Women read SMS about Polio prevention, Somalia, 2014. Photo: Ahmed Farah/Hijra

DIGITAL DEVELOPMENT: WHAT IS THE ROLE FOR INTERNATIONAL NGOS?

ICT for Development programmes and opportunities in the Horn, East and Central Africa

MATT HAIKIN AND GEORGE FLATTERS

Development is going digital and INGOs like Oxfam have a vital convening role to play. This paper draws on ICT for Development in Oxfam's programmes in the Horn, East and Central Africa to consider what this role is. In order to realise the opportunities associated with the digital landscape, Oxfam will need to build internal and external capacity to implement ICT in programmes to enhance quality, accessibility, and efficiency.

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EXECUTIVE SUMMARY

Development is going digital and INGOs like Oxfam have a vital convening role to play. This study into ICT for Development in Oxfam's programmes in the Horn, East and Central Africa set out to explore this role. In order to realise the opportunities associated with the digital landscape, Oxfam will need to build internal and external capacity for applying ICT in programmes to enhance quality, accessibility, and efficiency.

The World Bank's 'World Development Report 2016', *Digital Dividends*, states that we are 'in the midst of the greatest information and communications revolution in human history', and invites us to 'take advantage of this rapid technological change to make the world more prosperous and inclusive'. (World Bank, 2016)

Transformative successes have been achieved by those harnessing information and communication technologies (ICT) for development (ICT4D), and yet many people still lack access to ICT, and there is a sense that more needs to be done to understand how technology can best support humanitarian and development initiatives. In January 2016, Oxfam commissioned research to explore these issues in the Horn, East and Central Africa (HECA) region, where there is a burgeoning technology scene and numerous development projects incorporating ICT.

The objectives of the research were: to explore what actors in the region consider good and bad practice; to ask where they see the most interesting opportunities in the future; and to bring this together in a form that informs the role of INGOs using ICT4D, especially in the HECA region.

Between February and April 2016, following an extensive literature review, interviews were conducted with relevant private, public and civil society sector professionals; a workshop was held, bringing together diverse ICT and development practitioners from several African countries; and an online survey was launched (receiving 284 responses).

This report provides the analysis and key lessons from this research, including recommendations for Oxfam and other INGOs on the use of ICT.

KEY LESSONS

Many of the lessons from this research in the HECA region echo common ICT4D themes (such as those raised in the Principles for Digital Development[1]). The report recommendations include the implementation of principles which are not necessarily acted upon, while others are new or specific to the HECA region:

Build on what works and don't re-invent the wheel: Most things have been tried before, yet there can be an instinct to develop new tools from scratch. Where appropriate tools are already available, programmes should instead adopt a policy of 'buy or adapt by default'.

Think local to engage with users and develop local capacity: Local relevance and local production of content is critical to engaging end-users. Models which have been tried demonstrate lessons about dissemination and about supporting local organisations.

Design iterative programmes involving real end-users: Such approaches produce better results for the development sector—a truth almost universally acknowledged. However, there appear to be skill gaps and structural factors limiting the take-up of these ways of working.

Scaling is hard, but a common understanding helps: Scaling up from pilot projects is difficult, as is sustainability at scale. A common understanding of concepts between actors would help—as would funding specifically aimed at the scaling phase.

Combat survey fatigue by collaborating on monitoring and evaluation: The ease with which ICT can be used for monitoring and evaluation has in some instances contributed to 'survey fatigue'. Collaborating across projects, programmes and even organisational boundaries can help counter this.

Open development can create opportunities and reduce waste: There is widespread confusion over the concept of 'openness' in ICT4D (open source, open data, etc.), leading to missed opportunities to share resources, reduce costs and improve results.

Understand how different private sector actors can integrate with NGOs' duty of care: For long-term success, local and international private sector actors are critical. A more nuanced understanding of how INGOs can work with these stakeholders is needed.

Don't forget about connectivity: Access and connectivity are still significant barriers to participation, despite an increasing perception to the contrary. NGOs have a role to play in advocating for innovative last-mile connectivity solutions.

Convene, collaborate, and advocate: roles and opportunities for Oxfam and other INGOs in HECA

The key messages that emerged from the research in relation to the role of INGOs active in ICT4D are:

- **Act as conveners to improve the use of ICT across the region:** There is an unfulfilled role for a convener of different actors across different sectors to help them work together, share best practice and develop capacity, particularly in the civil society and start-up sectors.
- **Collaborate with NGOs, civil society and other actors:** Local networks and long-term relationships could enable Oxfam or other INGOs to take on this role, or to be part of a network brokering connections and knowledge sharing between tech organisations, NGOs, funders/donors and civil society partners.
- **Advocate at all levels:** INGOs' important relationships with delivery partners and global and national funders allow them to play a valuable advocacy role, seeking to ensure that best practice is mainstreamed in funding and partnerships.

Recommendations for Oxfam: develop a structure to enhance ICT work in HECA

Finally, the report focuses on what the findings mean for Oxfam's operations in the HECA region and beyond. Oxfam should make digital literacy—and knowledge of how to apply technology to development problems—core competencies for delivery staff and senior management. This would help maximise the potential of ICT in Oxfam's future work.

It is also recommended that Oxfam should hire or train more business analysts, and increase its in-country 'ICT in Programme' staff. This should be done in a way that ensures a level of global consistency and quality, perhaps using a matrix management approach. While some of these recommendations are specific to Oxfam's activities and structure, many were echoed by the wider community and reflect opportunities and challenges for other INGOs working in the region.

FOREWORD

Fragile and conflict-affected contexts and shrinking civil society spaces are two of the major current challenges to Oxfam's mission of working with others to alleviate poverty and challenge inequalities. They are challenging our traditional approaches to programming and increasing the need to consider how to promote social cohesion and empower nations and communities to become inclusive and resilient to external and internal shocks in the face of restrictions on movement and access.

The shifting digital landscape is changing the way that Oxfam—and more importantly those with whom Oxfam works—communicate and access services. This has implications for how stakeholders generate, access and use data, while trying to become ever more transparent. The Horn, East and Central African region has a burgeoning technology scene. However, it is not without ongoing challenges for connectivity and direct access, which perpetuate inequality and invisibility of voice, and are restricting the effective use of ICT to contribute to meaningful social change.

Oxfam commissioned this report to understand better how technology can help to develop long-lasting and impactful solutions, paying particular attention to methodologies being applied, programme design, enabling environments, business models and ethical considerations. We have started to witness how ICT can unlock new options to reach people. A number of initiatives and pilots at Oxfam have proven how the introduction of ICT saves time and money, while enabling the organisation to be more accountable and have a wider reach, even in some of the world's most fragile contexts.

Oxfam has experienced a shift over the past five years: from marketing the benefits of ICT to country programmes and partners, to facing significant demand to apply ICT in innovative ways. There is a need to offer professional support to introduce tools and uphold responsible data principles as we streamline and strategically invest in tools and partnerships to deliver our ambitions. In some areas, we don't want to be an early adopter, but to learn from others. In other areas, Oxfam's assets, leverage and networks open opportunities to influence how ICT in development and humanitarian programming is shaped. We even have opportunities to advocate for a more open and level playing field in regulatory and operational environments.

By sharing this research, Oxfam hopes to be true to the values of openness and explore collaboration opportunities as more and more stakeholders enter the ICT4D space. We are keen to engage in dialogue through networks about the value different actors can bring to the table to ensure we harness the benefits and mitigate the risks of the information age.

The phenomenal response to this research, not least the 285 responses to the questionnaire, demonstrates the enormous interest in ICT4D across the region and the urgent need to have this conversation.

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Before going freelance, George spent four years leading the Programme Development Team at Aptivate, a pioneering digital agency with a rights-based approach to technology accessibility in development. From 2005 to 2011 he was a consultant and systems developer at Itad, a leading M&E consultancy, working with DFID, UN agencies and the EC, among others.

George is on the steering committee for the Bond Technology for Development group, and regularly speaks at ICT4D and M&E conferences. He posts occasional blog entries on his LinkedIn profile: http://uk.linkedin.com/in/georgeflatters

ABOUT ICT IN PROGRAMME AT OXFAM GB

From monitoring water points to delivering electronic vouchers, agronomic or community health information via mobile phones and digitising paper surveys and registration processes, Oxfam has been exploring how ICT can offer opportunities to amplify and improve the effectiveness of our work. This can be in terms of the way we improve systems for our field staff and the way we engage communities directly using tools readily available to them.

A small team has been in place for more than five years to pull together learning and offer support on the applications of ICT in campaigning, development and humanitarian programmes. It is a unique setup that sits within Programme with the support of the Oxfam Information Services team, and offers services to the Global Humanitarian Team. The ICT in Programme team's purpose is to support the enabling role of ICT in improving the quality and effectiveness of Oxfam's work. It aims to learn from best practice to replicate initiatives that work, learn from mistakes and benefit from cost efficiencies to demonstrate value for money. We believe that ICT offer a huge cross-cutting opportunity to amplify and improve the effectiveness of our work, to enhance the quality of Oxfam's programming and contribute to fundraising by demonstrating how to appropriately adopt ICT.

Meanwhile, it is important to acknowledge that ICT is only an enabler; solutions will only work when they are embedded into programmes and suit contextual needs. At Oxfam, we are keen to ensure ICT are considered as a means to an end. We start with the problem, not with the tool, recognise limitations and ensure methodologies consider ethical applications that integrate ICT in an appropriate way. Effective methodology and programme design are critical for success.

GLOSSARY

Agile	A methodology for iterative software development
CSR	Corporate social responsibility
CSO	Civil society organisation
CTO	Chief technology officer
DFID	Department for International Development (UK)
HCD	Human-centred design (see also UCD)
HECA	Horn, East and Central Africa
ICT	Information and communication technology (or technologies)
ICT4D	ICT for (international) development
INGO	International non-governmental organisation
IoT	Internet of things
IP	Intellectual property
IS	Information systems
ITU	(UN) International Telecommunication Union
IVR	Interactive voice response
Lean Startup	An iterative business and product development methodology
M4D	Mobile for development
M&E	Monitoring and evaluation
MNO	Mobile network operator (also referred to as Telco)
NGO	Non-government organisation
RPU	Revenue per user
SME	Small or medium-sized enterprise
SMS	Short message service (text messages)
Start-up	Small business, typically under two years old, with about 5–10 employees
TelCo	Telecommunications company (see also MNO)
UCD	User-centred design (see also HCD)
UX	User experience
WASH	Water, sanitation and health

1 INTRODUCTION

BACKGROUND AND CONTEXT

Trends in international development point to increasing investment in new technologies and a more significant role for information communication technologies (ICT) in the work of NGOs. The World Bank's latest *World Development Report* focused on 'digital dividends'—the broader development benefits from using ICT. DFID are going 'digital-by-default', UNICEF is using ICT to 'remain relevant in the 21st century', and over 60 percent of survey respondents in this study agreed that 'the development sector is going digital'.

Any device that will store, retrieve, manipulate, transmit or receive information can be considered an ICT. This includes personal computers, television, radio, email and mobile phones. They offer a huge cross-cutting opportunity to amplify and improve the effectiveness of development work, to enhance the quality of programming and to contribute to fundraising.

Oxfam is already harnessing ICT to enhance the quality, accessibility and efficiency of its work: from monitoring water points, to delivering electronic vouchers through mobile phones and digitising protection surveys. But there is more to be done.

Participants in the workshop convened for this research said that 'Oxfam cannot run away from ICT4D, we live in an increasingly digital world'. HECA in particular was called a 'very techy region, with lots of energy and enthusiasm'. While some suggested that Oxfam is 'a step behind the curve', others see an opportunity to get 'ahead of the game and champion local technology solutions'.

This report outlines key themes that emerged from the research, with recommendations on where Oxfam has opportunities to improve its capacity, work and reputation in ICT4D across HECA.

RESEARCH AND METHODOLOGY

An extensive literature review was carried out, covering internal Oxfam documents, academic and industry reports, websites and expert blogs.

This literature review informed the key themes and questions for 36 semi-structured interviews undertaken in March and April 2016 with a variety of stakeholders, including Oxfam staff, ICT4D practitioners from other NGOs, funders, civil society activists and technology experts.

Throughout the interviews, a number of key recommendations, success factors and warnings emerged. Early analysis of these emerging themes aided the design of a face-to-face workshop in Nairobi and an online survey, which received 284 responses from a wide range of stakeholders.

The workshop was held in Nairobi on 7 April 2016, bringing together Oxfam staff working on ICT-related initiatives in seven countries (Kenya, Uganda, Somalia, South Sudan, DRC, Ethiopia, and Tanzania) with ICT4D practitioners and technology experts from across the HECA region (other NGOs, donors and private sector providers including Intel and Accenture), and representatives of intra-governmental bodies.[2] The workshop

allowed the presentation and discussion of initial results from the interviews and survey to fuel deeper discussion of the topics and provided an opportunity for ICT4D practitioners from different sectors to network and share ideas. It also created a space in which Oxfam field staff working with ICT could seek support from each other and a wider group of their peers to discuss their challenges.

The online survey garnered responses from those working in local and international NGOs, civil society organisations, academic and research institutions, government bodies, funders and large technology companies, as well as individual tech entrepreneurs in HECA and other regions. The survey questions were designed, in part, to test how widespread agreement was for the early findings from the interviews and literature review.

Through further investigation and analysis of the data gathered from the literature review, interviews, workshop and surveys, a series of key learnings and opportunities were identified, along with accompanying recommendations of particular relevance to Oxfam and other large INGOs.

Limitations and constraints

This research was undertaken in a short time with a limited budget. This led to more of the interviewees and workshop attendees being based in Kenya or the UK than would have been ideal.

The wide dissemination of the online survey mitigates this somewhat, but it should be borne in mind that all participants were either self-selected or chosen by convenience sampling. The results are not based on a statistically significant representative group of the region and do not necessarily reflect the views of practitioners from all HECA countries or all types of organisations. Therefore, while there are useful lessons to be learned from this study, care should be taken with interpretation.

The results are presented as-is, or with simple or narrative analysis. No deep analysis or regression testing has been undertaken.

If any data analysts are interested in accessing the raw data to explore it further, please contact Amy O'Donnell from Oxfam (AODonnell@oxfam.org.uk) to discuss.

2 IMPROVING EFFECTIVE USE OF ICT4D IN HECA

The key themes that emerged from the literature and interviews are presented in this section, combined with the views gathered through the survey where relevant. The researchers offer analysis and discussion.

Some of these findings are well-known and echo previous research or agreements (such as the Principles for Digital Development).[3] They are included as it seems that, despite any agreement, they are still not being acted on, so are worth reiterating.

2.1 BUILD ON WHAT WORKS AND DON'T RE-INVENT THE WHEEL

A principle of 'buy not build' has been in place at Oxfam for over four years, and ICT4D recommendations focus on using existing tools. Among ICT4D actors more generally, many projects (both commercial start-ups and grant-funded programmes), start by deciding to build a new tool. It is unclear why this is the case, given the overwhelmingly common view that it is rarely required.

> *'A challenge in the [mobile for development (M4D)] space is the high incidence of people seeing a problem, thinking no-one else has addressed it, and jumping in to build their own solution.'*
>
> (Raftree, 2012)

Working with older technologies, adapting existing tools, compromising on requirements and collaborating on building solutions all emerged as viable ways to improve the situation.

Established technology works best for engagement

> *'It's a very basic idea—old stuff, known technology, not trying to be fancy—that's what works in Africa.'*
>
> Interview with Erik Hersman, BRCK (Kenya)4

Such 'older' technologies are—reassuringly—also the most used (77 percent of survey respondents report experience in using SMS text messaging in projects).

This does not seem to stop NGOs from exploring new technologies, however. Despite the fact that typically only 20–30 percent of citizens in most African countries have internet access (ITU, 2015), 73 percent of ICT4D practitioners in the survey reported having used web and mobile apps; 70 percent have used social media.

While this exploration is exciting and, in some cases, positive and effective, the research suggests that, for many programmes, focusing on well-known and older technologies may be more effective.

Building from scratch is duplicating effort

Only 26 percent of survey respondents thought that NGOs should build products. Despite 90 percent of survey respondents considering 'adapting or customising existing products'

important, several interviewees reported that this has not happened even if it would have been the more sensible option:

> *'NGOs tend to do [requests for proposals] to build something, rather than scanning for existing services and just using one… this wastes millions of dollars. Is it information overload, culture, funding cycles?'*
>
> Interview with Fabrice Romeo, Echo Mobile (Kenya)

Often, tools already exist to do some or all of what is needed, and much of the sector is weak at using or improving these solutions or seeking to extend existing technologies. Organisations waste time and effort when they do not try to work together or do not try to re-use what already exists.

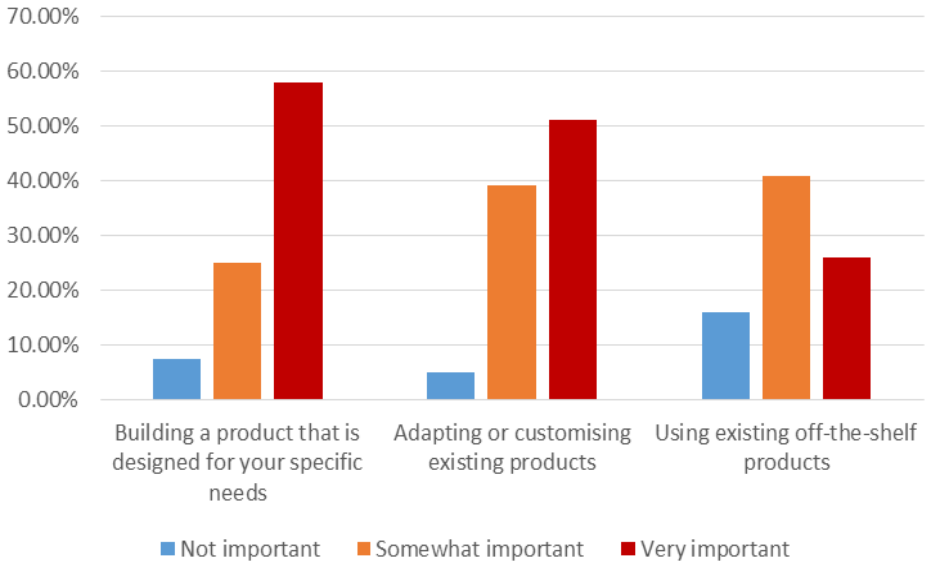
That is not to say it is never appropriate to build something new, but a suitable analysis of the available options should always be undertaken before making a decision to build yet another tool from scratch. Unfortunately, according to some interviewees, poor decision making around whether to buy, build or adapt technology is evidence of a shortage of key skills across the sector.

Oxfam has already adopted a clear default policy of 'don't build, buy or adapt where possible'. Adopting this stance in a stronger and more public manner could influence other NGOs to follow suit. More INGOs adopting and communicating such policies (with a clear justification required before budget is spent on building new tools) would send a clear message across the HECA region that could help to shift this balance.

Does your solution have to meet 100 percent of your perceived requirements?

The survey results show that, despite strong support for using or adapting existing tools, having a product that meets one's specific needs is of greater concern. Only 4 percent of NGO and civil society respondents said that a 'product designed for your specific needs' was *not* important.

Figure 1: Survey responses on whether or not to build a new product



Source: Authors' survey

While this may partially explain why so many are designing their own tools rather than adapting what already exists, there was a widespread feeling among interviewees that

significant amounts of public and private money are being wasted building these new tools—many of which are rarely re-used.

As one survey respondent reflects:

> *'When we buy a car, we don't design it from scratch, we see what exists and choose the best match. People don't see ICT in this way, they often want their bespoke model. How many people build their own survey tools, despite the wealth of existing survey toolkits? The problem is people don't necessarily understand how to specify what they really need, instead of what they want or think they need. "Designed to meet your needs" does not mean "built especially for you".'*
>
> *Building something yourself should be a last resort… you may think what you are doing is unique, but it is probably not. Resist the urge to invent "a better wheel" every time you plan a project—explore what else exists first, and challenge* yourself to make it work.'
>
> Alexander Nash, Chartered Engineer, Atkins Water and Environment (Survey response)

However, for re-use and adaptation to become the norm, it must be relatively quick, cheap and simple to find out what exists and judge whether it is suitable for your needs. Unfortunately, this is not currently the case, leading to some projects choosing inappropriate tools.

> *'Less than a quarter of the initiatives described the tool they had chosen as a success... only 6 out of 20 in Kenya... many organisations lack the capacities and resources to make strong tool selections.'*
>
> (Edwards and McGee, 2016)

With 53 percent of respondents reporting a lack of ICT capacity among their organisation's staff as a challenge, it is not surprising that robust analysis and selection of tools is difficult.

Given that only 33 percent of NGO respondents reported being unable to find products suitable for customisation, it seems likely that the key issue is not the availability of these starting points, but the desire, skills or budgets to do the adaptation and customisation itself.

Collaborate, collaborate, collaborate

Some interviewees reported (anonymously) cases in which INGOs or international organisations chose to spend large budgets on developing their own solutions, despite similar tools existing within other large organisations.

This lack of collaboration appears to be endemic across the sector, not just in the international bodies. However, some NGOs are collaborating to build tools together. Learning how these efforts have been effective could create valuable models for others to follow:

> *'We have built our platform through a shared investment by several large INGOs. These organizations had never considered working together before, but now they share their ideas in regular conference calls and technical meetings. All of the investors, large and small, get to enjoy the benefits of the components they build, and they share them with their local partners as well.'*
>
> John Feighery, Co-Founder, mWater (Survey response)

Box 1: Key lessons: Build on what works

- Default should be to re-use existing tech rather than build from scratch.
- Need to challenge mindsets about requiring tools that meet every specific need.
- Look for potential collaboration opportunities when developing technology.
- Old and well-established technologies can be as useful as new innovations.

2.2 THINK LOCAL TO ENGAGE USERS AND DEVELOP LOCAL CAPACITY

Oxfam already has a '*focus on in-country ownership rather than parachuted solutions'* approach (Oxfam, 2014), but there are some strong views that this could be extended further.

> *'Countries in the developing world have largely been on the receiving end of most content and lacking in the tools and infrastructure to support local content generation… [this] has slowly started to change, driven by increasing mobile penetration, access to the internet and social networks.'*
>
> (GSMA, 2013b)

These ideas resonated with practitioners in interviews and the survey—tailoring content for audiences is an important way to engage local users, and local creation of content and tools can be a way to support local civil society and local economies.

Locally relevant content is more engaging and trusted

The literature suggests that people are more likely to try new ways of doing things when the messages they receive are explicitly relevant to them and delivered by a trusted messenger. Digital Green, for example, discussed their digital platform for sharing locally created agricultural extension content. Combining this with human-mediated dissemination, they have found, leads to seven times the uptake of new practices compared with traditional extension work (Gandhi et al 2009).

A number of interviewees stressed that locally relevant and produced content is critical:

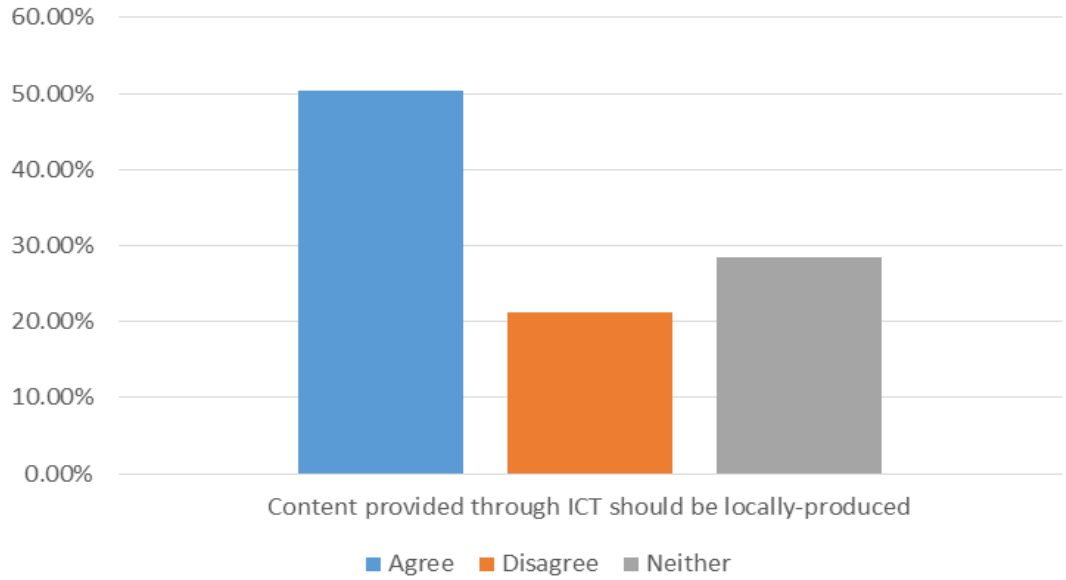
> *'To give the best chance of success, the programme content has to be more localised.'*
>
> Interview with Alvaro Valverde, Private Sector Adviser (ICT), Oxfam GB

With this in mind, for ICT to improve programmes' impact, it is vital to consider what content works best, and how best to create or source local content. Thinking local may be important for achieving impact.

Supporting local production of content and technology can develop local capacity

This research shows strong backing for INGOs to actively support local enterprises. Over 50 percent of survey respondents agreed that content provided through ICT should be locally produced (up to 67 percent among civil society respondents).

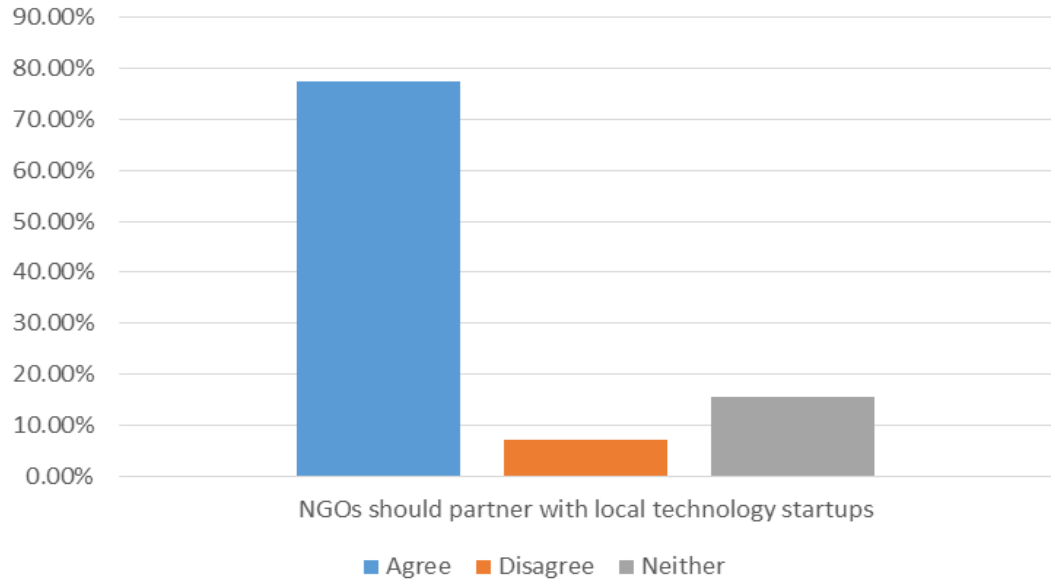
Figure 2: 'Content provided through ICT should be locally produced' survey responses



Source: Authors' survey

There is even stronger support when it comes to the creation of technology itself: 82 percent of NGO respondents and 94 percent of civil society respondents agreed that NGOs should seek to work with local technology start-ups. There was also widespread support for working with local suppliers in general (85 percent rated this as somewhat or very important).

Figure 3: 'NGOs should partner with local technology start-ups' survey responses

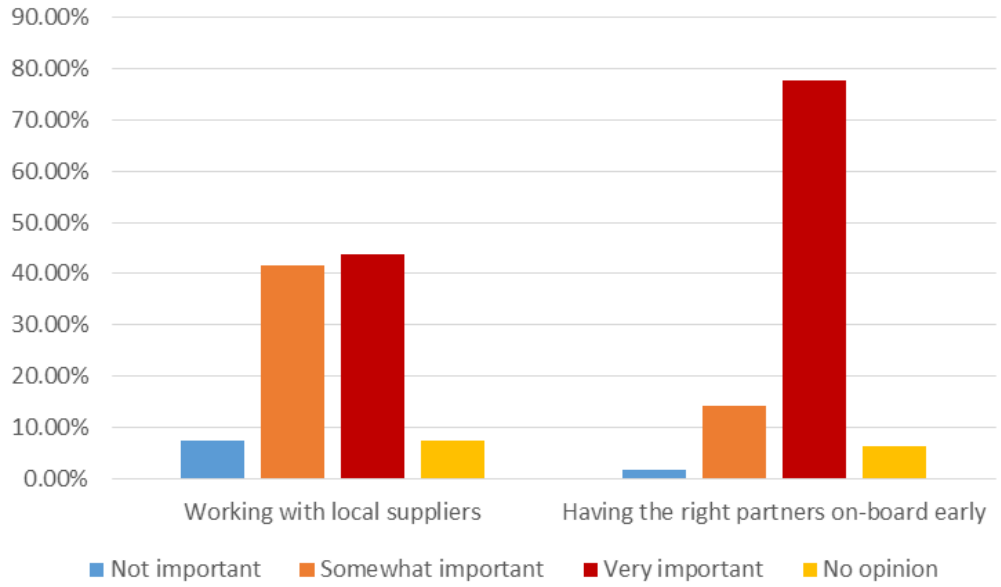


Source: Authors' survey

However, this seems to happen less often than such strong support would suggest.

The reasons for this are unclear. Inevitably, organisational procurement rules and tight project timelines and budgets will play a role, but interestingly, the desire to have 'the right partners involved early' is seen as even more important than working with local organisations (77 percent rated this as very important). Existing and established global partnerships are typically much quicker to transfer to a new programme or region, which could explain the disparity.

Figure 4: Survey responses on whether to work with local suppliers or have partners on board early



Source: Authors' survey

Oxfam has well-established policies on interacting with local economies, so as not to destabilise them when humanitarian assistance is being provided.

There is evidence that Oxfam programmes are designed sensitively and innovatively around how to re-use content in contexts outside those in which it was created. There is therefore a clear opportunity for Oxfam and other NGOs to build on this culture and facilitate more local content creation and dissemination in their programmes, remembering that supporting and developing the local economy can be a useful way to promote wider socioeconomic development.

Revisiting who creates or deploys the content and technology used in development programmes would help. While there is a clear need to have scalable and reliable technology solutions, this does not have to mean excluding local suppliers. The example of initiatives such as Digital Green also show that there are more creative ways to include local actors while still improving outcomes.

Box 2: Key lessons: Think local to engage users and develop local capacity

- When designing programmes, consider how to make messages explicitly relevant to the receiver and delivered by a trusted (local) messenger.
- As a check in design processes, constantly ask: 'what content works, who creates it and who supplies the technology to deliver it?'
- Do not lose sight of the local context or the individual users' perspectives.
- Support local enterprises and provide frameworks to enable the creation and re-use of local content and technology.

2.3 DESIGN ITERATIVE PROGRAMMES INVOLVING REAL END-USERS

Despite the widely shared belief that iterative and user-centred approaches are the most suitable when deploying technology for the complex environments found in most development programmes, challenges remain, and such methodologies remain the exception rather than the norm.

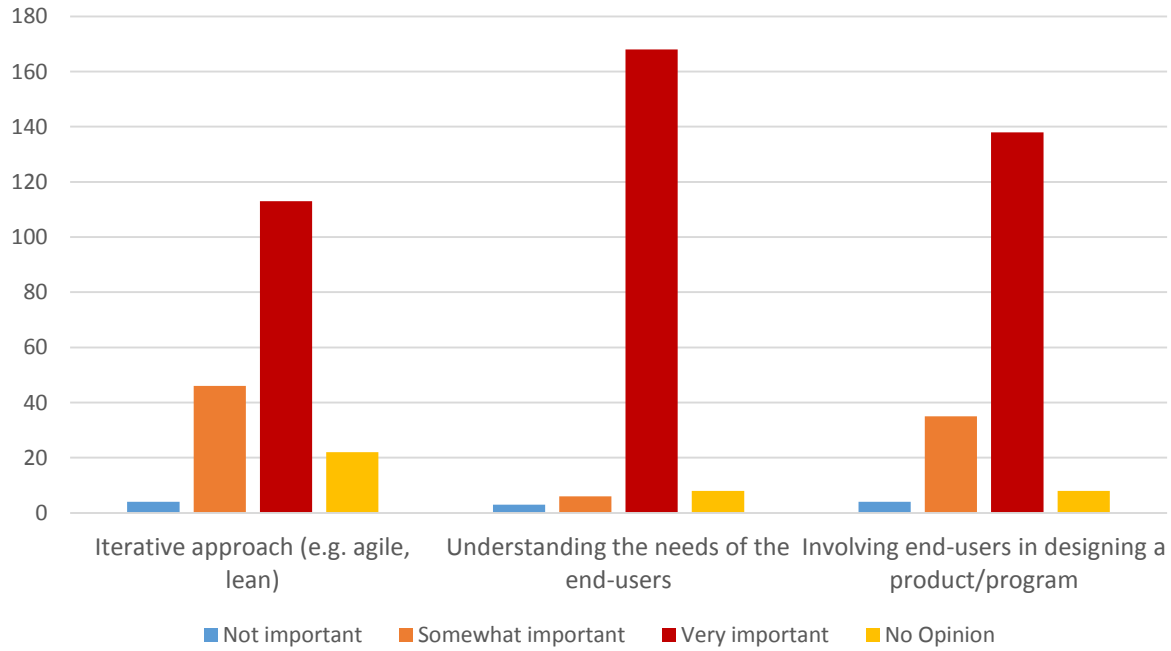
Involve users and work iteratively

The academic literature strongly suggests that iterative and adaptive approaches are better suited to the complex problems ICT4D seeks to tackle, and that involving end-users in design is likely to lead to more appropriate solutions. These ideas are reflected in the Digital Development Principles adopted by much of the development sector. More commercially sensitive M4D players are equally strong supporters of these approaches:

> *'Business offering mobile-enabled services must design and modify around the end-user… user-centric innovation... iterative design-and-modify processes… use first, keep learning and improving [because] user-centred design (UCD) can expose critical flaws early on.'*
>
> (GSMA, 2013b)

The online survey also overwhelmingly supports this view—with 85 percent believing iterative/adaptive approaches are somewhat or very important (94 percent for 'understanding the needs of the end-users' and 93 percent for 'end-users should be involved in product and project design'). A surprising 78 percent even agree that end-users should participate at every stage of product or programme development.

Figure 5: Survey responses on the importance of iterative approaches and involving end-users



Source: Authors' survey

One interview reflects that the critical issues are always user-related and rarely to do with the technology itself:

> *'Technology is not the main challenge. The challenge is always related to 2 points: trust and incentive.'*
>
> Interview with Stephane Boyera, SBC4D

The evidence seems clear, and there is consensus from all sectors: where practical, taking an iterative and user-centred approach to developing technology produces better results, especially in complex domains such as international development.

Focus on users or risk poor uptake of your technology

Unfortunately, there is much evidence that, despite overwhelming agreement, many technology projects in the development sector are *not* adopting user-centred approaches:

> *'Tools are chosen with only limited testing of their appropriateness for the intended users in the intended contexts… lack of success [due to] failure to sufficiently understand the users… neither user research nor trialling were well-represented.'*
>
> (Edwards and McGee, 2016)

> *'Design of the tools does not involve citizens for whom the tools are intended [which] hinders a comprehensive capturing of the pressing needs of citizens… little indication from organisations running the tools that citizen opinions on priorities informed the establishment of tools… more successful implementation would be achieved if citizens were involved in the design process.'*
>
> (iHub Research, 2014a)

Many interviewees supported the suggestions in the literature that, outside of start-ups, iterative approaches such as Agile and Lean are rarely used, and, in some cases, there is a lack of awareness of their existence.

Poor uptake of technologies is one of the most widely discussed 'failures' in ICT4D—for example, of the numerous systems designed to gather citizen feedback on service delivery or corruption, many remain relatively unused and/or virtually unpopulated of data. Insufficient understanding of target users is a widely accepted common reason for such poor uptake.

When asked about this, interviewees had some interesting thoughts on why this might be the case:

- Development professionals may have poor understanding of 'who is their customer?'
- A lack of focus on incentives: 'what's in it for them?'
- A general sense that the development sector doesn't take audience analysis and user discovery seriously, especially when compared with the private sector.

The reported lack of understanding of the target population is an inevitable consequence of the rarity of user-centred approaches. Ironically, this lack of understanding would become apparent much earlier if these programmes used iterative approaches, saving time and money, and addressing such problems before the product is launched and the budget spent.

Addressing structural barriers to iterative and user-centred approaches

Perhaps one of the most interesting questions raised in this research is why, despite such strong and cross-sector support for user-centred approaches and iterative methodologies, they remain so rare in development organisations.

While there was little consensus, two possible explanations emerged:

A skills and capacity gap of sector professionals

A capacity gap across the sector may be partially to blame—76 percent of survey respondents agreed that development professionals should understand more about iterative and user-centred approaches.

However, 28 percent of survey respondents actually reported being *unable* to adopt iterative approaches, and 42 percent *unable* to do sufficient work with end-users, suggesting that the underlying reasons are less to do with a lack of ability, and instead relate more to external inhibiting factors.

Structural issues related to funding and a lack of support from funders and donors

Other factors discussed included: shortage of time, short-term funding models, fixed deliverables and a lack of support from funders and donors for the longer time periods (and sometimes increased cost) involved in undertaking robust design work with real end-users. Reportedly, there is a reluctance to offer contracts that allow for iterative approaches that adapt to suit real-world circumstances as they develop.

> *'Need should be identified by the community, the initiative should be owned by the community and co-created with end-users... iterative design and getting prototypes in front of users... can be a challenge within typical development cycles of planning and funding.'*
>
> (Raftree, 2012)

Despite this perception among practitioners, it may be seen as ironic (and illustrative of the institutional constraints under which people work) that almost all donor employees interviewed or surveyed agreed that these ways of working are better: 100 percent agreed that understanding the needs of end-users is a success factor; 70 percent agreed that iterative approaches are similarly important; and 80 percent agreed that end-users should be involved in the design of a product or programme. This is from a sample of ten so, while it cannot be taken to represent a wider group of funders, it is nonetheless interesting, as is the fact that of the five government respondents, all agreed with all three statements.

Iterative methodologies such as Agile and Lean are now mainstream in the private technology sector (and virtually compulsory in the UK's Government Digital Service),[5] as are user-centred approaches. In the development sector, similar ideas framed around Adaptive Development are gaining traction with many, including some funders (Valters et al., 2016). However, none of this is new. As one participant reflects:

> *'Unfortunately, in the ICT4D sector, we've heard the same 'lessons learned' repeated again and again over the last 15 years: organisations coming to conferences and saying that you must find out what language your audience speaks, find out whether or not they can afford to access mobiles, find out whether, culturally, access is allowed… basic issues around understanding your audience and their technology patterns and needs. These aren't 'lessons', these are common sense approaches—and the fact they are still being re-stated shows that*

we have not succeeded in bridging the gap between the people who are learning and the people who are designing ICT4D projects.'

Interview with Carol Morgan, HIVOS

So the question remains: why are these methodologies not the default choice in ICT4D?

Of course, not all programmes should use these approaches. One participant, working in a humanitarian context told us that, in an emergency, they need something to deploy immediately and have no time for iteration or user-centric design work. But for the majority of development programmes, no such constraints exist and adopting best practices would make sense, improve uptake, save money and improve results.

While training for those working in ICT4D would undoubtedly help, advocacy (and training) aimed at funders and donors are also needed. So too is a more thorough understanding of the structural barriers to adoption, intentional or otherwise. Further research into these factors would also be extremely valuable.

Box 3: Key lessons: Design iterative programmes involving real end-users

- Iterative, learning approaches are usually best.
- Learn about your users and put them at the centre of your development programme design.
- If you don't know how to develop in an iterative and user-centred way, learn!
- If you do, influence donors and others to do the same.

2.4 UNDERSTANDING WHAT SCALE MEANS

Scaling is hard. The results of the survey suggest that not everyone agrees, and that the real difficulty is not scaling, but the move from pilot to scale, and achieving sustainability at scale. Also, respondents suggested that some projects are unfairly perceived as scaling failures, because as this was never a realistic or appropriate aim for them. These are subtler problems, and the lack of a shared understanding or even a shared terminology across the sector seems to be holding back the dissemination of valuable lessons.

Oxfam has already identified this pivotal move from pilot to scale as an area it is keen to improve, and many others report similar concerns:

'Progress on using ICT4D to increase efficiency of our work is strong, however the main weakness to date has been in moving from pilot to scale... few examples of where we have worked with others to scale ICT4D and too many projects have not transformed beyond the pilot stage.'

(Oxfam, 2014)

Scaling is hard… or is it?

There is a common perception in the ICT4D/M4D sector that scaling is rarely successful:

'Efforts to scale M4D initiatives and make them sustainable have largely failed... few examples of M4D at scale exist.'

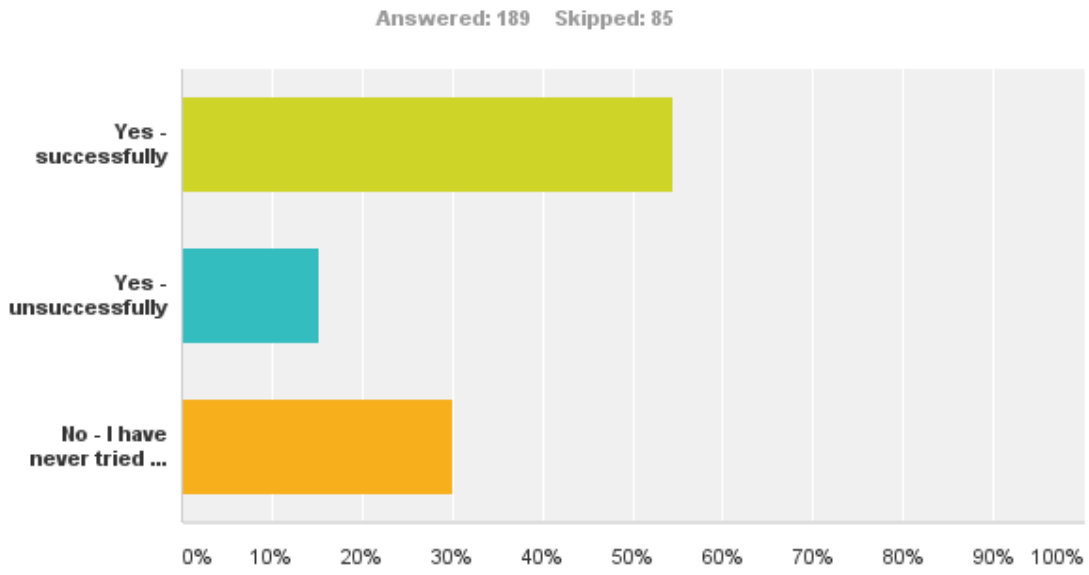
(Raftree, 2013)

'Scaling up [M4D] services still proves to be a challenge and sustainable business models continue to be elusive.'

(GSMA, 2013b)

The research highlighted a gap between the survey response and the received wisdom in the literature regarding successful scaling. Over half of respondents reported having successfully scaled a pilot or small project.

Figure 6: 'Have you ever sought to scale a pilot project or small product?' survey responses



Source: Authors' survey

While for some, scale itself is problematic, many discussed more explicit concerns—in particular the shift from pilot to scale, and sustainability at scale. The findings below describe the different views of how hard scaling is and offer some ideas for how to improve the situation.

Different perspectives on the meaning of 'scale' make learning and sharing lessons difficult

Among the participants in this study, there was confusion about the meaning(s) of 'scale' and how to achieve it. A number of challenges were identified around funding models, the perceived over-use of pilots, and how (or whether) to transition from pilot to scale.

For some interviewees (especially those from the private sector) successful scaling is seen as reaching millions of people in multiple countries. To many others, successful scaling is seen as any substantial increase in usage (from 100 to 1,000 people or from one to five countries).

Understanding factors behind success and failure is further complicated by many not appreciating the differences between different notions of scale (e.g. scale vs replication, horizontal scaling-out vs vertical scaling-up), which can distinguish between growing the size of a single programme and creating multiple versions of the same programme.

There was also confusion between scale, success and sustainability. In literature and in discussions these concepts are also regularly, and unhelpfully, conflated.

'Sustainability is not the same as success.'

(Heeks, 2005)

Arguably, a more useful focus would be on creating 'impact at scale' or 'maintaining scale'. Indeed, a shared taxonomy of related concepts would be a valuable first step to enabling different types and sizes of organisations to share lessons on scaling. This could help them design for the type of scale, success or sustainability that matches their context and goals.

Do unrealistic expectations mean pilots are setup to 'fail'?

A common charge levelled at ICT4D is that 'pilot-itis' prevails. This means that many projects fail to scale and are perceived as donor-funded projects that don't last beyond a project time-frame. The literature supports this, suggesting that the majority of ICT4D/M4D work, while sometimes successful at local level, fails to achieve significant scale.

'Many start-ups get stuck at a stage where they cannot grow users beyond a small scale… primarily due to building a product without establishing whether there is a sufficient market.'

(Jung and Feferman, 2014)

While the confusion over terms outlined above may play a role, the unrealistic expectations of start-ups and small teams also emerged as important.

A lot of ICT4D work is taken on by small technology start-ups—typically involving no more than three people. Expecting organisations like this to scale without significant time and support is optimistic, even naïve. In some cases, the organisations responsible for successful small-scale pilots may simply not have the resources required and be incapable of taking them to scale:

'Organisations that pilot innovations may not be good at scaling up or at running large scale programs… readiness to hand off to institutions that are able to manage the scaling-up process is key.'

(Hartman and Linn, 2008)

Customer discovery is different to a small project or initial rollout

There were differences in participants' understandings of what constitutes a 'pilot', as described below:[6]

- *Small-scale projects*—'many projects are not meant to scale'. A project which is designed small and stays small is not a failed pilot, it is a valid outcome. It is only a failure if it intends to grow and fails to do so.
- *Initial rollout*—rather than launching a product globally, it might be trialled for three months in one county to iron out bugs and help define a scalable rollout plan.
- *Alpha*—part of a Lean/Agile approach to product development, where an early-stage prototype is used by real end-users, to discover whether there is a market, test the functionality and, over time, evolve into something that meets a need.

While the last of these is an increasingly common way to develop for ICT4D (and an industry standard in the wider technology sector), the funding, support and evaluation of success is based on the former two types of initiative. That is, projects are being launched which are (or should be) about 'customer discovery', research and learning, but are being judged as if they are the first stage of a global rollout.

Designing for scale vs. iterative growth

For some, especially in large organisations, scale is not a problem:

> *'Because of our size, we are always working at scale.'*
>
> Interview with Geoffrey Okao, World Food Programme

> *'Scaling from the beginning is easy—the tricky bit is maintaining scale.'*
>
> Interview with Alvaro Valverde, Private Sector Adviser (ICT), Oxfam GB

> *'With enough money, you can scale anything, but that doesn't mean it will be sustained.'*
>
> Interview with Sean Blaschke, UNICEF

These organisations have the teams and/or budgets to design for scale from the beginning, thus avoiding the problems associated with moving from pilot to scale. However, there are mixed opinions over whether it is important to 'plan or design for scale from the start'. Some believe this is critical:

> *'If you don't plan for scale at the beginning, you'll never get there.'*
>
> Interview with Alvaro Valverde, Private Sector Adviser (ICT), Oxfam GB

Others believe that it is sometimes more important to start small and build from there based on user need:

> *'The principle of designing for scale is a worthwhile one, but at DFID we prefer the concept of "designing so that it could be scaled up". Designing for scale from the outset is sometimes appropriate and other times not. We advocate an adaptive approach, where priorities can be revised flexibly based on the user need. Users should be at the heart of everything we do, and designing for scale could imply we know everything from the outset and potentially limits flexibility.'*
>
> Interview with Joseph Pakenham, DFID

This tension is borne out in the survey responses too: while 86 percent said that planning for scale from the start is important, a similar number attest to the importance of iterative and user-centric approaches, without (it seems) noticing the potential contradiction between these two goals.

While it is not possible to say whether designing for scale or growing iteratively is better, it is important to understand the differences in these approaches (in terms of programme design, funding, and technology) and to decide early on which is a better match for the specific organisation and context for which the technology is being designed. Helping start-ups and NGOs understand these differences and the distinct needs of each approach would be valuable.

What should scale: the project, the technology or neither?

The question of whether a project or programme itself *should* scale also emerged.

> *'Many programmes are not meant to scale, but this does not imply that in a different scenario the underlying technology doesn't have such capacity.'*
>
> Interview with Sean Blaschke, UNICEF

> *'Are you building a business or a product?'*
>
> Private-sector interviewee, Nairobi (anonymous by request)

Both of these quotes point to the fact that projects are not necessarily the same as scalable products or platforms. In some situations, the project itself should scale, in others the platform could be re-used but not the project model, and in the remaining cases, neither may be appropriate.

Scaling technology often has an underlying goal: to introduce new ways of working to a huge population. This is clearly an enormous (and often unidentified) challenge.

> *'We amplify products far too quickly—go for scale too early and get stuck with 100,000 users and never break through it—we pump too much money and expectation into the successes and innovation achieved by small, local organisations too quickly, and they get overloaded and then we lose it all because we overwhelm them… Products need to be well worked-through before putting them on big platforms.'*
>
> Interview with Allan Moolman, Oxfam Tanzania

Iterative funding that explicitly targets scaling stages

In the development sector, despite widespread acknowledgement that scaling is both important and difficult, funding explicitly tailored around this stage of programmes and its specific challenges are rare:

> *'[there is] little systematic focus on scaling up among the donors.'*
>
> (Hartman and Linn, 2008)
>
> *'Innovative vehicles are needed for investing in M4D... Development funds do not move as quickly as technology-based funds [and have] low tolerance for uncertainty.'*
>
> (Raftree, 2012)
>
> *'This hole in the middle [of the funding cycle from idea to scale] is a drag on progress and a barrier to scale... funders must think of two kinds of success here, one (more traditional) model in which funding enables some specific sustainable impact, and another (less traditional) model in which funding enables the discovery of services that achieve a less pre-determined kind of impact, and are also thoroughly designed around end-users. Crucially the latter 'discovery' kinds of successes feed the former 'scaled' kinds of successes. We believe there to be a general lack of funding and support currently provided for discovering user-centric viable services.'*
>
> (GSMA, 2013b)

Making All Voices Count is one funder that offers funds explicitly for scaling, in the field of citizen participation, but few others do. Some 48 percent of survey respondents believe that more funding for scaling should exist.

Perhaps development funders could learn from the models used by commercial and social venture capital investors, in which it is common to have different funding, with distinct structures, for early-stage businesses, high-growth phases and scaling phases:

> *'There are different financial tools for funding pre-commercial phases of an innovative approach—i.e. (a) technical proof of concept; then (b) operational proof of concept; then (c) commercial proof of concept; and finally (d) scaling-up proof of concept for reaching breakeven volumes.'*
>
> Ueli Scheuermeier, Director, Rural African Ventures Investment, Tanzania (Survey response)

A universally agreed set of concepts such as these would enable innovation-specific and scaling-specific support for ICT4D to be targeted more effectively and appropriately.

NGOs need to consider the most appropriate stage at which they get involved, for example:

> *'Ideally we'd take on tech once it's functionality has already been tested and we are convinced by its ability to deliver... The pilot should focus on the design and how it is taken up in context, not whether the tech itself works, we should know that by the time we take it on.'*
>
> Interview with Amy O'Donnell, Lead of ICT in Programme, Oxfam GB

While innovation funding is common, there is room for more innovative models that are designed to explicitly encourage Agile and Lean approaches, including user-focused discovery, user-centred design, and learning by experimentation.

Box 4: Key lessons: Understand what scaling means

- Develop a shared understanding of concepts such as scale, success, sustainability.
- The real challenge is 'sustainability at scale', not just increasing in size or reach.
- Differentiate between scalable-pilots and small projects in their own right.
- Technology might scale even if the programme for which it is designed does not.
- Know when to design for scale from day one, and when to grow iteratively and naturally.
- Support and advocate for funding explicitly designed to support scaling phases.

Some tips on successfully scaling pilots can be found in Appendix C.

2.5 AVOID SURVEY FATIGUE BY COLLABORATING ON M&E

Several interviewees mentioned 'survey fatigue' in different contexts. In part due to the increasing use of technology, surveys are now easier and cheaper to undertake, so more organisations and programmes use them. The same community might be surveyed by multiple NGOs and donors in one year.

> *'We are seeing major 'survey fatigue' in regions where there are a lot of development projects.'*
>
> Survey response from Mark Leclair, Farm Radio International

> *'People are reaching saturation points in some countries—we risk exhausting the population and it won't work for anyone in future.'*
>
> Interview with Claudia Lopes, Head of Research, Africa's Voices

Table 1: Survey and NGO activity in top five countries in sub-Saharan Africa by development assistance received

	2014 Development Assistance*	NGO projects 2006–16 (active now)**	Orgs present 2006–16 (active now)**	Donors 2006–16 (active now)**	National surveys 1995–2005***	National surveys 2006–16***	Change
Ethiopia	$3.6bn	585 (98)	59 (27)	136 (43)	**59**	**53**	**-10%**
Kenya	$2.7bn	755 (129)	66 (39)	139 (62)	**19**	**36**	**+89%**
Tanzania	$2.6bn	254 (70)	43 (28)	74 (34)	**27**	**56**	**+107%**
Nigeria	$2.5bn	251 (39)	27 (13)	63 (17)	**18**	**39**	**+117%**
DRC	$2.4bn	342 (86)	38 (25)	82 (35)	**3**	**17**	**+467%**

Sources: (*) World Bank, 2016; (**) InterAction's NGO Aid Map, www.ngoaidmap.org; (***) International Household Survey Network, www.surveynetwork.org

Table 1 illustrates the high level of NGO activity in some HECA countries (and Nigeria), and the substantial increase in the number of national household surveys. The full picture will be more complex: no data was available on how many of the NGO projects conducted survey activities of their own. It is safe to assume that each project will undertake some kind of data collection, and that each donor will require data about results—thereby increasing the burden on communities.

Ease and low cost may lead to over-use, which may result in low-quality responses

The ease and low cost of surveying means that the situation may deteriorate further due to the uninformed nature of some of these surveys, and often by a lack of feedback to those being surveyed:

> *'Because it is cheap, easy and accessible, and reaches a large number of people very quickly, many more organisations are now doing SMS surveys. But many do this without previous testing, without providing enough context, or with badly designed questions. They end up reporting nonsense results or misleading percentages. This creates a bad reputation for everyone.'*
>
> Interview with Claudia Lopes, Head of Research, Africa's Voices

Survey fatigue may lead to people, quite rightly, complaining, dropping out, refusing to answer surveys or, where they have to—e.g. to receive the services or benefits of the programme—answering as quickly as they can, giving data of dubious value. The quality of monitoring and evaluation (M&E) data and the lessons that can be drawn from it will suffer.

Insufficient cataloguing of survey data: who did what where?

With the technology-enabled proliferation of surveys, it is surprising that it can still be difficult to establish what has already been done with a given population in terms of data collection, which risks exacerbating the situation further:

'When we needed information about wells in a certain area, it was impossible to find out if such data had been collected previously by other NGOs or by the municipality itself. Data was not catalogued nor easily accessible by others.'

Survey response from Marta Domini, PhD student, CeTAmb Lab, University of Brescia

There are resources available that could, with increased uptake, go some way to alleviating this problem, but there are gaps. The International Household Survey Network[7] catalogues national surveys undertaken by donors and governments. One of their stated goals is to improve collaboration and sharing of data. NGO Aid Map[8] provides a database of NGO projects and donor activity by country. The significant gap is that the survey activities conducted by NGOs and projects are not catalogued.

Oxfam are already exploring an approach to cross-organisation communication and sharing of information which would be easy to implement and might begin to fill this gap:

'This is in progress with the creation of a survey bank to include previous approved questionnaires (questions only, not answers) for programme staff to browse and borrow from to avoid starting from scratch. The survey bank will be a storage point for standard survey templates available for teams to edit and use as needed. Not only will this save valuable time, it will also facilitate best practice survey design and make a start towards standardising our common indicators which could lead to some level of global reporting. More on this can be found at http://policy-practice.oxfam.org.uk/blog/2016/09/mobile-surveys-the-past-the-present-the-future'

Survey response by Amy O'Donnell, Lead of ICT in Programme, Oxfam GB

Sharing data responsibly

Beyond the idea of a catalogue of surveys is the idea that data could be shared between organisations, thereby reducing the number of overlapping surveys.

'There are so many donors, NGOs and government departments creating their own separate databases on the same people. There is a lot we could explore to find areas where we can join up or even share the same data.'

Interview with Joseph Pakenham, DFID

'Communities are there continually, yet we do M&E at an artificial "project" level. Why aren't we working with communities outside of the context of individual projects?'

Interview with Fabrice Romeo, Echo Mobile

It may be comparatively simple for large NGOs such as Oxfam to leverage ICT to make M&E a cross-cutting activity that happens above the level of individual projects and programmes internally. It would be more challenging to make M&E an activity that cuts across entirely separate organisations.

'I observed a great need for a platform sharing data between institutions and NGOs working in the same area.'

Survey response by Marta Domini, PhD student, CeTAmb Lab, University of Brescia

'I can see projects and larger government programs combining M&E efforts to lessen this impact. ICT could play a major role in soliciting feedback from citizens on large scale through mass media, [interactive voice response] etc.'

Survey response by Mark Leclair, Farm Radio International

This approach seems to have support or may even be inevitable. Some 76 percent of survey respondents agreed with the statement 'In the future M&E will become a continuous ongoing process, outside of the boundaries of projects or organisations'.

In order to approach this, organisations will need to consider how this could be done responsibly, with the upmost care for the rights of the people whose data has been collected. Oxfam is among the first NGOs to develop a policy on the responsible use of data. The policy is based on the following rights:

- the right to be counted and heard;
- the right to dignity and respect;
- the right to make an informed decision;
- the right to privacy; and
- the right to not be put at risk.

The Responsible Data Forum[9] describe this as:

> *'The duty to ensure people's rights to consent, privacy, security and ownership around the information processes of collection, analysis, storage, presentation and re-use, while also respecting the values of transparency and openness.'*

The definition of responsible data offered above alludes to the tensions between the equally laudable principles of data privacy and data openness. Add to this the practical difficulties of gaining consent (e.g. 'is it reasonable to assume one can get informed consent from a semi-literate smallholder farmer to share her data with a network of NGOs?') and transference of the data between different organisations' systems, and one has a heady mix of countervailing issues that will require determined effort and leadership to address.

Collaborations among NGOs

To take these ideas further will require a concerted effort from the senior management of organisations, combined with the support of those who understand the legal, technical, process-based and cultural challenges to make it happen. Despite these challenges, it can be done. Indeed, collaborations are happening already:

> *'Water Aid have initiated this in the WASH [water, sanitation and health] sector—bringing together CEOs of three major technology providers at World Water Week to start hammering out interoperability between their systems to allow the free flow of data. The hope is that this will help in tackling the "data silos" for more informed decision making across the sector, reducing the need for duplicating surveys.'*
>
> Interview with Mike Smith, Water Aid

> *'Our partnership with CARE and World Vision ["Everyone Counts"] offers a compelling example of collaborative M&E. It looks at harmonising how teams collect field level data from "community scorecards", aiming to create a shared data source to inform joint advocacy, planning and evaluations based on citizen-generated data. We are also piloting harmonised M&E with the South African government, bringing together data across multiple departments at different levels.'*
>
> Interview with Rob Worthington, Kwantu

Community-owned M&E data collection?

Considering the issues of survey fatigue, privacy and collaboration raised in this section, along with the principles of user-centred design outlined earlier in the report, one must consider: what would user-centred M&E look like?

> *'Communities are there continually, yet involved in M&E as a one-way conversation. Two-way loops should be emphasised by feeding back the information collected throughout the M&E process to beneficiaries, so they can appreciate that their individual contribution has been taken into consideration and what is the action plan after the M&E findings.'*
>
> Interview with Fabrice Romeo, Echo Mobile

If development professionals truly wish to empower the people they work with, communities themselves (not just NGO staff) must be considered a primary user of M&E, and make the latter's needs central to the design of M&E tools and processes. This may look very different to the status quo: making M&E an ongoing community-level activity, outside individual projects or even organisations.

Box 5: Key lessons: avoid survey fatigue by collaborating on M&E

- Seek opportunities to combine M&E across different projects and programmes within the same organisation.
- Seek opportunities to collaborate externally on M&E activities.
- Technology can help to make M&E an ongoing community-level activity, outside the context of individual projects or organisations.

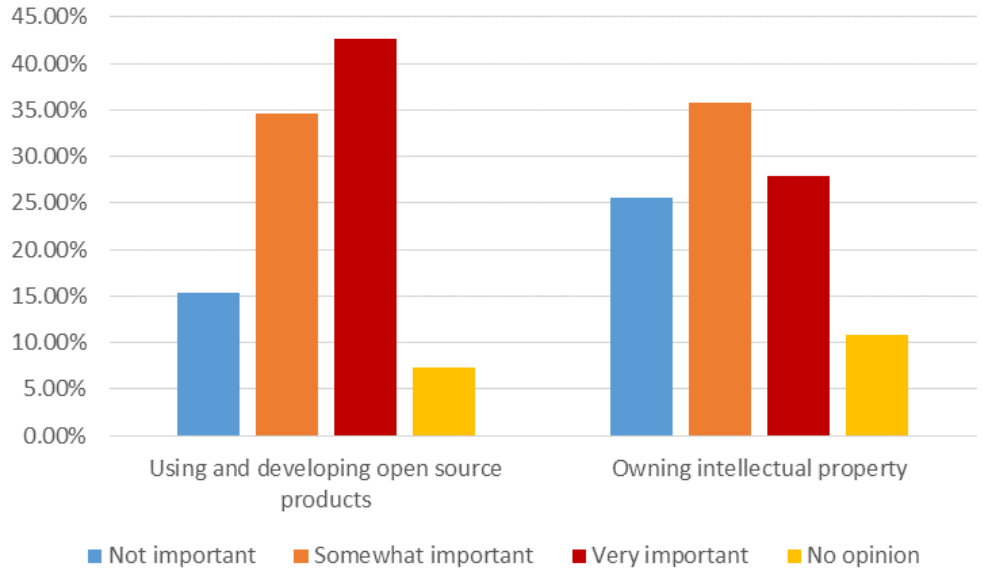
2.6 OPEN DEVELOPMENT CAN CREATE OPPORTUNITIES AND REDUCE WASTE

The research uncovered widespread confusion and disagreement over the need for 'openness' in ICT4D (open source, open standards, open data, open development), leading to missed opportunities to share resources, reduce costs and improve results.

A confused landscape with common misunderstandings

While most of the ICT4D practitioners surveyed support using and developing open source products, most also believe owning IP is important (see **Figure 7**). This appears contradictory and, judging from discussions in the workshop, reflects wider confusion over the implications of such choices.

Figure 7: Survey responses on open source vs. proprietary products



Source: Authors' survey

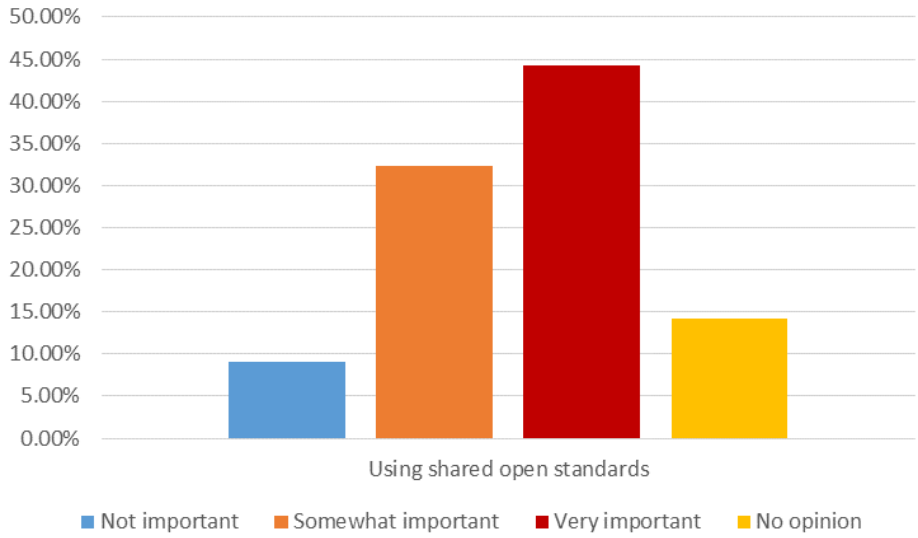
During the Kenya workshop, it was also apparent that people from different sectors had different views on the pros and cons of topics like open source and open standards, and also had different ideas of what the core terms actually meant.[10] Some of the concepts were either badly understood, had multiple competing views of their meaning, or were being used with differing assumptions.

This not only means some practitioners are not able to make the most suitable choice of technology for their situation, but makes it difficult to share lessons learned across different organisations and sectors.

Opening standards to exchange data

While some tools make it easy to migrate data to another tool, or to share data with other systems, many do not. Some interviewees reported feeling 'locked in' (particularly on certain commercial cloud-hosted platforms) or that moving to new systems was time-consuming and expensive. Our survey showed considerable support for open standards, as in **Figure 8**.

Figure 8: Survey responses on the use of open standards



Source: Authors' survey

However, this does not seem to be translating into commercial demands from NGO customers to technology vendors. Unless the customers—especially higher-spending large NGOs and donors—insist that the solutions they buy support open standards, there is no reason for software vendors to follow these standards or build functionality to allow easy sharing or migration of data between systems.

Although data standards for WASH and identification are gaining traction, for many aspects of ICT4D, the standards themselves do not yet even exist.

Inter-operable systems are important

Without agreed and adopted standards, opportunities for collaboration could be missed, along with opportunities to share data between different projects, organisations and sectors. Opportunities to combine data for research and learning, or simply to migrate to more appropriate platforms based on an assessment of users' needs may also be missed.

Large NGOs such as Oxfam are in a key position to be able to draw together consortia of users—NGOs, governments and civil society organisations (CSOs)—and developers to insist these discussions around open standards happen and enable the systems they are all using to talk to each other. These discussions are already taking place (in fora like Nethope, ELAN, MERL Tech etc.), and NGOs could play a valuable role if they were more involved.

Box 6: Key lessons: open development can create opportunities and reduce waste

- There is confusion and disagreement over the need for 'openness' in ICT4D, which requires further conversation to settle.
- Open standards are not translating into commercial demands and, in many cases, the standards themselves do not even yet exist.
- Large NGOs could engage in networks and draw together consortia of users and developers to insist discussions around open standards happen.

2.7 UNDERSTAND ORGANISATIONS' DIFFERING ROLES AND GOALS

For long-term success in many development initiatives, the local private sector and large corporate players have important and different roles to play. A more nuanced understanding of how INGOs can work with these stakeholders is needed.

Confusion over the meaning of 'private sector'—farmers and traders are not just 'beneficiaries'

In the workshop and other discussions, there was a lot of debate on the role of the 'private sector', but very little shared understanding of what this term meant. In some contexts, the private sector was taken to mean 'major corporates—multinationals and mobile network operators (MNOs or Telcos), while in other contexts it was taken to mean 'local SMEs'.

Of more concern, the two very different groups are often conflated. Some would refer to the need to 'support economic development by building the country's private sector',

when in reality their work involved partnerships with large multinationals headquartered overseas.

One interviewee explicitly made the connection between development or aid and supporting the local private sector—helpfully identified as 'commercial actors—farmers and traders themselves'. Anecdotally, farmers are sometimes treated as 'beneficiaries' by NGOs rather than 'private sector actors', which may be inappropriate in certain contexts.

As more development funding is being channelled towards private-sector and market-based programmes, it will be essential to develop a fuller understanding of different private sector actors, the roles they may take on, and the different roles NGOs need to play when partnering with them.

What can NGOs get from helping private sector access new markets?

> *'The money's got to come from somewhere.... MNOs are not doing this for corporate social responsibility, they are doing it for the market they are going to get now or the market they are going to get in the future because of these ICT4D interventions...'*
>
> Interview with Carol Morgan, HIVOS

There is evidence of NGOs harnessing this dynamic to further developmental goals.

One programme asked MNOs to submit bids for offering nutrition messaging services with a clear plan for sustainability. In this way, the programme outsourced the responsibility for coming up with the sustainability model to the private sector and accepted that MNOs can offer entertainment and other revenue generating content alongside nutrition messaging. It included a financial incentive from the donor for the private sector actors.

One NGO identified an MNO new to the market that was keen to build a customer base in rural Tanzania, outside the crowded urban markets. In exchange for the NGO facilitating access to people in rural areas who wanted access to agricultural extension video content, the MNO offers discounted smartphone handsets—products that farmers want and which will be crucial to delivering the NGO's content.

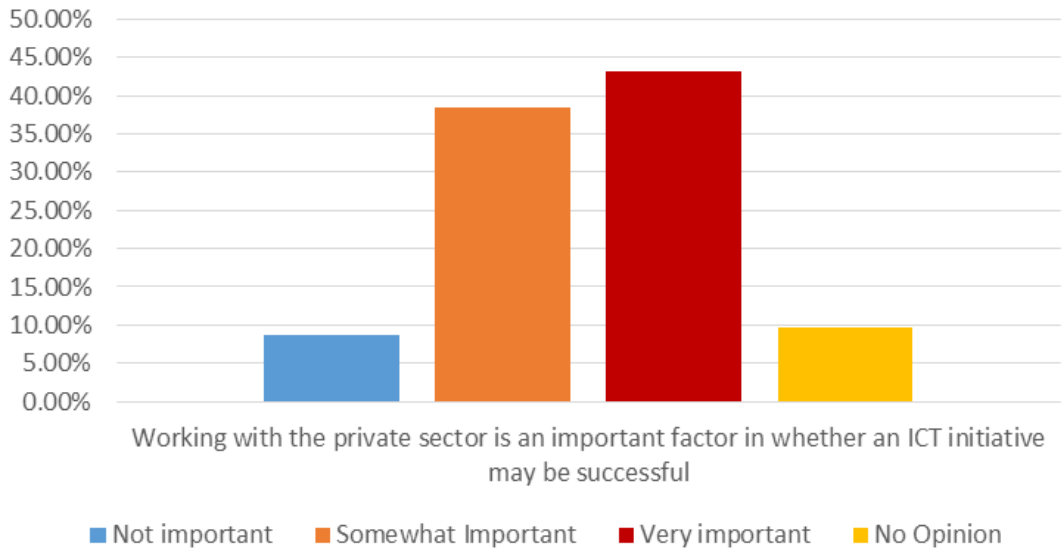
Another NGO mentioned how, in place of traditional ICT4D models in which the government or end users pay for services, they have developed a partnership with MNOs across Africa in which the MNO pays. They do this by bringing local content to the MNOs with wide appeal to their subscriber base, and track increases in revenue per user (RPU), gateway (adoption of other paid services) and increased customer loyalty among their user base. These kind of mutually beneficial partnerships are likely to be more sustainable in the long term than relying on MNOs' goodwill.

Working with MNOs is essential, as they will play a significant role in improving Africa's connectivity and access to technology. For NGOs, it may therefore be a matter of reaching an accommodation with this fact and learning to work with and influence companies for the most positive developmental impacts.

NGOs' duty of care when collaborating with the private sector

Over 80 percent of survey respondents thought working with the private sector was important (see **Figure 9**).

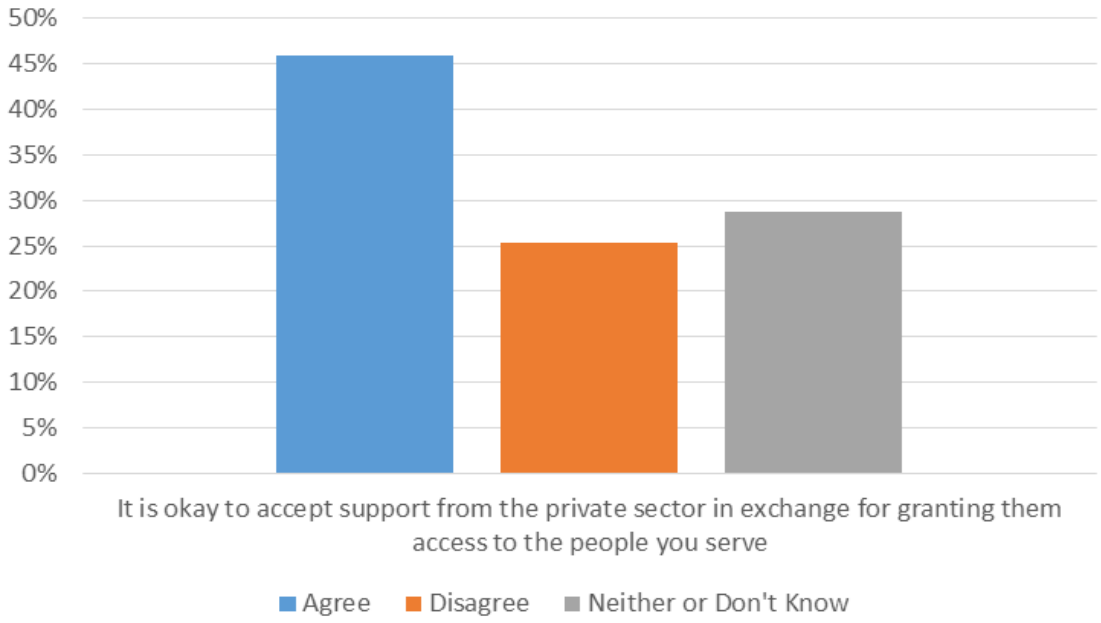
Figure 9: Survey responses on working with the private sector



Source: Authors' survey

However, feelings about accepting support from the private sector in exchange for access to people were much more mixed, as can be seen in **Figure 10**.

Figure 10: Survey responses on exchanging access for services



Source: Authors' survey

While there is no denying the duty of care that NGOs have for the people with whom they are working, one respondent questioned the premise of the question: 'do you own access rights to your beneficiaries now?'

Oxfam has done innovative work in figuring out ways to work with the private sector for mutual advantage—with cash transfer partnerships and nutrition messaging. It has also

taken a leading role in building consensus on responsible data policies—one of the key areas of concern when working with companies.

It will become increasingly important for NGOs to navigate this tension between representing the needs of their stakeholders and developing mutually beneficial relationships with MNOs and other private sector partners.

Box 7: Key lessons: long-term success needs better partnerships and new business models

- Develop more mutual understanding around types of private sector actors.
- Working with the private sector is essential as it will play the dominant role in improving Africa's connectivity and access to technology.
- Ensure duty of care in working with private sector for mutual advantage with a view to developing a set of policies around private sector engagement.

2.8 DON'T FORGET ABOUT CONNECTIVITY

Initiatives to promote basic connectivity and access to the Internet are not new or innovative, and some of the literature suggests that it is no longer a problem. This is not the case.

Connectivity in HECA remains a barrier to participation and will be so in to the future

Access to ICT and the Internet will remain a major development problem for the foreseeable future.

McKinsey reported in 2014 that 4.4 billion people remained digitally disconnected (McKinsey, 2014). Statistics from the UN International Telecommunication Union (ITU) suggest that only 21 percent of citizens across Africa use the Internet (ITU, 2015). In some HECA countries it is even lower (e.g. in South Sudan, 15.9 percent). This is perhaps summed up best in the World Bank's Development Report on Digital Dividends (2016):

> *'Nearly 60% of the world's people are still offline… only 31% of the population in developing countries had [internet] access in 2014… women are less likely than men to use or own digital technologies… nearly one fifth of the world's population is illiterate.'*

This echoes the findings of the survey, in which 69 percent of respondents reported bandwidth or connectivity having been a barrier to their work. They also saw no signs of this changing in the near future—67 percent of those surveyed believed connectivity and accessibility would continue to be a problem for at least the next five years.

It is important that, in the rush to embrace new technologies, smartphone apps, mobile surveys, etc., NGOs remember that significant numbers of the people they are seeking to reach are not connected—these are often the ones who are in most need of help.

Box 8: Key lessons: don't forget about connectivity

- Don't believe the hype—connectivity remains the problem and will be for some time to come.
- Ensure that design considers who you are excluding, especially when using online technologies.
- Consider how to extend connectivity to those who need it most.

3 KEY ICT4D OPPORTUNITIES FOR INGOS IN HECA

The key messages that emerged from this research in relation to Oxfam and other large INGOs are:

- The most valuable role they can play in the technology sphere is as convenors and capacity builders, not directly creating technology themselves;
- Better collaboration between NGOs, civil society, and other players would improve outcomes; and
- NGOs have a unique position to advocate to funders and governments on behalf of wider groups.

3.1 INGOS AS CONVENORS AND HELPING TO BUILD LOCAL CAPACITY

In the survey, the views of the appropriate roles of NGOs in the technology space in HECA were extremely mixed. Some welcomed their involvement, while others suggested that local organisations should be doing the work.

There was strong consensus among interviewees and survey respondents that there is a need for someone to convene different partners. INGOs are considered well placed for this: 88 percent of survey respondents believe INGOs should play a convening role; 84 percent a capacity-building role; and 87 percent that partnering on ICT initiatives should be about collaboration and co-creation (only 1.5 percent disagree).

Bringing together the different players from different sectors, helping them work together to share best practice and develop capacity would be invaluable—particularly for the local civil society and technology start-up sectors.

Developing shared guidance on how to choose products

As a convener, Oxfam could help avoid duplication and offer guidance on how to source appropriate off-the-shelf products. There are significant opportunities for a convener, adviser and capacity builder to help people avoid waste and duplication and co-ordinate (or spark) collaborations, thereby delivering wider benefits to the sector. There is widespread confusion about what products are available and the extent to which they can be customised:

> *'People don't know where to go to find out what ICT4D projects already exist in their country—and what lessons already exist globally.'*
>
> Interview with Carol Morgan, HIVOS

For example, Oxfam HECA staff at the Nairobi workshop related how difficult it can be to find the best way to meet their technology needs. The Engine Room reported that, among the 38 organisations in their 2015 study on ICT in accountability initiatives, less than one-quarter were happy with the tools they chose.

There are toolkits available to help people find the right tools, but these are not widely known or used.[11] Oxfam's ICT in Programme team has developed toolkits for mobile data

collections and is working on other areas, for example an electronic cash catalogue with ELAN.[12]

There is an opportunity to build on the work of the ICT in Programme team, to survey the marketplace for ICT solutions that meet other common requirements in the region and provide recommendations, or at least assessments. Guidance on how to find and evaluate products and suppliers would also be useful.

In this way, Oxfam can change perceptions of development professionals and help the sector pivot from a default inclination to build, to a position where collaboration and adaptation are the norm.

Supporting skills development around iterative and user-centred approaches to development

One of the reasons cited for the lack of involvement of users and the rare use of iterative methods was a lack of understanding of how to do this by those applying technology to development problems.

However, much of the training that *is* being offered would appear to be missing the mark.

> *'Necessary components of entrepreneurial management skills include opportunity recognition, product design, organisational planning, leadership, customer discovery, marketing, early-stage financing, partnership negotiation, revenue model development… local Kenyan solutions are to utilise narrow training programs from large organisations on project management and technical product development, designed for managers within big companies, not adequate to needs of start-ups'*
>
> (Jung and Feferman, 2014)

Convening those who do and those who do not have these skills to discuss and learn from each other would be very valuable.

Bringing together different actors to develop a common understanding of scaling

Those developing technology in HECA would benefit from a shared understanding of the terms, concepts and factors related to pilots, discovery and scaling outlined earlier. Oxfam could convene a group of other ICT-focused NGOs and technology providers to develop such a shared understanding—and then ensure that all Oxfam information systems (IS) and programme staff, partners and projects adhere to this.

Addressing this widespread confusion of concepts is important as, to learn from one other's successes and failures, it is vital to be able to compare consistently.

In particular, a model of the type of support, partnerships and funding most suited to 'discovery', 'rollout' and 'scaling' phases would be a valuable tool for the entire sector.

Facilitating the creation of an ICT4D agenda from and for the global South

There is a clear demand for an ICT4D agenda coming from HECA, Africa and/or the global South as a whole. While INGOs obviously should not seek to lead this—it must be driven by Southern NGOs, CSOs and tech providers—they can play an important role in supporting and facilitating it.

Their size and partnerships also mean that they can add significant value by linking governments, donors, and the international community. Oxfam and other INGOs can play an invaluable role in helping convene these organisations, facilitating dialogue and sharing experiences from other regions, which may fuel discussions and agreements.

As convenors, NGOs like Oxfam can facilitate formal and informal activities to help ICT4D actors across the region develop a shared voice. Informal activities might include organising events, hosting relevant sessions at conferences, bringing together diverse people to explore existing uses of and lessons about ICT, critical design considerations and simply to share experiences (as happened at the workshop for this study).

A more formal role would need to emerge from the Southern actors themselves, which might involve the creation of more structured partnerships or advocacy groups to increase the impact of ICT4D activity across the region.

The range of stakeholders that could be brought together under this convening role is large. There are the typical 'ICT4D players' (NGOs, donors, etc.) but also all those using technology for social purposes, such as CSOs, private and charitable tech organisations, start-ups, tech communities and innovation hubs.

Even in Nairobi, the tech capital of the region, there is a palpable sense of people working in silos with few opportunities to communicate and meet among social-tech actors outside their immediate circles. Anecdotally, while in Kenya, the researchers organised some ICT4D events (in addition to the Oxfam workshop), and there was a lack of similar convening happening and a clear desire among participants for more.

3.2 COLLABORATION WITH OTHER NGOS, TECHNOLOGY PROVIDERS AND LOCAL ACTORS

Another cross-cutting theme that emerged was a feeling that the sector, and larger NGOs in particular, could be collaborating more, and more effectively. Particular demand was evident in the following four areas.

Collaborating on developing products or product requirements

In addition to the suggestions around ‘adapt don’t build’ for individual organisations, there is an opportunity for NGOs to collaborate and develop or adapt/extend technologies together.

This might actually mean pooling budgets to develop new products (or better, new features for existing products), or simply coming together to present better a shared set of requirements to technology providers.

If done on a wider scale than just projects or programmes, this could also mean convening a forum of key regional actors to develop shared ICT requirements, presenting a unified voice to technology vendors, and making clear the needs of ‘the customers’, thereby producing more appropriate tools and saving money in the process.

A more collaborative approach to local partnerships

Successful and effective partnerships between INGOs and local organisations appear to be elusive and problematic (36 percent report difficult relationships with implementing partners), and anecdotal reference to hierarchical and competitive overseas NGOs and donors was common.

In order to address the need expressed by participants, the partnerships convened would have to be geared towards collaboration, co-creation and capacity development, not based on implementation or service delivery. Unfortunately, what seems to be more typical is a relationship in which an INGO is the lead and the other partners are sub-contracted.

Developing and managing more equitable and supportive relationships with local partners requires changes to culture and processes in both the INGOs and the partners with whom they work.

Convening both INGOs and local partners to create a better understanding of the needs, desires and problems of each would be valuable. Distilling some 'best practice' which can be shared and inform future partnerships and contracts would be a useful tool that a convenor could create.

Sharing expertise in engaging with the private sector

Some NGOs, including Oxfam, have considerable experience of working effectively with private sector actors—small and large; multinationals and local technology start-ups. Convening a forum to understand these nuances better and share this knowledge with other NGOs and civil society actors would be useful. This could even form the basis for developing a set of shared policies and best practices for private sector engagement, allowing the NGO sector to fulfil its duty of care to people, while better harnessing the resources of the different actors in the private sector.

Collaborative M&E beyond individual projects

To combat the survey fatigue outlined in **Section 2.5**, INGOs (which probably undertake the majority of M&E survey work) could collaborate on minimising the impact on the communities with which they are working.

A simple catalogue of 'who did what where' (which Oxfam are already exploring through survey banks) would be a good place to start. This could kick-start the collaboration without the need to tackle the complex legal, technical and cultural issues around data sharing. NGO Aid Map and the International Household Survey Network would be potential partners in this endeavour.

A more in-depth option would be to actively collaborate on M&E. For example, if multiple NGOs and the government are operating in the same region, they could combine their M&E needs into one survey instead of four separate overlapping ones.

While the challenges are significant (especially regarding partnerships with certain governments), the direction of travel seems unavoidable, and is an opportunity for larger NGOs such as Oxfam to lead, rather than trail behind while waiting for technology providers to facilitate this. It is inevitable that NGOs would need to rethink their role with respect to M&E if this happens:

> *'Disintermediation of existing players will create a greater emphasis on working in networks—data sharing will mean the end of reports and create a greater emphasis on standards as the basis for M&E in the future.'*
>
> Interview with Rob Worthington, Kwantu

While some data sharing already takes place (for example, Oxfam published results through the **International Aid Transparency Initiative (IATI) registry**,[13] and through the UK Data Service[14]), it tends to be primarily related to donors and reporting, rather than

directly sharing data between projects/organisations working in the same regions or with the same people.

Ignoring the challenges of sharing data across organisational boundaries, a lot of value could be gained by seeking to make M&E a cross-cutting activity *internally*. This means sharing M&E needs (and data) across silos, programmes and departments to ensure different projects are not surveying the same people or communities unnecessarily. This would be a good start and could help to pave the way for external collaboration in the future.

3.3 NGOS ADVOCATING TO DONORS, FUNDERS, AND GOVERNMENTS

INGOs such as Oxfam are in a unique position, with relationships to both delivery partners and global/national funders, and could play a valuable advocacy role.

This would mean seeking to ensure that the best practices identified in this research and elsewhere become institutionalised in how funding and partnerships operate. In particular, promoting the idea that access is not just about infrastructure and affordability, but how people use technology—with related factors such as literacy, confidence, and perceptions, as well as the availability of timely, relevant content—being critical.

Oxfam in particular has been considering how its advocacy role and technology interact:

> *'How can ICT4D best support the influencing agenda?'*
>
> (Oxfam, 2014)

However, this research identifies the reverse as another valuable influencing role of organisations. i.e. actively advocating and seeking to influence how the major international players fund, manage and support/inhibit the success of ICT4D.

The key areas for advocacy recommended are those outlined earlier in the report:

- Improved funding models so that they actively encourage iterative and user-centred approaches, rather than structures which, however unintentionally, prevent them;
- More nuanced funding that is designed to support customer discovery, pilots or scaling phases;
- Funders to use their influence, money and roles to facilitate better collaboration across different actors in the ICT4D space;
- Active support for shared approaches to M&E across projects and funders;
- Agreement on and dissemination of best practices in delivery, methodologies and product selection; and
- Advocacy for improved connectivity and, in particular, funding of alternative options for 'last-mile connectivity' to help combat the continuing problems with not reaching the poorest or most isolated communities.

On the latter, Oxfam's expertise in advocacy, influencing and lobbying could be put to good use if joined with those organisations advocating for connectivity, such as the Alliance for Affordable Internet and Emergency Telecom Cluster. In this way, Oxfam could explore not just the mainstream rollout of mobile/fibre connections, but innovations in last-mile connectivity and the related issues of power. Connecting those who are not commercially viable customers for multinationals will only happen if it is demanded. As two participants reflect:

'Although we have good infrastructure, some parts of Kenya are yet to benefit. Last-mile interventions are required.'

Survey response by a Kenyan government employee (anonymous)

'If we can combine solar and connectivity so that we can rely on mobile phones and data working everywhere, it would transform the sector.'

Interview with Geoffrey Okao, WFP

Oxfam's local networks and long-term relationships mean it could be well positioned to lead or join partnerships for convening, collaborating and advocacy. Oxfam could use its networks to broker connections and help share knowledge between tech organisations, NGOs, funders/donors and civil society partners.

4 HOW CAN INGOS IMPROVE THEIR 'ICT IN PROGRAMME' WORK IN AFRICA?

This section focuses on the changes an organisation like Oxfam might seek to make if it wishes to tackle the challenges outlined in this report and is keen to take on the convening, collaborating and advocacy roles discussed in **Section 3**. While it is tailored to the specific situation of Oxfam GB in the HECA region, much of it may have wider relevance.

The key question for Oxfam and others is whether they wish to be seen more as a 'convenor' and less as a 'doer' when it comes to technology programmes. Oxfam is developing a position on this, and it is hoped other NGOs will follow suit:

> *'Oxfam needs to establish the extent to which it can innovate or be an early adopter in certain areas of ICT, or whether it is better to facilitate, and follow in the footsteps of, advances by other initiatives.'*
>
> Interview with Amy O'Donnell, Lead of ICT in Programme, Oxfam GB

For any NGO that is serious about playing a major role—whether delivery, supporting, convening or advocacy— within the ICT4D space, there is a necessary level of understanding of the key issues relating to technology and, more importantly, to the application of technology to development problems that must permeate every level of the organisation. It is hoped that the recommendations below would help make this a reality.

A change process to address skills gaps and capitalise on enthusiasm

Oxfam, along with many other NGOs, faces significant gaps with ICT skills and capacity with limited time, money and strategic-level buy-in. There is, however, great enthusiasm for learning and collaborating on ICT among frontline staff.

A change process is recommended, to create a culture in which ICT is a cross-cutting part of all of Oxfam's work in HECA and digital literacy, as applied to programmes, is a core competency for all staff.

While there are ICT skills and capacity gaps in general, Oxfam staff in HECA are seen as having 'good digital literacy' overall. The key capacity gap is in the understanding of how to apply ICT to development and programme problems—a role played by what other sectors typically refer to as an 'IT/Business Analyst'. Related to this are the various other skills gaps concerning best practice when applying ICT to development, which are outlined in detail in other sections (e.g. Agile, Lean and iterative ways of working, user-centred design, systems that work in environments with low or no bandwidth, etc.).

This view is shared across the region, with 53 percent of those surveyed reporting that a lack of internal ICT capacity among staff is a challenge in their work. Some 88 percent agree that organisations benefit from staff who specialise in applying ICT to development problems (89 percent of NGO respondents and 94 percent of civil society).

This finding was the one echoed most by others working in the region outside of Oxfam. It seems that there is a widespread acknowledgement of the need for more knowledge and

skills relating to the application of technology to development programmes at every level, whether this gap is met through training, hiring or partnerships.

Make digital literacy a core competency for all staff and senior management

Oxfam participants called for more support for ICT4D from senior management, suggesting that taking ICT4D seriously would be 'Impossible without buy-in and genuine support at country-director level' and 'when ICT is reflected in Oxfam Country Strategies this may be possible, not before'. While of course it is not relevant or appropriate for every country to place ICT as a core part of its strategy, what does seem vital is for every country and every senior manager to develop an understanding of if and how ICTs impact their strategy and how ICTs can be used to increase their impact, whether 'ICT in Programme' activity or as a cross-cutting theme underpinning other strategic goals. Without this focus, ICTs are likely to be overlooked, sidelined and under-funded, risking missing out on their potential benefit to Oxfam's work. They also requested more regional-level coordination and capacity development—particularly to anchor different activities, connect up staff and projects and to help establish more multi-country ICT programmes.

If Oxfam expects to keep up with the increasingly rapid pace of technological change in the sector, it may need to make digital literacy a core competency for all staff, not just the IS and ICT in Programme teams. In particular, senior managers in-country should understand the strategic aspects of applying ICT to development programmes to enable them to allocate budgets better and manage teams doing this work. This is not a suggestion that all staff become experts in ICT4D, but simply an extension of Oxfam's stated aim *'to improve ICT4D literacy rather than get staff to the same level of competence as existing ICT4D staff'* (Oxfam, 2014).

There are different levels of knowledge and detail that would be required by different staff, so final decisions on how this is implemented should be made by managers with an understanding of Oxfam's human resources and capacity development processes. One example of a possible supporting structure is that of the 'matrix-managed' ICT team, used by Cisco, among others (see below for more information on matrix-management).

Hire more business analysts

> *'ICT people need to be able to talk development language and vice-versa—the classic business analyst bridges the divide.'*
>
> Interview with Steve Ball, Farm Africa

There is an acknowledged shortage of analysts across the entire development sector. To keep ahead of the game, Oxfam could recruit more people with these skills. These could be from an international development background, from a commercial software environment (consultancies such as ThoughtWorks regularly have adverts for analysts which cover the same skills Oxfam and other INGOs would require), or could mean recruiting ICT4D graduates who are explicitly trained in subjects relevant to Oxfam's work (covering programme areas, Agile, UCD, bandwidth issues etc.). It is worth noting that competition for skilled analysts will increase as other organisations also begin to recognise this gap.

Better regional knowledge management

Oxfam has already begun to develop guidelines for some key ICT4D areas, such as choosing data collection technology. This could be developed further with more

guidelines—on many of the topics outlined throughout this document—and ensuring these are accessible to all on internal shared platforms. DFID is doing something similar with its ‘Digital Grid’ (to which Oxfam has already contributed), and there may be room to look at combining these efforts or extending Oxfam’s internal knowledge management beyond its borders to include partners and donors, etc.

Oxfam country staff from the HECA region said that they found tremendous value and inspiration in meeting each other at the workshop. They were able to meet each other for the first time in most cases and learn about each other's experience with ICT4D.

Oxfam workshop attendees said it was ‘good to mix with techies’ and saw the event as ‘a great opportunity to learn from people who know how ICT works (or doesn’t!)’, while others were ‘excited about opportunities for knowledge exchange with other NGOs’. A couple of participants reported finding potential suppliers with whom they are now following up. There was unanimous agreement that these types of internal and external networking and learning opportunities should happen regularly.

As knowledge management improves within Oxfam, more opportunities emerge to convene and collaborate to share this knowledge with a wider audience. Other NGOs are unlikely to have the same structures as Oxfam, but anecdotal feedback suggests that the core problems are the same across all but a few, and the above suggestions could be adapted to different situations.

The development sector is going digital. The key question for Oxfam and for other NGOs would seem to boil down to one thing: how can they develop a wider range of staff expertise in applying ICT to development programmes? Whether by retraining existing ICT/IS teams, deploying staff differently, hiring or partnerships, NGOs will need to rise to the challenge if they hope to improve the impact of development programmes using ICT. This will be especially important if they aim to support the wider sector through convening, collaboration, advocacy or technology delivery.

APPENDIX A: LIST OF RESEARCH PARTICIPANTS

The table below lists all the key informants who were involved in this research, either through semi-structured interviews conducted between 3 March and 2 April 2016 or through participation in the 7 April 2016 interactive workshop at Oxfam's offices in Nairobi, Kenya.

All are either based in a country in the HECA region, or have extensive experience of working in one or more of these countries.

Table A1: Key informants list

Name	Organisation	Role
Alex Pitkin	FrontlineSMS	CTO
Allan Moolman	Oxfam (Tanzania)	Head of Programme
Amy O'Donnell	Oxfam GB	ICT in Programme Lead
Rashida Shariff	Oxfam (Tanzania)	Gender Justice Programme Manager
Alvaro Valverde	Oxfam (ICT in Programme)	Private Sector Adviser (ICT)
Andy Haxby	Competa IT/Code Pamoja	Secretary
Angela Kabari	Making All Voices Count/Ushahidi	Capacity Development Officer
Aniruddha Brahmachari	Oxfam GB (HECA region)	Regional Programme Quality Lead
Anna Kondakhchyan	Oxfam GB	ICT in Programme Humanitarian Adviser
Anne Salim	Eneza Education	COO
Anthony Kimani	World Vision International	Advisor, Humanitarian Technologies
Anthony Njage	DFID Kenya	Social Development Advisor
Anusha Aiyar	Accenture Development Partnerships	Engagement Manager
Ayaz Manji	Kenya Red Cross	Head of WASH
Bellah Mikangi	Internews Network	Africa Regional Program Associate
Benjamin Weber	Welthungerhilfe	ICT and Program Consultant
Beryl Aidi	Amnesty International	Regional Content Manager, East Africa
Caleb Gichuhi	Institute for Social Accountability	Communications Officer
Carol Morgan	Hivos (Making All Voices Count)	Head of Communications
Dennis Gichangi	Dew CIS Solutions Ltd	Director, Development
Diana Mukami	Amref Health Africa	eHealth Programme Manager
Dr Claudia Lopes	Africa's Voices	Head of Research
Ed Anderson	World Bank	Senior ICT Policy Specialist
Elaine Chang	Taro Works	Senior Manager, Global Market Development
Emily Tomkys	Oxfam (ICT in Programme)	ICT in Programme Officer (MEAL)
Emma Nielsen	Every1Mobile	Project Manager
Erik Hersman	BRCK (Ushahidi)	CEO
Fabrice Romeo	Echo Mobile	Business Development Manager
Francesca Reinhardt	Oxfam (DRC)	EFSVL Coordinator DRC

Geoffrey Okao	World Food Programme	Chief, IT Competence Centre Regional IT Officer, Eastern/Central Africa
Hannah Metcalfe	Human Networks International	Country Manager
Harriet Mbabazi	Oxfam (Uganda)	Programme Officer
Jack Kaburu	Catholic Relief Services	ICT4D Specialist EARO Region
Jacob Korenblum	Souktel	CEO
James Mwololo	Farm Africa	Head of Agriculture
Jimmy Eddy	Team Courage Movement	Activist and Communications
Joe Pakenham	DFID	Digital Adviser (Knowledge and Capability)
John Kitui	Christian Aid Kenya	Country Director
Joseph Pearce	IRC Wash	Governance, monitoring and systems expert
Joshua Ogure	Map Kibera Trust	Project Coordinator
Joyce Kabue	Oxfam (Kenya)	Communication and Information Advisor
Kellen Eilerts	Human Network International	Regional Director (East and Southern Africa)
Kevin Barassa	Kenyan ICT4D Entrepreneur	Self-employed
Kisuma Mapunda	Oxfam (Tanzania)	Programme Officer, Communications and Learning
Lakshmi Iyer	Digital Green	Director (Africa Programs)
Mark de Blois	Upande limited	CEO
Martin Kinyua	IntraHealth International	Assistant Director, Technology and Innovations
Maryanne Smith	Mobenzi	Account Manager (Oxfam)
Matt Berg	Ona	CEO
Mercy Khamalla	Oxfam (Somalia)	Nutrition Programme Manager
Mike Smith	Water Aid	Systems Architect
Modong Florence	Oxfam (South Sudan)	Programme Manager-Urban Programme
Monica Nthiga	Making All Voices Count (Ushahidi)	South to South Lab Manager
Muriuki Mureithi	Summit Strategies	ICT Consultant
Ric Tighe	Oxfam (ICT in Programme)	Business Lead, Beneficiary Information Management (LMMS)
Richard Kananga	Oxfam (Rwanda)	Participatory Governance Lead
Sammy Mbogoh	Oxfam (Somalia)	Public health promotion advisor
Sean Blaschke	UNICEF	Technology for Development Coordinator (Health Systems Strengthening Specialist)
Solomon Medhane	Oxfam (Ethiopia)	Senior Livelihood Programme Officer
Steve Ball	Farm Africa	Country Director
Suraj Shah	Intel	Africa Program Manager
Suvojit Chattopadhyay	Adam Smith International	Senior Manager, Results and Learning

Teemu Seppala	Tanzania ICT	Chief Technical Adviser
Tesfaye Ararsa-Bededa	Oxfam (Ethiopia)	Early Warning—Early Action Project manager
Tim Chong	Accenture Development Partnerships	Manager, Growth Strategy for Amref Health Africa
Tim Kelly	World Bank	Lead ICT Policy Specialist
Timo Bange	Accenture Development Partnerships	Senior Manager
Varyanne Sika	Hivos, Making All Voices Count	Country Engagement Developer
Violet Mbiti	Youth County Projects Kenya	Founder
Wairu Kinyori-Gugu	Oxfam (Kenya)	Tax Justice Project Manager
Wouter Dijkstra	Trac FM International	Founder
Zipporah Wanaswa	VSO Kenya	Programme Development and Funding Manager

APPENDIX B: SURVEY DATA SUMMARY

The online survey was hosted on Survey Monkey and live for responses from 2 to 19 April 2016. Listed below are the key questions and demographics from the online survey. For practical reasons, demographic questions, branching options, and details on possible responses have not been listed.

Table A2; Top-level survey questions

In the last three years, have you been involved in initiatives with which end-users/customers based in HECA countries?
In the last three years, have you been involved in initiatives working in any of these thematic areas?
Please describe interesting elements of your approach or the effects of these ICT-related initiatives (how you sourced/chose the technology, design, delivery, deployment, audience research, technology sourcing, partnership/business models, intended/unintended effects, positive/negative outcomes, short/long-term impacts, etc.)
Which of the following areas of technology are you experienced with or looking into?
Have you ever sought to scale a pilot project or small product/initiative and enable it to reach a large audience?
In your experience, how important are the following factors in whether an ICT initiative may be successful?
Have you encountered any of the following challenges in your own organisation's work?
What, in terms of the funding and investment environment, needs to change to better support ICT initiatives with a social purpose?
Which of these roles should large INGOs play in relation to ICT?
Which organisations (particularly NGOs) do you see as playing an active and useful role in regards to ICT in the region?
To what extent do you see Oxfam as currently playing a visible and active role with ICT in the HECA region (Horn, East and Central Africa)?
Please rate how you think Oxfam in your country and the wider HECA region rates with regards to these factors.
Please share projects, colleagues and partners who are exhibiting excellence or could be ICT champions in the region.
Please rate your overall experience of working on ICT-related projects with Oxfam.
What one thing would you like to see Oxfam in HECA do (using, or in relation to, ICT)? (For example, an idea for using ICT directly support citizens, to enable you to achieve greater impact, to make your work easier, etc.)
To what extent do you agree or disagree with the following statements about the role of ICT in the development space?

Table A3: Key demographics about survey respondents[15]

Total responses	284
Gender	64% male 34% female 2% prefer not to say
Country	Horn, East or Central Africa 39% (21% Kenya) Other Africa 7% Europe 31% North America 12% Asia 3%
Type of organisation	38% NGO 21% Technology provider 13% Civil society 11% Academia 11% Private sector (other) 5% Donor/Funder 4% Government

If you would like more detailed information on the survey or on the responses to any of these questions, please contact Amy O'Donnell at Oxfam to discuss (AODonnell@oxfam.org.uk).

APPENDIX C: TIPS ON SUCCESSFULLY SCALING ICT4D PILOTS

Successful scaling is a complex and context-specific process, and this report cannot offer a guide on how to do it. However, during the course of the research, a number of interesting and potentially useful comments where provided by participants. These are collated below, as they may be useful for a wider audience.

- **Scaling can be growing in size, but it can also be replication.** Others copying your ideas and implementing them elsewhere is a valid and useful form of scaling.

  'A key challenge is generating evidence that it works, then sharing this with sector peers so others will take it up or partner on it'

  Interview with John Kitui, Country Manager, Christian Aid Kenya

- **Longevity is critical.** Few projects scale immediately.

  'Anything that really does scale takes 5–10 years of persistence. We are lucky to get 2, maybe 3 years of focused funding before whims change.'

  Interview with Wayan Vota, Digital Entrepreneur

  'It took decades for Apple to get where it is. We expect our projects to work in 6 months.'

  Interview with Fabrice Romeo, Echo Mobile Kenya

  'Scale is difficult to define, as must go through multiple iterations of learning… The problem is that people expect it to happen too quickly…'

  Interview with Ed Andersen, World Bank Kenya

  'Things that have scaled all have something in common—years of investment and marketing by a dedicated team, usually with core support of the platform.'

  Interview with Wayan Vota, Digital Entrepreneur

  'There is no quick and dirty way to test services locally. They all need months if not years of field testing... getting the business right often takes 1–2 years of adjustment and several millions of dollars of investment.'

  *(*Carvalho et al, 2012*)*

- **Channel partners can be a vital resource to reach scale.**

  'We kept our very local approach, and scaled up by training and working with local organisations and initiatives to reach 30,000 additional subscribers in only three months.'

  Survey response by Rachel Brown, Founder and former CEO of Sisi ni Amani Kenya

- **Partner with larger organisations.** The most common route to successfully scale a pilot scale is through partnership with larger organisations who already know how to take things to scale.

  'National-level partnerships with ministries and MNOs really make scale work.'

  Interview with Jacob Korenblum, Souktel

  '[m-Pesa scales because] it piggybacks off widely deployed infrastructure [of retail village shops].'

  (Mas and Radcliffe, 2010)

- **Don’t lose sight of your original objectives in your quest for more numbers and greater reach**

  ‘Making scaling more important than the concerns of our participants, we risked losing the interest of our user base and partners, potentially leading to project failure.’

  Interview with Joe Press, Royal Holloway University London

- **Remember that someone will have to pay.**

  ‘Many projects have mistaken population need for consumer demand, providing a service that the targeted end-users were not willing to pay for’

  *(*Carvalho et al, 2012*)*

  ‘Who is your customer? The person paying… That might be the same as the target end-user or beneficiary, but it might be someone else—government, an NGO, a funder, an intermediary… Don’t forget you need to service the needs of your customer as well as your end-user or they’ll stop paying!’

  Interview with an Oxfam staff member (anonymous)

- **The devil is often in the detail.** A number of people raised specific factors that have been responsible for the success or failure when attempting to scale.

  ‘If systems and structures don’t already exist, then scaling can be relatively easy. If existing systems need changing, that is much harder.’

  Interview with Ed Anderson, World Bank Kenya

  ‘Some INGOs care more about ego and credit than results—they’d make more impact at scale if they were more willing to partner with organisations which have things and support their agendas.’

  Interview with Erik Hersman, BRCK Kenya

  ‘A clear dissemination, rollout and maintenance plan was key.’

  Interview with Natasha Dyer, Communication for Development specialist

  ‘Key scaling success factors were: speed to release a minimum viable product, testing early and repeatedly, rapid prototyping/Lean methodologies and an experienced development team.’

  Interview with Geoffrey Okao, World Food Programme

APPENDIX D: COMMON MISUNDERSTANDINGS ABOUT 'OPEN TECHNOLOGY'

While some participants exhibited a degree of confusion and misunderstanding about concepts relating to 'openness', it was around the implications of open source technology—or policies such as 'open source by default'—where the most confusion and conflicting definitions were observed.

Below are some clarifications about some of the key issues relating to open source that, it is hoped, will help when decisions are being taken about the use of open source and proprietary tools.

Licensing

Definitions: free, paid-for, commercial, sustainable etc.

The workshop discussion reflected that many believe all open-source software is free, and that open-source developers do not make money or profit. This is sometimes true (particularly in public-sector funded open-source frameworks), but there are many for-profit companies that use and build open-source products, and various licensing, installation, support and enhancement models for revenue generation. There are also many 'free-to-end-user' examples of closed-source software.

Ability to extend/enhance tools

Similarly, the workshop revealed that some believe only open-source products can be customised. In fact, most commercial companies are willing to adapt and customise their (open- or closed-source) products for paying customers. An open-source modification will almost always be released back to the wider community, while a modification to a proprietary product may or may not be added to the core product (the latter has been seen in Oxfam's work with mobile data collection providers).

However, it is often easier to enhance open-source software, as it can be done by anyone, not only by paying the original developers, which reduces capacity problems.

Ethics and ideologies around intellectual property and open/closed source

Intellectual property was raised in many interviews and the literature in regards to supporting an emerging private sector in Africa. In reality, there are very few products relevant to the ICT4D market that have any significant intellectual property to protect (most are variations on data collection, survey tools, case management systems or dashboards, which have existed in various forms for decades). This position also seems to confuse a laudable desire to support the local economy, with a misunderstanding that open-source equates to the public/voluntary sector. As an example, one of the Oxfam workshop attendees suggested that 'in emergency contexts we need to have a tried and tested commercial solution ready to deploy at high speed'. The sentiment is entirely valid, but conflates 'tried and tested, ready to go' with 'commercial'. There are many examples of enterprise-class tried and tested open-source solutions that can be deployed instantly (such as Ushahidi, DHIS2 and ODK).

Practicalities of reusing available tools

Many release their code as open-source on principle. However, from background research, it is clear that only a fraction of this so-called open-source code is reusable in a meaningful way. Organisations need to spend time re-factoring their code, writing documentation and guidance, and promoting their products if other organisations have a realistic chance of reusing or extending them, or collaborating with them.

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NOTES

1 http://digitalprinciples.org

2 See Appendix A for a full list of interviewees.

3 http://digitalprinciples.org

4 See Appendix A for a full list of interviewees.

5 See https://www.gov.uk/service-manual/service-standard

4 See Appendix A for a full list of interviewees.

5 See https://www.gov.uk/service-manual/service-standard

6 A more thorough discussion of different project types and a push back against a ‘dualistic perception of 'pilot’ vs. ‘scale-up’’ can be found in Heeks and Foster, 2013.

7 www.surveynetwork.org

8 www.ngoaidmap.org

9 https://responsibledata.io/responsible-data-and-project-design

10 Some of the terms most commonly misunderstood or with the widest variation in how people used them have been collated in Appendix D in the hope this could be the start of developing a shared language to avoid future misunderstandings, and help practitioners make the best choices for their particular circumstances.

11 For example, Engine Room’s Tool Selection Assistant (https://toolselect.theengineroom.org/), NetHope (https://nethope.org/), ELAN (http://www.cashlearning.org/elan/elan), Kopernik (kopernik.info), OpenFM (open.fm/).

12 http://policy-practice.oxfam.org.uk/blog/2016/09/mobile-surveys-the-past-the-present-the-future; and http://www.cashlearning.org/downloads/cn-product-catalog-v3-2.29-final-1.pdf

13 http://policy-practice.oxfam.org.uk/our-approach/accountability-and-transparency/our-data

14 http://policy-practice.oxfam.org.uk/blog/2015/09/data-revolution-will-ngos-miss-the-boat

15 Note that not all questions were mandatory, some questions allowed multiple responses and responses with very small numbers have been ignored, so the results do not necessarily total 100 percent.

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