A GCRF Research Practitioner Workshop Report

Digital Aid: understanding the digital challenges facing humanitarian assistance

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1. Foreword

Mike Aaronson (Chair of Strategic Advisory Group of the Global Challenges Research Fund (GCRF), 2016 – 2019)

The new capabilities offered by digital technology are transforming the way we live our lives. They can undoubtedly be a force for good but can have undesirable - even sinister - consequences if not properly managed and governed. How can we ensure that the negative outcomes are avoided?

Faced with seemingly intractable global challenges such as conflict and displacement, aid agencies have always sought to take advantage of the latest technological advances to improve the effectiveness of their response. The nature and quality of humanitarian assistance and protection have been transformed by the development of: cross-country vehicles with greater versatility in difficult terrains; new food materials to enable speedy recovery of severely malnourished children; the introduction of satellite phones to maintain communication with teams working in conflict zones.

Now the accelerating pace of the digital revolution is permitting even more dramatic innovations: the use of facial recognition technology to reunite lost children with their families; the use of satellite imagery and data science to target food aid more precisely; the use of digital-ID and artificial intelligence to establish an individual's entitlement to refugee rations. These have enormous potential for good but also carry significant ethical and operational risks.

First, we must guard against the illusion that digital capabilities replace the need for a deep understanding of the context in which humanitarian response takes place. For example, new capabilities can generate an illusion of proximity to a problem when in fact they create distance from it; satellite imagery aimed at assessing the state of the harvest in a drought-stricken area may miss the crops that are grown under the shelter of trees to protect them from the hot sun. This could lead to an inappropriate food aid intervention that would depress local market prices and worsen any food crisis by impoverishing small farmers.

Second, there must be adequate safeguards to ensure that data collected for a humanitarian purpose cannot be exploited by those who would use it for a different one. For example, refugees fleeing persecution in their own country may consent to give up their biometric data to facilitate the receipt of rations in a refugee camp, but not if there is a danger this data may fall into the hands of the regime that persecuted them at home. Thus ‘data safeguarding’ becomes as much of an issue in the digital age as other forms of safeguarding.

Third, those who possess capabilities in data safeguarding must share them; they must form as much a part of capacity-building as anything else if the gap between the rich world and the poor and marginalised is not to widen even further. A feature of the digital age is that most of the innovation comes from the private sector, rather than from state-funded activity as in the past. This poses particular challenges of governance, as companies, not unreasonably, pursue their own profit rather than act from altruistic motives.

In short, while there is undoubtedly a ‘humanitarian imperative’ to take full advantage of the capabilities offered by new technology, there is an equally strong ethical obligation to ensure that it benefits, and does not harm, those on whose behalf it is deployed. We should ask - Who benefits? Can we ensure it is not just companies who develop and market the product? Can these technologies become genuine public goods? Academic research has a crucial role in answering these questions by synthesising the experience of affected communities, humanitarian practitioners and policy-makers.

2. Executive Summary of Key Event Findings

The UKRI Digital Aid workshop on 9 September 2019 brought together expert practitioners and researchers to focus on the use of digital technologies in humanitarian aid. Participants brought wide experience of digital applications to monitor conflict, refugees, food security, and to reunite families, enable communication and increase donor value for money. The event identified key areas where the rapid pace of technological change is outstripping our current understanding of emerging risks, digital inequalities and ethical dilemmas associated with the use of digital technologies in humanitarian response.

The International Committee of the Red Cross (ICRC) in their contribution to the UN Secretary-General's High-Level Panel on Digital Cooperation warned that it is of critical importance to 'keep humanitarian purpose, and the people humanitarian organizations are there to protect and assist, firmly at the centre of any developments in order to ensure the humanitarian response do no harm in their application' (ICRC 2019). Yet workshop discussions showed how humanitarian practitioners are struggling to operationalise the "do no harm" principle in the context of a rapidly changing technological landscape. Workshop participants felt that research has a vital role to play in protecting the interests of vulnerable communities in the digital age.

Gaps in understanding included:

- **Human-centred humanitarian processes:** Participants asked whether the humanitarian principle of valuing human agency and the ethic of human-centred processes can be fully reconciled with the use of artificial intelligence in aid processes. How do we make processes more human-centred given the mounting pressure to replace human reflection, deliberation and relationships with artificial intelligence and automated decision-making?

- **Data Safeguarding**: In conflict settings, meta-data is used to kill people (Cole 2014). Yet humanitarian agencies feel under pressure to experiment on affected populations with new technologies such as iris-scanning, digital-ID and artificial intelligence. In confidence, workshop participants disclosed serious flaws in humanitarian data handling protocols in their own agencies. There is an absence of safe spaces to share lessons from failings and successes. Research should ask what incentives are driving humanitarian innovation, what mechanisms are necessary to safeguard vulnerable populations, and what principles should guide future policy and practice.

- **Prioritising affected populations**: Many participants expressed serious concern that those directly affected by conflict and displacement were not represented in the workshop; this reflects a broader concern that their experiences and priorities are not shaping the emerging agenda. Affected populations are also underrepresented in many humanitarian innovation processes. Research needs to establish how the interests of affected populations can outweigh those of more powerful actors in the humanitarian innovation ecosystem. Research funders are uniquely placed to incentivise genuine human-centred humanitarian innovation.

3. Digital Humanitarian Technologies: what do we know now?

Humanitarian agencies have been enthusiastic adopters of digital technologies in part because innovation and value for money are incentivised by donors. Donors and humanitarian agencies have been positioning themselves as pushing boundaries with cutting-edge technologies. The rush to innovate can be in tension with the precautionary principle; the voices and interests of affected populations must remain central.

Perhaps because of these pressures, humanitarian technology investments have often taken place ahead of due diligence. Informally, it is no secret that data safeguarding and digital due diligence in humanitarian agencies is at a low level, and

some are arguing that a major data breach or scandal involving sensitive data about vulnerable population is a crisis waiting to happen. It is vital that the humanitarian sector avoid its' own "Cambridge Analytica moment".

The sharing of data on vulnerable populations with corporations has raised important questions about humanitarian surveillance and data safeguarding. The proposed data partnership between the United Nations World Food Programme (WFP) with the private software company Palantir, raised major concerns about the threats from combining and merging huge datasets on the beneficiaries of humanitarian action. In an open letter, humanitarian and human rights actors argued that this partnership risked undermining WFP's fundamental humanitarian principles (Responsible Data 2019).

General Hayden, former director of the United States National Security Agency and of the Central Intelligence Agency in May 2014 famously said 'we kill people based on metadata' (Cole 2014). The purposeful misuse of data for disinformation on social media platforms offers dangerous new avenues for actors in conflict situations to control narratives through the use of "troll factories" and "bot armies" to disseminate propaganda. Humanitarian organizations are using social media metadata for a variety of reasons, but this can lead to surveillance, false identification and mis-targeting (Privacy International 2018).

Populations affected by conflict and displacement have made innovative use of mobile and internet technologies to augment their response, resilience and reach; examples include the building and use of the crowd-sourced mapping Ushahidi[1] by Kenyans to map and draw attention to the unfolding post-election violence in 2007. The AHRC/NERC/ESRC funded WhyDAR[2] project used qualitative GIS and creative practices to explore new ways of mapping and visualizing disaster risk reduction.

[1] Ushahidi website
[2] WhyDAR website

However, humanitarian innovation too-often fails to build on indigenous knowledge, local innovation, and existing capacity. To be optimally effective, humanitarian innovation needs to be in local languages, reflect local culture, be promoted by local champions, and adopted and sustained by local organisations.

Biometrics in humanitarianism

Biometric data is measurable physical characteristics that can be used to identify or verify the identity of individual. There has been a widespread deployment of biometrics in development and humanitarian contexts, but questions have been raised about the collection of refugees' biometric data, including use of iris-scanning, and the use of digital ID to regulate access to food aid. In 2018 Rohingya Muslims protested in refugee camps in Bangladesh against the United Nations refugee agency for refusing to identify their ethnicity as Rohingya on smart cards issued to them (Arkar 2018). The refugees also called on officials and aid agencies to stop collecting their biometric and family information.

Oxfam had a two-year moratorium on the use of biometric data. In a report co-written with the NGO the Engine Room they concluded that 'the potential risks for humanitarian agencies of holding vast amounts of immutable biometric data – legally, operationally, and reputationally, combined with the potential risks to beneficiaries – far outweigh the potential benefits in almost all cases' (Oxfam, The Engine Room 2018).

ICRC's Biometrics policy introduced in 2019, 'The Biometrics Policy', in line with the ICRC Rules on Personal Data Protection, requires the ICRC to explain the basis and purpose of data processing to its beneficiaries, including any data-sharing arrangements, regardless of the basis for the processing. If people do not want to provide their biometric or other personal data, or to see their information shared for humanitarian purposes with partners, the ICRC will respect their wishes (Hayes and Marelli 2019).

4. The Digital Aid Workshop

The UKRI Digital Aid workshop aimed to identify an emerging research agenda, build a network of researchers and practitioners, and inform UKRI's policies and funding priorities in this emerging space. Multidisciplinary researchers and humanitarian aid practitioners were brought together to take stock of these emerging themes, identify gaps and needs, and assess research priorities in the provision of humanitarian assistance in a rapidly digitising world.

Participants included International Non-Governmental Organisations (INGOs) such as the ICRC, International Organisation for Migration (IOM), the United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) Centre for Humanitarian Data and Privacy International, as well as researchers from across UK universities including fellows of The Alan Turing Institute from a range of disciplinary backgrounds. The event was hosted by The Alan Turing Institute: the UK's national institute for data science and artificial intelligence, based at the British Library.

Dr Neil Viner (Deputy Executive Chair, UKRI EPSRC) opened the workshop and spoke about the growth in concern about the ethical implications of technology; to this end UKRI is undertaking a review of Artificial Intelligence (AI) research and innovation. This review will provide a strategic analysis of the support for AI research and innovation and recommend future support strategies that will enable AI to reach its full potential in the UK. An advisory group chaired by Professor Tom Rodden has been established and the review will report in Spring 2020. The objectives of the review are to:

- Map UKRI current support for AI-related research and innovation
- Engage key stakeholders in exploring the UK's ambitions for AI-related research
- Set the UK's current position and future potential in an international context

In the morning session, the plenary panel was chaired by Professor Sir Michael Aaronson, Honorary Visiting Professor at the University of Surrey, Chair of GCRF Strategic Advisory Group and former Director General of Save the Children. He framed the session within the overall GCRF ambitions of bringing together policy

makers, practitioners and academics, along with the contextual issues of threats to humanitarian values from growing inequality and populism. The panel then reflected on critical questions around ethics in the humanitarian technology sector.

Charlotte Lindsey-Curtet (Director of Digital Transformation at ICRC) set out a strategy for appropriately supporting AI research and innovation in the UK. She reflected on the importance of focussing on protection and the fact that consent in humanitarian programmes has changed dramatically: she felt that 'people do not know what they are consenting to today' and that there is pressure on humanitarian agencies to accept technology from companies. She felt that people should not be excluded from programmes because they do not want to give over biometric or digital data.

Professor Kate Robson-Brown (Director of the Jean Golding Institute at the University of Bristol) is a data scientist working in forensic science in a humanitarian context. She focussed on the need to avoid perpetuating inequalities; both between groups in society and between Northern and Southern stakeholders. Professor Robson-Brown emphasised the importance of increasing the capacity of local actors to shape humanitarian priorities and projects. She was critical of the lack of core funding for what she described as the 'uncharismatic' end of data science; it is much easier to get short-term funding for a data set which then gets siloed somewhere rather than maintaining and updating the data set.

Professor Maria Fasli (Professor of Computer Science, Director of the Institute for Analytics and Data Science at the University of Essex and the UNESCO Chair in analytics and data science) spoke about another potentially valuable area of capacity building for academia in helping NGOs develop their digital and data skills. More broadly, there is a need for cross-sector understanding and a common language, with the involvement of governments and education systems. However, she also spoke about the risks of a 'brain drain' with big technology companies setting up offices in sub-Saharan Africa, making academia a less financially appealing option for talented computer scientists. She also emphasised the importance of ensuring

that code and digital products delivered for development and humanitarian purposes can be re-used. This is in line with the Principles for Digital Development [3]backed by DFID, which suggest that programmes look for ways to adapt and enhance existing products, resources and approaches, and also use open standards and open-source software. (Principles for Digital Development 2021)

Data science to Enhance Disaster Forecasting at the University of Sussex
The AstroCast project uses advanced data analysis techniques used in astronomy to facilitate improved drought and flood forecasting in Kenya. It supports pastoralists to decide the suitability and location of livestock pastureland. This will enhance their livelihood resilience in the wake of large and extensive droughts, overgrazing and land cover change. (UKRI 2019)

Ben Ramalingam, Lead consultant with OECD Innovation for Development, reflected on the 'fetishisation' of innovation of all kinds, and of digital technologies in particular. He argued that much of what happens in the digital humanitarian space is driven by corporate marketing, rather than by the needs of communities. He shared an example of this focus on marketing, rather than a priority for the data privacy of beneficiary communities, from August 2019.

5. Breakout sessions:

Three workshop breakout sessions looked at **Intelligent Assistance**: the role of AI in humanitarian assistance, **The Data Vault**: systems to secure humanitarian data and **The Digital Conditions of Aid**: places where humanitarian principles meet digital rights and ethics. There were many cross-cutting issues and a rich discussion surfaced three major themes:

- Human-centred humanitarianism
- Data safeguarding
- Prioritising the interests of affected populations

[3] Principles for Development website

5.1. Human-centred humanitarianism

Humanitarianism is an ethic of valuing human life. It is operationalised in the practice of preventing suffering and promoting human wellbeing and agency. The desire to keep the voices and needs of affected populations at the centre of humanitarian work was reaffirmed by multiple participants. When human-centred processes and the promotion of human agency lies at the core of humanitarian principles, it is legitimate to ask: why use digital technologies designed to systematically decentre human decision-making and remove human agency?

This is not a question about whether to use technology; it is question about how to use technology and what to use technology for. Participants had positive experiences of using computational techniques to map, monitor and document human rights violations. The ESRC funded Human Rights, Big Data and Technology Project [4] at the University of Essex considers the challenges presented by AI and demonstrates the value in using the technology for issues such as improving hate speech detection on social media (Zimmerman, Fox and Kruschwitz 2018).

However, workshop participants argued that machine learning, and algorithmic decision-making, could be seen as dehumanising technologies to the extent that they replace human agency and discretion with automated logic steps (an algorithm). They were keen to 'keep humans in the loop' when employing artificial intelligence to support human decision-making, to ensure 'that we keep people at the centre of everything that we do'.

Research in this area could usefully review practice in the existing use of artificial intelligence in humanitarian work and analyse its use through the lens of humanitarian principles. It would be valuable to understand what uses of artificial intelligence in humanitarian assistance increase the agency, freedoms or rights of affected populations and the organisations that work for them.

[4] Human Rights, Big Data and Technology Project (HRBDT) website

5.2. Data safeguarding

Workshop participants felt that there has been a rush to innovate in the absence of responsible data practices, or other due diligence, prior to implementation and a lack of protocols and best practice for data science. A discussion of mobile phone data records, to explore population movement in order to provide early warning systems for disease outbreaks, highlighted the existence of weak links in the data safeguarding chain. Particularly in a lack of adequate data security at small mobile network operators.

Through discussions on data safeguarding failings in organisations, it became clear that serious concerns exist about sub-optimal data collection, secure storage processes and an absence of standard operating procedures in many agencies. There was an appetite to share and learn more about data minimisation and anonymisation from other sectors, such as health and financial services. Participants wanted funds for reviews of current practice and policy on information security and risk management. Such reviews would surface evidence of current threats and harms in the ecosystem, as well as government and corporate practices and policies. Participants also wanted to bring together experts and humanitarian organisations in different regions and organisation types, in order to identify best practice, areas of challenge and to generate actionable recommendations.

Good practice on humanitarian data safeguarding

The OCHA Centre for Humanitarian Data ‘Data Responsibility Guidelines’ were released in March 2019 to help staff navigate the technical and ethical aspects of working with humanitarian data. The Centre for Humanitarian Data will facilitate targeted field support in at least 3 pilot country offices to guide colleagues in the implementation of the Guidelines. These pilots will allow for structured feedback and revision of the working draft based on hands-on experience, ensuring that the Guidelines are fit for the purpose of guiding responsible data management throughout the organisation. (OCHA 2019)

5.3. Prioritising the interests of affected populations

Humanitarian use of digital technologies is often driven by concerns with control and cost efficiency gains, rather than to increase the human agency or wellbeing of affected populations. There was some reflection that ‘digital pilots become an industry in themselves’. More than one participant argued that unproven innovations are being tested on vulnerable populations. It was felt that principles of free and informed consent were often impossible to secure in humanitarian settings. There is also very little focus on affected populations as users of data.

It was suggested that due diligence processes should be a precondition of humanitarian innovation and that an independent review board might be necessary to review the tech as it emerges or individual programmes/solutions. Research could usefully establish what pressures are leading agencies to rush ahead with experimenting on vulnerable populations. Questions might include: what incentives are driving humanitarian innovation? What mechanisms are necessary to safeguard vulnerable populations? What principles should guide future policy and practice?

What does it mean to fail in humanitarian tech?

The Ebola outbreak in West Africa in 2014 was one of the worst health crises in modern history. The international community pressed for the release of mobile network operator records, to aid response efforts. These records are some of the world’s most sensitive data sources. especially when linked to health information. However, research revealed a lack of dialogue around the significant legal risks posed by the collection, use, and international transfer of this data, and grey areas around assumptions of public good (McDonald 2016).

This highlights the broader issue, that many digital projects fail and yet we never speak about or learn from them. The sector has a huge reservoir of knowledge about failure, but we cannot speak of it and therefore we cannot learn from it. How can we create safe spaces in which to systematically learn lessons?

6. Towards a new Research Agenda

Discussions in breakout groups showed the urgency of further research into the risks and ethical dilemmas of digital humanitarianism. Against this backdrop, there is a vital role for researchers in identifying gaps and risk and in co-creating ethical frameworks and guidelines with affected populations and practitioners. In confidence, practitioners expressed anxiety about irresponsible data practices in their agencies and about a major data scandal waiting to happen. To avert this danger, the sector urgently needs to create a safe space where agency staff can speak openly and anonymously about what is going on, share learning and develop solutions. UKRI is well placed to convene such a learning process.

6.1. Overcoming barriers between research and practice

In theory, it is vitally important to have researchers from all disciplines collaborating with practitioners, but in practice workshop discussions surfaced significant barriers. Groups with very different timescales, incentives, terminologies and philosophical approaches face significant challenges in working together. In terms of timescales, humanitarian practitioners are incentivised to innovate, deliver and redeploy, often within timeframes of a few weeks, whilst researchers may dedicate years of systematic study and reflection to underlying systemic causes. The research community also often lack the standpoint of affected populations and the practical experience of practitioners. Researchers are often incentivised to publish in obscure and inaccessible formats and are not always successful in translating findings into timely policy and practice.

Where these collaborations have worked, they have been long term, rather than project based. This allows for slow, iterative projects as well as smaller, ad-hoc pieces of work; typically triggered via the shared interests of individuals meeting at specialist forums. Medicin Sans Frontiere's (MSF) collaboration with researchers was cited as an example of where this has worked well, as it involved long term engagement. But this long-term engagement should not just be bottom-up. Professor

Maria Fasli reflected on the need for institutional level leadership and CEO level commitment to make these partnerships work.

The challenges of building impactful long-term relationships are also faced by national research funders. UKRI are leading the way in these discussions by partnering with international organisations such as the ICRC and UNDP, but recognise the need to ensure that these organisations retain their neutral status and that these partnerships are beneficial in terms of research needs and funding timescales.

Research should seek to distil lessons learned across the many innovation programmes (non-humanitarian and humanitarian) that DFID has funded, to identify what works best to move projects through the different phases of innovation and scaling. This research could capture learning on the kinds of collaborations that are functional during each phase and how to get the right mix of funding and support types to build the capacity for sustainable humanitarian innovation. UKRI could help build local capacity by including a section on local capacity building targets in grant applications. Mike Aaronson emphasised how the traditional positioning of humanitarian organisations has been turned on its head by digital technologies and that there is a new imperative to engage with the private sector. This makes it vital to connect with people in the private sector who understand, and are committed to engaging with, the ethical issues around the use of digital technologies in humanitarian contexts.

6.2. Making interdisciplinarity work for everyone

A range of experiences, skill sets, and perspectives are necessary to identify blind spots and to develop solutions, in what is an inescapably interdisciplinary field: the application of technology to social change.

However, the different starting points of data scientists and social scientists requires explicit facilitation to ensure they produce synergy and not fractures. Humanitarian research should be centrally informed by the experience and needs of affected

populations and evaluated by the extent to which it increases their wellbeing, agency, freedoms, and rights. We need to find ways to include the voice of affected populations at every stage of research conception, design, implementation, and dissemination. The need to identify and build capacity of local organisations of affected populations, was one of the strongest themes of the day. It was suggested that UKRI can use its convening and grant-making power to facilitate and sustain such collaborations.

7. Priorities and next steps

A set of priorities and potential next steps emerged including the following:

Funding human and technical capacity

- Supporting computing-intensive work in data science, by funding infrastructure and computing capacity in the Global South: there currently is no support for hardware over £10,000.
- Support a cohort of Fellows to act as challenge owners for regional studies, to bring together data scientists and humanitarian organisations to work on specific challenges.

Bringing people together

- Ensuring that policymakers, donors, and the private sector are brought into future ‘digital humanitarianism’ research conversations.
- Root this conversation in lived experiences, by taking it to locations convenient to affected populations.
- Generating actionable recommendations through regional workshops with a range of different organisations, to identify best practice and flashpoints of challenge.

Implementing ethical practices in a humanitarian context

- Support and work with existing standards such as the Signal Code which translates existing international human rights standards into the context of the use of ICTs in humanitarian contexts. (The Signal Code 2017)
- Develop a concept and roadmap for coalition of humanitarian organisations to collectively audit and improve data and information security policies and procedures using different visualisation, communications, and e-learning tools and templates.
- Expand beneficiary involvement and accountability to include truly informed consent about why data is being collected, and what options and rights beneficiaries have.
- Conduct future-casting outcomes: doing a 'pre-mortem'. Ensuring that organisational accountability mechanisms are in place before a project starts.

Closing words

In the closing panel Charlotte Lindsay-Curtet warned that the humanitarian community has lost the ability to slow down how technology is being used. Governments have lost the capacity to develop policy and legal frameworks in this domain, so the moral compass is being set by international agencies or by companies. There is an important role for research to look at ethical questions and contribute to frameworks with practitioners.

She reflected on the issue of sexual exploitation and abuse in the aid sector and warned there will be the same kind of scandal but with data and humanitarianism in the next three to five years which might affect the whole sector; leading them to be judged by the lowest common denominator. This makes it critical that organisations know and act on their blind spots and have clear policies. In humanitarian crises people are vulnerable so we must not be making this worse.

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