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Evaluation of the DIF 121 Personal Cash Aid Project

Final Report

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Abbreviations

AW	Aid Worker
CTP	Cash Transfer Programming
CVA	Cash and Voucher Assistance
DIF	Dutch Innovation Fund
DCHI	Dutch Coalition for Humanitarian Innovation
DRA	Dutch Relief Alliance
FCA	Financial Conduct Authority
FSP	Financial Service Providers
GDPR	General Data Protection Regulation
HCD	Human-centered Design
HO	Humanitarian Organization
IATI	International Aid Transparency Initiative
KII	Key Informant Interview
KYC	Know Your Customer
NLRC	The Netherlands Red Cross
PA	Persons Affected
PD	Persons Donating
PMTF	Proxy Mean Testing Formula
SDIA	System Design and Integration Alignment
SWOT	Strengths, Weaknesses, Opportunities and Threats

Executive Summary

Over the past decade, Cash and Voucher Assistance (CVA) has gained momentum in humanitarian settings. In 2019, CVA constituted 17.9% of the total international humanitarian assistance (5,6 billion USD). In 2016, the Grand Bargain's call for action at the World Humanitarian Summit stressed that CVA "helps deliver greater choice and empowerment to affected people and strengthens local markets", and explicitly called for the sector to "invest in new delivery models" which can be increased in scale while identifying best practice and mitigating risks in each context.[1]

In response to the Grand Bargain's call for action, the DIF project embarked on **a two-year innovation process during which it invested in a new delivery model: the 121 system**. The 121 system aims to facilitate coordination between humanitarian organizations (HO)s and donors by providing CVA for a more efficient distribution of cash. Second, it aims to provide people affected (PA) with assistance attuned to their needs, whilst protecting their anonymity.

Objective and scope

The present independent evaluation primarily aims to collect the **learnings and insights** from the DIF project to inform a future phase of implementation as well as future endeavors to improve CVA. In addition, the evaluation aims to provide **accountability** towards the donors in light of the learnings acquired by the project so far.

Methodology

The evaluation began with an inception phase during which the evaluation team and the reviewee committee refined the scope and objectives of the evaluation, conducted an extensive desk review and produced an **inception report**. Primary data collection involved **17 semi-structured interviews** with 20 key informants, including the DIF project consortium members, and DIF portfolio managers. The evaluation team also conducted a light external desk review to **map sectoral CVA innovation**. Primary and secondary data were analyzed using a **coding matrix** in Excel format organized per evaluation question and sub-question.

The main **limitations** of this evaluation are that the data used in this evaluation was project-centric which reduces the objectivity of the findings. Without **engaging experts** in CVA innovation and humanitarian practitioners outside the project, the evaluation was unable to validate the relevance of the innovation itself and the value of the learnings generated in the innovation process for the CVA sector. Instead, it focused on the evaluation process.

Findings

1. Relevance

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[1] The Grand Bargain. (2016). "A Shared Commitment to Better Serve People in Need".

The project identified **targeting methods and traceability of funds** as the main challenges in CVA programming. In response, the project proposed a kernel system targeting method that applies algorithmic decision-making to validate people's needs and allocates cash transfers based on a vulnerability assessment. This feature was **deprioritized due to feasibility**. The evaluation was unable to establish the relevance of this system in contexts where community-based targeting (CBT) is the norm and considered more appropriate, such as Kenya.

The project also proposed a **blockchain-based fund management platform and a blockchain-based common cash ledger** which delivers low-cost and fully transparent international transfers, and compatibility with the International Aid Transparency Initiative (IATI). These features were **deprioritized due to feasibility**, and also relevance in the case of the IATI compatibility. Although the majority of interviewees showed a keen interest for these features and there was alignment with the Grand Bargain's call for greater transparency, it was unclear how this solution was more relevant when compared with already existing solutions (e.g., Segovia). As the Grand Bargain stressed the importance of the IATI as the most advanced option for a shared open-data standard, **the DIF project would, in the long-term, increase in relevance when the 121 system is compatible with the IATI**.

The project identified **coordinated delivery of CVA and overlap with social protection schemes as the main challenges in CVA programing**. In response, the project proposed a blockchain-based self-sovereign identity module which would give PA control over their digital identity, reduce duplications, allow HOs to collaborate and detect fraud. Although this feature was deprioritized due to feasibility and replaced with a centralized system, the **relevance of a decentralized storage system is well-established and should be further explored**.

The project also proposed an integrated **social protection measure** through linkages to existing referral systems. There was an alignment between the challenge of insufficient overlap with social protection schemes and the Grand Bargains' call to increase the use and coordination of cash-based programing.

2. Effectiveness

In an effort to prioritize the insights generated in the **co-design sessions**, the project team needed to reprioritize certain features which meant that already developed software would not be used in the project. Although this process was inefficient, the project team managed to integrate this learning and improve their innovation processes.

The DIF consortium was **cross-sectoral and cross-organizational**, which made the project more attractive to the donor and had the potential to add value. However, as the project vision was still in its infancy, **a number of coordination challenges became apparent, for which the project was unable to address with the resources available**. Instead of onboarding partners as the 'grand vision' became clearer (relevance and feasibility), the consortium acted as a platform to probe the vision.

Project planning and coordination was insufficiently anticipated and resourced, which was clear when unexpected complexities presented themselves, yet the project team remained flexible allowing for two scope changes, which served as evidence of the teams' ability to iteratively integrate learnings into the innovation process.

In spite of the Covid-19 pandemic, **the team successfully implement a pilot project in the Netherlands**. The pilot showed that the 121 system works, and the team used the pilot as an opportunity to iteratively integrate learnings.

In terms of **learning and adapting**, the project team documented learnings in project reports and proposed two scope changes in response to the project's learnings. There was a consensus that the original vision of the DIF project was grand and overly ambitions to achieve within a two-year scope. The project team learned that their offering (i.e., a full end-to-end system) was not relevant to the humanitarian sector and that, rather, a compartmentalized product would be more attractive. The evaluation recognizes that these were major and valuable learnings for the project team, towards which the team was flexible and receptive.

3. Replicability and scalability

The replicability of the 121 system is based on the assumption that "*internet connectivity tends will continue in the coming years, significantly reducing the 'unconnected' population.*"[2] The project has not, however, provided evidence to support this assumption. In the presence of limited **internet connectivity**, the 121 system cannot currently be replicated. In light of this, offline functionality was prioritized in the product roadmap.

Regarding **adoption and integration** of the 121 system by HOs, the project team has not documented the technical feasibility, skills, and training needed for staff to use the platform during the pilot. Interviewees suggested that replicating the 121 system would currently be human resource intensive, as the system is not ready-to-use and requires substantial technical skills.

The factors that would contribute to the **scale-up** of the innovation include **collaboration among HOs, the availability of an open-source code, and the provision of technical manuals and support groups**. The main factor that would inhibit scale-up is an overestimation of the interest and willingness of HOs to adopt the innovation.

The delivery of a completed pilot was considered a precondition for **future funding** to become accessible. The evaluation team did not gather sufficient conclusive evidence to understand why further funding was preconditioned by a pilot rather than a full environment mapping or an updated business model.

Conclusion

The original vision of the DIF project was grand in scope and was revised throughout the innovation process as the relevance and feasibility of the vision became clearer. While many of the problems identified by the project were relevant and responded to the Grand

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[2] DIF Consortium. (2018). "Logframe 121 DIF".

Bargain's call for action, not all the proposed solutions were clearly aligned with this call. Importantly, the project team learned that a full end-to-end system was not always relevant, rather a compartmentalized solution appeared to be more appropriate for HOs to adopt the system. This learning will be carried forward in future development of the 121 system. Learnings were generated and incorporated into the project in an effort to improve the effectiveness and quality of the innovation process. The team was considerably flexible, which is well captured in the scope change requests. During the next phase of the project, research on the willingness and feasibility for HOs to adopt the 121 system is critical.

Recommendations

1. Traceability of donors' funding throughout the transaction chain should be a priority. In prioritizing accountability to donors as a project goal, the relevance of a blockchain-based fund management system compared with, for example, a mobile payment network should be presented.
2. Linkages with social protection schemes forms a valuable component of the 121 system and should continue to be prioritized in future development of the system.
3. Integrate a co-creation approach that engages the entire consortium and external stakeholders, such as Design Thinking.
4. Engage a broad range of stakeholder. The DIF project would have benefited from an advisory committee (e.g., a think tank) that provides insights on the broader strategic issues that could affect the innovation process.
5. Conduct an Innovation Diagnostic, which is an evaluation of the consortium's innovation capabilities. An Innovation Diagnostic should be coupled with a feasibility study.
6. Assumption and precondition-log could be used to continually identify assumptions made by the project team as the product is developed and insights from Human Centered Design (HCD) are generated. All project stakeholders could contribute their expert knowledge in identifying assumptions and preconditions.
7. Conduct a full environment mapping to support the development of the future operating model.
8. The product roadmap should be accompanied by market research that gauges the interest of HOs in the current product, and a strategy to draw in HOs and other stakeholders.

I. Context and background

I.1. Cash and Voucher Assistance

Over the past decade, CVA has gained momentum in humanitarian settings, with CVA now a major part of almost every humanitarian response. In 2019, CVA constituted 17.9% of the total international humanitarian assistance (5,6 billion USD). This represents a 100% increase in the use of CVA since 2016. As a result, CVA is reshaping humanitarian programming.[3] The State of the World's Cash report (2020) identified key shifts in CVA since 2017:

As a multipurpose tool, CVA presents a coordination challenge. There is a lack of clarity on how to coordinate CVA within the humanitarian sector and who should lead and resource the coordination. 66% of practitioners identified coordination of multipurpose cash as the greatest challenge to effective CVA.

CVA recipients are not yet in the driving seat. In theory, CVA should empower PA with the freedom of choice to respond to their own needs, thereby enhancing their dignity. However, the value for CVA recipients is still being determined. Practitioners need to gather more recipient feedback more systematically.

CVA is driving vertical and horizontal collaboration. CVA is driving collaboration with local actors, governments, the private sector, market actors and civil society organizations. Yet, HOs hold systemic biases about the capacity of local organizations, which presents a barrier to the uptake and success of CVA. More research is needed on how HOs can collaborate more effectively to provide CVA.

Regarding innovation for CVA, mobile-based services and the use of mobile money for CVA has continued to grow. A trend towards digital identity provision and management is also on the rise. For example, blockchain-based ID management that allows CVA recipients to control their data, and biometric technology for CVA registration.

CVA is increasingly reliant on digital channels, and as a result, financial service providers (FSPs), mobile network operators and fin-tech providers are steadily more involved in humanitarian assistance. As a result, highly sensitive and private data of vulnerable groups is being collected, stored, used, and shared across the CVA sector. CVA programming needs to incorporate data responsibility into its safeguarding practices.[4]

I.2. The DIF Project

In 2017, the Netherlands Red Cross (NLRC) embarked on a nine-month research process during which cash experts identified the challenges of cash for emergencies and the opportunities for digital innovation. The research team concluded that a key challenge is

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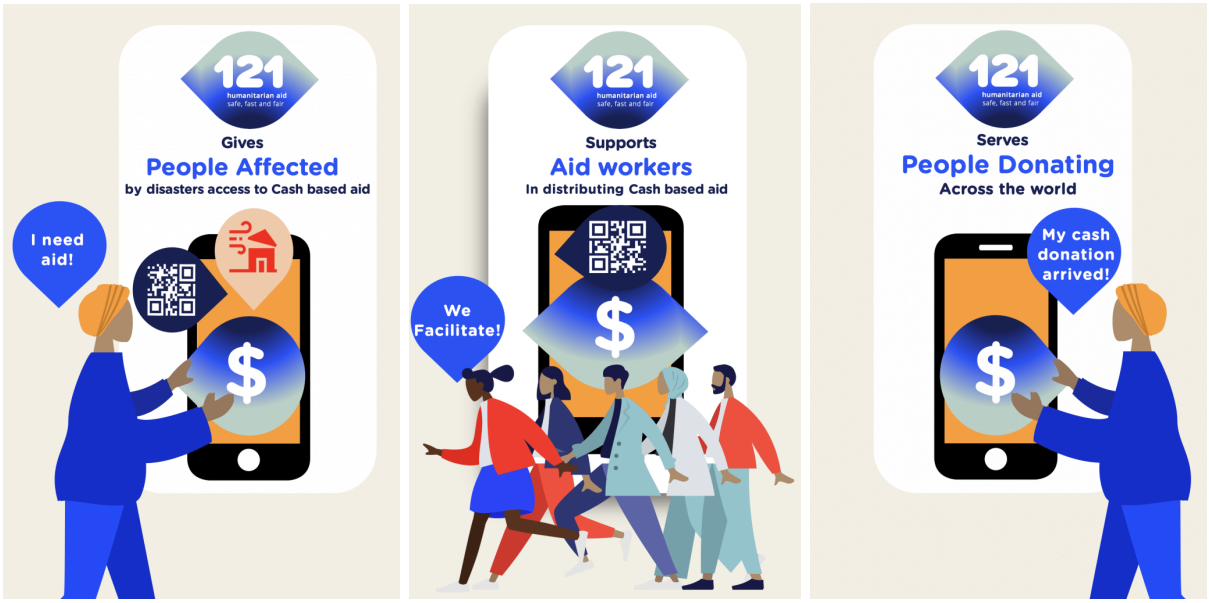
[3] CaLP. (2020). "The State of the World's Cash 2020". Available here.
[4] Raftree, L. (2021). "Data Responsibility in Cash and Voucher Assistance – a toolkit for 2021". Available here.

that the cash sector lacks an open-source platform that could be scaled while maintaining a low cost for HOs.[5]

The 121 platform was designed in response to this research process. Its grand vision is to "*support Cash Program Managers who want to help persons affected apply for cash aid by reducing uncertainty, unclarity, admin and time needed to register, validate, include and distribute cash-based aid.*"[6]

The 121 platform is developed together with several consortia, of which the Dutch Innovation Fund (DIF) consortium is one. The DIF consortium (see Table 3: DIF Consortium) was awarded funding by the DIF for phase one of the 121 innovation process (January 2019 – December 2020).[7]

The DIF project's objectives were two-fold. First, to facilitate coordination between HOs and donors by providing cash-based assistance for a more efficient distribution of cash. Second, to provide PA with assistance attuned to their needs, whilst protecting their anonymity.[8]



In its original vision, the DIF project aimed to achieve both objectives via a sophisticated kernel system responsible for registering PA and validating their needs, assigning digital identities and allocating cash using vulnerability and cash allocation algorithmics.[9] This way, cash would be delivered more quickly, safeguarding the identity of PA. The key components of the project were to develop four interfaces:[10]

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[5] DIF consortium. (2020). "121 Product Roadmap".
[6] DIF consortium. (2020). "121 Product Roadmap".
[7] The scope of this evaluation is limited to the DIF funded phase one of the project (January 2019 – December 2020) and the partners mentioned in this consortium. The "DIF project" refers to the DIF funded component of the 121 project and not the 121 project as a whole.
[8] DIF Consortium. (2018). "DIF Full Proposal".
[9] DIF Consortium. (2018). "DIF Full Proposal".
[10] DIF Consortium. (2018). "DIF Full Proposal".

Persons Donating	Persons Affected	Aid Workers	Humanitarian Organizations
Real-time track and trace of funds.	Self-sovereign digital identity.	Validate registration data in privacy-sensitive manner.	Algorithm-based prioritization, direct payments via integration with FSP.

In August 2019, the DIF project team requested a change in scope that involved two outcomes:[11] 1. A simplified Malawi pilot with fewer implementing partners, coordinated only by Tearfund (the project team initially suggested cancelling the Malawi pilot). 2. A reduced technical scope with lower priorities for certain features (see Table 1: Features planned and tested).

Two pilots were planned for the second and third quarter of 2020: one in Malawi to assist PA by poverty and floods[12] and the other in Ethiopia to assist internally displaced people[13]. However, as one of the project subcontractors – Disberse – had ceased business operations and in light of the COVID-19 pandemic, the team proposed a second change in scope in July 2020.[14] This involved an alternative pilot project (to the pilot projects planned in Malawi and Ethiopia) that would be feasible both technically and with respect to the COVID-19 restrictions. It was necessary for the project team to implement a pilot within the planned timeframe as the DIF funding did not allow for a (non-)cost-extension.

In November 2020, a pilot was implemented in the Netherlands targeting PA in the National Immigration Facilities' (LVV) waiting list. These facilities are part of a pilot conducted by the Dutch Ministry of Justice and Security to assist migrants with voluntary return, onward migration, or legalization of residence. Due to the limited capacity of these centers, some of the people identified were wait-listed. In July 2020, between 250 and 300 persons were on the waiting list to receive the LVV support. After careful review of the Netherlands pilot, a number of different stakeholders, including the municipality of Amsterdam, acknowledged that the DIF pilot could provide emergency assistance to a vulnerable group.[15]

Dorcas contracted Key Aid Consulting to evaluate the progress made by the DIF funded 121 Personal Cash Aid Project (2019 – 2020), with a focus on the innovation process and the Netherlands pilot project.

II. Objectives and scope

The objectives of the evaluation were two-fold:

1. To provide accountability towards the donors in light of the quality of the learning acquired by the project so far.

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[11] DIF Consortium. (2020). "Scope Change Request 1".
[12] 121. "DIF Consortium Pilots 121 with Tykn, Disberse & 510 in Malawi". Available here.
[13] 121. "DIF Consortium Pilots 121 with Tykn, Disberse & 510 in Ethiopia". Available here.
[14] DIF Consortium. (2020). "Scope Change Request 2".
[15] DIF Consortium. (2020). "Scope Change Request 2".

2. To collect **learnings and insights** regarding the project, so they may be shared and used for future endeavors to improve CVA.

The evaluation team mostly placed emphasis on the innovative aspects of the DIF project, differentiating this evaluation from traditional cash intervention analyses. Hence, throughout the evaluation, special attention was given to documentation related to innovation in humanitarian settings.[16] Humanitarian innovations can be understood as "*an iterative process that identifies, adjusts and diffuses ideas for improving humanitarian action.*"[17] One of the key differences in evaluating an innovation project stems from the fact that these projects are not subject to a strong causal chain "*from inputs to outcomes*" the way traditional projects are. Since they are moving into the unknown, innovation projects rely on hypotheses of the changes an intervention will bring.

This evaluation focused on **process innovation** (i.e., changes in the ways products and services are created or delivered). A component of process innovation is the project process itself (the set-up, coordination, implementation, and revisions within the project team). The evaluation team was aware of the complexity and unpredictability of humanitarian innovation and understood that patterns initially foreseen would evolve as a project unraveled. Regardless of the challenges entailed by this iterative process, it is also a learning opportunity to achieve a more robust and feasible intervention. The lessons learned are of much importance for future programming of the DIF 121 project, as well as of CVA and innovation projects.

The evaluation included the following OECD-DAC criteria:

- **Relevance** is the extent to which the innovation responds to a recognized problem or meets end user needs and priorities.
- **Effectiveness and learning** are the degree to which the innovation process generates new knowledge or evidence.
- **Scalability** is the extent to which there is uptake of the broader effects of an innovation or its consolidated learnings by many actors.
- **Replicability** is the extent to which innovation is adopted by actors to improve humanitarian performance.[18]

The evaluation matrix can be found in VII Annex 1.

III. Methodology

The evaluation used a participatory approach and relied on a qualitative methodology, through primary data (semi-structured interviews) and secondary data (desk review).

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[16] The "Evaluating Humanitarian Innovation" report published by ELRHA's Humanitarian Innovation Fund (HIF) and ALNAP will be a useful guide to support this evaluation and to frame the methodology.
[17] Obrecht, A., & Warner, A. (2016). "'More than just luck: Innovation in humanitarian action'. HIF/ALNAP Study.
[18] Obrecht, A., & Warner, A. (2016). "'More than just luck: Innovation in humanitarian action'. HIF/ALNAP Study.

III.1. Desk review & Inception phase

The evaluation kicked-off with an **in-depth briefing** with the Key Aid evaluation team and the evaluation review committee.[19] Beyond fostering a broad and general understanding of the project background and of the evaluation's ToR, this briefing was used to refine the list of documents available for the desk review. During the inception phase, the evaluation team conducted an extensive structured **desk review** of the project documentation to inform the primary data collection. The evaluation team produced an **inception report**, including a finalized methodology and timeframe, the evaluation matrix, primary data collection tools, and a list of key informants.

III.2. Primary data collection

III.2.1. Key Informants Interviews

Primary data collection involved **17 semi-structured interviews** with 20 key informants, which allowed for a more in-depth understanding of the DIF project and the Netherlands pilot, the innovation process and potential scale-up in the near future. Key informants included the DIF project consortium members (including members involved in the Ethiopia pilot project), and DIF portfolio managers (donor representation).

III.2.2. CVA humanitarian innovations mapping

To determine the relevance of the DIF project, the evaluation team conducted a light external desk review to map sectoral CVA innovation.[20] The consultants evaluated whether each of the CVA innovations had one or more of the features outlined in the DIF proposal[21] and how these features were tested during a piloting phase.

III.3. Analysis & Report

The evaluation team used a **coding matrix** in Excel format organized per evaluation question and sub-question, which includes all primary and secondary data in a single document. The analysis was carried out iteratively so as to adjust the data collection tools and explore some of the trends more in-depth. Data was triangulated across sources to ensure accuracy.

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[19] The review committee includes project stakeholders from Dorcas, NLRC510 and Help a child. The Help a Child stakeholder joined the review committee after the inception briefing.

[20] CVA innovations include: The Unblocked cash project; Sempo; WFP Building Blocks; AidCoin; LittleBitz; Aid:Tech; RedRose and GiveDirectly.

[21] A blockchain-based self-sovereign identity; a kernel system that applies algorithmic decision-making and validates people's needs and allocates cash transfers based on a vulnerability assessment; a blockchain-based fund management platform that delivers low-cost and fully transparent international transfers; a blockchain-based common cash ledger that optimizes coordination; context-specific donation and payment options; integrated protection measures through linkages to existing referral systems. DIF Consortium. (2018). "DIF Full Proposal".

When findings were corroborated by a number of interviewees, the report indicates the proportion of interviewees relative to the entire interview sample (e.g., one-fifth of the interviewees, infers four interviewees). It is important to note that this does not infer that the remaining proportion did or did not corroborate the findings, agree or disagree, as not all interviewees were asked all questions. Rather, this is to show that the finding came up repeatedly. Therefore, any indication of a proportion should be read as the most corroborated response to a particular question.

After a preliminary analysis, the consultants conducted a **workshop** with the evaluation review committee to present and discuss the preliminary findings, identify trends, and receive feedback on the evaluation. Based on analysis and feedback, the evaluation produced a draft report followed by a final report presented in a workshop. This **final report** is accompanied by a standalone executive summary capturing key findings and recommendations to support dissemination.

III.4. Limitations

The data presented in this study was limited to the DIF project itself, such that all interviewees formed part of the DIF consortium or represented the donor, and that all documentation was internal to the project. The limitation of **project-centric data collection** is that data is not objective and as such subject to biases, which was discussed during the inception phase and led to evaluation questions being adjusted to present project-centric views.

Without **engaging experts** in CVA innovation and humanitarian practitioners outside the project, the evaluation was unable to validate the relevance of the innovation itself and the value of the learnings generated in the innovation process for the CVA sector. As a mitigation measure, the evaluation team evaluated how the innovation process aimed to fill in a gap and be relevant.

Further, without **engaging PA in the Netherlands pilot and HOs** outside of the DIF consortium, the evaluation was unable to determine the value proposition for PA, aid workers (AW) and HOs. During the inception phase, the evaluation team and review committee agreed that it was not feasible to engage with PA in the evaluation given their precarious status in the Netherlands as undocumented migrants or refugees, and due to COVID-19 related travel restrictions.

The DIF project was part of a larger initiative. **Documents and knowledge** from stakeholders involved in other stages of the broader initiative were not included in this evaluation. Contributions of other workstreams of the initiative and their mappings were not part of the scope of this evaluation.

When discussing the scalability of the project, the point of view of **HOs from outside the consortium** would have been valuable, yet the evaluation team did not interview such organizations. This was decided by the review committee during the inception meeting and resulted in a limitation of the study that could not be mitigated. Scalability, and more particularly deviation from current practices, was subject to consortium members' evaluation only.

IV. Findings

The following sections include the analysis and evaluation findings on the relevance of the innovation (IV.1), the effectiveness of the innovation process (IV.2), and scalability and replicability of the innovation (IV.3). Each section presents an analysis in response to the evaluation sub-questions (see VIII.). A consolidated conclusion and recommendations for each section is under V. Conclusion and VI. Recommendations.

IV.1. Relevance

In 2016, the Grand Bargain called on the humanitarian sector to invest in new delivery models, which have the potential to scale while identifying best practices and risk mitigation.[22] The call noted that CVA "*helps deliver greater choice and empowers affected people and strengthens local markets*."[23] The Grand Bargains' call, which outlined ten areas for action in the humanitarian sector, informed the DIF projects problem statement: "***There has been slow progress in developing and deploying CVA delivery models, which can be attributed to three challenges: scale, coordination, and risk mitigation***."[24]

In the following sections, the relevance of these three challenges is discussed. Specifically, how these challenges align with the Grand Bargains' call for action, and the relevance of the DIF projects' proposed solution to these challenges.[25] Where relevant, the evaluators took into account gains and losses brought by two scope changes.

IV.1.1. Scale

Problem statement: "*Scale is limited by the capacity of HOs to target and monitor transfers, as well as reliance on often inadequate delivery channels*."[26] The following section discusses the challenge of targeting methods, and the challenge of fund traceability, as described by the project team.

IV.1.1.1. Targeting methods

The DIF project proposed a kernel system targeting method that applies self-learning algorithmic decision-making to validate people's needs and allocate cash transfers based on a vulnerability assessment.[27] The purpose of this method, was to reduce the time taken to validate PA during the registration process. The method was identified based on a research study titled "A fair distribution algorithm for cash transfer programs".[28]

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[22] The Grand Bargain. (2016). "A Shared Commitment to Better Serve People in Need".
[23] The Grand Bargain. (2016). "A Shared Commitment to Better Serve People in Need".
[24] DIF Consortium. (2018). "DIF Full Proposal".
[25] The evaluation matrix structures the relevance section with two questions and four sub-questions (see VIII). However, during the analysis of findings, this section was restructured to increase readability and balance sections.
[26] DIF Consortium. (2018). "DIF Full Proposal".
[27] DIF Consortium. (2018). "DIF Full Proposal".
[28] Bijkerk, M. (2018). "A Fair Distribution Algorithm for Cash Transfer Programs".

Indeed, the unique **value-proposition** of the DIF projects' kernel system is not well established when compared with existing algorithmic-based targeting methods, such as Proxy Means Testing (PMT)[29], used by UNHCR and co-developed with the World Bank.[30]

Eligibility is a key component in CVA targeting. Eligibility for assistance requires a shared understanding of the vulnerability which is often not unanimous among program stakeholders.[31] CVA best practice requires that eligibility criteria is publicized through sensitization efforts, such as community meetings. In addition, the community has the opportunity to help define targeting criteria, including adding or removing criteria.[32]

In some contexts, CBT is often considered to a more appropriate method for targeting.[33] For example, the Government of Kenya and the World Food Programme have used CBT in relief and recovery efforts for the past two decades.[34] An interviewee stressed that "*fair*" algorithmic decision making is a Western, individualistic construct and it clashes with the collectivistic values of many developing countries in Africa, for example. In these contexts, the appropriateness of a fixed or self-learning algorithm within DIF 121 would be questionable.

Self-learning algorithmic decision-making was proposed in the original vision as a technical endeavour; however, this idea was **deprioritized** in the first midterm report due to feasibility. Rather the project incorporated the option for simple algorithms (scored questionnaires) which includes the possibility of CBT.

IV.1.1.2. Traceability of funds

The DIF project envisioned a comprehensive solution to channel funds more directly from persons donating (PD) to PA. The solution involved a **blockchain-based fund management** platform which delivers low-cost and fully transparent international transfers. The main objective was to shorten the financial distance between PD and PA. This fund management system would be accompanied by a **blockchain-based common cash ledger** that is optimized for transparency for PD and anonymity of PA. In addition, the project planned to be compatible with the IATI.[35]

There was an alignment between the challenge of trackability of funds, identified in the DIF project proposal, and the Grand Bargains' call for **greater transparency**. This call involved the use of open-data standard and common digital platform that would demonstrate the

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[29] PMT involves three steps, 1. Establish a proxy for vulnerability (e.g., consumption), 2. Collect data on a range of household characteristics and features (including the proxy variable), 3. Apply econometric methods to establish when household characteristics and features are most significantly associated with the proxy variable. Cash Work Group Iraq. (2019). "Multipurpose Cash Assistance in Iraq Vulnerability Assessment and Targeting Review". Available here.
[30] UNHCR. (2019). "Beneficiary Selection Process for UNHCR Multipurpose Cash Assistance (MPCA)".
[31] Cash Work Group Iraq. (2019). "Multipurpose Cash Assistance in Iraq Vulnerability Assessment and Targeting Review". Available here.
[32] MercyCorps. (2015). "Cash Transfer Programming Toolkit". Available here.
[33] Conning, J and Kevane, M., (2000). 'Community Based Targeting Mechanisms for Social Safety Nets'.
[34] WFP. (2015). "Community-based Targeting Guide".
[35] DIF Consortium. (2018). "DIF Full Proposal".

movement of funds from PD to PA. Further, the call stressed the need to comply with the IATI.[36]

Based on the interviews conducted with the project team, it is unclear whether a blockchain-based fund management system and common cash ledger was a relevant solution in response to this challenge. An alternative method to address the challenge of traceability of funds is a mobile payment network, such as Segovia, which offers a unified API to execute bulk payments through multiple payment providers (mostly mobile money).[37] GiveDirectly works in partnership with Segovia, to issue payments via mobile money networks (including Safaricom, Airtel, MTN, Orange, Tigo and Paga).[38]

That said, this alternative solution would not necessarily shorten the finance chain, which was also a goal of the proposed blockchain fund management system and common cash ledger. The majority of interviewees showed a keen interest in the blockchain feature which could serve a dual goal of fund traceability and shortening the financial chain. The prospect of faster, transparent and efficient money transfers was particularly appealing from a donor perspective, or from HOs that could increase compliance with donor requirements. Thus, the DIF project's proposed solution remains is a relevant solution in the grand vision of the project.

A blockchain fund management platform and a blockchain-based common cash ledger were deprioritized due to feasibility. In the second scope change request, the project team explained that throughout the project these financial components were revised due to technical limitations of local partners and local FSPs. When Disberse, the project partner tasked with delivering these financial components, ceased business operations in July 2020, these components were completely deprioritized. This was because Disberse held most of the contacts with the FSPs and were unable to handover any technical integrations into the 121 system.[39]

Compatibility with the IATI was also deprioritized due to feasibility and relevance. Regarding feasibility, in the first scope change request, the project team explained that given that the 121 system was not sufficiently developed, integration with the IATI reporting tools required a larger investment than anticipated. Regarding relevance, the project team recognized that many HOs already have an established link between their project management systems and the IATI. As such, an investment in the IATI compatibility without desirability validation was not appropriate at this stage of the project.[40] Given that the Grand Bargain stressed the importance of the IATI as the most advanced option for a shared open-data standard, the DIF project would, in the long-term, increase in relevance when the 121 system is compatible with the IATI.

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[36] The Grand Bargain. (2016). "A Shared Commitment to Better Serve People in Need".
[37] Segovia Payment Gateway. Available here. That said, Segovia does not solve the DIF projects' desire to shorten the financial chain, rather it would present a middle-ground between the 121 platform and several FSPs, with which Segovia is connected.
[38] GiveDirectly. Available here.
[39] DIF Consortium. (2020). "Scope Change Request 2".
[40] DIF Consortium. (2020). "Scope Change Request 1".

IV.1.2. Coordination

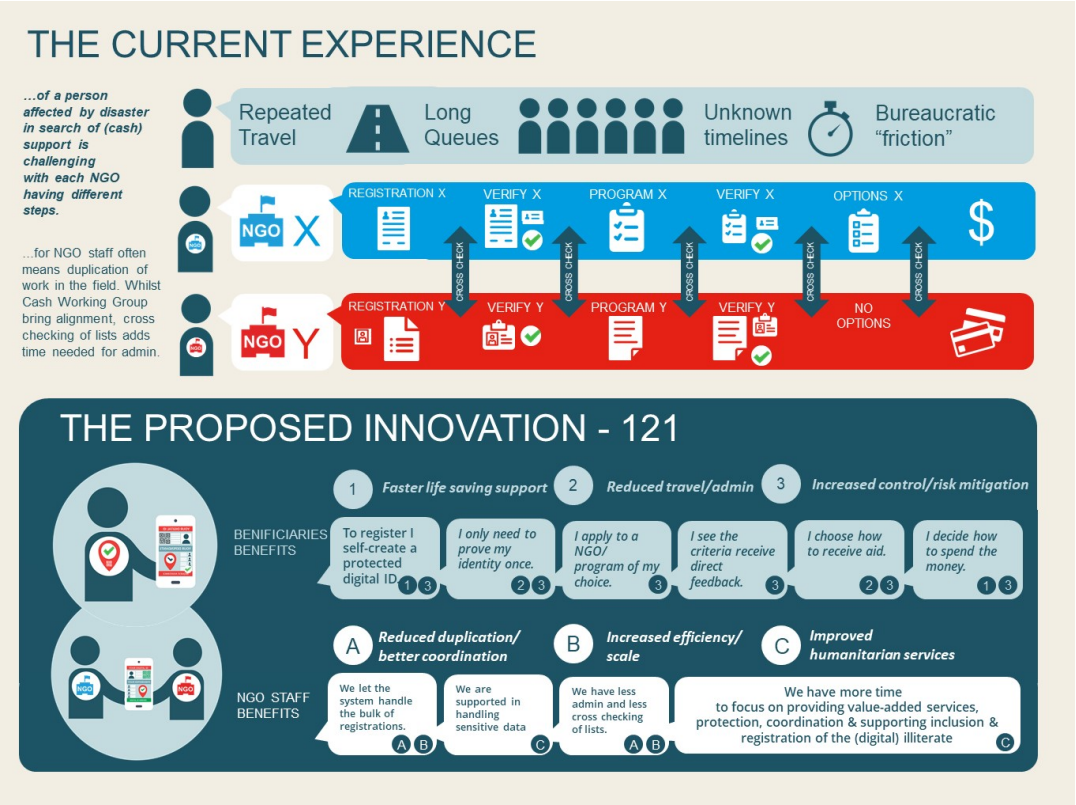
Problem statement: "*Coordination is made difficult by the desire of many different HOs to deliver CVA through different channels, as well as potential overlaps with social protection schemes.*"[41] Based on the problem statement, the project team identified two challenges: 1. Uncoordinated delivery of CVA, and 2. Insufficient overlap with social protection schemes.

IV.1.2.1. Coordinated delivery of CVA

Most interviewees stressed that a challenge to CVA is that programming efforts among HOs are uncoordinated. As a result, PA often engage in **multiple registration processes** which is both time consuming and involves uncertainty for the PA. This also reduces the efficiency of HOs and their potential to collectively scale CVA programming.

To address these challenges, the project proposed a **blockchain-based self-sovereign identity module** which would give PA control over their digital identity (discussed under IV.1.3) and, would allow PA to self-register once for multiple CVA programs.[42] The project team explained that this solution would allow PA to "*access life-saving cash support much faster with less bureaucracy since they will not have to register with multiple NGOs to access aid services.*"[43]

Figure 1: CVA registration current experience and proposed solution[44]



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[41] DIF Consortium. (2018). "DIF Full Proposal".
[42] DIF Consortium. (2018). "DIF Full Proposal".
[43] DIF Consortium. (2018). "DIF Full Proposal".
[44] DIF Consortium. (2018). "DIF Full Proposal".

There was an alignment between the challenge of coordination of cash-based programing, identified in the DIF project proposal, and the Grand Bargains' call to **reduce duplication**. This could be achieved among other things, according to the Grand Bargain, by harmonizing partnership agreements and sharing data about PA, and by maximizing efficiencies in procurement and logistics.[45]

That said, a blockchain-based self-sovereign identity module used for the registration of PAs would in itself not improve coordination among HOs. For the innovation to reduce registration duplication, there would need to be a **collaborative effort among HOs** in a given area to use the 121 platform. Based on the information collected through this evaluation, it is unclear how the DIF project plans to improve HOs' willingness to coordinate their CVA programing, and, in turn, make use of the proposed self-registration process.

In addition, the project team explained that the platform will improve efficiencies by applying new technologies that reduce administrative tasks and enable risk free data sharing. One of the ideas behind this was to integrate **automated fraud detection and reduce registration duplication**. While the project team was able to identify a potential solution, this solution was resource-intensive and would violate the principles of privacy by design. The project team recognized that this component was not critical for the pilot projects and as a result, this component was deprioritized.[46] Automated fraud detection could have contributed to mitigate the problem of misappropriation by non-eligible recipients.[47]

Although deprioritized, the project team recognized the potential value add of this component and have re-prioritized this component in long-term focus of the DIF project. The roadmap stresses that technical and design research should be conducted on how to mitigate duplication and counter fraud, specifically in a self-registration scenario.

IV.1.2.2. Overlap with social protection schemes

The project proposal outlined insufficient overlaps with social protection schemes as a challenge to CVA coordination.[48] In response to this challenge, the project proposed an integrated protection measure through linkages to existing **referral systems**.

There was an alignment between the challenge of insufficient overlap with social protection schemes, identified in the DIF project proposal, and the Grand Bargains' call to **increase the use and coordination of cash-based programing**. The call stressed that to have a greater impact, cash-based programing should, where possible and appropriate, align with local and national mechanisms such as social protection systems. This should include preparedness, planning and mapping measures to ensure that cash-based programming more effective.[49]

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[45] The Grand Bargain. (2016). "A Shared Commitment to Better Serve People in Need".
[46] DIF Consortium. (2020). "Scope Change Request 1".
[47] Smith, A. (2020). "Operational Review of Exposure to Corrupt Practices in Humanitarian Aid and Implementation Mechanisms in the DRC".
[48] DIF Consortium, '121 Personal Cash Aid Proposal'.
[49] The Grand Bargain. (2016). "A Shared Commitment to Better Serve People in Need".

As stressed by the Grand Bargain call, linkages should be used where possible and appropriate. In the Ethiopia pilot, the project team explained that linkages with social protection schemes were not possible due to limited availability of these services (this learning presents an opportunity for advocacy in Ethiopia). Comparatively, in the Netherlands pilot, linkages with social protection schemes were both possible and appropriate. The majority of interviewees stressed the relevance of this feature and the value it brought to the Netherlands pilot.

IV.1.3. Risk mitigation

The project team explained that the challenges of scale and coordination, combined with technical challenges (such as lack of interoperability) increase **privacy and protection risks** for beneficiaries, who are not given control and capability to mitigate those risks.[50]

The project proposal considered PA' lack of control over their own data as a risk for CVA programing, and in response to the Grand Bargain's call to **include people receiving aid in making decisions** the project proposed a blockchain-based self-sovereign identity module.[51] This would, according to the project team, give PA control over their digital identity and, in turn, increase PA' privacy while still offering transparency to donors.[52]

The project team explained that the relevance of this feature was informed by research conducted by research partners, namely Stevens' research on Self-Sovereign Identities for Scaling Up Cash Transfer Projects and Staehli's research on Managing Registration on the Blockchain in humanitarian Cash Transfer Programing (CTP).

Stevens' research pointed out that CTP is weakened by a lack of collaboration and interoperability among HOs, centralized identity management systems, insufficient privacy and data protection systems, and the need for proof-of-identity during the registration process, stressing that the World Bank estimates that 1 billion people have no official means to prove their identity, with the majority living in Africa and Asia.[53] One solution to these weaknesses, as proposed by Stevens, are digital identity systems. More specifically a self-sovereign identity system enabled by blockchain technology.[54]

Staehli's research on Managing Registration on the Blockchain stressed that blockchain technology is "*substantial and serves as a likely game-changer in various identity-related issues*", however, this technology is still in its infancy and should be used with caution. Staehli explained that while blockchain-based self-sovereign identity may overcome a number of challenges related to logistics, timeliness, safety and sustainability, however, it also opens a "*Pandora's Box*" of ethical issues of humanitarian aid more generally.[55]

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[50] DIF Consortium. (2018). "DIF Full Proposal".
[51] "Self-sovereign identity (SSI) is a term used to describe the digital movement that recognizes an individual should own and control their identity without the intervening administrative authorities. SSI allows people to interact in the digital world with the same freedom and capacity for trust as they do in the offline world." (Sovrin, 2018)
[52] DIF Consortium. (2018). "DIF Full Proposal".
[53] World Bank. (2017). "Principles on identification for sustainable development (second edition)".
[54] Stevens, L. (2018). "Self-sovereign identities for scaling up cash transfer projects".
[55] Stähli, T. (2018). "Managing Registration on the Blockchain".

As such, according to Staehli, it is uncertain whether the challenges of digital identity (i.e., privacy and control) can be solved with a blockchain-based system, or if these problems will merely be redistributed and concealed behind complex terminology. The research identified a myriad of challenges regarding the implementation of a blockchain-based identity system, including, legal and regulatory challenges and usability, user experience and user acceptance.[56]

Given these conclusions, it is clear that the project team identified these challenges and uncertainties related to blockchain based self-sovereign identity as an invitation to contribute to research on the topic. That said, the alignment between the Grand Bargains' 2016 call to "*include people receiving aid in making decisions*" and a blockchain-based self-sovereign identity is not well established.[57]

Staehli's research also pointed out that usability currently poses a greater challenge than acceptability, mainly due to Internet access and digital devices.[58] Blockchain-based self-sovereign identity was reduced in the first scope change request. The project team explained that the technology requires a specific version of the Android system or higher, smartphone use and a stable internet connection. As a result, the project team reprioritized their available resources to develop a centralized storage option.[59]

IV.2. Effectiveness

Effectiveness of the project looks at the degree to which the innovation process generated new knowledge or evidence. This section evaluates IV.2.1 The factors that shaped the quality of the DIF innovation process (Agile Software development and HCD approaches), IV.2.2 Partner selection and collaboration, IV.2.3 Planning and coordination, IV.2.4 Piloting activities (location, features tested and design), and IV.2.5 The project team's ability to learn and adapt.

The DIF consortium (see Table 3: DIF Consortium) combined technical skills (such as Tykn focused on developing a secure global digital identity system and Disberse, which aims to improve the speed, costs, and transparency of transfers) and sectoral reach (such as NLRC510 embedded within the Red Cross umbrella, and Dutch Relief Alliance (DRA) consortium members). The DIF consortium also benefited from the quality assurance expertise of PwC, humanitarian innovation knowledge of the Dutch Coalition for Humanitarian Innovation (DCHI) and the academic research expertise of TU Delft.[60]

IV.2.1. The quality of the innovation process

According to Obrecht and Warner, humanitarian innovation is iterative and requires a flexible approach.[61] The following section discusses two approaches, Agile software

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[56] Stähli, T. (2018). "Managing Registration on the Blockchain".
[57] The Grand Bargain. (2016). "A Shared Commitment to Better Serve People in Need".
[58] Stähli, T. (2018). "Managing Registration on the Blockchain".
[59] DIF Consortium. (2018). "DIF Full Proposal".
[60] DIF Consortium. (2018). "DIF Full Proposal".
[61] Obrecht, A., & Warner, A. (2016). "'More than just luck: Innovation in humanitarian action'. HIF/ALNAP Study.

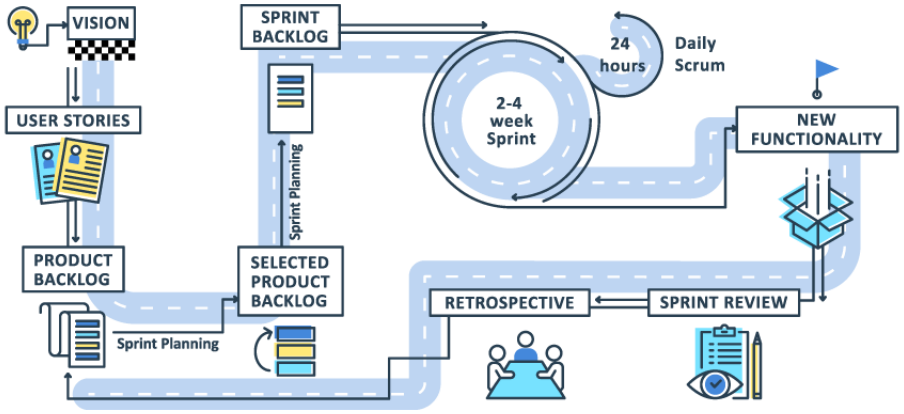
development (namely, Scrum) and HCD,[62] and how these approaches shaped the quality of this innovation process.

IV.2.1.1. The Agile Scrum methodology

Agile methodologies are a group of project management approaches that oppose traditional waterfall style project management techniques. Agile methodologies allow an innovation team to iteratively integrate changes and respond swiftly within a structured process, and to develop a clear roadmap for progress that enables flexibility within a timeline.[63] There are a variety of different Agile methodologies and among them, Scrum and Kanban are arguably the most popular.[64]

In the Scrum methodology, projects are divided into Sprints (usually two and four weeks). In the Sprint planning, the team selects the backlog items that they will address in the upcoming Sprint. Then, this process is repeated throughout the project (see Figure 2: The Agile Scrum lifecycle). The team is divided into different roles (e.g., Product Owner, Scrum Master, the Scrum team).[65]

Figure 2: The Agile Scrum lifecycle[66]



In the DIF project, the tech lead (NLRC510) intended on using Scrum for software development. However, the NLRC510 team initially lacked experience on how to effectively implement Scrum.[67] Additionally, this team lacked a straightforward roadmap, role-definition, coordination and tended to "*cherry-pick convenient elements of the software development framework.*"[68] In November 2019, the NLRC510 team hired a new software architect, who happened to be an experienced Scrum master. This allowed the team to successfully implement the methodology 11 months into the DIF project.[69] That said, the

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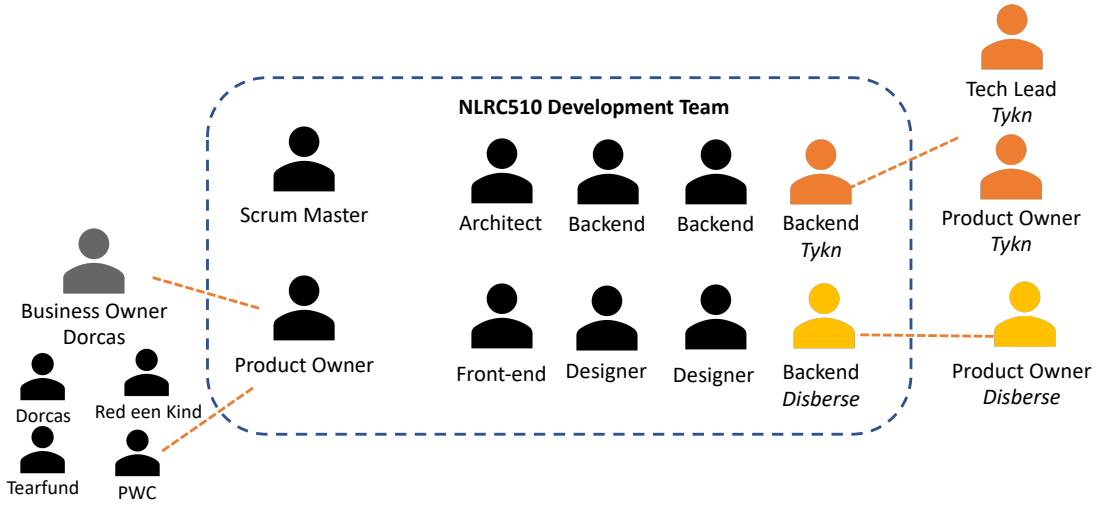
[62] A design and management framework that aims to make systems usable and useful by focusing on the users, their needs and requirements, and by applying human factors, usability knowledge, and techniques.
[63] Obrecht, A., & Warner, A. (2016). "'More than just luck: Innovation in humanitarian action'. HIF/ALNAP Study.
[64] López-Alcarria, A., Olivares-Vicente, A., Poza-Vilches, F. (2019). "A Systematic Review of the Use of Agile Methodologies in Education to Foster Sustainability Competencies"..
[65] Wilson, F. (2018). "Types of Scrum meetings and Scrum best practice". Available here.
[66] Microsoft Azure. (2021). "What is Scrum?". Available here.
[67] 121. (2021). "Scrum for 121: Getting the Key Roles Right". Available here.
[68] 121. (2021). "Scrum for 121: Getting the Key Roles Right". Available here.
[69] 121. (2021). "Scrum for 121: Getting the Key Roles Right". Available here.

effective integration of Scrum contributed to the effectiveness of the innovation process within the NLRC510, the benefits of which were reaped by the DIF project in terms of project coordination and integration of co-design insights into software development.[70]

In implementing Scrum, the NLRC510 team created clearly defined roles (see Figure 3: NLRC510 scrum team) and more effectively managed the product backlog. The team unified on a single technical vision that focused on adding value for the PA.[71]

Figure 3: NLRC510 scrum team[72]



The NLRC510 attempted to unify the tech partners (Disberse and Tykn) on a **single technical vision** and Scrum methodology, which, according to one fifth of the interviewees, proved inefficient to achieve the project goals. These interviewees argued that this was because the NLRC510 team did not have a working platform at the start of the DIF project, which meant the tech partners were unable to integrate their respective systems with the NLRC510 platform. As a result, the meetings between tech partners were slow and distracting from each of their project goals.[73] Some interviewees stressed that it was more efficient for each tech partner to focus on their goals and coordinate within their respective teams than to align all three partners on a single methodology.

An innovation process requires a **solid technical lead** with a transparent working methodology, which, based on the analysis, the DIF project did not have. Some interviewees pointed out that it is not necessary to have technical partners align on a software development methodology, but that it is critical to implement a structure that facilitates effective collaboration between tech partners, which, based on the analysis, was not achieved in the DIF project.

Team building is an important component of any Agile methodology, especially when a product is built from scratch. One approach to team building is to set up workshops with stakeholders to form the product backlog and invite stakeholders to the **Sprint reviews**.[74]

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[70] DIF Consortium. (2020). "Midterm report 2".
[71] 121. (2021). "Scrum for 121: Getting the Key Roles Right". Available here.
[72] PwC. (2019). "Agile Processes".
[73] Currion, P. (2020). "Lessons learned on 121 DIF project and consortium".
[74] Altexsoft. "25 Scrum process best practices that set your agile workflow for efficiency". Available here.

During the implementation phase, the tech team invited project stakeholders to the Sprint review. Some interviewees stressed that this was an effective method to get the whole team onto the same page and allow project stakeholders to advocate for certain changes or see how some changes had been integrated.

IV.2.1.2. Human-centered Design approach

Scrum is often accompanied by a HCD approach (as shown in Figure 2: The Agile Scrum lifecycle). According to Bourne, an HCD approach is user-centered (building solutions around the end-user's needs, experiences and lives), participatory (end-users are part of the decision-making process and problem-identification) and iterative (software specifications are not pre-determined, a feedback loop is used to integrate end-user insights).[75] To meet these characteristics, HCD should follow a general process: 1. Understand the needs of end-users, 2. Design and iterate potential solutions, 3. Deliver an optimal solution.[76]

1. Understand the needs of end-users

Stage one involves qualitatively exploring the needs and priorities of end-users (PA, AW, HOs and PD) through co-design sessions. The main objective of this stage is to understand the needs of end-users, evaluate the innovation teams' assumptions about the end-users' needs and experiences, and if necessary, reframe the initial problem statement.[77]

The DIF project did not sufficiently start from a problems-perspective (i.e., an understanding of PA, AW, HOs and PD' needs), rather it started from a solutions perspective (i.e., software specification and development). This, according to some interviewees, is partly because the DIF proposal was output driven and lacked a process- and short-term vision-oriented approach necessary for a humanitarian innovation project.[78] Based on this learning, the project team adapted their processes to focus on a HCD approach, and engaged in additional research, such as validating donor interest for direct donations into 121 using a mock-up donor interface.[79]

Without a roadmap that sufficiently took account of the need for further problem exploration with end-users and a well-established technical lead, co-design sessions took place five/six-months into the DIF project.[80] By designing with PA and AW, the project team gained new and valuable insights that influenced the design of the 121 system. The team realized that certain components, which had already been built, were not relevant to the piloting context (e.g., self-sovereign identity which would require widespread smartphone use). As a result, the team revised the initial system design and reprioritize functionalities to ensure that the system would meet end-users needs and not cause them any harm.[81]

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[75] Bourne, S. (2019). "User-centered Design and Humanitarian Adaptiveness". ALNAP Case Study.
[76] Bourne, S. (2019). "User-centered Design and Humanitarian Adaptiveness". ALNAP Case Study.
[77] Bourne, S. (2019). "User-centered Design and Humanitarian Adaptiveness". ALNAP Case Study.
[78] DIF Consortium. (2020). "Scope Change Request 1".
[79] DIF Consortium. (2020). "Scope Change Request 2".
[80] DIF Consortium. (2020). "Scope Change Request 1".
[81] DIF Consortium. (2020). "Scope Change Request 1".

The initial co-design sessions were focused on understanding the vulnerability and needs of PA and AW. The sessions were also used to get insight on the feasibility and acceptance of the project concept for PA, AW, PD and HO, e.g., by asking about their use of mobile phones and access to internet, and their willingness to register for support via a digital platform.[82]

2. Design and iterate potential solutions

Stage 2 involves prioritizing and incorporating the needs and experiences of end-users discovered in stage 1 into the design of a potential solution.[83] The co-design session enabled the tech team to **evaluate the feasibility of certain features** and the project teams' assumptions.[84] Further, insights from the co-design sessions were used to develop/adapt the interface such as the 'connect me', 'prepare me', and 'help me' interface[85], or the WhatsApp-like layout.

It is unclear how co-design insights on the relevance of the innovation itself, based on the needs and experiences of PA and AW, were integrated into concept development (i.e., is a digital solution the most relevant or efficient approach to deliver CVA?). For example, an interviewee explained that one PA was not interested in a digital solution due to the concern that their phone might lose battery.

3. Deliver an optimal solution

As humanitarian innovation is an iterative process, the line between design and delivery is blurry. The innovation process requires rapid testing, evaluation, and improvement of the product to arrive at a stage where the product is feasible and sustainable to implement.[86]

The DIF projects' ability to rapidly test, evaluate and improve was impeded by an inefficient implementation of Scrum (discussed in detail in IV.2.1.1) and pilot location choice (discussed in detail in IV.2.4.1).

As put by an interviewee, "*the HCD approach of the DIF project was not perfect, but it still added a lot of value, and without it, the likelihood of failure would have been much bigger.*" The project team was aware that an HCD approach was critical to the success of the project. Yet, as three participants explained, **insufficient budget and time was allocated to this approach in the DIF proposal and initial roadmap**.

The DIF project's goal was "*to provide more efficient, effective, faster and safer cash support for people in need. This will be achieved through a co-design approach that incorporates the perspectives of service providers, governments and disaster-affected communities.*"[87] The DIF project did not engage in co-creation activities with a wide variety of stakeholders. The HCD approach was used to gain insights from PA and AW, which were prioritized and integrated by the design and tech team.

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[82] DIF Consortium. (2020). "Scope Change Request 2".
[83] Bourne, S. (2019). "User-centered Design and Humanitarian Adaptiveness". ALNAP Case Study.
[84] DIF Consortium. (2020). "Scope Change Request 1".
[85] DIF consortium. (2020). "121 Product Roadmap".
[86] Bourne, S. (2019). "User-centered Design and Humanitarian Adaptiveness". ALNAP Case Study.
[87] DIF Consortium. (2018). "DIF Full Proposal".

The project team learned that an effective integration of these approaches, both improve the innovation process for the project team and the relevance of the project for end-users.

IV.2.2. Partner selection and collaboration

IV.2.2.1. Partner selection

Innovation benefits from cross-sectoral and cross-organizational collaboration, which cross-pollinates ideas, development, implementation, and innovation scaling.[88] The DIF consortium was an example of a **cross-sectoral and cross-organizational collaboration**. This, according to half the interviewees, made the project more attractive to potential donors as it fostered the values of cross-sectoral collaboration and increased the likely scalability of the innovation.

More than half of the interviewees recognized each partner's value add within the consortium, especially the private tech partners – Tykn and Disberse – who offered unique, innovative propositions while embracing humanitarian principles. Similarly, a small number of interviewees agreed that the DIF project was an attractive entry point for private tech partners into the humanitarian sector.

However, a quarter of the interviewees mentioned that the DIF project would have benefited from a **validation phase**, during which 1. The HCD team evaluates the relevance of the innovation for end-users (PA, AW, and HO), 2. The consortium lead evaluates which partners are most appropriate to meet the needs identified by the end-users, and 3. Partners are selected based on the composition of their team members.

There is no consensus on an ideal innovation team or on partnership models, as this depends on the innovation type or problem area.[89] The DIF project engaged in a cross-sectoral and cross-organizational partnership. However, as start-ups, Tykn and Disberse were unable to sustain a long-term engagement in the project without draining their limited resources. This proved problematic for the effectiveness of the DIF project.

IV.2.2.2. Collaboration with partners

Beyond partner selection, the innovation process benefits from a strategic approach to collaboration, allocating time and resources to managing the consortium.[90] The DIF consortium experienced steep learnings on how to foster effective collaboration. A quarter of the interviewees mentioned that the project lacked a strategic collaboration approach, specifically around cross-sectoral partnerships with start-ups (Tykn and Disberse).

A strategic innovation approach should recognize that while the innovation process is primarily geared towards generating profit for the private sector, it is for the humanitarian sector primarily geared towards improving assistance for affected populations. When a humanitarian innovation consortium engages the private sector as partners, rather than

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[88] Obrecht, A., & Warner, A. (2016). "'More than just luck: Innovation in humanitarian action'. HIF/ ALNAP Study.
[89] Obrecht, A., & Warner, A. (2016). "'More than just luck: Innovation in humanitarian action'. HIF/ ALNAP Study.
[90] Obrecht, A., & Warner, A. (2016). "'More than just luck: Innovation in humanitarian action'. HIF/ ALNAP Study.

service provides – as was the case with the DIF consortium – a strategic collaboration approach is necessary and should acknowledge these particular diverging priorities and incorporate this into the innovation process design.[91]

Some interviewees thought that the DIF consortium should have **engaged fewer partners at this phase of the project**. Once the project built on solid foundations (e.g., an established lead technical team with a working platform), the consortium could then have collaborated with relevant partners based on the project objectives.

In the innovation process, **engagement with start-ups requires a strategic approach**, particularly around the timeliness of engagement. While the majority of interviewees agreed that each partner in the DIF consortium had the potential to add value to the 'grand vision', partners were engaged in an untimely manner. Following the proposal writing phase during which Tykn and Disberse contributed to the core vision of the 121 platform, these partners should not have been engaged again until the 121 platform was sufficiently developed, this would have ensured that these start-ups did not deplete their limited resources during platform development.

The type of partnership was not always clear to some of the partners involved in the consortium, which led to misaligned expectations. Tykn and Disberse took on a transformative partnership (partners seek to create new value that is mutually beneficial to all parties involved). However, these partners learned that by engaging in a transactional partnership at this phase of the project (each party maximizes their own interests), they would have protected their interests and invested less time and resources, which were limited, in establishing the short-term objectives of the DIF project. This lesson works both ways, tech start-ups also often have a 'grand vision' yet need time to establish their development team and product/s, it is beneficial for HOs to engage in a transactional partnership with these organizations to protect their project objectives.

IV.2.3. Planning and coordination

To start with, the DIF proposal did not recognize the coordination requirements necessary to run an innovation project. **The proposal used an output-driven approach,** which is standard practice in humanitarian projects and was in line with donor proposal formats. As a result, the coordination requirements were predetermined in line with the outputs that the DIF project had expected to deliver. Given that the innovation process is iterative, these expected outputs rapidly changed, which the DIF project planning and coordination was not well resourced for, according to the majority of interviewees.

In addition, as outlined in the first change of scope, the DIF consortium learned that "*a large multi-disciplinary consortium might in theory be appealing to donors, but in practice complicates the innovation process and leads to a lot of time and resources spent on coordination*."[92] Half of the interviewees thought that the inception phase should have been longer and committed to getting all consortium members on the same page. While the tech

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[91] Obrecht, A., & Warner, A. (2016). "'More than just luck: Innovation in humanitarian action'. HIF/ ALNAP Study.
[92] DIF Consortium. (2020). "Scope Change Request 1".

partners aligned on a 'grand vision' in the software specification requirements, the less explicit goals and constraints of each tech partner were not well identified.

A short inception phase led to a project planning that was insufficiently based on where partners stood in terms of technical development, which had a cascading effect on the entire project. The main effect, as described by five interviewees, was that team members were unaware of each partners' competing stakes and expectations from the project. For example, private tech partners primarily planned to use the pilots to develop a sustainable business model, whereas humanitarian partners primarily planned to use them as an opportunity to learn and improve.

Following the inception phase, the PwC report on quality management stressed that roles and responsibilities were loosely defined and sometimes combined, potentially leading to activities falling through the cracks.[93] Upon hiring a Scrum Master in November 2019, the NLRC510 team more clearly defined the roles of their scrum team members, which improved their effectiveness in the DIF project. However, the roles & responsibilities of individual team members within the DIF consortium remained unclear. During the evaluation, one fifth of the interviewees mentioned that it was unclear, especially during the go-no-go session, which partner was responsible for decision-making. As such, go-no-go sessions often led to more go-no-go sessions without a final decision being made. This was, to a large extent, justifiable, given that the project team was dealing with the unpredictability of the COVID-19 pandemic. Many decisions could only be made closer to a given deadline, as pandemic related restrictions became clearer.

Beyond leadership, team members found it challenging to coordinate within the consortium and know who was responsible for what, especially stakeholders who were not a part of the project from the start. Three interviewees explained that unclear role division had an impact on the timing of stakeholder engagement. For example, relevant stakeholders – FSPs in Malawi and Ethiopia – were only engaged half-way into the project once the 121 system was more developed. These interviewees argued that FSPs should have been engaged at the start of the project as these processes are time consuming. This is quite likely a learning that resulted from the project and could not have been foreseen.

An output-driven proposal, insufficient resources allocated to coordination, and a short inception phase hindered the coordination of the DIF project. A consequence of insufficient project planning was that team members' respective roles were not clearly defined. In PwC's report on quality management, following the inception phase, a number of project-related risks were identified, and useful recommendations were offered to the project team. These recommendations were partly integrated, in line with time and budget available, into the project processes. The evaluation team re-iterates the recommendations that were not fully integrated, due to time and budget constraints, for the next phase of the project (see Table 5: Implementation of PwC recommendations).

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[93] PwC. (2019). "Quality Management Research Cycle 1".

IV.2.4. Piloting activities

Piloting activities are critical to answer the innovation question "does it work" (i.e., is the innovation achieving the expected results). Pilots are used to generate feedback and improve the innovation.[94] The section below discusses the effectiveness of the pilot projects regarding location, features tested, number, size, and duration.

IV.2.4.1. Location of the pilots

The DIF project proposed two pilot locations: Malawi[95] and Iraq[96]. While each country presented a unique humanitarian profile and national culture, both countries had ongoing CVA programs with unique obstacles to efficiency and scale. Further, the DRA consortium members (Dorcas and Tearfund) had offices in these countries, allowing for them to broaden their activities in humanitarian settings.[97]

When the project started, Iraq was taken out of scope and replaced with Ethiopia, where Dorcas had a country office.[98] Two interviewees explained that when compared with Malawi, Ethiopia provided a unique humanitarian context with unique government regulations related to international financial transfers, which made the choice of location effective for the innovation process.

That said, the project experienced significant challenges in establishing an FSP and navigating the government structures in Ethiopia. Further, the project team learned that Ethiopia's government could cutoff internet connectivity at any moment without warning.[99] At the proposal phase, the team acknowledged that "*the novelty of these technologies requires multiple iterative developments and piloting cycles, but the evidence shows sufficient positive results to pilot a full end-to-end platform in Malawi and Iraq in phase 2*."[100] However, the team realized that both the connectivity in Malawi and Ethiopia and the use of smartphones were insufficient to test specific features (e.g., self-sovereign identities) and these features were hence taken out of scope.[101]

These challenges led to several go-no-go sessions[102], and some interviewees stressed that it was uncertain whether the project team would deliver an end-to-end pilot before the end of the project.

Due to the COVID-19 pandemic the project team decided to move the planned pilots in Malawi and Ethiopia to a pilot in the Netherlands.[103] The DIF project team justified the move

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[94] Obrecht, A., & Warner, A. (2016). "'More than just luck: Innovation in humanitarian action'. HIF/ ALNAP Study.
[95] Malawi: 21% without formal identification, 82% unbanked, 60% limited access to mobile networks.
[96] Iraq: 50% without formal identification, 89% unbanked, 19% limited access to mobile networks.
[97] DIF Consortium. (2018). "DIF Full Proposal".
[98] Dorcas has a country office in Iraq, however, at the inception phase there were internal discussions if the office could remain open or not.
[99] DIF Consortium. (2019). "Midterm report 1".
[100] DIF Consortium. (2018). "DIF Full Proposal".
[101] DIF Consortium. (2020). "Scope Change Request 1".
[102] Go-no-go sessions are consortium meetings during which the team decides whether to revise the product roadmap or not. These decisions are based on feasibility.
[103] DIF Consortium. (2020). "Scope Change Request 2".

explaining that "*the digital literacy is high, and the smartphone technology is abundant. The consortium partners have full control and influence over how the pilot is implemented, there are no travel restrictions, and the DIF 121 innovation team can implement user acceptance testing. The technical teams and evaluators can all be on-site, which will greatly enhance our ability to learn and improve the 121 system.*"[104]

Some interviewees mentioned that by piloting in the Netherlands, the project was kept within the NLRC and, therefore, reduced the potential to replicate among other HOs. Moving the pilots to the Netherlands was particularly disappointing for non-NLRC partners as they were unable to test the product within their respective organizations, which was a motivating factor for joining the DIF consortium.

Given that the 121 system is designed for humanitarian settings, it was relevant to pilot the system in Malawi and Ethiopia. By attempting to pilot in these locations, the project team generated a number of learnings particularly related to the limitations of these settings to test certain features and establish FSPs. Had the project team planned to pilot in the Netherlands from the start of the project, a number of these learnings would have probably not arisen. That said, in choosing Malawi and Ethiopia as humanitarian settings, the project was subject to a number of coordination challenges and unable to test certain features, which hindered the effectiveness of the innovation process. For optimal testing of the 121 system a fine balance between a humanitarian setting and digital connectivity would have been desirable in order to effectively pilot the system (e.g., Lebanon, Greece and Turkey[105]).

IV.2.4.2. Features tested

One third of the interviewees argued that, although the challenges described in IV.2.4.1 mirror the reality of the settings that the innovation will be built for, the DIF project did not have to tackle these types of challenges at this phase. The donor had also encouraged the project team to pilot the innovation with those "*most in need*". However, one quarter of the interviewees explained that the level of need of PA should not determine the location of the pilot. To test critical features, such as self-sovereign identity and blockchain-based fund management, it would have been more effective to select locations with a higher level of connectivity and available services.

Table 1 below shows the features planned in the DIF proposal, how these features were revised in scope change 1, and what was tested in the Netherlands pilot.

Table 1: Features planned and tested

Proposed features[106]	Revised Features[107]	Piloted in the Netherlands[108]
A blockchain-based self-sovereign identity	Deprioritized and replaced with a centralized stored identity (self-	Self-registration module for PA

[104] DIF Consortium. (2020). "Scope Change Request 2".
[105] DIF Consortium. (2020). "Scope Change Request 1".
[106] DIF Consortium. (2018). "DIF Full Proposal".
[107] DIF Consortium. (2020). "Scope Change Request 2".
[108] The pilot also tested digital vouchers disbursement for PA that can be used to buy emergency needs (e.g., food, hygiene products). This is, however, outside the scope of the DIF project. (DIF Consortium. (2020). "Scope Change Request 2").

	register on a supplied device or a PA' own smartphone, digital identity stored on central servers) due to limited access to smartphones.[109]	
Integrated protection measures through linkages to existing referral systems	Deprioritized due to limited access to smartphones	Received information on available protection, health, and shelter services
A kernel system that applies algorithmic decision-making	Deprioritized due to relevance	Validation module for AW
A blockchain-based fund management	Deprioritized due to technical feasibility	
A blockchain-based common cash ledger	Deprioritized due to technical feasibility	
Context-specific donation and payment options	Deprioritized due to technical feasibility	One payment option was piloted
Automated fraud detection/reduction of duplication	Deprioritized due to resource feasibility	
Automatic M&E integrated with International Aid Transparency Initiative (IATI) reporting tools	Deprioritized due to time investment required	

Beyond interface and process acceptance, which was considerably low (52%) (discussed under IV.2.4.3), it is unclear how the features tested in the Netherlands pilot contributed to the effectiveness of the innovation process and the 'grand vision' of the project.

The Netherlands pilot used a voucher modality, as such, the pilot could not generate lessons learned on how to reduce the financial chain using blockchain technology.[110] Further, the pilot did not sufficiently answer some of the learning questions: How can HOs comply with Know Your Customer (KYC) requirements in open-loop cash transfers? What are the main challenges of international money flows from donors to beneficiaries, and how can blockchain technology contribute to solving these challenges?[111]

Based on these findings, **the features tested in the Netherlands pilot were considered insufficient for an effective contribution to the 'grand vision' of the DIF innovation process**. That said, the learnings generated from the pilot based on the features tested, contributed to the project roadmap which sets the direction to move closer toward the 'grand vision'.

IV.2.4.3. The design of the pilot

A third of the interviewees argued that it would have been **more effective to plan the pilot in two locations consecutively with sufficient time apart to integrate learnings**. These

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[109] Blockchain-based self-sovereign identity was developed, however, taken out of scope due to low smartphone penetration and digital connectivity.
[110] In the absence of Disberse, the project could have tested a financial integration with, for example, mPesa.
[111] DIF Consortium. (2018). "Logframe 121 DIF".

interviewees stressed that attempting to pilot in two (less-connected) locations (almost) simultaneously added a coordination burden that was not sufficiently budgeted. The pilots' simultaneous planning "*did not allow the project team to focus on one thing and make progress.*"[112] Beyond simplifying coordination, planning the pilots consecutively would have allowed the project team to integrate learnings and insights from the first pilot into the second, thus contributing to the innovation process's effectiveness.

The Netherlands pilot intended on targeting all PA on the LVV waiting list (250 to 300 persons in July 2020).[113] However, when the pilot was launched in November 2020, the number of people on the list had fallen to 65 PA. All 65 PA were invited to self-register. However, only 34 PA (52%) responded to the initial invitation and were included in the pilot.[114] By January 2021, 96 PA has been invited to self-register, of which 57 self-registered (59%). This is a considerably small pilot for the time and financial investments that went into the project, and the project goals outlined in the revised log frame which accompanied the second scope change request, namely: a maximum of 200 – 250 registrations.[115] That said, one has to appreciate the circumstance in which the Netherlands pilot was launched. The COVID-19 pandemic presented unprecedented challenges in terms of coordination and decision making. In light of these challenges, the DIF project's ability to run a pilot should be considered an accomplishment.

The basic flow of a person registering involves eight assumptions, namely: the PA 1. Is aware of and trusts the program, 2. Has a smartphone, 3. Trusts SMS source/link to WhatsApp etc. Given that 41% of the PA invited to join the Netherlands pilot did not self-register, these assumptions were clearly misaligned with the levels of trust, understanding and digital acceptance of PA in the Netherlands. There could be additional reasons why PA did not register which are difficult to identify.[116] That said, given the target groups' low levels of trust, for example, and without a comparative analysis, it is difficult to determine if 52% self-registration is an achievement/improvement in CVA programing.

Figure 4: Basic flow of the person registering for the Netherlands Pilot[117]

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[112] Preliminary findings workshop with the evaluation review committee (22 March 2020).
[113] DIF Consortium. (2020). "Scope Change Request 2".
[114] DIF consortium. (2020). "121 Product Roadmap".
[115] DIF Consortium. (2020). "Log frame contingency"..
[116] The Netherlands Red Cross pilot suggested one reason why PA did not register could be that invites were sent in English as the pilot team only received the cell phone numbers of the PA and therefore could not send messages in line with the PA's language preferences.
[117] 121. "283 people self-register remotely". Available here.

The NLRC agreed to pilot the project for seven months, which—as five interviewees explained—meant that learnings were iteratively integrated, and more PA could be added to the pilot as product improvements were made. These interviewees elaborated that this was valuable as the PA in the target group has not previously received CVA. As such, by incrementally inviting PA to self-register over the course of several months, the project team could first ensure that the system works and does no harm, before involving a large number of vulnerable PA. If successful, the Netherlands pilot will exist beyond the scope of the pilot (June 2021). The product will be embedded in the core services of the NLRC, which would not have been the case in Malawi or Ethiopia.[118]

A successful pilot should display a comparable improvement in terms of effectiveness, efficiency, and quality over existing approaches.[119] Given that the NLRC did not have any existing CVA programs in the Netherlands, the NLRC-stakeholders consider the pilot to be an improvement on existing programing. However, without comparing the pilot to previous CVA programs, it is not possible to determine an upswing in effectiveness, efficiency, or quality of CVA programming.

IV.2.5. Learning and adapting

A successful humanitarian innovation process should lead to consolidated learning and evidence, an improved humanitarian sector solution and wide adoption of an enhanced solution.[120] The following section discusses the consolidation of learning and evidence in the DIF project (i.e., how new knowledge was generated and how this contributed to the innovation process).

IV.2.5.1. Set-up and documented learning processes

1. Learning questions and assumptions

The DIF project included **five learning questions** meant to improve sectoral knowledge.[121] These questions were partly answered by researchers and by the project team in, for example, the mid-term reports.[122] For example, Q4: *What are the main challenges of international money flows from donors to beneficiaries, and how can blockchain technology contribute to solving these challenges* was answered by Disberse in a reflection paper on money flows and blockchain in Aid.[123]

Following the changes in scope, the project team was unable to answer all of the learning questions in full. Importantly though, the scope changes were based on learnings themselves, showing effectiveness in the learning process. However, in most cases, the scope of the DIF project (2019 – 2020) was too short to sufficiently answer all of the proposed

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[118] DIF Consortium. (2020). "Scope Change Request 2".
[119] ELRHA. (2021). "Pilot – develop and test your solution in humanitarian settings". Available here.
[120] Obrecht, A., & Warner, A. (2016). "'More than just luck: Innovation in humanitarian action'. HIF/ ALNAP Study.
[121] DIF Consortium. (2018). "Log frame 121 DIF".
[122] Bouwens, M. F. (2020). "Towards more foundational humanitarian self-sovereign identity systems". Delf University
[123] Disberse. (2020). "Reflection Paper: Money flows and blockchains in Aid".

learning questions. As features are reprioritized in the following phases of the project, these questions will be more sufficiently addressed. For example:

Q2: *What are the potentials and challenges of a blockchain-based identity management system for beneficiaries of a cash transfer program in regard to usability and technology acceptance?* Some insights were shared in the first mid-term report in which the project revealed a major challenge regarding the usability of such a system in a context with low smartphone penetration and digital connectivity. The project team learned that in order to test the self-sovereign identities they need to pilot in locations with a very high prevalence of smart phones such as Greece, Lebanon or Turkey. Further, it is challenging to test features in humanitarian contexts while ensuring that the project 'does no harm'.[124] Based on these learnings, self-sovereign identity was taken out of scope and more testing is now needed to better understand whether the theories hold up in practice.[125]

Q3: *How can HOs comply with KYC requirements in open-loop cash transfers?* Some insights were shared in the first mid-term report; however, the project team argued that in the absence of Disberse, the project was unable to test these insights in practice.[126]

Based on the learning questions, the DIF project team outlined five assumptions in the log frame.[127] Throughout the innovation process, the project team rigorously re-evaluated these assumptions as new learnings were generated, as shown in the mid-term reports.[128]

2. Design and software development processes

An HCD approach and a Scrum methodology are designed to effectively integrate learnings and insights into the project process.[129] The project team used a backlog to collect insights generated through the HCD approach (i.e., co-design sessions and user-tests), which were then integrated into the Scrum process.

A small proportion of interviewees argued that a "*Design Thinking*" approach should have been applied with internal project stakeholders (e.g., tech partners, implementing partners, protection partners), integrating expert knowledge that did not explicitly come from the PA. However, as explained during the preliminary findings workshop, the project experienced a pendulum effect: "*At the start of the project, the tech team was too focused on internal stakeholders' expertise that allowed all tech partners to align on the software specifications. However, when the project team effectively integrated an HCD approach, the project lost its internal alignment.*"[130]

3. Documentation and reporting

Lessons learned were documented in the quarterly review meetings, monthly reports, and reports to donors. Each scope change request included details of the specific lessons learned. Some interviewees stressed that a feedback loop through which the project team

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[124] DIF Consortium. (2020). "Scope Change Request 2".
[125] DIF Consortium. (2020). "Midterm report 2".
[126] DIF Consortium. (2020). "Midterm report 2".
[127] DIF Consortium. (2018). "Logframe 121 DIF".
[128] DIF Consortium. (2020). "Midterm report 1"; DIF Consortium. (2020). "Midterm report 2".
[129] Bourne, S. (2019). "User-centered Design and Humanitarian Adaptiveness". ALNAP Case Study.
[130] Preliminary findings workshop with the evaluation review committee (22 March 2020).

could reflect on learnings and insights and share expertise was not effectively implemented, especially during the pilot phase.

The project team appears to be strong on documenting internal learning and re-evaluated the assumptions made in the log-frame. That said, too few assumptions were identified in the project log-frame and in project documentation. For example, as shown in Figure 4, the project team made a number of assumptions about the level of trust of PA, yet in addition to the assumptions made in the log-frame, these additional assumptions are not well defined and addressed in the project documentation.

IV.2.5.2. Learning processes yielded improvements

The **insights generated from the HCD approach led to a revision in the initial system design and a reprioritization of functionalities**, to ensure a more appropriate and non-prejudicial end product in response to the needs of PA.[131]

In evaluating the feasibility and relevance of the project (based on internal capacity, timeframe, HCD insights etc.), the project team realized that they did not have sufficient technical or coordination resources to implement the full vision.[132] As such, the team proposed two scope changes. In scope change one, it put in place measures to reduce the coordination burden, such as reducing the number of implementing partners in Malawi.[133]

Based on the second midterm report, the project team learned that the coordination resources available to the team were insufficient to manage two pilots. As a result, the team considered cancelling the Malawi pilot to increase the focus on and quality of a single pilot. The second scope change moved the pilots from Malawi and Ethiopia to the Netherlands. This allowed the team to implement a pilot before the project end date.[134]

Although the 121 system was eventually piloted in the Netherlands, the process of attempting to pilot in Malawi and Ethiopia nonetheless generated a number of learnings for the project team. For example, learnings related to the ability and willingness of FSPs in developing countries to connect their systems to the 121 financial backend, or the need for offline functionality which was integrated into the product roadmap.[135]

There was a consensus that the original vision of the DIF project was grand and overly ambitions to achieve within a two-year scope. Ultimately, the 121 system is an innovation "for the future," and as such, the project team learned that certain components could already be developed (e.g., linkages to social protection) while others require sectoral development before integrated into the system (e.g., self-sovereign identity). In a similar vein, the project team learned that their offering (i.e., a full end-to-end system) was not

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[131] For example, the project assumed that the operational environment in Malawi and Ethiopia was stable enough to implement pilots. In the first mid-term report the project team remarked: "So far, the operational environment has been stable. However, during the co-design sessions it was experienced first-hand that the internet connection could simply be switched off by the Ethiopian Government. With current turmoil in both countries, this needs to be closely monitored".
[132] DIF Consortium. (2019). "Midterm report 1".
[133] DIF Consortium. (2020). "Scope Change Request 1".
[134] DIF Consortium. (2020). "Scope Change Request 2".
[135] DIF Consortium. (2020). "Scope Change Request 1"; DIF consortium. (2020). "121 Product Roadmap".

relevant to the humanitarian sector and that, rather, a compartmentalized product would be more attractive, thereby shifting from product innovation to process innovation.

The evaluation recognizes that these were major and valuable learnings for the project team, towards which the team was flexible and receptive. It's important to recognize that innovation takes place in, for the most part, unchartered waters. In navigating these uncharted waters, the project team successfully shaped their challenges into opportunities to learn and improve their innovation process.

There is, however, room for improvement on how to consolidate and share learnings externally. The second midterm report explains that all research, diagramming and code generated in the project is available online, and that 121 has been actively branded in sector presentations (e.g., Flanders Red Cross, RCRC EU Regional Working Group, RCRC Cash IM Working Group, the Humanitarian Innovation Exchange, a DRA IWG meeting that was hosted by 121 consortium partner PWC and in a visit to the Ministry of Foreign Affairs).[136] However, beyond availability of information and public branding, it is unclear whether an effort was made to report on the findings and key lessons from the innovation process and to disseminate this widely to external experts in the relevant area addressed by the innovation. As such, the evaluation was unable to determine if the humanitarian sector was strengthened as a result of the learnings generated in the DIF project.

IV.3. Replicability and scalability

IV.3.1. Replicability

Replicability is the extent to which actors adopt innovation to improve humanitarian performance.[137] The following section explores the extent to which the project team has put in place conditions for the innovation to be replicable: Efforts made by the project team to let the innovation be used in less connected settings, technical obstacles for HOs to adopt or integrate the platform, data protection policies, norms and requirements, and other preconditions for the platform to be used.

IV.3.1.1. The 121 platform in less connected settings

The project was based on the assumption that "*internet connectivity trends continue in the coming years, significantly reducing the 'unconnected' population.*"[138] It has been estimated that $100Bn is needed to close the internet access gap in Africa by 2030.[139]

Figure 5: Visualization of fiber infrastructure in Africa[140]

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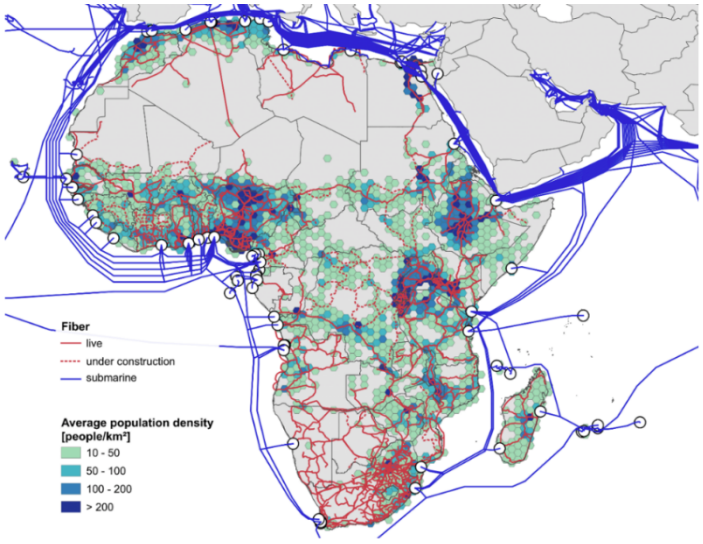
[136] DIF Consortium. (2020). "Midterm report 2".
[137] Obrecht, A. with Warner, A. and Dillon, N. (2017) 'Working paper: Evaluating humanitarian innovation' HIF/ ALNAP.
[138] DIF Consortium. (2018). "Logframe 121 DIF".
[139] Broadband Commission for Sustainable Development's Working Group on Broadband for All: A Digital Infrastructure Moonshot for Africa, 'Connecting Africa Through Broadband A Strategy for Doubling Connectivity by 2021 and Reaching Universal Access by 2030', 2019.
[140] ROKU FUKUICHRISTOPHER JAMES ARDERNETIM KELLY, 'Africa's Connectivity Gap: Can a Map Tell the Story?' (World Bank Blog / Digital Development, 2019).



Visualization of fiber infrastructure in Africa and population density, showing unserved regions. Total population is estimated for each 10,000 km2 hexagon; those with populations below 100,000 are excluded. Source: Network Startup Resource Center, TeleGeography, and European Commission.

The project team has not identified nor researched to confirm **whether the connectivity gap** will be filled according to this assumption[141] and that the absence of internet connectivity "*resulted in more work to make the system also usable offline*".[142] Although offline options have been explored,[143] the project team narrowed the scope of the project to connected settings. This limitation impacted the development of pilots, especially in Ethiopia (see IV.2.4).

Therefore, the 121 system could not be replicated in the absence of the internet.[144] While the project team aimed to consider connectivity constraints, it appears the platform **cannot be replicated in less connected settings**. In the absence of a full offline functionality, the platform is less replicable, however, offline functionalities are included in the 121 Product Roadmap (December 2020).

IV.3.1.2. Adoption and integration of the 121 platform by humanitarian organizations

The project team has not documented[145] the technical feasibility, skills, and training needed for staff to use the platform during the pilot. As a result, there is a lack of data to assess the level of effort required for HOs to reuse the platform in other settings.

It appears that the project team has emphasized **the replicability of the innovation system** (open-source code available to DRA members) rather than the platform itself (ready-to-use application). The first scope change planned to make the platform more replicable for other contexts in the next phase of the project when additional customization would be developed.[146] An interviewee summarizes: "*Right now the product is available to but not*

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[141] DIF Consortium. (2019). "Midterm report 1".
[142] DIF Consortium. (2020). "Midterm report 2".
[143] The project team has considered integrating KOBO so that the system will be able to handle intermittent connection better.
[144] According to most interviewees interviewed.
[145] There was no mention of training material has been made during interviews conducted with the project team.
[146] DIF Consortium. (2020). "Scope Change Request 1".

necessarily accessible to other organizations." As a mitigation strategy, the project team considered self-teaching material (manuals or video tutorials available on GitHub) or coaching services.[147]

The project roadmap was an opportunity to identify several options for the platform to be integrated along with existing resources:

- Potential to align the intuitive open-source interface with Kobo Toolbox to get further validation and access to more end users to scale.
- Potential to reuse the opensource code for Digital CEA communication in humanitarian programs (explored by IFCR in the MENA region).
- Potential to address a niche in humanitarian needs with the "go to Cash Aid Program tool" (prototype of a cash program start up wizard based on CALP Network's working methods).[148]

At the time of data collection, the project team was currently studying these options and had not, therefore, conducted a detailed analysis on the extent to which these integrations would benefit the platform's replicability.[149]

In conclusion, the effort required for a HO to use the platform is only known in theory for the features developed so far, but it was not sufficiently documented (the Netherlands pilot still being underway). The level of effort required after these developments are made was unknown and exceeds the scope of this evaluation.

IV.3.1.3. Data protection policies, norms and requirements

The project team has conducted research on data protection relevant to the project and the CVA sector to ensure these features, key to replicability, were considered. While some studies commissioned by the project team were much lighter[150] than others,[151] it was beyond this evaluation's scope to assess these studies. However, this evaluation's data demonstrates that compliance was at the center of the team's preoccupations.

Nevertheless, compliance of the platform with regulatory requirements has been found very difficult to achieve because *"certainty is needed on the architecture of a software product and on design decisions on the input (donor) and output (financial service provider) sides, as well as regarding the personal data of persons affected."*[152] One interviewee noted that, if looked at closely, current CVA programs were also facing challenges in complying with these requirements.

Efforts made by the project team to keep the platform as compliant as possible included, storing only indispensable data, securing the technical infrastructure with Microsoft Azure,

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[147] Mentioned by one interview.
[148] DIF consortium. (2020). "121 Product Roadmap".
[149] And it was outside of the scope of the evaluation to assess how these activities (not planned in the project proposal or scope changes, hence within the scope of this evaluation) would benefit the replicability.
[150] Tykn, 'Study on Decentralization of Cloud Storage for Identity Wallets', 2020.
[151] M.F. Bouwens, 'Towards More Foundational Humanitarian Self-Sovereign Identity Systems' (Delft University of Technology, 2020).
[152] DIF Consortium, '121 Personal Cash Aid Midterm Report 1'.

conducting a full GDPR audit done for all the platforms and systems, explaining what consent is to people affected, and limiting information visible by user type.[153] PwC was the focal point of the consortium on investigating GDPR compliance. The consultancy group shared a series of recommendations halfway through the project. They affected the very design of several components of the project, including international transfers (KYC), self-sovereign identities, and beneficiaries targeting (kernel algorithm).[154]

In conclusion, the project team has documented significant efforts to **align the innovation with data protection policies**, norms, and requirements, increasing its replicability significantly.

IV.3.1.4. Other preconditions for replication by other organizations

Interviewees episodically mentioned other factors that would influence the innovation's replicability: time-consuming preparation to set up the platform (language, relevant local information),[155] research and codesigning sessions to adapt the app, engagement with PA. Furthermore, three interviewees mentioned that HOs need to have strong CVA experience and a strong IT expertise as prerequisites.

These factors mainly indicated that **replicating the 121 innovation would currently be human resource intensive. The platform was not ready-to-use and required a lot of technical skills**. On that note, one interviewee added that removing the blockchain feature made the DIF project more replicable. In conclusion, the evaluation found the project was not easy to replicate.

IV.3.2. Scalability

Scalability is the extent to which there is uptake of the broader effects of an innovation or its consolidated learnings by many actors.[156] In that sense, scalability is very connected to the effectiveness of the learning process and documentation of relevance. More precisely, "*scalability refers to the viability of the innovating team's plans for diffusing an innovation to achieve impact through wider use*."[157] In this section, the evaluation team explored (1) the factors contributing to the potential scale-up of the innovation, and (2) the funding strategy.

Limitation of the study: in evaluating the Netherlands pilot, the evaluation is unable to determine the value proposition for PA as they were not interviewed. Recognition of the value proposition by potential users could not be evaluated as only HOs that formed the project team was interviewed by Key Aid and that all documents provided by the review committee for the desk review were authored by the project team. Likewise, deviation from current practices will only be appraised from consortium members' points of view. As a result of the above-mentioned limitations, the evaluation sought to understand what factors

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[153] One interviewee
[154] PricewaterhouseCoopers, 'Preliminary GDPR Recommendations on DIF Project "121 Personal Cash Aid"', 2019.
[155] This could result in the platform to not be appropriate for emergency settings, added the participant to the study.
[156] Obrecht, A. with Warner, A. and Dillon, N. (2017) 'Working paper: Evaluating humanitarian innovation' HIF/ ALNAP
[157] Alice Obrecht, Alexandra Warner, Neil Dillon, 'Evaluating Humanitarian Innovation' (HIF-ANALP, 2017).

influenced deviations from practices only from the perspective of the 121 consortium members.

IV.3.2.1. Factors contributing to the scale-up of the project

Following the key informant interviews, the evaluation team identified factors that are likely to affect the scale up of the project.

1. **Factors identified by the project team that could contribute to scale-up and for which completion could be confirmed by the evaluation team**[158]

First, there are two factors that will contribute positively to the scale up of the project. i.e., the **collaboration amongst partners**[159] and the **availability of the open-source code.**[160] Based on the data available as part of this evaluation, the evaluation team could confirm these two factors.

Second, according to the project proposal, the adoption of the innovation should have been guided by **technical manuals and support groups** comprised of humanitarian donors, local and international NGOs.[161] But in the absence of these manuals and groups at the time of the evaluation, the evaluation team could not determine to which extent these would improve the scale up of the platform.

2. **Factors identified by the project team that limited scale-up**[162]

First, the project proposal acknowledged that adaptations would be required to meet the financial regulations of each country in which the platform would be deployed. The context in which the innovation would take place was very important to interviewees, who noted the platform would only add value in the right context. They did not agree on what was the best context for the innovation to take place: hyper-connected setting such as the Netherlands vs. disconnected settings in Africa.

Second, another factor mentioned by three interviewees is the fact that the project team may have **overestimated the interest of HOs** in adopting the innovation. Insufficient communication with HOs (internally and externally) at the design stage (see Relevance) and during the implementation phase resulted in the project team being unable to gauge the interest of HOs for the innovation. The product roadmap confirmed that traction on HOs was not an immediate priority.[163]

Lastly, the **complex nature of an ambitious project** covering so much ground was also considered a limiting factor to four interviewees.

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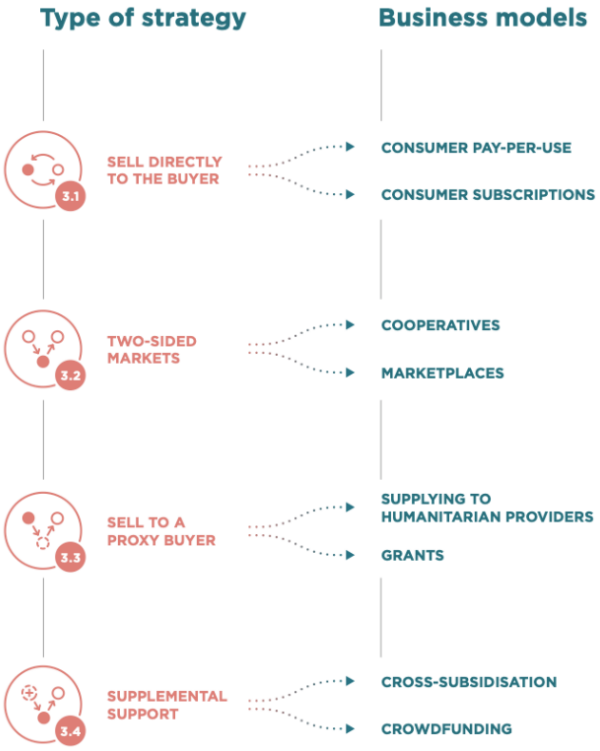
[158] Based on primary and secondary data provided to Key Aid Consulting in 2021
[159] Mentioned by five interviewees and corroborated by the desk review
[160] Mentioned by the vast majority of key informants interviewed
[161] DIF Consortium, '121 Personal Cash Aid Proposal'.
[162] To which we could add the Risks identified in project proposal "121 is not compliant with regulations and principles, 121 will not be used by Humanitarian Organizations, 121 excludes groups of vulnerable people with limited access to technology, Misalignment between humanitarian insights and technical development" DIF Consortium.
[163] DIF consortium. (2020). "121 Product Roadmap".

In conclusion, the diffusion of the innovation did not lead to wider use within the DIF consortium. Therefore, based on the data available, it **cannot be concluded that the project team has put in place favorable conditions for the platform to scale up outside the consortium.**

IV.3.2.2. Funding strategy towards individuals and donors

"*Far too many promising innovations have not gone to scale. A failure to select, validate, and implement appropriate revenue models is one of the key reasons for this.*"[164] A recent paper on business models for innovators provides an inventory of strategies and business models that have proven particularly relevant to the humanitarian sector. The recommended method consists of structuring key information into a canvas: value proposition, market and customer segments, channels, customer relationships, key activities, key resources, key partners, cost structure, revenue streams, and pricing. Once structured, this information could help identify the best strategy amongst the following:

Figure 6: Overview of possible strategies and business models[165]



This exercise was conducted by the project team during the development of the roadmap in 2020 (see Figure 8: DIF humanitarian canvas). The support of Foundations, the DRA Innovation Fund, GSMA and the investments made by NLRC played a particularly important role in the development of that roadmap. **More decisions, yet to be made, would contribute in 2021-2022 to shaping the operating model of the 121 platform**:

- Explore the opportunity to partner with Harvard Humanitarian Initiatives (develops and maintains the Kobo Toolbox).

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[164] Gray, I. et al., (2019). "Business models for Innovators Working in Crisis Response and Resilience Building".
[165] Gray, I. et al., (2019). "Business models for Innovators Working in Crisis Response and Resilience Building".

- Clarification on whether the 121 platform was centrally managed or products self-hosted by organizations.
- Clarification on whether the 121 platform should be maintained internally, by a dedicated team, or externally, by a community of software developers.
- Clarification on whether a dedicated legal entity (private company) should be established to run the platform.
- Put in place a fee to produce income.

Interviewees had mixed opinions of the sustainability of the funding strategy. For example, for three interviewees, the discontinuation of activities by the tech partners Tykn and Disberse hindered the solidity of the project's business model.

The delivery of a **completed pilot was considered a precondition for additional funds** to become accessible. The evaluation team did not gather sufficient conclusive elements to understand why further funding was preconditioned by a pilot rather than a full environment mapping or an updated business model.

V. Conclusion

Relevance

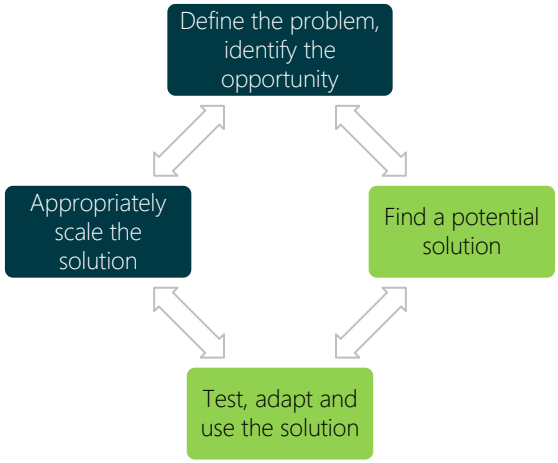
The DIF project was an ambitious initiative set out to tackle multiple problems simultaneously. It offered a comprehensive range of solutions, and invested resources in testing them when they turned out to be feasible.

The Grand Bargain commitment to "*reduce the costs and measure the gained efficiencies of delivering assistance with technology*"[166] was aligned with the initial DIF project that included mobile technology for needs assessments/post-distribution monitoring, a digital platform and mobile devices for financial transactions, and communication with affected people via call centers and other feedback mechanisms such as SMS text messaging.

If, in theory, the innovation would have tackled some problems, limited effort has been allocated to the definition of these problems (mainly related to risk mitigation). More importantly, the feasibility of the solutions presented by the project team were insufficiently probed against opportunities presented by other initiatives and tested with potential future users. The reasons why solutions presented *to* the project team were ruled out were insufficiently documented. This gap affected the scalability of the innovation, as recognition by end users could not be anchored in solid evidence. The project team focused mainly on two steps (in green below) of this innovation cycle suggested in a study published by OCHA.

Figure 7: Innovation cycle[167]

[166] IASC. (2019). "Reduce Duplication and Management Costs with Periodic Functional Reviews".
[167] Betts, A. & Bloom, L. (2014). "Humanitarian Innovation: The State of the Art".



The context in which the innovation was to take place was insufficiently assessed in the initial stage of the project. The project team realized along the way that a full end-to-end platform was not always relevant for all humanitarian settings.[168] A compartmentalized solution appeared to be more appropriate for HOs to take onboard features they needed to implement their CVA projects. The question of whether the 121 platform should be a centralized or a decentralized solution is to be answered in a near future (2021-2022). In addition, HOs willingness to integrate the 121 system into their ways of working should be further explored.

The need for a full environment mapping was reiterated by the project team.[169] It would have indeed been useful to confirm the relevance of the innovation. In the absence such a full mapping, the evaluation team cannot conclude on the relevance of the project.

Effectiveness

Obrecht and Warner's remark that humanitarian innovation is **iterative and requires a flexible approach** captures the essence of the DIF project. Throughout the DIF project, learnings were generated and incorporated into the project in an effort to improve the effectiveness and quality of the innovation process. In terms of design methods, the project team had planned to implement well-establish design methods for humanitarian innovation namely, Scrum and HCD. That said, the process of implementation was back-to-front. The project kicked-off with software specification requirements and software development, following which, the project team engaged in co-design session with end-users. In an effort to prioritize the insights generated in the co-design sessions, the project team needed to **reprioritize certain features** which meant that already developed software would not be used in the project. Although this process was considerably inefficient, the project team managed to integrate this learning and improve their innovation processes. Design methods have the potential to benefit the entire consortium, however, were limited to the tech and design teams.

The DIF consortium was cross-sectoral and cross-organizational, which made the project more attractive to the donor and had the potential to add value. However, as the 121 vision

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[168] Reasons include international and national regulations, political and contextual limitations, mistrust in digital money, mistrust in direct donations.
[169] DIF consortium. (2020). "121 Product Roadmap".

was still in its infancy, such complexities presented a number of coordination challenges that the DIF project was unable to address with the resources available. Instead of onboarding partners as the 'grand vision' became clearer (relevance and feasibility), the consortium acted as a platform to probe the vision. To reduce the coordination burden while developing the vision, the project should have engaged fewer partners at this phase of the project.

Project planning and coordination was insufficiently anticipated and resourced, which was clear when unexpected complexities presented themselves e.g., establishing a FSPs in pilot locations, and the COVID-19 pandemic. In light of these, and other challenges, the project team remained flexible allowing for two scope changes, which serves as evidence of the project teams ability to iteratively integrate learnings into the innovation process. The PwC report on quality management provided useful recommendations, a number of which were integrated, however, given budget constraints, the project team was unable to implement all recommendations.

In spite of the Covid-19 pandemic, the team successfully implement a pilot project in the Netherlands. This was not the pilot project that the team had anticipated, and the pilot did not provide any comparable improvement in terms of effectiveness, efficiency and quality over existing CBA approaches. That said, the pilot showed that the 121 platform works, and the team used the pilot as an opportunity to iteratively integrate learnings.

In terms of learning and adapting, the project team documented learnings in project reports and proposed two scope changes in response to the project's learnings. However, the evaluation was unable to determine if the humanitarian sector was strengthened as a result of the learnings generated in the DIF project.

Replicability and Scalability

Even though the project team took into consideration connectivity constraints, the platform currently cannot be replicated in unconnected settings.

The level of effort required from an organization to use the platform is only known, in theory, for the features developed so far for the Netherlands pilot (and Kenya pilot, which is outside the scope of this evaluation). But the pilot still being underway, the evaluation team could not conclude on the replicability of these features outside the NLRC. The platform requires further development to be replicated by other organizations. The level of effort required after these developments are made is unknown and exceeds the scope of this evaluation. The 121 system is not an off-the-shelf product, the process of setting the system up would be human resource intensive and would require strong technical expertise.

The project team has documented significant efforts to align the innovation with data protection policies, norms and requirements, increasing its replicability significantly. These norms are of particular importance to governments and donors, less so to people affected. The project team successfully devised a funding strategy towards institutional donors to scale the innovation, but not for individual donors. The question of whether the strategy will be successfully implemented cannot be answered with the evaluation.

Replicability of the innovation is difficult to ascertain as the feasibility of each component of the innovation was not sufficiently demonstrated.

Collaboration amongst partners and the availability of the open-source code are considered positive factors to the scalability of the project. But the project team missed some opportunities to develop guidance and learning material pulled from the development of the 121 platform. Insufficient ownership of an ambitious innovation by HOs and challenges in testing the innovation hindered the scalability of the project.

VI. Recommendations

Table 2: Recommendations

Section	Recommendation	Target
Relevance		
Traceability of funds	In line with the Grand Bargain's call, traceability of donors' funding throughout the transaction chain should be a priority.[170] In prioritizing accountability to donors as a project goal, the relevance of a blockchain-based fund management system compared with, for example, a mobile payment network should be presented. If the project plans to shorten the financial chain as an additional goal, then evidence of the efficacy gains of a blockchain fund management system compared to 'traditional' systems should be presented.	DIF consortium
Linkages with social protection schemes	Linkages with social protection schemes forms a valuable component of the 121 system and should continue to be prioritized in future development of the system. This is in line with the Grand Bargain's call which stresses that "*delivering cash should, where possible and appropriate, use, link or align with local and national mechanisms such as social protection systems.*"[171] In integrating protection-related insights from the co-design session, the project team should also rigorously integrate the insights of protection experts which form part of the consortium.	DIF consortium
Risk mitigation	Continue to explore the feasibility and relevance of a decentralized system which could omit the risk of single point failures and provide opportunity to involve a diversity of organizations, thus increasing the adoptability of the system. Also continue to explore the feasibility of automated fraud detection which could have contributed to mitigate the risk of misappropriation of non-eligible recipients.	DIF consortium
Effectiveness		
The quality of the innovation process	Ensure technical skills match the software development approach. For example, in adopting Scrum methodology, ensure that the lead technical team has a Scrum expert.	Consortium lead and technical lead

[170] The Grand Bargain. (2016). "A Shared Commitment to Better Serve People in Need".
[171] The Grand Bargain. (2016). "A Shared Commitment to Better Serve People in Need".

	Integrate a co-creation approach that engages the entire consortium and external stakeholders, such as Design Thinking.[172] The methods used in Design Thinking help the design team to understand the diverse perspectives of many stakeholder (e.g., C-Box method[173]).[174] To achieve this, it is critical to prioritize design and budget accordingly.	Coordinator
Partnership and collaboration	Ensure a shared understanding of the type of partnership. There are a number of approaches to align a project team, for example, Backcasting for Stakeholder Alignment outlines the actions necessary to reach stakeholders' desired goals. As stakeholders' goals might shift during the project, these outputs should be revised throughout the project cycle. The project team's choice of approach should be based on a comparative SWOT analysis.	Coordinator
	Engage a broad range of stakeholder. The DIF project would have benefited from an advisory committee (e.g., a think tank) that provides insights on the broader strategic issues that could affect the innovation process.	Consortium lead
	Assess the composition and competencies of the proposed innovation team. One approach is to conduct an Innovation Diagnostic, which is an evaluation of the consortium's innovation capabilities. An Innovation Diagnostic should be coupled with a feasibility study.	Consortium lead
Planning and coordination	Track decision-making. A decision log can be used to track what decisions have been made, why they have been made, who made them, what follow-up actions are required, and who should be informed. This will help inform team members who were not a part of the decision-making process to realize that a decision has been made and the rationale. This is particularly useful for team members who join later in the project or work part-time, which is the case for many of the DIF team members.	Meeting authority

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[172] Design Thinking is a human-centered approach that is driven by creative and analytical thinking, end-user empathy and iterative learning. Noteworthy, Design Thinking values co-creation and is based on the notion that all stakeholders should be involved in the design process, not just the design team. Design Thinking is useful in novice multidisciplinary teams for concept generation and selection, and increases teams' reflexivity (debating ideas, processes, changes to concepts). Seidel, V & Fixson, S. (2013). "Adopting Design Thinking in Novice Multidisciplinary Teams: The Application and Limits of Design Methods and Reflexive Practices". Journal of Product Innovation Management.

[173] A C-Box is a type of perceptual map that allows comparison and evaluation of a large number of ideas generated in a brainstorm session by the design team. The method allows everyone to contribute in a democratic way. It can be used to identify the most feasible and innovative ideas. It is up to your team to decide the level of innovation that they would like to carry forward form the idea generation or divergent phase of the project to the convergent or refinement and implementation phases.

[174] IDEO. "What is Design Thinking", available here.

Piloting activities	A concept validation phase should proceed piloting activities. Using a HCD approach, the validation phase should test the relevance and comparative effectiveness of the project concept.	Technical lead and design team
	Plan consecutive rather than simultaneous pilots to reduce the coordination burden and effectively integrate former pilot learnings into the design of the latter pilot.	Technical lead
Learning and adapting	Assumption and precondition-log could be used to continually identify assumptions made by the project team as the product is developed and insights from HCD are generated. All project stakeholders could contribute their expert knowledge in identifying assumptions and preconditions.	DIF consortium
	In line with the recommendation in the PwC report, the project team should design a lessons learned-log that captures lessons for future phases of the project, especially given the high turn-over of team members. A feedback mechanism should be set-up to discuss the lessons as they are logged.	DIF consortium
Replicability and Scalability		
Scalability	Conduct a full environment mapping to support the development of the future operating model (recommendation formulated in the 2020 product roadmap, but not completed yet).	DIF consortium
Replicability	The product roadmap should be accompanied by market research that gauges the interest of HOs in the current product, and a strategy to draw in HOs and other stakeholders.	DIF consortium
	Document retroactively for the Netherlands pilot and proactively for future pilots the roll out of the platform to collect inform technical feasibility, skills, and training needed for staff to use the platform during the pilot.	DIF consortium

VII. Annex 1 DIF Consortium

Table 3: DIF Consortium[175]

Member	Category	Responsibility
Dorcas (DRA member)	Consortium lead	Coordinate all consortium activities, lead integration of donation and payment solutions and facilitate the Ethiopia pilot.
NLRC510	Technical lead	Core system development lead and Malawi pilot co-host with the data team of Malawi Red Cross. Establish the support group and open-source license.
Disberse	Private tech	Enable regulated transfers from donor to pilot countries and integrate donation and last mile payment solutions.
Tykn	Private tech	Private sector partner for the development of digital identity protocols and inclusion and validation components.
Help a Child (DRA member)	Protection services	Research and monitor protection risks, advise on mitigation measures and establish linkages with complementary protection services in Ethiopia and Malawi
Tearfund (DRA member)	Implementing lead	Co-facilitate the Malawi pilot with local partners Eagles and SOLDEV, provide cash expertise and contribute to the scale-up plan.
PwC	Quality assurance	Focus on quality assurance and testing to ensure quality, security and compliance (General Data Protection Regulation (GDPR), AML, Audit) so that the system is safe and ready for scale up.
TU Delft	Academic institution	Contribute with supervision and technical guidance of MSc students on the research tracks in the project.
DCHI	Innovation coalition	Collect and share lessons learned throughout the sector, support the scaleup plan and link with potential future partners.

[175] DIF Consortium. (2018). "DIF Full Proposal".

VIII. Annex 2 Evaluation Matrix

Table 4: Evaluation matrix

Evaluation Question	Indicator	Source
Q1 Relevance: Was an innovation necessary to achieve the intended outcomes?		
Q1.1 Did the innovation respond to a clear problem?	I 1.1.1 Extent to which a new/ disruptive innovation was needed to address the problem/s identified by the project team	KII [all] Desk Review Innovation mapping Focus on scope change docs
	I 1.1.2 The successive objectives of the project were aligned with known and documented problems[176]	KII [all] Desk Review Innovation mapping
Q1.2 Does the innovation offer an improvement in quality, efficiency or effectiveness compared to current approaches?	I 1.2.1 The innovation is perceived as attractive / interesting / promising by the project team	KII [all] Desk Review Innovation mapping
	I 1.2.2 Gains and losses brought by the two scope changes are known and identified	KII [all] Desk Review
Q2 Effectiveness: Learning and improvement		
Q2.1 What factors shaped the quality of this innovation process?	I 2.1.1 Extent to which the Scrum process has contributed favorably to the effectiveness of the innovation process	KII [focus on tech team] Desk Review

[176] Original objectives (1) To initiate direct cash programs in a transparent, inclusive and efficient way (2) To allow for multiple donations and last-mile payment between donors and end-users (3) To facilitate collaboration among humanitarian organizations and developers (4) To identify protection risks, propose mitigation measures and established linkages to Protection services.
Objectives after first change (1) No self-sovereign identities on smart phones (2) Without the possibility for program staff to design their own questionnaires to establish vulnerability in the 121 system (3) No triggers for automatic referral to protection service providers (4) No automatic M&E done by the system (5) No separate application for person donating (6) No automatic fraud detection.
Objectives after second change (1) Cancellation of pilots abroad and initiation of the Netherlands pilot (2) Test with mock-up user interface for persons donating (3) Linkages to protection providers via referral app

	I 2.1.2 Extent to which the co-designing process and design of flow has contributed favorably to the effectiveness of the innovation process	KII [all] Desk Review Focus on pre pilot experience
Q2.2 How useful was the structure and management of the innovation process?	I 2.2.1 External partner selection contributed favorably to the effectiveness of the innovation process	KII [all] Desk Review
	I 2.2.2 The coordination of the project contributed favorably to the effectiveness of the innovation process	KII [all] Desk Review
Q2.3 Did piloting activities contribute to the effectiveness of the project?	I 2.3.1 The number, size, duration and location of pilots (attempts vs completed) contributed to the effectiveness of the innovation process	KII [all] Desk Review
	I 2.3.2 Features tested contributed to the effectiveness of the innovation process	KII [all] Desk Review
Q2.4 How successful was the project team at learning and adapting?[177]	I 2.4.1 Extent to which the project team has set up and documented learning processes	KII [all] Desk Review
	I 2.4.2 Extent to which the learning processes have yielded improvements to the innovation process	KII [all] Desk Review
Q3 Scalability and replicability: Is the innovation sustainable over time?		
Q3.1 To what extent did the project team put in place conditions for the innovation to be replicable?	I 3.1.1 The project team has taken less connected settings into consideration when developing the innovation	KII [all] Desk Review
	I 3.1.2 Evidence that the project team has considered the feasibility for HOs to adopt/integrate the innovation product (e.g., technical feasibility, level of skills and training needed for staff)	KII [all] Desk Review
	I 3.1.3 The project team has taken into account data protection policies, norms and	KII [all] Desk Review

[177] 1: What are key factors of success and failure in a multi stakeholder innovation process (NGO's, private sector, knowledge institutes) 2: What are the potentials and challenges of a blockchain-based identity management system for beneficiaries of a cash transfer program in regard to usability and technology acceptance? 3: How can humanitarian organizations comply with KYC (Know Your Customer) requirements in open-loop cash transfers? 4: What are the main challenges of international money flows from donor to beneficiaries and how can blockchain technology contribute to solving these challenges? 5: What are key factors to enable sector wide acceptance and usage of the 121 open-source cash system?

	requirements that are applicable/common in the sector	
	I 3.1.4 Evidence that the project team has assessed and tackled the preconditions for replication by other organizations	KII [all] Desk Review
Q3.2 To what extent did the project team put in place conditions for the innovation to be scalable?	I 3.2.1 Evidence that the project team has identified the factors that would contribute to the scale up of the project	KII [all] Desk Review
	I 3.2.3 The project team has devised and implemented a funding strategy towards individuals and donors to scale the innovation at the end of the pilot	KII [all] Desk Review

IX. Annex 3 PwC recommendations

Table 5: Implementation of PwC recommendations

PwC Recommendations[178]	Implemented	Comment
Human Resource Planning: A resource plan that identifies current and future gaps in the available capacity and expertise.	Yes	**Issue-log**: Each issue is assigned to a meeting-authority and resolved[179] **Risk-log**: risks are assessed bi-weekly and mitigation measures are put in place[180] All partners were requested to develop a HR capacity plan and HR capacity and expertise was discussed in several coordination meetings.
Clearly defined governance and role & responsibilities: Adapt the organizational structure to increase alignment, buy-in and information exchange with a separate role and responsibility for the Project Lead, Project Manager, Product Owner, and Project Management Officer.	Somewhat	The NLRC510 team more clearly defined the roles of their scrum team members, which improved their effectiveness in the DIF project. However, the roles & responsibilities of individual team members within the DIF consortium remained unclear. This was particularly the case when decisions needed to be made during the go-no-go sessions. While all decisions were captured in the meeting minutes and available on various Teams notebooks (e.g., technical meetings, coordination meetings, quarterly review meetings), a number of interviewees recommended a consolidated **decision-log** to track who is responsible for what decisions and when a decision is made. Some interviewees recommended a **stakeholder-register** – a simple excel document stating each stakeholder's responsibilities, time commitment and relevant points of contact.
System design and Integration Alignment: A System Design and Integration Alignment (SDIA) team to ensure a single and aligned view across all parties.	Yes	The tech teams (NLRC510, Tykn and Disberse) attempted to integrate their software development processes (single Scrum process), which proved inefficient. Instead, the tech teams decided to continue their respective software development processes and agreed to align on a single view on system design and integration. The tech lead made use of a Design Authority to ensure alignment and integration.
High-Performing Teams: Create a High-Performing Team (common goal, clear structure, change resistant, and constructive behavior).	Somewhat	Following the PwC report, the organizational structure was more clearly defined. However, during the project, misalignments between partners became apparent, this was largely the result of the scope changes. The project team did not integrate an effective feedback loop to ensure that insights and learnings are shared among the entire project team. The majority of interviewees expressed that the lack of resources for the coordination of the project impeded the effectiveness. **Design Thinking** methods could be used to align the project team.

[178] PwC. (2019). "Quality Management Research Cycle 1".
[179] DIF Consortium. (2019). "Midterm report 1".
[180] DIF Consortium. (2019). "Midterm report 1".

X. Annex 4 DIF humanitarian canvas

Figure 8: DIF humanitarian canvas[181]

[181] DIF consortium. (2020). "121 Product Roadmap".

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