Tracking UK Aid on the Blockchain - Pilot -

Report on Sprint 2:

Data collection

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Executive Summary

With the participation of OCHA and 40 CBPF implementing partners, we completed the main objective of Sprint 2 successfully. In **Experiments 1 and 2** we collected financial data from Iraq and oPT which highlighted the current situation:

- **Efficiency:** Data on delivery times, transaction costs and FX risks provided detail on the challenges described by stakeholders in Sprint 1. Funds can take close to 100 days to reach final implementing partners, with transactions costs in the range of hundreds of dollars, and significant financial risk for local organisations.
- **Transparency and tracking:** The data highlights how severely limited the transparency is for these funding flows. Despite an active approach to delivery chain mapping and excellent responses from implementing partners, financial data on the delivery chain remains very limited.

This data provided the starting point for **delivery chain visualization**; it will be used to **seed the Simulation Exercise** on the Disberse platform; and it will **provide benchmarks** against which we will measure the results of the Simulation.

Experiment 3 was limited both in scope and results, but the discussions that took place will inform Sprint 3. We expanded on specific use cases identified in Sprint 1, and thresholds for adoption of the technology, both based on the potential value for the aid industry.

Experiment 4 was also limited in scope, but identified the potential for integration between IATI and Disberse. The two platforms have different assumptions, reflected particularly in how their data is structured, but we believe that a future Sprint can test their interoperability in practice.

Our **conclusion** describes how the Sprint 2 findings will inform upcoming Sprints, once approved by the Steering Committee, including how challenges and opportunities identified by stakeholders might be incorporated into the Simulation, and how data visualisations can be developed to communicate the Pilot findings.

Introduction

What is the Aim of the Pilot?

The Pilot aims to test the central hypothesis that

> *"If we introduce distributed ledger technology to tracking UKAid payments through the delivery chain, then we will enhance transparency, increase the speed at which money flows to the end recipient, and reduce intermediary costs."*

The Pilot will test this hypothesis by running a Simulation exercise on a platform based on distributed ledger technology, using historical data from a County Based Pooled Fund (CBPF) managed by the UN Office for Coordination of Humanitarian Affairs (OCHA).

The Simulation will be compared to a "business as usual" benchmark to test for improvements in key metrics identified by stakeholders, and to identify potential strategies for mitigating risks in the "business as usual" model. This analysis will then be presented for discussion at the end of the Pilot.

The DFID Steering Group and Disberse Project Team have formulated a number of additional key assumptions to guide the Pilot in answering four key questions:

1. Does it have a positive social impact?
2. Will key stakeholders engage with it?
3. Does the technology work?
4. Will this grow after the pilot?

The Pilot is organised as a series of Sprints. Each Sprint is developed by Disberse, the technical partner selected by DFID, but the Sprint design must be approved by the Steering Committee based on the results of the previous Sprint.

This report introduces the findings from Sprint 2. The sprint provides a number of benchmarks for the continued Pilot, providing data on the current state of financial aid transactions.

How did Sprint 2 contribute to the Pilot?

Sprint 2 focused on establishing a baseline for the continued Pilot, with data on today's financial aid transactions. As the pilot aims at testing a hypothesis that UKaid payments could be faster, less costly and more transparent we have worked with a large number of aid organisations to collect relevant data on these factors.

Each experiment aimed to test an underlying belief through specific tasks:

#	Underlying belief	Specific task
1	We believe that the data exists to reconstruct the entire delivery chain, but are fragmented between multiple stakeholders and in different systems.	Collect, collate and clean financial data.
2	We believe that the data collected from stakeholders will provide a more granular picture of the delivery chain than currently available data from IATI.	Compare the data gathered in exp 1 with published IATI data.
3	We believe that Dfid and OCHA colleagues, as well as other stakeholders, can provide important insight into how the pilot technology can be leveraged to create the value needed for adoption within their organisations, and more broadly in the sector.	Engage with Dfid and OCHA colleagues on use cases.
4	We believe that this platform can improve IATI reporting by enabling stakeholders to produce reporting data more systematically.	Map IATI reporting tools and formats.

The findings from the all four experiments - including visualisations of the gathered data - are presented in this document.

The document concludes with a short note describing how the Sprint 2 findings can be built on in the upcoming sprints, including how the challenges and opportunities identified by stakeholders might be incorporated into the Simulation, and how the visualisations can be further developed to communicate the eventual findings of the Pilot.

Experiment 1: Collecting benchmark data

"We believe that the data exists to reconstruct the entire delivery chain, but are fragmented between multiple stakeholders and in different systems."

About the experiment
We will collect, collate and clean datasets of financial transactions for both Iraq and oPT, with the aim of collecting data to the sub-implementing partner level of the delivery chain if possible.

Datasets for Iraq and oPT that are:

- Clean = as tidy as possible, with no duplication or omission;
- Comprehensive = including as much detail as possible;
- Extensive = as far along the delivery chain as possible.

This data will provide us with the benchmark for the upcoming simulation. It will provide baselines for i) fund delivery times from Dfid to Implementing partners ii) transaction costs, charges, fees and iii) financial (FX) risk.

The minimum proof produced will be the foundation for the rest of the sprint.

Methodology

In this experiment we created two datasets of financial transactions in the delivery chains from DFID to the OCHA CBPFs in Iraq and oPT. As the engagement from OCHA and their implementing partners in each country was stronger than expected, we decided to widen the scope of the experiment from the implementing partners that participated in Sprint 1. An invitation for voluntary participation was sent from each CBPF managing unit to all their implementing partners. Considering the short timeframe of the request, we are very pleased with the response.

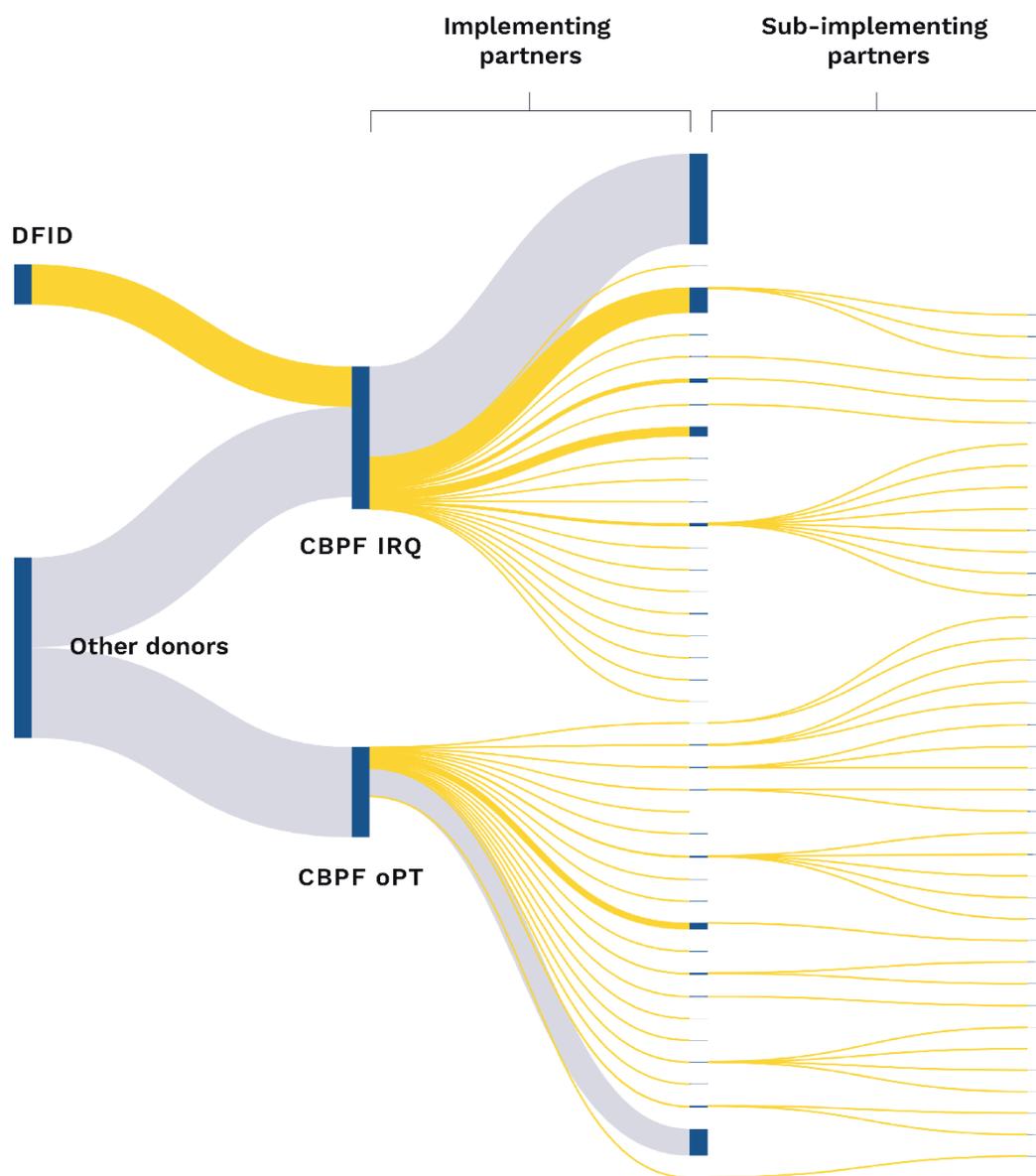|	CBPF oPT	CBPF IRQ
Total Implementing partners	39	82
Partners participating in pilot	19	21
Total transactions from OCHA, 2018-19	140	262
Transactions mapped in pilot	67	78
Total disbursed from OCHA 2018-19	31m USD	88.8m USD
Disbursed amount mapped in the pilot	14.3m USD	32.1m USD

Figure 1: Illustration of pilot delivery chains. *The yellow flows represent the funding flows mapped in the pilot, gray are other flows to and from the CBPF:s.*

The data collection was based on an initial set of transaction data from OCHA GMS, describing the financial disbursements from OCHA HQ in New York to implementing partners in the two CBPF during the period 2018-2019.

Partners were asked to contribute data on when they received funds, how much they received, in what currency, and finally if they disbursed funds to sub-implementing partners - and if so, how.

Data on other donor contributions to the two CBPFs was also added to the dataset, using OCHA Contributions Tracking (OCT) data available through GMS.

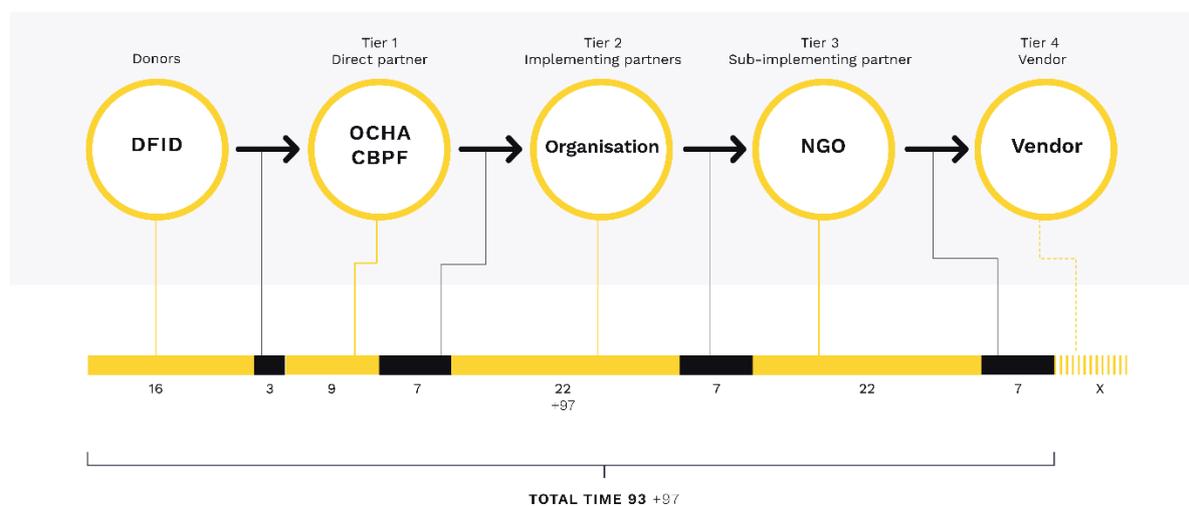# Results - Delivery times from Dfid to implementing partners

Figure 2: Delivery Times (Source: Experiment 1)

Delivery times through the two delivery chains mapped in the Pilot were more or less similar on average. The data highlights both the time needed for the involved banks to deliver funds and the internal handling and holding times in each delivery chain tier. Breaking out the data visualised in Figure 1, we see clearly that:

1. **Financial transactions** take a lot of time, on average 7 days. Especially transactions to the countries can add significant time to fund delivery. It should be noted that this average represents transaction of funds primarily going to Europe and North America (see next section). A number of organisations report transactions in line with what was reported in interviews in Sprint 1. These have very long delays, where funds can be delayed for weeks or months.

2. **Handling time**, the time between a payment request or contract signature, adds a lot to the fund delivery time. OCHA have a very quick turn-around (4 days in management, 5 days in UN accounts) while implementing partners report an average of 22 days between receipt of payment request and disbursement. As funds often go through a number of tiers before reaching the final implementing organisation, this adds significant delivery time for each additional tier involved in the delivery chain.

3. The data also enables and analysis of partner **holding time**, defined as the time implementing partners hold funds before they are disbursed to a sub-implementing partner or vendor. The average holding time reported by the participating implementing partners is 97 days, indicating that funds are

held for a significant period before being transferred to sub-implementing partners.
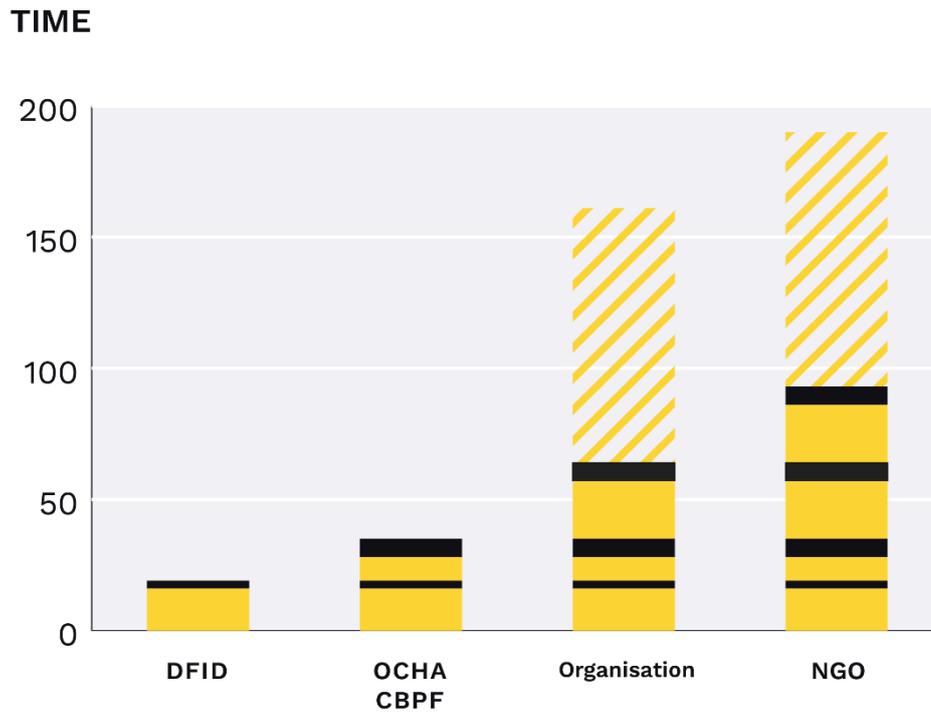
TIME

Figure 3: How fund delivery times aggregate through the delivery chain (Source: Experiment 1)

Transaction times, handling time and holding time all contribute to the total fund delivery time through the studied delivery chains. The total delivery time when only counting transaction time and handling is an average 35 days from Dfid to OCHAs contracting implementing partners, and increases to 97 days for a chain with 4 tiers.

Fund destination, disbursements from OCHA

A majority of the funds disbursed to implementing partners by OCHA go to bank accounts in Europe or North America, at least initially (see Figure below).
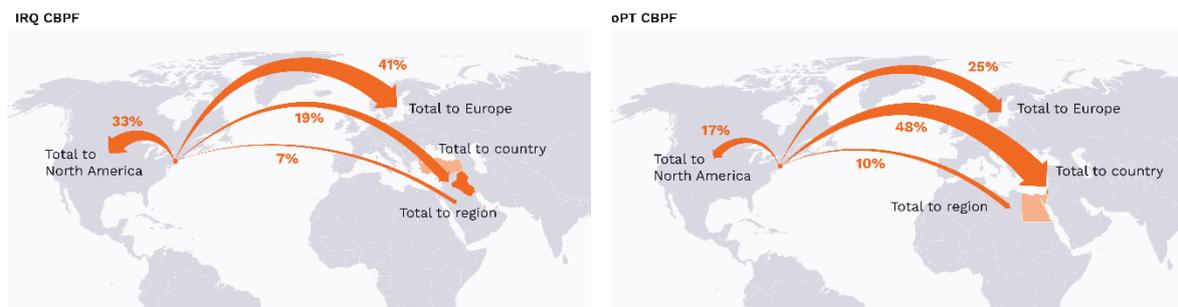

Figure 4: Destinations for CBPF first-stage disbursement (Source: Experiment 1)

This implies that there are likely to be an additional number of transactions before the funds reach their end destination. We draw three conclusions from this finding that can can inform this pilot:

1. Estimates of delivery times have to be understood as primarily representing transactions between American and European banks. These transactions, while taking time, are not as slow or as unpredictable as transactions to Iraq or oPT. Stakeholder interviews in Sprint 1 clearly indicated transaction to the beneficiary countries are more complicated in terms of administration and the risk for delays.
2. Implementing partners have developed coping mechanisms to ensure that cash flow to their operations remain smooth, even when CBPF disbursements are opaque or banking mechanisms are unreliable. These mechanisms rely on budget management in-country to re-allocate existing liquidity as necessary in anticipation of the later arrival of CBPF funds from HQ.
3. Following from Point 2, we believe that total transaction costs for the delivery chains (described below) are likely to be larger than that indicated by the data. This is because additional transactions will have to be completed before implementing partners have access to funds in-country.

Results - Transaction costs, charges, fees

Participating organisations reported the received amount, and based on this have the transaction costs were calculated (the difference between funds disbursed and received, i.e. the cost of disbursement).

This initial cost analysis indicated that the direct costs of transactions are in general quite limited. The chart above shows that most participating organisations reported a cost was at most a few dollars per transaction. A significant amount of organisations reported that the cost was zero - that they received the exact amount sent by OCHA.
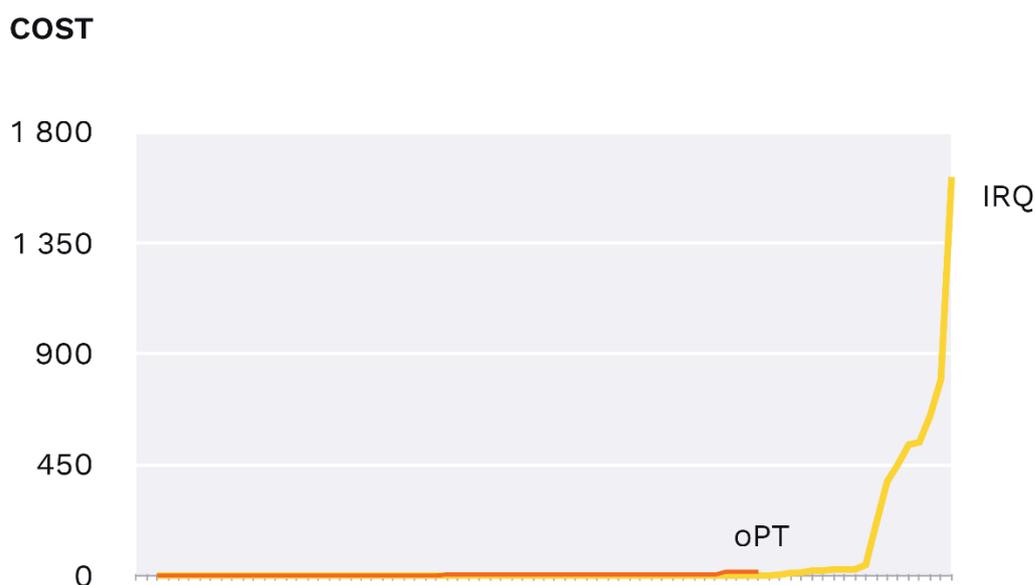
COST

Figure 5: Reported transaction costs (USD), per transaction, for Iraq and oPT (Source: Experiment 1).

As the chart indicates, a small number of organisations reported transactions to Iraq where the costs diverged from the rest very significantly. Our calculations indicated that the costs, per individual transaction, had been ranging between 215 USD and 1,617 USD. The data came from four different implementing partners, involving payments through three different local banks.

As the data diverged so significantly from the other values reported, we initially feared that it might indicate situations of fund mismanagement. To clarify the situation, the process established for such a situation in the Sprint design was initiated. The four reporting partners were contacted informally to ensure that the data has been reported and analysed correctly.

The results were enlightening, and turned out to provide crucial data for the pilot: **the Central Bank of Iraq charges 0.5 % on all transactions** into the country (up

from 0.4% in 2017). This thus provides a clear and quantifiable data point for fund delivery to Iraq.

Analysing the total dataset of transactions with this new data, we can conclude that

1) A majority of the transactions mapped have international banks in Europe or North America as destination, where transaction costs are limited. The costs for delivering funds to in-country operations will instead be applied in subsequent transactions.

2) A number of organisations have reported the direct transaction costs as zero, but interviews from Sprint 1 indicate that they are still costly. Based on Sprint 1 stakeholder interviews we conclude that this is likely to be because such costs are covered by each organisation on a distinct budget line, and therefore are not experienced as a direct cost by that organisation.

   A quick look at the budgets held in GMS indicated that financial costs on those budget lines are quite significant; however it was not possible to disaggregate the costs, since they are reported as a lump sum that covers a number of different costs, including bank transfer commissions, hawala fees etc. This means that there is clearly scope for cost efficiencies in this area even if the exact size of the potential savings are unknown.

Finally, the gathered data unfortunately have not provided any useful data on how the **exchange rate spreads** affect the efficiency of fund delivery. Of the more that 140 transactions from OCHA mapped in the pilot only one (1) was reported as involving a currency exchange (from USD to Israeli Shekel). All the rest were reported as having been received in USD. The costs of currency purchases thus remain to be analysed. An exception was the transactions from Dfid to OCHA, where clear and granular exchange rate data was available in OCHA:s OCT.

Results - Financial (FX) risk

Financial risks from exchange rate fluctuations arise when there is a time delay between the pledge or contract in one currency (the budget) and the exchange and use of those funds in another currency (the costs). We identified two distinct risk scenarios In the two delivery chains mapped in this pilot:

1. During the time between donor pledges and funds disbursements to OCHA. These periods were quite limited - for DFID the average was 16 days - so the risk of financial uncertainty was limited.
2. More significant risk develops for implementing partners which have costs in other currencies than USD. From our stakeholder interviews, this was a particular concern for smaller and/or local organisations.

The level of risk depends on the time elapsed and the currencies involved. With the delivery time data established in this experiment we have established the relevant time period. This allows calculations of how the exchange rate risk develops for each of the main currencies used by implementing partners in the two countries, as shown in the Figure below.
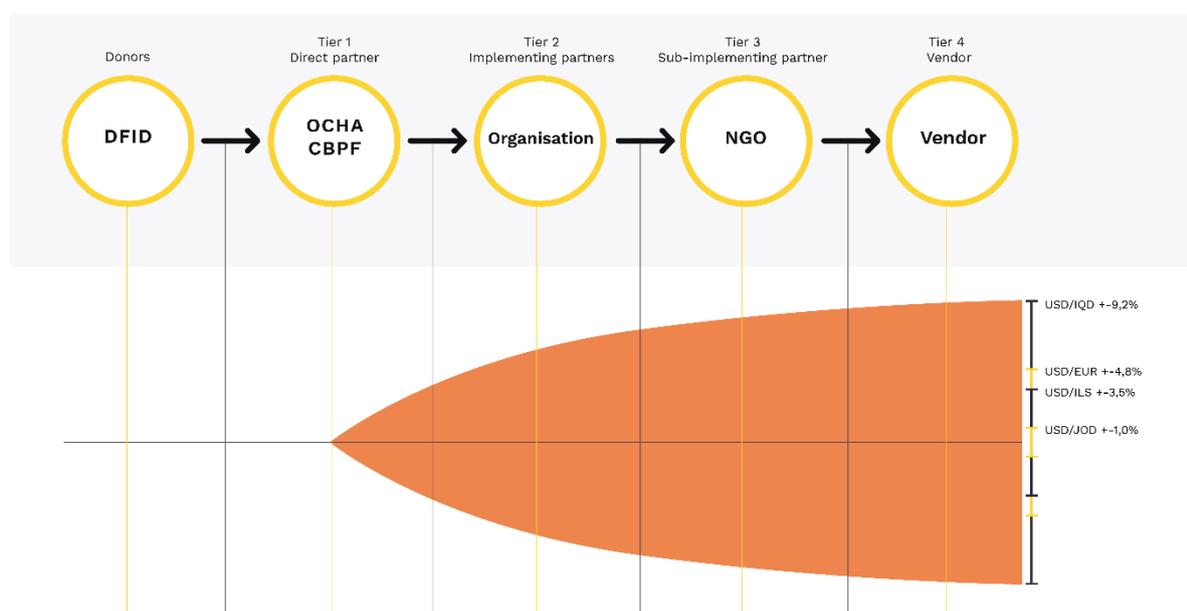

Figure 6: Financial Risk Profile of a Delivery Chain (Source: Experiment 1). *USD: US dollars, IQD: Iraqi Dinar, ILS: Israeli Shekel, EUR: Euro.*

The calculations show that the risk is especially large for organisations using the Iraqi dinar; these organisations experience a risk for potential fluctuations as great as + or -9.2% of the value of their funding. In practical terms this means that between the time a budget is finalised and the actual disbursement of a tranche, the amount received in local currency can have fluctuated between 91% and 109% of the original budget amount - an uncertainty interval of 18 percentage points.

For the the other main currencies (Jordanian Dinar, Istaeli Shekel and Euro) the risk is slightly more limited. In the case of the Jordanian Dinar, its low risk is dependent on the currency continuing to be pegged to the USD.

The risk calculations presented here are based on the active delivery time of funds, and does not take into account the average holding time of funds. In a delivery chain where funds are held for a significant period before being disbursed onwards, the risk will continue to grow. This data is particularly important because it confirms the findings of previous studies that the financial cost of uncertainty in funding correlates roughly with the size of the uncertainty.[1]

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[1] See for example: The Aid Effectiveness Agenda: The benefits of going ahead, Final Report. Bigsten, Platteau and Tengstam, European Commission, 2011 and Östlund, N. (2018), How predictable is Swedish aid? A study of exchange rate volatility, EBA Report 2018:03, Expert Group for Aid Studies.

Experiment 2: Comparing with IATI

"We believe that the data collected from stakeholders will provide a more granular picture of the delivery chain than currently available data from IATI."

About the experiment - Background

After building the datasets and mapping the delivery chains for the 2 CBPFs in Experiment 1, we also extracted the same datasets from IATI in order to compare the two, thus providing the benchmark for the Simulation exercise planned for Sprint 3 (particularly in terms of assessing transparency). These two datasets also enabled us to establish a set of metrics to measure the success of the Simulation. since the data produced by the Simulation can be compared to the transparency value provided by the datasets produced by the other two sources.

Methodology

We used GMS data to create a rough overview of the implementing and sub-implementing partners in each delivery chain, building on the Experiment 1 results. For parts of these delivery chains we were also able to collect additional and more detailed financial data, creating a granular view of funding flows, and allowing us to expand the delivery chain map for each CBPF (shown in Figures 7 and 8 below).

We then used IATI data to examine the same two delivery chains, in three steps:

1) **From Donors to OCHA CBPFs:** Based on OCT donor data, we mapped each donor in IATI to ascertain whether i) they reported to IATI, and, if so, ii) what activity and financial data they reported on their CBPF funding.
2) **To OCHA and from OCHA onwards:** We compared the samples of the GMS data to the data reported by OCHA to IATI.
3) **To Implementing partners and onwards:** We established which implementing partners reported to IATI, and what data we could find on their activities - and more importantly on financial transactions coming from OCHA and going on to sub-implementing partners.

The results are visualized in Figures 9 and 10 below.
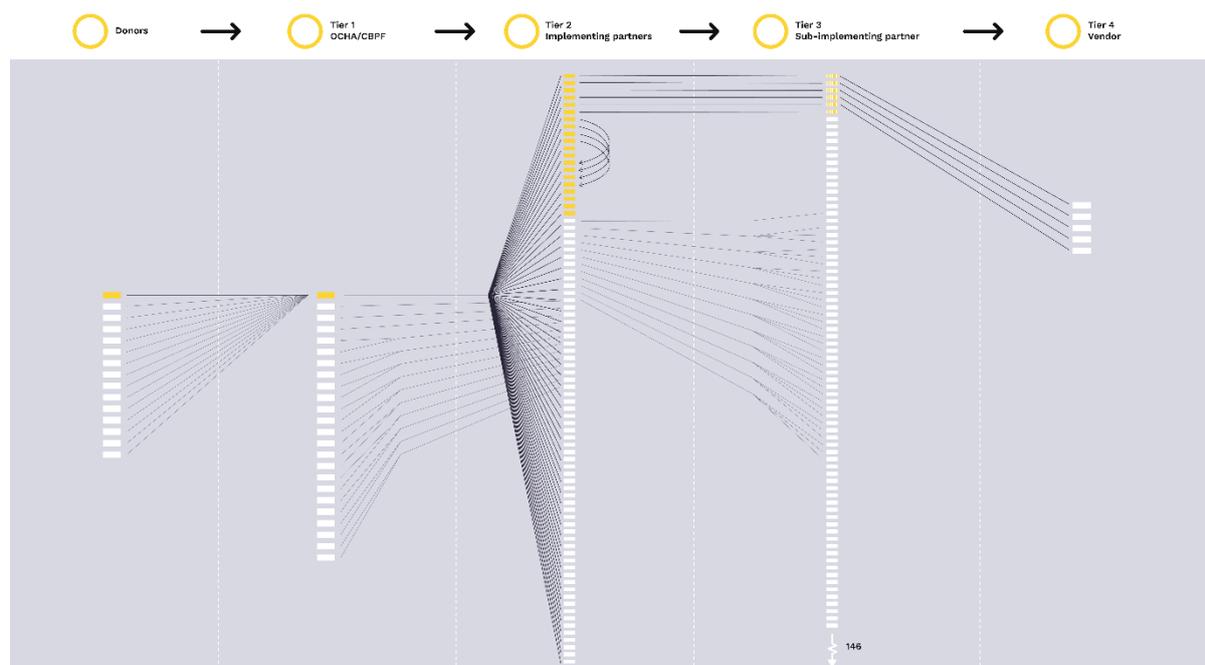
Results - delivery chain map mapping

Figure 7: Delivery chain map – Iraq v1 (Source: Experiment 1)

The Figure above illustrates the delivery chain from DFID to OCHA CBPF implementing organisations in Iraq, based on data collected in Experiment 1. The figures illustrate financial transactions between two different types of organisations, represented by arrows.

- **Yellow rectangles** represent organisations for which we have collected financial data on incoming and outgoing transactions.
- **White rectangles** represent organisations for which we have only limited data on financial transactions.

We can see an extensive delivery chain, with 82 direct implementing partners working with the CBPF, but the data also shows that a significant number of these organisations have funding relationships with each other, partnering in various combinations for different projects.

While this paints a complex picture, it is likely that this map in fact underestimates the complexity of the actual delivery chain:

- We have GMS data of a number of **refund transactions**, which are not included in the map as they are of limited volume.
- We included a few self-reported **additional funding sources**, but it is highly likely that there are more such sources which we are unaware of.
- Most importantly, an unknown number of **sub-implementing partners** and **vendors** would have to be added to complete a full mapping.
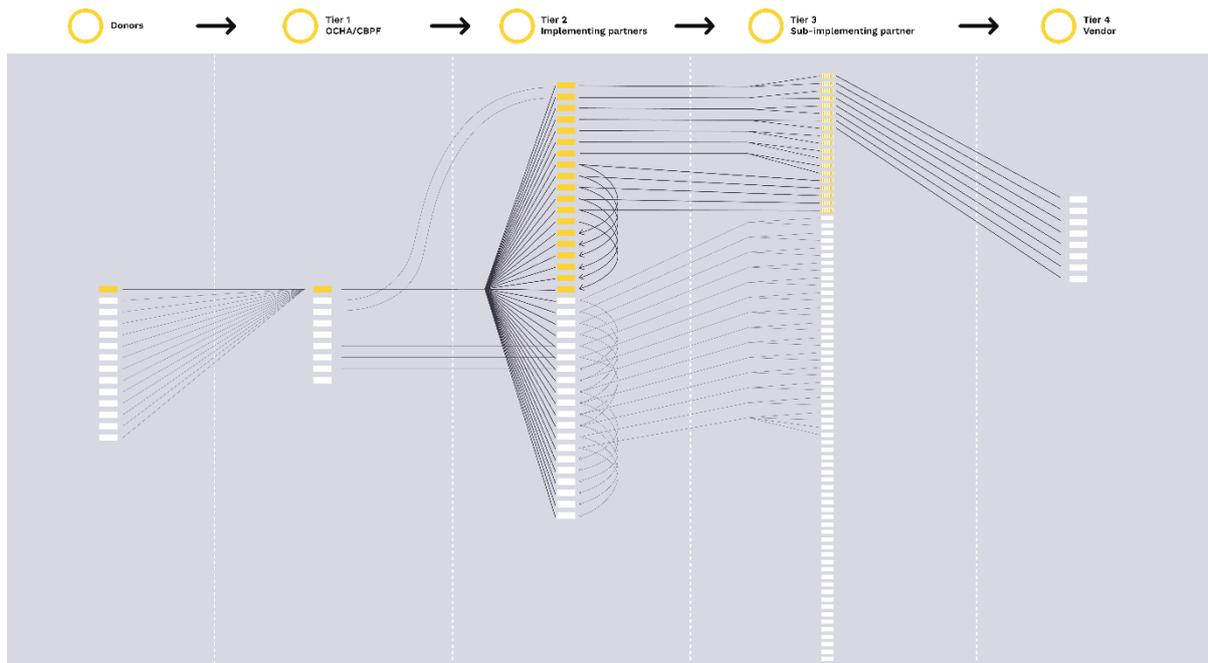
Figure 8: Delivery chain map – oPT v1 (Source: Experiment 1)

The delivery chain map for the oPT CBPF created based on Experiment 1 data is very similar to the map for Iraq discussed above.

Since the pooled fund is slightly smaller, the total number of implementing partners is correspondingly smaller; however a larger proportion of those organisations responded (compared to the Iraq respondents), which meant that the overall coverage of the mapping is also better. It should still be noted that, as with Iraq, uncertainties remain, especially when it comes to vendors and sub-implementing partners; for a complete delivery chain mapping, we would need data on all significant financial transactions between organisations.

A general conclusion from the mapping exercise, and even more from the development of the figures, has been the importance of the upcoming design task - developing effective data visualisations for the upcoming sprints. While these figures clearly communicate the complexity of the delivery chains studied there is a lot of data that is not communicated. Exploring how dynamic versions can allow for more in-depth exploration and tracking of fund flows will be key to ensure that the technology supports the most important use cases.

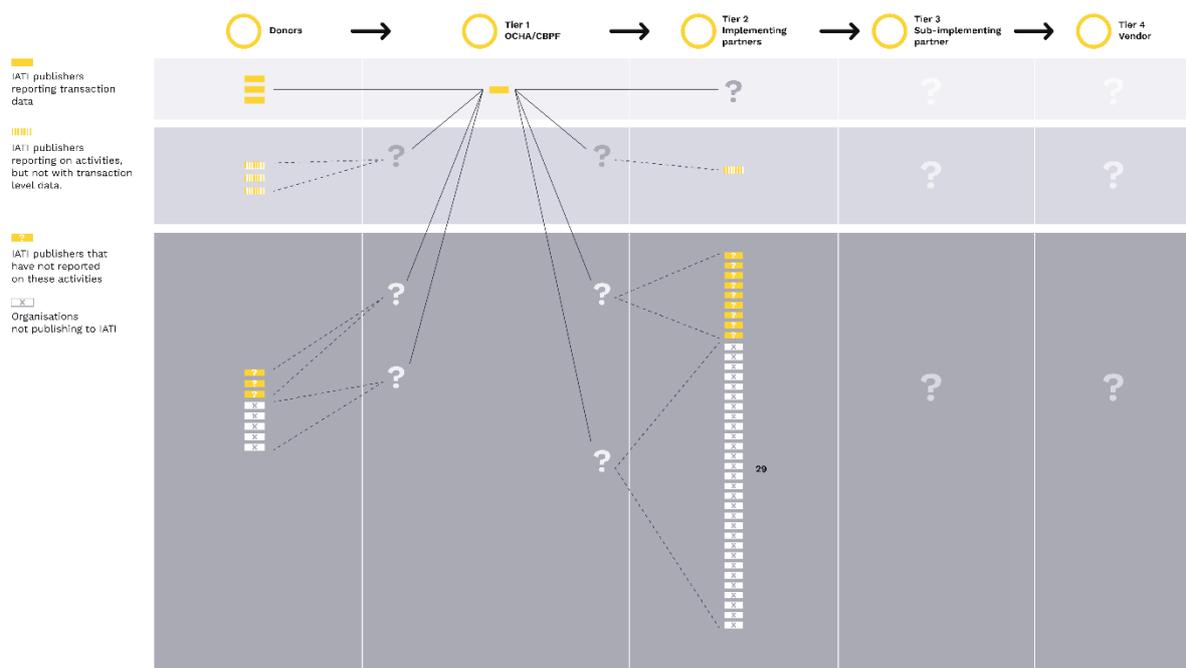# Results - delivery chain map mapping with IATI

Figure 9: Delivery chain map - Iraq v2 (Source: IATI)

Figure 7 shows the same delivery chain map, from Dfid to the Iraq CBPF, now based on IATI data. It is immediately clear that this is significantly different to the map based on the data collected in Experiment 1.

- **The top layer of the diagram** shows organisations that publish to IATI, with reporting that include data on financial transactions. This level of reporting, while not real-time, allows for a recreation of how funds flow through a delivery chain.

- **The second layer** down includes those organisations that publish to IATI, but where the provided data does not include enough financial data to enable an analysis of financial transactions. These records often just include a name of a project, sometimes with annual budget data. It allows us to conclude that the reporting organisation is active in the country, but not where funds come from or if they send funds on to sub-implementing partners or vendors.

- **The third layer** includes all those organisations that can only be identified through the IATI data provided by OCHA. These organisations are either not IATI publishers, or don't publish any data related to OCHA funded activities in Iraq.
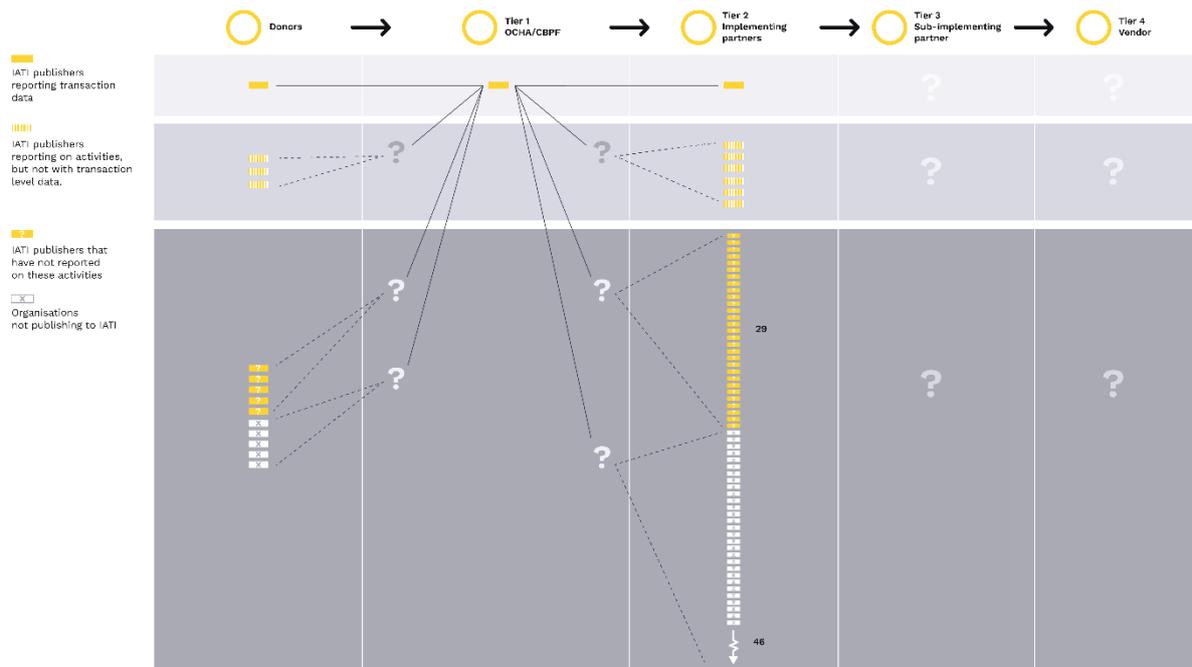
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Figure 10: Delivery chain map – oPT v2 (Source: IATI)

The IATI data map for oPT **(Figure 9)** has clear similarities with the one for Iraq, discussed above. Our primary conclusion is that a limited number of donors and implementing organisations report to IATI, and what they report is seldom granular enough to support tracking or financial analytics. Previous independent analysis of financial reporting to IATI concluded that the lack of proper transactional data severely hinders any ambition to use IATI data to improve financial accountability.[2]

In total, slightly more than 1,000 organisations contribute data to IATI. While many donors are represented, the total number of IATI publishers still represents a limited part of all aid organisations globally. And perhaps more importantly, in terms of financial usability, the amount and granularity of data reported is often very limited in those few cases where involved organisations are IATI publishers.

For example, only 3 of the **donors** contributing to the pooled fund report their financial activity to IATI on a sufficiently granular level to allow any transaction mapping. Only a limited number of the 82 implementing partners covered by this pilot are registered as IATI reporting organisations. Of the ones that are registered, the review of their reporting for oPT and Iraq concludes that only a handful provide transactional data in their IATI reports.

DFID and **OCHA** reports on both incoming pledges and transactions, and outgoing commitments and transactions. Had this pilot focused on almost any other organisations in the experiment the delivery chain had been more or less empty.

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[2] Östlund, N. (2018), How predictable is Swedish aid? A study of exchange rate volatility, EBA Report 2018:03, Expert Group for Aid Studies.

Experiment 3: Understanding use cases

"We believe that Dfid and OCHA colleagues, as well as other stakeholders, can provide important insight into how the pilot technology can be leveraged to create the value needed for adoption within their organisations, and more broadly in the sector."

About this experiment
We started to engage DFID, OCHA and external stakeholders to explore key use cases for value creation and the key drivers for adoption. Issues for exploration included transparency for tracking, connection to cash-delivery, and interoperability.

Methodology

We produced a document to collate and expand our previous analysis of use cases and thresholds based on the Sprint 1 interviews. We then developed a question set which combined this analysis with themes highlighted in the experiment design. Our plan was to use the summary and questions as a basis for further discussions with colleagues at DFID, OCHA and external stakeholders.

We had recognised that this sprint was scheduled for a particularly busy period (including the Christmas and New Year holidays), and had therefore extended the entire Sprint by an additional two weeks. Despite this, however, this experiment was adversely affected by the busy period which made it difficult to arrange interviews with key stakeholders.

Use Cases

Use Case 1: Transparency and tracking

While it is universally agreed that increased transparency is important, one question raised during Sprint 1 was the need to identify specifically what problems transparency can potentially solve, or at least contribute to solving. This question is complicated by the fact that transparency means different things to different stakeholders, which we have explored in a separate blog post [LINK].

Within DFID, colleagues highlighted the value of having access to data that would enable real-time analytics. The common thread was the value of real-time data in improving the reach and utility of management information, although the uses to which this capability would be put varied depending on which part of DFID the respondent was in.

One such use case for tracking identified was in enhancing delivery chain mapping and improving analytical capabilities specifically for financial management and forecasting. DFID Finance highlighted how improved tracking could provide DFID

with better data on fund utilization and flow rates, which could be used to improve financial forecasting and cash management.

Similar use cases were sketched for audit and control, risk management, and procurement, and contact was initiated with concerned departments to deepen the understanding in these cases. These discussions will continue through the rest of the pilot, and we anticipate that this specific use case will inform the outputs of the Simulation Exercise.

We noted that one of the key questions around transparency in this specific case is that CBPFs are set up to obscure how individual donor contributions are directed. OCHA colleagues pointed out that removing that filter would undermine one of the key characteristics of the Funds, which raised an interesting question of how to retain that design while still improving tracking.

Use Case 2: Interoperability

During the Sprint Review, the question was raised of whether some of the discussion about transparency was in fact a discussion simply about data sharing. Blockchain technology was associated by some respondents with the idea of an "open ledger" that would facilitate data sharing, both through its own openness and its compatibility with other systems, such as IATI.

Within large organisations, however there is also the challenge of data sharing between functional units. For example, we found that the CBPF Unit within OCHA does not have access to financial transaction data held by UN Treasury; in this case the obstacle to data sharing is not a lack of technical standards, but internal policies and processes.

Interoperability therefore does not mean just the development of technical standards to facilitate that sharing, but also of processes to enable that sharing to take place systematically. However the development of standards and processes are both arduous processes, as the experience of the Humanitarian Data Exchange has demonstrated over the past few years.

In the case of financial transactions, it may not be appropriate to open up detailed transaction data; respondents were particularly concerned about the implications of this in politically sensitive operations, for example. The primary use case expressed by respondents was not for open data, but for more visible data within the delivery chain in order to manage project budgets more efficiently.

This does not necessarily involve interoperability, since different organisations have different internal systems for managing those budgets (and the associated financial transactions). Bringing those transactions onto a common platform that can provide visibility to the delivery chain (such as the one used in this pilot) can therefore address the main use case identified regarding interoperability.

Use Case 3: Cash and Voucher Assistance (CVA)

The review meeting for Sprint 1 raised the question of whether CVA could be incorporated into the Simulation. The rationale - apart from the growing importance of CVA in general - was to extend the delivery chain in the Simulation to include the final stage of distribution (since CVA frequently involves third-party vendors, such as mobile money services, as well as affected communities).

Unfortunately it was not possible to extend our interviews to those organisational units responsible for CVA, and as a result we were not able to collect data on the timeframes and transaction costs involved in CVA. However Disberse is working with other partners to extend its tracking capability to include CVA, by exploring how to build interoperability with third-party service providers.

Extending tracking in this way clearly adds value, and the early findings of our other work show that this is technically feasible. However the feasibility of such integration is determined heavily by the technical capability of both the implementing partners and the service providers, which is something that is out of the control of a service such as Disberse.

Thresholds for Adoption

Interview respondents in Sprint 1 identified potential benefits of the proposed service, but it is clear that adoption of such a service is not guaranteed. Obstacles to the adoption of new technology are always present; while the single biggest risk is that the Platform simply fails to meet expectations, there are other potential obstacles related to the wider context in which the service operates.

Early adoption requires a careful analysis of any potential benefits against emerging risks, and an understanding of what the thresholds for wider adoption are. If reluctance to adopting distributed ledger technology emerges within key stakeholder groups, then DFID will face increased risk, particularly in terms of spending its political capital to overcome this reluctance.

Based on the conversations in Sprint 1, and the feedback from the Steering Group, two main thresholds have been formulated at this stage. The next step will be to ensure incentives to overcome those potential objections.

Threshold 1: How can the service address existing constraints?

Financial technology may be able to provide solutions to some of the problems faced by the aid industry. Blockchain technology in particular has been posited as an alternative to an international financial system based on fiat currency; however cryptocurrencies have failed to establish themselves as such an alternative at scale in any sector of the economy (apart from criminal activity).

However the blockchain technology underlying major cryptocurrencies can still offer technical advantages which may help to address the main constraints which adversely affect the movement of funds into and within regions and countries identified by Sprint 1 interview respondents. These constraints are separate, but frequently occur in combination, with specifics varying depending on location:

a) Security is poor and therefore oversight is weak.

Digital cash in general can compensate for weak oversight; unlike physical cash it offers less risk to affected communities (and the organisations that serve them), and it is easier to track than physical currency. The difficulty is that existing service providers are opaque, their service is sometimes unreliable, and they are poorly integrated into the workflows of implementing organisations.

Blockchain has been incorporated into voucher-based distributions, most notably in WFP's Building Blocks pilots. (We reached out to WFP but were not able to interview them.) The technology has been proven to work here, but there are questions about whether the specific strengths of blockchain are really essential in CVA programmes which already use digital platforms.

However interview respondents made clear that insecurity has a direct impact on their access to banking services, particularly in unstable areas where financial infrastructure is degraded, Syria and Yemen being mentioned most frequently. A more decentralised financial instrument may be able to address part of this challenge, although last-mile distribution will always be the weak link.

b) Institutions are degraded, either by war or disaster.

The key issue we face when institutions are degraded is that we lose trust in those institutions. Technology alone cannot build institutional capacity, but it may be able to compensate for some weaknesses. Blockchain technology is generally agreed to be a mechanism for ensuring trust without the need to trust the other party in the transaction. A blockchain-based service provider can take advantage of this aspect of the technology to increase clients' trust in their transactions.

The minimal value-add is the immutable record of transactions that a public blockchain provides, but it is also possible to implement smart contracts within the service that add additional conditionality to payments that add another layer of trust. However this requires stakeholders to take a radically different view of their trust relationships, and there may be institutional obstacles to this given the superstructure of financial monitoring and audit that are already in place.

As with the first use case, a more decentralised financial instrument may be able to compensate for some weaknesses, where liquidity is held outside those less capable institutions, but agreements are in place to ensure that liquidity can be mobilised as necessary. However the trade-off in this instance is that this approach is unlikely to support those institutions to (re-)build their capacity.

c) Legal obstacles are in place, such as sanctions.

Respondents raised the question of how a blockchain-based service might address constraints imposed by sanctions or other watchlists, related to e.g. counter-terrorism. There are creative solutions to this challenge, but there is a limit to how far those solutions can be explored by a regulated financial institution: any solution which involves the risk of breaching the law is not a viable solution.

One specific example that has been raised is that of the hawala system, which is frequently used by aid agencies in-country to distribute funds. Hawala is viewed with particular suspicion by regulatory authorities due to its utility for money laundering and other criminal financing, which makes it difficult for regulated financial institutions (such as Disberse) to engage directly with this system.

However this has been exacerbated in recent times by a policy of bank de-risking which has caused banks and other global financial institutions to withdraw services, with smaller, poorer and unstable countries most at risk - which are of course the locations of many humanitarian operations. Innovative solutions in this area may require stakeholders to review their own risk appetites, as well as to seek out institutions that are more flexible regarding de-risking.

Threshold 2: How can a third-party service integrate with enterprise systems?

All delivery chain stakeholders have internal software that they rely on for various enterprise-level functions such as financial accounting, grant management, and fund tracking. Most stakeholders also rely on third-party services, such as online banking and foreign exchange services, to meet transaction requirements; the Disberse service that forms the basis of this pilot is one such service.

Usually integration between enterprise systems and third-party services is minimal, although the line between them has become blurred by the rise of cloud-based services. However Disberse is unlike other third-party service providers due to the service going beyond simple transactions to offer tracking and analytics, and will therefore have greater implications for internal systems.

Outside of this pilot Disberse has been in discussion with various implementing organisations to identify the best way to achieve this. It has become clear that the most important internal stakeholders for achieving change are at the senior management level - since only they have the authority to adopt a new service - but it is also critical to engage with middle management in order to build consensus around the need for change.

The key finding of our research in Sprints 1 and 2, confirmed by our experience of working directly with stakeholder organisations in pilot projects, is that adopting

new technology platforms requires internal discussions that includes multiple functional units: finance is the cornerstone, but legal departments, risk management, operational teams, and others must all be consulted. Although each unit does not require the same level of engagement, at least one "champion" needs to be identified that can mobilise the others.

A key question to explore going forward is how to best approach such internal organisational stakeholders who are in charge of these systems in order to ensure that services such as Disberse can be integrated relatively smoothly.

Stakeholder Group

One of the planned outputs from this experiment was a list of potential stakeholders (drawn from both donors and partners) that could add value in a future advisory group or other DFID-led dialogue for the pilot. Such a Group would not have a formal role in the pilot (or any follow-up to the pilot), but would be invited to participate in discussions about the wider issues raised by the pilot.

The table below sets out the list of stakeholders that we have identified, and the current status of discussions with them.

Stakeholder	Status
DFAT	Both donors have expressed interest in supporting the pilot. Challenge is identifying the right contacts within these organisations to ensure value for all parties.
Sida	
Dutch MoFA	Contact established, but donor expressed reservations about engaging. May be better to approach via IATI, where Steven Flowers has been working with MOFA.
Other donors?	
IATI	IATI is fully engaged from a technical perspective, and can be further engaged at strategic level during a later Sprint.
Start Network	Start Network have expressed interest in participating in discussions, and may decide to run a similar pilot.
Other representatives from implementing partners	A number of knowledgeable colleagues have been identified during the first two Sprints, and could likely be engaged to ensure a good insight to stakeholder concerns.
Centre for Humanitarian Data	Key stakeholder in data sharing and standards.

Experiment 4: Exploring improved IATI data

"We believe that this platform can improve IATI reporting by enabling stakeholders to produce reporting data more systematically."

About this experiment
We will investigate how better data can improve reporting to IATI through the combination of formats, workflow and systems.

As IATI builds on self-reporting and activities, a key is to understand how a full Donor-to-IP financial dataset provided by the platform can feed into and improve the data reported to IATI. A key assumption is also that this reporting should benefit stakeholders, rather than adding yet another reporting requirement.

This experiment should be limited in scope, and instead build upon input from key stakeholder (ie IATI TAG and other key experts).

Methodology

This Experiment was planned to have a more limited scope. We set out to map IATI reporting tools, to improve the limited data on this from Sprint 1. The new IATI website launched in 2018 includes an overview of "Publishing tools and services to create your IATI data files", so this task was quickly completed.

We then reviewed the setup and functionality of the various reporting solutions, to ensure a better understanding of the current status of and future potential for more granular financial data reporting. We then arranged some conversations with IATI stakeholders on the topic, which informed a proposal outlined at the end of this section for a future Experiment.

Results

The IATI website lists a handful of reporting tools, and Aidstream seems to be far the largest one when measured by number of publishing organisations. According to their website, close to 900 different organisations have used their service for IATI reporting. Since there are about 1,100 registered publishers in total on IATI, AidStream seems to be the service used by almost all those publishers who lack the capacity to create their own reporting files.

Technically, connecting the Disberse platform to AidStream or other reporting tools would not be a significant challenge (see Figure 10). AidStream is an open source service, and data could be shared through an API, which could itself be connected to IATI to enable reporting organisations to choose already existing IATI activities they wished to connect their reporting to.
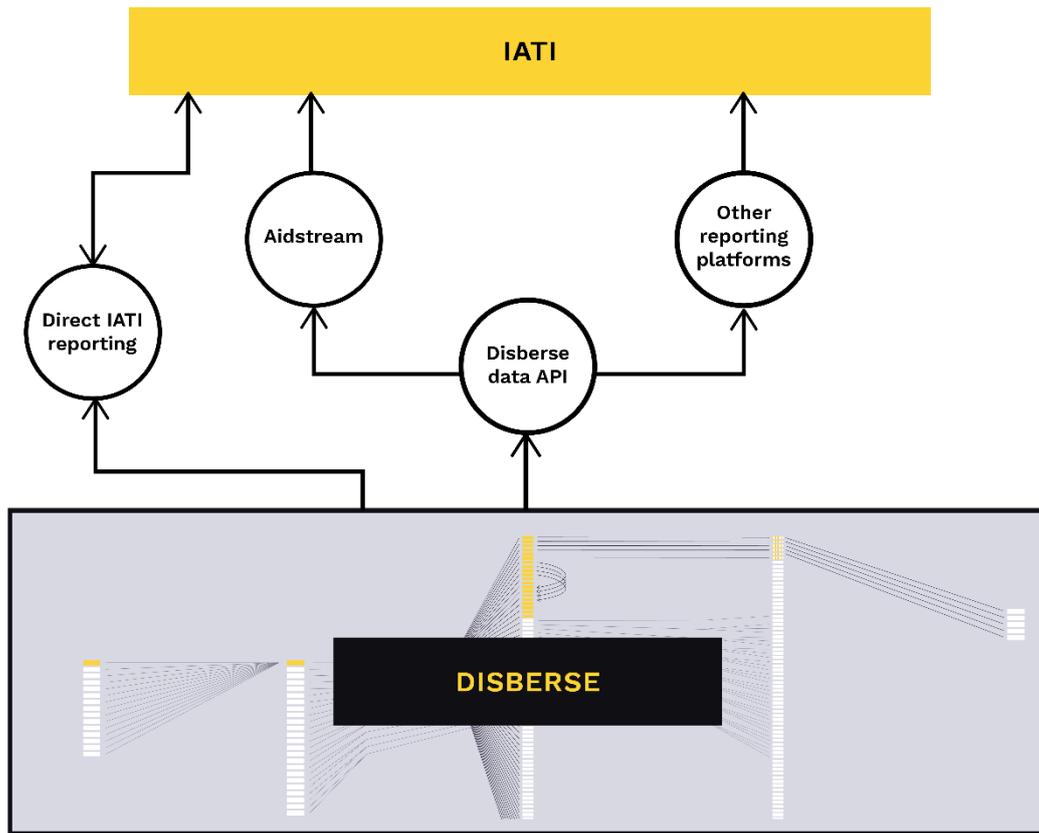
Figure 11: A potential Disberse – IATI integration.

The real challenge is that, in terms of **data and reporting format**, interview responses and our own analysis indicate that more granular transaction data on e.g. the Disberse platform might only provide limited benefit for current IATI reporting. This is partly to do with the data structure, which in IATI is based on activities rather than transactions; but also because IATI reporting relies more on context-based documents and manually-extracted data, rather than on automated technical systems, such as the tracking function of Disberse.

However our discussion with IATI suggested that the best way to answer these questions is to incorporate an Experiment in Sprint 4 of this Pilot. Co-designed with IATI and DFID stakeholders, this would culminate in a short technical test. It would not result in full integration but would enable us to test assumptions on both sides, and to examine practical aspects of interoperability.

Conclusion: How do we build on Sprint 2?

How can these findings be used to inform upcoming Sprints?

Sprint 2 has established a number of key data points that are vital for the next phase of the pilot; in particular **Experiments 1 and 2** provided the material needed to establish the analytical framework needed for Sprints 3 and 4.

This analytical framework also draws on the finding from Sprints 1 and 2 that many of the key stakeholders - DFID and OCHA colleagues, as well as representatives of implementing partners - see particular value in delivery chain mapping and real-time fund tracking capabilities.

We now have a dataset containing transaction data from two CBPF delivery chains over the course of a year, which can be used as **seed data** for the Simulation exercise on the Disberse platform. That same data has also provided a **series of benchmarks** against which we can measure the results of the Simulation:

- **Efficiency:** Data on delivery times, transaction costs and FX risks will provide a clear, measurable and transparent baseline that can be used to compare current solutions to the results of the simulation.

- **Transparency:** The collected transaction data and the IATI mapping will allow for comparison between potential financial transparency provided by the pilot technology and currently available data (IATI and FTS).

- **Tracking:** The data collected in Sprint 2, and the actual work in collecting said data, will provide a useful baseline for analysing the tracking capability of the pilot technology.

Depending on the results of the simulation, potential savings in delivery time, cost and financial risk reduction can be clearly established.

The first two experiments also provided an important starting point for **delivery chain visualizations**, an area that will need to be developed further.

Experiments 3 and 4 were limited both in scope and results, but the discussions that have taken place will still inform sprint 3. It is clear that there are a number of important thresholds that the pilot technology would need to clear to be able to provide value for the aid sector.

Understanding these thresholds, as well as the potential value creating use cases perceived by DFID and OCHA colleagues, will be key also in upcoming sprints. We aim to ensure that the pilot does not just deliver theoretically interesting results, but provides a foundation for practical scaling.