IFRC

INVESTIGATING SAFE DATA SHARING IN HUMANITARIAN CASH ASSISTANCE: TECHNICAL VALIDATION EXERCISE LESSONS LEARNED

ACKNOWLEDGEMENTS

Funded by European Union Humanitarian Aid

This research and publication were made possible thanks to funding from the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

This report was written by Caribou Digital, led by authors Bryan Pon, Alphoncina Lyamuya, Emrys Schoemaker, and Horacio Nunez. We extend our sincere gratitude to all the interviewees and reviewers for their generous contributions.

Caribou Digital

Thanks also to the members of the Dignified Identities in Cash Assistance consortium (DIGID), the Norwegian Refugee Council, the Norwegian Red Cross and Save the Children Norway for their involvement and support during this research.

NRC NORWEGIAN REFUGEE COUNCIL

Norwegian Red Cross

Save the Children

Contact us:
Requests for commercial reproduction should be directed to the IFRC Secretariat:

Address: Chemin des Crêts 17, Petit-Saconnex, 1209 Geneva, Switzerland
Postal address: P.O. Box 303, 1211 Geneva 19, Switzerland
T +41 (0)22 730 42 22 | **F** +41 (0)22 730 42 00 | **E** secretariat@ifrc.org | **W** ifrc.org

Cover photo: Florence decided to start a grocery with the 248,000 SSP cash grant assistance she received from the South Sudan Red Cross to boost her livelihoods. Photo Credit: IFRC.

CONTENTS

EXECUTIVE SUMMARY

This report highlights key lessons learned from conducting a technical validation exercise with humanitarian organizations providing cash programming in Uganda and South Sudan. Building on prior interviews and landscaping research of the processes and systems used in these countries,[1] the technical exercise used a digital prototype, or simulated environment, to better understand potential improvements in data-sharing practices.

While the prototype simulated a complete online application, it was designed to evaluate key workflows and constructs more than the viability of a singular solution. Specifically, the technical exercise sought to evaluate the usability and value of 1) an enforced data schema, or set of data standards, and 2) a cloud-based platform for uploading and sharing files.

In terms of tactical lessons learned, we highlight here key takeaways:

- The operational staff who participated in the exercise were proficient in their ability to navigate the user workflows for data sharing via an online application.
- Every respondent articulated ways in which the prototyped solution would add value to their day-to-day data management and sharing operations, especially compared to the current, default approach of sending spreadsheets by email.
- Respondents were highly supportive of using both a data schema, or semantic standards, as well as an online environment to upload and share files.
- A technical validation exercise using a functional prototype proved to be a valuable tool in deepening the research team's understanding of barriers and opportunities to improved data sharing, and was successfully applied virtually (remotely).

These insights result in two main recommendations from this work:

- Support for simple, modular digital public goods designed for humanitarian data management use cases could help provide accessible options for low-resource organizations needing improved tools for data sharing.
- Further research exploring the most effective ways to embed data standards in data-sharing workflows will help with the broader process of standards adoption.

1 This prior workstream is captured in the report: International Federation of Red Cross and Red Crescent Societies (IFRC). *Investigating Safe Data Sharing And Systems Interoperability In Humanitarian Cash Assistance,* 2023. https://interoperability.ifrc.org/wp-content/uploads/2023/11/DIGIDInteroperability-InvestigatingSafeDataSharingandSystemsInteroperability.pdf

PROJECT OVERVIEW

This technical validation exercise is part of the interoperability project[2] led by the Dignified Identities in Cash Assistance (DIGID) consortium.[3] This is funded by the European Civil Protection and Humanitarian Aid Operations (ECHO) as an effort to strengthen the humanitarian sector's ability to securely share data about beneficiaries and services provided to them.

In a prior workstream, the project conducted landscaping of current systems and processes used for sharing data across humanitarian organizations. Through interviews with humanitarian operators, private-sector solution vendors, donors and industry coordinating bodies, the project team identified key barriers and opportunities for improving the state of interoperability in the sector.[4]

In subsequent workstream, the project undertook a technical landscaping of the current state of data sharing and interoperability in the sector. Focusing on two use cases in cash programming – deduplication of beneficiaries and referrals of individuals – the project evaluated the potential of emerging technologies and operating models to address challenges in existing approaches. The project team identified a wide diversity of data-sharing mechanisms, from wide use of rudimentary methods such as emailing Excel files by low-resourced organizations to the use of sophisticated, proprietary systems by international NGOs and UN agencies.

The technical validation exercise described in this report was designed to complement and validate this landscaping research through the use of a digital simulation environment, or prototype. Using a simulation environment offers multiple benefits to increase our understanding of a problem space. From understanding the actual needs of end users in humanitarian organizations to understanding user readiness and addressing usability issues, such exercises can provide crucial insights through a human-centred design approach.

For the series of validation exercises we conducted, the simulated environment was a series of screens – web pages accessed through a browser – that guided the user through specific workflows. While the screens were 'clickable' and allowed users to manage their own progress through the workflow, there were no underlying connections to real databases. The simulated environment imitated the front-end user interface (UI) of a typical software application, which is the key part of any software that most users interact with, and therefore can provide valuable insights into basic engagement and user journeys. In particular, this exercise emphasized testing 1) the ability of users to understand and apply semantic standards, and 2) the utility of a web portal tool for basic data sharing as an alternative to emailing files.

2 For more details, see the DIGID Consortium's project page on Interoperability, at: https://interoperability.ifrc.org/projects/interoperability

3 DIGID is a group of four NGOs: IFRC, the Norwegian Refugee Council, the Norwegian Red Cross and Save the Children Norway. The four organizations previously collaborated on the DIGID project with the objective of providing a digital identity (ID) for people without official ID so they can access cash assistance. See more at DIGID Consortium (IFRC): Digital wallet, https://interoperability.ifrc.org/projects/digital-wallet

4 IFRC. *Enabling Dignified Humanitarian Assistance Through Safe Data Sharing: Landscape Mapping*, 2023. https://interoperability.ifrc.org/wp-content/uploads/2023/11/DIGIDInteroperability-LandscapeMappingOverview.pdf

GOALS OF THE TECHNICAL VALIDATION

The key objectives of this validation exercise were to test our assumptions and understanding of the problem space, and how current technical solutions are, or are not, meeting user and organization needs. We had previously explored these topics in user interviews conducted via video calls, so we had developed a basic understanding of how data was collected, processed, shared internally, and finally shared externally with partners for the two use cases.

However, the act of interacting with a simulated digital environment creates a very different experience and dynamic for both the respondent and the researcher, creating new opportunities for learning and spurring new questions and insights that a traditional interview can never do.

Such exercises can be effective mechanisms to enable the research team to take a human-centred design[5] view of the problem space, test user readiness,[6] as well as identify and address usability issues[7] before implementing a system at a broader or wider scale.

Instead of trying to test a singular technical solution, we sought to evaluate a more general set of workflows that are likely to be common across any recommended solutions. The specific workflows we tested were considered instrumental to the two key use cases, deduplication and referral processes. Based on a model of a cloud-based web portal, these workflows included:

- **user authentication/access controls** – ability of the user to access the network and authenticate herself with a web-based log-in form
- **data export/import** – ability of the user to import or upload data in the form of a beneficiary list to be deduplicated or programming information for a referral
- **semantic standardization** – ability of the user to map her data fields and values to an established set of semantic standards
- **data reconciliation and updates** – ability of the user to interpret any automated reconciliation functions, e.g. exception report from standards enforcement
- **sharing controls** – ability of the user to define access permissions for other user(s) to view/access the data.

While these workflows are core components or building blocks of both the deduplication and referrals use cases – i.e. they constitute key actions or tasks that the user must engage with for those use cases – the actual prototype solution focused only on the deduplication use case.

5 GSMA. *Human-centred design in humanitarian settings: Methodologies for inclusivity,* 2020. www.gsma.com/mobilefordevelopment/wp-content/uploads/2020/09/Research_Methodologies_R1_Spreads-1.pdf; Frost, L., Khan, S. & Vinck, P. *Technologies in Humanitarian Settings: Community and Stakeholder Engagement. Harvard Humanitarian Initiative,* 2022. https://hhi.harvard.edu/publications/technologies-humanitarian-settings-community-and-stakeholder

6 Lavin, A., Gilligan-Lee, C.M., Visnjic, A. et al. 'Technology readiness levels for machine learning systems' in Nature Communications, vol. 13, art. 6039, 2020, https://doi.org/10.1038/s41467-022-33128-9

7 Matthiesen, S., Schmidt, S., Klingler, S. et al. 'Supporting Validation Activities and Self-Reflection Processes in Interdisciplinary Design Teams.' Proceedings of the 17th International Conference on Engineering and Product Design Education (E&PDE15), Great Expectations: Design Teaching, Research & Enterprise, Loughborough, UK, 2015. www.designsociety.org/publication/38480/; Azwar, A.G., Nurwathi, A., Sirajuddin, A. et al. 'Website Usability Evaluation using Human Centered Design (HCD) Approach.' 15th International Conference on Telecommunication Systems, Services, and Applications (TSSA), Bali, Indonesia, 2021, https://ieeexplore.ieee.org/document/9768223

METHODOLOGY

This validation exercise draws on in-depth interviews with key informants in Phase 2, particularly in the context of data sharing for processes of deduplication and referrals.

A series of four validation exercises were conducted remotely via a video call. These exercises involved teams of humanitarian technical operators – individuals who are directly involved on a day-to-day basis with using technical systems to share data in cash programming – from NGOs in South Sudan and Uganda. From a purely technical perspective, remote sessions are sufficient to capture learnings, but we recognize there are other factors that favour in-person sessions (e.g. building awareness of the project and longer-term engagement with partners).

To better facilitate the session in accordance with the organization's typical practices and workflows, we held calls with representatives from each organization about a week before the exercise to understand how the participating organization currently manages deduplication and referrals. Then we followed up with a second call to conduct the actual technical exercise.

During the exercise, participants were required to have a computer connected to the internet to perform the data-sharing activities (see workflows to be tested as described above). Each exercise lasted between 70 and 90 minutes. For a full account of the script used in each exercise, see Appendix A. Exercise methodology.

Participants

- Uganda Red Cross Society
- Save the Children Uganda
- Norwegian Refugee Council
- South Sudan Red Cross

Limitations

This technical validation exercise had important limitations. For one, it was conducted with a single organization at a time and focused on bilateral data sharing, which limited the team's ability to learn about more complex coordination and governance considerations that are the hallmark of multilateral data-sharing processes. Perhaps most importantly, respondents were all working in one of two countries, and we were only able to conduct the exercise with a total of four respondents. These limitations on the sample reduce the ability to generalize the findings, and the conclusions outlined here should bear this limitation in mind.

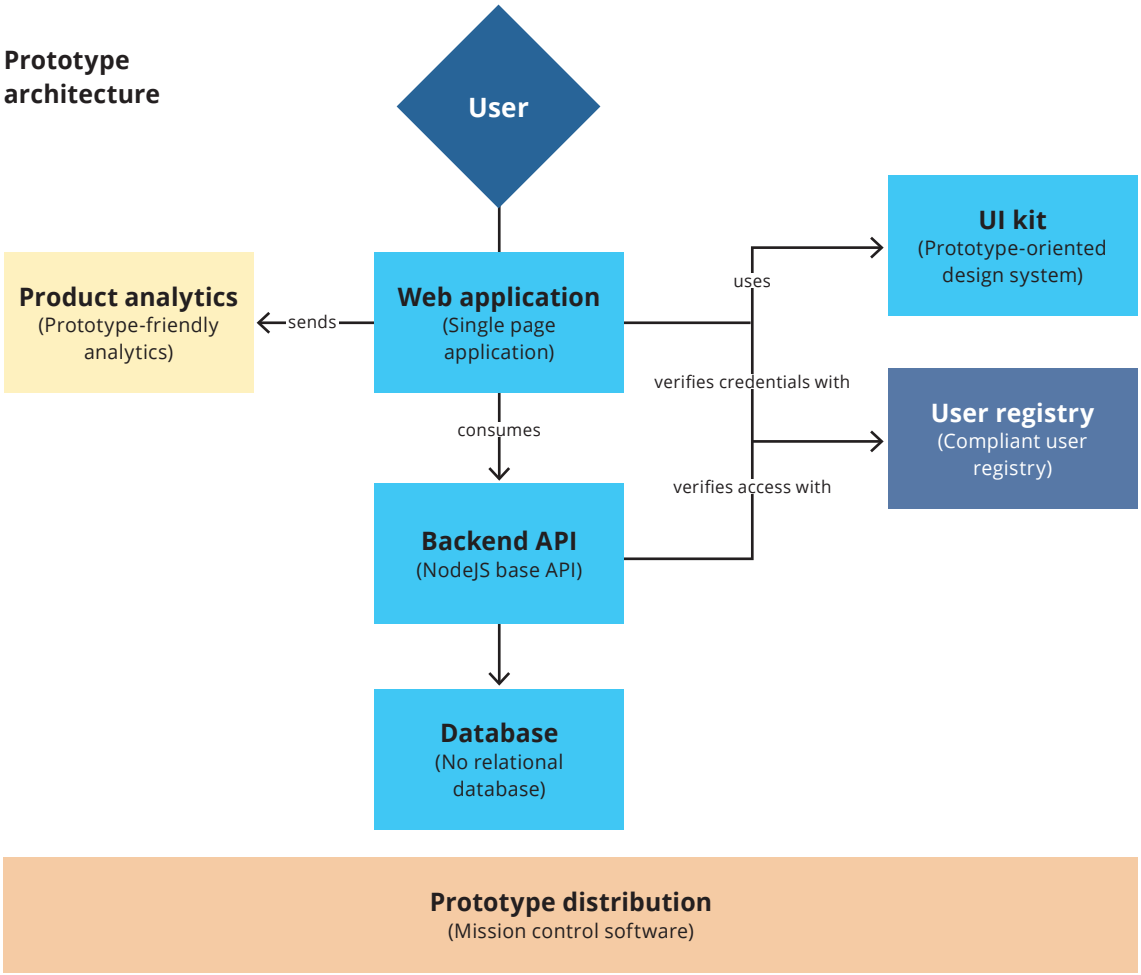
SIMULATED ENVIRONMENT

To provide a realistic representation of operational software, the project team developed a simulated environment, or prototype, that mimicked the essential user interface (UI) features of a standard online application. As with any such technical effort, the team had to balance the need for a realistic environment with one that could be built and modified quickly. Put another way, there are always diminishing returns to additional features and functionality, and the team had to determine where that threshold was, based on the goals of the validation exercise, the nature of the application being simulated, and the resources and timeline of the workstream.

Given that the core function of the application being simulated was to share files between organizations, the team decided that network connectivity was a requirement (contrast this with data collection applications, which are often designed to run offline and store data locally). And with the assumed wide range of computer operating system versions in use by humanitarian organizations, plus the diversity in IT security policies – which often control what users can install onto the computer – the project team determined that an online application (i.e. an application hosted on a server and accessed through a standard web browser) was the most appropriate choice for this context.

The simulated environment was powered by a software architecture chosen for its potential to be expanded into an architecture that could power a 'minimum viable product' while also allowing for very fast prototyping.

Figure 1. Architectural model of prototype



Language

The entire codebase is written in TypeScript. As one of the most popular high-level programming languages, TypeScript has a very large user base globally, making it an easy choice for open-source software projects.

Backend

The backend uses an industry-standard NodeJS backend application that can be deployed with ease in any cloud environment and can be modified and improved by many software engineers around the world. Because the natural progression of a prototype is a system with real users, all requests of the backend are verified against the free tier of a compliant user registry called **Auth0**. For the vendor of the backend API, we used an instance of **Google Cloud Run**.

Storage

Given the wide range of legal regimes and internal organizational regulations around data storage and processing, the technical team determined it was important to optimize flexibility of storage options without compromising on future scalability. So the storage layer was designed to be characterized by a database technology that was schema free and proven under heavy loads. For this we selected MongoDB and in particular the product **MongoDB Atlas** as the vendor.

Front end

For the UI stack we decided to use an open-source framework that supports very fast UI prototyping. The choice was **React 18** and this decision was paired with the selection of **Chakra UI** and its design system.

Prototype distribution

To facilitate the coordination of all of the different vendors and subsystems carrying the prototype code, we used **Merthin CED** as the distribution tool from the start. Rather than having to share a prototype between different organizations, the team was able to configure discrete dedicated deployments.

Data schema validation

The research from the prior technical landscaping phase highlighted the need for standardization at the data layer, in particular around data semantics and syntax – that is, agreement on what constitutes the composition of a *household,* whether age information should be collected as a *number or a date of birth*, or what the possible values are for a *gender/sex* field, and what format each of these should take. Having alignment on the resulting data schema would enable organizations to more effectively share data and develop interoperable systems and processes, regardless of the specific software or tools being used.

In other words, we consider the data layer a prerequisite or foundation for any true interoperability. Of course, given the diversity of programming needs and operational contexts, any data standard would need the flexibility to accommodate custom or localized data types and definitions, but our research suggests that a core dataset is possible.

In collaboration with the sister interoperability project led by the Collaborative Cash Delivery Network (CCD) consortium, we helped identify relevant existing data standards currently in use within and outside the humanitarian sector. These included the Minimum Core Assistance Delivery Dataset for Affected Populations[8] data standard developed originally by the UN Refugee Agency (UNHCR) and the World Food Programme, the HXL (Humanitarian Exchange Language)[9] data standard for aggregate

8 UNHCR, www.unhcr.org/media/minimum-core-assistance-delivery-dataset-affected-populations
9 HXL, https://hxlstandard.org

assistance data managed by the UN Office for the Coordination of Humanitarian Affairs (OCHA), and identification-specific standards[10] promoted by the industry advocacy group Open Identity Exchange (OIX).

While the work to develop and socialize a universal data schema is still ongoing, we decided to use the simulated environment to test our hypotheses around users' ability to understand and apply a data schema within their typical data-sharing workflows. For the purposes of this evaluation, the exact fields and definitions used in the schema were less important than the construct of an established standard that would be enforced in order to use the web portal.

Data-sharing function

Another key finding from the previous research was the extent to which organizations – especially smaller, lower-resourced organizations – continue to rely on sending spreadsheets via email when sharing data. There are good, legitimate reasons why organizations continue to use Excel and email, and for many organizations, there are no other viable options.

To better understand how exactly spreadsheets are used across the typical data workflow, and to evaluate whether a more secure alternative might substitute for emailing spreadsheets, we designed a simple data-sharing function. This data-sharing function was not conceived as an approach that could serve all data sharing use cases (for example, it would not work well for multilateral deduplication), but instead was aimed only at the most basic, bilateral data transfers.

The UI of the data-sharing function intentionally emulated common tools in wide use today, including cloud-based file storage (e.g. Dropbox) and collaboration tools (e.g. Google Docs). In fact, many commercially available products have the necessary functionality to perform the data sharing as described. The limited use of these tools by humanitarian organizations is thus less a reflection of their capabilities, and more likely related to cost and data protection concerns (e.g. many platforms store data in the United States, which may be at odds with organization policy or local data sovereignty regulations).

The Uganda Red Cross, with support from the IFRC, provided cash assistance to flood-affected woman-headed households in the Bukedea district, Uganda Photo Credit: Uganda Red Cross Society.

10 OIX, https://openidentityexchange.org/networks/87/item.html?id=700

LESSONS LEARNED

Several key lessons emerged over the course of the four validation exercises. We summarize them here in two broad categories: *Tactical insights* into the user experience and technical functionality of the prototype, including navigation, error messages and workflow of each use case, and *value insights* into how the proposed tool may or may not solve specific problems, how it might fit into current ways of working, and the overall perceived value it would bring to the organization.

Tactical insights

Overall, the participants had minimal trouble navigating through the environment and completing the workflows. This was no doubt partly due to the intentional simplicity of the UI, as well as the adoption of standard design practices for common functions (e.g. a standard picklist menu for selecting a local file to upload). But this was also a reflection of the general digital literacy of the participants, who all demonstrated familiarity with navigating online applications. We here summarize the learnings from each of the core workflows that were tested.

User authentication

Because the key advantage of the proposed web portal model of data sharing (compared to emailing files) is increased data protection and security, the team felt it was essential to test user access controls. The primary way this was tested was through a simple user authentication step at the beginning of the session, using a username and password combination that was emailed to the participant immediately before the session started.

While the team expected that this standard approach to authentication would be familiar to users, we wanted to understand whether users would have, and be able to easily access, an official organization email address (i.e. not a personal address such as Gmail) and pull the credentials from it to use in the simulation. All of the participants were able to complete this step without significant issues. Note that we also asked participants whether there were other software services that they had to authenticate themselves in order to use; participants mentioned SharePoint, KoboToolbox and UNHCR's Feedback, Referral and Resolution Mechanism (FRRM).[11] One key consideration raised by participants is the need for a reliable internet connection for this solution to function. Indeed, our virtual validation exercises were sometimes interrupted by network connectivity issues.

Data schema

Evaluating how participants experienced the application of the data schema was a core objective of the validation exercise, and perhaps the biggest unknown going into the testing. There were clear differences in comfort level and experience working with data and the concept of applying a standard format. We started this part of the test by showing the participants the simplified data schema (see Figure 2) and inviting them to comment on how it may or may not reflect the data they collect when working with beneficiaries.

Figure 2. Test data schema

Field	Description	Value type
source_organization_id	Unique identifier assigned to individual by registering organization	alphanumeric
first_name	First name of individual	string
family_name	Family name or surname of individual	string
gender	Gender/sex of individual, possible are male,female, other	string
date_of_birth	Stored in the international date formate YYYY-MM-DD	YYYY-MM-DD
mobile_phone	Local phone number, with country code prefixed by +	alphanumeric

11 For more on the FRRM, see UNHCR. 'UNHCR and partners launch communication system for refugees in Uganda', press release, 10 October 2018, www.unhcr.org/africa/news/news-releases/unhcr-and-partners-launch-communication-system-refugees-uganda-0

One participant was able to immediately understand the data schema and comment on how it could fit with his organization's registration practices, whereas other participants required more discussion and explanation about how it could lead to consistent and standardized data that would simplify sharing and processing. Once they understood the idea behind the data schema, all participants voiced enthusiasm for its utility in their operations, though perhaps with different levels of certainty about exactly where it could best be enforced (see section 'Value insights' below for more).

Participants did highlight differences between the schema and their operational practices in terms of data collected. For example, participants based in South Sudan noted that given the high frequency of popular names, it's common practice to register three names instead of just two, and to also record the village or location of the individual or household. Furthermore, mobile phone penetration among the population being served is relatively low, and therefore phone numbers are not typically collected.

In terms of navigating the file upload with the intentional data errors, all participants quickly understood from the error messages that the file was not compliant with the data schema. The specific details of the error messages (i.e. describing errors in both a *data header* and in a *data format*) were understood by most participants. However, there were questions on this step in the workflow, and we assume that operators with lower levels of digital literacy might struggle to interpret error messages.

> *"This is like when we share with the bank, we would get error messages like this. The finance team would upload a file and get the message."*

One participant suggested that if the system identified errors in terms of missing or incomplete data, it could offer the user the option of uploading those records that were complete.

File sharing

When asked about the options in the permissions menu, all participants expressed familiarity with the structure and the available options for sharing (see Figure 3); we consider this a result of the popularity of online collaboration tools such as Google Docs and Microsoft Office 365, which were the design conventions that we emulated.

> *"This looks like SharePoint, we do this a lot with [partner NGO]. I would give [staff member] Edit permissions, and probably 7 days, after 7 days the link should expire."*

Most participants cited the length of time as a valuable element for protecting data. Participants gave widely varying feedback on the ideal choices for the length of time, ranging from 7 days on the low end to 2 years on the high end. This diversity reflected different partner categories (e.g. sharing with a financial service provider versus government agency), among other variables. An alternative to the length of time was the option for limiting the number of times a file could be accessed; in one discussion with a participant, this was seen as a very useful control.

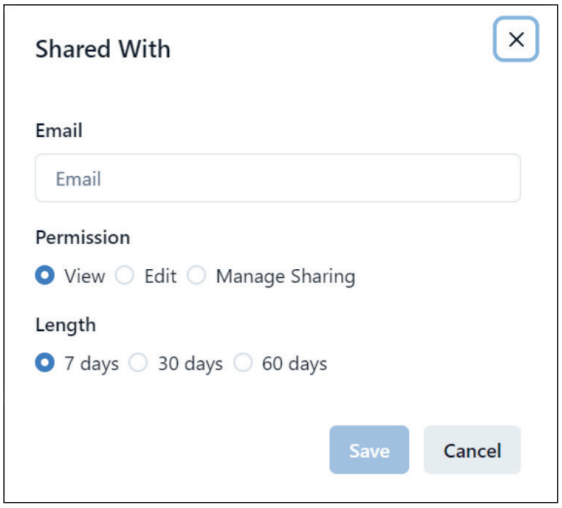
> *"They should only be able to download twice, to protect the beneficiary's data."*

Other suggestions for the sharing mechanism included the addition of a description field to include notes about the file being shared, and the ability of the user to add or update sharing permissions of an already-uploaded file; e.g. being able to share an already-uploaded file with additional persons.

Viewing shared files

Users could access a 'view' screen where they could see the file they had just uploaded, as well as see any files that had been shared with them (see Figure 4). With this screen, the project team primarily sought to understand how well users were able to understand the metadata associated with each file.

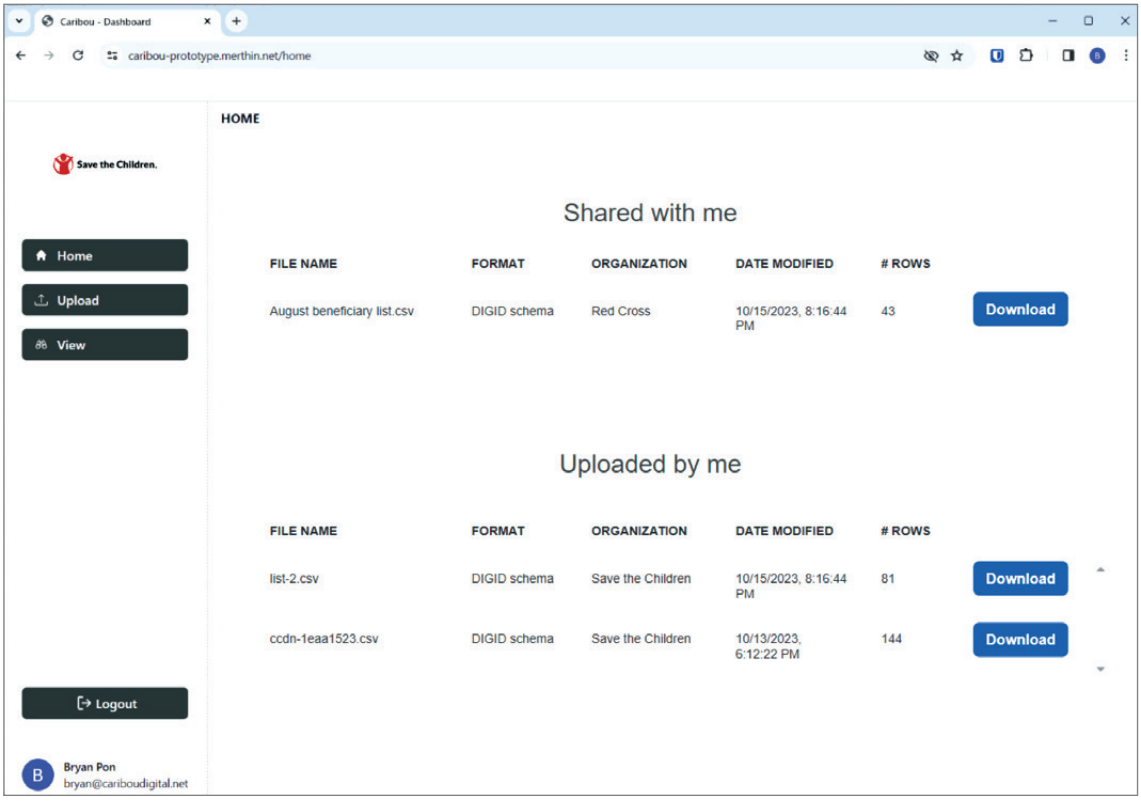
Figure 3. Sharing permissions menu



There were multiple suggestions for improving the labels and general signposting on this screen (e.g. the 'Format' label wasn't immediately obvious), but overall the respondents seemed comfortable with the representation and were able to easily explain what they saw on the screen. Similar to the sharing permissions, it seemed that adopting some of the well-established design conventions in this view provided a level of familiarity for the respondents.

There were promising suggestions for improving the UI. One respondent wanted the ability to see a preview of a file, without having to download it. Another suggestion was to add logging metadata, for example, the number of views or downloads, to each record.

Figure 4. 'View' screen showing files uploaded and shared



Value insights

In this section we summarize the lessons learned in terms of overall value of the potential solution as perceived by the participants. We frame the insights by the two core use cases of the solution, 1) the application of a standard data schema, and 2) the ability to securely share files via an online portal. We also include general insights into usability and training.

Standardized data schema

There was moderate to strong enthusiasm for the ability to apply a data schema to uploaded files. Note that in its questions around this topic, the project team did not attempt to differentiate between the value of a data schema, i.e. the establishment of a set of standards that participating organizations agree to, and the value of a mechanism to enforce that data schema, i.e. a technical function for ensuring compliance, as demonstrated in the prototype.

Participants cited two key benefits to the functionality shown. For one, they described what could be considered data protection benefits. Because the data that is shared externally with other partners is often a subset of the data collected, having a data schema that defines the fields to be shared, and a function that validates that only appropriate fields are being shared, would reduce the risk of sharing private data unintentionally. Participants specifically mentioned data sharing with financial service providers and government agencies as two types of partners where internal organization policy places strict limits on which data fields are shared.

> *If this can be imposed on the staff, that would be really very helpful, they would have to have the right list, and the staff would know if there is a problem [when the data schema is applied].*

The second benefit was raised by all participants, and was about the efficiency, convenience and accuracy of data-processing activities. Specifically, participants described current data flows where individuals will have to email files multiple times due to errors in the original file and the need to make modifications before resending. One participant described a similar challenge with internal data flows, whereby field officers would record registration and email files to a central team, who might then have to email back to inquire about missing information.

> *This would be faster than email. The problem with email is that there is back and forth with [partner NGO], they say there is something missing, so we need to find that information.*

Secure file sharing

All participants were quick to highlight the benefits of the proposed solution compared to sending files via email. The main advantages that were cited were security and data protection; participants broadly seemed very aware of the risks posed by emailing files, even when password protected, and recognized the security benefits offered by the portal model. Specifically, the sharing permissions menu (see Figure 4) was of high interest to the participants and contributed to the sense of increased security.

> *I feel like the control is much more on my end compared to sending an email.*

At least one participant described how the solution could improve internal file sharing as well as external sharing with partners, and multiple participants described the potential value in having a more robust data management solution generally. In regards to this latter use case, the current status quo was described as data being collected with KoboToolbox, and then managed and shared in Excel, with some long-term storage in a cloud environment. In this context, there was perceived value in having better file management capabilities, including storage. Long-term storage and file management was a use case for which the proposed solution was not designed for, and would introduce significant complexity and potential overlap with existing beneficiary management solutions.

> *You get lots of emails with attachments, I get a lot of data from the field, and you can lose it, you have to organize the files. But with this tool, it could be easier.*

Usability and adoption

Toward the end of the validation sessions, the project team would solicit general feedback from the participant, including to what extent they could envision the tool being used with their organization. In these discussions, the most common finding was that all participants found the prototype to be easy to use, and felt that training staff on its use would not be overly difficult. This was a key consideration and research question the project team sought to answer, as the proposed solution was positioned as an alternative to emailing a spreadsheet, which is by far the most commonly understood and practiced approach to sharing data, and therefore a difficult behaviour to displace.

> *I didn't find anything complicated with it. You can give orientation to someone in the field in an hour and that's it.*

> *This tool is a little bit friendly, maybe just very minimal training for field staff.*

> *I think this is a good platform, especially if we can further contextualize for both internal and external data sharing.*

Obviously, the usability of the solution is not the only consideration driving potential adoption and usage. Respondents mentioned existing data-sharing operating arrangements, namely, with UN agencies, that specify the software and mechanisms to be used. These institutional agreements, where national NGOs typically act as implementing partners that must use UN systems and data processes, add significant complexity to any changes to current data-sharing practices.

Multiple respondents described the lack of alignment between humanitarian organizations on data collection and sharing processes. This was sometimes described as simply a coordination issue, but also as an incentives issue – i.e. different organizations collect different data at registration because they have different programming goals, donor reporting requirements and so on.

> *There is a gap in the way information is shared across programmes and organizations in this country, there is no synchronized database which makes it tricky to effectively coordinate and no agreed set of variables to be used in data collection.*

CONCLUSION AND RECOMMENDATIONS

The technical validation exercise proved to be an excellent tool for deepening the project team's understanding of key challenges and opportunities for improved data sharing in the sector. While building a functional prototype requires an engineering investment, conducting the exercise itself can be done remotely over video calls, providing a cost-effective mechanism to test and iterate on technical ideas. Ultimately, conducting user testing within simulated environments or artifacts remains the only way to uncover many types of insights.

All respondents we spoke with were well aware of the risks associated with the most common data-sharing practices, namely emailing spreadsheets or printing hard copies of lists, and were equally easily able to articulate the ways in which a solution as demonstrated would offer real benefits. Multiple respondents asked when they could start using the solution, highlighting the perceived value it would bring.

This awareness suggests that current data-sharing practices in the selected countries are perhaps less the result of low capacity or low levels of digital/data literacy, and more the result of limited options and tools. Some organizations we spoke with were exploring the adoption of formal beneficiary management solutions, e.g. RedRose, which could address many of these data-sharing challenges. But the high cost and complexity of these end-to-end solutions hinder their adoption, leaving many organizations without options as they wait for the grant or funding needed to pay for such a system.

This suggests that there may be latent demand for simple, low-cost solutions that can serve specific use cases. Instead of an all-or-nothing frame, where organizations rely on the most rudimentary tools (i.e. email and spreadsheets) until they can adopt a full-fledged beneficiary management solution, investments in smaller, modular tools that can fill this gap could offer significant improvements to data-sharing practices.

This idea isn't without precedent: the organizations ODK and Kobo have built simple, dedicated solutions to solve one specific use case – data collection – and have seen widespread adoption. Indeed, for multiple organizations we spoke with over the course of this project, KoboToolbox and Microsoft Excel were the only tools used for data management and processing.

In a similar vein, the exercises revealed that participants were acutely aware of the coordination costs associated with sharing data in incompatible formats, even within their own organization. That is, the overall response to the data schema was surprisingly positive, insofar as participants didn't seem to regard it as additional friction and hassle, but as a welcome mechanism to reduce errors and streamline their workflows.

RECOMMENDATIONS

Supporting digital public goods for humanitarian organizations

The findings from this research, and especially the specific technical validation exercises, have suggested that there is a need for simple tools that support more secure data-sharing practices.

As described previously during this project,[12] the tremendous diversity in operating environments, programming and organizational resources/capacity make it extremely unlikely that any singular approach to data sharing or system interoperability can work in all contexts. Instead, organizations will likely continue to use a range of processes and systems in accordance with their needs.

Investing in more open-source, modular tools that solve specific problems – such as ODK and KoboToolbox – could help organizations who want to improve aspects of their data management and sharing practices, but don't have the resources or capacity to invest in comprehensive beneficiary management systems.

Therefore the development of 'digital public goods'[13] designed to provide humanitarian organizations with better data management options could help provide fit-for-purpose tools for the wide diversity of organizations and operating contexts of humanitarian response.

Exploring ways to operationalize data standards

Regardless of any tools or technologies, this exercise confirmed interest and perceived value in a data standard, and more importantly, how a standard could be applied. The prior phase of interviews had highlighted the general lack of standardization, and respondents expressed interest in a data schema, but only in abstract terms. With the technical exercise, respondents were able to directly experience one way in which a data schema could be enforced within a workflow, and were generally very positive about the operational value it would bring.

But this exercise only tested one approach to embedding a data schema into workflows. Further research could better understand the specific touchpoints where data schemas may most effectively be enforced, and what form that may take.

For example, while this prototype enforced the schema, the operator still has to manually configure the data file before the system will accept it. Building simple tools that can translate source data into the standard format could allow organizations to easily convert their data to specified formats before or in the process of sharing with external partners.

This remains a key question in the overall challenge of standards adoption. Even if stakeholders align on a data schema, top-down enforcement can only ever be part of the answer. Finding ways to improve bottom-up compliance with the standard will likely depend on identifying the optimal contexts and mechanisms for doing so, and ensuring these are aligned with personal and organizational incentives.

12 See: DIGID Consortium/IFRC: Reports, https://interoperability.ifrc.org/resources/reports

13 See, for example, the UN Development Programme's 2023 report on digital public goods for the SDGs: www.undp.org/publications/digital-public-goods-sdgs

APPENDIX A. EXERCISE METHODOLOGY

This table summarizes the script and timings used in the technical validation exercise.

Pre-work before session	**Estimated time (minutes)**
1. Conduct a 1-hour consultation with the partner organization to understand the systems and processes used in data workflows, in particular for deduplication and referrals use cases.	n/a
2. Immediately before the session, create authorized users for the individuals expected to do the testing.	n/a
Session intro	**Estimated time (minutes)**
1. Explain the purpose of the exercise and what we hope to learn a. We value candid feedback most of all b. We want you to think about how this tool might be used in your own organization, as well as based on your experiences with other organizations, and how it might be used more generally c. At the end of the session, we have some specific questions to get feedback, but we also want to hear your thoughts while we're going through the different steps d. This is not a test, and there are no wrong answers. But we have designed it to have errors, because that helps us learn, so be prepared for things to go wrong and know it's on purpose!	5
2. Explain what the tool is and how it works a. A web portal for uploading data and sharing with others b. Provides more security and control over the data c. Can be used for multiple use cases d. Uses a data schema to enforce standards	5
3. Show the user the data schema, and ask for feedback a. What is missing from what you usually share?	5
4. Confirm our basic understanding of the partner's data-sharing workflows, and identify the specific data sharing use case(s) we believe this tool could help with	2
5. Discuss the user's typical setup in terms of what kind of device she uses, in what setting, with what kind of network, etc.	5
Session workflow	**Estimated time (minutes)**
1. Provide the user with her username/password and ask her to log in a. Are there other services that she currently logs into? What credentials does she use?	2
2. Email the user the sample data file, and ask her to download that file to her local machine a. Does she normally keep files on the local machine?	2
3. Ask the user to upload that data file to the portal.	1
4. The user will experience an error uploading the file. a. What do you think that error means? b. What would you do next? Do you think you would be able to fix the error?	10
5. We guide the user to the 'synthetic-2' csv, then she will upload the file again	2
6. Ask her to share the file with thomas.raffort@ifrc.org: a. Does she usually have the email address of the person she shares with? b. What does she think about those permission controls? Any there other controls that would make sense?	5
7. Then ask the user to view files a. What do you think of this view? Is it clear what you can access and what other people can access? b. What else would you like to see here that would make it more helpful?	5
Closing	**Estimated time (minutes)**
1. Overall, how well do you think a solution of this kind would work for the types of data sharing your organization does? What about other organizations that you may have worked for? 2. What would you see as the biggest benefit of a solution like this? 3. What would you see as the biggest barrier or risk? 4. Is there other functionality that you would like to see included?	15

THE FUNDAMENTAL PRINCIPLES OF THE INTERNATIONAL RED CROSS AND RED CRESCENT MOVEMENT

Humanity

The International Red Cross and Red Crescent Movement, born of a desire to bring assistance without discrimination to the wounded on the battlefield, endeavours, in its international and national capacity, to prevent and alleviate human suffering wherever it may be found. Its purpose is to protect life and health and to ensure respect for the human being. It promotes mutual understanding, friendship, cooperation and lasting peace amongst all peoples.

Impartiality

It makes no discrimination as to nationality, race, religious beliefs, class or political opinions. It endeavours to relieve the suffering of individuals, being guided solely by their needs, and to give priority to the most urgent cases of distress.

Neutrality

In order to enjoy the confidence of all, the Movement may not take sides in hostilities or engage at any time in controversies of a political, racial, religious or ideological nature.

Independence

The Movement is independent. The National Societies, while auxiliaries in the humanitarian services of their governments and subject to the laws of their respective countries, must always maintain their autonomy so that they may be able at all times to act in accordance with the principles of the Movement.

Voluntary service

It is a voluntary relief movement not prompted in any manner by desire for gain.

Unity

There can be only one Red Cross or Red Crescent Society in any one country. It must be open to all. It must carry on its humanitarian work throughout its territory.

Universality

The International Red Cross and Red Crescent Movement, in which all societies have equal status and share equal responsibilities and duties in helping each other, is worldwide.

The International Federation of Red Cross and Red Crescent Societies (IFRC) is the world's largest humanitarian network, with 192 National Red Cross and Red Crescent Societies and around 14 million volunteers. Our volunteers are present in communities before, during and after a crisis or disaster. We work in the most hard to reach and complex settings in the world, saving lives and promoting human dignity. We support communities to become stronger and more resilient places where people can live safe and healthy lives, and have opportunities to thrive.

Follow us:

www.ifrc.org | twitter.com/ifrc | facebook.com/ifrc | instagram.com/ifrc | youtube.com/user/ifrc | tiktok.com/@ifrc