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Interim Report: Stocktaking of UN Crisis Information Management Capabilities

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ICT for **peace** foundation

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Introduction

From October 2007 to February 2008, representatives from the ICT4Peace Foundation met informally with a number of high-level representatives at key agencies based at the United Nations in New York in preparation for a stocktaking exercise on crisis information management capacities and best practices. These meetings with heads of agencies, units and departments, IT administrators and key Knowledge Management (KM), Information Management (IM) professionals and consultants gave vital insights into some of the best practices and key challenges facing crisis information management at the UN including the gaps and needs that had already been identified, the challenges facing KM and IM and ideas for meaningfully addressing some of these challenges.

The authors express their sincere thanks for those who shared their knowledge and insights. This report captures pertinent observations on crisis information management based on the discussions we had over February 2008 in New York and subsequently over email. An official stocktaking questionnaire circulated to all members of the CEB in April 2008. A draft report was tabled at a meeting held on 8th July 2008 in New York at the United Nations, where respondents and other high level participants were invited to engage with the preliminary findings and observations. Their input and feedback at the meeting and via email is incorporated in this final draft.

This report is presented as an anchor for on-going interaction and conversation within the United Nations and is strictly not for public dissemination.

The responsibility for any faults, omissions and mistakes, as inevitably there are in this report, lie solely with the authors.

Evolution of the United Nations crisis information management stocktaking process

Paragraph 36 of the World Summit on Information Society (WSIS) Tunis Commitment in 2005 states that:

> "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."

This paragraph was introduced by Daniel Stauffacher, Chairman of the ICT4Peace Foundation, and former Swiss Ambassador to the World Summit on the Information Society (2003 in Geneva and 2005 in Tunis), on behalf of the Swiss and Tunisian Governments for its adoption as part of the WSIS Tunis Commitment in 2005. The ICT4Peace Foundation was subsequently established to raise awareness about the Tunis Commitment and promote its practical realization in all stages of crisis management by *inter alia*:

1. raising awareness about the contribution and potential of ICT in crisis management
2. fostering the exchange of best practices in the field of ICT for crisis management
3. Contributing to the establishment of broad principles derived from operational best practices, help integrate them into UN processes and make ICT part of UN evaluation exercises.
4. Develop and implement ICT4Peace Training Modules for Integrated and multi-stakeholder Peacekeeping and Peacebuilding Missions.

The first order of the Foundation was the publication of a book on the practice and theory of ICT in peacebuilding. In-depth research on the role of ICT and information management in preventing, responding to and recovering from conflict resulted in the publication in 2005 of *The Role of ICT in Preventing, Responding to and Recovering from Conflict*, by the UN ICT Task Force Series. The first part of the report reviews the origins of ICT for Peace in the United Nations World Summit on the Information Society, and the role that ICT might play in the broader field of conflict management. The second part showcases many examples of how ICT is being used before, during, and after conflicts. The conclusion and recommendations highlight both the challenges and opportunities for development in ICT for Peace (ICT4Peace), with the aim of raising awareness and building coherence in this important sphere of activity. The United Nations has called attention to the close link between peace and development and many initiatives from within and outside of the UN system are identified in the book. This was followed in 2007 up by an online wiki based inventorisation of ICT4Peace initiatives by the ICT4Peace Foundation, http://inventory.ict4peace.org. This wiki already indexes over 100 examples of the

use of ICT in crisis management, mitigation, prevention and post-conflict recovery, including many examples from the UN and global civil society.

Following the publication of the report and under the Chairmanship of Former President of Finland and Nobel Peace Laureate in 2008 H.E. Marti Ahtisaari, a group of experts from the UN, international civil society, business and academia met in March 2007 to identify key challenges of and solutions to existing ICT mechanisms on conflict management. Pursuant to this meeting, it was decided that ICT4Peace addresses these central challenges in a three-fold manner:

1. Enhance the performance of the international community in crisis management through ICT
2. Develop of templates for ICT, media and communications in conflict management
3. Inventorise existing initiatives and tools

It was expected that with the establishment, in 2007, of the High Level Experts Group on ICT4Peace under the aegis of the Foundation, more concerted efforts could be made in the future in the pursuance of the Foundation's mandate and shared goals with the UN Global Alliance for ICT and Development (GAID). The Foundation was also approached by the UN Office for the Coordination of Humanitarian Affairs (OCHA) to partner with it for the OCHA Global Symposium +5 event in October 2007. The Foundation and the Global Symposium +5 shared the common objective of mobilising the international community within its respective areas and seeking UN member state commitment by way of General Assembly endorsement of best practices related to ICTs in crisis management. The timely partnership between the Foundation and OCHA also strengthened their individual purposes by working towards one common Declaration. The partnership included the Foundation's participation at the Global Symposium +5 and the commitment of OCHA to work with the Foundation in planning and preparations for the ICT4Peace High Level meeting at the UN scheduled 15 November 2007 hosted by the Ambassador of Switzerland to the UN in New York and under the Chairmanship of President Martti Ahtisaari.

The event included the participation of high-level representatives from key UN and civil society organisations. The Foundation with the help of the Swiss Mission and UN OCHA, UN DESA and UN GAID facilitated the participation of DPKO, WFP, UNDP, UNICEF, the UN CITO and high-level representatives of other agencies, and Ambassadors of key countries. The working lunch provided an opportunity to take stock of the on-going efforts to bring about greater coherence and effectiveness in crisis management thanks to the use of Information and Communications Technologies (ICTs). The preliminary conclusions of the UN OCHA's Global +5 Symposium "Information for Humanitarian Action" held in October 2007 was also presented and the event provided a valuable opportunity for an exchange of views on how the UN was coping with the challenge of providing a comprehensive response to crisis management with the help of ICTs. Discussions also touched upon the need to identify best practices, lessons learnt and challenges that needed to be addressed presently and in the future with regard to crisis management.

As a result of this meeting, UN ASG and CITO Soon-Hong Choi invited the Foundation to undertake a stocktaking exercise of UN Crisis Information Management Activities, Capabilities

and Best-Practice, of which this preliminary report is a part of. Separate yet complementary to the stocktaking exercise, expertise of the Foundation was sought in the Information and Communications Technology (ICT) Strategic Planning process conducted under the leadership of the UN CITO in February 2008. Questions for Executive Interview were sent to the Foundation to give its expert input into the exercise that was aimed at revamping the IT architecture of the UN system. The Foundation was the sole entity outside the UN system to be consulted as part of this exercise to revamp its IT / ICT infrastructure and operations.

All of the organizations in the Chief Executive's Board were invited to participate in the stocktaking exercise. This includes all of the UN Agencies, Funds and Programmes, the Departments of the UN Secretariat, and other members of the broader UN System. A follow-up review is being considered that would include Governments, International NGO's, businesses and national militaries.

How is a "crisis" defined in this report? What is the role of information management in times of crises?

Information Communications Technology (ICT) is changing the way we communicate with colleagues in our offices as well as in the field. Many of these tools and technologies already have millions of users, in all parts of the world. As a result, they are increasingly pivotal in the early detection of crisis, as well as how agencies respond to them and reach out to UN stakeholders and the international community at-large.

While Crisis Management (and Information Management) systems and tools are clearly critical for those in the UN System regularly engaged in humanitarian response, it is important that all UN organizations recognize the value of such systems for the prevention, early warning, mitigation of and recovery from crises. **The definition of a crisis adopted for the purpose of this stocktaking exercise is one that reflects the nature of those the UN has been involved in or called upon to respond to. As many recent situations have unfortunately illustrated, a significant natural disaster such as an earthquake, flood or Tsunami forces development agencies and all members of a Country team to respond; as does a suddenly intensifying complex emergency (witness Pakistan, Kenya, Kosovo); and global threats such as Avian Influenza or a Human Pandemic, all of which increasingly impact both Headquarters' and Country Offices.** In these situations, preparedness and interoperability are crucial to ensuring staff safety, business continuity, and the ability of the UN System to work with Member States to fulfil Peace and Security, Development and Human Rights mandates.

The authors argue that the UN deals with crises as more the rule than the exception. Crises as understood by the definition above could involve a number of scenarios. For example,

- Tsunami, a 9/11 situation or any other sudden onset natural or man-made disaster / crisis
- A peacekeeping and humanitarian situation, a complex political emergency
- A sudden political flare-up in a country
- Bombing of a UN compound

The end of this report flags some technologies, products, tools and online services that can be leveraged and adapted to suit the demands and challenges posed by each of these crises. We note that in many cases, it is often a combination of these crises that occur on the ground, requiring a robust framework of crisis information management planning at the HQ and field levels and communications between and within agencies involved in crisis response. To prefigure what was repeatedly noted by agencies who the Foundation interacted with, many noted the importance of actually putting into practice lessons already identified and learnt within the UN system to respond with crises, as opposed to having plans on paper with no real rigorous scenario based testing and implementation. The authors avoid a prescriptive approach. The range of tools, products and web services noted at the end of the report is current or emerging at the time this report was written. Rather than championing one or more of them, the authors instead propose

that the UN, in keeping with the UN CITO's presentation to the UN General Assembly[1], looks at adapting and leveraging the significant potential of any one or a combination of these technologies to strengthen and support crisis information management.

Preliminary studies show that the UN System has a number of Crisis Information Management "point solutions" that have emerged in response to particular events or needs, usually within individual organizations. Many of these solutions have produced excellent results and could be leveraged across the UN system in times of crisis. However, at present many tools, solutions and processes remain unknown and isolated from one another. Clearly, there is a need for increased strategic guidance, best-practice identification, and most critically, best-practice sharing. We believe this questionnaire represents an opportunity for the UN System as a whole to address, at a strategic level, issues of crisis information management and technology best practice and interoperability and will ultimately contribute positively to future crisis response efforts.

Crisis management is an imperfect science. It is impossible to accurately predict when and where a disaster will occur. Yet efforts towards drawing up national and regional crisis management strategies have encountered significant challenges. Studies show that the problem lies not with the use and adoption of technology *per se*, but with the more entrenched culture of institutional and individual resistance to information sharing in an open, timely and sustainable manner. Governments as well as local and transnational non-governmental institutions are both victims to and perpetrators of this culture of secrecy. In controlling the flow of information – what gets out where, to whom, how and when – these stakeholders directly influence disaster management planning and action. With little or no incentive to change their ham-fisted approach to information sharing and its twin corollaries - collaboration and coordination - key stakeholders including non-governmental agencies are culpable for significant lapses in information flows. Lessons identified have not been learnt. These gaps could lead to loss of lives and of precious resources.

Radio and television, mobile and fixed line telephones, technologies such as SMS and cell broadcasting, addressable satellite radios, Internet and the web as well as community radio have been identified as complementary mechanisms and media that can aid in disaster management in any country[2]. Software such as Microsoft Groove Virtual Office® have also been used in disaster management and point to the growing potential of collaboration tools able to direct urgent needs in the field to logistics hubs that are then able to route supplies accordingly.[3] Further, applied research and best practice in the region strongly suggests a range of technologies and media can be effectively used to create disaster management frameworks that are scalable, sustainable, redundant and resilient. For example, at a presentation held in 2007, researchers at the Sri Lanka based research organisation Lirneasia flagged technologies such as SMS, remote sensing, satellite

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[1] *Investing in Information and Communications Technology: Information and Communications Strategy for the United Nations Secretariat, Report of the Secretary General*, A/62/793, 9th April 2008

[2] *ICT in Disaster Management*, APDIP e-Note 16 / 2007, Chanuka Wattegama, http://www.apdip.net/apdipenote/16.pdf

[3] *After the deluge: Info Share's response to the tsunami*, Sanjana Hattotuwa, Pages 14 – 20, http://sanjanah.googlepages.com/IS_post_tsunami_thoughts.pdf.zip

radio and Common Alerting Protocols that significantly aided (village level) community disaster planning and response[4].

As noted in the ICT4Peace Foundation's 2005 report *Information and Communication Technology for Peace - The Role of ICT in Preventing, Responding to and Recovering from Conflict[5]*, initiatives such as the Center of Excellence in Disaster Management and Humanitarian Assistance (http://www.coe-dmha.org), a project mandated by the US Congress to improve the coordination and integration of the world's response to natural disasters, humanitarian crises and peace operations and FedNet (https://fednet.ifrc.org) by the International Federation of Red Cross and Red Crescent Societies are two examples of significant mechanisms that use ICTs in all aspects of disaster management, mitigation and response.

ICTs alone are of little or no help in addressing the practical realities of crisis management in countries with volatile socio-political and economic conditions. However, with the necessary *political will and strategic foresight*, they can be indispensible tools that strengthen disaster management. Fundamental amongst these is the need to meaningfully engender institutional and political leadership by public and private policy makers and local community leaders to further disaster management at all levels of polity and society. As Chanuka Wattegama avers in an UN APDIP primer published in 2007[6], "many governments do not see investment in ICT or even building up ICT-enabling infrastructure as priorities. The result invariably will be that ICT and technology in general take a backseat to presumed priorities such as ensuring good governance practices, providing healthcare facilities and addressing gender barriers… It should therefore be the responsibility of all concerned stakeholders, from governments to donor organizations, to give the right priority to ICT development and adoption. Only that will ultimately guarantee disaster risk reduction for all." The authors of this report concur with this observation. As Daniel Stauffacher notes[7], while there are many humanitarian relief efforts underway around the world, in most cases ICTs are not used effectively. The problem is more often one of leadership than of a lack of technology itself. The most significant challenge is making relief and peace groups want to leverage ICTs to better collaborate amongst themselves first and then with wider groups of stakeholders including most importantly the affected communities and grassroots.

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[4] http://www.lirneasia.net/2007/12/making-communities-disaster-resilient-at-gk3/#more-2016

[5] http://www.unicttaskforce.org/perl/documents.pl?id=1571

[6] *ICT for Disaster Management/Disaster Management* (ibid)

[7] http://money.cnn.com/2008/01/04/technology/kirkpatrick_peace.fortune/index.htm?section=money_latest

Final report and process leading up to it

The final report aims to provide a high-level overview of current and planned Crisis Information Management tools and practices across the participating organizations. Crisis Information Management includes Information Management, Knowledge Management and Information and Communication Technologies when used to improve effective and informed decision-making, action, resource-allocation, accountability and advocacy during early warning, crisis prevention, conflict, humanitarian response, peacebuilding and reconstruction.

This includes,

- Strategic frameworks in place within the system, both for internal, individual agency use, and Inter-agency interoperability, coordination and coherence.
- Technology available, hard and soft, with examples of current use, and best practices.
- Existing data and process standards, and practice, including intra-agency (internal) standards, and those currently used for inter-agency cooperation and data sharing within the UN System (both ad-hoc and formalized), and any broad international standards.
- Organization, leadership, and resources available, including focal points for improvements in interoperability
- Already identified issues and gaps.
- Examples of tools/standards/initiatives etc that participants wish to highlight
- Existing plans for future development of Crisis Information Management and ICT's.
- Conclusions and recommendations for actions to be taken to improve crisis information management capabilities and practices.

The Foundation with the support of the UN CITO has conducted a written survey and follow-up with direct interviews with participating organizations. The survey design, and outcomes, will be reviewed with a stakeholder group, comprising OCHA, DPKO, DESA, DSS, CEB Secretariat and members of the CEB as appropriate.

Participating organizations will nominate an appropriate focal point for the stocktaking, ideally working in an ongoing fashion with either crisis information management or program business continuity. The stocktaking is drawing on the ongoing and pre-existing internal review and best practices work of organizations and will not involve extensive internal reviews.

Summary of the discussions and responses

The representatives of the ICT4Peace Foundation informally met with the following persons over the course of February 2008 in New York:

Name	Designation	Organisation / Unit / Department
Alta Haggarty	Deputy Chief, Advocacy and Information Management Branch	OCHA
Gitanjali Sakuja		UNDP
Rashid Khalikov	Director	OCHA
Andre Dehondt	Information Management Coordinator	DSS
Kate McBride	Chief, Information Management Unit	DPKO IM Unit
Christina Goodness	Information Officer, DPKO IM Unit	DPKO IM Unit
Brian Gray	Senior Business Continuity Specialist	UNICEF
Patrick Gordon	IM Officer	OCHA
Choi Soon-Hong	UN CITO	EOSG
Kenneth Herman	Senior Advisor on IM Policy Coordination	CEB
Patrick Breard	Knowledge and Information Manager a.i.	UNDP BDP
Jaime Guevarra	ITS / Information Technology Support Unit	OCHA

The informal discussions centred on the need to focus on best practices and solutions to gaps and shortfalls in organisational responses to information management during crisis that individuals and organisation knew existed. Meetings were followed up by email discussions in some cases where the authors were given, in confidence, details of internal evaluations, best practices, software and hardware frameworks, interoperability standards and other content. A list of the documents and other content consulted by the authors can be found at the end of the report.

This interim report also reflects the comprehensive responses to the stocktaking questionnaire given by the following:

Name	Designation	Organisation / Unit / Department
Kate McBride	Chief, Information Management Unit	DPKO/OUSG/IMU
Janthomas Hiemstra	UNDP SURGE Project Manager	Bureau for Crisis Prevention and Recovery, Programme and Operations Support Cluster, DC1 New York
Anders Norsker	Chief IS Department	ITU
Stefan Zutt	Director, Division of Information Technology Solutions and Services (ITSS)	UNICEF, New York

The correlation of data and resulting analysis in this interim report is framed by the input provided by these agencies and individuals. It is incomplete, in that key agencies involved in crisis response and information management did not respond in time for inclusion of their ideas in this report. A deeper and broader understanding of the UN's crisis information management capacities and best practices would require a wider and more concerted effort on the part of the agencies and the CEB to elicit these responses vital for shared learning.

Already identified issues and gaps

To face already recognized challenges there are a number of recent initiatives directly and indirectly improving the UN System's Crisis IM capability – notably the Inter-Agency Standing Committee's (IASC) Cluster Process, ongoing Pandemic preparedness, a recent UNOCHA Information Management review and work by DPKO's Best Practices Unit and its creation of an IM unit. There is a need for increased strategic guidance, best-practice identification, and critically, best-practice sharing.

Greater coherence

All meetings confirmed a greater emphasis on more pervasive, effective and sustainable communications within and between agencies (horizontal as well as vertical) as a standard operating procedure, leading to a culture of transparency and inter-personal trust mechanisms that could be quickly leveraged to support crisis response. Respondents stressed that to engineer crisis information management systems wholly separate to the diurnal communications and information sharing needs and systems within and between agencies, at the headquarters, country office and field levels, would be counter-productive and perhaps even detrimental.

On the one hand, agencies such as OCHA said that Information and Communications Technologies (ICTs) had enabled staff members to design and develop "point solutions" - ad hoc, needs driven products that had sprung up at various levels across the organisations in a highly federated manner. Often, staff members working alone designed, developed and maintained most of these "point solutions". Some were good, some bad and overall few were based on interoperable data standards. Ironically, this meant that the most successful "point solutions" (or mash-ups) were also the greatest information silos with no easy way to link to information within or to get information out to other systems in a timely and sustainable manner. Questions were also raised about the sustainability of "point solutions" once the crisis had passed and individuals responsible for them had moved on to other duties and responsibilities. The lack of any institutional learning and memory of *ad hoc* solutions was seen as a growing problem that needed to be addressed. Some called for a balance between standards and structures and the freedom to experiment with mash-ups / point solutions, with the best of breed solutions feeding into organisational KM and IM best practices. However, some also pointed to the significant difficulties associated with capturing peer-to-peer information and knowledge transfers enabled by these point solutions.

A community orientation for KM and IM strategies was also underscored at some of the meetings, with some seeing great value in opening up knowledge resources, best practices, case studies and lessons identified to a wider public including affected communities and beneficiaries on the ground.

Interoperability

A good working understanding of interoperability for the purposes of this report comes from renowned computer scientist Jon Postel. In 1981, he formulated what's known as Postel's Law: "Be conservative in what you do; be liberal in what you accept from others." Originally intended to foster "interoperability," the ability of multiple computer systems to understand one another, Postel's Law is now recognized as having wider applications. To build a robust global network with no central authority, engineers were encouraged to write code that could "speak" as clearly as possible yet "listen" to the widest possible range of other speakers, including those who do not conform perfectly to the rules of the road. The human equivalent of this robustness is a combination of eloquence and tolerance — the spirit of good conversation.

Interoperability was very high on the agenda of everyone who responded to the questionnaire and those Foundation representatives met in New York. While the specific standards of interoperability were contested, what was not was the need for coherent, system wide, open information exchange standards across the UN at all agencies, in all stages of crisis information management and at all levels. Some agencies underscored the need for high level leadership in regard as well as clear policies and guidelines for all levels of staff at HQ and field level to comply with. There was an understanding that even though some agencies had operational data in standards that were interoperable with the systems and tools within the agency, the lack of any institutional interoperability guidelines for crisis information management impeded timely and sustained sharing of information. The plethora of systems, each in and of themselves well suited for a specific task, yet each what the authors would term an "information black-hole" had resulted in years of operational experience, best practice, lessons identified and learnt to be locked up within agencies, systems, individual PCs and products. The resulting knowledge scatter was acknowledged as being detrimental to, *inter alia*, crisis response.

Management of expectations

The management of personal expectations was another area that kept cropping up in discussions. Key in this regard was the need to clearly define information management frameworks and tools to senior management, whose buy in and support were seen as essential to any IM and KM development over the long term. Others echoed this and repeatedly called for champions of KM and IM within agencies who needed to be recognised and supported by the UN. OCHA went on to suggest the need for strong governance of IM and KM at the UN with requisite organisational policies that promoted standards, interoperability, collaboration, coordination and security. On the other hand, many participants felt that a wholly HQ centric KM and IM architecture would not get the necessary buy-in from the field level, which they said were responsible for generating the most pertinent information. The ownership of the responsibility to share information and knowledge they felt was key in the long-term success of any KM and IM initiative. Some went as far as to suggest the most successful KM and IM systems would be those that were able to convince field-level staff that the systems primarily benefitted them.

Information security

The issue of information security in KM and IM frameworks brought a number of varied responses. On the one hand, everyone agreed on the need for adequate protection from attempts to siphon information and knowledge from UN agencies. Fears of unauthorised access to KM and IM systems were high on the radar of IT administrators as well as high-level staff in agencies. On the other hand, more staff than IT administrators were supportive of the introduction and standardisation of technologies such as Peer-to-Peer (P2P) applications that helped them communicate effectively with colleagues and partners outside the UN. There was a significant variance in agency approaches to this – some operated on lock-down mode with rigid, inflexible systems that were centrally managed and not at all open to new technologies such as VOIP. New media and ICTs were often seen as bandwidth hogs and serious security threats. Other agencies were very open to VOIP and collaboration platforms that ran on a P2P architecture and had managed to create robust IT strategies around the need for staff to be able to effectively communicate using off the shelf collaboration and communications tools. Staff at some agencies said they covertly used unauthorised programmes with colleagues simply because in-house solutions were inadequate, ineffective and too cumbersome. Others said that while they would like to, they could not since they did not want to be held responsible for network intrusions that could be blamed on their use of new technologies, even if there was little or no connection between the two. Some IT administrators said that they were aware of staff within agencies using unauthorised technologies such as VOIP to communicate, but could not support them institutionally because of rigid IT policies. While they were privately very supportive of these communications frameworks, archaic institutional IT policies took precedence. Accordingly, though many other transnational NGOs could use and adapt new technologies to significantly augment KM and IM frameworks and strategies (and thereby their effectiveness in crisis prevention, mitigation and response), some IT administrators the UN was hampered in this respect by its adherence to IT policies and standards that had not evolved at the same pace as ICTs had.

Network resilience

Redundancy and strategic complementarity were concepts suggested in some meetings as those upon which the architectonics of KM and IM strategies could leverage. Redundancy implied the non-reliance of KM and IM mechanisms on any one system, media or channel ensuring that, much like the Internet, the failure of one node did not bring down the entire system. Strategic complementarity suggests the design and development of programmes and frameworks able to exchange information with each other easily, transparently and in a sustainable manner.

Robust KM and IM policies

Participants in the discussions also emphasised the urgency of robust KM and IM policies, frameworks, standards and practices that they felt the UN's ability to be a meaningful

stakeholder in crisis management to rest upon. While deeply supportive of processes to revamp and harmonise IT infrastructure, procurement and communications architectures in the UN writ large, participants felt that the emphasis on strengthening KM and IM needed to occur in parallel.

Though those represented in it were protective of the mechanism, some participants expressed their frustration with the IASC, which they felt was a powerful idea that nevertheless had significant shortcomings in its implementation. Inadequate cohesion and collaboration within the IASC and sector leads was seen as factors, amongst others, that vitiated the potential of the IASC. The lack of an adequate and sustained emphasis on KM and IM within IASC members also seen as an impediment.

The essential disconnect between the best-laid plans and the actual commitment to KM and IM was highlighted in some meetings. Some participants said that pandemic preparedness and contingency planning has resulted in crisis (information) management structures limited to paper.

Some meetings flagged the point that instead of always developing new KM and IM mechanisms, it would be useful to provide staff with training and incentives to use existing tools and mechanisms in this regard. It was suggested that there was a big gap between the full potential of some KM and IM systems today, the degree to which staff were aware of this potential and the extent to what staff actually used the systems.

The authors were somewhat surprised to note that some relatively cash rich UN agencies were the most resistant to the development of KM and IM strategies, tools and frameworks, perhaps because there was little incentive to spend money in the bank on processes they felt had little demonstrable impact. Conversely, the lack of funding for KM / IM initiatives and processes for some agencies was a serious problem. They felt that the lack of institutional, human and financial support exacerbated the problem of highly decentralised and disconnected information silos, which no one person located in the agency could access on-demand, with access also hostage to issues such Internet connectivity. The creation of seamless ways that information could be exchanged between all levels and related agencies was as urgent and vital for the work of many the authors spoke with.

Infrastructural challenges at the UN headquarters

The physical infrastructure of the UN Secretariat was flagged by some as inimical to reliable crisis information management systems in particular and diurnal KM / IM processes in general. One example given was scheduled maintenance of the Secretariat that shut down infrastructure and several sections of the building on the weekend of Kosovo's declaration of independence. Unreliable and slow connectivity, power outages, building maintenance and grossly inadequate or inappropriate IT infrastructure, some felt, severely vitiated the ability of agencies located in the UN Secretariat respond effectively to crises and support mission critical KM and IM architectures. There was also the point made that for many development organisations, the HQ was in fact a support structure for the work conducted in the field. While this would not be the

case with agencies such a DESA and DPA, many others felt that the lack of HQ KM / IM awareness and support hindered vital field based processes integral to the mission of the agency. On the other hand, many participants suggested the need to get the UN more interested in and supportive of KM / IM mechanisms as opposed to just IT infrastructure development. Too often, they said, the UN Secretariat thought of KM / IM primarily from the lens of providing equipment, software and IT services with no meaningful emphasis on change management and the introduction of knowledge and information management tools based on user needs, instead of technology that drove users to communicate in pre-defined ways that were inflexible, unappealing, not intuitive and unsustainable. This was also echoed in the fear of some we talked to that the emphasis on ERP and indeed the time it would take to institutionalise ERP mechanisms at the UN would vitiate the resources necessary to mainstream KM and IM.

The significant variance of crisis information management practices and the challenges that arise on account of it

There were some other points worth noting. Although agencies agreed on the need for common data standards and procedures for timely and sustained data entry, it was noted that the UN does not have a vital records archival programme across the institution. Data integrity and long-term storage was left up to individual agencies. This was seen to be both positive and negative. On the positive side, some agencies said that they were free to use and leverage best of breed data archival, storage and retrieval systems to support their work. On the other hand, they recognised that the lack of institutional coherence meant that the archives could not on accessed be opened by those who did not have special software / hardware. Agencies celebrated their agility in determining their own archival solutions but wanted some guidelines that could bind them to a larger institutional memory.

The responses from each agency suggested that policies and procedures were in place, at least on paper, to facilitate information sharing during crises with (member state) governments and other actors outside the UN including the general public. Yet there was significant variance on this. Some agencies felt that the interfaces with the general public and collaboration with actors outside the UN were, at best, of secondary importance. Accordingly, information and knowledge management systems were inward looking, with little or no hooks to the outside world. Other agencies said that their systems, by nature of their work, were designed to facilitate collaboration on-demand with non-UN stakeholders.

There seems to be a move in many agencies (though it is not coordinated and is happening independently of each other) to move towards what's called "unified communications". This suggests, at its broadest, a way in which all communications within an agency, at all levels and in all locations (HQ as well as field) is simplified, standards based, interoperable, resilient to outages and breakdowns and leverages mobile devices as well as PCs and a range of IP based technologies that operate over the Internet and web. Accordingly, voice, email, secure fax and videoconferencing services and data services are now in the process of being streamlined, with redundancy built in so that the failure of one transport does not lead to a domino effect and

result in the complete breakdown in all communications. It is obvious that the benefits of such a unified communications architecture will be, *inter alia*, in the ability of agencies to better collect, analyse and respond to information on crises.

The variance continued with the use of metadata in each agency to tag outputs and other information (documents, reports et al). Some agencies had developed what can be called highly agency-centric "folksonomies" – that is, ways of tagging documents that used acronyms and an operational language based on the agency's primary foci. This meant that staff within the agency (at HQ and field levels) could access and retrieve information easily. But the KM / IM system, when opened up to a larger group outside the agency, was less effective, since the meta-tags did not necessarily appear to be self-explanatory to those outside each agency. Each agency sometimes had materials / documentation in standard and approved format for easy exchange with enterprise systems and with field partners. But this did not necessarily translate into more cohesive inter-agency interoperability and knowledge sharing.

Inside looking out vs. outside looking in

Unsurprisingly, a number of the responses to the questionnaire chose to highlight the initiatives either already in operation or soon would be in each agency. From the perspective of the agency concerned, the greater challenges and obstacles towards crisis information management lay with the UN writ large or with other partners. The need for collaboration based on open data standards as well as interoperability was not at all contested. What was flagged was the need for everyone to be on the same page – agencies that were ahead of the curve were frustrated by the practices and policies of those who were "behind" them. Agencies that for whatever reason felt they were being treated as "inferior" did not have any incentive to adopt best practices of other agencies who were more evolved in their IM / KM strategies. This was a vicious cycle that vitiated the broader appeal, awareness and impact of best practices as well as tools and technologies that could benefit everyone in crisis information response, preparedness and mitigation. This is particularly evident in the availability of best practices, lessons learnt and lessons identified within each agency, but no real emphasis on a single repository (an expert system) that could collate and semantically connect similar resources to give agencies and individual members of staff guidance on how best to respond to crises. Existing portals for this purpose, by some accounts, were unwieldy and though useful for a particular community of practice, agency, collective or group, were in design and application non-interoperable – which meant that information sharing was problematic and knowledge creation vitiated.

Information overload

It was evident to the authors that knowledge was the victim of information overload. Emails, IM's, portals, websites, communities of practice, intranets, extranets all provided different means of cataloguing and accessing information, yet few were aware of the existence of other similar platforms, services, tools and frameworks. This meant duplication, information scatter and a

distinct fatigue (both individual and institutional) when dealing with IM and KM. This in turn led to high levels of resistance and indeed, sometimes even outright cynicism when the issue of KM and IM reform to better deal with crises was mooted. The response to the questionnaire, the authors noticed, was a mixture of cautious optimism based on the desire to make IM and KM work better (or as they should) and one of pessimism, because of many initiatives in the past at many levels, led by many agencies, to bring about greater cohesion and coherence but had failed.

Beyond the technical / technological dimensions of crisis information management therefore, the authors felt that there needed to be an emphasis (as noted earlier in this report) on the management of expectations of agencies and users at the UN. One concrete suggestion would be to publish, in layman terms, the capacities and functionalities of all the systems used by an agency in crisis response, prevention and mitigation – so that all staff members know, or have access to the knowledge of what works, where, why, when, with whom and how.

Significant variance of human resources, staff transience

Many agencies noted the lack of dedicated staff to deal with crisis information management. Plans for information management were hostage to paid deadline and the added burden of responsibility during sudden onset emergencies and crises. This meant that institutional learning occurred irregularly at best, with ad hoc practices and on-demand ICT tools taking precedence over a more robust, strategic and iterative development of tools and services to strengthen crisis information management. Staff transience without feedback mechanisms and knowledge capture mechanisms meant that learning migrated with staff relocation, leaving institutions suddenly bereft of key personnel who managed crisis information. Over time, this meant scattered information pools across the UN system. Staff lists, locations, external contacts, handover repositories for staff rotations *et cetera* were often difficult to find and rarely updated. Basic organisational information was hard to source, with information scatter vitiating severely efforts to deal with the challenges posed by crises to the UN system as well as individual agencies. More work is needed to secure a robust understanding of what staff management systems exist and also locate further development of such systems with initiatives already undertaken to develop single sign-on, inter-agency portals, UN system wide intranets, HQ and field VPNs and other technologies and services that seamlessly allow information from disparate sources and databases to be readily accessible from a single portal or gateway.

A few examples of best practices and use of ICTs

Readers will recall that this is an interim report and that what is enumerated below is not reflective of what will be included in the final report when more agencies have responded to our questionnaire.

- OCHA mentioned some Humanitarian Information Centres, some field office IM frameworks and work conducted in the West Bank and Gaza as instances where the organisation felt the most pertinent best practices could be gleaned from. They also mentioned the response to the Pakistan earthquake as another example where inter-agency collaboration, KM and IM were leveraged effectively in the emergency response.

- The example of leveraging technologies such as Google Groups, as had been done in Uganda by OCHA, was also mentioned with the caveat that it was no magical replacement for a robust understanding of and approach to information collection, archival and dissemination within an agency. Whereas Google Groups had enabled rapid exchange of information sans the red tape and delays associated with setting up UN information sharing architectures, the nature of Google Groups coupled with the lack of a commonly accepted taxonomy for the classification of information soon led to a situation where the agency did not know what was in the collaboration spaces. OCHA nevertheless proposed the use of Google Groups as a powerful way in which groups of individuals (within and outside the UN) could be quickly, effectively and easily brought together to respond to certain needs.

- The Global Disaster Alert and Coordination System development by UN OCHA provides near real-time alerts about natural disasters around the world and tools to facilitate response coordination, including media monitoring, map catalogues and Virtual On-Site Operations Coordination Centre. The system provides the following capabilities[8]:

  1. Disaster coordination - the main purpose of the Virtual OSOCC is to facilitate decision-making for international response to major disasters though real-time information exchange by all actors of the international disaster response community.
  2. E-mail and SMS alerts - All Virtual OSOCC users have the opportunity to create e-mail and SMS messages that are sent automatically to subscribers to inform about critical situation updates during disaster response operations.
  3. Mobilisation - through the Virtual OSOCC the United Nations Assessment and Coordination Team (UNDAC) can be mobilised effectively through on-line workflow procedures including SMS and e-mail.

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[8] See http://ocha.unog.ch/virtualosocc/(zsaen4qclwhlmr555nyk4u55)/VOLogin.aspx

4. Training and meetings - the Virtual OSOCC facilitates management of UNDAC, INSARAG and UN-CMCoord training, meetings and workshops through e-mail notification, on-line participant registration and discussion of background material.
5. Discussion forum - the Virtual OSOCC provides its users with a discussion forum for any area of interest, including information exchange on best practice and lessons-learned after disaster response operations.
6. Photo library - the Virtual OSOCC includes a photo library where users can share disaster and other related photos as documentation or presentation material or souvenir of a joint mission.

- Though the sole focus is not on crisis information management, the use of collaborative technology by the UN Knowledge Sharing Project led by UNDP's Partnerships Bureau holds promise as an approach that can be adapted and leveraged by all entities across the UN system. Through technology such as Google Apps or Cisco's WebEx (the Project is currently evaluating the market) the KS Project seeks to produce collaborative workspaces enabling participants across dispersed locations to interact with each other just as inside a single entity overcoming space and time differentials. The workspaces are unique online venues, which takes the community of practice concept and pairs it with wiki tools that allows peers to exchange ideas, discuss and consult and enable each to participate equally and irrespective of their organizational affiliation. The KS Project further provisions secure access to each UN entity's intranet developing data connectors that would mine each entity's knowledge base and areas of specialized competence residing on the intranet and present it to the user with no significant migration from existing software and hardware. The UN KS Project offers each participating agency the opportunity to showcase its expertise, experience and capacities to deliver coordinated development and humanitarian (including crisis management) assistance at the country level.

- Country portals such as those development by Humanitarian Information Centres (HICs), OCHA's Information Management Toolbox[9] and the Working Group on Emergency Telecommunications (WGET), which also involves OCHA are useful platforms, mechanisms and existing nodes of significant experience and information that can be leveraged and adapted for a more system-wide implementation of crisis information management capabilities. The Working Group on Emergency Telecommunications (WGET) is a forum to increase the effectiveness of its participants related to regulatory, operational and technical aspects of telecommunications for disaster relief. WGET's Terms of Reference include[10]:

1. Facilitating the promotion and implementation of The Tampere Convention on the Provision of Telecommunication Resources for Disaster Mitigation and Relief Operations;

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[9] http://www.humanitarianinfo.org/IMToolBox/index.html

[10] http://www.reliefweb.int/telecoms/intro/wget.html

2. Encouraging measures applying the ITU resolutions and recommendations relative to telecommunications for disaster relief;

3. Exchanging and disseminating information concerning emergency telecommunications;

4. Promoting cooperation and interoperability of telecommunications with and in the field.

Institutional participants in the WGET include international, governmental and non-governmental humanitarian organizations with an interest in emergency telecommunications. Individuals with an interest in emergency telecommunications may be invited to participate in the work of the WGET.

- A few participants said that given the institutional resources that had gone into the development of the UN's intranet solution called iSeek, it was an obvious candidate to be strengthened and leveraged for crisis information management purposes.

- HEWS (Humanitarian Early Warning Service - http://www.hewsweb.org/home_page/default.asp) and EPWeb (http://epweb.wfp.org) of the World Food Programme in particular provide powerful case studies on how information portals with near real time information updates from the field can help in crisis information management. EPWeb is an intranet based emergency preparedness and response information management system and provides a portal for WFP staff to quickly and easily access and share the information they need to be prepared and to respond to a crisis. EPWeb has a fresh, intuitive look and feel with truly useful information aggregated into a single place. It is limited by access controls but with information updated in near real time from the field and the in-built capability through templates to quickly create a comprehensive information map for a crisis.

- DPKO's Digital Dashboard concept, under development, will be a single portal for accessing in-depth, up to date information pertinent to the operations of the agency. Current development includes full GIS integration via an ESRI based front-end and just in time (JIT) information from the field. All information pertinent to DPKO operations would be on-screen and readily accessible - much like the EPWeb. Through the digital dashboard, DPKO wanted to realise, *inter alia*, standards in data sharing, storage, retrieval, dissemination and exchange for DPKO operations at HQ and field levels.

- The KM network of the UNDP BDP based on intranets that can scale up to support thousands of staff globally and are centred around "practice workspaces" (basically collaborative workspaces, including online discussion groups and file sharing / storage mechanisms) and email based news updates, knowledge sharing. Linked to this was the development of extranets based on the need to collaborate and share knowledge on allied interests and shared goals with other UN agencies. The first of these would be between the HIV / AIDS programmes at UNDP and UNAIDS, and there's also one in the works with UNEP. The first phase of the KS Project or the 'federation' of identity enables the portability of identity information across otherwise autonomous security domains. The ultimate goal of this phase is to enable users of one domain (i.e., UNFPA) to securely access protected data or systems of

another domain (i.e., ILO, UNDP, UNOPS) and vice versa without the need for redundant user administration. By integrating applications across resident and non-resident agencies, regional commissions and all other UN entities across the world, staff of the UN system can work across autonomous entities seamlessly as if they were part of the same security domain, while in fact the domains remain largely independent. Once provisioned access has been established, the second phase of the Project deploys a search engine designed to reach in, out and across the traditional information and communication lines delivering a plethora of knowledge at your fingertips. The inter-agency search engine acts as an information retrieval system: (1) transforming a search query and broadcasts it to the protected web resources of each agency with the appropriate syntax, (2) merging the results collected from the resources, (3) presenting them in a succinct and unified format with minimal duplication, and (4) providing a means, performed either automatically or by the authenticated user, to sort the merged result set. Though Google Apps was looked at initially the project is now looking at alternatives such as WebEx Connect from Cisco.

- Partly with the emphasis on revamping its dated website and IM / KM architecture, the DSS will use off the shelf products and decentralised software wherever possible. These range from the use of Google Maps, Groove Virtual Office, Skype and Moodle (including Moodle archives for institutional memory) to E-Room collaboration platforms. The idea is to give on-demand access to the knowledge and information resources at DSS to agencies within the UN as well as vetted partners and stakeholders outside the UN, which includes "offline" access – KM / IM systems that are not rendered wholly inoperable because of limited or no Internet connectivity. Aspects and recommendations of the Brahimi report released in 2008 will also feed into the design of information sharing systems.

- UNICEF's DevInfo is a powerful database system that monitors progress towards the Millennium Development Goals. It generates tables, graphs and maps for reports and presentations. DevInfo has been developed in cooperation with the UN system and has been adapted from UNICEF ChildInfo technology. The database maintains indicators by time periods and geographic areas to monitor commitments to sustained human development. What is important here is to recognise the value of such a database in eliciting baseline information for a particular country or region, vital in the first hours and days of crisis response. The Foundation at the time of writing this report was unable to ascertain whether any agency mandated with crisis information management – e.g. UN OCHA – accessed and leveraged DevInfo in their work or had developed thin-client applications (lightweight, network and operating system agnostic front ends to DevInfo) to facilitate access to the information in the database to a larger group of stakeholders outside the UN.

Use of ICT tools and mechanisms: Narrative

ICTs / Mechanisms / Services	Usage
Situation Reports	Sitreps are used by all those who responded for purposes of information gathering and situational awareness, pre-deployment planning and preparedness as well as on-going analyses. Some agencies said that SitReps were used to share Information internally and to communicate with Governments / Donors.
E-mail Distribution Lists (LISTSERVS)	Used by most agencies to inform partners and stakeholders without and outside the UN system. Email distribution lists exist for information dissemination in support of coordination within different groups by various sectors as well as for cross-sectoral coordination. For major emergencies involving significant HQ and field office support, task forces are identified and form the distribution list. However, there does not appear to be any centrally managed LISTSERV system at the UN, shared lists or a single repository of all LISTSERV groups. Each agency manages their own LISTSERV that in turn run on proprietary LISTSERV management platforms. Only one agency mentioned that even within the agency, shared address books were used to create LISTSERVS.
Intranets (e.g. E-Room)	Intranets are common and used for intra-agency collaboration, planning, analysis as well as information sharing. Intranets were also used to keep field level staff in touch with colleagues in NY, Rome and Geneva. Continuous staff education is also a feature of some intranets.
Extranets	Some agencies said that extranets were used to promulgate their work in the early recovery phase, suggesting that they were used as an interface to the information needs of local NGOs and other partners.

| ICTs / Mechanisms / Services	Usage
	Some agencies said that they used extranets to communicate and share information with UN member state (representatives).
Reliefweb	Agencies were aware of and to varying degrees used Reliefweb to stay informed of humanitarian situations across the world and general news as well as to post staff vacancies to a wider audience. As the global hub for time-critical humanitarian information on Complex Emergencies and Natural Disasters, many (though not all) agencies followed updates on this site regularly.
News websites (e.g. CNN, BBC, Al Jazeera, Technorati, Yahoo, MSN)	Agencies followed major cable news services as well as wire reports for information and news on crises. Few responded that they specifically followed only web-based media such as Technorati or web news aggregation portals such as Google News. However, a few agencies are well ahead of the curve and use sophisticated news scanning and dissemination tools that leverage web based media as well as RSS feeds to inform, prepare and help respond to crises.
Online and free email services (e.g. Gmail, Yahoo, Hotmail)	Although all primary emails remained with UN domains, many staff members had two or three other emails hosted on at least one of these providers. In some crises, the greater reliability and ease of access to these services over the UN hosted emails resulted in their greater use for mission critical communications. That said, the underlying email architecture shows variance – some agencies have adopted architectures (akin to those used by Google / Microsoft) far more resilient to disruptions and local network outages than others, resulting in a higher level of service and reliability. Some agencies said that the ease through which local stakeholders could gain access to free email service meant that short-term collaboration and communication between the UN and local agencies was facilitated by the use of free email services. Other agencies as a matter of policy discouraged members of staff to use emails outside the UN / agency

ICTs / Mechanisms / Services	Usage
	domain.
Social networking sites (e.g. Facebook, Myspace, LinkedIn)	Some agencies said that though the potential for networking exists through Facebook, it was underused because of significant concerns of privacy. On the other hand, some agencies said that certain manifestations of Communities of Practice fell into this category, although they are not used for socialisation. Rather they are used as forums to consult upon policy, share practice tips and obtain help from colleagues.
Social travel sites (e.g. Dopplr)	Many agencies responded by saying they had their own travel service or relied on the UN to coordinate travel arrangements. However, not a single agency was aware of or chose to leverage the social aspect of sites such as Dopplr, where users could leave helpful notes, pointers and constant pointers on ground conditions and other travel related information for each other.
Online photo sharing (e.g. Flickr)	Agencies said that there was no useful purpose foreseen for the use of online photo sharing sites to support / strengthen their operations. One agency said that an in-house photo database is available for members of staff.
Online / On demand video (e.g. YouTube, Vimeo, Veoh)	Agencies said that there was no useful purpose foreseen for the use of online video to support / strengthen their operations. On the other hand, one agency said that they had comprehensive in-house hosting of audio/video clips, NewsMarket service for broadcast quality clips, YouTube and iTunes for vodcasting.
Web based one to many messaging (e.g. Twitter)	Some agencies said they used Skype for IM. Respondents seemed to be largely unaware of the benefits of web based one to many messaging services to augment their crisis information management.
Wimax / Wifi / Wireless broadband	Agencies tasked with emergency telecoms provisioning were aware of and tended to use wireless broadband solutions more than others. Other agencies used these technologies for tele-medicine and emergency telecoms over VOIP.
Free online storage (e.g.	Agencies said that there was no useful purpose foreseen for the use of free online storage to support / strengthen

ICTs / Mechanisms / Services	Usage
www.box.net)	their operations. Others said that the use of these services was discouraged as it was perceived to be insecure.
PC based synchronous and asynchronous collaboration tools (e.g. Microsoft Groove, Lotus Notes)	Some agencies used Microsoft Groove for intra-agency team collaboration (and on occasion inter-agency work), but the lack of wider adoption across the UN had resulted in information silos. Other agencies said that these tools were used in an ad hoc basis to support short-term team projects. There is a movement of many agencies towards Microsoft back-end supported and driven architectures. For example, Microsoft SharePoint technologies were used or contemplated by many agencies to enable teams to connect to agency networks on-demand.
Web based synchronous and asynchronous collaboration tools (Google Docs, Adobe Share beta)	There is significant variance in the responses on the understanding and use of web based asynchronous collaboration tools. Some agencies disseminated information through services like Google Groups and yet discouraged members of staff from using other services such as Google Docs because of perceived security risks. At least one agency was revamping its entire knowledge management system by leveraging Google Docs and Google Apps technologies.
Enterprise search tools (e.g. Google Desktop, MSN Desktop search)	Many agencies responded by saying they used Google web search, but few were aware of the desktop clients that could be installed to help information retrieval locally and / or across the organisation's intranet.
Mobile devices (including mobile phones)	Every single agency and member of staff had at least one mobile. Many US staff members were on Blackberry's though custom applications specifically designed to leverage the Blackberry's advanced voice and data features for crisis information management had not yet been developed. Quad band mobile phones were rare and individual ownership of satellite phones (e.g. Thuraya handsets) even more so. Some agencies however gave members of staff access to these devices during the onset or response to a crisis.

ICTs / Mechanisms / Services	Usage
SMS	Responses varied on the use of SMS. Some suggested that it was used informally as a way of keeping colleagues appraised of work, scheduling and collaboration whereas some others had used it for mission critical work in crisis management, particularly for situation reports from the ground when other means of communications were dead.
	One agency said that they have an enterprise level SMS system – during a crisis, text messages could be sent to all concerned.
Maps and GIS (e.g. Google Maps, Microsoft Earth)	Respondents said that maps / GIS was used widely in crisis rooms. There was little or no indication that Google Maps / Google Earth or comparable tools and products were mainstreamed into the coordination, collaboration and day-to-day work of most agencies.
	Exceptions in this regard were some agencies that had sophisticated information dashboards with contextual and situation awareness augmented through the use of Google Maps technology.
	One agency used Google Maps to provide Early Warning / Early Action information on its website.
Mashups (e.g. Ushahidi, Crisis in Darfur by US Holocaust Museum)	Some agencies were in the process of upgrading or designing "dashboards" - a single, continuously updated portal for agency staff at the HQ and field levels to avail themselves of critical information. Others said that the implementation of social software is still in the investigative stage and called for the benefits and risks of using such platform in a business environment to be carefully analysed.
Wikis (e.g. Wikipedia)	Few agencies were aware of or used wikis. One agency however said that wikis were being tested for implementation / integration into their main websites.
Blogs (e.g. www.humanitarian.info)	Some agencies used blogs to disseminate information internally (within an agency) though few said that they looked concertedly at the blogosphere as a source of information on emergent and existing crises. At least one agency responded that they were looking at the

ICTs / Mechanisms / Services	Usage
	integration of blogs into their website in the future.
Podcasts	Only two agencies said that podcasts were produced and made available (through Apple's iTunes and / or through IRIN).
RSS / news feeds (e.g. new publications by your organisation, situation updates)	Only a single agency said that their websites published RSS feeds (or knew enough of the technology to answer in the affirmative).
Citizen Journalism (e.g. http://www.globalvoicesonline.org)	Not a single agency said they were looking at or had any intention to leverage citizen journalism in crisis information responses / management.
Voice over IP (e.g. Skype)	Skype was mainstreamed into the operations of a few agencies whereas others did not allow it on their intra-agency networks. Some agencies that use it are able to keep in touch with colleagues in the field for little or no cost and with higher frequency. Others pointed to the encryption of Skype and the added level of security for sensitive and highly confidential information. Others however said that agency policies currently forbid the use of free VoIP tools like Skype and Yahoo Messenger on the corporate network infrastructure. Such peer-to-peer applications are discourage in view of the security risks, administration challenges and the inefficient use of the bandwidth in offices with limited connectivity.
Instant Messaging (e.g. MSN Messenger, Yahoo Messenger, Skype)	Some agencies said that IM tools were in the process of being deployed. Some agencies used proprietary systems that were in the process of being phased out in favour of unified communications that were seamless, presence aware and worked across PC's and mobile devices.

Use of ICT tools and mechanisms: Graph
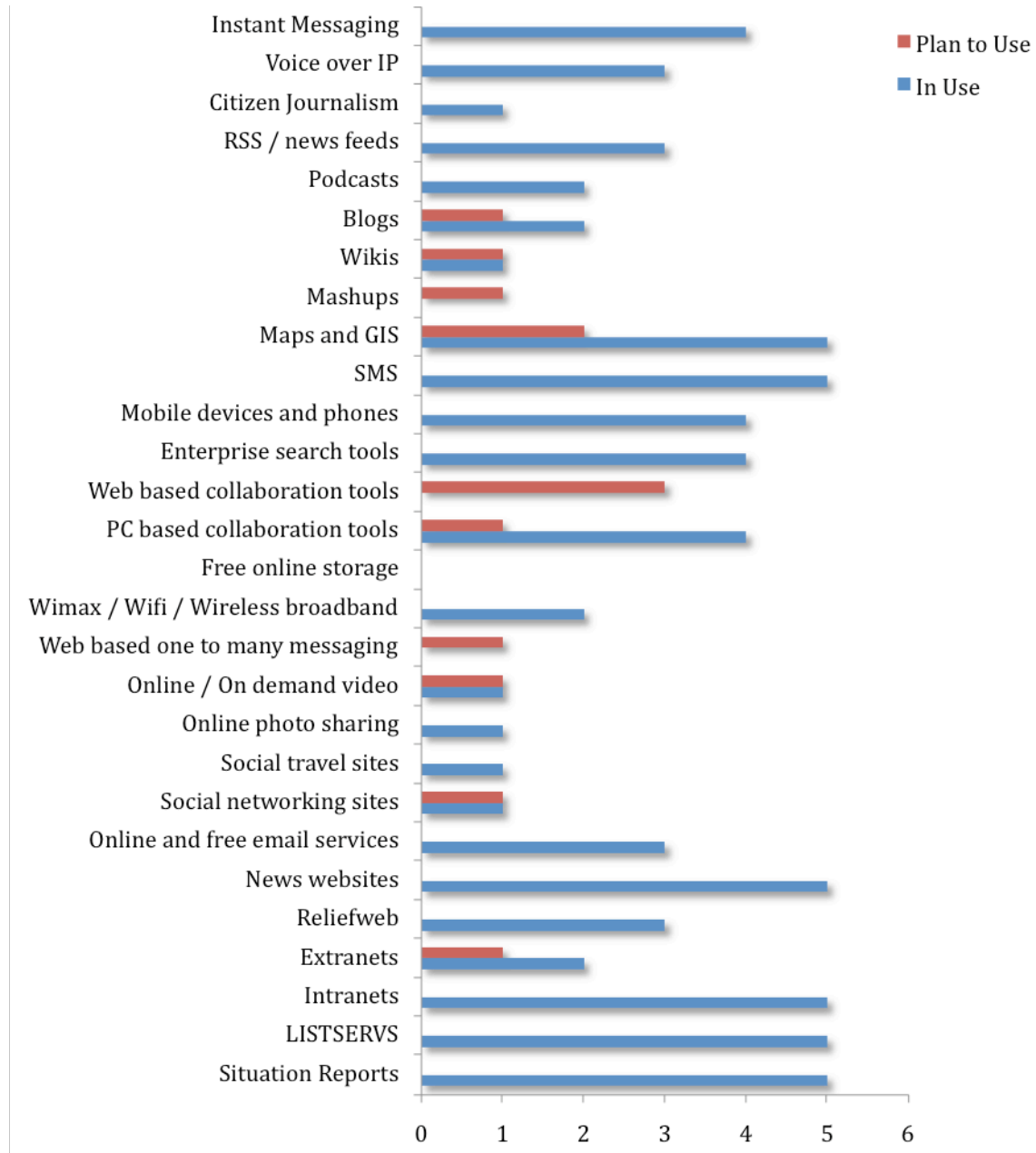
Recommendations and ideas to strengthen best practices

The authors strongly feel it is timely for the UN System as a whole to address, at a strategic level, issues of crisis information management and technology best practice and interoperability – to identify current knowledge of best practice, capabilities and challenges, and plot a way forward to improved response.

Respondents in the discussions felt that IM and KM strategies, frameworks and technologies were constantly evolving as well, making it important to create **policies in the UN robust enough to handle current needs but flexible enough to accommodate change**. Others noted the importance of using **appropriate technology** – hardware and software solutions – that could leverage existing (embryonic) IM / KM mechanisms and render them more meaningful and effective. This includes the **need to develop of mechanisms and tools that work in austere conditions**. Crisis information systems need to be developed that work robustly and are "good enough" to work in conditions of chaos, political instability, poor and intermittent network access, lack of physical security, with democratic institutions under siege and very little control over territory by a central government. Developed for these conditions, it is expected that the crisis information management tools can both scale up and be deployed in other conditions less austere, and also at the HQ level at the United Nations in New York.

An **emphasis on standards** is important. Data mining of intranets and extranets, however sophisticated the process, is but one facet of KM and IM. Without **staff buy in** at all levels and senior management leadership along with common minimum requirements for knowledge sharing, agencies run the risk of undermining their own KM / IM strategies. Some went as far as to suggest punitive measures for processes and staff inimical to knowledge sharing on a systematic basis. Unless the operations and staff at the field level perceive that systems, processes, tools and mechanisms for crisis management don't benefit them primarily, there would be little or no buy in from them over the long term. For many agencies to design, adapt, adopt and sustain KM and IM strategies, they need to fully acknowledge first that such support services are designed to strengthen actions and initiatives of the UN in the field, especially during a crisis.

Existing best practices and processes that work need to be comprehensively mapped to ascertain who uses what, why, how, when and for how long in terms of tools, technologies and frameworks for IM and KM. Without this, KM and IM strategies run the risk of developing solutions for problems that don't really exist whilst ignoring ones that do. Process mapping would include looking at the way in which the standard operating procedures for daily SitReps could be aided by technology, so that the information therein could be tagged, geo-coded and distributed amongst the UN system in a manner that aided the work of all agencies involved in a

particular region or country. This would in turn strengthen the UN's ability to respond to a crisis when it did occur.

Overall, there is **inadequate awareness across all agencies of tools and technologies such as Web 2.0 and social networking** that can be leveraged and adapted to fit the requirements of agencies at the UN. Using examples of forward thinking best practices, some of which have been noted in this report, the UN must leverage intra-agency expertise and experience in KM / IM design to benefit the larger organisation. The survey questionnaire sent to members of the CEB that will feed into the final report will map some of these technologies and suggest their utility in augmenting some of the KM / IM structures the authors were introduced to.

Linked to this, the UN needs to **urgently harmonise the significant variance in agency approaches to and capacities of IM and KM**. As some inter-agency KM processes such as the UNDP's KSP discovered, this variance can severely hold back the potential of KM and IM for the UN and is also a disincentive for organisations well ahead in the field to engage with other agencies that, in their perception, are not. There must be an emphasis on the development of a common minimum standard of KM and IM across the UN that includes technical standards, sustainable best practices, hardware and software solutions as well as appropriate incentives within human resource, procurement, career advancement and other mechanisms to ensure that KM and IM is mainstreamed and strengthened at all levels at the UN. Many underscored the need for significant and sustained financial and human resources support needed to harmonise and equalise this variance in agency capacity.

Some pointed to the possible value in **combining comprehensive crisis information frameworks in the *Delivering as One* initiative piloted in some countries**. As was noted at the meeting to discuss the draft report on 8 July 2008, some suggested that it would be useful to link crisis information management pilots / mechanisms with the One UN process, even though others said that the One UN process was as yet too embryonic to locate such a process in. The authors recommend, if the One UN is considered as a vehicle to develop the institution's crisis information management capabilities, steps to first define a crisis for the sake of a pilot exercise, identifying a couple of scenarios either past or hypothetical and define the major roles UN agencies, departments and programmes played, and as a subset, the roles they played in collecting exchanging storing and disseminating information. (e.g. who collected what and shared what with who, when and how). An agency such as DSS and / or UN OCHA could take the lead and work directly with CITO to define baseline information shared by all parties during crisis, and define a working group to recommend standards for interoperability and crisis procedure. DPKO could then volunteer a mission for a pilot, maybe Liberia, Sudan or Haiti. The Foundation could develop a tool for the management of crisis information, in collaboration with the UN and incorporating technologies that have been enumerated later in this report. Lessons identified and learnt from such an active deployment could feed into a more robust understanding of crisis information management and the manner in which the UN can and should respond to growing demands and challenges in this context.

Create a case study or pilot programme anew to robustly test and deploy crisis information tools and services across UN agencies. A robust scenario involved multiple agencies can be

developed to demonstrate by example how following simple processes and using ICTs can aid in crisis information management. The scenario could be based on previous real world crises. A working group overseeing the scenario development and responses to it could validate the tools and mechanisms that are used in crisis response ask seek senior management buy in and support. This approach gives the flexibility to deal with a large spectrum of mechanisms and tools without endangering real relationships or stakeholders involved in crisis response.

While the buy-in from senior management was repeated noted as essential in the ultimate success of any crisis information management framework, **a good system will be required to look at the UN system at the macro, meso and micro levels, corresponding to the HQ, Regional HQ and Country Office levels, perhaps even going down to the Field Office level and the individuals in-situ**.

The following recommendations apply broadly to the development of a system that meets the challenges and needs of all these levels:

- The crisis information management solution must be provided for staff at each of the three levels. At each level, the IM tools and architecture must be perceived to have been designed primarily for their requirements.
- If UN system wide / UN mandated solutions aren't provided, then staff *will* find, use and promote their own solutions within peer groups. This is the source of poor-quality intranet sub-sites, ad hoc / point solutions and other undesirable approaches, including the net result of information scatter and little or no interoperability.
- A clear policy must be developed, adopted and buy-in fostered, outlining when each of the three levels applies, and how information should be managed within each level.
- Processes must be put in place to 'bubble up' or 'promote' information from lower levels up to higher levels, and trickle down information *vice versa*. For example, some team-generated information will be critical for the whole organization and some policies passed in NY critical for the safety and security of UN staff on the ground.
- As much as possible, a seamless information management environment should be delivered that covers all three levels. This means designing for austere network conditions, mobile devices including mobile phones, able to transverse diverse networks, be browser, platform, device and operating system agnostic to the greatest extent possible
- Be based on open standards and open source.

Conclusions

Being prescriptive or positing recommendation that work in theory but fail in application are two dangers the authors are aware of in concluding a report of this nature. Nevertheless, it is important to reaffirm what has been brought out clearly in this report.

Fundamentally then, our starting point is that though a lot of work and thought has already gone into crisis information management, it is not enough. Good intentions are scattered, lack cohesion and institutional traction and ultimately result in episodic learning soon forgotten. The inconvenient truth is that there is much more to be done.

The authors see this as an opportunity for change and input.

For example, we no beyond any doubt that interoperability as a first and vital principle of crisis information management, at all levels of the UN, needs strengthening. We recognise that it is technically challenging to deal with the legacy of proprietary systems and information and move into those that can exchange information on-demand and seamlessly. It is organisationally challenging to deal with conservative information regimes that interoperability mechanisms seek to prise open. However, the UN must encourage ways that address both the technical and the organisational aspects of interoperability. The future does not lie with a walled-garden approach to information. Perpetuating existing proprietary systems will increasingly put at risk the UN's ability to manage crises and put staff at risk. The authors strongly believe there is enough evidence to support crisis information management systems based on open standards and are interoperable are more capable, sustainable, cost effective over the long term, effective, engender trust, coordination and collaboration and strengthens institutional learning.

Forward thinking is vital. As enumerated earlier, it important to create crisis information management policies and tools in the UN robust enough to handle current needs but flexible enough to accommodate change. This requires on the one hand technical expertise to be upgraded to leverage and adapt existing standalone and web-based tools.

As importantly, it requires buy-in and leadership from senior management. Time and again, the authors were told that if senior management does not visibly support crisis information management frameworks and tools, there was little chance of staff in the agency adopting it.

There is a wealth of best practices, lessons learnt and lessons identified. Ironically though, information scatter and silos severely vitiate larger institutional awareness and learning. The UN CITO's plans to strengthen KM and IM in this regard are vital anchors in mainstreaming crisis information frameworks as part of day-to-day operations. The authors are sceptical of systems to deal with crisis only after they occur, or are clearly identified. Sudden onset, complex political emergencies and protracted violence – crises man-made and natural – are all inter-linked. No single agency in the UN has the capacity or mandate to address these crises. This makes it vital

that staff at all levels of the UN use tools and systems, produce, disseminate and archive output in a manner that can be scaled up or rapidly focused to deal with any type of crisis. This was also supported by many of the responses received.

More rigorous institutional support is needed to ensure the continuous development of crisis information management platforms, tools and processes for and at the UN. This comes importantly, yet only partially, from the UN CITO and the Secretariat. Each agency needs to underscore the development of such tools, and share learning and results with the larger institution.

We strongly believe that there is an opportunity for the UN writ large, and its constituent agencies, to jointly develop solutions, under the leadership of the CITO, for crisis information systems. There isn't, and never will be, a perfect system. The goal of this long-term exercise is, as an institution working as one to respond the challenges placed by a wide-range of crises, which in turn requires the information systems to be up to the task. This will require pilots to be applied in real world scenarios, real world simulations, the development of new tools and products to respond to real challenges and demands in the field, country-office and Secretariat levels. It will require the support of existing programmes, initiatives and actors working on crisis information management, strengthening shared learning on what works, what can work and importantly, what does not.

The Foundation, with significant human and technical resources, stands willing and able to support the UN in this vital task.

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Annexure 1

Notes from 8th July 2008 meeting in New York to discuss draft UN stocktaking report on crisis information management capacities and best practices

- The meeting was co-organized by the Office of the UN CITO, the Swiss Mission to the UN and the ICT4Peace Foundation. It was co-chaired by Dr. Choi, UN CITO and Ambassador Maurer, and moderated by Dr. Stauffacher, Chairman, ICT4Peace Foundation.

- Sanjana Hattotuwa made an in-depth presentation of the draft UN stocktaking Interim Report. Participants agreed upon the text of the Interim Report and expressed ideas and suggestions on how to make the final report stronger and more reflective of current challenges and approaches to crisis information management.

- Some suggested the need for an inventory of tools, best practices, mechanisms, processes and products used in crisis information management at present, reflecting on the report's capture of a few such examples.

- There was a repeated emphasis placed on the field as the primary theatre of crisis information generation and dissemination, with the Secretariat looked upon more as an archival, process and standards setting institution with also analytical capacity.

- Accordingly, participants said that it was vital to look at the issue of crisis information management not just from a top-down hierarchical perspective but also as an issue that was central to both the field and the Secretariat.

- Some expressed the need for an institutional risk management framework that could be used to promote technologies and tools that helped in crisis information management. Linking the risks and benefits of various mechanisms and tools for issues such as interoperability and field-HQ communications they felt would demystify it for senior management and ensure greater buy-in.

- Others suggested that it would be useful to link crisis information management pilots / mechanisms with the One UN process, even though others said that the One UN process was as yet too embryonic to locate such a process in.

- Alta Haggerty of OCHA noted that the report affirmed that which they had observed through the initiatives of OCHA on humanitarian information management. She spoke of the need to harness the innovation of "point solutions" and at the same time develop institutional

frameworks and standards for interoperability. Without the latter, she noted, institutional learning was severely impeded. She also spoke of the need to animate middle level management in addition to senior management. This level she felt was more sensitive towards the needs of adopting and adapting new technologies as well as common standards and guidelines.

- She went on to push the need for a better taxonomy for information management in the humanitarian field, a key point of the recommendations of the OCHA +5 Symposium. She noted that the consumption of new media (blogs) was growing and not linked to any one event, issue or process and that this needed to be taken into account in the development of IM.

- She also said that the problem of some "point solutions" like Google Groups was that they become information islands. Alta went on to note that it was important to leverage clusters and cluster relationships for crisis IM.

- Other participants expressed a note of caution with regards to a coordinated UN response on crisis IM linked to the One UN process. They noted that the One UN process did not work and without clear guidelines at the field level (where most of the vital information related to an existing / emergent crisis was generated) that just work at the Secretariat level would not improve the situation.

- Some said that field level connectivity was also an issue and that Crisis IM needed to take this into account.

- Christina Goodness from the DPKO IM Unit asked for a clearer understanding of just what a "crisis" was in order to develop solutions and policies. She spoke of the need for common business terms and a common understanding / language to help agencies ascertain what a crisis was and how best to respond to it. She said that senior management buy-in was essential for sustainability of IM mechanisms but also spoke of the need to animate other levels of staff to a system of policies and best practices.

- She said that on-going training was essential and that it was fundamental to crisis IM to first establish a baseline / foundational knowledge base of a particular region / country / issue / actor in order to help with an understanding of the crisis and its best response.

- She also said that key personnel in each organisational needed to be identified to mainstream standards based IM within each agency, so as to move away from the model where personal relations/ relationships determined the quality of information generated, disseminated and analysed.

- Others, echoing that which was expressed in the report, called for a map of roles and responsibilities of agencies in crisis IM specifically, if none existed to date.

- Dr. Choi tabled the idea for a paper on Crisis IM to be presented to the GA, so as to animate member states on the issue and gain political traction for it. Participants at the meeting

acknowledged that a paper specifically looking at Crisis IM had not been produced, though there was mention of some of its principles in other documents at the GA and agency levels. Dr. Choi expressed the desire to see a robust, inclusive definition of crisis IM in this paper along with mention of solutions, standards, best practices et al.

- Amb. Peter Maurer expressed a note of caution in this regard and said that any definition of Crisis IM needed to come bottom up / from the field level needs and reiterated Christina's point that there needed to be a better understanding of baseline information in crisis response.

- Dr. Choi agreed with this point but also noted that a definition was nevertheless necessary in order to capture the attention and eventual support of member states.

- Other participants noted that middle management needed to articulate the needs of Crisis IM in a language that the SM understood and bought into. They said that there needed to be a strategy to move forward with Senior Management to get their buy in for what was proposed as recommendations in the final report.

- With regards to baseline information in a crisis, some said that it was a case of what needed to be shared, for what, with whom, how and when.

- Some went on to say that the development of templates for mobile devices could facilitate this (common needs assessments / rapid needs assessments) and that a good meta data level of descriptors for agency output could also help facilitate better crisis IM.

- Participants noted that unless the tools for crisis IM were used by those staff that would use it daily, they would stand little chance of being used sustainably and to their fullest potential during a crisis.

- Others said that the stocktaking process could lead to a community of practice of crisis IM champions within each organisation.

- Nigel Snoad giving his expert presentation endorsed the need for a risk management framework on crisis IM as a way through which agencies resistant to change could be encouraged to develop their understanding of and approach to crisis IM. This he said needed to be coupled with a far more robust monitoring and evaluation framework for crisis IM, which could also be a powerful way to encourage buy-in from agencies.

- He went on to say that user generated content (through participatory media) needed to be looked at far more robustly by UN agencies and any process of crisis IM. Co-opting new media strategies and leveraging the information generated by new media to support crisis IM was vitally important.

- Jacques Baud made a presentation on field level application of ICT to aid crisis information management drawing upon his experience from UN peacekeeping operations in Sudan and elsewhere. His idea for a system was extremely well received by the audience.

- Based on this presentation and the findings of the stocktaking process, it was agreed at the end of the meeting to develop a simple platform for crisis information management using off-the-shelf technology leveraging existing assets of key stakeholders, enabling inter-agency collaboration and information sharing in a sustainable manner. The system would be scalable and will feature, *inter alia*;

    1. Geo-spatial / Geographical Information visualisation
    2. Templates for information input
    3. Semantic visualisation (the system will associate meaning, not just index information)
    4. Works on PCs and mobile phone / mobile devices
    5. Work over any Internet connection
    6. Capable of multimedia as well as text
    7. Benchmarking system for evaluating in-coming information in order to facilitate rapid analysis and situational awareness
    8. Interface with existing databases at field and HQ level
    9. Entry of information via GIS interface, templates, mobile templates

- It was proposed to have a high-level meeting in September/October to release the final report, discuss its findings and brainstorm ways to apply its recommendations with the participation of President Ahtisaari, Maria Cattaui, Gen. Satish Nambiar, USGs, Member State Representatives, Heads of Missions, Heads of Agencies and others.

- This would, he proposed, animate and raise awareness on crisis information management at the senior management and member state level of the HQ. On the other hand, the development of the demonstrator and subsequent pilot in a field mission would encourage standards based information gathering, dissemination and crisis information management at the field level.

- This mutually reinforcing twin track approach was endorsed by the meeting as a means through which crisis information management would stand the best chance of gaining traction at both the HQ and field levels.

- In addition, Dr. Choi also invited the participants to meet again regularly to discuss progress made in the above-mentioned activities and create a "UN champions group for crisis IM".

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