121 Product Roadmap

121 platform for cash and voucher assistance in emergencies

December 31th, 2020

Contents

List of abbreviations

Abbreviations	
OS	Operating system
PA	Person affected
AW	Aid worker
CPM	Cash program manager
HO	Humanitarian organisation
UX	User experience
UI	User interface
MVP	Minimum viable product
PSS	Psycho social support
HCD	Human centered design
SSI	Self soverign identity

1. Introduction

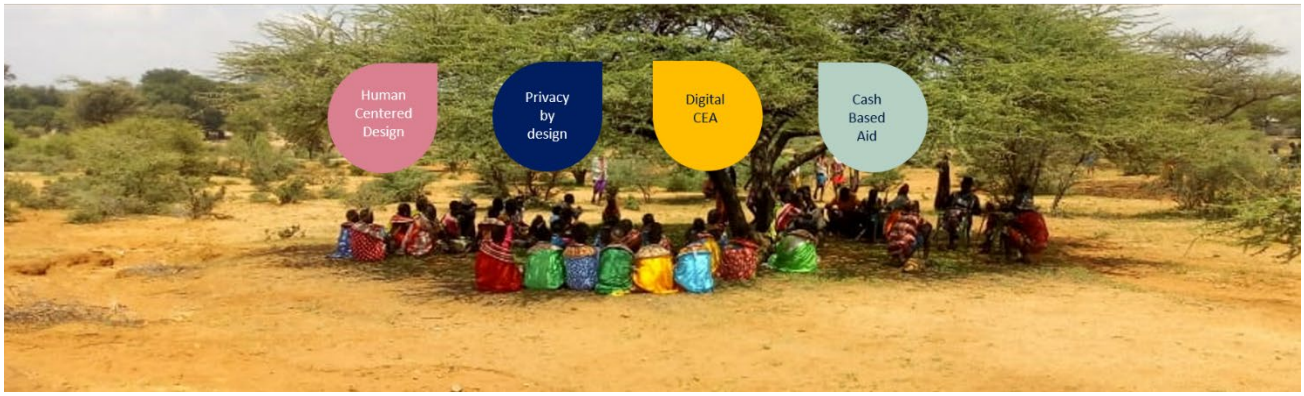
The 121 platform supports humanitarian organizations in making Cash & Voucher Assistance fast while preserving privacy-by-design. The platform is designed with People Affected by disasters, Aid workers in the field and at HQ. 121 aims to use robust and available technologies, connecting to Financial Service Providers with existing payment infrastructures.

The history of the 121 platform can be split up in two phases: research and pilots. In 2017 the Netherlands Red Cross recognized the increasing use of cash as aid and saw some potential pitfalls in the underlying information systems. A research process of 9 months, during which cash experts from the Red Cross Movement (National Societies, IFRC and ICRC) where involved in identifying the challenges of cash for emergencies and the opportunities for digital innovation in this space. Several platforms utilized by other humanitarian organizations were reviewed to explore existing solutions and identify common approaches. A key challenge derived from this research was the lack of an open-source alternative that could create scale at with lower costs for humanitarian organizations.

For an open-source solution to be successful it was decided to build support and momentum with Red Cross National Societies, the Dutch Relief Alliance, start-ups, corporate partners and research institutes. The pilot phase incorporated the conception of two innovation consortia to design, develop and test the 121 platform in a several humanitarian contexts:

- In Kenya, with support of the GSMA and IKEA Foundation
- In Ethiopia, Malawi and the Netherlands, with support of the Netherlands Red Cross and Dutch Relief Alliance Innovation Fund

Together with the efforts of Dorcas, Tearfund, Help a Child, Netherlands Red Cross, Kenya Red Cross, British Red Cross, Tykn, PWC, volunteers, researchers and 510, these investments have resulted in two successful pilots in 2020.



Goal of the 121 product component roadmap

The remainder of this document serves as an overview to the product roadmap on how to continue with the design and development of the 121 platform. The goal of this roadmap is threefold.

First, for people affected receiving cash and humanitarian organizations implementing cash programs, this document should bring clarity on what product components within 121 will be moved forward and when they should be ready for piloting and implementation.

Second, for those who are already invested in the 121 platform, this document provides alignment on how to make the first goal happen. It presents:

- Which product components have already been realized and why?
- The rationale behind prioritization and moving forward products and for which clients and end-users
- The current humanitarian canvas and steps for creating a sustainable business model and the organizational structure to execute this business model

Third, for those who see the opportunity to invest and become part of this product component roadmap, this document should clarify what has been achieved so far by a cross pollinated team that co-created with the experience and effort of 135 People affected by Hurricanes, Floods, Droughts and Manmade Crises across St. Maarten, Ukraine, Malawi, Ethiopia, Kenya and the Netherlands. 25 Cash Program Mangers from 8 different organizations. 9 Developers, 15 Human Centered/ Strategic Product /UX UI Designers who have designed and developed the products so far. With your investment, we will reach the mission of positively impacting the lives of millions of people affected by disasters by creating autonomy and reducing uncertainty through Safe, Fast, and Fair Cash Based aid.

2. 121 Product(s) Vision, Mission and Goals

121's **Vision** is a future where people affected can maintain control over their lives and their communities, before, during or after a disaster. 121 simply facilitates.

121's **Mission** is to redesign humanitarian aid using human insights & technological possibilities to create a platform with intuitive interfaces that streamline cash aid processes.

121's **Purpose** is to restore autonomy to people affected by disasters safely, through fast and fair distribution of Cash Based Aid.

121 PLATFORM GOAL

The 121 Platform, **Helps** Cash Program Managers **who want to** help people affected apply for cash aid by **reducing** uncertainty, unclarity, admin and time needed to register, validate, included and distribute cash-based aid. **Increasing** autonomy, dignity, data responsibility for safe, fast and fair cash distribution. *This platform was designed for both low and highly digital familiarity and low high digital connectivity*.

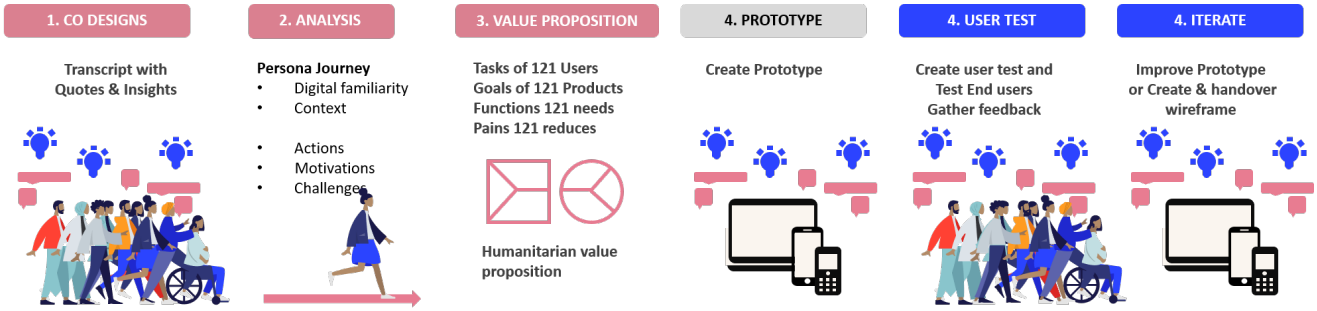
3. 121 End users & Product Design

3.1. 121 End Users & User Research methods

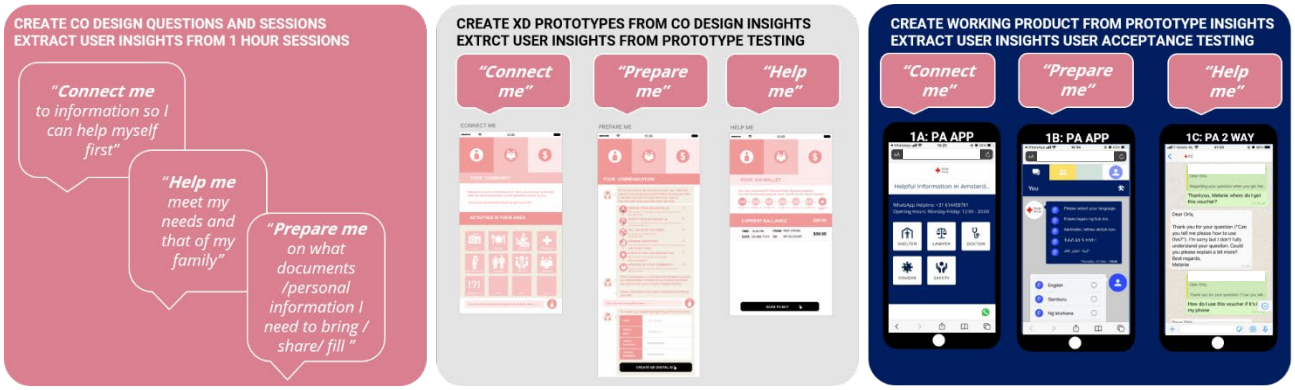
The 121 vision mentions People Affected can maintain control, the 121 mission is to redesign humanitarian aid using human insights, 121's Purpose is to restore autonomy, 121 Product goal is to Help Cash Program managers to Help People affected. The main end users of the 121 system are as follows:

- Person Affected (PA)
- Aid worker/ Volunteer in field (AW)
- Cash Program Manager (CPM)

To ensure the main needs of the end users are taken into account we use a combination of Human Centered and Strategic Product design methods. Below is a brief overview of the user research methods and a short example of the resulting outputs.



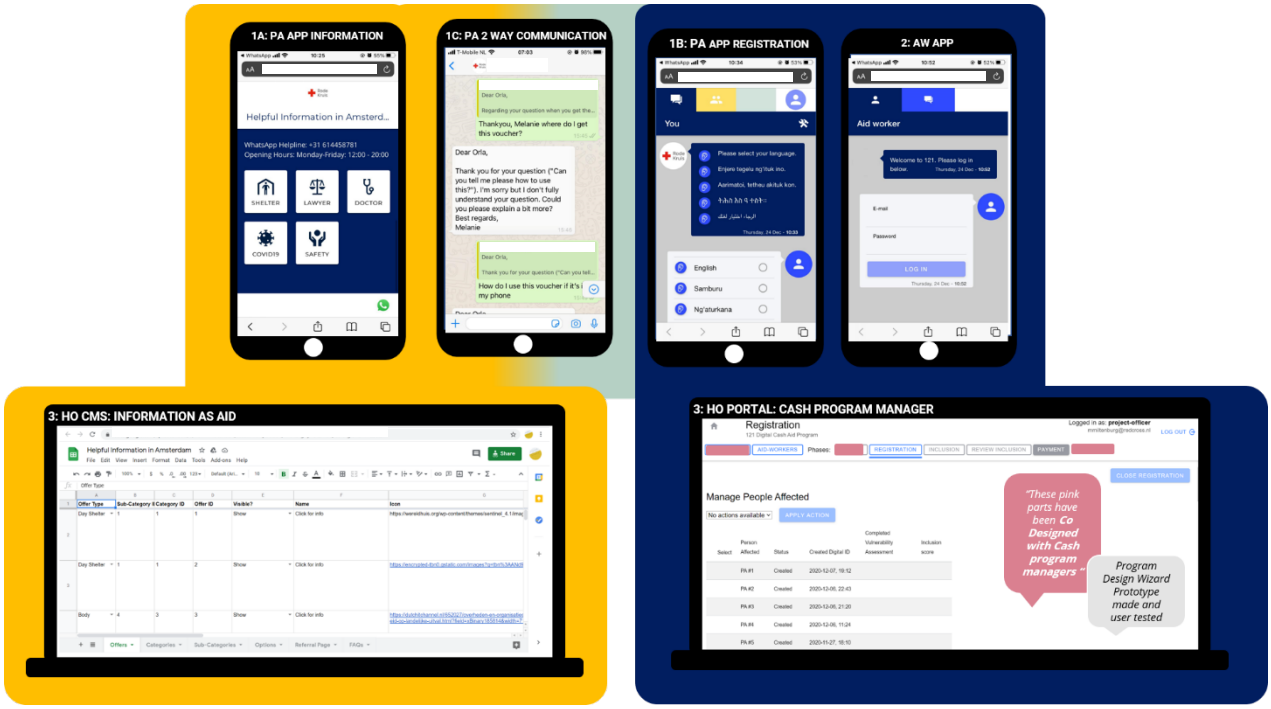
For example, for Person Affected you can see below how the 3 values of "Connect Me" "Prepare me" and "Help me" are extracted from the co-design sessions to create 3 interfaces for the PA APP PRODUCT OFFER first as a prototype that's user tested then iterated and improved then handed over to be developed (& user tested again etc.).



Whilst the various interfaces are at different build phases these methods were used for all interfaces in the 121 system to achieve clear product value & high-end user buy in.

3.2. 121 Products Designed & Developed

The following 121 product offer has been designed and developed by a core 121 scrum team.



For each of these interfaces the following aspects are discussed in subsequent sections:

- Key challenges & insights & observations of end-users
- Existing product components and features and what value has been achieved

A brief description of the end user and what the product interfaces do, can be found below.

END USER: Person Affected (PA)

- 1A: PA APP INFORMATION : Connects PA to relevant local aid & information through a simple intuitive interface
- 1B: PA APP REGISTRATION: Prepares & guides PA through program registration through a simple chat like interface
- 1C: PA 2 WAY COMMUNICATION
    - Helps PA receive SMS/WhatsApp messages regarding registration/inclusion status
    - Helps PA through a familiar WhatsApp helpdesk when registering for and receiving Cash/Voucher aid.

END USER: Aid worker/ Volunteer in field (AW)

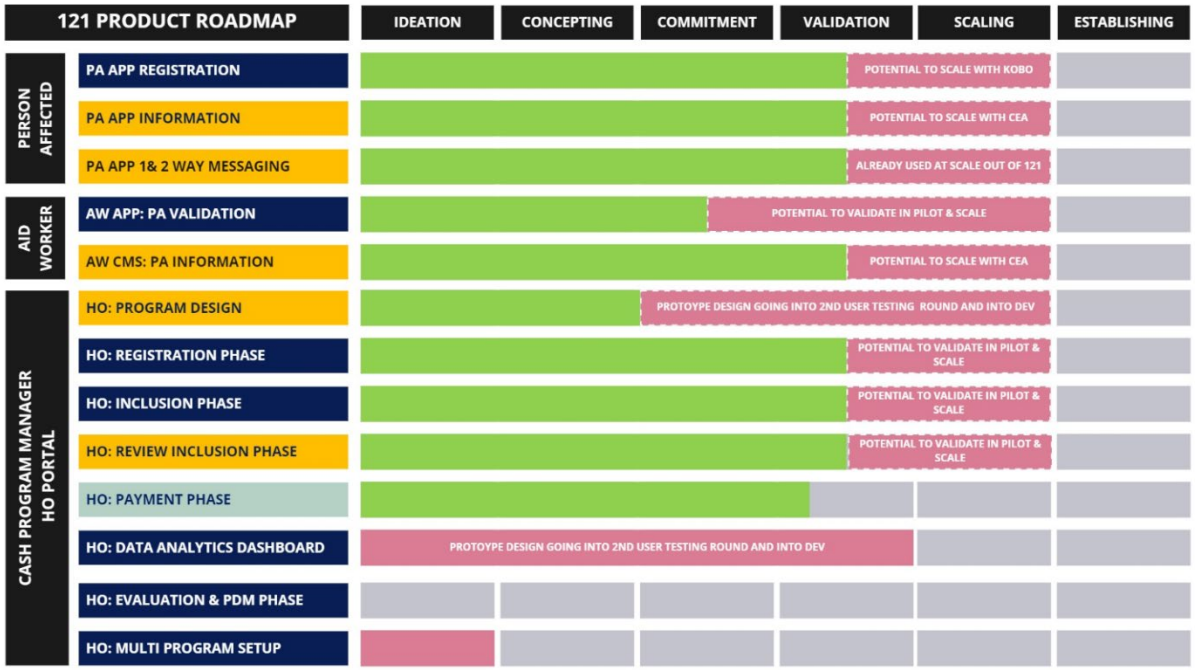
- 2: AW APP VALIDATION: Guides Aid worker on how to retrieve & digitally validate PA registrations through a simple familiar interface

- 3: HO CONTENT MANAGEMENT SYSTEM (CMS): INFORMATION AS AID: Enables Aid worker on how to gather local aid offers for referral using a simple familiar google sheet.

END USER: Cash Program Manager (CPM)

- 3: HO PORTAL: CASH INFORMATION MANAGEMENT, Enables Cash Program managers to
    - Monitor PA Registration
    - Include PA's / Review PA Inclusion into program
    - Send group / individual payments
    - Send group / individual SMSs/WhatsApp

3.3. 121 Products Road Map Achieved and Potential



Green: achieved, Pink: potential ways forward, grey, not yet planned

We have mapped each 121 product component along the roadmap to establishing. In green is what the wider 121 team and consortia have achieved in creating, developing and implementing in the two pilots in Netherlands and Kenya.

During a two-day product strategy session key 121 consortia-members took part in mapping the progress and value added of each 121 component created so far. The results directly inform this document.

Strategically selecting the next components to scale or develop we discussed in parallel the evolution of the humanitarian business model canvas. In pink in the chart above, and below in words is the top line overview of potential ways to further validate and scale the current 121

product offer and or what could be developed as new components and why such a new build maybe of value.

- PA APP REGISTRATION: Potential to align our intuitive open-source interface with another open-source product, Kobo Toolbox[1] to get further validation and access to more end users to scale and establish.
- PA APP INFORMATION: Potential identified to reuse the opensource code for Digital CEA communication in humanitarian programs. (Currently being explored in MENA region with IFRC).
- HO PORTAL PROGRAM DESIGN WIDGET: A prototype of a cash program start up wizard was created based on CALP Network's[2] working methods and curated resources, potential to address a niche in humanitarian needs as the "go to Cash Aid Program tool".
- 121 ALL PRODUCTS: Due to COVID19 many of the product validation tests were unable to be completed by the 121 product team directly. That said, many user tests were conducted over the course of product creation and the team is actively gathering user insights remotely through PDM done by the pilot teams and the online Helpdesk to help inform the future steps.

3.4. 121 Products tested in Pilot context

The 121 platform has been tested in two pilot locations. The overview below depicts the common information needed to understand program context to successfully adapt and subsequently implement 121 products. For simplicity four categories of literacy are described as: none, low, medium, high.

[1] https://www.kobotoolbox.org/
[2] https://www.calpnetwork.org/

PROGRAM CONTEXTS

OBSERVATIONS OF END USERS IN CONTEXT:
Every context where 121 could be used has different user needs. For example, a person affected in Netherlands and person affected in Kenya have very different cultural, technological, political and economical contexts as do the Aid workers and volunteers assisting in the program. The reason why and how people affected are seeking aid also differs.

The Netherlands:

Person Affected users (PA):
- Undocumented migrants on waiting list to receive aid from Dutch government.
- **Literacy:** Generally literate
- **Languages:** Multiple, mostly English, French, Arabic, others from East & North Africa.
- **Digital literacy Scale:** Medium or High
- **Phone:** Own a smart phone

Aid Worker (AW):
Combination of Aid Workers mainly NLRC
- **Literacy:** Generally literate
- **Languages:** Multiple, mostly English, Dutch
- **Digital literacy:** High

Context:
- **Level of trust for HO:** Unknown
- **Channels to support PA:** Mostly online
- **Device in use:** Personal device
- **Hardware:** Smart phones, mostly android
- **Internet connectivity**: Medium to High
- **Information dissemination channels:** SMS, WhatsApp, PA APP information
- **Aid dissemination channels:**

1. Whatsapp Supermarket Vouchers
2. Paper Supermarket

- **Aid dissemination stakeholders**:

1. Red Cross
2. Intersolve
3. Albert Heijn

Interface component observations:
- **Radio buttons:** Find it relatively easy to use
- **About button:** Understand, but don't use
- **Data privacy:** Understand, but don't read
- **Create account:** Understand the concept
- **Full name:** Not comfortable giving personal details
- **Password:** Can create a password, find it difficult to remember it
- **V-number:** Understand what to enter then
- **Phone number:** Usually enter the phone number without the area code
- **Digital voucher:** Understand the concept of digital voucher, but don't find it easy to use.

Kenya:

Person Affected users (PA):
- Vulnerable community members affected by drought.
- **Literacy:** Generally illiterate
- **Languages:** Turkana, Samburu and/or Kiswahili
- **Digital Literacy Scale:** Little or none
- **Phone:** May own feature phone

Aid Worker (AW):
Combination of Aid Workers from: KRCS
- **Literacy:** Generally literate
- **Languages:** Multiple, English, Turkana, Samburu and/or Kiswahili
- **Digital literacy:** Medium

Context:
- **Level of trust for HO:** High
- **Channels to support PA:** Mostly Offline
- **Device in use:** Red Cross's device
- **Hardware:** Tablets with speaker, Smartphones
- **Internet connectivity**: None to Low
- **Information dissemination channels:**

Barassa, Word of mouth, SMS, Radio

- **Aid dissemination channels:**

1. MPesa SMS
2. Mpesa Agent

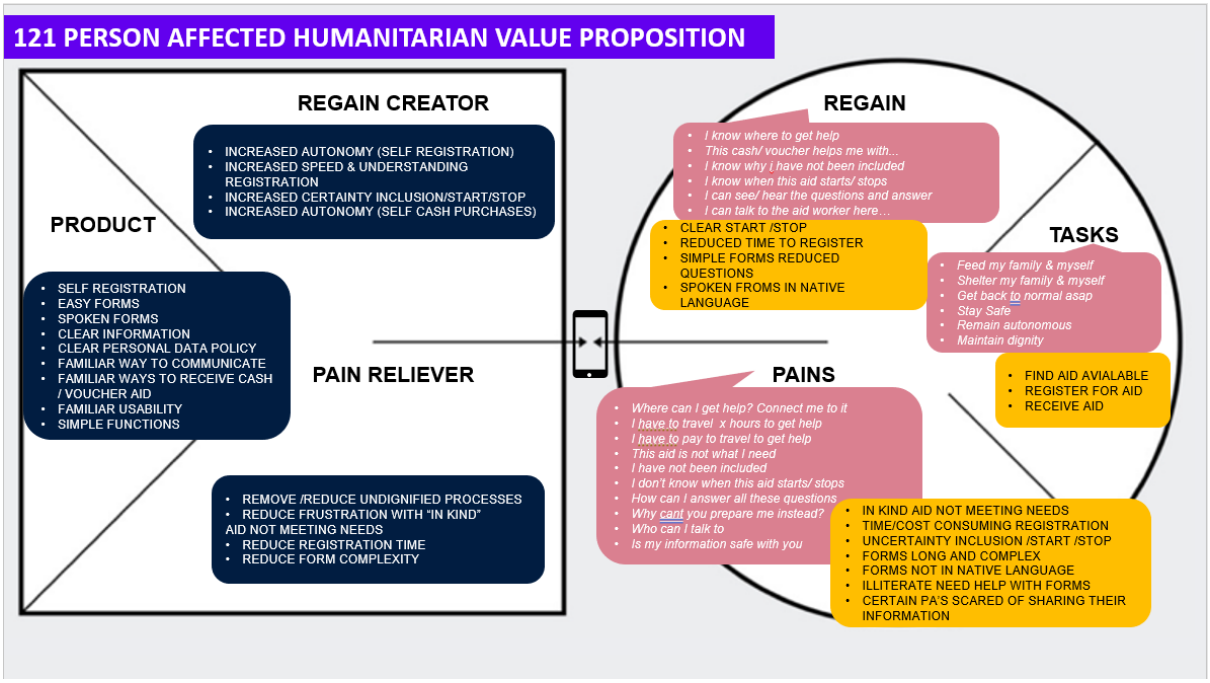
- **Aid dissemination stakeholders:**

1. Red Cross
2. Mpesa

Interface component observations:
- **Radio buttons:** Find it difficult to use
- **About button:** Don't understand or use it
- **Data privacy:** Don't understand or use it
- **Create account:** Don't understand the concept
- **Full name:** Usually give their first name and last name, can't type by themselves sometimes
- **Password:** Don't always understand the concept of a password, typically enter birth year.
- **Phone number:** May not own a phone, and usually enter their or proxy phone number without the area code
- **Mpesa:** Often have previous experience with using Mpesa to withdraw money.

4. 121 PA APPS

4.1. Key challenge and value for People Affected



Through co-design sessions, where the experience of before, during and after receiving aid is explored, People affected have confirmed that there is potential to:

- Reduce admin complexity of forms filled when applying for aid.
- Reduce uncertainty of when and if PA will receive aid.
- Increase safety when receiving cash-based aid.
- Reduce travelling when applying for aid.

Cash Based Aid can restore some autonomy and dignity to a person affected, depending on conditionality and restrictiveness of cash aid provided. 121 gives autonomy and dignity to people affected by reducing waiting time and travel time by enabling them to self-register and have more transparency in the identification, registration and inclusion of people affected in a humanitarian program. 121 increases the control a person affected has of their personal information used to determine their eligibility in an aid program. Through a digital identity they create themselves, people affected have a way to identify themselves with multiple humanitarian organizations.

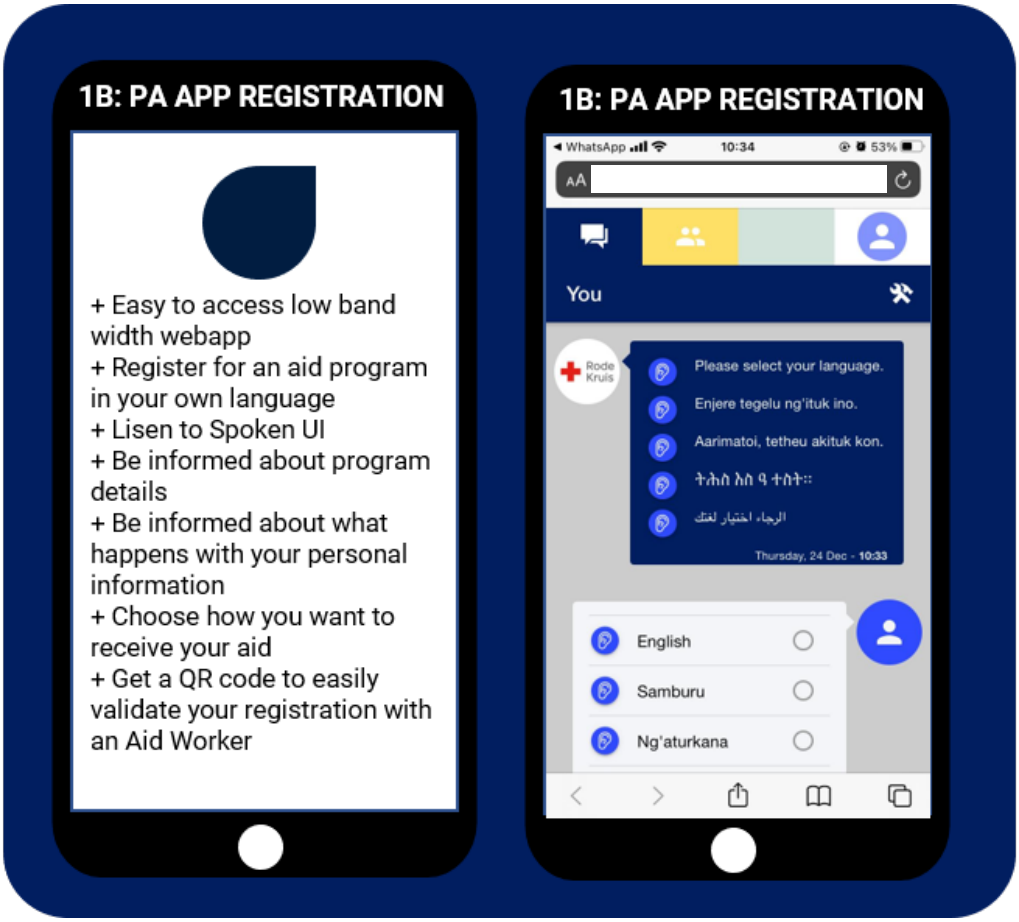
4.2. Existing PA-app product components and features

To achieve the value and solve the key challenges four main concepts were researched, designed, tested and developed:

1. Self-registration
2. Information as aid
3. One way and two-way communication
4. Self-sovereign identity

Each component will be described as it exists, the value it brings and the insights that were gathered across the product creation and pilot implementation.

4.2.1. Self-registration



"PREPARE ME"

- **Chat like** WhatsApp-style form filling to register, create account and fill in needs assessment.
- **Simple Buttons** enable people with lower digital literacy to "tap as they go" through the registration process.

- **Pop-ups** enable people affected to be easily, yet concisely, informed as to what the aid program is about and what happens to their personal information.
- **UX copy & tone of voice** was created by reviewing co-design sessions to mirror language use across different contexts and then when possible homogenized. Words like "submit" were amended to "send" to remove any potentially negative translations. This 121 tone of voice was co-written with dedication of HCD team & volunteers, Kenya Red Cross Volunteer, and a professional Volunteer UX copy writer.
- **Spoken UI** allows illiterate or people with visual impairments to keep track of the process and understand what is being asked of them in each step, in their own language. The voice of the interface is recorded via WhatsApp message by local volunteers, who were asked to imagine who they are helping when recording, to create a kind yet steady tone of voice.
- **Multiple languages** are available for registration. Currently we have successfully translated the basic from English to Turkana, Samburu, Arabic and Tigrinya with plans to translate to Dutch, French and Kiswahili too.
- **Easy to translate** the interface through the Transifex-platform which makes it easier for local volunteers to help translate for further end users.

1B: 121 PA APP REGISTRATION

Product Component Goals

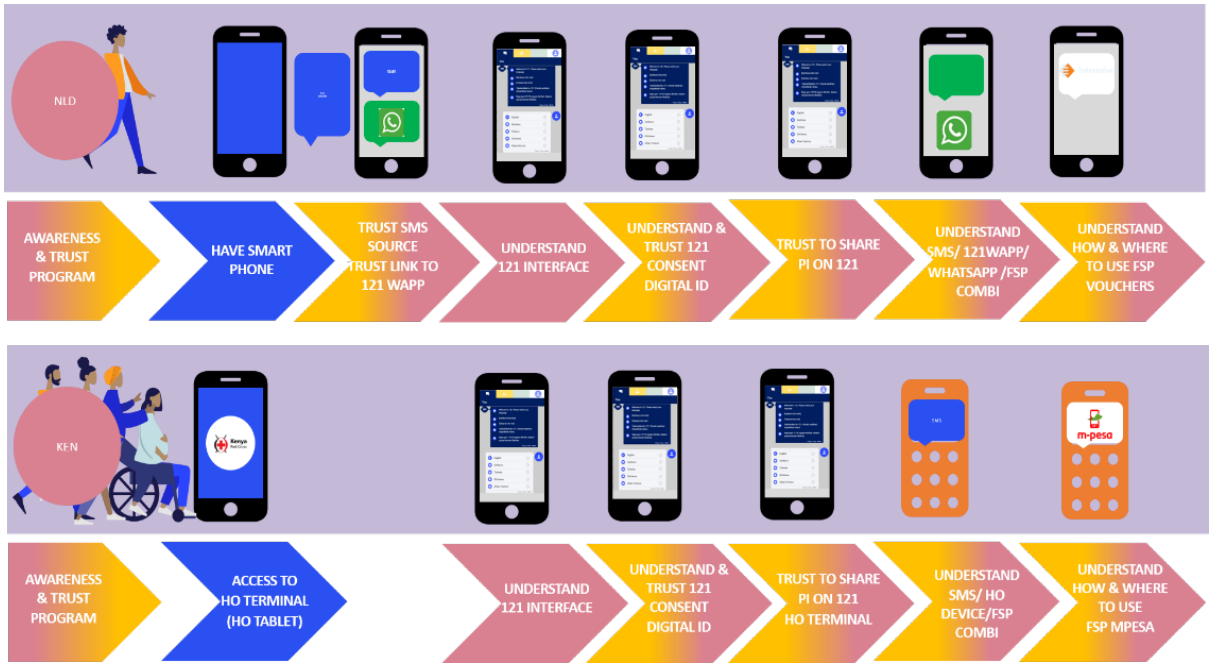
The 121 PA APP Information **Helps** People Affected **who want to** get access to humanitarian aid, by **reducing** time taken to register, **reducing** the complexity of the form filling process, **reducing** unclarity on program information, inclusion, when/how/for how long they would receive aid. **Enabling** people to self-register for a cash-based aid program and **increasing** the autonomy to complete the registration and receive aid to meet their needs and that of their family. *This app was designed for both low and highly digital familiarity such as People affected by drought in Kenya and Undocumented Migrants in the Netherlands.*

4.2.2. Self-registration pilot context & insights

Self-registration has been proven to be feasible in two very different contexts of the Kenya & the Netherlands pilots using both personal devices and devices owned by humanitarian organizations.

PERSON AFFECTED SELF REGISTERING AND TRUST

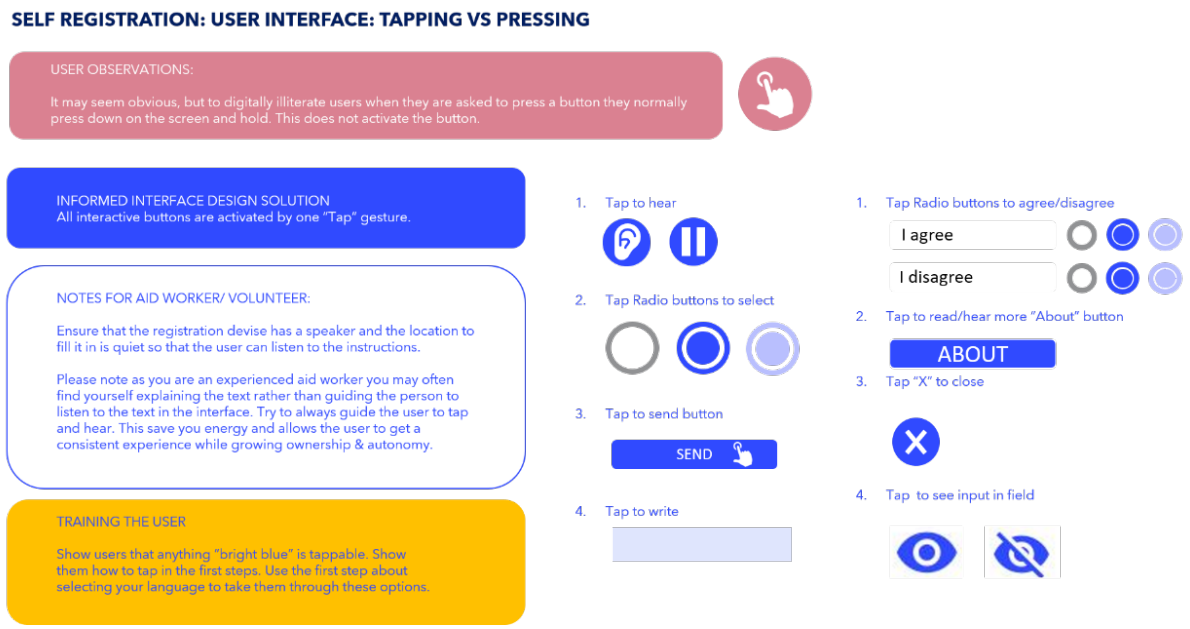
Throughout co-designs, user testing and piloting of self-registration, various components were user & feasibility tested and subsequently validated, all the while one reoccurring theme kept returning: trust.

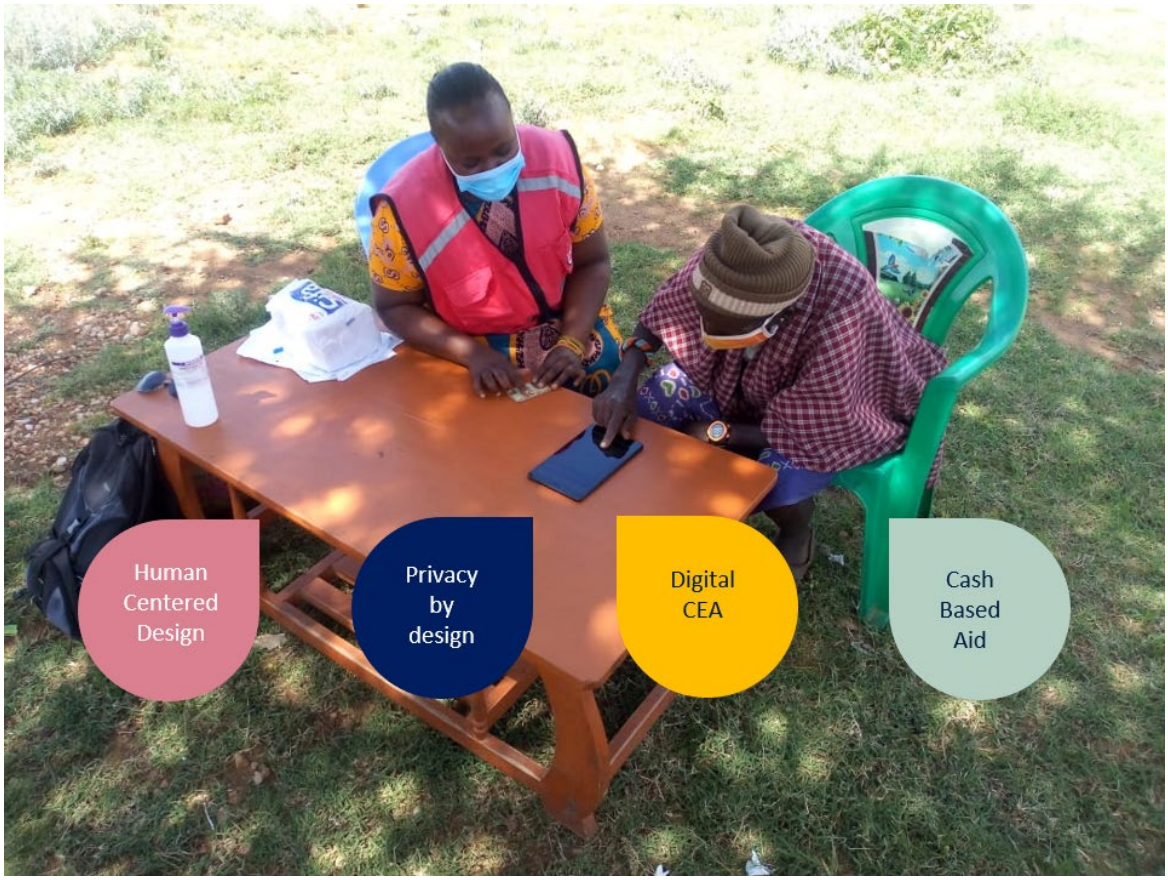


Whether a PA trusts the registration process is very dependent on their personal situation and perception they have of the humanitarian organization facilitating the registration, and the questions they are asked in the needs assessment. For both pilots care and attention was paid to ensure the offline/Face to face communication and explanations matched that of the 121 interfaces in language and logos.

During user testing in both locations it was noted that the majority of PA's were able to use the interface albeit with assistance from an aid worker. In response to this observation the 121 product team created a mini training manual to instruct aid workers on how to set up and conduct assisted self-registration. The main objective of this document is to ensure the person affected is as autonomous yet confident as possible throughout the registration process.

In addition intentional design methods like reducing button types and having repeated actions rather than less steps (conventional UX design) help people who are less familiar with digital interfaces to learn and build confidence as they move through the process.





PERSON AFFECTED SELF REGISTERING AND AID WORKER ASSISTANCE

The Kenya pilot is finished but the Netherlands pilot will continue as an operational program of the Netherlands Red Cross. The below is based on the metrics and feedback so far:

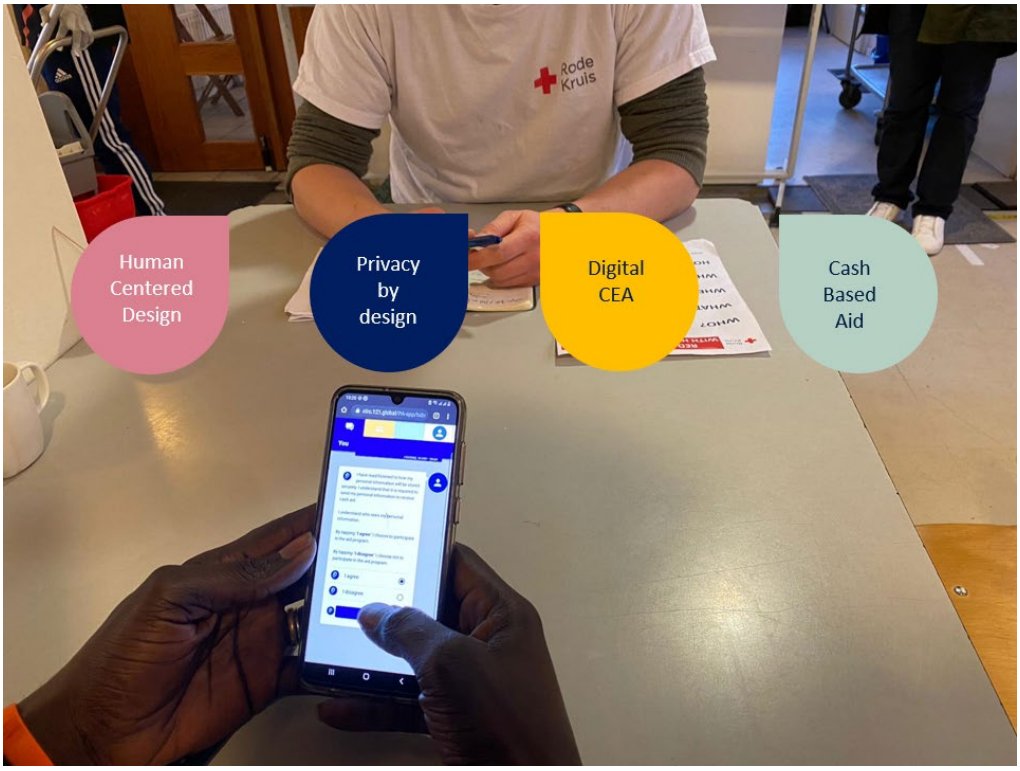
- Kenya: 214 respondents were asked to feedback of the 366 that registered
- Netherlands: 65 respondents were not yet asked to feedback through a survey (planned), however below numbers are based on monitoring of the helpdesk

SELF REGISTERING, TIME TAKEN

In the following metrics taken from the HO portal you can see that whilst Kenya had many more steps to complete, the average time is less than in the Netherlands pilot. The reason why this is the case can currently only be assumed, however we do know that PA's in Netherlands report to having difficulties with attention span and did not all have the interface in their native tongue.

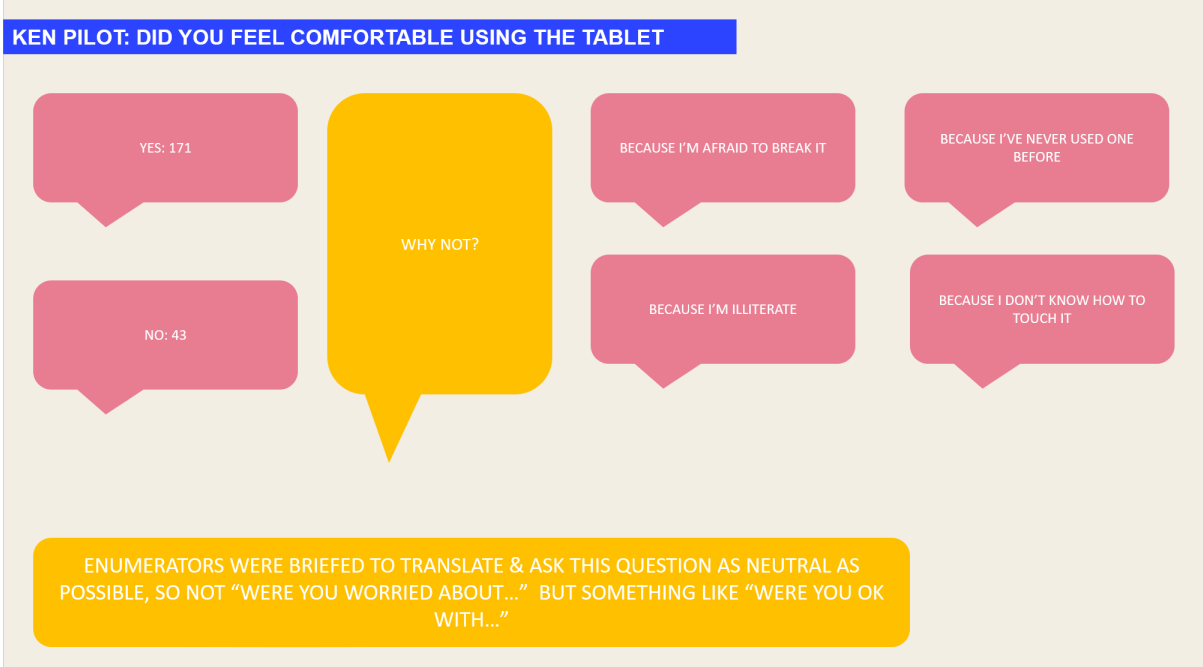
KENYA PILOT METRICS FROM HO PORTAL		NETHERLANDS PILOT METRICS FROM HO PORTAL	
Respondents: 214	100%	Respondents: 0 (Assume 53)	100%
PA no Assistance: 35	16%	PA no Assistance: 29	55%
PA some Assistance: 112	52%	PA some Assistance:27	51%
PA a lot of Assistance: 43	20%	PA a lot of Assistance: 9	17%
PA could not self-register: 24	11%	PA could not self-register: Unknown	Unknown
Started registration: 366 PA	100%	Started registration: 65 PA	100%
Completed registration: 355 PA	97%	Completed registration: 53 PA	82%
Included: 350 PA	96%	Included: 34 PA	52%
Removed: 5 PA	1%	Removed: 15 PA	23%
Average time: 3'38"		Average time: 4'21"	
Variance: 15'41"		Variance: 56'39"	

In the Netherlands 55% of PA were able to self-register (51% with some assistance) whilst only 16% were able to self-register in Kenya (52% with some assistance). The point here is to realize that the majority of the assistance asked in the Netherlands was more content lead rather than technical. We are currently awaiting details, but it will be interesting to see what type of assistance PA's required in Kenya.



SELF REGISTERING AND FEEDBACK ON USING HO DEVICE (KENYA)

Below you can see the response to the questions Did you feel comfortable using the tablet (to use the PA APP to self-register) The feedback was positive (again we need to balance this positive feedback with the reality of some people affected assuming they need to mitigate negative feedback.)



SELF REGISTERING AND POTENTIAL DUE TO COVID PANDEMIC

The COVID19 pandemic has cleared the way for registration alternatives that comply with social distancing measures and influenced a rapid digital transformation which could mature this approach. Nonetheless, it is necessary to improve before scale can be secured.

4.2.3. Information of aid

"CONNECT ME"

- **Simple app** with easy functionality to tap through categories
- **Simple visual design** allows for space to recognize icons and logos
- **Mirrored Language** allows Aid worker to adapt category names and visuals to match end users naming and word us

1A: 121 PA APP INFORMATION: Product Learnings **HYPOTHESIS:**
We believe that the 121 PA APP Information, **Helps** People Affected by displacement in Netherlands **who want to** get access to healthcare/shelter/Protection/Legal Aid **by reducing** unclarity on what aid is available and where its available **& Enabling** digitally literate people to see what is available in their area **& increasing** the ease and speed to access the aid.

4.2.4. Information as aid pilot context & insights

The information as aid app was created and implemented solely for the NETHERLANDS pilot, but interest has been expressed by humanitarian organizations for a product that can support outside of Cash Based programs. There are two end users in the design. The PA who co-designed the app and decided on the categories and the AW in field who informed the back-end design based on the common denominator skill of using a spread sheet. For this reason, the APP runs off simple spreadsheet as this is a skill that every AW in field has so far.

1A: 121 PA APP INFORMATION: Product Learnings

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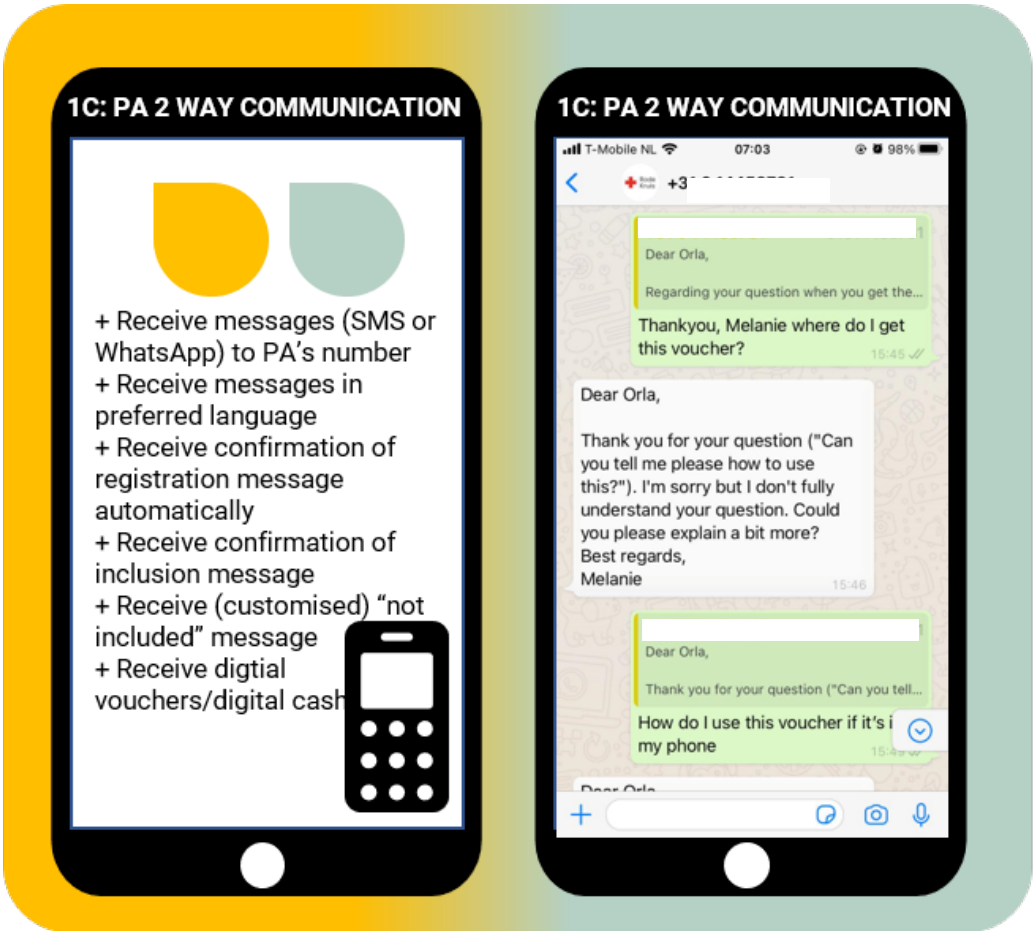
4.2.5. 2-Way communication



"HELP ME"

- **Familiar channel** using WhatsApp or SMS using a helpdesk software managed by volunteers or staff from the HO
- **Prewritten messaging** incorporates language use of PA peers
- **Visual Digital CEA** incorporates Explainer posters on how to use e voucher

1C: 121 PA APP 2 WAY MESSAGING Product Component Goals

This Integrated Product component **Helps** People Affected **who want to** get access to humanitarian aid, **by reducing** uncertainty and complexity by using familiar communication channels **and enabling** digitally literate to get access to advice in low physically connected contexts. *This component was added specifically in highly digital but low physical access situations such as the ones Undocumented Migrants in the Netherlands and People affected by conflict in Ukraine, and People in St. Maarten post hurricane encounter.*

4.2.6. 2-Way communication pilot context & insights

As the Netherlands is still running into MAY 2021, we have not pulled the stats form the helpdesk monitoring system.

4.2.7. Self-sovereign identity (SSI) & pilot context

"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)

The concept of self-sovereign identity suits the ideology of this challenge well, it is about giving back control to people and doing this in a digital way. Together with several knowledge institutes the concept was researched. A world becoming increasingly connected and digitally literate, it was deemed worthy enough to pursue next steps. Tykn and the Netherlands Red Cross/510 started a technical partnership to further the SSI agenda in the humanitarian sector by developing and demonstrating the technology.

The technical infrastructure was developed and integrated into the wider 121 platform. Although functionally working, it was soon realized that adding any direct value for people affected would be difficult. Lacking smartphone penetration and internet connectivity in the pilot locations, plus the restrictiveness of the technical infrastructure made for a difficult fit. Such is the reality of piloting in humanitarian settings.

There are some steps that might take SSI to the next level and although formulated below for completeness they will not form any further part of this product portfolio roadmap:

- Unify registrations and verification efforts across multiple organizations
- Continue development with a self-managed identity approach, letting go of the complete SSI ideology while remaining true to the same open standards. This would take away the heavy technical infrastructure and allow for issuing and verification through simpler methods. Potentially allowing people to manage and update digital identities through feature phones, web portals and smartphones.
- Lay the foundation for acceptance of digital credentials issues by humanitarian organizations that have value outside of humanitarian contexts. For example, for higher socio-economic inclusion such as allowing a person affected to access education or health care by verifying with a digital identity issued by a humanitarian organization.

Indirect value of SSI was also found. It does contribute to this product component roadmap. It put privacy-by-design and responsible data use front and center of our efforts. This does not only echo through the 121 platform but through all organizations involved. On top of this, it helped pave the way for self-registration.

4.3. Future PA APP components and features

From the perspective of the person affected it is vital to confirm that self-registration is desirable and if so, for what reasons. During the creation process user testing was done (albeit

limited due to COVID19 restrictions. An improved understanding of the issues people face while doing normal and self-registration, must be done to inform subsequent design iterations.

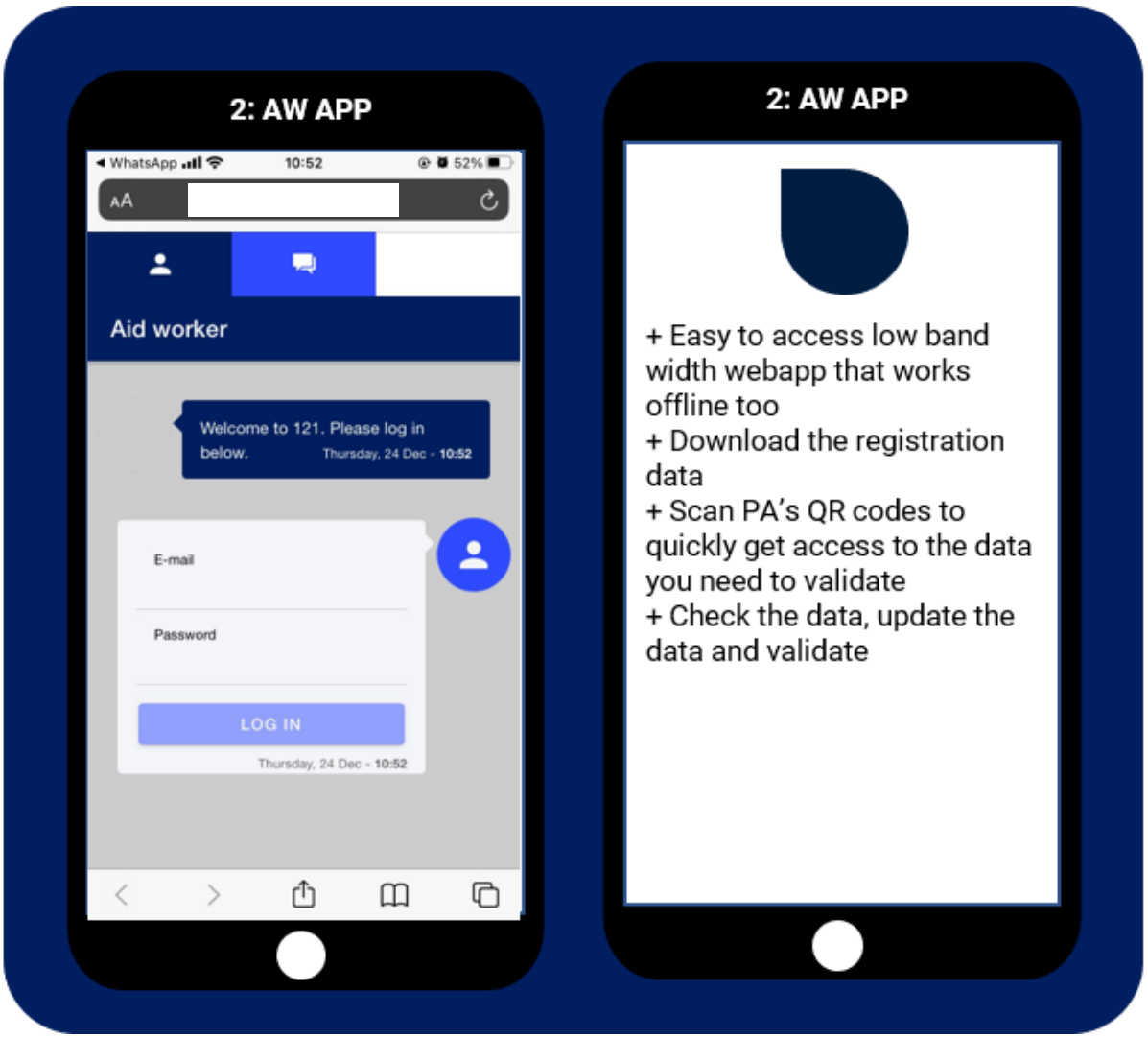
From the perspective of the aid workers and humanitarian organizations it is also crucial to validate their desire for self-registration at scale. Better knowledge of what problems are encountered technically, institutionally and process-based when designing forms and conducting registrations is needed. Therefore, understanding in which context self-registration adds value to their assistance, will help in creating a feasible and viable solution. With a certain degree of certainty, it can be said that humanitarian organizations would want at least the following additions:

- More elaborate logic and customization of form building, similar to any .xls-form-builder solution
- Means to spot duplication and discourage misuse while registering

To enable scale and to facilitate potential development of these additions the following next steps are suggested:

1. Utilize the learnings and link up with KoBo Toolbox to develop a specific self-registration interface any KoBo user can provide to people affected
2. Thoroughly analyze the existing pilots on issues with self-registration and provide solutions for those
3. Simplify or remove SSI component to allow fo full offline usage and reduce technical complexity
4. Continue with problem discovery among people affected, aid workers and humanitarian organizations, develop and test prototypes, then add these solutions to the existing codebase.

5. 121 AW APP: Validation for Aid workers in the field



"EASY DATA RESPONSIBLE VALIDATION"

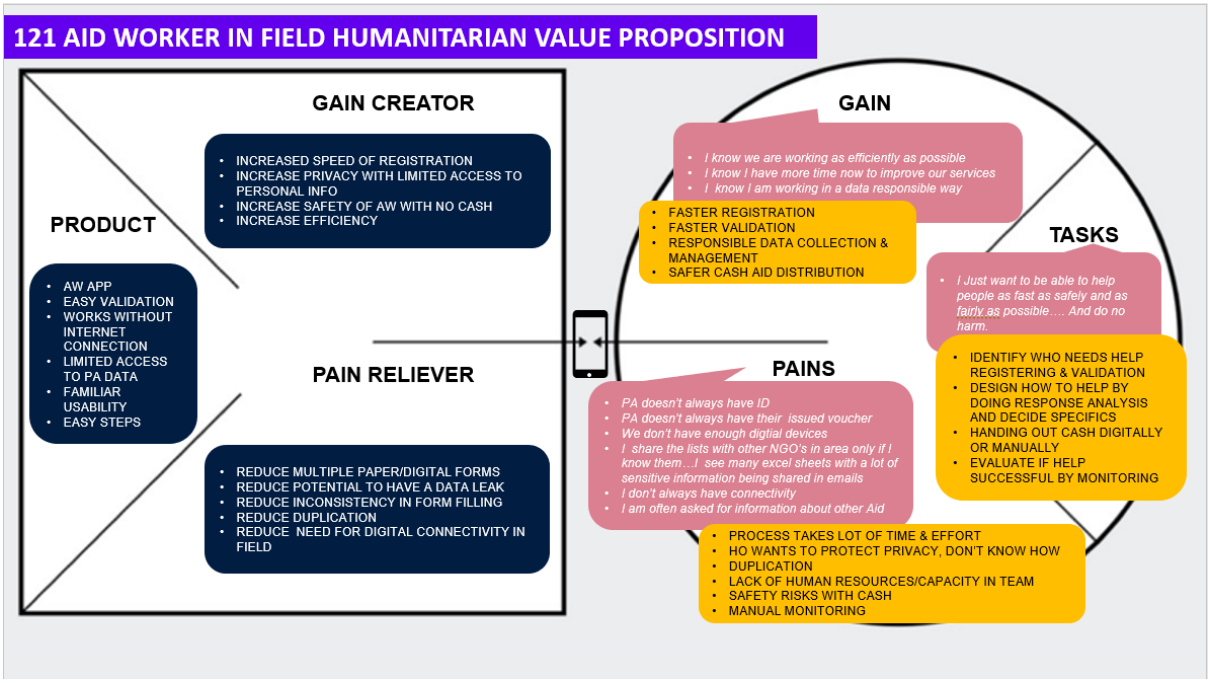
- **Familiar interface** using Chat Bot style interface like PA APP makes 121 familiar for all end users
- **Simple step task** keeping easy digital tasks for AW & Volunteers alike
- **Offline data** Allows for easy anonymized PA Data download before going into field
- **Data Responsible** Through easy coupled QR code retrieval avoids access to needed data and reduces duplication of validation.

2: 121 AW APP VALIDATION Product Component Goals

This Product component **Helps** Aid workers & volunteers **who want to** validate PA's **by reducing** access to personal data and potentially duplicate inputs **and enabling** responsible PA data collection and validation

This component was added specifically for low digital access whilst validating people door to door in semi urban and rural areas like intended pilot locations in Malawi and Ethiopia.

5.1. Key challenges and value for Aid Workers



Through co-design sessions, where we discuss the experience of planning, giving and monitoring aid, Aid Workers have confirmed that there is potential to:

- Reduce duplication and improve coordination
- Increase efficiency and scale
- Upgrade their humanitarian services

The value of the AW-app to take on these challenges was to be found in (partly) splitting the registration process from the validation process. Aid Workers would already have access to the information that needed to be verified and could therefor increase their efficiency and only needed to correct faulty inputs. According to Aid Workers and People Affected, keeping a human in the loop like this would also add value on its own.

This validation by an aid worker could result in a digital confirmation of someone's identity and vulnerability status. At scale, these digital confirmations also called credentials could be used by a person affected between organizations reducing any further need for extensive field

visits and duplicate registration efforts. It was even envisioned that a mandatory credential of what aid was received would be included, in order to make sure that people affected would not receive the same aid of various organizations leaving others unassisted.

All of this increased efficiency and scale would free up time of aid workers to upgrade their humanitarian services. In other words, provide the assistance that money cannot buy, or markets cannot provide.

5.2. Existing AW APP components and features

The 121 platform has a functional AW-app that can facilitate the Person Affected validation process. Unfortunately, this app was not used in both pilots due to:

- Pre-targeting of people affected;
    - In both pilots there was no "open self-registration"
    - Specific groups of people were invited to (self)register based on sharing selection criteria with partner organizations and/or communities
- Community review of final inclusion list;
    - Even if other people affected had found their way to the PA-app, the final list was reviewed either by the community or partner organization
    - In other words, the community or partner organization had a much more influential say than the aid workers could have had facilitating this program

As such it is not possible to judge if the key challenges are resolved and value is delivered. With some confidence it can be said that the if self-registration is used and the PA-app interface is open to all, the need to use the AW-app would increase.

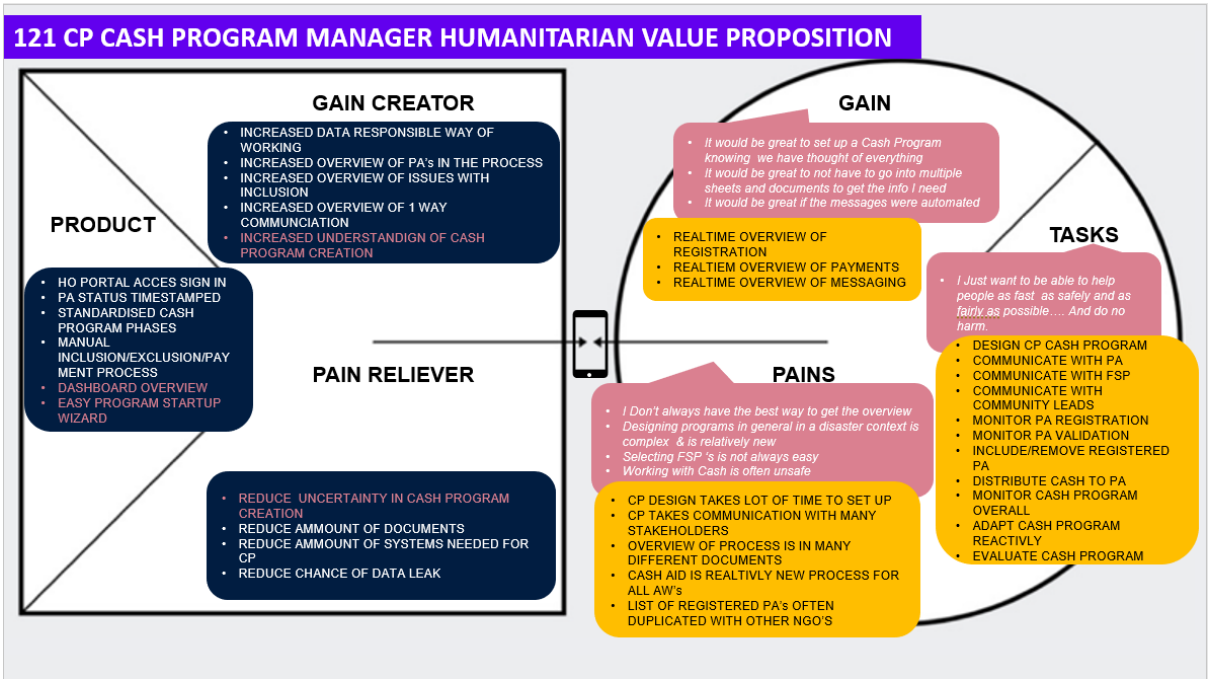
5.3. Future AW APP components and features

The AW app needs to be validated in a pilot setting where self-registration is suitable. This way the delivered value can be measured against the envisioned value and insights can be gathered to further develop the AW-app. This pilot does not necessarily have to be a cash program, as this would work for any registration and validation process for a humanitarian program.

The AW app could ultimately scale into becoming a tool accommodating a wider set of processes for registration and validation, fitting any type of humanitarian program. As far as is known, there are no ready alternatives for this type of work that so tightly relate to self-registration. Functionalities one could think off are appointment modules, automated warnings for duplication, automated data verification such as phone-numbers and detection of misuse.

6. HO PORTAL: Cash Information Management System for Humanitarian Organizations

6.1. Key challenge and value for Humanitarian Organizations



Humanitarian organizations and aid workers can improve their cash aid services for people affected.

The key challenges for a humanitarian organization in an emergency setting are to do the following fast, efficient and if possible, at scale:

- Identifying, registering and validating the most vulnerable people
- Assessing, designing and implementing the right response
- Distributing cash or vouchers, electronically or physically
- Evaluate and monitor whether their assistance was well received
- Doing no harm and adhering to other humanitarian principles

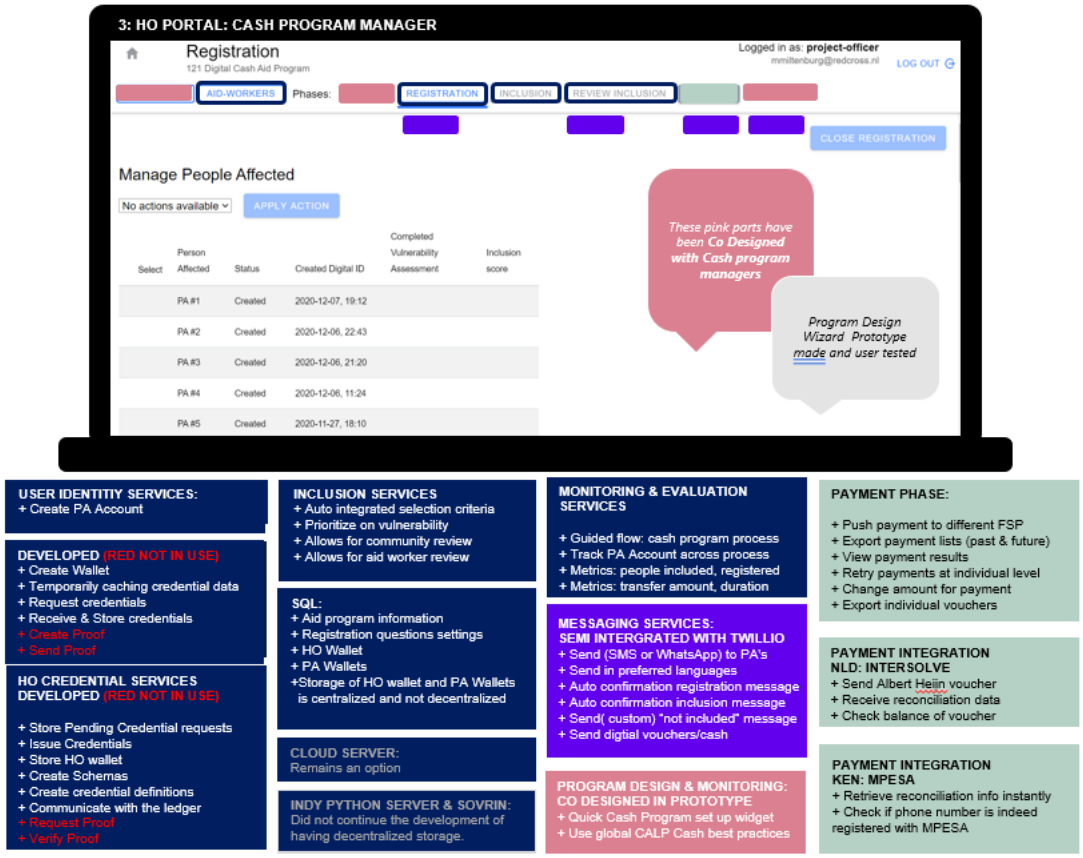
In other words, the 121 Platform should handle the bulk of registrations and support in handling sensitive data. This reduces the administrative burden on organizations and allows for more time to focus on providing value-added services, protection, coordination & supporting inclusion & registration of the (digital) illiterate.

6.2. Existing components and features: HO Portal

The Humanitarian Organization (HO) Portal is a software solution that allows Cash Program Managers to manage a cash-based aid program from start to finish, including registration, validation, inclusion, communication via SMS and WhatsApp and doing payments via digital vouchers and M-PESA. The portal is accessible through any browser. The HO portal was successfully used in both the Netherlands and Kenya pilots. Two users were created for each HO Portal. One, a Program Manager, able to see personal information. Two, a Project Officer, not able to see personal information but able to push through phases of a cash program.

Based on co-design interviews, user tests and two pilots the following added value and insights can be derived for the three product components of the HO Portal:

1. Cash Program Management
2. Communications
3. Payments



6.2.1. Cash Program Management

The Cash Program Management component adds value for humanitarian organizations by providing real-time traceability and dashboard, enabling efficient coordination. Based on extensive user research on aligning common phases of multiple HO & NGO's Cash Program design, Calp training and resources, the HO portal contains the following program phases:

- Program Design
- Registration
- Inclusion
- Review Inclusion
- Payments
- Monitoring & Evaluation

Regardless of each phase, several things became clear during the pilots:

- Any cash program requires a significant amount of information management expertise
- The interface of the HO portal is functional but needs improvement through the added insights form UX UI research.
- Switching back and forth between program phases is always necessary as cash programs are not linear.
- Extensive user & contextual research has been done and a design sprint has been planned.

For the **Program Design** phase three important insights were gathered. First, cash for emergency programs require a fast set-up while recovery focused programs may require a more complex set-up including extensive case management. Second, organizations have a tendency to be excessive with asking and collecting data. This can be countered by limiting the customization of registration forms and reinforcing the importance of a simple, understandable, self-registration interface. Third, informed by co-design interviews there is a need to add a "program design wizard" which enables organizations to streamline cash program designs and integrate those designs directly in a software solution.

Already during **Registration,** it should be possible for organizations to see some personal information in order to check whether the right registrations are coming through the system.

The **Inclusion** and **Review Inclusion** phase were characterized by the use of pre-targeting people affected, incentivizing the 121 platform to make validation by aid worker an optional feature. The same is true for community or organization review of the final inclusion list, which motivated the use of automated inclusion scores to become optional too. A valued addition to these phases was derived from the experiences of Kenya Red Cross where an MPESA verification button was developed, allowing an organization to check whether a registered phone number is actually able to receive MPESA.

In the **Payments** and **Monitoring** phase it became clear that organizations are interested in better monitoring of payments, monitoring of phase flow and use of the PA-App. First, several requests came in to monitor the actual use of vouchers and provide outstanding balance per voucher or person affected. Second, there was a need for a more case-management style approach in one of the pilot projects. Clear statements were made about potentially adding

data fields to the people affected, integrating helpdesk features and sending custom messages. Third, for the PA-app interface there was a request to get insights into statistics about actual use of the PA-app such as clicks, buttons used, duration of registration etc.

6.2.2. Communications

Automated communications add value for people affected with limited efforts for aid workers. People are kept up to date with, SMS or WhatsApp, of their progress in the cash program, for example by confirming their registration, inclusion and potential end of the aid process.

Only part of the communication structure was directly integrated into the HO Portal, it was soon realized that optionality and customized messages were required to improve Community Engagement and Accountability.

6.2.3. Payments

A complete technical integration with Financial Service Providers allows for push-of-the-button payments and direct reconciliation data which can be proactively used to process payment errors. In the pilots integrations with Intersolve (a gift-voucher provider) and Safaricom's M-PESA, through Africa's Talking, were realized.

Complete technical integration with a Financial Service Provider is a tedious process**.** Not so much the coding part (API integration), but the process of getting contacts, changing internal financial processes in a humanitarian organization, receiving the right documentation and making sure it works in a production environment is challenging. Furthermore, even with digital cash payments it is crucial to take into account that there will be people affected that are not able to receive digital vouchers or cash. Being able to print vouchers, or somehow identify that people will be given physical cash needs to be an option.

6.3. Future components and features

Based on the existing components, codesign interviews and user tests several priorities have been identified. Researching, prototyping, testing, building and piloting are in general the best steps forward for any of these short-term focus areas. As Steve Blank would have it: "Get out of the Building!".

Cash Program Management

In the short term an important phase that needs improvement is the monitoring and evaluation phase. Steps to be taken are:

- Test if and how 121 could be more valuable for (financial) monitoring and evaluation, by creating statistics from 121 data and presenting these to the end-user
- Test if and how 121 could be used for post-distribution monitoring

- Make a prototype, test this prototype, pivot or persevere and build plus integrate

In the medium-term emphasis should be placed at using the 121 platform for a multi-program set-up, in other words enabling one humanitarian organization running several programs at the same time. This will likely include more elaborate role and access-based management, for example with offering Single Sign On.

In the longer-term focus can be placed on the other phases.

- **Program design phase**: desirability among humanitarian organizations should be gaged for a program design wizard using best practices from the sector. To be followed up by the design of a prototype and then test this with a variety of humanitarian organizations and aid workers with cash programming expertise ranging from beginner to advanced.
- **Registration phase** requires an improved design but also a decision on the level of case-management 121 should provide. Technical and design research should be conducted on how to mitigate duplications and counter fraud, specifically in a self-registration scenario. A priority is to review if multiple data management systems can be added as backends to the 121 platform, such as the EspoCRM open-source product.
- **Validation phase** could support more methods of validation, such as using OAuth 2.0 (an open standard for digital authorisation) but before that is developed further user testing by Aid Workers and validating this proposition is needed
- **Inclusion** and **Review Inclusion** phase could benefit from an increased understanding of cash programs using automated inclusion and an actual pilot using the 121 automated inclusion scoring system

Communications

In the medium term, it would be good to validate the communication flow as it is now and understand which parts would need to be added to the HO Portal to make for a more complete product. To do so the existing external communication flow in the Netherlands pilot can be analyzed and cash projects in the Dutch Caribbean should be reviewed as they integrated using the same communication tools.

In the long term, it should be understood if and how a helpdesk functionality could add value if integrated directly into the 121 platform.

Payments

In the short term the payments component requires a high priority as there are many organizations momentarily starting up cash programs and procuring financial service providers. Hence, a better understanding of the desirability and market size of technical integration of Financial Service Providers with humanitarian practices is key.

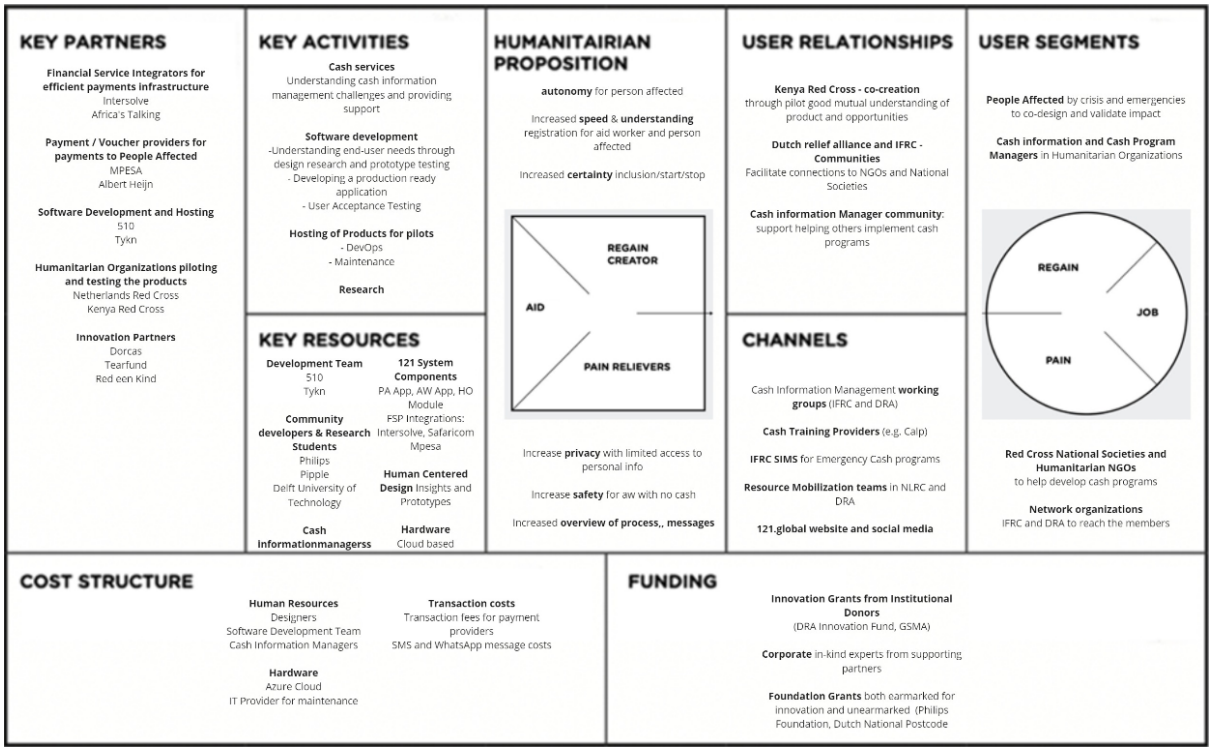
If this is validated, then in the medium term a method/approach can be developed to quickly integrate with Financial Service Providers in a very minimalistic and privacy-preserving approach using basic databases.

In the long term, research should be conducted on how to onboard finance managers into the 121 platform to approve payments and monitor financial flows. This could include providing a financial audit trail.

7. Humanitarian Canvas

7.1. Current humanitarian canvas

The humanitarian canvas of the 121 platform shows the key partners, activities and resources, users, cost structure and funding.



The operating model of the team researching and developing 121 has led thus far to a successful resourcing and funding of the innovation process over the course of 3 years. This has delivered in depth user insights, operational products and a network of partners. Particularly important during this phase of the innovation process has been the support of Foundations, the Dutch Relief Alliance Innovation Fund, GSMA and the investments done by Netherlands Red Cross. The current humanitarian canvas and operating model will run into 2021, to ensure that the product portfolio is fully validated with humanitarian organizations, aid workers and people affected, more humanitarian organizations doing cash programs are currently being engaged.

7.2. Future Humanitarian Canvas

The future operating model for 121 and the humanitarian canvas need to evolve, to ensure that a transition from research, development and piloting to scale up is possible. The key decisions to take over the course of 2021-2022 are:

- Key Partners

    - The key partners for scaling 121, such as financial services payment integrators, pay out services and voucher platforms, committed networks of humanitarian organizations, and innovation partners willing to research, develop and pilot new features. Also, integration partners are identified, such as the at Harvard Humanitarian Initiatives who develop and maintain the Kobo Toolbox.
- Key Activities
    - Whether the 121 products are centrally developed and managed, and offered as a service to humanitarian organizations, or alternatively the 121 products are made available to humanitarian network organizations for self-hosting and management.
- Key Resources
    - Whether a community of software developers should be established who further develop and maintain the open-source products in the 121 platform.
- Cost Structure
    - Whether a separate legal entity / business has to be established to further develop, maintain and/or deliver the 121 products and what type of business this should be to ensure cost-recovery and sustainability.
- Funding
    - The support of the Ministry of Foreign Affairs of the NL, another EU Ministry of Foreign Affairs, or the EU itself will be essential to come through the critical phase to scale.
    - A proposition will be developed for Foundations and Corporate partners
    - Further support Cash Information Management services to embed components of 121 in ongoing humanitarian programs
    - Reviewing opportunities for innovation program support in the humanitarian ecosystem, for further refinement and validation of the products
    - Depending on the operating model chosen, research will start to design a possible fee structure for sustainable income.

7.3. Humanitarian Environment

A full environment mapping will have to be done to support the development of the future operating model.

Market Forces

- Increasing number of humanitarian organizations are scaling up cash programming and this partially replaces their existing services.
- Cash programming, especially unconditional cash, is cross cutting existing humanitarian sector expertise and could result in changing jobs in humanitarian organizations

- Lack of knowledge on cash programming and especially the cash information management part of this
- There is an increased demand for skilled profiles and capacities on technology, data systems and digitalization of Cash and Voucher Assistance.[3]

Key Trends

- Rapid increase in cash and voucher assistance by humanitarian organizations, with an increase of 100% between 2016 and 2019. There is a trend of a smaller number of larger actors delivering a higher proportion of cash and voucher assistance globally.[3]
- Increasing investments and interest in Digital Transformation with humanitarian organizations, such as the recently launched IFRC Digital Strategy.
- Due to COVID-19 pandemic globally higher data and digital literacy, although still a big digital divide exists.
- Steadily maturing tech sector in many countries, which increases options for local support on high technology innovations.
- Increasing urbanization and therefor focus on urban humanitarian context.
- Access to the internet and digital technology rising globally, but therefor also in some context more fragility due to internet access restrictions or no approval for the use of technology to collect data, especially in areas affected by conflict.
- There is an increasing emphasis on digital identity provision and management as a critical enabler of access to aid and broader financial services.[3] However, this technology still needs to prove scalability and interoperability with official identity systems.
- The covid-10 crisis is driving rapid shift of remote and digital channels for registration, delivery and monitoring of cash and voucher assistance and these require careful consideration of data protection and data responsibility.[3]

Industry Forces

- Uprise of financial payment integrators, connecting financial service providers, however much less so in markets of high humanitarian needs. Still more focus on pay-in for commercial purposes than pay-out.
- Financial service providers increasingly opening services through programmable interfaces, improving interoperability.
- Mobile based services and the use of mobile money for Cash and Voucher assistance has continued to grow.[3]
- Plenty of attention for connecting humanitarian services such as Forecast-based Financing to social safety net schemes, and some operational examples.
- Some increase in the availability and scale of digital cash voucher assistance systems, which are an alternative in smaller geographical contexts
- The main competitor in Digital Cash and Voucher assistance programming is not technology providers, but the pen and paper process in low digital and data literacy environments.

[3] CALP – State of the World's Cash 2020

- We have seen a big uptake of Mobile Data Collection in the humanitarian sector since the launch of Kobo Toolbox.

Macroeconomic Forces

- Increasing donor requirements for transparency and restrictions on international cash transfers to some humanitarian contexts as a result of recent UN resolutions and EU council directives.
- Reducing international aid budgets due to covid-19 and localization of aid drives the need for efficiency and scalability of aid services.
- Innovation grants are still scarce and therefore innovation needs to be funded from within the humanitarian programs.
- High willingness of private sector to support humanitarian organizations with skills and services, which reduces the cost to cost to operate.
- Low availability of skilled cash information managers with humanitarian experience. This increases the need to intensify capacity building.