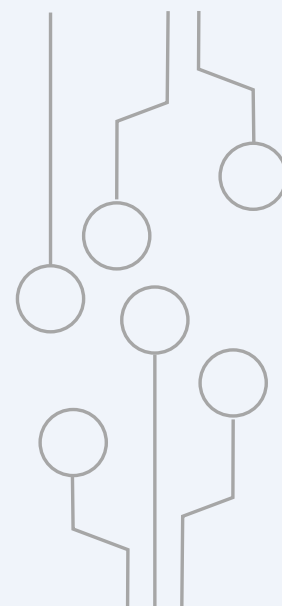


TECHNOLOGIES IN HUMANITARIAN SETTINGS: COMMUNITY AND STAKEHOLDER ENGAGEMENT

DECEMBER 2022



In brief:

- There is strong support for community and stakeholder engagement in the development and implementation of digital technologies for use in humanitarian settings. Implementation, however, has been slow and there have not yet been sufficient sector-wide efforts to put community engagement into practice.
- Human-Centered Design (HCD) is emerging as a common practice used by humanitarian organizations to engage communities and stakeholders around technological innovations with a growing understanding of what works as well as its limitations. HCD, however, can be opaque and extractive, reinforcing asymmetrical relationships among humanitarian actors.
- Community and stakeholder engagement in the development and implementation of digital technologies entails careful planning and considerations for community dynamics and ensuring diverse perspectives. It also requires starting early and planning through the lifecycle of a technology including implementation phases.
- Community and stakeholder engagement requires flexibility, iterations, and long-term programming, with the support of adequate financial and human resources, including facilitators trained and experienced in relevant concepts and approaches.
- Leadership and institutional commitment are necessary to ensure that the digital transformation of humanitarian response does not fail broader efforts to give more power, funding and resources to humanitarian aid organizations and people based in crisis-affected countries.

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INTRODUCTION

The humanitarian system is an increasingly complex environment marked by critical needs rising faster than the availability of financial resources to address them, placing pressure on humanitarian actors to improve the effectiveness and efficiency of their work. To address these pressures, humanitarian actors have turned to multiple strategies, including technology and innovation as well as localization—the respecting, funding, and strengthening of local and national organizations to better address the needs of affected communities [1]. At the convergence of these two strategies are questions about how technology and innovation used by humanitarian actors is developed and implemented with meaningful participation and engagement of people in crisis-affected communities and local organizations.

Over the past decade, there have been progressively more calls within the humanitarian system for increased participation and engagement of affected communities. In 2012, “participation” was one of five Inter Agency Standing Committees (IASC): Accountability to Affected Populations Commitments in which humanitarian agencies undertook to enable communities to have a decision-making role in processes that affect them [2]. Several years later, the Grand Bargain Commitment 6 at the World Humanitarian Summit 2016 focused on a “Participation Revolution” in which humanitarian agencies pledged to include people receiving aid in decisions that influence their lives [1].

Despite these commitments, the focus on participation and engagement in humanitarian action has remained mostly rhetorical and has not become part of standard practice or led to meaningful processes with real results [3-4].

The lack of meaningful engagement with people in crisis-affected communities is especially apparent with humanitarian action involving digital technology. While the 2021 IASC Operational Guidance on Data Responsibility in Humanitarian Action emphasizes that operations be inclusive and people-centered and give affected populations an opportunity to be included, represented, and empowered, its focus is on data management rather than the design, development, and implementation of technologies [5]. Moreover, while one of the nine Principles for Digital Development is “Design with the User” [6], these approaches have been prioritized more by the digital development community of practice than by the humanitarian community.

This study examines efforts of humanitarian agencies to conduct community engagement processes and assesses how and under what conditions digital technology in humanitarian settings can be designed, developed, and implemented with meaningful engagement from affected communities, local organizations, and other relevant stakeholders.

It provides concrete, actionable considerations for how humanitarian actors can better ensure the participation and engagement of the people they are serving. The focus of this study is on externally led innovations (as opposed to community-led innovations, which are the subject of a separate study in this case study series) and looks specifically at information communications technologies (ICTs) for use in humanitarian crises.

RESEARCH APPROACH

CONCEPTUAL FRAMEWORK

The research was structured according to a “technology use” conceptual framework which uses a systems approach to place technology within a wider system of multiple components including (i) technology, (ii) policies and processes, (iii) people, (iv) partnerships, and (v) operating environment [7-8]. These components are dynamic and linked, and their interactions lead to the system’s observed behavior in rolling out digital technology in the humanitarian system. Drawing from this framework, the research study focused on the five primary questions in Table 1.

METHODOLOGY

This analysis is based on qualitative research conducted between January and June 2022 consisting of a comprehensive literature review and key informant interviews with 20 people

who have conducted or participated in (or otherwise supported) engagement processes around technology to better understand how these processes work and identify lessons learned.

Relevant documents related to digital technology design, development, and implementation in humanitarian settings as well as community and stakeholder engagement were identified using search strings in Google Scholar, Pubmed, and other search engines with the following keywords: stakeholder, community, engagement, participation, empowerment, digital technology, humanitarian technology, and humanitarian ICTs. Documents reviewed include strategies, evaluations, research studies, and project reports.

A range of different organizations were represented by the key informants including international and local implementing NGOs (8), service providers (5), United Nations agencies (4), foundations (1), academic/research

Table 1: Analytical framework and research questions

TECHNOLOGY	Which humanitarian ICTs have been developed and/or implemented with meaningful community and stakeholders’ engagement, at what stage in the innovation cycle, and under what conditions?
POLICIES AND PROCESSES	What specific mechanisms and processes are used to conduct meaningful community and stakeholder engagement and how does this feed back into decision making about technology development and/or implementation?
PEOPLE	Who conducts, supports and participates in meaningful community and stakeholder engagement and who is represented from community and stakeholder groups?
PARTNERSHIPS	How do partnerships support meaningful community and stakeholder engagement processes in the development and implementation of ICTs for use in humanitarian settings.
OPERATING ENVIRONMENT	How have external factors, including the COVID-19 pandemic, influenced meaningful community and stakeholder engagement processes?

institutions (1), and associations (1). Representativeness was sought in terms of administrative location of interviewees (10 informants are based in humanitarian agencies' headquarters around the world, 4 are remote, 3 are in country offices, and 2 are in regional offices) and geographic location (13 people are based in the global South and 7 in the global North). Technologies discussed in the interviews included mobile applications (e.g., for data collection, case management, or information dissemination), community feedback mechanisms, digital cash transfers, crisis maps and dashboards, drones, artificial intelligence, and blockchain.

A semi-structured interview guide was developed for use in the interviews to prompt discussion of relevant key issues across the research questions, as well as lessons learned and recommendations. Interviews were primarily conducted remotely, though five were conducted face-to-face. Interviews were recorded when given permission by interviewees, and all interview data was transcribed from recordings using Otter.ai software. Data from the literature review and interviews was analyzed thematically, using codes assigned a priori based on the research questions (deductive coding) and, via grounded theory, through emerging themes developed collectively over the duration of the fieldwork (inductive coding). Patterns and themes related to the five primary research questions were then identified in the data and grouped into findings as well as actions and considerations for humanitarian actors.

SUBJECT

The Grand Bargain's "Participation Revolution" committed partners in humanitarian action (individuals and agencies from the public and private sectors, as well as traditional and nontraditional funding sources) to (i) developing common standards and a coordinated approach

to participation in humanitarian system, (ii) ensuring inclusion of the most vulnerable, (iii) strengthening local dialogue and utilizing technologies to support feedback processes, (iv) building links between feedback and program adaptations, and (v) funding flexibly to facilitate program adaptation [1]. A five-year review of the Grand Bargain, however, found that the "participation revolution" has failed to deliver [4]. Activities have been conducted at the institutional level and some at the collective level, but many of these have been focused on engagement with people in affected communities to gather information and seek feedback. Therefore, "aid continues to be provided on the basis of what agencies and donors want to give, rather than what people say they want and need" and a system-wide transformation to more demand-driven humanitarian responses has yet to occur [4]. With travel restrictions, social and physical distancing, and increased remote working, the COVID-19 pandemic has led to an even greater distance between humanitarian staff and people in communities at the center of humanitarian crises [7] and has further restricted participatory and engagement efforts.

In parallel, but independently from the commitment to engagement and accountability with people in affected communities, humanitarian actors have embraced the digital transformation of humanitarian action as a path toward effectiveness. A number of studies have found, however, that this digital transformation has been largely a top-down process and has lacked sufficient meaningful engagement with affected communities and other relevant stakeholders, including country offices of international agencies [8-9].

Despite these challenges, there remain strong rationales for participation by and engagement with crisis-affected communities and relevant stakeholders, including for humanitarian action

involving digital technology, as illustrated in Table 2.

Humanitarian agencies, however, often do not articulate why engagement is important, and this is problematic because goals are important for determining the degree of engagement and specific approaches [3].

There is also a lack of clarity on what is meant by community and stakeholder engagement within the humanitarian system. “Community” is a contested term and can hide inequalities and internal power structures (such as around gender) [10]. In this study, “community” broadly refers to stakeholders—both individuals and organizations—who interact with digital technologies utilized in humanitarian programs. This includes people in crisis-affected settings, as they are the intended users for many digital technologies (such as digital cash transfers) or are affected by their implementation (such as biometrics). Communities in crisis-affected settings can be delineated by geographic location or individual characteristics such as age, gender, or status [11] and may have representatives (such as elected leaders in refugee camps). “Community” in this study additionally includes staff in humanitarian agencies who may be the primary users of

certain technologies, such as mobile data collection applications.

Like “community,” “engagement” is also a term that lacks clarity and is often used interchangeably in the literature with many other terms such as participation, sensitization, mobilization, empowerment, and trust-building [12]. This study conceives of engagement as taking one or more of the following forms, as shown in Table 1, which are on a continuum starting with one-way communication and ending with two-way/multi-way communication [13-15].

The study further understands “engagement” as occurring at any point of a technology’s lifecycle, including in problem recognition, design, development, implementation, and adaptation. For example, in the problem recognition phase, community and stakeholder engagement might focus on what the problems may be in a particular context, options for solving these problems, whether technology can be used to address the problem, and if so, whether technology is safe and sustainable in that context. In the design and development stages, on the other hand, engagement processes might be undertaken to determine how a new digital technology can be developed

Table 2: Rationales for engagement

1. **Value-based or normative rationales** – agencies should support engagement because it is the right thing to do, in order to fulfil a moral duty and/or written obligations, respect the rights and dignity of crisis-affected groups, and act in solidarity with them.
2. **Instrumental rationales** – agencies should support engagement because it makes programs more effective, efficient, and of greater quality by helping them gather information to feed back into programming decisions and better meeting the needs and wants of crisis-affected communities and relevant stakeholders.
3. **Emancipatory rationales** – agencies should support engagement because allowing voice and agency for crisis-affected communities strengthens society and addresses underlying vulnerabilities and inequalities.

Source: Adapted from Brown and Donini, 2014 [3]

so it is appropriate, acceptable, and useable. And in the implementation stage, engagement might be undertaken to support the rollout of a technology as well as create feedback loops to iteratively improve and adapt the technology and supporting programs.

At the same time, embedded within the many strategies humanitarian actors use to engage crisis-affected communities and organizations are larger questions about what constitutes meaningful participation and engagement. At a very basic level, an engagement process can only be considered “meaningful” if peoples’ recommendations are taken seriously and considered in decision-making about a digital technology [16]. Additional considerations for meaningful processes are that (i) they should start as early as possible and be ongoing, not an isolated or standalone event, (ii) different categories of “communities” (individuals and groups) should be represented and involved, and inclusion ensured, and (iii) processes should be transparent, respectful of people’s time, and free of intimidation and coercion [16-17].

Table 3: Forms of engagement

INFORMING	Providing communities with information about a digital technology
CONSULTING	Obtaining community feedback on a digital technology
INVOLVING	Working directly with communities to ensure concerns and aspirations are understood and considered in digital technologies
COLLABORATING	Partnering with communities on a digital technology
EMPOWERING	Assisting communities to design, develop, and implement their own technologies

FINDINGS SUMMARY

- Humanitarian agencies that have undertaken community and stakeholder engagement processes in the development and implementation of digital technology in humanitarian settings have done so for a range of different ICTs used by both aid workers (such as mobile data collection applications) and people in crisis-affected communities (such as digital cash transfers).
- Agencies use varying terms and concepts for engaging with communities, and specific strategies differ depending on how the community has been defined, the goals of engagement, and the stage in the lifecycle of the technology.
- There is general consensus amongst people leading and facilitating community engagement processes that it is both the right thing to do—since the people interacting with digital technologies should have a say in how they are developed and implemented—and makes programs more effective by ensuring digital technologies and supporting programs are appropriate, useable, and sustainable and by improving user and stakeholder buy-in, with many having learned from previous experiences with failed technology and innovation projects.
- Priorities for digital technology in humanitarian settings are still often set by humanitarian organizations and donors, rather than starting with intentional discussions with citizens, local organizations, and aid workers about what is needed and possible solutions (which may or may not include technology). Thus, community and stakeholder engagement processes should begin early, before a focus on digital technology solutions has already been determined.
- Engagement processes are considered meaningful if they feed into decision-making processes about technology design, development and implementation, and include the closing of feedback loops with participants. Processes that do not seriously consider information in decision-making about the technology are extractive, and lead to disillusionment and mistrust.
- There is increasing experience of conducting human-centered design (HCD) for designing and adapting technologies in humanitarian settings, with a growing understanding of how user insights can lead to greater technology uptake and program success, as well as the need to balance HCD with systems thinking and a wider understanding of the digital landscape, systems, and literacy levels.
- Community engagement processes are also conducted during the implementation phase of rolling out digital technologies in humanitarian settings, with some agencies building in two-way communication to inform new programming and continue to iterate and respond to user needs.
- Community engagement processes require facilitators trained and experienced in relevant concepts and approaches. These skilled people might be located internally in humanitarian organizations or found in external partners.
- When conducting community engagement, there is a tendency to fall back on involving the usual stakeholders (individuals and groups) as participants and over-simplifying conceptions of “communities” and “users.”
- Being inclusive and ensuring diverse perspectives in community engagement requires attention to who should be engaged, how and where to engage them, language issues, and power differentials between people leading, facilitating, and participating.
- Community engagement processes in humanitarian settings raise ethical concerns, underscoring the importance of adhering to humanitarian principles related to consent

and innovation in emergencies when undertaking these processes.

- Budgets and project timelines for humanitarian response that facilitate community engagement for digital technologies are those that allow flexibility, iteration, and long-term programming. Organizational systems of humanitarian agencies also influence meaningful engagement around digital technologies.
- A few agencies are building participant insights databases, modelled on UX databases, as a tool to address repeated engagement with the same users, as well as problems of insufficient budget, time, and human resources for community engagement. Such a database can also give participants more agency over their data and establish two-way communication but building them requires addressing significant logistical and ethical issues.
- For international humanitarian agencies, and in some cases for national organizations, partnering with local agencies is critical for engagement efforts since they are more closely connected with communities. These relationships also facilitate a more demand-driven approach to technology and humanitarian aid more generally.
- The COVID-19 pandemic further emphasized the need for international humanitarian agencies to collaborate with local organizations in engagement processes for digital technologies; those international agencies that did not have partnerships in place found engagement to be extremely challenging during the pandemic, and often impossible.
- Engagement activities of local agencies and national offices of international agencies were also affected by the COVID-19 pandemic—some were unable to reach communities due to COVID-19 restrictions while, in other contexts, agencies could continue engagement processes but with

delayed timelines and often requiring new approaches for reaching people.

- There is sometimes misalignment between international agencies and local partners regarding capacities of local partners, with stronger partnerships emphasizing collaborative work to identify strengths and weaknesses of all partners and finding ways to enable and empower.

FINDINGS

TECHNOLOGY

Humanitarian agencies that undertake community engagement do so for many different types of digital technologies and employ a range of different terms and conceptions.

Humanitarian agencies and their partners have undertaken community engagement for many different types of digital technologies, using varying approaches and processes (as will be discussed in the next section). This study found that many different terms for engagement were used including participation, consultation, co-creation, co-design, and inclusive adoption. Moreover, at least three different, sometimes overlapping, conceptions of “community” emerged. One is a focus on communities as vulnerable, at-risk, or crisis-affected people. The second envisages communities as the “users” of digital technologies, whether they are aid workers or people living in affected communities. The third conceives of community as any group of people or network doing an activity together related to digital technology. A key difference between these three conceptions is the language used, with the first utilizing definitions and terms from the humanitarian system, the second drawing from language used in the technology sector, and the third emerging from language and concepts related to network-centric approaches (such as, for example, in the open-source technology sector). The varying ways of speaking about community engagement may create confusion; however, some argue that different definitions are unimportant as long as community engagement processes are undertaken and are done in a meaningful way [11].

A second key difference between these three definitions is where humanitarian organizations place themselves in relation to these definitions

of “community”—within it or separate to it. One interviewee noted that when defining “community,” it is important for humanitarian organizations to think about where they sit in relation to this community in order to recognize power differentials which may exist in engagement processes, and which may complicate efforts to ensure they are meaningful.

Humanitarian organizations that prioritize community engagement use instrumental and value-based rationales, and many learned from previous experiences of technology and innovation projects that faltered due to a lack of engagement with communities.

Humanitarian organizations that conduct community engagement in the design, development, and implementation of digital technologies do so primarily for instrumental reasons. As mentioned previously, instrumental rationales support engagement because it makes humanitarian programs—in this case, programs involving digital technologies—more effective and efficient, better meeting the needs of those affected by crises. Interviewees spoke of the need to conduct community engagement to ensure buy-in, and also to ensure efficiency since programs with technology can be so expensive.

Humanitarian technology requires a huge investment, so you want to make sure you get it right. It's more expensive if a technology is developed that is not appropriate

UN Protection Officer

A handful of interviewees also spoke of value-based rationales for conducting community engagement, noting that it is the “right thing to do.”

Community engagement around digital technologies is often undertaken after previous

experiences of launching technologies that involved no consultation with the technology's intended users, with interviewees describing these as failures that were inappropriate and a waste of money, and others voicing concerns about potential harm to affected communities. These experiences pushed them to prioritize meaningful community engagement in future technology projects.

That project [an innovation imported from a donor country] really opened our eyes because it just didn't work. There really was no human-centered design or user consultations done around it. And so there was no buy-in and no ownership from the community

Innovation Expert for National and Regional Humanitarian Agencies

Despite efforts by some humanitarian agencies to undertake community engagement processes, priorities for digital technology in the humanitarian field are still generally set by international agencies and donors, rather than by aid workers, local organizations, and citizens.

Assessments of the “participation revolution” show that humanitarian aid continues to be delivered based on decision-making by agencies and donors, rather than the people affected by crises [4]. Interviewees—particularly those working for local organizations—emphasized that this is also the case regarding digital technologies in humanitarian action. There is an allure to new technology and an interest on the part of international agencies and donors to try new tools that they believe are promising, often because agencies think they will improve the efficiency, effectiveness, and accountability of their operations. Additionally, technology companies may wish to contribute to humanitarian efforts and offer their technologies to agencies working in crisis-affected areas. These technologies, however, may not match

with what country offices, local organizations and citizens express that they need or have the capacity to implement. Interviewees also noted that even when community engagement around digital technologies occurs it sometimes begins too late—after the decision to employ a particular technology has already been made by international agencies, donors, or technology partners—rather than beginning with a dialogue in communities about needs and appropriate solutions, which may or may not require digital technologies. At the core of this problem is that humanitarians and technology partners are thinking about digital technologies from their own perspective, rather from the perspective of the people who will be using or affected by the technologies. Shifting the focus more towards crisis-affected communities, and away from technology, thus requires a significant mindset shift on the part of humanitarian agencies and staff.

If you want to ensure sustainability, don't start with technology. You start with the question: what do humans intrinsically see as a problem? What do they currently use to try and solve it? What could be used in technology to help it? And can that technology survive in that context?

Product Designer for Humanitarian Agency

The problem with working in the technology sector is that it is exciting and sexy, and people want to use technology. But the challenge is taking a step back and making sure that you deeply understand the local context and people's relationship to technology, how people are already using technology, the technical capacity, and the landscape of what apps and services are already available. Because if we know one thing, it's that the humanitarian sector does not need a new app. If you're not adding value to the end user, you're just doing it for yourself, and I don't think you're doing your

job as a humanitarian.

Humanitarian Connectivity Researcher

To make this shift, interviewees spoke of the need to embed community engagement principles and practice in humanitarian agencies' operations (as will be discussed further in the next section). They also spoke about decisions to focus instead on community-led innovation through the establishment of local innovation and fabrication labs and skills-based training with communities to ensure that people have full agency and autonomy in decision-making about innovations. Another research study in this series focuses specifically on these community-led approaches.

POLICIES AND PROCESSES

Specific engagement strategies differ depending on how the community has been defined, the goals of engagement, and the stage in the lifecycle of the technology.

Humanitarian agencies use a range of different processes during the problem recognition, design, development, and implementation phases to engage with communities—including people from affected communities as well as aid workers—and other decision-makers such as government officials, local partners, and donors. Strategies are context-specific and depend on who will be interacting with the technology but require a deep understanding of the community and are supported by partnerships with local organizations (see following sections on “People” and “Partnerships”). One innovation approach that is increasingly used by humanitarians during the design phase is human-centered design, also called user-centered design, design thinking, or co-design. The choice of approaches and specific strategies employed by agencies depends on who the community is—the people and groups who will be interacting with the technology. These choices also depend on the goals of engagement and the

stage of the technology's lifecycle (design, development, implementation, adaptation). Interviewees emphasized that despite the approach and strategies used for community engagement, they require continuous processes rather than once-off events as well as sufficient time and resources.

Engagement processes are considered meaningful if they feed into decision-making processes about technology design, development, and implementation, and include the closing of feedback loops with participants. However, engagement often falls short of ownership and decision-making role.

Engagement processes that involve collaboration with communities are only meaningful (rather than extractive) if they are seriously considered in decision-making about the design, development, and implementation of technologies. Interviewees emphasized that meaningful processes also involve the closing of feedback loops with participants of engagement processes.

I think one of the best teaching things you can say about community engagement is that you must give people feedback on their feedback.

Innovation Expert for an International Agency

One interviewee who worked in a country office for a humanitarian agency had experienced extractive engagement processes and stated that these processes lacked sincerity and were a waste of time. These types of processes have serious consequences for future collaboration and trust between people and agencies within the humanitarian system. If participants in community engagement efforts keep sharing information and see nothing happening with their feedback, they will likely become disillusioned, mistrustful, and will not be motivated to keep sharing information. On

the other hand, if people share information and then see some kind of action coming out of it, they will likely keep participating and sharing.

Interviewees spoke about ways to ensure meaningful engagement. Agencies conducting community engagement processes need to communicate and manage participant expectations from the beginning, so people do not misunderstand the reasons for engagement. This involves efforts to communicate the nature of the project, and potential benefits and risks to participants [18]. Also, mechanisms for how information will be considered in decision-making and how feedback will be given back to participants need to be established early on. Interviewees discussed various mechanisms they have tried including preparing synthesized reports or handbooks that are concrete and actionable. Another interviewee spoke about establishing multi-stakeholder governance structures (that include senior managers, donors, and community members such as representatives of refugee communities) with the goal of collapsing hierarchies between these groups and allowing direct, two-way communication about community needs and perspectives about solutions. Once there is action, then feedback loops with participants can be closed through appropriate communication means.

There is increasing experience of conducting human-centered design for designing and adapting technologies in humanitarian settings, with a growing understanding of what works as well as limitations.

The human-centered design (HCD) approach draws from different methods and fields—ethnographic, participatory, design, and systems thinking—to ensure that the perspectives of a technology’s users are integrated into design and adaptation of technologies [19]. Design company IDEO defines three general phases of HCD: 1) inspiration (understanding people), 2)

ideation (generating, testing, and refining solutions), and 3) implementation (bringing the solution to market and maximizing impact) [20]. There is not a set methodology for HCD, and the evolution and adaptation of methodologies is encouraged [19]. Many of the tools and methods used for HCD are similar to those already used in humanitarian and development programming, such as participatory methodologies [18]. At the core of the HCD approach is collaboration (between the designer/developer and user) and iteration, which allows continual refinement and improvement of solutions.

Agencies have been using HCD in development projects involving digital technology for years and one of the Principles for Digital Development is “Design with the User” [6]. In the humanitarian setting, however, the use of HCD has been more limited, particularly with affected people as the main end users of innovations [18], though recent work has placed a renewed focus on its use in humanitarian settings [21-23].

In interviews, this study found that agencies are increasingly using HCD for technologies in humanitarian settings—primarily during the design phase of new digital technologies though also sometimes in adapting technologies that have already been implemented. This research found a range of HCD approaches were being tried, based on many different levels of engagement including consulting, involving, collaborating, and empowering. Some agencies are primarily conducting research using qualitative and participatory methods using tools such as digital diaries, user journeys, maps, focus group discussions, and interviews. For example, Ground Truth Solutions in collaboration with the Humanitarian Policy Group and Oxfam utilized user journeys in research in Kenya and Iraq on recipients’ perceptions of cash transfer programs [24]. Additionally, to better understand how people

living with disabilities in humanitarian settings use mobile technology and the barriers they encounter, GSMA's Mobile for Humanitarian Innovation program utilized an HCD approach with tools such as user journeys and digital diaries [19].

We are working [on a mobile technology project with refugees] with people who have hearing impairments and people with visual impairments. And we asked them to map out their community and placed figurines around the map to show where they go, who they interact with, and where they feel safe. And for people with visual impairments, for example, their world was so much smaller because they didn't have the assistive technologies to go too far from home or do much independently. Because when visual impairments and refugee status collide, people feel very isolated and lonely and confined to their homes. And that map gave us a deeper understanding of what daily life looks like and helped us as researchers to better understand the challenges that need to be programmed for.

Interviewees argued that HCD for technologies in humanitarian settings have provided important insights that have fed into technology design and development and improved community and stakeholder buy-in, leading to greater uptake and program success.

Human-centered design takes more investment but if you do it properly, it can have larger effects.

Humanitarian Connectivity Researcher

Interviewees pointed to several different ways that HCD made digital technology more effective. First are those interviewees that spoke about making iterative changes to the technical design of a digital technology once they better understood, through HCD

processes, the needs and challenges faced by users (such as humanitarian field staff and people living in crisis-affected communities), and people affected by the new technology (such as beneficiaries of programs in crisis-affected communities). For example, one interviewee explained how HCD processes for a digital case management application led to changes that allowed it to be a better fit with workflows of humanitarian workers and ensured that data would synchronize securely in low technology environments. Another interviewee spoke about the design of a mobile cash transfer program for people without legally recognized identification in which HCD raised issues around digital literacy and led to changes to the interface that included an audio option.

Other interviewees spoke about how HCD processes improved the content of and mode for delivering information through digital technology. For example, interviewees spoke about a technology project that was developed to provide early warning alerts for adverse weather events based on interactive voice response (IVR). The partners developing the program spent significant time conducting HCD in the design phase and understanding how people use their phones, including what time they prefer to receive phone calls and how best to deliver information in that particular context. These insights were then built into technology design and content development, leading to impressive rates of uptake. That same platform was then rapidly adapted, again using HCD, for use in disseminating messages during the COVID-19 pandemic.

Other interviewees pointed out that HCD processes not only influenced the design of technologies but also the programs that supported them. For example, one person spoke about how HCD processes for a digital cash transfer program highlighted challenges for people with mobility issues and pointed to programming issues such as ensuring that

cashing out agents were in accessible locations and offering extra transport allowance to people with mobility issues. In another example, HCD research in a crisis setting found that people who had been receiving information about humanitarian assistance through mobile phones could no longer afford those phones and therefore risked losing access to important information. This finding raised critical programming questions for humanitarian agencies working in this setting.

Finally, interviewees emphasized that HCD processes increased buy-in by users and related stakeholders. For example, interviewees felt that the success of the IVR project mentioned earlier was due to the co-designing approach which led to significant buy-in both by country-level staff and technology users.

It was really important that we were capturing people's actual challenges and using believable stories about people through our technical modality which was IVR...we were telling stories of real people, we did soap operas, telenovelas, as our training modality. And that ensured buy-in and kept people engaged.

International NGO Country Director

While HCD is emerging as a common practice of engagement around technological innovations among humanitarian organizations, there are risks specific to conducting HCD in humanitarian contexts. Furthermore, HCD is typically part of a problem-driven approach triggered by a concern that must be perceived to exist.

The literature notes there are risks specific to conducting HCD in humanitarian contexts such as security concerns in some settings that make consultation processes too risky [25] as well as ethical concerns, as will be discussed in further detail below. Additionally, one interviewee noted that while HCD seeks to begin with the

problems that people face, rather than starting with the solution, often in the humanitarian space, HCD processes begin with a technology already in mind, or a limited set of solutions being offered.

In a sense...we're coming with a very limited set of solutions that the users are allowed to choose from, and we're sort of trying to align what we're learning from users with what we're already allowed to do, rather than coming and saying, let's figure out together what we can do here to make your lives better.

Human Designer for a Technology Company

Another interviewee noted that in HCD processes there can be a misalignment in terminology between humanitarian organizations and technology designers—as well as potential differences in value systems underpinning their work—in the development of digital technology, and to address this requires taking time to develop shared terminology and understandings. This point is also reiterated in the literature in which a matrix is presented that helps translate and communicate humanitarian effectiveness into technology designers' terminology [26]. Another interviewee noted that sometimes when HCD processes are underway, it becomes clear that a technology solution is not needed but pressure from other parts of an agency or from donors for a digital solution means that these findings are ignored.

Another limitation is that HCD can lead to the design of solutions that make sense to the participants in the process but may not fit within the digital system and literacy levels already existing in agencies or government systems, and these end up unusable or needing to be re-worked. HCD processes can also lead to repeated engagements with the same user,

where the same people—who may be volunteering their time—are asked the same questions repeatedly over multiple time periods. There is thus a need to understand these limitations to HCD and be intentional about lessening their ill-effects. This includes balancing HCD approaches with systems thinking and making sure there is an understanding of the digital landscape, systems, and literacy levels, humanitarian work practices [27], and all potential risks to the use of digital technology. It also means purposeful and careful planning to make sure that people are not being overburdened by consultation [19], with consideration given to compensating people's time (as will be discussed further below).

In an HCD approach, you need to take a step back and understand the challenges that humanitarians and beneficiaries are facing...including understanding mitigation measures if issues arise. Because a digital solution comes with a certain level of rigidity. It's a machine, not a human. And a machine will not understand if a mother is upset because she lost her card, and the child is sick and needs to get treatment immediately. This is a life-saving environment so there are all these different implications that need to be carefully considered.

UN Innovation Expert

Community engagement processes are less frequently conducted during the implementation of digital technologies in humanitarian settings, with some agencies building in two-way communication to ensure these processes are not merely extractive. Incremental improvement based on community feedback remains infrequent.

Community engagement processes are also conducted by humanitarian actors during the implementation phase of a technology's

lifecycle, primarily in the early phase of implementation. Often this is to encourage adoption and participation of communities in implementation of digital technologies. For example, one interviewee explained how they consult with community members in order that they understand the work that the agency is doing with a technology, to encourage adoption, and to gain important information specific to the community that aids in the implementation of the project. Another interviewee talked of informing communities about their technology-related project through radio, posters, and flyers and how to become involved in reporting as a part of crowdsourcing surveillance.

While interviewees shared different approaches for engaging users in the implementation of technology projects, many of which relied on community involvement for their success, overall there was less focus on this than in the design phase. Interviewees suggested that this may be because there has not historically been a need to demonstrate value in the innovation world or show evidence of impact. Asking questions about what was delivered and what the community said about implementation have not been integrated into many innovation projects (nor humanitarian projects more generally) or required by funders (apart from a few notable exceptions). The focus instead has been on short-term innovation funding and quick implementation, rather than showing evidence of impact. While challenging, many interviewees emphasized that community engagement throughout the lifecycle of a technology is essential, as is building in two-way communication to these processes. The importance of this real-time feedback is also emphasized in the literature on humanitarian innovation [28].

I think there are many different stages at which engagement is needed. Starting with understanding the current digital landscape and digital divides and gaps, and then

understanding the barriers and how to program and reduce those...And then the last step is once the program is designed...to allow continued engagement and accountability and two-way communication and often that is overlooked. So it's not just...in the design and research phase, but also throughout the lifecycle of the project, responding to people's needs, shifting the program to maintain those. Because people's needs change over time, and programming should reflect that.
Humanitarian Connectivity Researcher

Several humanitarian agencies and their partners are utilizing two-way communication models to adapt digital technology programs, inform new programming, and respond to user needs. For example, Signpost (a collaboration between the International Rescue Committee and Mercy Corps) is a community-led information service that employs digital information platforms to respond to information needs of crisis-affected populations. At the heart of Signpost is its two-way communication approach facilitated by moderators who respond to comments—following established principles pertaining to confidentiality, informed consent, protection needs, digital security, and dignified communication—through social media channels [29]. Moderators are hired based on high emotional intelligence and expert skills in communication and are information bridges with communities [29]. The two-way communication approach creates a feedback mechanism and allows Signpost to monitor and improve content so that it is relevant to users' lived reality and empowers people to understand their full range of options [29].

A participant insights database is a tool that can address problems of insufficient budget, time, and human resources for community engagement, giving participants more agency

over their data and establishing two-way communication. Building these, however, requires addressing significant logistical and ethical issues.

While interviewees uniformly agreed that community engagement should always be conducted for digital technologies, and are an integral part of all projects, many pointed out that sometimes it is not possible due to insufficient budget, time, or staff. In addition, there may be cases of repeated engagement with the same users, unnecessarily taking people's time for similar processes. To address these issues, a few technology organizations working in development and humanitarian settings have taken initial steps towards the establishment of participant insights databases, modeled on user experience (UX) databases. The idea of these databases is to enter anonymized information from users that is tagged and searchable, with dates of when data has been collected from participants so data can be cleared when the organizations feel that it has expired or when participant consent has ended. One interviewee explained that such a database could also give participants agency over their data—participants would have contact data for the organization and could request that data be deleted, or they could restrict how it is used and by whom, thereby protecting their privacy. Contact details for participants could be included along with consent to being contacted in case there is a need for follow-up, establishing a two-way relationship between research subjects and researchers. Establishing such a two-way relationship, however, may be challenging given power dynamics between users and technology organizations.

You know...there is no two-way relationship right now between the research subjects and the researchers. It has been missing. So we really want to build that and give people agency over their own data.

Human Designer for a Technology Company

In those instances in which it may not always be possible to conduct HCD processes, the participant insight database can be used for technology designers and developers to conduct a minimum level of design involving identification of assumptions and vetting them with information from the database.

The idea is that they will be able to go into this repository and look up the country they are working in, and the type of user they are working with, and they can start to see some of the attitudes and challenges and needs and motivations of users, even if they cannot speak to them directly. And so, the ultimate goal is continuous research.

Human Designer for a Technology Company

Despite these benefits, there are significant challenges to establishing a participant insights database. One of these is the time it takes to build, to get enough information on technology users to make it useable. Other challenges include ensuring privacy and anonymization of data. Additionally, there is the potential for information to be used out of context which raises questions as to who in an organization has access to the data (for example, just the design team or, instead, wider access within the organization). A final issue is the appropriateness of using these types of insights when more in-depth community engagement processes should be conducted instead.

Community engagement processes for digital technology in humanitarian settings involve important ethical considerations and navigation of asymmetrical relationships that can be extractive and even reinforced through poorly implemented HCD.

Interviewees spoke about the ethics of conducting certain engagement approaches for digital technologies with people in crisis-affected settings. One concern is related to the testing and prototyping of innovations in unregulated spaces such as refugee camps and settlements, where there may be unclear governance and accountability. Another interviewee voiced the frustration that many innovation concepts and approaches—such as “fail fast, fail forward”—are imported from the technology sector in the global North, and questioned whether testing and failing is acceptable in communities where people are fragile and vulnerable.

Testing with those that really have nothing, who are struggling to put food on the table every day, is just not an ethical perspective.

Innovation Expert for National and Regional Humanitarian Agencies

One study emphasized that for humanitarian innovations that involve people in crisis-affected areas, a minimum standard must be to demonstrate how their rights and interests are respected in the process of innovation [18]. They suggest that one approach may be a staggered piloting process in which pilots are first conducted in non-emergency contexts with clear protections and benefits for communities [18, 22].

Another concern is how to establish processes that are not exploitative. Interviewees spoke of the need to think carefully about consent processes with participants and to consider whether it is absolutely necessary to collect certain data, as well as to address how people can opt out, how they can access their data, and whether people really understand how their data is being used and stored. Moreover, as mentioned previously, there are concerns about whether it is ethical to ask people to volunteer their time for engagement activities, particularly when they have been asked to engage repeatedly. One interviewee explained that

their organization is considering paying for people's time in engagement activities and is designing an "incentives calculator" which will be provided open-source to others in the humanitarian system. Another concern is that people giving feedback may never become the users of the technology or the technology may never come to fruition.

In community engagement activities, therefore, interviewees emphasized the need to review and adapt safeguarding procedures [22] and adhere to ethical principles of humanitarian action related to innovation and building these into organizational strategies and policies. Ethical principles include the Signal Code (developed by the Harvard Humanitarian Initiative in 2017), Principles for Ethical Humanitarian Innovation (created for the 2016 World Humanitarian Summit), the Ethics Framework for Humanitarian Innovation (developed by MSF for use by innovators to identify and weigh harms and benefits of their work and attend to ethical considerations), and the Principles for Digital Development [30-33]. A paper about the ethical questions faced by innovation labs recommended asking and addressing the following questions about community engagement as innovation work progresses: a) how much should be invested in facilitating community participation? b) how can participants' expectations be managed? c) what are the opportunity costs to participation? d) are there unintended consequences? and e) what is the collective impact? [34].

Budgets and project timelines for humanitarian response that facilitate community engagement for digital technologies are those that allow flexibility, iteration, and long-term programming.

Funding for humanitarian response does not usually include allocations for community engagement. Interviewees explained that when they do gain funding for community engagement around a technology, it is usually for a once-off

consultation or a short period upfront, rather than for continuous processes during design and rollout to allow learning and adaptation.

Co-designing is really hard to do because people don't have the time, and we do not budget money for this. I constantly have to fight to include in proposals an iteration period and then a learning period...where you have people who are actively going out and working with the end user to say, does this actually work as intended? Is this making your job easier? Does this align with your workflows?

Product Designer for Humanitarian Agency

One reason for this lack of resources is that many donors and decision-makers within humanitarian agencies (including senior managers and business developers) have not prioritized community engagement for digital technology in proposals, either because they do not believe it is a priority or because they believe that donor funding will not support these processes. Additionally, the structures of humanitarian response funding, including for technologies, are rigid and do not easily provide space for iterative community engagement processes. These structures are determined by norms and requirements of donor countries and institutions which lead to a certain rigidity (due to, for example, audit controls) and particular methodologies (such as log frames) and short funding cycles for innovation projects. One interviewee explained that the restrictions of their funding for a digital technology pilot project meant that they were not able to choose focal countries until after the proposal was written and the funding approved. That meant that the national and subnational organizations who were subsequently involved were not leading and participating in the design process from the beginning but became involved after many design issues had already been determined. And despite significant efforts to

reshape the project so it better suited the needs of local partners, there were still significant problems with financial flows, human resources, project timeline (because of local holidays, for example)—all issues that were context specific and needed to be built into the design period from the beginning.

Interviewees did speak of exceptions where certain donors invite proposals with engagement and participation as key components, as well as humanitarian organizations that prioritized community engagement as part of business development efforts and learned to prioritize community engagement from the beginning of discussions with donors emphasizing the importance of flexibility, iteration, and investing in the process rather than the solution which requires more long-term programming.

Meaningful engagement around digital technologies is also influenced by organizational systems of humanitarian agencies.

As with donor funding, systems and bureaucracies within humanitarian agencies can also have an impact on meaningful engagement in the design, development, and implementation of digital technologies. Project management software and other systems used by agencies may not fit well with community engagement principles and methodologies. In some organizations, staff who lead engagement processes are siloed into research or design departments and not fully integrated into organizational workflows. While there may be advocates for community engagement within an organization, including from senior management, there is often not a shared belief across staff members as to its importance or an understanding that meaningful community engagement involves iterative, continuous processes.

We find that principally a lot of people are stuck in the consultation space without any kind of pathway towards co-creation or complete program leadership.

Innovation Researcher and Manager

Within organizations, the principles, policies and strategies related to community engagement and accountability in the program department may not be linked with those in the digital, innovation, or IT departments. Moreover, different groups across the same organization may use different terms and strategies for engagement and participation activities. Some humanitarian agencies have instituted policies and strategies that build on existing digital, ethical, and community engagement principles and use these to guide and support their community engagement processes.

Organizations that oversee Innovation Funds have more formalized policies because of intense review and auditing processes involving local organizations and considering risks. Specific policies and processes identified in the research include ethical principles for using ICTs in humanitarian emergencies. For example, Oxfam has six principles for its approach to using ICT in humanitarian emergencies, one of which is: “Listen to the end-users to understand their needs, habits and risk factors and to maximize ownership and control over services. Through all initiatives we commit to significant, continued stakeholder engagement” [35]. One organization included community engagement as part of the organization’s standard operating procedure as a way to integrate it into agency workflows. Additionally, resources around consent were mentioned by many interviewees as imperative. Finally, resources on participation and community engagement—including concrete and updated methodology toolkits, a matrix of participation (by type and degree), Codes of Conduct, network-centric resources, guides [11], and online courses such as the WeRobotics community engagement course—

help co-create a standard level of literacy across partners and staff.

A major reason that organizations in the humanitarian system have not prioritized community engagement for digital technology is that there are few incentives to do so. As one person explained, in the commercial sector driven by demand for goods and services, a company must know what the end user wants in order to respond to this demand. Therefore, the company has an incentive to understand users. The same incentives do not exist in the humanitarian system, and it thus requires intentional work to embed community engagement in an organization's systems and to understand the capacity building that is needed around it.

PEOPLE

Community engagement processes require facilitators trained and experienced in relevant concepts and approaches.

Engagement processes are undertaken by people with capacity and skills to listen, who understand inclusion, and who have skill sets in engagement approaches and reaching specific groups (for example, women, disabled people, refugees, and LGBTQIA communities). People conducting these processes should themselves represent diverse communities. One interviewee noted that as the humanitarian system shifts toward AI powered tools, it is even more critical to include women and people from the global South as leaders and facilitators of engagement processes since many of the natural language processing libraries being developed for AI are global North-focused. While not everyone within a humanitarian organization will have deep skills on how to engage with communities and related stakeholders (such as on design thinking), interviewees stated that it helps if staff across all departments (including business development)

understand the principles of community engagement so they can best assess when expertise needs to be outsourced, which are the right partners to engage with, and why it's important to prioritize time and budget for engagement processes.

These skilled people might be located internally in humanitarian organizations or in external partners.

Community engagement processes are conducted internally by staff in headquarters of international humanitarian agencies, by staff in national or local offices, or in collaboration with both headquarters and in-country staff. Interviewees stated that engagement processes led by local staff should be prioritized since they have more connections with affected communities. As discussed below, however, many humanitarian organizations are still conducting engagement around digital technology led by people who work outside of affected country contexts, rather than by local staff or partners.

Community engagement processes might also be conducted in collaboration with external agencies—both in the global North and global South—that have particular expertise (for example, on participatory methodologies or human centered design). The benefit of working with external agencies is that these groups might have expertise that humanitarian organizations lack and have decided not to (or are unable to) develop internally. One interviewee argued that humanitarian agencies should do a better job at looking outside their organizations for expertise that they do not have. On the other hand, the information that these external groups collect during engagement processes may be met with pushback by humanitarian agencies and not fed back into decision-making about technologies.

Being inclusive requires dedicated and careful attention to who should be engaged, how, language issues and power dynamics.

When conducting community engagement activities, there is a tendency to fall back on involving the usual stakeholders (individuals and groups) as participants and over-simplifying conceptions of “communities” and “users” [23]. But there is never just one user interacting with technology; there are always multiple. People have different relationships and networks, experience crises differently, and respond with their own capacities.

There are a lot of assumptions about who is a community...But you don't know who somebody is. And you don't know what their relationships are, what networks they are a part of. And so you won't know that until you start asking questions.

Innovation Expert for an International Agency

One interviewee noted the importance of including diverse voices in the design and implementation processes, emphasizing that most technologies were initially designed and built by men in the global North, and thus it is vital to hear the voices of other groups including refugees and women and the disabled to find out their experiences and needs, and then feed this information back into design. One interviewee also discussed the importance of engaging the right people within agencies (for example, engaging country directors instead of field-level technical experts did not, in their mind, constitute adequate feedback and engendered mistrust in the process). It is also important to consult beyond users and include other stakeholders who may affect the sustainability of the technology during implementation [22]. In sum, it is essential to get the right people involved and to look at technology-related issues in humanitarian settings from different perspectives, because

otherwise engagement processes can lead to the wrong solutions. This takes significant time and effort and being purposeful at every step [19].

Thinking about inclusivity and determining who in a setting should be engaged occurs during the preparation stage of community engagement. Local partners who know the community can identify a diversity of participants, and the types of participants that are important to include can also be identified through research such as desk review and key informant interviews. The focus should be on people at the margins, rather than the “average” user, and people from a variety of environments, with varying levels of experience with technology, and from underserved populations [6]. To reach diverse groups, interviewees stated that an iterative approach can be used starting with contacts in which humanitarian agencies and local partners have relationships and use a snowball approach to find the right people. For example, an HCD process with refugees, undertaken by GSMA’s Mobile for Humanitarian Innovation program, reached people with hearing impairments through sign language translators who had strong connections in the community [19]. When participants are representing certain groups and communities, interviewees spoke of the need to be intentional about understanding more about these individuals, their information sources, and how trusted they are as representatives.

In any society, information is power. They [representatives] can act as gatekeepers, they might not necessarily be representative, there might be someone who's a self-appointed leader to undermine the actual sort of leadership structure...So we try and do an assessment to work out where people are getting their information and how trusted these structures are.

UN Protection Officer

The preparation stage should also include determinations about the type of engagement that will be undertaken, as these decisions affect whether a diversity of people can participate. For example, engagement through interactive radio (media forums combined with SMS) allows a large range of participants because as long as people have access to a radio and mobile phone, they can participate from wherever they are, including at work, in the home, and during travel. Moreover, utilizing multiple forms of engagement may help reach more diverse voices. For example, if consultations are the only form of engagement pursued, it may be impossible to reach people who are not, or cannot be, vocal in public. The environment in which people are engaged is also a facilitating or limiting factor for inclusion, and this raises issues of trust and social agency [19]. In the HCD project with disabled refugees mentioned previously, having translators and sign language interpreters in the room made participants feel more comfortable and heightened trust [19]. Related issues to consider are the location and time of in-person engagements, physical accessibility, participant representation in the session, and comprehensibility (that is, how much people in engagement processes understand what is happening) [19].

Both the desk review and interviews underscored the importance of language to ensuring diverse voices in community engagement processes [22]. Most of the technologies developed by international agencies and partners for use in humanitarian settings are developed in the global North and in English. This is both a barrier to using and adopting technologies in non-English speaking countries, and to engaging communities in design, development, and implementation.

I'm very mindful that when we do community engagement, we are still talking about an English language-based thing. And, you know, despite our efforts, there is a

huge language divide in our work.
Innovation Expert for an International Agency

In order to engage widely, consultations may need to be held in multiple languages and translation of both materials and technologies may also need to be undertaken. Interviewees spoke of the need for a sufficient budget and adequate time for translation, as well as the involvement of local partners in engagement efforts. An interviewee who was coordinating a large disaster response with a digital technology component emphasized the critical role that a UN agency played in providing resources for translation, with their network translating all the messages for community engagement into 14 vernacular languages across the region. Another interviewee cautioned, however, that some terms related to technology are not present in certain languages. Individuals and organizations around the world, for example the Kiswahili Language Translation Project and Localization Lab, are working to address these issues through translation (“localization”) projects including workshops, crowdsourcing, and sprints.

The challenge with language goes beyond translation and also concerns the terminology used to engage people. One interviewee at a country office spoke of receiving manuals for new digital technologies from headquarters that were written in complicated, sophisticated language that aid workers in the field found difficult to understand since English was their second (or third) language. Others spoke about how certain words and terms used in the innovation and technology space proved to be alienating for communities they were hoping to engage. Thus organizations should use inclusive language that everyone can understand, rather than “exclusive” or “expert” terminology [28].

Another barrier to inclusion in engagement processes is power differentials that may be

present between facilitators and participants. In some contexts, it takes time to build enough trust for people to speak freely; in other contexts, there may be deference to authority (for example, as might exist between country offices and headquarters staff). This can affect engagement processes, including informed consent for participation, and requires intentional work to understand the power differentials at play and address them where possible.

PARTNERSHIPS

Meaningful engagement efforts involve partnerships with local organizations; these relationships also facilitate a more demand-driven approach to technology and humanitarian aid more generally.

Local partners have networks and relationships with individuals and groups within particular communities, often share the same language, and understand channels for engagement as well as potential challenges [36]. One interviewee explained how pre-existing relationships that a local implementing agency had with individuals across a network of communities made a difference when a crisis arose and there was an urgent need to communicate with affected populations. In fact, it was through these pre-existing relationships that a large amount of reliable information started flowing into the organization from trusted people in communities about an impending crisis through digital radio. The local agency that received this information then shared it with an international organization that was working on the issue, and these groups then partnered together and with others on a regional response that involved a joint operations center involving real-time data from communities, remote imaging, and various sensors.

Partnerships with local agencies are not only important for international humanitarian

agencies but in certain circumstances may benefit national organizations to gain access and engender trust. One interviewee explained that their technology company, based in a capital city in the global South, normally conducts community engagement activities with program partners who work in crisis-affected communities and have established relationships with leaders and local administration. Despite the importance of working with local partners, these implementing partners are sometimes disregarded or bypassed in engagement efforts between humanitarian agencies and the communities they serve, and this hinders the durability and sustainability of digital technology.

Strengthening partnerships involves collaborative efforts by partners to identify strengths and weaknesses and find ways to enable and empower.

One interviewee from an agency based in the global South noted that in their experience of partnerships around digital technology for humanitarian settings, there can be misalignment amongst partners in terms of understanding the capacity of local organizations and this leads to international partners taking a heavy hand on capacity and skills building and determining priorities. They recommended instead that partners work collaboratively to identify strengths and weaknesses, and to seek ways to enable and empower partners. In a recent project on participatory AI—involving a partnership between Nesta, the Nepal Red Cross, the Cameroon Red Cross, IFRC Solferino Academy, and Newcastle University's Open Lab—project activities provided an opportunity for skills exchange for all partners with, for example, the Red Cross staff in Nepal and Cameroon learning about AI and trying out these new digital tools while data science experts in the other agencies developed new skills in designing and implementing participatory activities [37].

OPERATING ENVIRONMENT

The COVID-19 pandemic further emphasized the need for international humanitarian agencies to collaborate with local organizations in engagement processes for digital technologies.

In early 2020, the COVID-19 pandemic forced many staff members of international humanitarian agencies to halt their travel and transition to remote working [7]. For those organizations that were used to conducting engagement processes that involved headquarters staff flying in and out of humanitarian settings, the switch to remote processes caused significant problems, as systems were not set up for remote work and there were often not enough in-country staff to take over the engagement activities. One interviewee described how, prior to the pandemic, travel budgets for designers in their agency were built into contracts and plans, and they would fly internationally to meet with technology users to conduct HCD processes. During the pandemic, designers switched to remote working, and it was particularly hard to ensure inclusivity with remote engagement activities. Another interviewee explained that during the pandemic, their organizations' community engagement efforts came to a halt and, as a result, they lost contact with many end-users of digital technologies, particularly in those areas where digital penetration was low.

Those international organizations that experienced fewer problems during the pandemic already had partnerships in place with staff and organizations at subnational and national levels (including country offices), and were already accustomed to playing a facilitation, rather than leadership, role in engagement. One interviewee explained how, prior to the pandemic, locally based consultants and researchers were already leading participatory processes—with guidance and

feedback provided by international staff—and these processes continued throughout the pandemic, depending on each context and national COVID-19 regulations. Another interviewee described how the pandemic forced their organization to reassess their way of conducting HCD processes and begin the process of changing the make-up of their design team, hiring experts from the global South rather than from the global North, as was done previously.

Engagement activities of local agencies were also affected by the COVID-19 pandemic, leading to creative solutions and new challenges.

Depending on the context, some local organizations and country offices of international agencies were unable to engage communities during the pandemic, while others were able to conduct these processes but at a much slower pace and requiring new engagement techniques. Some staff in these organizations described feeling “on their own” for certain key points in the process, and while challenging, this also empowered them to seek creative solutions to ensure they were engaging communities and stakeholders during this time.

No one had access to electricity or internet, I mean we just had to call someone, put them on hold, call another person, put them on hold, call another person, put them on hold, and join them up into a call. And at one point, we had like three phones sitting in the middle of a table, and they were all on speaker, because...you couldn't join calls between the two phone companies. And so we decided, we are just going to make this work.

International NGO Country Director

For some, the circumstances of the pandemic helped them focus on the task at hand and pulled everyone together for more creativity

and collaboration. Once face-to-face consultations with affected communities and end-users were possible again, there were many new logistics to consider ensuring safety and

KEY AREAS FOR CONSIDERATIONS AND ACTION

What shocks me the most is how much people talk about community engagement, but don't do the work and aren't accountable to dig in. So what will it take?
Innovation Expert

The findings from this research study point to considerations and actions at both the programmatic and organizational level. Programmatic considerations are targeted at humanitarians at the global, national, and subnational levels who are considering, embarking on, or already implementing digital technology programs, with a focus on how to ensure community and stakeholder engagement is an integral part of the program. At the organizational level, considerations focus on how to embed community and stakeholder engagement within the organizational systems of humanitarian agencies working on digital technologies.

CONSIDERATIONS AND ACTIONS TO ENSURE MEANINGFUL ENGAGEMENT WITH COMMUNITIES AND STAKEHOLDERS IN DIGITAL TECHNOLOGY PROGRAMS

Rationale: To ensure that the people who interact with digital technologies in humanitarian programs have a say in their design, development, and implementation, a purposeful approach to community and stakeholder engagement is needed across the program cycle.

Audience: These considerations and actions are relevant for all humanitarians working on

adherence to government and organizational regulations for engagement activities such as spacing, masks, sanitization, and approvals.

digital technology programs—in headquarters of international agencies, in regional and country offices, and in national and subnational organizations.

Considerations and Actions:

- **Cross-check whether digital technology should be applied in this situation.** Ask whose problems you are trying to solve and through consultation with the people who have the problem, ascertain whether technology is needed. Ensure the project is solving the right problem for the right person.
- **Determine who is the community for the digital technology.** Consider who are the individuals and groups who will be using, supporting, and/or affected by the technology. Understand your position (as an individual and an agency) within or in relation to this community to be clear about power dynamics.
- If you represent an international or national organization, **collaborate with local actors in community engagement efforts** that are embedded in and/or have contacts in target groups. In these collaborations:
 - International agencies should have a facilitation role, and work collaboratively to identify ways to enable and empower all partners.
 - Local partners should have the lead role in engagement processes and should insist on both decision-making power and the resources necessary for leading meaningful engagement processes.

- Conduct community engagement processes **across the lifecycle** of the technology if possible.
 - In the design stage, start engagement processes from the beginning. If using human-centered design approaches, ensure these are balanced with systems thinking and an understanding of the digital landscape, systems, literacy levels, and humanitarian work practices.
 - In the implementation stage, establish engagement processes that involve two-way communication to inform new programming and adaptation.
- **Allocate time and effort** to understanding who to engage within the community to ensure a diversity of perspectives.
 - Be purposeful about inclusion and do not tick the box on diversity.
 - Sensitize the program team that there is never one group/user of a technology, there are always multiple. Instead of thinking about the average user in a community, focus on people living on the margins. Consult beyond users and include other stakeholders who may influence the implementation and sustainability of the technology.
 - Do research (such as desk research and key informant interviews) before engaging to identify diverse groups, including marginalized people.
 - Utilize an iterative approach – if you represent a local partner, start with your contacts in the community and use snowball sampling until the right people are identified.
- Plan forms of engagement that allow the diverse voices in target groups to be heard. Consider utilizing several different forms of engagement to ensure everyone can participate.
- Arrange for a safe space for engagement whether it is in person or online, thinking through location and time, physical or digital accessibility, and comprehensibility. Consider social dynamics and trust issues, and the involvement of trusted community members to put people at ease.
- Seek to understand whether participants who are representing groups and communities in engagement processes are trusted and learn more about these individuals and their information sources.
- Ensure meaningful engagement by **building in mechanisms for action and closing feedback loops**.
 - Manage participant expectations so engagement is not misinterpreted, focusing on engagement as a chance to elevate diverse voices. Be transparent about your constraints and take care not to engage participants beyond their scope for influence to avoid asking for feedback on issues that you are unable to change.
 - Establish mechanisms for action in decision-making. Consider multi-stakeholder governance structures (including for example senior managers, donors, and community members such as representatives of refugee communities) that collapse hierarchies and allow direct, two-way communication.

- Close feedback loops with participants by bringing the results of engagement back to them—give feedback on feedback.
- Consider the development of supporting dissemination tools if needed including synthesized actionable reports, handbooks that operationalize lessons learned, workshops, and toolkits.

CONSIDERATIONS AND ACTIONS TO EMBED COMMUNITY AND STAKEHOLDER ENGAGEMENT PRINCIPLES AND PRACTICES IN ORGANIZATIONAL SYSTEMS OF HUMANITARIAN AGENCIES WORKING ON DIGITAL TECHNOLOGIES

Rationale: Community and stakeholder engagement of digital technology through the lifecycle of a technology requires support from across the humanitarian organization, as it cannot be achieved by one person or one team. This requires that community and stakeholder engagement be embedded in principles and policies and systems and that an understanding of community engagement is co-created across the organization through leadership, communication, training, and staffing. This will help staff across the organization better understand when expertise needs to be outsourced to technical agencies, who are the right partners to engage with, and why it is important to prioritize time and budget for engagement processes in proposals.

Audience: These considerations and actions are relevant for all humanitarian agencies and technology partners working on digital technology programs—organizations located within countries affected by crises as well as international organizations. They are not the responsibility of any one person within an

organization but require work by multiple people and multiple departments.

Considerations and Actions:

- Conduct an **assessment of current policies, strategies, and resources** on community and stakeholder engagement across the organization as well as potential systems barriers (such as project management systems that do not make space for engagement processes).
- **Determine what the organization means by “community engagement” and its goals in regard to digital technology.** Consider community engagement as a process that goes throughout a technology’s lifecycle, not just in the design phase, and includes two-way communication during implementation.
- Build an **understanding of and support for community engagement and digital technology from leaders and senior managers** and identify focal points within the organization. Leaders can model community engagement by practicing techniques within organizations and teams, thereby creating a culture around that practice.
- **Establish or update guiding principles, policies, and plans for engaging communities and stakeholders** for the development and implementation of digital technologies in humanitarian settings, based on humanitarian commitments and ethical principles. Ensure that community engagement policies and digital policies across the organization are linked. Consider inclusion of community engagement in standard operating procedures and establish policies to ensure that processes are not exploitative to participants or local

organizations (such as compensating people and partners for their time).

- **Provide guidance and resources.** Consider including guidance and resources around informed consent, guides and toolkits on engagement and participation, and online courses on community engagement approaches (see Annex I for illustrative guides and tools).
- **Train staff across the organization on the fundamentals of community engagement for digital technologies and ways to support processes.** This includes training of the business development team to change the way discovery work happens so that partners are sensitized to this way of working, so that budgets and timelines in proposals include community engagement in design and learning periods, so that local organizations are at the front of grant writing whenever possible, and so there can be advocacy with donors about the inclusion of community and stakeholder engagement in proposals.
- **Embed a workflow of community engagement methodologies that are linked to the larger flow of work within the organization,** building on what already exists.
- **Ensure sufficient human resources for facilitating and conducting community engagement.** Emphasize skill sets in listening and communication and an understanding of inclusion. Community engagement processes should be facilitated and led by diverse groups, including women and people from the global South, and hiring practices should reflect these needs.

CONSIDERATIONS AND ACTIONS TO EMBED COMMUNITY ENGAGEMENT PRINCIPLES AND PRACTICES IN DONOR FUNDING OF HUMANITARIAN RESPONSE WITH DIGITAL TECHNOLOGY.

Rationale: To ensure that funding facilitates, rather than limits, community and stakeholder engagement, changes need to be made to the structure of donor funding for humanitarian response.

Audience: These considerations and actions are relevant for all donors funding humanitarian responses that include digital technology.

Considerations and Actions:

- **Actively ask how technologies are being adapted to context and needs, and allow flexible funding for iterative, ongoing community and stakeholder engagement processes** throughout the lifecycle of a technology (rather than once-off consultations early in the design period).
- Make sure **local stakeholders are at the front of grant writing**, or at minimum ensure that **their contributions are driving the design** so that context—which is a critical part of community engagement—is built into proposals.
- **Priorities:** Ensure digital technology programming is emerging from intentional discussions with aid workers and local organizations and people in crisis-affected communities rather than priorities of external agencies (such as donors, international agencies' headquarters, and technology companies).

ANNEX I: TOOLS AND GUIDANCE FOR MEANINGFUL COMMUNITY AND STAKEHOLDER ENGAGEMENT IN THE DEVELOPMENT AND IMPLEMENTATION OF DIGITAL TECHNOLOGIES IN HUMANITARIAN SETTINGS

- ▶ GSMA. Human-centred design in humanitarian settings: Methodologies for inclusivity. https://www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/09/Research_Methodologies_RI_Spreads-1.pdf
- ▶ GSMA. (2021). The Connectivity, Needs and Usage Assessment (CoNUA) Toolkit. <https://www.gsma.com/mobilefordevelopment/resources/the-connectivity-needs-and-usage-assessment-conua-toolkit/>
- ▶ IFRC. Data Playbook Version 1. <https://preparecenter.org/wp-content/uploads/2022/06/DTPBVI.pdf>
- ▶ IFRC and ICRC. Community Engagement and Accountability Toolkit. <https://www.ifrc.org/document/cea-toolkit>
- ▶ Mays, R. Wheel of Successful Practice. <https://www.alnap.org/help-library/valuing-what-works-success-factors-for-disaster-preparedness>
- ▶ Principles for Digital Development. Principle: Design with the User. https://digitalprinciples.org/wp-content/uploads/PDD_Principle-DesignWithUser_v31.pdf
- ▶ WeRobotics. Community Engagement Course. <https://werobotics.org/community-engagement-online-course/>

ANNEX: CASE STUDY QUESTIONS AND SUB-QUESTIONS

TECHNOLOGY

Research question: Which humanitarian ICTs have been developed and/or implemented with meaningful community and stakeholder engagement, at what points in the innovation cycle, and under what conditions?

Sub-questions:

- Which humanitarian ICTs have been developed and/or implemented with meaningful community and stakeholder engagement? Why?
- How do stakeholders define “meaningful community and stakeholder engagement” in relation to humanitarian ICTs?
- At what stage in the innovation and/or implementation process did this community and stakeholder engagement occur, and under what conditions?
- Are there certain thresholds related to the technology (i.e., size, level of risk, type of ICT, etc.) at which community and stakeholder engagement is undertaken?
- Has community and stakeholder engagement influenced the management and use of these technologies? If so, how?

POLICIES AND PROCESSES

Research question: What specific mechanisms and processes are used to conduct meaningful community and stakeholder engagement, and how does community and stakeholder engagement then feed back into decision making about technology development and/or implementation?

Sub-questions:

- Are there policies, strategies, norms, standards, regulations, protocols, operating procedures, and/or guidelines that mandate, guide and/or support community and stakeholder engagement processes?
- What specific mechanisms and processes are used for meaningful community and stakeholder engagement? What is the type/level of engagement? Do these differ at different moments in technology development and implementation or for different types of technologies?
- How do meaningful community and stakeholder engagement processes feed back into decision making about technology design and/or implementation? What are the mechanisms to ensure action?
- What are the possibilities and limitations of meaningful community and stakeholder engagement processes, and overall lessons learned?

PEOPLE

Research question: Who conducts, supports, and participates in meaningful community and stakeholder engagement processes, and who is represented from community and stakeholder groups?

Sub-questions:

- Who develops and implements these technologies, and what other stakeholders provide support to their development and implementation?
- Who uses these technologies, and who is affected by them?
- Who initiates meaningful community and stakeholder engagement processes?
- Who conducts and supports community and stakeholder engagement processes? Is community and stakeholder engagement conducted internally by technology developers and/or implementers, or externally?
- Who participates in meaningful community and stakeholder engagement processes, and who do participants represent from community and stakeholder groups? What are best practices for ensuring inclusive processes?

PARTNERSHIPS

Research question: How do partnerships support meaningful community and stakeholder engagement processes in the development and implementation of humanitarian ICTs?

Sub-questions:

- What partnerships support meaningful community and stakeholder engagement processes in the development and implementation of humanitarian ICTs?
- How can partnerships be strengthened, and what are overall lessons learned?

OPERATING ENVIRONMENT

Research question: How have external factors, including the COVID-19 pandemic, influenced meaningful community and stakeholder engagement processes?

Sub-questions:

- How has the COVID-19 pandemic influenced meaningful community and stakeholder engagement processes in the development and implementation of humanitarian ICTs?
- What other external factors have influenced community and stakeholder engagement processes, and how?

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