1 ACCESS BRIEF SERIES

Humanitarian Access and Technology: Opportunities and Applications

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Conflict Dynamics International's Access Brief series provides topical guidance on policy and practice to humanitarian practitioners in their efforts to secure and sustain humanitarian access in situations of armed conflict.

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1 Introduction

The effectiveness of humanitarian action hinges on access: access by humanitarian practitioners to people in need, or by people in need to essential goods and services. New technological advances that have emerged or become more widely available in the past few years offer promising opportunities to support and improve humanitarian access. These can be harnessed to assist humanitarians in, for example, identifying humanitarian needs, getting essential items to those who need them, and enhancing program quality and resource monitoring, all of which can widen the scope of access options, especially in conflict zones.

Yet technology alone cannot solve the problems of humanitarian access. Some technologies may even generate new forms of risk. An over-reliance on technology may foster a widening gap between humanitarians and people in need, which may erode the hands-on understanding and empathy that should be the inspiration and guide of humanitarian action.

To help avoid the pitfalls and risks associated with some technologies, humanitarians can explore technological options as part of an approach to access that is firmly rooted in the core humanitarian principles, committed to sound analysis, creative in generating options, and persistent in working through dilemmas. Such an approach is outlined in Conflict Dynamics' *Humanitarian Access in Situations of Armed Conflict: Practitioner's Manual*.[1]

This Access Brief explores several technological options organized in three broad areas integral to securing and sustaining humanitarian access: (1) access to information; (2) physical access; and (3) enhancing quality and monitoring resource use.

2 Access to Information

In seeking options and devising strategies to secure and sustain humanitarian access, obtaining current and accurate information is critical for humanitarians, as well as people in need. Organizations that can obtain and provide the most accurate and closest-to-real-time information related to humanitarian needs and assistance will be better positioned to prepare and organize a timely and relevant response, weigh the risks versus the benefits of intervention, and secure the necessary resources. While technology can support practitioners in accurately and rapidly obtaining and providing information, the high volume of information available through recent advances in tele-communications presents challenges in managing and analyzing the information, as well as determining its veracity and reliability.

Worldwide, mobile phone and internet access have grown tremendously in the last decade.[2] Both will soon be nearly ubiquitous, including in conflict-affected humanitarian crises. Smart phones are quickly replacing first generation mobile phones, creating even more potential for information gathering and dialogue between people in need and those assisting.

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1 Conflict Dynamics International, *Humanitarian Access in Situations of Armed Conflict: Practitioners' Manual, Version 2* (Cambridge: 2011).

2 For example, internet use in Africa rose from 0.4% to 26.5% between 2000 and 2014. See Internet World Stats, "Internet World Stats: Usage and Population Statistics," http://www.internetworldstats.com/stats1.htm [accessed 8 October 2015]. Further, between 2008 and 2014, the percentage of adults in sub-Saharan Africa using mobile phones jumped from 19% to 39%, and is forecast to hit 49% by 2020. The use of smart phones in sub-Saharan Africa is also growing tremendously: "[M]obile data traffic is forecast to see a twentyfold increase from 2013 to 2019, around twice the global growth rate." See GSMA Intelligence, *The Mobile Economy: Sub-Saharan Africa 2014* (London: 2014), pgs. 2 and 8.

For example, the distribution of mobile phones to drought—and conflict-affected communities in northern Kenya, combined with the establishment of information "hubs," has increased two-way communication between an aid agency and relief recipients. Community-based relief committees use the phones to communicate information such as environmental conditions to the aid agency, while the information hubs managed by the aid agency send bulk messages to communities indicating, for example, upcoming food deliveries.[3]

In another example, Translators Without Borders helped in the 2014 Ebola response by translating public health and social mobilization messages into local languages that were subsequently distributed via SMS to the mobile phones of community members and health workers in affected countries.[4]

It is also possible to collect information systematically and remotely using **digital data forms** on mobile phones. For example, Open Data Kit and Kobo Toolbox are free open-source tools for mobile data collection geared toward humanitarian use.[5] Both tool sets support the creation of customized data forms or surveys for use on mobile phones or tablets, which can be used off-line and uploaded to a server during or following data collection. Aggregated data can then be organized into usable formats and linked to digital maps.

Some technological applications are designed to support **qualitative information gathering** and analysis. For example, one organization uses a database called SenseMaker to aggregate and analyze thousands of stories told by people in need in East Africa. Local volunteers collect, record, and code the stories using mobile phones and oral recordings. Interviewees identify what they view as their priority needs and issues before staff upload and analyze the stories to inform their programming.[6]

Crowdsourcing—the process of obtaining on-line contributions from a large group of people—can advance humanitarians' efforts to gather, validate, and process information by tapping into the real-time knowledge and information of people in or outside areas of need. For example, crowdsourcing via SMS and Twitter helped humanitarians after the 2010 Haiti earthquake to identify the spread of cholera outbreaks in Port-au-Prince.

Crowdsourcing has the potential to dramatically increase the scope and speed of obtaining information in real time in emergencies. While hugely promising, it comes with significant information management and reliability challenges.[7] A study reviewing the role of information and communications technology in disaster response concluded that if humanitarian decision-makers are to effectively take advantage of crowdsourcing, they will "need to figure out how to process information flows from many more thousands of individuals than the current system can handle." [8]

Advances in **geomatics**—the field of acquiring and processing spatial data—have created new opportunities to use mapping to identify and track humanitarian needs. With the increased precision of **Global Positioning Systems (GPS)**, availability of high quality satellite imagery, user-friendly software, and high-speed internet, humanitarians can now readily produce high quality maps of complex humanitarian situations with little or no time lapse.

Satellite imagery can be particularly effective in tracking population movements in conflict situations, as was done during the rebel attack on N'Djamena, Chad, in 2008, and in northern Sri Lanka following military attacks in 2009.[9]

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3 Carole Chapelier and Anita Shah, *Improving communication between humanitarian aid agencies and crisis-affected people: Lessons from the infoasaid project,* (London: 2013), pg. 19.

4 Lydia Tanner and Alice Obrecht, *Words of Relief: Translators without Borders' local language translation for emergencies,* (London: 2015).

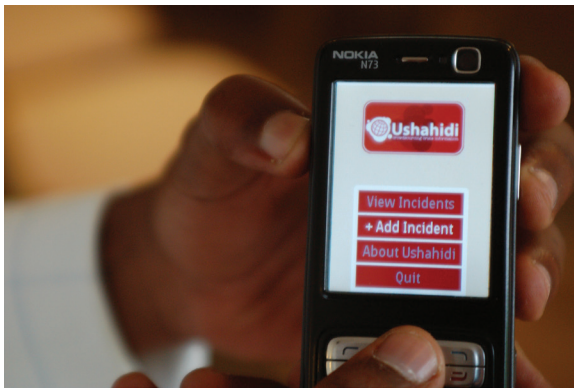
5 See Open Data Kit, https://opendatakit.org/ [accessed 8 October 2015], and Kobo Toolbox, https://www.humanitarianresponse.info/en/applications/kobotoolbox [accessed 8 October 2015]

6 CDA Collaborative Learning Projects, *Feedback Mechanisms in International Assistance Organizations* (Cambridge: 2011), pgs. 22-23.

7 Data verification and achieving an adequate number of reports to make the data statistically relevant remain important challenges in crowdsourcing. See IRIN, "Questioning the Crowd - data verification challenges for humanitarians," 20 August 2013, http://www.irinnews.org/report/98569/questioning-the-crowd-data-verification-challenges-for-humanitarians [accessed: 8 October 2015]. See also DemocracySpot, "Ushahidi in (Sobering) Numbers," http://democracyspot.net/2012/08/29/ushahidi-in-sobering-numbers/ [accessed: 8 October 2015].

8 Harvard Humanitarian Initiative, *Disaster Relief 2.0: The Future of Information Sharing in Humanitarian Emergencies* (Washington D.C.: 2011).

9 Diane Coyle and Patrick Meier, *New Technologies in Emergencies and Conflicts: The Role of Information and Social Networks,* UN Foundation & Vodafone Foundation Partnership (Washington D.C.:2009), pg. 34.



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Ushahidi, a Kenya-based **open-source mapping** company, has pioneered the combination of crowdsourcing and crisis mapping for humanitarian purposes. Humanitarian Tracker has applied them same process to crowdsource and map humanitarian needs in the Syrian conflict since 2011, which can help humanitarians focus their efforts to gain access.[10] One organization has also used crowdsourcing via OpenStreetMap to ask volunteers all over the world to help it create an accurate map of buildings and roads in a town in North Kivu, Democratic Republic of Congo. The map enabled the organization to decide where to lay pipes and dig reservoirs for a water supply project.[11]

Crowdsourcing is creating low-cost opportunities related to humanitarian access. However, information from individuals within a crowd may or may not be reliable, and this approach therefore demands triangulation or other forms of information verification. Another branch of information management—**big data** analysis—does not have the same limitations and may offer some complementary advantages. Rather than relying on specific information from individuals reporting on a certain issue or situation, big data analysis looks at broad trends in the **data exhaust**—the digital by-product of online use—of whole communities or populations.[12] For example, according to a study in 2012, while crowdsourcing via SMS and Twitter aided the 2010 Haiti cholera response, retrospective analysis of the data exhaust produced by tweets after the earthquake revealed that the cholera outbreaks could have been detected two weeks earlier than they were. [13, 14]

Immediately after Typhoon Bopha hit the Philippines at the end of 2012, big data analysis was also used to categorize thousands of social media messages to create a map of the storm's impact within 24 hours of its onset.[15] Big data analysis also revealed roughly how many people left the earthquake-affected area in Nepal in April 2015, and where they went.[16]

Though not yet readily accessible to most humanitarians, the introduction of big data analysis into humanitarian emergencies could help provide valuable real-time information.

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10 Taha Kass-Hout and Hend Alhinnawi, "Humanitarian Tracker: Crowdsourcing Syria Crisis since 2011," https://www.ushahidi.com/blog/2014/04/08/humanitarian-tracker-crowdsourcing-syria-crisis-since-2011 [accessed: 8 October 2015].

11 International Committee of the Red Cross, "Mapping humanitarian action – a fast-developing sector," http://www.icrc.org/eng/resources/documents/interview/2012/mapping-interview-2012-04-05.htm [accessed: 8 October 2015].

12 For further information, see UN Global Pulse, *Big Data for Development: Challenges & Opportunities* (New York: 2012).

13 Daniela Hirschfeld, "Twitter data accurately tracked Haiti cholera outbreak," 10 January 2012, http://www.nature.com/news/twitter-data-accurately-tracked-haiti-cholera-outbreak-1.9770 [accessed: 8 October 2015].

14 L. Bengtsson et al., "Improved Response to Disasters and Outbreaks by Tracking Population Movements with Mobile Phone Network Data: A Post-Earthquake Geospatial Study in Haiti," *PLoS Medicine,* Vol. 8, Issue 8 (August 2011).

15 United Nations Office for the Coordination of Humanitarian Affairs, "Big data and humanitarianism: 5 things you need to know," 27 June 2013, http://www.unocha.org/top-stories/all-stories/five-things-big-data-and-humanitarianism [accessed: 8 October 2015].

16 FLOWMINDER.ORG, "Nepal Earthquake 2015," http://www.flowminder.org/case-studies/nepal-earthquake-2015 [accessed: 23 November 2015].

IN FOCUS

A Note on Drones (UAVs)

There is considerable excitement in the humanitarian community about the potential use of drones, or unmanned aerial vehicles (UAVs), to facilitate humanitarian access. Yet the use of drones, particularly in conflict settings, presents principled, legal, and ethical challenges.

In conflict situations, UAVs have the potential to minimize humanitarian staff security risk while expanding the options available to improve humanitarian access by humanitarians to people in need, as well as by people in need to essential goods and services. Most commonly, UAVs can help gather information and map needs in emergencies. Rigged with cameras, they can produce higher-resolution images, more quickly and cheaply than satellite imagery, which can help humanitarians more quickly and clearly define the purpose and strategy for humanitarian access. UAVs were deployed for crisis mapping and monitoring purposes in disaster sites as early as during the Haitian earthquake (2010) and following Typhoon Yolanda in the Philippines (2013). In 2015, a humanitarian organization used a drone to help locate people in need of assistance on the Mediterranean Sea.[17]

UAVs can also be used to facilitate information transfer, which can help humanitarians as well as people in need to make quick decisions related to providing or accessing essential items. For example, UAVs can be used as makeshift 3G and 4G cell towers in areas where such connections are knocked out. Though somewhat costly, as UAVs become cheaper and more widely available, civilians may more commonly use personal drones to gather and feed information to humanitarians in crises as a form of 'aerial social media'.[18]

Though few examples currently exist, UAVs may also be used for light humanitarian cargo transfer, such as medicines. In Syria, the Syrian Airlift Project foresees employing a fleet of low-cost fixed-wing UAVs with individual payloads of 1kg to deliver essential humanitarian supplies to persons in difficult-to-access parts of Syria.[19]

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However, despite the potential to address or circumvent certain access challenges, the use of UAVs for humanitarian purposes presents challenging principled, legal, and ethical questions. UAVs are strongly associated with military applications, and within mainstream perceptions as attack weapons. Humanitarians using UAVs risk lending legitimacy to the UAV/military industry that seeks to rebrand UAVs in a more positive light. Humanitarians using UAVs also risk accusations of supporting military intelligence gathering and compromising their perception as neutral actors. In reaction to this concern in the Democratic Republic of Congo, where the UN Chapter VII mission employs long-range UAVs for reconnaissance, a group of international organizations recently stated, "If data gathered during a [UAV] flight with a humanitarian objective informs combat operations or is used for military intelligence, there is a clear compromise of neutrality."[20]

For another organization, "[T]he debate is on whether or not the negative image associated with drones means that even the use of small-scale drones in Papua New Guinea or the Philippines should be discontinued. Drones may be very useful, but for humanitarian use, their reputation may just be too toxic." [21]

17 Médecins Sans Frontières, "MSF & MOAS to launch Mediterranean search, rescue and medical aid operation," 10 April 2015, http://www.msf.org/article/msf-moas-launch-mediterranean-search-rescue-and-medical-aid-operation [accessed: 8 October 2015].

18 Jay Cassano, "Drone Operators Are Setting Their Sights On Disaster Relief," 10 February 2015, http://www.fastcoexist.com/3041468/drone-operators-are-setting-their-sights-on-disaster-relief [accessed: 8 October 2015].

19 Jay Cassano, "Could Drones Circumvent Syria's Efforts To Block Humanitarian Aid?," 18 May 2015, http://www.fastcoexist.com/3046252/fund-this/could-drones-circumvent-syrias-efforts-to-block-humanitarian-aid [accessed: 8 October 2015].

20 Concern Worldwide et. al., "Joint INGO position on humanitarian use of UAVs," 16 July 2014, http://reliefweb.int/report/democratic-republic-congo/joint-ingo-position-humanitarian-use-uavs [accessed: 8 October 2015].

21 Michiel Hoffman and Jonathan Whittall, "Opinion and Debate: Drone Aid: A useful tool with a toxic image," 21 August 2015, http://www.msf.org.uk/article/opinion-and-debate-drone-aid-a-useful-tool-with-a-toxic-image [accessed: 8 October 2015].

IN FOCUS **CONT.**

The legal and normative framework pertaining to the application of UAVs is nascent and not always specific regarding the regulatory environment within which UAVs can be used. While national legislation regulating drone use in countries like the United States is relatively well developed, in many countries where humanitarians work it is weak or non-existent, which means that humanitarians may need to negotiate the use of UAVs with authorities on an ad hoc basis.

Internationally, the use of UAVs is subject to international laws, including, in conflict situations, international humanitarian law. Yet there are few specific international guidelines on UAV use. Seeking to address this gap, UAViators is developing a Humanitarian UAV Code of Conduct & Guidelines, expected to be finalized by the end of 2015. The draft guidelines state that UAV use should avoid harm and be guided by purely humanitarian concerns and by the humanitarian principles, including avoiding that their use is "perceived as being politically or economically influenced," particularly in conflict settings.[22] The draft guidelines also emphasize transparency and community engagement: "[I]nformation should continuously be provided to communities regarding the intent and use of UAVs."[23] UNOCHA also suggests that, owing to the (mis)perceptions of what drones are used for, "for humanitarians operating UAVs, transparency and engagement will likely be critical for success," aiming for a form of 'informed consent' from communities and local authorities.[24]

There are also important questions about the confidentiality of—and access to—potentially huge amounts of information gathered by UAVs. Who will have access to the big data that is likely to be generated by UAVs? What are the implications for personal privacy? There are also questions of safety and liability in the event of accidents involving UAVs.

Humanitarian practitioners will need to approach the use of UAVs as an access-enhancing strategy with caution, carefully sorting through issues of principle, perception, legality, privacy, liability, and effectiveness.

3 Physical Access

Humanitarian access is ultimately about ensuring that people in need receive essential goods and services. Three opportunities to improve physical access through technology are explored below: cash transfers; physical structures; and on-the-spot manufacturing.

Cash transfers

Cash payments can, at times, be an effective, low-cost, and empowering method of facilitating access by those in need to essential goods and services. Mobile phone technology has greatly enhanced opportunities for humanitarians, as well as the relatives of people in need, to do so. M-PESA in Kenya has helped pioneer mobile phone **SMS** credit transfers that can be redeemed for cash at designated stores and banks, or transferred via SMS to others. Similarly, a humanitarian organization uses locally redeemable electronic food vouchers in Syria and Iraq. The vouchers are sent via SMS to pre-identified recipients, who can redeem them at designated food stores.[25]

While the technology exists to readily and cost-effectively facilitate cash and voucher transfers, these methods for improving access do not foster direct contact between humanitarians and those in need. This can create challenges in identifying needs, understanding local community or conflict dynamics, and ensuring appropriate distribution of cash or goods.[26] Hence practitioners may need to consider how to meet such challenges—including through the application of technologies—in order to ensure that cash and voucher transfers facilitate access while avoiding negative outcomes.

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22 UAViators, "[draft] Humanitarian UAV Code of Conduct & Guidelines," http://uaviators.org/docs, [accessed: 8 October 2015].

23 Ibid.

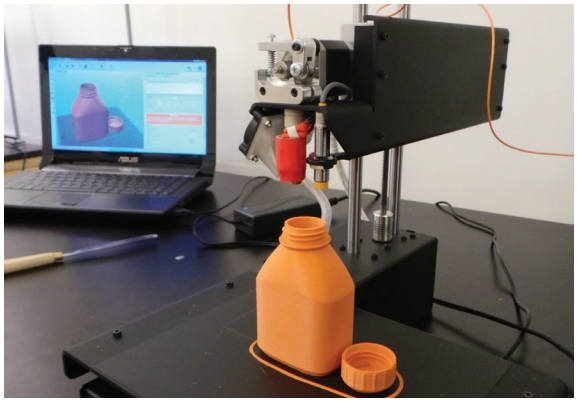
24 United Nations Office for the Coordination of Humanitarian Affairs, *Unmanned Aerial Vehicles in Humanitarian Response* (New York: 2014).

25 IRIN, "Syria: WFP pilots SMS food distribution," 4 November 2009, http://www.irinnews.org/report/86872/syria-wfp-pilots-sms-food-distribution [accessed: 8 October 2015] and Tarek Elguindi, "New technologies in food assistance: electronic vouchers for Iraqi refugees in the Syrian Arab Republic," http://documents.wfp.org/stellent/groups/public/documents/newsroom/wfp225951.pdf [accessed: 8 October 2015].

26 Breanna Ridsdel, "New Learning in Cash Transfer Programming: Bigger, better, faster: achieving scale in emergency cash transfer programmes," *Humanitarian Exchange*, No. 54, (May 2012). For further guidance on how to approach cash transfers, see Kokoévi Sossouvi, "E-Transfers in Emergencies: Implementation Support Guidelines," Cash Learning Partnership, 28 November 2013, www.cashlearning.org/downloads/e-transfer-guidelines-English-20-12-2013.pdf [accessed: 8 October 2015].

Physical structures

Physical structures can play a critical role in facilitating access, especially in crises in which urgent action is required. Recent advances in **modular buildings** make it increasingly possible to package, transport, and rapidly set up all kinds of structures, from individual shelters to storage facilities and full hospitals, which increase options for rapid access in crisis situations. Materials such as Deltawood[27] and plastics are lightweight and durable. For example, one organization has used flat-packed plastic refugee structures in refugee camps in Ethiopia, claiming that they are more durable and habitable than the tents they have replaced.[28] Another organization is able to erect full modular hospitals or stand-alone surgical rooms in conflict-affected areas. A plastic surgical facility, with inflatable arches, can fold into a transportable bag, is resistant to disinfectants and easily sanitized, and can be used with fans or air conditioning systems.[29]



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On-the-spot manufacturing

3D printing, or additive manufacturing, while not new, is becoming increasingly available, accurate, and affordable.[30] 3D printers use raw materials, usually plastics or metals, to produce physical products of just about any shape and complexity. 3D printing has the potential to significantly shorten supply chains—and thus reduce importation or logistical impediments to access—by producing various items, such as medical disposables or prosthetics, on site. 3D printing can also foster innovation and improve the relevance of humanitarian aid. One humanitarian organization has used crowd sourcing to solicit ideas from Syrian refugees and others on the best ideas for hand-washing systems that encourage use, increase hygiene, and save water. Their plan is to send the best ideas to a company that can convert the ideas to printable files, create prototypes locally, and refine them until the ideal design is developed.[31]

4 Enhancing Quality and Monitoring Resource Use

In exploring and implementing options to secure and sustain humanitarian access, practitioners must consider whether identified options will have the intended impact and whether resources are appropriately used. New technologies and advancements can support practitioners in these areas.

Training and coaching can contribute substantially to quality programming, and hence expand options for humanitarian response in situations where non-local staff have limited access. With internet access increasingly prevalent, including in difficult-to-access areas, humanitarian staff can take advantage of an increasingly wide range of **distance learning** courses related to their work.[32]

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27 Deltawood is made of 8-shaped hollow and highly durable compressed wood beams that slide into H shaped metal pillars. For more information see "Deltawood" http://www.deltawood.nl/nl/home [accessed: 8 October 2015].

28 Disaster News Network, "IKEA builds refugee structures," 27 October 2013, http://www.disasternews.net/news/article.php?articleid=5533&printthis=1 [accessed: 8 October 2015].

29 Plastics: The Mag, "Humanitarian Aid: Plastics at the Heart of the Action," 28 May 2014, http://www.plastics-themag.com/eco-plastics/humanitarian-aid-plastics-at-the-heart-of-the-action [accessed: 8 October 2015].

30 3D printer prices now range from a few hundred to tens of thousands of dollars.

31 Alan Gardner, "Oxfam Teams with MyMiniFactory to Provide Humanitarian Aid in Syria, Using 3D Printing," 8 May 2014, http://3dprint.com/3400/syrian-crisis-oxfam/ [accessed: 8 October 2015].

32 See, e.g. CERAH, "HDL: Humanitarian Distance Learning," http://www.cerahgeneve.ch/training/humanitarian-distance-learning/ [accessed: 8 December 2015], Professionals in Humanitarian Assistance and Protection (PHAP), https://phap.org/ [accessed: 9 December 2015] and RedR UK, "Online Security Training," http://www.redr.org.uk/en/Training-and-more/mission-ready.cfm [accessed: 8 December 2015].

Humanitarian staff can also work with experts and colleagues from outside project locations to obtain specialized advice and coaching. For example, by interfacing SMS with Facebook, a group of maternal health workers has built a virtual professional community of practice across several crisis-affected areas. This allows professionals at a distance to exchange and provide advice to 'deep field' practitioners, thus increasing access for external practitioners to difficult-to-access areas and increasing program quality for local health workers.[33]

The broad field of **telemedicine** extends beyond advice, coaching, and training, and can include remote medical consultations. For example, Syrian medical professionals abroad have conducted medical consultations with civilians in need in Syria via telemedicine.[34]

In the area of monitoring program quality and resource use, technology is being applied in numerous ways. As mobile phones are increasingly prevalent among aid recipients, some humanitarian organizations have established **call centers** dedicated to managing direct contact between remotely based humanitarian staff and aid recipients. In Somalia, this practice is now widely adopted among humanitarian organizations as a way of obtaining information on whether or not aid has reached the intended recipient, how it was used, and recipient satisfaction.[35] This type of information can be critical, for example, in sustaining access under a 'remote management' model.

Technological applications can also assist in verifying and cross-checking information on stocks and other resources used in remotely managed programs. Again in Somalia, one organization used digitized spread sheets, the internet, and mobile phones to monitor medical stocks by cross-checking international stock shipments, field warehouse stock counts, patient prescriptions, and hospital ward-level consumption.[36]

Bar code scanning, though not a new technology, may enhance resource tracking even further. For example, another organization in Somalia has used bar codes scanned with smart phones to track voucher-based food distributions. Field staff used a smart phone app to monitor whether intended beneficiaries received food and to approve and track payments to local merchants.[37]

US Department of Defense/Petty Officer 2nd Class David Brandenburg

Printed **electronic smart labels**, though not yet widely field tested, also have the potential to contribute to resource monitoring. Thinfilm, for example, produces low-cost battery-powered smart labels that can store and display data on items like medicines, vaccines, and other humanitarian goods. They can, for example, show if a medicine has been exposed to inappropriate temperatures or when it expires.

Similarly, **radio frequency identification (RFID)** uses tags or labels attached to items that transmit electronic data via UHF radio waves. A two-way radio transmitter, or reader, detects and reads information from the tag. The tags can be battery powered and actively send out signals at regular intervals, or they can operate without a battery by passively responding to the RFID reader's signal as long as it is within a few meters of the item.

All of these methods—call centers, information triangulation, bar code scanning, electronic stickers, and RFID—have the potential to enhance the options available for securing and sustaining access in conflict-affected situations by helping to verify that humanitarian assistance is relevant and that resources are used appropriately.

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33 Sandra Krause and Diana Quick, "Using technology to help save mothers and babies," *Forced Migration Review,* No. 38, (October 2011).

34 Rola Hallam, "Response to Syria's health crisis," *The Lancet, Vol. 382,* Issue 9893, (24 August 2013).

35 Somalia Common Humanitarian Fund (CHF), *CHF Somalia Annual Report 2014,* (Mogadishu: 2015), pgs. 25-26.

36 Joe Belliveau, "Remote management in Somalia," *Humanitarian Exchange,* Issue 56, (January 2013).

37 Cathy Herholdt, "Food distribution in the Horn of Africa Goes High Tech," http://humanitarian.worldconcern.org/2012/10/11/food-distribution-in-the-horn-of-africa-goes-high-tech/ [accessed: 8 October 2015].

A more controversial area of technology applied to monitoring is **biometrics**. Biometrics is the use of human measurements, such as fingerprints, eye scans, or facial recognition, for digital identification. It can be used, for example, to register and verify aid recipients and to reduce fraud, as has been done in Afghanistan for several years.[38] Yet the practice is controversial, as an individual's identity characteristics are gathered and stored, and can be easily shared with other actors for purposes other than humanitarian.[39]

5 Conclusion

New technologies and advances have the potential to help overcome some of the challenges of humanitarian access. Humanitarians can harness new technologies to provide shelter and other physical structures, as well as move and even create essential humanitarian items. Yet, perhaps the most significant advances relate to communications and information flow. Humanitarians can use technology in unprecedented ways to gather, aggregate, and analyze data, which can help them anticipate events, measure trends, monitor and verify outcomes, link experts with less experienced practitioners, and coordinate emergency responses directly or remotely. Technology can facilitate two-way communication between humanitarians and people in need, and can connect large numbers of people across any distance, including those directly and indirectly involved in crisis situations.

However, in reducing the need for physical proximity between humanitarians and people in need, technology may also foster more technocratic, less empathetic, inappropriate, and possibly even harmful forms of humanitarianism. As practitioners seek to improve and expand their access options, they should take care to use technology in a manner consistent with the core humanitarian principles and to enhance rather than obscure the vital connection between humanitarians and individuals in need.

Author, Joe Belliveau

38 See Katja Lindskov Jacobsen, "Experimentation in humanitarian locations: UNHCR and biometric registration of Afghan refugees," *Security Dialogue*, Vol. 46(2), (2015).

39 Paul Currion, "Eyes Wide Shut: The challenge of humanitarian biometrics," 26 August 2015, http://www.irinnews.org/report/101913/eyes-wide-shut-the-challenge-of-humanitarian-biometrics [accessed: 8 October 2015].

Mission Statement

Conflict Dynamics International is an independent, not-for-profit organization founded to prevent and resolve violent conflict, and to alleviate human suffering resulting from conflicts and other crises around the world.

CONFLICT DYNAMICS® INTERNATIONAL

Conflict Dynamics International

1035 Cambridge Street
Suite 10A
Cambridge, MA 02141
USA

+1 617 661 1066 Phone
+1 617 661 1686 Fax

info@cdint.org
www.cdint.org