HPG report

Digital technologies and inclusion in humanitarian response

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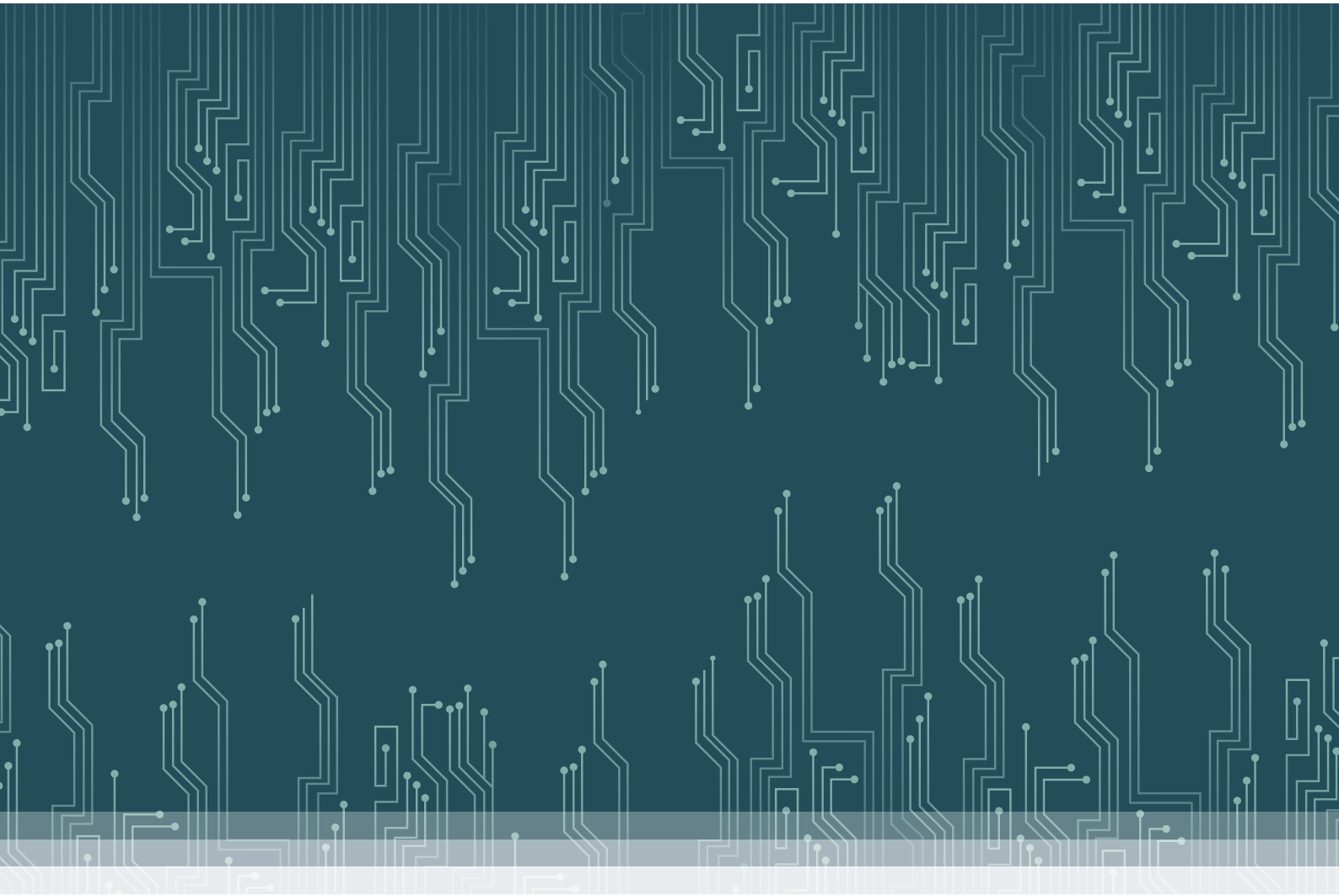

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About this publication

The Humanitarian Policy Group (HPG)'s work is directed by our Integrated Programme (IP), a multi-year body of research spanning a range of issues, countries and emergencies, allowing us to examine critical issues facing humanitarian policy and practice and influence key debates in the sector. This paper is part of HPG's 'Inclusivity and invisibility in humanitarian action IP'. The author would like to thank HPG's IP donors whose funding enables us to pursue the research agenda.

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Acronyms

AI	artificial intelligence
HPG	Humanitarian Policy Group
ML	machine learning

1 Introduction

Digital technologies are becoming an integral part of humanitarian responses and increasingly facilitate access to critical support in crises. The iris scans and fingerprints of aid recipients are fed into biometric verification systems run by the world's largest humanitarian agencies, altering how people are identified and how they interact with service providers. Predictive forecast-based financing models use machine learning (ML) to trigger the release of funds to communities likely to suffer drought and food insecurity. A global network of 'digital humanitarians' from across the world volunteer to produce up-to-date digital maps to inform responses, transforming how efforts are coordinated and implemented. While not always applied in an organised or systematic fashion, the process of digitalisation is accelerating across the humanitarian system, impacting almost every aspect of how it works.

At the same time, these digital tools are becoming intertwined with some of the humanitarian sector's most enduring challenges, including that of inclusion. Defined as ensuring programmes provide assistance and services, including information and protection, to the most marginalised people in a humanitarian crisis (see Box 1), inclusion touches on many different practical and philosophical debates around how the aid system works. As well as ensuring assistance 'irrespective of age, sexual and gender identity, disability status, nationality or ethnic, religious or social origin or identity', inclusive responses are those that ensure not just equal rights but also participation in humanitarian action (Searle et al., 2016, in Barbelet and Wake, 2020: 9).

The use of digital tools and approaches in the humanitarian sector has many implications for inclusion. In a global context of strained resources, digital tools offer the means to effectively scale up responses through better analytics, targeting and efficiency. While the response to the Covid-19 pandemic has dramatically illustrated this, with a greater role for digital technologies in interpreting virus spread and responses, their scale – and the standardised approaches that can come with digitally enabled approaches and tools – can often be in opposition to inclusion. While a focus on who 'falls through the cracks' of humanitarian responses tends to rightly emphasise the experiences and specific needs of marginalised groups, inclusion should also be understood as highly contextual, subject to change and a product of human relationships rather than determined by the fixed categories of quantifiable data that so often characterise digital ways of working.

Power is central to inclusion and exclusion, and concerns about its uneven distribution across the aid sector certainly predate digitalisation, but digital tools bear particular consideration. They are increasingly the means through which powerful aid actors understand crisis-affected people, their contexts and the support they should receive. While some people in crises use social media, digital mapping and other tools to self-organise and advocate for their rights, far more are recorded passively – whether they wish to be or not – by technologies such as biometric identification and satellite imaging. Recent headlines of Rohingya refugees' biometric data being passed without consent to the government of Myanmar constitute a worst-case scenario wherein already marginalised people are exposed to greater risk due to inadequate safeguards (HRW, 2021). Such examples go beyond data responsibility to demonstrate the very real harms that a lack of inclusive processes – for example,

consent and meaningful participation, both of which remain rare in many digital approaches – can bring for affected people. While they may be the sources of data about themselves and their communities, affected people often exercise little control over how that data is used. In the rush to adopt such tools, how to counter these risks and build more inclusive digital approaches for crisis response is a crucial question for the future of responsible humanitarian action.

Box 1 Defining inclusion

While inclusion is a critical concept in humanitarian action, there is no agreed sector-wide definition. The definition used in this study (Barbelet, 2021: 5) includes:

- Inclusion as impartiality: ensuring through inclusive assessments and the use of disaggregated data that humanitarian action reaches and focuses on the most urgent cases and those most affected by crises without discrimination.
- Inclusion as equitable access: ensuring that all individuals affected by crises can have equal access to services and assistance.
- Inclusion as specific and diverse needs: ensuring that humanitarian responses address the specific needs of individuals and cater to diverse needs, including through tailoring programmes.
- Inclusion as participation: ensuring that all individuals are able to participate in humanitarian responses. This includes influencing the strategic direction of humanitarian responses, the capacities of all individuals being recognised and harnessed, and that humanitarian responses listen to the voices of those too often marginalised in societies and communities.

This lens emphasises a rights-based approach and a greater focus on the root causes of crises, rather than just the provision of relief and services, as well as the human relationships, agency and structures that can determine inclusion. Vulnerabilities are therefore to be understood as the product of current and historical processes of marginalisation perpetrated by a range of actors.

Inclusion and exclusion can occur for both deliberate and unintended reasons, whether due to the targeting of specific groups, denial of access to needed resources, poor understanding of the particular needs of specific people or the personal biases of aid providers. These can result in a response that either does not reach certain groups or does not engage with them appropriately. These issues are highly complex, and despite global policy commitments, the track record of fostering this kind of inclusion in programmes remains fragmented and generally poor (Barbelet and Wake, 2020).

1.1 This study

This paper brings together the key findings of research into digital humanitarian action and inclusion, asking what the impact of new digital approaches has been on how inclusion is understood and operationalised in humanitarian action. This central contention brought with it questions around how new technology has changed the humanitarian sector, who has been included and excluded as a result, what these technologies mean for some of the sector's commitments and reform processes, and how the sector might adapt its use of digital technologies in the future to drive more inclusive responses.

The Humanitarian Policy Group (HPG) undertook three thematic case studies considering different technology areas: biometrics, geospatial mapping and social media. A total of 256 interviews were conducted with stakeholders and key informants, along with strategic engagement with the humanitarian and digital sectors. All the case studies drew on both global key informant interviews and country-level perspectives, including from the Rohingya response in camps in Cox's Bazar, Bangladesh, and interviews with refugees and aid responders in Jordan, Venezuela and Uganda.

The three thematic case studies focused on:

- Digital identity systems, particularly those that use **biometrics**, which refers to 'a set of electronically captured and stored attributes and credentials that can uniquely identify a person' (Casswell, 2019: 64). They can be used in systems enabling individuals to cross borders, as well as for registering and verifying people to access services, and their use by large humanitarian agencies is rapidly increasing – for example, in cash and voucher assistance programmes. Usually promoted as a means to prevent identity theft, they are also more invasive than other means of identification and end users have little say as to how such data will be used (Holloway et al., 2021).
- **Geospatial mapping**, a means of analysing the digital data of a place, which is then used as a way to create custom maps that have widespread utility for humanitarian actors, governments, civil society groups and many more organisations. It is commonly used by humanitarian actors for situational awareness and understanding hazards, services and needs, but can also be used as part of protection and advocacy activities (Bryant, 2021). Geographically located data requires the appropriate capacity, interoperability and skill to make use of it, but through open-source software it can be used, edited and removed by diverse groups of users: a key positive for building inclusion.
- **Social media** platforms such as Twitter, Instagram, Facebook, TikTok and WhatsApp were not designed for humanitarian purposes but are commonly used by people in crisis to maintain connections, access information, organise and support – or harm – each other (Lough, forthcoming). Humanitarian organisations also use social media to disseminate information and as a two-way communication tool, although it does play a relatively marginal role in humanitarian practice owing to challenges in implementation and concerns over how best to engage. While social media is certainly participatory, and so could be argued to support inclusivity, its role as an amplifier of misinformation and hate speech, and its limited utility in reaching the most marginalised mean inclusion is far from guaranteed.

These three sets of tools share several characteristics, chief amongst these being that they are often mistakenly presented as solely technical, obscuring the complex social, economic and political contexts in which they operate. Each also brings new dynamics around access, design and use, including how they capture and analyse data. Taken together, these factors can determine the inclusiveness of programmes, assessments and other activities, and so inclusion must be a fundamental consideration in deciding whether and how to apply digital tools to aid humanitarian responses to a crisis.

2 The application of digital technologies in humanitarian assistance

2.1 The incentives and drivers for digitalisation in the humanitarian sector

There are several dominant incentives and drivers at play in the humanitarian sector around the adoption of digital tools. Among the most important is the offer of better data for context analysis. For humanitarian actors with strained capacities and facing demanding humanitarian needs, these tools offer the promise to understand contexts better and more rapidly and ultimately deliver assistance more effectively. For aid users, the visibility that digital tools offer – for example, through community mapping of informal settlements that may not appear on commercial or official platforms – can function as a first step towards improved service provision. However, as will be further detailed, such uses require more than just technology, and can also bring risks.

Digital tools also promise the means for greater oversight of assistance, with the aim of measuring impact or reducing cases of end-user fraud or diversion. In our research, this was most clearly seen in the case of biometrics, where the primary drive for adopting such a system for refugee aid recipients in Jordan was the offer of 'stronger levels of assurance' to donors and aid organisations that cash assistance was going to the right recipient (Holloway et al., 2021: 19). Yet people living far from biometric-enabled cash machines (ATMs), as well as those who had health conditions such as cataracts, experienced difficulties with using the iris-scan technology. Older people, other people with disabilities and groups who are often excluded from appropriate aid also reported facing further barriers to accessing aid when these tools were used. Indeed, most recipients interviewed preferred standard ATM cards to a biometric system for receiving cash. As a result, the goals of delivering greater oversight and accountability for the benefit of donors and organisations clashed with the principles of inclusion.

There is a dominant global humanitarian narrative of rising needs and ever-more restrictive resources. Many digital tools promise the means of 'doing more with less' and providing the means to better target assistance to those most in need. This partly explains, for example, the rapid utilisation of automation in the humanitarian sector, where artificial intelligence(AI) and ML tools have been recognised for their potential role in assessments. In terms of inclusion, the results of such a trend are so far mixed. Humanitarian mappers described advances in ML as beneficial in the context of limited resources, as foundational tasks such as mapping buildings and roads can be automated to free up capacity for more inclusion-focused tasks, such as providing support to marginalised groups or assessing whether spaces are safe on the ground (Bryant, 2021). As will be described in a later chapter, proximity to affected people – in the form of appropriate digital tools suited to the context and a human presence to mediate – is an important determinant of inclusion. Yet this should be weighed against the latent biases within many algorithms and ML processes developed far from humanitarian contexts, which can also have implications for inclusion.

Perhaps the strongest driver for digitalisation in the humanitarian sector has been the need to catch up with the wider world, to assess and engage with affected populations who use digital platforms and tools in everyday life. In contrast to the project-focused and siloed framing of digital interventions by humanitarians, digital mapping initiatives and, most obviously, social media are used for all kinds of networking, leisure and information-gathering activities – including in humanitarian contexts.[1] During crises, these platforms nonetheless now have a central role in disseminating information that allows users to navigate, communicate and collectively make sense of such changes (Latonero and Kift, 2018).

Proponents of digital mapping, in particular, argue that open-source resources such as crisis maps constitute a 'common good' that all humanitarian responders can use during a crisis, including affected people. Unlike the traditional framing of 'victims' of disasters and conflicts, affected populations can be active participants in constructing a shared understanding and narrative of the crises they face. Experiments with digital mapping have led to 'messy maps' integrating more qualitative data, such as interviews, to depict visualisations of human networks of support and where formal and informal responders are, challenging notions of an objective and technical view of a response (Bryant, 2021: 36). These alternative uses of technology can sit outside humanitarian silos. As the case of Rohingya activists using WhatsApp to coordinate protests against a new 'smart ID' process in Bangladeshi refugee camps shows, such digital-enabled mobilisation can publicly take humanitarian actors and humanitarian issues into an explicitly political space (Lough et al., 2021). Yet if inclusion is interpreted as treating affected people as active agents and not passive beneficiaries, such processes are valuable.

Social media and digital mapping can facilitate a more diverse set of representations of a crisis, unseating the exclusive monopolies of interpretations and narratives often perpetuated by aid actors. Although this is another potential positive development for inclusion, it is not without risks. Social media is also a vehicle for spreading misinformation and hate speech that are often highly prevalent in crisis contexts and which can threaten already marginalised communities.

1 Crisis-affected people also pay for these services, often more so than in wealthier countries: wealthier populations spend about 2% of their monthly income on data, but this can go as high as 5% for people in low-income countries (Arora, 2019).

3 The implications of digital tools for inclusion in humanitarian responses

Many digital tools and approaches do not lend themselves to improving inclusion, in part because this is rarely the primary driver behind their use. Providing the means to deliver more assistance with fewer resources, or better tracking for donor monitoring purposes and to address aid diversion, might lead to some beneficial outcomes for users of humanitarian services and assistance, but such goals can also run counter to principles of inclusion and negatively impact the prospects for furthering more inclusive responses. This chapter considers the implications these digital tools have for inclusion, both positive and negative, and how they can impact the wider dynamics of exclusion, participation and agency in humanitarian action.

Inclusion is rarely a central motivator when technologies are adopted in a response. This means opportunities for inclusion-building approaches may be lost or are considered an add-on to tools and processes. Representatives of humanitarian organisations using social media for feedback initiatives, for example, reflected on having to push against an initial common attitude of 'build it and they'll come' amongst their colleagues, who assumed a representative group of aid users would participate without further efforts to find and engage them. Similarly, participatory mapping approaches have in general been created after, and as a response to, large and remote digital initiatives; efforts to make mapping groups more diverse and locally representative were a reaction to unrepresentative groups and maps. Concerns around who is using such digital tools and their links to affected people, which could eventually lead to inclusion-building approaches, tend to come later, if at all, mirroring the sector's tendency to paint inclusion concerns as secondary to more 'immediate' needs. This manifests in the use of aid user 'consultations', rather than participatory design, since the boundaries and uses for a digital tool and processes have been decided in advance of engagement with potential users. While acknowledging pressures on time and resources, not considering these issues early on can cement a framing of, and a response to, crises that further excludes the most marginalised groups in the long term.

3.1 Digital tools replicate real-world dynamics of exclusion

Digital tools do not operate on a 'blank slate' but rather in a world of existing dynamics of inclusion and exclusion. Most obviously, since access to and effective use of digital technologies are not equal, those without digital technologies miss out on their benefits. Digital divides operate across multiple levels, from reliable access to network infrastructure, connectivity and devices, to the ability to effectively use and innovate with technology to improve one's welfare (Lough, forthcoming). In a humanitarian context, underlying infrastructures of connectivity and electricity may be lacking or unreliable, and digital divides and inequalities in power can be especially marked. A study of connectivity in refugee settlements in Jordan, Uganda and Rwanda, for example, found rates of mobile phone ownership among refugee populations were substantially lower among women and people with disabilities

(Handforth, 2019). Digital spaces, tools and approaches often replicate the dynamics around inclusion that exist in the physical world. Technology frequently operates as an amplifier, with positive and negative impacts that magnify underlying human and institutional intent and capacity (Toyama, 2011).

Digital divides in technology-heavy approaches amplify existing inequalities and exclusion in multiple ways. As described earlier, refugees in Jordan experience barriers to using iris identification-run ATMs for cash programmes, due to age, health and physical distance (Holloway et al., 2021), and the adoption of this technology first and foremost benefits donors and humanitarian organisations, not affected people. What remains missing is an actual assessment of the relative costs and benefits to aid users of using digital technology compared with earlier methods.

While exclusion through lack of access to digital technology is a familiar concern for humanitarian and other organisations, this is a product of complex 'infrastructures of exclusion', comprising economic, political and social dynamics. For example, a woman living in a displacement camp may not have a say over the use of a shared mobile phone because of both patriarchal social norms and a deliberate limitation on connectivity by a host state, as has been the case for Rohingya refugees in Cox's Bazar, Bangladesh. This can be compounded by unequal access to digital spaces and tools, which can mirror many of the same inequities that exist for specific groups and individuals.

The abuse of people's personal biometric data, such as that of the Rohingya in Bangladesh, is especially damaging in that it is a continuation of real-world exclusion from participation, adequate consultation or consent that has contributed to their current marginalisation. The Rohingya have been systematically stripped of citizenship and any sense of belonging through processes including the denial of identity documents, rendering them more vulnerable than people who are well-represented and protected by strong legal frameworks (Al-Achkar, 2021: 73; Kaurin, 2021: 2). Despite this, there is limited understanding among humanitarian organisations of such cumulative, intersecting dynamics, and of the potential for an uncritical adoption of digital technology to compound pre-existing exclusion.

3.2 Visibility without consent can lead to exclusion

Digital tools have rapidly expanded the visibility of various subsets of people living in crisis by enabling greater quantification via the platforms and databases used by humanitarian organisations. This can bring considerable benefits to the delivery and oversight of humanitarian services, as data science, crowd-mapping and other tools have increased the available information about crisis-affected places, people and their needs. Exclusion from maps and therefore also from services and infrastructure is common for many marginalised communities. Entire groups of refugees in displacement settlements in West Nile, Uganda, who had previously been missed from assessments and services due to their plots being further away from supply roads, were suddenly made visible to service providers through mapping initiatives (Allan, 2020: 226). A study conducted by the Minority Rights Group in Somalia found 33 internally displaced person (IDP) settlements that were designated 'minority only' had received less assistance than the national average. In this case, digital maps and assessments helped to address their exclusion, as the World Food Programme incorporated these settlements as a result (Thomas and Opiyo, 2021: 28).

Yet the advantages of digital technologies in making people visible should also be critically challenged when considering inclusion. While affected people are 'included' in the sense they are better 'represented' in databases or on maps, this form of representation may not be meaningful and may even be harmful (Wilton Park, 2019: 5). Many of the default relationships that affected people have with digital technologies, such as biometrics, leave little scope for their participation and consent. Few people can opt out of initiatives or exercise control over their personal data. Such a dynamic in humanitarian contexts mirrors concerns common to debates around digital rights more broadly,[2] albeit with heightened inequalities of power between data subjects and those collecting and using it, given the relationships at stake in humanitarian interventions. The widespread use of the language around inclusion complicates this picture: digital initiatives may promise a 'right to be counted' and 'provide an identity' to their users, although it is a relationship run through powerful intermediaries (Hosein and Nyst, 2013; Madianou, 2019: 594). While visibility may be necessary for access to relief and services, it is by itself insufficient for inclusion.

Digital tools collect different types of data in different ways, each with their own implications for visibility and inclusion. For digital technologies relying on passive modes of data collection, such as through collecting information on online behaviour or observation-based data such as satellite imagery, people are usually made visible without their explicit consent or awareness. Thus, it is already the case that, while someone might be made visible for the first time on a map or assessment process, there is little or no scope entailed for their meaningful inclusion or involvement in a participatory process. As many technologies used in aid continue to move toward this passivity, informed consent processes in humanitarian contexts appear increasingly isolated (Cinnamon, 2019). Not only does a lack of clarity of where data will eventually go present risks, as has been seen with the transfer of biometric data of Rohingya refugees to the Myanmar government, but also the lack of viable alternative systems means that, even where consent is sought, the choice presented by humanitarian agencies to affected people can be a false one. If saying 'no' is perceived to mean not receiving assistance at all, aid users are less likely to raise concerns over data misuse. As Syrian refugees receiving assistance in Jordan explained: 'I am in need of every penny, so I didn't ask' (Holloway et al., 2021). The concept of 'informed consent' is already a dubious one in a humanitarian context, owing to the huge disparities in power between aid users and providers, and questions over whether aid users can freely refuse with no adverse consequences. This problem is worsened in the absence of feasible alternatives that can be used to provide assistance if consent is not given.

Just as many digital tools used in humanitarian crises were originally intended for high-income, non-conflict contexts, so too is much of the framing and language around digital risks. While privacy concerns are still present for crisis-affected people, they sit alongside many other potential harms that are less recognised. For instance, individuals need not be personally identifiable for data collected about their

2 For example, around the European Union's General Data Protection Regulation, and questions about individual ownership and control over personal and personally identifiable data.

community or location to cause harm.[3] In displacement or other humanitarian contexts, visibility can be detrimental to the safety of many persecuted people and communities, whose safety often relies on their ability to avoid detection (Bedoya, 2014). Some humanitarians involved in digital mapping of communities under threat from persecution understand this threat, describing the need for community control of this process to avoid making 'treasure maps' that could facilitate exploitation by hostile actors. Others recounted instances of government authorities clearing informal settlements of refugees in Jordan and Kenya, following their new visibility on crisis maps (Bryant, 2021). The lack of participation and power of already marginalised populations only serve to further exacerbate the risks of such harms.

3.3 Digital tools do not handle complex vulnerability or marginalisation well

Digital technologies can also bring new risks. The way identities and characteristics are translated into data, and recognised by digital tools, can impact how they are understood by humanitarian responders, with consequences for affected people. Digital tools classify information into discrete categories, however granular, that can then be read and used. Not only are these categories determined by external actors who may embed them with their own biases, but also the collation of granular information inevitably leads to nuances and details being lost (Bell et al., 2021). At the same time, it can also be a process that detaches data from contextual and historical issues that are central to understanding dynamics of exclusion and inclusion.

There is an incompatibility between data collection processes that leave little room for complexity, context or nuance and the highly dynamic reality that determines a person's marginalisation and vulnerability. Meaningful inclusion requires an understanding of complexity and context, including the root causes behind displacement, and long-standing political, economic and social marginalisation. Digital technologies do not, in isolation, capture the complex histories of people in crisis contexts, but they do solidify one view of people and their circumstances by representing them as data in discrete categories. This was seen in Cox's Bazar, where a hazard-mapping process led to 5,000 households being flagged as at risk of flooding. Attempts to convince residents to move, however, failed to consider the real economic and social reasons – for example, being close to services and employment – behind their location and thus their refusal to participate in a planned relocation scheme (Bryant, 2021: 34).

Many digital tools, such as crisis maps, also solely reflect the present. Digital crisis data 'prioritizes immediate quantitative knowledge over longer-term contexts, underlying crisis conditions, and other qualitative understandings' (Chernobrov, 2018: 937). This 'ahistorical' depiction is of value for a time-sensitive aid response but, in isolation, it shows little of how and why humanitarian needs came about. This effect can be compounded by open-source crisis mapping and other big data approaches, which rely on recent imagery and online platforms, erasing previous maps of affected areas (Bryant, 2021).

3 Raymond (in Dubberley et al., 2020: 306) has labelled this non-personal but still potentially sensitive information 'demographically identifiable information', which can easily be corroborated with other sources to identify groups of people for persecution.

Social media analytics often gauge activity around particular hashtags or common words, and use this information as an indicator of the utility of a particular platform or salience of an issue – a practice that has been criticised for promoting sensationalism and short-term framings (Crawford and Finn, 2014). As these tools become more central in the remote assessment and planning of responses, and potentially used by staff of international organisations who are relatively detached from the context in which they work, they risk de-emphasising root causes of marginalisation and perpetuating a shallow understanding of a context and affected population. This situation has been compared to a theatrical performance, with a staged reality of efficient, resilience-building aid distribution using new technologies in contexts such as Somalia and Ethiopia masking a backstage of decision-making monopolies by powerful actors, collusion and diversion. While powerful governments and aid organisations benefit from this status quo and self-censor to maintain it, the root causes of marginalisation and exclusion remain unaddressed (Jaspars et al., 2020).

Responses that target the most vulnerable or marginalised must at least be informed by issues of politics and power if they are to effectively navigate them, yet the data categories and analysis prioritised through digital approaches risk furthering a reductionist approach to inclusion. There are signs of recent shifts away from narrow categories and understandings of ideas such as vulnerability – for example, the broadening of 'gender' approaches to now account for harms against men, boys and gender-diverse people. Continuing to improve on what has been called the sector's 'fragmented approach to vulnerability' requires such shifts, and digital approaches need to better incorporate a similar appreciation of the complexities of inclusion to facilitate this (Barbelet and Wake, 2020: 8).

3.4 Digital approaches can contribute to exclusion through 'techno-colonialism'

'Techno-colonialism' refers to the notion that digital power dynamics in the Global South, together with existing social, economic and humanitarian power structures, are reforming and continuing colonial and extractive relationships (Madianou, 2019). As a way of understanding power and technology in humanitarian settings, it articulates many of the concerns around the lack of participation and agency that affected people can exercise in digital approaches. With affected people lacking the means to participate in many digital approaches, such a dynamic results in a knowledge imbalance, or a new digital divide, between those who passively produce data and an elite who collect, analyse and make use of it (Cinnamon, 2019). Humanitarian and private sector organisations that make use of digital tools exercise power in deciding, often from afar, how people are represented, and whether and how they will have access to their own data – a form of extraction that Krishnan (2022) argues can cause harm and remove agency.

Ownership and design of the tools themselves are key to this digital divide: although various initiatives that utilise digital mapping and social media can demonstrate involvement by affected people in their design and implementation, they are ultimately reliant on platforms and software developed and operated by firms and staff based outside the context in which they are applied, which has practical implications for inclusion. The sector also ends up relying on digital tools programmed for other contexts, which are not necessarily fit for use in humanitarian settings. Thus, the dominance of technology companies

headquartered in North America or Europe, designing products for those same settings – for example, social media platforms for western audiences or GPS systems for non-humanitarian contexts – means that fewer resources are devoted to optimising accessibility for less profitable markets across the world. For example, the lack of optimisation for minority languages and/or for moderating the spread of hate speech on social media have huge impacts for inclusion, keeping or driving many groups of people offline and further 'pushing minorities to the periphery' (Bytes for All, 2021; Lough, forthcoming). Automated digital mapping is another example, with lower accuracies reported in recognising the roofs of houses outside North America and Western Europe (Bryant, 2021). Using tools such as these therefore necessitates a process of identifying what technologies were programmed to do, and what they might be likely to omit or miss when applied in humanitarian responses. These particularities must be considered, with ML tools often needing to be 'retaught' by in-country programmers to be appropriate for the aims of the humanitarian sector and context.

Humanitarian actors also have a contentious track record of carrying out experimental applications of technologies in crisis contexts (Sandvik et al., 2017; Madianou, 2019). Biometrics, distributed ledger technology[4] and drones have all been used in humanitarian crises in ways described as experimental, benefitting from a lack of national regulations and carrying unnecessary risks for crisis-affected people (Jacobsen, 2015; Coppi and Fast, 2019; Meier, 2021). The use of humanitarian data to train AI algorithms, for the commercial benefit of third-party systems used by humanitarian organisations, is also a lucrative business[5] (Coppi et al, 2021: 11). Although these many experimental technology projects may lead to some improvements, their effectiveness is often mixed, and they enact extractive relationships of a kind that is hard to envisage being permitted in other places (Jacobsen and Fast, 2019: 6).

HPG's research highlights techno-colonial relationships in responses and suggests a generally pessimistic picture of the degree to which digital technologies have improved the level of participation that end users can exercise over response design and implementation. Some initiatives have certainly used digital tools to further inclusion, such as digital mapping initiatives: through OpenStreetMap, anybody with a computer and web access can edit and create maps used for crisis response, although the advocacy of groups such as Humanitarian OpenStreetMap Team (HOT) is required to push for better representation of affected people themselves in those map-making spaces. Organisations using such platforms for specific areas, such as Map Kibera, have gone on to train residents to map informal settlements and to use those maps to campaign for better recognition and public services from authorities.

4 Distributed ledger technology is a means of recording data across multiple computing devices, creating identical copies and so not being stored in a centralised manner. Its advocates argue such a system is more transparent and secure, since validation from multiple ledgers make tampering with the records or transactions they hold effectively impossible. Blockchain is the most famous example and is the foundation of cryptocurrencies such as Bitcoin (Coppi and Fast, 2019).

5 The training of AI/ML algorithms is also increasingly carried out by aid users themselves. The rise of 'click work' or microwork, including labelling images to improve algorithms for the benefit of the world's largest technology firms, has been documented in displacement camps and has been criticised as being poorly paid and insecure (Jones, 2021).

Yet, instances of successful inclusion-building should be seen within a broader context of growing obstacles that digital tools have not alleviated. These patterns are reinforced through the framing of analysis resulting from digital tools and through the framing of the digital technology sector as a whole as 'objective', positioned above the messy, political context 'on the ground'. This 'presumed neutrality', as well as simple moral assertions that good intentions can never cause harm and should be above reproach, erase the power relations at play and protect such applications from critical considerations (Krishnan, 2022). These dynamics are especially stark when considering inclusion, as the benefits of adopting many digital tools are concentrated in the hands of the already powerful, while the most marginalised are faced with new risks.

4 How can digital technologies be used to further inclusive humanitarian action?

4.1 Proximity

Digital technologies can facilitate the breaking down of the dynamics of exclusivity in humanitarian programmes, although whether they do so is largely down to analogue – or human – factors. The relationships and degree of proximity between those who design digital interventions and affected populations, and the levels of trust between data collectors and service users, were cited as among the key determinants of whether the benefits of such initiatives were distributed more equitably. The presence of trusted interlocutors, for example, was central to the success of community mapping schemes for flood warnings, health and infrastructure provision, while the principle of people following advice from smaller groups and familiar sources could be seen in the use of WhatsApp groups in distributing health information (Bryant, 2021; Lough, forthcoming). Yet considering both the practicalities of humanitarian programmes and what is often the logic and promise of many digital tools – that of remote and scalable initiatives not needing an 'on-the-ground' presence – ensuring this kind of proximity is not straightforward, and like inclusion itself, involves trade-offs.

Guaranteeing that digital tools suit the needs of affected people, and are appropriate to the context and its supporting infrastructure, are basic considerations – but not ones that are universally followed in applying such tools to humanitarian contexts. These considerations could take the form of translation into local languages, digital platforms designed to work with low bandwidth, or social media initiatives for accountability or feedback purposes being sufficiently engaging and relevant. Even global platforms such as Facebook are used differently in different contexts, necessitating contextual understanding to engage with them in a safe and effective way (Costa, 2018). Ensuring this appropriateness requires local insight and proximity through local staff and presence, something that even so-called 'remote' initiatives have always relied on. For example, although the response to the 2010 Haiti earthquake is popularly framed as the beginning of 'digital humanitarianism', the crowdsourced needs project Digital Humanitarian was built on contextual knowledge, as members of the Haitian diaspora plotted and translated incoming information to make a useable map for relief providers and affected people (Gutierrez, 2019: 102).

Proximity is also essential to understanding and overcoming context-specific exclusions, including the crucial 'last mile' engagement and delivery for those who do not use digital tools. The assumption that people affected by crisis will continuously adopt digital technologies, albeit perhaps at a slower rate than elsewhere, is often inaccurate and belies the fact that people can easily revert to non-digital technologies in crises. The most marginalised Venezuelan refugees travelling to Colombia on foot (so-called *caminantes*), for example, had to use alternative means of communicating once budgets

for data and smartphones were exhausted (Lough, forthcoming). Proximity delivers a context-specific assessment of the added value of using digital tools, and for what purposes, and highlights who is likely to be included and excluded.

However, proximity is often the opposite of what many digital tools promise – that is, interventions with less on-the-ground involvement, increasing efficiencies and 'doing more with less'. Pushing against this trend are initiatives such as the Flying Labs Network, founded by WeRobotics, which seeks to counter the distancing of digital approaches in responses and advocate a 'technology transfer' to affected communities. Created in response to a drone disaster-mapping industry dominated by companies and non-profits based in the Global North, the network seeks to mitigate the power imbalance of such projects in humanitarian crises by supporting locally led drone mapping organisations and principles to 'hire local' (WeRobotics, 2022). Localization Lab similarly 'connects communities, partner organizations and developers around the importance of cultural and linguistic context in technology', by making open-source technology available to underrepresented communities in 220 languages (Localization Lab, 2022).

Finally, and more fundamentally, digital tools that facilitate a more remote relationship with people, combined with a common assumption that a digital system is irrefutably accurate, have long been concerns in other sensitive areas of public life including policing, healthcare and border control. Using fixed categories to qualify for a service with no room for negotiation can mean especially exclusive outcomes, including denial of service, with special characteristics or circumstances not considered by the tools' designers. Humanitarian staff working with biometric registration in Jordan described how those who were unable to use thumbprint scanners brought a family member to register in their place. While the non-governmental organisation concerned was accommodating, many others are not, and the sector has a track record of technology failures being attributed to end users acting fraudulently (Holloway et al., 2021; Hosein and Nyst, 2013; Jacobsen, 2015). Such cases justify concerns that digital tools make possible a far more conditional model of assistance, with the onus switching to affected people to demonstrate their eligibility for assistance and resulting, in effect, in exclusion as default.

Regardless of the hidden algorithmic biases that inform many digital technologies, simply the space and human contact to meet people halfway, empathise with their circumstances and deal with ambiguity are vital for effective and inclusive humanitarian work. Any reduction of this kind of contact must be done with great care.

4.2 Participation

If proximity is key for inclusive applications of digital technology, then participatory design is best practice for planning and design, with affected people directly inputting into the crucial first stages of the production of a digital tool. To date, their involvement tends to be limited to consultation-type processes, where aid users are asked their opinion about pre-existing tools and what those tools have achieved, as was the case in the mapping of healthcare facilities in the Rohingya refugee camps in Bangladesh (Bryant, 2021). While this process is valuable, it does not redistribute power or realistically provide a route to an alternative design. One of the most participatory approaches is that offered by

open-source mapping initiatives, which, although still dominated by volunteer mappers based in North America and Western Europe, at least offer the means by which individuals across the world can map their own local area. To that end, local mapping groups – MapBecks in the Philippines, GeoChicas from Brazil and many more – advocate for a more diverse and inclusive participation in creating such resources (ibid.).

Social media as a 'participatory' space, albeit a highly flawed one, could also provide lessons for engaging with affected people who are navigating a wider digital world beyond the aid sector. Since digital spaces can be prone to uncertainty, as well as conduits and amplifiers of misinformation, humanitarians who had considered social media often expressed reluctance to engage with such platforms in our interviews. There may also be discomfort on the part of aid organisations to cede control and become a minor actor in a wider digital space. Not engaging effectively with tools such as social media can also carry risks for inclusion, in terms of giving up a now important, albeit chaotic, forum that many people use. Lessons in principled engagement in this space can be found with initiatives such as the International Rescue Committee and Mercy Corps collaboration Signpost, which provides information on existing platforms for affected people. The initiative aims not only to combat the spread of misinformation, but also places emphasis on community ownership and empowerment, encouraging open dialogue with service providers (Signpost, 2020). If inclusion is among the considerations on whether to engage with existing digital infrastructure, then meeting aid users in the digital spaces they are already familiar with is important.

Humanitarian organisations must navigate these new digital spaces, just as they do physical ones, informed by and advocating for principles that aim to protect affected people. Each of these spaces and tools comes with its own dynamics and inequalities that impact inclusion, so they must be carefully considered for humanitarian use. Among them are important but difficult-to-quantify metrics that can sit outside usual humanitarian considerations, such as the degree of agency that participants can exercise when using a pre-existing digital space. To further inclusion, humanitarians need to also consider how to decentre themselves and use digital technologies to enable people to articulate their own understanding of crisis and recovery.

Participatory design is challenged by how the aid sector operates, and in the digital space especially by a narrative around its tools and processes being 'technical', having to be designed, created and operated by specialists who understand them. As advocates for a decolonial approach to technology argue, such language tends to perpetuate an exclusionary dominance of specific perspectives, categories of expertise and approaches to knowledge (Scott-Smith, 2016). This extends to the type of data collected and deemed important, with a stubborn tendency to 'privilege quantitative over qualitative data, and technical expertise over local knowledge' – a product, in part, of a need to generalise and simplify, but also one that denies a valuable avenue to participation (Barbelet and Wake, 2020: 25). Such design approaches are also limited by capacities and funding for aid programmes. While the open-mapping initiative Map Kibera has been highly participatory, focused on training residents to be mappers, its intended design as 'pure, open-ended, community-driven participatory development and social accountability' proved difficult to adequately fund (Hagen, 2017: 8). What participatory approaches

exist are small in scale, with the sector's largest organisations offering 'no systematic incorporation of affected population's views or participation in technology decisions' (WFP, 2022: x). This is, in part, a symptom of the framing of participation in the sector as a means by which to improve particular humanitarian programmes, rather than being seen as a right (Lough et al., 2021: 20). An increased reliance on data analytics, ML and more may further limit the extent to which the sector's biggest actors incorporate the views of affected communities (Spencer, 2021).

What connects proximity and participation is trust, which is frequently discussed and often assumed in humanitarian work (Krishnan, 2022). Yet an absence of trust is common in the digital space – an absence that is evident, for instance, in the misinformation prevalent on social media and furthered by data breaches and protection failures. Lack of trust is also the underlying rationale behind many digital initiatives, such as donors citing concerns over aid diversion as reasons for introducing biometrics. Inclusion instead requires trust to be a key part of the equation in introducing digital tools (Kaurin, 2021). Trusted interlocutors have a key role as intermediaries, translating tools and providing a two-way relationship between affected communities and humanitarians, as shown in the use of interactive WhatsApp messaging groups to disseminate messages and answer queries by organisations such as BBC Media Action (Lough, forthcoming). Centring these trusted voices is more important than digital interventions themselves: for example, a study of trusted media sources in the Democratic Republic of Congo recommended setting aside computational methods in favour of local civil society actors (Fondation Hirondelle, 2019). While trust is difficult to measure or build remotely, and is easily lost, it remains a crucial and overlooked determinant of success in digital initiatives and is key to inclusion.

5 Conclusion

Applying an inclusion lens to digital technology use in humanitarian crises highlights many genuine trade-offs that humanitarian actors must consider during a response. For example, while more people could benefit from critical assistance through the collection and analysis of their data, they are simultaneously put at greater risk of it being used without their consent in a system that might lead to tighter surveillance. Conversely, more accessible tools and platforms that aid users can engage with more actively, such as social media and digital mapping, may exclude many people in humanitarian settings as these tools have a less clear relationship with humanitarian action and tend not to be used by the most marginalised. There is also a balance that has not yet been struck between the necessary collection of sufficient data to make sense of inclusion and exclusion, and adequate analysis and use of such information.

While there are many examples of digital technologies being used by international, national and local humanitarian organisations, civil society groups and others to facilitate more inclusive responses, they are often fighting against a prevailing tide of incentives and dynamics from the aid and private sectors. Inclusion is rarely a motivating factor behind decisions around when and how to apply most digital tools. Much of what they offer in terms of allowing more distant relationships and management is at odds with contemporary understandings of how to build inclusion into responses. There are also fundamental limitations to a 'datafied' approach to inclusion, with a flattening of identity, complexity and fluidity into discrete categories that are not reflective of realities. Humanitarians must at least attempt to mitigate these problems by expanding access and control of such data to affected people themselves.

Although many of the biases and exclusive practices in aid design and delivery predate digitalisation, the promises of new digital tools to overcome barriers and deliver a model of aid that is inherently more equitable should be critically considered. So, too, should assumptions that such platforms, tools and processes are objective and technical. More investment will be needed, as mitigating the exclusions that digital tools can amplify (or even introduce) is usually dependent on resource-intensive, in-person and mixed-methods approaches, as are the more intensive end-user consultations and participation processes needed for designing more appropriate digital tools. Failing to prioritise inclusion will continue to produce inappropriate digital tools that are not suitable for the most marginalised. Overwhelmingly, the most marginalised aid users are faced with the risks of technological failures and exclusivity. Lacking true informed consent, meaningful feedback channels and other protections, the worst of these new digital relationships between aid provider and end user mirror colonial models of resource extraction. They threaten to undermine ongoing reform efforts that have aimed to make the sector more responsive and accountable.

Recommendations

There is now a growing number of initiatives in the humanitarian sector that are articulating new digital rights and responsibilities, including the Harvard Humanitarian Initiative's Signal Code (Greenwood et al., 2017), the Data Responsibility Guidelines (OCHA, 2021), Operational Guidance for Data Responsibility in Humanitarian Action (IASC, 2021), the International Committee of the Red Cross' Data Protection Handbook (Kuner and Marelli, 2020) and the Cash Learning Partnership's Data Responsibility Toolkit (Raftree and Kondakhchyan, 2021). Others consider the implications of digitalisation for upholding existing humanitarian principles and standards, such as the Core Humanitarian Standards or SPHERE standards. Yet the use and awareness of such toolkits is far from guaranteed. The increase in different humanitarian and private actors involved in assessments and responses makes a shared understanding and commitment to common principles difficult and technologies such as ML have fewer inclusive principle-making processes (Coppi et al., 2021).

Context, and data collection methods, collation, analysis and use, all bring a slightly different set of implications for thinking about digital technology and inclusion. But there are some commonalities when considering the politics and incentives around how these processes have been introduced, as well as the need to assess digital technologies within a broader approach to inclusion that takes participation and agency into account. Krishnan (2022) has also proposed that decoloniality should be added to these considerations: how to best recognise and consider multiple, diverse understandings of concepts such as rights and fairness.

In seeking to apply digital tools and approaches in ways that will be beneficial for inclusion, humanitarian responders should consider the following.

Apply and adapt existing digital principles

- Work to codify existing approaches and develop more consistent frameworks for applying an inclusion lens to technology deployment and use. Adapt user-centred design processes as much as possible in resource-poor humanitarian settings.
- Consider specific digital risks relating to humanitarian protection and risks for specific groups.

Prioritise contextual awareness, participation and consent

- Ask if the technology is the right fit for the context. In many cases, older methods of identification, registration, verification and communication are good enough and carry fewer risks.
- Spend time sensitising communities offline and in-person before implementation, to overcome any fears and misunderstanding. Understand how affected communities are using technology themselves and for what purposes – are there existing systems that can be adapted?

- Offer a meaningful alternative to service provision via the technology. Provide information about options in simplified and transparent language that explains where data is stored and who has access. Consent should not be taken at face value if end users believe that assistance will be revoked if they do not consent or if they complain.
- 'Problematise' digital tools and consider their biases and assumptions – where were they designed and how have automated systems 'learned'?

Develop responsible inclusive data protection

- Practise data minimisation. Do not collect data that is unnecessary for the provision of aid and could potentially pose harm to individuals by someone wishing to target specific population groups.
- View data protection as more than just compliance or a 'tick box'. Rather, it is an opportunity to not expose people to additional and unnecessary risks.
- Uphold principles around data protection and rights, even when using software and platforms run by non-humanitarian entities.

Recommendations for other actors

- Donors should prioritise support to cross-sector and agency-specific initiatives, to address inclusion in digital humanitarian action more explicitly. They should support the development of an evidence base for potential and actual harms, and help set out and mainstream standards around digital inclusivity.
- Donors should incorporate questions relating to inclusion and technology in their proposal formats.
- Technology providers and users should share lessons of inclusive technology and consider where their practice could focus more on reducing exclusion and applying an inclusion lens.

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