usually better) on this, in the Haiti context and others. [33]

The context: on January 12 2010 I was, by chance, visiting the Washington DC headquarters of the American Red Cross, discussing with senior staff possible roles for new technologies and strategies for information management and community resilience in crises. The next day I was flying to the Dominican Republic with a Pelican Case filled with gear, on loan from my employer and trying to find my way to Port-au-Prince to join the UN Disaster Assessment and Coordination Team, helping coordinate information and whatever else I could do. I was also mourning the death of colleagues and close friends and hoping to act as a bridge between the on-the-ground information and humanitarian actors and the crisismapping community.

In no particular order:

1. **Sign up to GDACS alerts**. http://www.gdacs.org/. I received a SMS text message within the hour of the earthquake from this service that draws on the resources of the EU Joint Research Centre, UNOSAT and UNOCHA's ReliefWeb and many other sources. The site is an example of how one or two people can make a difference to the rest of the humanitarian community with a carefully targeted information service.
2. **Never, ever, get separated from your luggage.** Aside from the fact that many agencies get annoyed when you lose their expensive satellite gear, turning up in an emergency environment requires being ready for almost anything. Unfortunately there are always those who arrive missing bags, usually because they agreed to have them fly "on the next flight" which never came. Assuming there are any flights: it's usually a process of begging or cajoling a lift during the early days of a response unless you're lucky enough to work for an organisation with the money for it's own aircraft charter. In Haiti I spent the first week sleeping on a cardboard box steps from the airfield, with one shower between several hundred people at the UN Logs base. And while this is nothing compared to the deprivations endured by those affected, it's unconscionable to become an additional burden on a relief effort. Corollary: bring as small a bag as you can. Despite knowing this rule I ended up cursing myself when trying to lug 120lb of someone else's gear across the airfield fences at two in the morning in Port-au-Prince airfield.
3. **Discover that as someone who works on "information" you'll never leave your work tent/desk.** In the field information management is mostly paperwork, file management, lots of data entry, meetings and meetings, and millions of emails and that you end up working twenty-hour days, on and on. There's always more to do, more situation reports to write, more emails to review, more meetings to attend and people to see. Life doing IM in a sudden onset emergency is about always playing catch-up and perpetual triage. In a slower developing "complex" emergency you're still hammered 12 plus hours a day. In Haiti if we weren't spending all day and night updating contact lists then we were responding to thousands of requests for data about the situation, all expecting more detail than existed.
4. **Communications don't work as promised.** Despite having the latest satellite communications gear your Internet connection and email doesn't work at least half the time. And invariably your HQ colleagues will not really believe that all that expensive satellite equipment doesn't work as promised. Text messages are often the most reliable thing, assuming the towers are still standing.
5. **Information overload is the norm.** Email volumes are overwhelming, but it's still critical. Which means you miss many important pieces of information. This challenge is at the core of the inevitable information overload in the field and in headquarters. You have to skim your email, but rarely have time to work through it thoroughly, let alone read deeply the 12 situation reports that arrived in the past day. In a coordination role it's even worse: in Haiti we had two people working several hours a day just forwarding items from the shared inbox to the appropriate person. There was no time to do a more complete job of extracting additional useful information like contacts or assessment data that wasn't immediately actionable.

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[33] For example of firsthand writing about Haiti from experienced aid workers see:
http://humanrights.change.org/blog/category/humanitarian_relief and http://talesfromethehood.com/tag/haiti/
http://talesfromethehood.com/2010/02/25/as-long-as-it-takes/

6. **You don't really know what's going on outside your bubble.** This is a result of points 3-5 above. Despite being in the middle of it your world-view shrinks until those outside the crisis area know much more than you do about what's going on. I've always spent the months after the immediate crisis response learning from friends and colleagues what happened half a mile away from where I was sitting. In Haiti I spent two weeks less than 50 feet from one of my best friends working for another agency, and saw him once. Corollary: you struggle to read even your own organisation's situation report.

7. **Anything that's not part of your critical path, or pre-planned gets missed or put aside.** While deploying to Haiti I had assumed that I could act as a bridge between the traditional humanitarian information efforts and the crisismapping community. It turns out that getting the contact list completed was more important right then and there. The entirety of my engagement with friends and colleagues working on the US based volunteer response was reading a mailing list once or twice, perhaps two Skype chats and finally sending a list of hospital facilities with addresses to be mapped to the Tufts Fletcher School team.

8. **So try and get out and see something other than a tent/office.** Help load some WFP food into a helicopter or take part in a Search and Rescue (SAR) mission. As a former SAR team leader I can state that for outsiders the latter is a counter-productive and often traumatic experience. The real reason to get out of the office/camp is to turn the numbers back into human beings, to connect with the reason for working on this crisis, to test and think for yourself, as an expensive foreign professional, why you're there.

9. **Remember that 95% of all humanitarian response is performed by the local community.** It might be 99%: local neighbours pulled most people from the rubble after the Haiti earthquake, including all of my friends who were trapped alive and survived. Ad-hoc markets were operational in many parts of Port-au-Prince mere days after January 12 2010, though prices were too expensive for the poor and those who had lost their livelihoods.

10. **Go on an assessment mission using electronic data collection tools and re-discover that they are hardly ever effective.** Time and again technologists (including myself) propose using mobile tools for data-collection in emergencies. Unless the team using them is pre-trained, and have the right devices, then this effort is bound to be incomplete and fail as a comprehensive assessment. That said there are many solutions, like WalkingPapers[34] and SMS text forms that seem likely to make a difference in the future.

11. **You'll have to invent at least two new systems and processes.** Some blindingly obvious process or system won't work or is wrong for the context or none of the people involved have had the right training, so you'll have to create a new/better/simpler form/website/tool/working group. Outsiders will say "but why isn't there a standard way of doing that?" or "why didn't you use my great tool, it was all ready to go if you'd only looked at this website" and you'll be unable to explain why that isn't possible. There will be a lot of manual data entry even though "the import/export should just work."

12. **Remember that most coordination happens at physical meetings, and the meeting venues/tents remains the centre of information exchange for the international response.** The cluster and coordination meetings (or at least the free-form gatherings before and after) are truly where most actionable information exchange occurs amongst international actors. Online tools provide an important forum and source of information for those who can't make it in person. Everybody present realizes that this group is privileged by language (often English) and access, but recognize that local government and NGO meetings happen elsewhere. In Haiti several local groups attended meetings, but for the most part access to the UN Logs Base was restricted. All this leads to agencies dedicating people as "meeting monkeys" and ultimately a whisper-net effect of imperfect information flow between multiple coordination locations such as the Government, US embassy and the UN Logistics Base.

13. **Go to the reception tent/helpdesk/HIC.** If you're lucky the UNDAC team or UNOCHA has setup one of these, and there are maps and contact lists to pick-up or download. You might even be asked to fill out forms for the 3W (Who What Where). In Haiti this was mostly inaccessible to local groups, but we still had people coming in every hour with heart-wrenching stories, asking for someone to help them provide food/water/medical care to their orphanage/village/neighbour/school/hospital. It's gut-wrenching as a coordination worker to only be able to point them to someone "who might be able to help". Fundamentally

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[34] http://walking-papers.org/ and the form-based derivative Talking Papers.

the Water, Food and Health clusters coordinate aid aimed at large or wide-scale distributions, and ideally work through local governments. Haiti challenged all these standard ways of operating.

14. **Everyone wants maps.** Printed and electronic maps are still the most in-demand way of communicating analysis and actionable information at a glance. There's a insatiable demand for printed maps in the field, and in most cases this is the main lure you have as an information worker to gather or exchange data with others.

15. **Look at the inter-agency web-platform, but which one?** In Haiti OneResponse.net was managed by UNOCHA and the clusters, but every emergency has multiple platforms, and sources of information, formal and informal. Pick one (preferably the most official one you have access too, but also that with the most active community) and hope that it will be updated regularly. Contribute yourself.

16. **You've got to give something to get something**. While not strictly true, it certainly helps to have something useful to provide at a meeting or to colleagues when you're asking them to do something for you, or to share information. See the comment on maps above.

17. **You will spend half your day chasing people down.** The phones are unreliable, and email overwhelming, which means that you wander around camp or stuck in traffic in the city trying to track down the best person to do something about the critical request that's come in to the inbox, or to the reception tent.

18. **Almost all decisions are made from situation reports.** Unstructured data is still the most common form of reporting and analysis. Which makes it even harder to extract and compile structured data products like thematic maps.

19. **Someone will always expect more from you than you can give and you'll leave feeling guilty for not having done enough.** Headquarters will continually demand more information, more detail, more gaps analysis. Local management will expect miracles. This is exactly what they should be doing, but it can be hard to explain why, with dedicated information managers present, it's not so easy to compile an accurate picture of what's going on. You'll always make mistakes, and realize things that you should have done, that would have made a difference. If you're lucky you'll also know the good that you've done, and learn for next time.

20. **Haiti earthquake response was anomalous in so many ways**, both good and bad: a permissive security environment, a sudden onset disaster rather than an on-going complex emergency (though that was present too), massive amounts of money, an existing UN Mission, with the UN, Government and NGO operations affected by the their own tragedies, and perhaps most critically: the proximity to the US meant overwhelming media attention, and an overwhelming volunteer response from people who had never participated in an emergency before.

This might seem like a mostly negative list, though it does outline some of the challenges working in the field in a massive sudden-onset disaster. Despite this I think there are reasons for looking forward positively: my personal observation is that while some things seem to never change, in many ways responses to major disasters are getting better. The support and deployment of volunteer technical groups like MapAction and TSF have made a difference in sudden onset disaster responses, as has the emphasis on training and tools by UNOCHA and the clusters. Compared to the Tsunami response in Haiti there were more and better maps, contact lists and situation reports available immediately. Cell-phone towers are repaired quickly, people have a better understanding of their roles despite the presence of ever more NGO actors and a more complex humanitarian structure.

Despite some healthy scepticism from many colleagues I can also clearly see how new technologies and volunteer groups may make an increasingly significant impact on humanitarian responses and on the welfare of affected populations. This is discussed at more length and detail in other places in this volume, but many of the challenges raised in the points above, particularly on information overload, would be helped by having the "volunteer cloud" perform a filtering and aggregation role, and to take other time-consuming and repetitive tasks out of the theatre of operations. This is the critical value of efforts like the ICT4Peace wiki[35], and the opportunity glimpsed in task-"turking" work like Project-4636's translation tools and the Tufts Fletcher

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[35] See http://wiki.ict4peace.org/w/page/17234282/Haiti%20Earthquake%20-%20January%202010

Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | 37

School team's geo-coding efforts. Resolving the social, political and technical challenges to making use of these systems will take time and multiple field deployments. There are similar challenges and opportunities to effective information exchange and interoperability. As an example it's clear that platforms like Sahana have the capability to act as a part of the Who What Where service and hence distribute the task of collecting and marrying contact and operational data.

Fundamentally the ability of new technologies to engage affected populations directly and build bridges to the Diaspora puts them on a new path that will hopefully lead to increased community resilience and, eventually, a new way of engaging and directing international responses. The growth of the Communicating with Disaster Affected Communities (CDAC) initiative already points the way to how this might bridge with the "formal" international humanitarian response. Ultimately without a massive investment in human and systems resources along the lines of what sustains national militaries, the humanitarian community will always have chaotic elements and fractured responses. As a complex system coherence is enabled by building systems - human and technical - that enable (enough) shared goals, (enough) shared standards, (enough) shared situational awareness and ultimately (enough) communication links between the actors, local and international, affected or not.

No matter what happens with new technologies and communities, work on the ground in emergencies will always be exhausting, frustrating, rewarding and, in my experience, leave you wondering how you might have done things better.

Conclusion

Paul Currion

1. **Ironically enough considering the projects I've been involved in, I'm a sceptic when it comes to how technology is used to support ICT4Peace. This isn't because of some dormant Luddite tendency, but because in the past 10 years I've had high expectations about how technology could change the way in which the humanitarian community did business - and those changes have still not arrived.**

   Few of us that have been working since those early days have many illusions about the limits of technology, but we underestimated the inertia that exists in our systems of early warning, conflict resolution, disaster response and nation-building. In essence we were trying to apply 21st century technology to 20th century systems, and that experience over the last ten years has made me ask a difficult question: what if failure is built in to those systems?

   There's growing recognition that nobody really understands how to generate economic development; that humanitarian assistance can and does contribute to the political problems whose effects it is supposed to mitigate; that post-conflict reconstruction is driven by parochial security interests rather than genuine concern; that early warning systems are pointless when the political actors that receive those warnings have little incentive to respond. However most critics – some of whom are writing in this paper series – start from the fundamental assumption that even if those systems are broken, they can be fixed.

   My argument is slightly different, because I don't necessarily believe that those systems are broken in the first place. My argument – as worrying to me as I hope it is to you – is not that these systems are dysfunctional, but they function in exactly the way they were designed to. If that's true, then all the technology in the world won't help those systems deliver what they promise; it will just keep them in business as usual while everybody watches the camera pan smoothly across the most up-to-date satellite imagery from the latest disaster zone.

   If we want technology to have an impact, we need to understand the political economy of ICT4Peace.

2. **When somebody like me starts talking about something like this, those actually affected by crisis are usually the last aspect that we talk about, so let's reverse that here. I've argued elsewhere that we should be concentrating our efforts on developing technology that will help communities to improve their own resilience, so that they have to rely less on external organisations to support them in times of crisis, and that information is a critical part of that resilience.**

   Unfortunately that isn't the model that we have right now, especially when it comes to technology: historically information has been extracted from affected communities by organisations claiming to work on their behalf. The assumption is that, in exchange for that information, the communities will receive physical or financial assistance from those organisations. Rarely do communities receive information back again in a useful form, and this model needs to change, for three reasons.

   First, information is one of the most valuable resources an affected community can receive, in some ways as valuable as any material assistance, enabling them to make more informed decisions about their own lives. Second, accountability is critical for this sector, but few pick up on the fact that information is essential for enabling communities to hold aid

organisations accountable, to judge our effectiveness compared to the commitments we make, and to the work of other organisations.

Third, there is a fundamental question of public interest at stake. If a public organisation supported by public funds and working for the public good collects data, that data should be public by default. The only possible exemptions to this are on grounds of security or privacy, but both of these can be managed much more easily than most people assume. Yet organisations continue to act as if the value in data is how much of it you can hoard, rather than how much of it you can share.

At the moment, affected communities (and their governments) tend to be treated like children by the international community. The price they pay for external assistance is a loss of autonomy, which is made possible through their lack of access to information – information about donor funding, for example, or information about NGO activities. This has started to change over the last few years, particularly since the tsunami, but the pace of change is slow.

We have yet to see the killer app that will change the extractive relationship that currently exists.

3. **The rapid spread and visible success of information technology, or more accurately the success of two particular technologies, the Internet and the mobile phone, has helped to construct a utopian vision of how technology will change the world. More than a few people – not necessarily the ones writing in this volume, I hasten to add – have assumed that these changes will necessarily lead to greater efficiency and greater empowerment. We're increasingly aware that this is not the case, that there are limits to what technology can achieve.**

A useful counter-example in the case of efficiency is humanitarian co-ordination, which will always suffer from the transaction costs of collective action. Technology can help minimize those costs – for example, by improving communication – but it cannot eliminate them and, in some cases, it adds to transaction costs (as anybody who struggles to manage their email inbox will tell you).

As for empowerment, I've already outlined how the relationship between the powerful and the powerless is usually a one-way street when it comes to information exchange. At first glance, some of the new technology looks like it does address this imbalance, offering tools for use by those affected by emergencies. Unfortunately none of these tools really delivers when it comes to empowering affected communities: the traffic is still largely one-way.

More worryingly, this technology usually offers a culturally specific conception of technology use as individualistic and technocratic and is not necessarily a good fit with either the cultures or the capabilities of affected communities. As much with technology as any other aspect of ICT4Peace, the involvement of communities in developing their own solutions is essential if we want those solutions to be sustainable. Community participation by itself is not enough in times of crisis, however.

One of the few lessons that has been learnt by organisations working in ICT4Peace is that top-down solutions rarely work. We've learnt it so well that we've failed to realise that the reverse is also true: that bottom-up solutions rarely work either. There's a balance to be struck between the emergent activities of individuals and the directed activities of organisations, especially when we're chasing the latest technology down the rabbit hole.

Balancing top-down and bottom-up requires more serious reflection than it's previously been given.

4. **So how do we best judge when a new technology is worth adopting? The most persistent challenge in ICT4Peace is the absence of useful metrics of success. Unlike commercial technology development, success has nothing to do with how many users**

you have or the value that they might derive from the technology. The key measure is whether that technology improves the lives of individuals and communities affected by conflict, either directly or indirectly.

Measuring impact is difficult enough, but at first glance measuring this kind of impact looks impossible. Perhaps it is impossible to definitively demonstrate the impact of a particular tool – indeed, there are some who believe that it's impossible to demonstrate the impact of humanitarian assistance itself – but at the moment, beyond a basic appraisal of customer satisfaction (with the customers usually being large international organisations), very little attention has been paid to this.

The tendency instead is to rely on anecdotal evidence provided by operational agencies or assumptions imported from the technology sector – both of which have a vested interest in promoting their work. We remain largely in the dark about the impact all this technology has had, except for an unsettling feeling that we aren't really learning from our mistakes.

The difficulty of measuring impact, however, is not an excuse for not attempting it. In some ways it is perhaps more important for us to properly measure the impact of technology, because we have more to prove. Organisations working on ICT4Peace issues are generally resource-constrained and – in brutally simplistic terms – every cent spent on technology is a cent that doesn't go to affected communities.

The opportunity costs of technology – not just developing, but implementing and maintaining it – are relatively high, making the sector conservative rather than innovative. We can argue about whether those limits to innovation are a good thing or a bad thing, at least when people's lives are on the line. What it means in practice is that innovation usually comes from outside established actors, usually in the form of partnerships with smaller, more agile organisations, the private sector, or both.

This leads to more challenges: those from the private sector have difficulty understanding how the public sector works; those from a technology background have difficulty understanding how people from an operations background work; those from developed countries have difficulty understanding how people in developing countries work. Bringing those different groups together, it's important to remember that the definition of 'success' may look different from each side.

Innovation challenges are not insurmountable, but they'll come back to bite you if you're not careful.

5. **Innovation is all well and good, but you can easily miss the forest for the trees. The assault of visualisation tools, of real-time, of data-mining, of crowdsourcing, of government 2.0; all these obscure the fact that our ability to respond to crises does not appear to improve much, year after year. The reason for this is simple: political problems cannot be solved by technological solutions, and at root most problems in ICT4Peace are political in one way or another.**

This is true whether we're talking about the complexities of regional geopolitics or the banalities of day-to-day intra-organisational politics; technology changes, but people remain the same. Technology providers have an interest in persuading us that their products and services will change the way we do business, but many successful ICT4Peace projects are successful because they were bound to existing business processes, rather than trying to reinvent them in a new form that better suited the technology on offer.

In particular we need to be careful when we consider whether technology will change how ICT4Peace organisations work in ways similar to how they've changed private organisations in global markets. The obvious counter to this is that conflicts aren't markets, and those types of organisations are very different creatures. Technologies don't operate in isolation but are woven into complex political, economic and social systems.

Because of those complex relationships, technology is both the result and the cause of change; and we barely understand either dynamic. This complexity is one reason that we don't have a good track record in predicting how technologies will be used, or what their effects will be – the spread of mobile telephony being a perfect example. Once those uses are obvious and their effects are clear, however, we like to persuade ourselves that they were inevitable, and plan accordingly.

There's a steep learning curve for people approaching the field of ICT4Peace for the first time, and a distinct tendency to fall into the trap that Abraham Maslow apocryphally described: "If the only tool you have is a hammer, then everything looks like a nail." Nobody can argue that technology doesn't change the way our organisations work, but that's not the real discussion we should be having. The discussion we should be having is which technologies are a good fit for the work we're engaged in.

Given the rate of technological change, we need the right tools for the job more than ever before.

6. **You don't hear much about the projects that promise a lot then fail to deliver, or about the projects, which are built on technology that is out-of-date by the time they go public. We don't discuss the reasons why projects start strongly but then grind to a halt when the champion of that project moves to a new position, or the projects which deliver nice graphics but little operational value. As soon as the stakes are raised, and this is true for private and public organisations, there is a huge incentive not to discuss failure, or even to let it see the light of day.**

Yet these are exactly the projects, which we need to hear about, and these are the discussions that we need to have, if the sector is to learn from its mistakes. We have an obligation to learn from those mistakes, and to predict what other mistakes might be out there waiting for us; 'failing forward' is a concept that ICT4Peace organisations need to become much more familiar with. One of the key roles of this series of papers will be to explore successes – and failures – and see what lessons can be drawn from them. I'll be watching this process very carefully because, as I said at the beginning, I'm a sceptic when it comes to technology.

But to paraphrase George Carlin: scratch a sceptic, and you'll find a disappointed idealist underneath.

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Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | **44**

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About this publication

- **Framework**: An edited series of brief papers based on:

  1. Paragraph 36 of the WSIS Tunis Declaration in 2005
     We value the potential of ICTs to promote peace and to prevent conflict, which, *inter alia*, negatively affects achieving development goals. ICTs can be used for identifying conflict situations through early-warning systems preventing conflicts, promoting their peaceful resolution, supporting humanitarian action, including protection of civilians in armed conflicts, facilitating peacekeeping missions, and assisting post conflict peace-building and reconstruction.

  2. In September 2000, the General Assembly of the United Nations adopted the UN Millennium Declaration as a reaffirmation of their faith in the United Nations Organisation and the United Nations Charter as foundations for "a more peaceful, prosperous and just world." The Millennium Declaration emphasized the need for "a fully coordinated approach to the problems of peace and development", while the eight Millennium Development Goals (MDGs) agreed at the same time formed a blueprint to meet the needs of the worlds poorest.

  3. Target 5 of Goal 8 of the UN Millennium Development Goals (MDGs):
     In cooperation with the private sector, make available benefits of new technologies, especially information and communications.

- **Editors**: Daniel Stauffacher (Chairman, ICT4Peace Foundation), Barbara Weekes (Senior Advisor, ICT4Peace Foundation), Urs Gasser (Executive Director, Berkman Centre for Internet and Society, Harvard University), Colin Maclay (Managing Director, Berkman Centre for Internet and Society, Harvard University), and Michael Best (Assistant Professor at the Sam Nunn School of International Affairs and the School of Interactive Computing at Georgia Institute of Technology).

- The ICT4Peace Foundation in collaboration with the Berkman Centre for Internet and Society, Harvard University, and the Georgia Institute of Technology (Georgia Tech) commissioned the contributions included in this publication.

ICT4Peace Foundation

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ICT4Peace took root with pioneering research on the role of ICTs in preventing, responding to and recovering from conflict in 2003 and lead to the adoption of Paragraph 36 by the UN World Summit on the Information Society (WSIS) in Tunis in 2005 which recognises *"...the potential of ICTs to promote peace and to prevent conflict which, inter alia, negatively affects achieving development goals. ICTs can be used for identifying conflict situations through early-warning systems preventing conflicts, promoting their peaceful resolution, supporting humanitarian action, including protection of civilians in armed conflicts, facilitating peacekeeping missions, and assisting post conflict peace-building and reconstruction"*.

The ICT4Peace Foundation works to promote the practical realisation of Paragraph 36 and looks at the role of ICT in crisis management, covering aspects of early warning and conflict prevention, peace mediation, peacekeeping, peace-building as well as natural disaster management and humanitarian operations.

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Peacebuilding in the Information Age: Sifting hype from reality
ICT4Peace Foundation, January 2011 | www.ict4peace.org
Page | 47