Design of a support system for 121

A case study on digital aid for undocumented migrants in the Netherlands

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Master Thesis

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At the end of the summer, I came in contact with Orla from 510 and formulated the brief for this graduation project. With a lot of new motivation, I started this new journey.

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Abstract

This graduation project is about digital product 121. This product is developed by 510, the data and digitalization imitative of the Netherlands Red Cross. Through 121, a person affected (PA) by a humanitarian disaster, can receive Cash Based Aid (CBA) and Information as Aid (IAA).

CBA is new form of aid, where the PA receives digital money instead of traditional in-kind aid such as food or water. There are several benefits of CBA over in-kind aid.

First, it can be delivered faster as the PA does not have to travel to a certain location to receive the aid, but can receive it on their digital device. Furthermore, it can be safer for PA and Aid Workers (AW) as no cash money needs to be handled. Also, it creates more autonomy for the PA on how to use the aid. And last, for AW the process is more efficient because of the digitalization.

121 is a promising product that could be used in many different humanitarian contexts. Ideally, the product can be used autonomously. Meaning that the PA can register, receive the aid, and use the digital money without additional support. However, research by 510 showed that often people cannot use the product autonomously and need additional support. This support be for example an aid worker assisting with the registration, or providing internet access for people who have no access to internet.

This graduation assignment was focused on finding out, what support system functionalities might be needed, for the product 121 to function optimally. Also, the goal of the project was to show the need and relevance of this support system to external stakeholders and internal stakeholders of 510, so that the development of a support system becomes an integral part in the development of 121.

A case study on undocumented migrants has been conducted, to find out what support system functionalities might be needed for that specific context. This humanitarian context was chosen, because a 121 pilot program ran from November 2020 until May 2021. During this pilot program, insights of the product in context could be gathered. Also, through an ethnographic study, insights from the end users, the undocumented migrants and aid workers have been gathered.

With the insights from the case study, design requirements could be formulated, for the design of a tool to design the support system for a certain context, and to show the need and relevance for this support system.

The final concept is a support system design approach consisting of four steps. The approach is accompanied with templates and a support system design canvas. This canvas has been specifically designed to facilitate problem finding and solution generation for support system functionalities.

Through a creative session with 510's team members and external stakeholders, the canvas can be filled in and the support system functionalities defined. The last step is implementing these functionalities in the further design of 121. Because, with a support system in place, more people are able to receive the aid they need.

Executive Summary

Introduction
When a humanitarian disaster happens, aid organisations come to action to help the people affected by the disaster. For example, when the hurricane Irma struck the island of Sint Maarten in 2017. The Netherlands Red Cross, together with St. Maarten Red Cross provided food and water to the people of the island. Traditionally, emergency aid is provided through physical things like food or non-food products. However, because of digitalisation, potential to provide aid have changed.

Cash based aid
An upcoming new form of aid in the humanitarian sector, is providing digital cash to people affected by disasters. This Cash and Voucher Assistance (CVA), or Cash Based Aid (CBA) is possible because the world becomes more digital, and more people have access to digital technology, such as smartphones, and have access to the internet.

Providing Cash Based Aid, has several benefits for the person affect (PA) by disaster and for aid workers in the field. Social benefits, include more autonomy for the PA as the person can decide what to do with the money. For local economies, CBA could be beneficial as because of CBA money could be invested in the local economy. Functional benefits include, no need to travel to a certain location to receive aid, the aid can therefore be provided faster. Furthermore, there is no need to handle cash money, therefore making the process safer. And as the PA registers online, the validation of the PA for the aid programme, could be more efficient for aid workers.

Product 121
Because of these promising benefits of Cash Based Aid, 510 - the data and digitalisation initiative of the Netherlands Red Cross – developed a digital product, that enables aid organisations to provide CBA to people affected by disaster. This graduation project is focussed on this product, which is called 121 (one-to-one).

The product is designed in a way, that through customization every aid organisation would be able to use the product, to provide CBA in a specific humanitarian context. The product, consists of two core modules: A CBA module and an Information as Aid module. As the term suggests, Information as Aid is focussed on providing helpful information to the PA. Finding the right information can be challenging, as there is an overload of information in the internet, including a lot of misinformation. In the scenario a humanitarian disaster happens, quickly finding correct and information is vital. For example, information where to find medical aid or emergency shelter.

The CBA module consists of a registration web app, where the PA could register for a specific aid program. A digital ID needs to be created, so that the PA can later log in and possibly register for other aid programs as well. The digital ID is checked by aid workers in the organisation portal, if the PA is eligible for aid, the person will receive a message confirming the inclusion in the program. The PA will then receive digital cash vouchers that could be redeemed at certain locations.

The Information as Aid module, is specifically designed for every humanitarian context. This module could for example consists of a web app with helpful information, that can be accessed by the PA.

Problem definition
121 is a promising product, that ideally could be used autonomously by the PA. However, research showed that often this is not the case and additional support is needed. For example, the PA could have difficulties registering online, and would need assistance from an aid worker with the registration. But, in the product development of 121, the focus has been mainly on developing digital functionalities, such as the registration website. And, no space and budget has been allocated to the development of support system functionalities.

In response to this problem definition, this graduation project was started. The assignment was to come up with a strategy to bridge the gap between the end user of 121 and the product. To find a solution for this problem, research has been conducted and several concepts have been created.

Research questions and approach
To guide the research, two research questions were formulated:

1. **What support system is needed for 121 to function optimally?**
2. **How can support be created within the organization, for the development of a support system?**

As 121 could be used in different context, analysing all possible contexts of 121 would be an enormous task. To narrow down the scope of the graduation project, it was therefore decided to do a case study of a specific context. The chosen humanitarian context, was undocumented migrants in the Netherlands.

Research 121
To find the answers to the research questions, first the product 121 has been analysed. This analysis showed the influences of organisations and stakeholders in the development of 121. 121 has been developed through several pilot programs. For each pilot a program proposal is written, to define what functionalities of 121 need to be developed. Because no deviation from the defined requirements in this proposal is possible, it is important to incorporate space and budget for the development of support system functionalities in the proposal. Otherwise, it cannot be assured that support system functionalities could be developed.

Case study – the Netherlands pilot
After the research on the product, the case study could be conducted. This case study started with analyzing the humanitarian context of undocumented migrants. The next step, was to conduct a design ethnography focused on understanding the situation and lives of the undocumented migrants. The last step, was to evaluate the product 121, in the humanitarian context.

The case study confirmed the need for a support system. Often, undocumented migrants cannot access or use 121 without extra support. Five bottlenecks for using or accessing 121 have been identified: Awareness, trust, digital access, registration and use of the digital aid. Results from the field and desk research have been translated into personas and persona journeys. These designs, have been used as inputs for the design phase.

Support system design

The last part of the graduation project was the design phase. In this phase, the outcomes from the research have been used to come up with a concept that could answer the main research questions. Three design requirements were formulated to guide the design process, and to be able to evaluate the concepts:

1. **The design should show the need and relevance for a support system.**
2. **The design should show what support system functionalities should be developed.**
3. **The design should be scalable for all contexts of 121.**

Program context map

The first concept was a program context map. This map was designed with the goal to visualise the hidden world of the undocumented migrant. The map was designed to be interactive, enabling the users to click on several items to see what support system functionalities should be developed. Although the map is a clear visualisation of the humanitarian context, it did not meet the three design requirements. Because of the large amount of information on the map, seeing wat support system elements needed to be developed could easily be missed, and therefore seeing the relevance and need of a support system was therefore not guaranteed. The map was too specifically designed for the context of the case study, therefore making it difficult to replicate a similar solution for other contexts of 121.

Support system design approach and canvas

The second concept was based on the idea to create a more generalized approach and canvas that could be used for all contexts of 121. The steps needed to design the program context map, were used as inspiration to come up with a 4 step approach, accompanied with a support system canvas. This canvas had been designed to facilitate problem finding and solution finding for the five support system bottlenecks that were defined during the case study research. Through going to the approach and filling in the canvas, the 510 team could define specific support system functionalities for any humanitarian context. By going through the approach with the team, the need and relevance for the support system could be emphasised. Therefore, this approach and canvas did meet the three design requirements.

The approach and canvas should be filled in during a creative session at the start of a new program. Therefore, ensuring that support system functionalities that are defined, can still be incorporated in the program proposal of that program.

The next steps, would be testing the approach and canvas with different team members and for different contexts, to validate the usefulness of the approach and canvas.

Conclusion

121 is a promising product to provide Cash Based Aid and information as aid to people affected by a humanitarian disaster. However, people cannot always use or access 121 autonomously. Therefore, a support system is needed, to ensure more people are able to use 121.

This graduation assignment was focussed on this support system. Research questions were formulated to find out, what this support system would look like, and how to show the need and relevance of this support system to important stakeholders. So that in further product development of 121, space and budget would be allocated to the development of support system functionalities.

Through a case study of a specific humanitarian context, relevant insights were gathered about the specific support system functionalities of that humanitarian context. These insights have been used to design a more generalized approach and canvas for support system design. This approach and canvas can be used for different contexts of 121, showing what support system functionalities should be developed, and through stakeholder involvement, showing the need and relevance of these support system elements. Therefore, creating a support base within the organisation for the development of support system functionalities. Assuring, space and budget would be allocated to the development of a support system for every context of 121. And by doing so, improving the effectiveness of 121, ensuring more people are able to receive the aid they need.

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PART 1

Exploration

CHAPTER 1

Project introduction

1.1 Introduction

The purpose of this graduation project was to analyse the digital aid product 121 designed by 510, an initiative of the Netherlands Red Cross. 121 is a promising product to provide Cash Based Aid (CBA) to people affected by natural or man-made disasters.

Cash Based Aid is a new form of aid where the recipient of aid receives digital cash or vouchers instead of traditional in-kind aid such as food packages or blankets. The product 121 is the facilitator of CBA and can be used by aid organizations worldwide to provide CBA in humanitarian contexts.

The digital product has been designed with the emphasis on developing digital functionalities, such as the functionality to creation a safe digital identity. However, it has been identified that offline functionalities in the humanitarian context, such as aid workers helping people register for CBA, are just as essential for the delivery of aid.

Previous research by the HCD (Human Centred Design) team of 510 indicated that there is a need for offline support functionalities in these contexts, and that 121 could benefit from both digital and offline functionalities to work together.

The goal of this graduation assignment was to find out what these offline functionalities could be, and how these functionalities could form a support system to support the digital functionalities of 121.

To answer this question, a specific context has been researched through a case study. In this case study, undocumented migrants in the Netherlands were the targeted end users of the 121 product, as this group of people has a clear need for humanitarian aid, and were expected to have high digital literacy.

Both desk and field research have been used to answer the question if offline support functionalities were needed and what those functionalities would be.

Insights from the research have been used as inputs for the development of an approach for support system design. With this approach, support systems could be designed for every specific context where 121 is used. The support system consists of both digital and offline elements and the approach shows what elements are already developed, and what elements should be developed.

Figure 1.1 - Logo of 121

Figure 1.2 - Logo of 510

1.2 Problem definition

The initial problem definition formulated in the design brief (appendix A) was formulated upon the insights from 510's HCD research, which showed that 121 in its current state does not possess all the functionalities that were requested by the end users of 121. Furthermore, the research indicated an interaction between the digital functionalities of 121 and a need for offline support functionalities in the humanitarian context.

However, from organisational level there is currently no space and budget for the development of these offline support functionalities, as the emphasis has been on developing digital functionalities. The problem definition was therefore:

"How can space be created for the integration of offline functionalities in 121, while involving and including all stakeholders?"

Because of new research insights over the course of the graduation assignment, the problem definition has been further refined during the project.

121 is a technology push product, which means that the product has not been designed specifically for a specific context. Ideally, the product could be used by the end users without the need for additional support. However, in reality this is often not the case, and the end user need additional support for using 121. This additional support system could consist of both digital (e.g., WhatsApp Helpdesk) and offline functionalities (e.g., Physical Helpdesk). The problem definition is therefore not per se focussed on offline elements only, but on this support system as a whole.

1.3 Research questions

Research showed that not all end users of 121 could use the product autonomously, and the need for a support system was identified. Furthermore, within the organisation there was a lack of support base for the development of a support system, as the focus of the organisation was aimed at developing digital functionalities.

The research question is therefore twofold:

1. What support system is needed for 121 to function optimally?

2. How can support be created within the organization, for the development of a support system?

These research questions will be answered throughout this graduation project.

1.4 Scope

Because the support system should be different for every context, researching all possible contexts of 121 would not fit in the scope of this graduation project. Therefore, it was decided, to research a specific case study and use the outcomes from that study to design an approach that would be replicable in other contexts. The humanitarian context that was chosen, was undocumented migrants in the Netherlands.

1.5 Assignment

The assignment from the client organization was to design a strategy to bridge the gap between the end users and the digital product 121.

This strategy could be in the format of a framework, manual or tool and should consist of guidelines on how to build and maintain a support system. Furthermore, this strategy should be applicable for all current and future contexts where 121 will be used, to make the solution scalable.

Different designs have been created throughout the project, eventually leading to a 4-step approach for support system design together with a support system canvas. This final deliverable will be discussed in chapter 8.

1.6 Relevance of the work

With the outcomes of this graduation project, 510 has a new approach that can be added to current methodologies and work processes of the organisation. This approach can be used to design fitting support systems for current and new humanitarian contexts where 121 is employed. Because the support system can be identified at the beginning of a new humanitarian program, space and budget can be allocated to the development of a support system. With a support system, 121 can be more effective for providing aid as more end users will be able to use the product.

1.7 Readers guide

This report consists of three part.

The first part -exploration- is about introducing the project (current chapter) and research on the product 121 (chapter 2).

The next part -Case study- consists of three chapters. Chapter 3 will discuss the humanitarian context of the study, chapter 4 will discuss the end user research and chapter 5 will discuss the product in context analysis.

The last part -Design- is dedicated to the final design deliverables of this graduation assignment. The outcomes from the research will be translated into a program context map (chapter 6). After evaluating this program context map, the next concept and final design deliverable (the support system design approach and canvas) will be discussed in chapter 7.

The last chapter of the report will consist of a general conclusion and recommendations.

1.8 Project approach

The approach of this graduation project is based on the double diamond framework (Ball, n.d.). This framework consists of four phases and the two diamond in the framewor reflect the diverging and converging dynamics of the research and design work. The project timeline could be plotted onto this framework (see figure 1.3).

Two smaller diamonds have been added at th start and the end of the project timeline.

Diamond 1.
Has been used to formulate the design brief, find out where the problem definition originates from and to define the scope of the graduation project.

Diamond 2.
Started with an analysis of the organization, product and stakeholders. The result of this diamond was a refinement of the original problem definition and assignment. After this refinement specific requirements for design could be formulated.

Diamond 3.
The diverging part of this diamond consisted of desk and field research on the end user and the humanitarian context. The converging phase, was focussed on visualising the research outcomes, and turning them into tangible design that show the humanitarian context of the case study. The outcome of this phase was the program context map.

Diamond 4.
As the program context map was difficult to replicate, a last diamond was added to the timeline. In this diamond it was zoomed out from the Netherlands case study to develop an approach for support system design for other contexts of 121. This approach is the end deliverable of this graduation project.

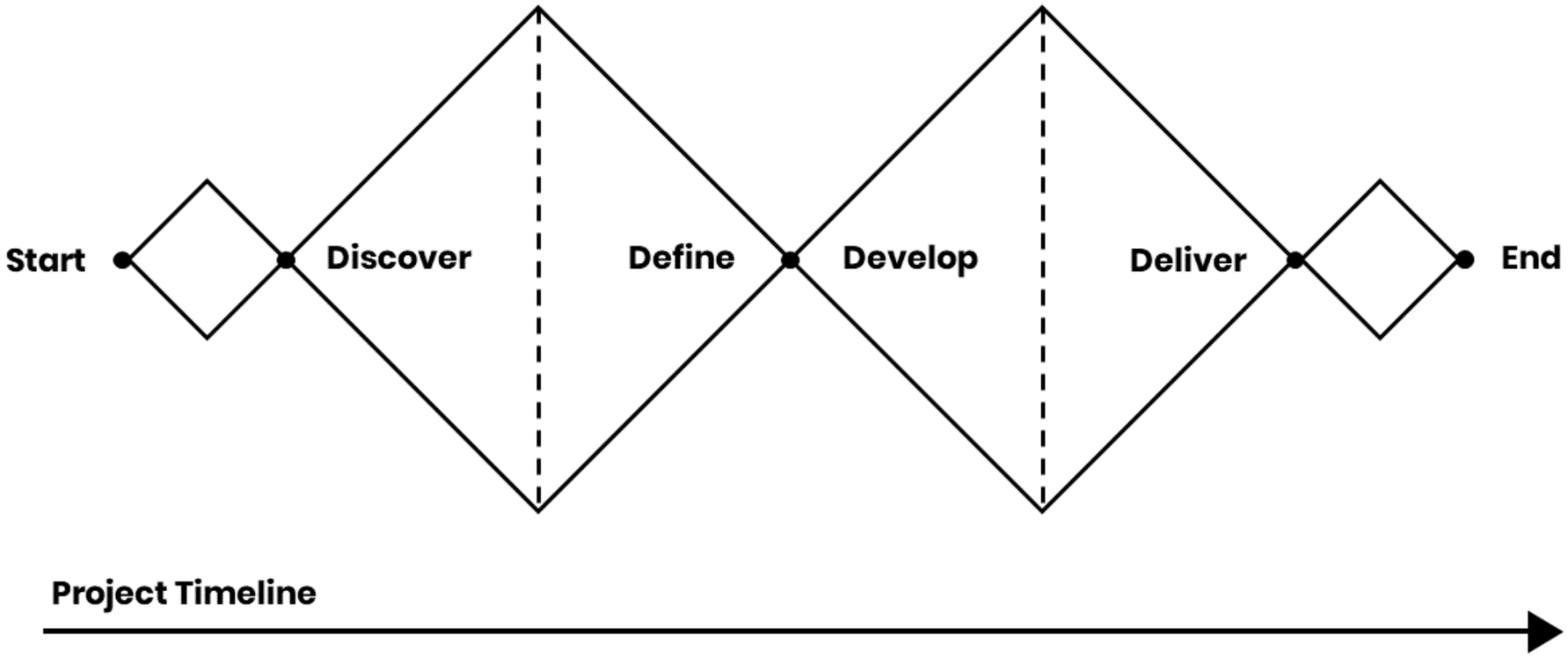


Figure 1.3 - "Double Diamond" project timeline

CHAPTER 2

Product

2.1 Introduction

This chapter discusses the digital product 121, which is developed by 510, the data and digitalization initiative of the Netherlands Red Cross. With this product, Cash Based Aid and Information as Aid could be provided to people affected by humanitarian disasters.

Because of the digital functionalities of 121, the process of providing aid could be faster, safer and fairer. The recipient of aid, should be able to autonomously register for the aid, and receive the aid digitally. The product takes work out of the hands of aid workers, as registration and validation of the person affected by disaster is digitalized.

This chapter starts with a discussion of humanitarian programs. What are these programs, how are they created and executed and what role could 121 play in these programs?

Then, the product architecture of 121 is discussed as well as the current functionalities and interfaces.

After a clear understanding of the product is established, the development of 121 will be discussed. The client organization will be introduced as well as other important stakeholders that influence the product development of 121.

At the end of the chapter there will be understanding of the product 121, the development of the product and the organizations involved in the development.

Figure 2.1 - Debris removal, after hurricane Irma struck the island St. Maarten in 2017

2.2 Humanitarian aid

Whenever a natural or manmade disaster happens, humanitarian organization come in action to provide aid to the people affected by the disaster. Humanitarian aid can have many different forms, but the two main categories that can be distinguished are emergency aid and developmental aid (Rysaback-Smith, 2015).

The first, is focussed at alleviating suffering of people that are struck by a natural or manmade disaster. An example of a manmade disaster was the explosion in the port of Beirut in 2020 (BBC, 2020). Because of this explosion many buildings were destroyed and people were buried or wounded by debris. Humanitarian organisations took action to save and rescue buried people as well as treat the wounded. An example of a natural disaster, is the hurricane Irma that rushed over the island St. Maarten in 2017, destroying buildings and infrastructure and creating chaos on the island (figure 2.1). Emergency aid was provided by the Netherlands Red Cross and Saint Maarten Red Cross by distributing food, water and non-food items to people that were affected by to the hurricane.

In both examples, emergency aid provided assistance to people with direct emergency needs. The difference of emergency aid compared to developmental aid is that the latter is focused on providing structural solutions to a specific humanitarian context. For example, by organizing schooling programmes or providing new methods for improved farming.

Humanitarian programs

When a humanitarian organization takes action to provide aid in a specific humanitarian context, this is called a humanitarian program. Humanitarian programs consist of three things: (1) humanitarian organization, (2) providing a specific form of aid to (3) people in a specific humanitarian context. This could for example be Oxfam, providing new farming methods, to farmers in Malawi. But it could also be UNICEF distributing water and hygiene supplies to families with children in underground bomb shelters in Donetsk, Ukraine (figure 2.2).

Data and digitalization in humanitarian aid

Aid can be provided in many forms. Traditionally, assistance was provided in-kind, which means that physical goods were provided such as food, blankets or emergency shelters. Nowadays, the digitalization of the world creates opportunities to provide aid in different ways.

The kind of aid which is provided by aid organisations changes over time, because people and organisations change their views on what kind of aid is most effective in a certain situation (Rysaback-Smith, 2015). One of the latest developments in providing humanitarian aid is, is providing aid by transferring digital money to the people affected by disaster. Because more people have access to internet (Johnson, 2021) and digital technology such as smartphones (O'Dea, 2021), this form of aid called Cash Voucher Assistance (CVA), is a promising new form of aid.

Benefits of Cash and Voucher Assistance

The benefits of CVA are, that it creates more autonomy for the people receiving the aid, as they can decide themselves how to use the aid. Furthermore, CVA could be positive for the local economy, as money is invested in local companies and organisations (Tschunkert & Schläpfer, 2021). Because aid is dispensed digitally, people could receive the aid faster, as there is no need to travel to a physical location to receive the aid. It is also safer for aid workers and the recipients of aid, as the money is transferred digitally, so no amounts of cash money need to be handled. Furthermore, for aid organisations and aid workers, the process of providing aid could be more efficient and streamlined, as people can register and be validated online. With the creation of digital IDs, it is also easier for aid workers to check if the recipients have the right to receive the aid and who needs the aid the most. This increases the fairness of distributing the aid, assuring people who need it the most will receive the aid they need. In this way, through CVA the provision of aid could be safer, faster and fairer for people who receive aid and for aid organisations.

Information as Aid

Another form of aid that will be discussed during this graduation assignment is Information as Aid (IAA). Getting the right and relevant information can be difficult as there is an overload of information and misinformation available online. In emergency situations, people need to find the right information for their situation. Providing relevant information can be vital during a humanitarian disaster, for example information where to find shelter or medical aid.

Digitalization creates new opportunities for the provision of information and this could be an integral package together with digital cash transfers.

Figure 2.2. - UNICEF staff distributing water and hygiene supplies to families with children in the underground bomb shelter in Donetsk, Ukraine

2.3 Product

121 is the product that deals with Cash and Voucher Assistance (or Cash Based Aid according to 510) and Information as Aid. These two types of aid could be delivered through offline means, such as physical cash or information leaflets. However, 121 is focussed at digital ways to provide Cash Based Aid (CBA) and Information as Aid (IAA), such as delivering digital vouchers and providing information through a web app.

Through customization, different aid organisations could make use of 121 to provide CBA and IAA in their specific humanitarian program.

End users

121 is specifically designed for aid workers (AW) and cash managers (CM) of aid organizations with the goal to provide aid to people affected (PA) by a humanitarian disaster.

Person Affected

For the person affected (PA) it is most important to receive aid as fast as possible and in a safe way. Furthermore, it is in the interest of the PA to have autonomy on how to receive the aid.

Because CBA is digital money, the PA can register online and therefor does not have to travel to a physical registration place. Because of the digital aspects of CBA, the aid can be received faster than traditional forms of aid. Furthermore, receiving money instead of other forms of aid results in more autonomy and is more dignified for the PA.

Aid Worker

The role of the aid worker is to get the aid fast and efficient to the PA. Through digitalization, its quicker for the AW to validate the PA and include the PA in the aid program. Also, because there is no physical money involved, this is safer than dealing with physical money. Because of the digital registration, the process can also be faster. Creating more time for the AW to work on other urgent matters.

Product architecture

The core of the 121 product, are the CBA and IAA modules. Through these modules, aid organisations are able to provide aid to people affected by disaster.

The CBA module

Interface

At the front end, the CBA module consists of a self-registration web app where the person affected can register for the aid program. The interface of this web app has a chat style format that guides the PA through the registration (see figure 2.3). The chat style format is designed to facilitate the registration also for people who are less digitally literate. The web app can be set to the preferred language, and for each speech bubble there is the option to listen to a voice message explaining the text. The web app can be reached through a specific URL that can be opened in browsers on smartphones, tablets or computers.

Registration

As aid organisations need to validate people applying for aid, they need some personal information to see if the applicant is eligible for aid. Therefore, the PA needs to create a digital ID. With this ID, the PA could log in another time to register for other aid programmes.

The preferred communication method of 121 (in the Netherlands context) is through WhatsApp. However, many people have two phone numbers. They use one for WhatsApp and one for calling and texting people. Therefore, there is the option to register two phone numbers and to select the preferred communication method. If people only have a phone number for texting and calling, they cannot receive a digital voucher, as this voucher can only be sent through WhatsApp. The workaround for this, is to enable those people to collect a physical voucher at a certain location after showing a confirmation text message that they received.

Procedure/use

After registration, the PA receives a confirmation message through WhatsApp or text message, that tells the person that they have successfully been registered and now have to wait for validation and inclusion in the program. After validation, they receive another message that they are eligible for aid and have been included in the aid program. From that moment they will receive digital cash vouchers through WhatsApp, until they are no longer eligible for aid (because they have moved to another program) or the humanitarian program ends.

When the PA is no longer eligible for aid or the program is going to end, the PA will receive a message with information about the last vouchers they will receive.

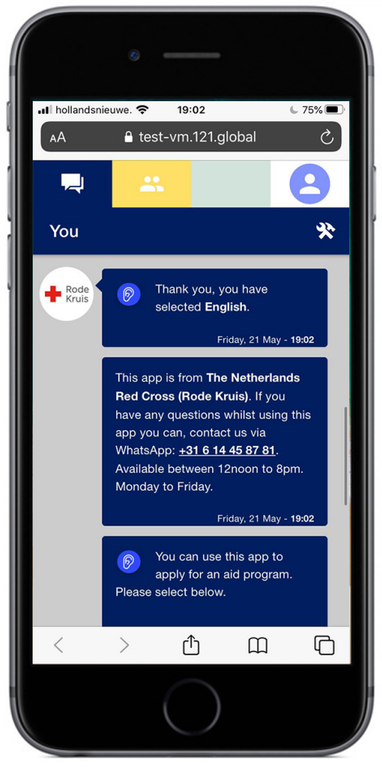


Figure 2.3 - CBA module interface

The number of digital vouchers people will receive and the places where these vouchers can be used, will be different per humanitarian program context.

Back end

At the back end, an organisation portal has been developed (see figure 2.4). In this portal, aid workers and cash managers can see who signed up for the aid programs and check people for eligibility for the program. It can also be checked if the issuing of vouchers was successful and what the total number of issued vouchers is.

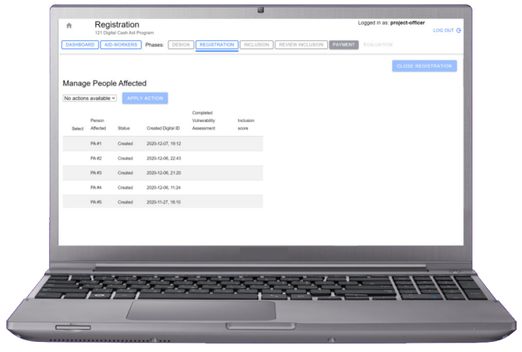


Figure 2.4 - Organisation portal

The Information as Aid module

The Information as Aid module needs to be adapted to the specific context it is needed for. To show an example for this section, the information as aid module for the Netherlands Context is used.

For the Netherlands pilot, an information web app has been developed which contains helpful information for undocumented migrants. Currently there is information available for Amsterdam and Utrecht. For both cities there are six categories with information about where to find appropriate aid (see figure 2.5). This information is an up-to-date representation of the aid offering in the cities.

The goal of the web app is to make it easier and reduce the time needed, to find appropriate aid.

Back end

Aid workers can access and update the information that is displayed in the information portal. This portal with a spreadsheet layout is easy to edit, therefore enabling aid workers to maintain correct information at the information web app (see figure 2.6).

System architecture

Together the CBA and IAA modules make up the core system of 121. Through this core system, aid organisations are able to provide aid to their target audience. Ideally the end users of the system are able to register and receive aid autonomously. However, not everyone can access this core system without help. There are sometimes barriers for the end users to receive aid (see figure 2.7).

Five bottlenecks have been identified that could limit the use of the core system of 121: Awareness, trust, digital access, registration and using the voucher. For 121 to function optimally, these bottlenecks need to be resolved. This could be achieved through a support system, that functions as an additional system around the core system, enabling access to the core system modules (see figure 2.8).

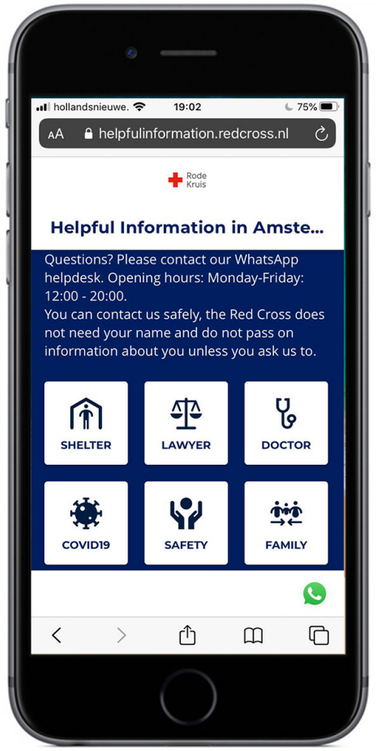


Figure 2.5 - Helpful information interface

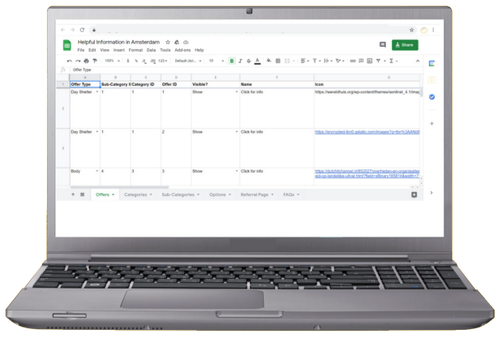


Figure 2.6 - Information portal

Support system

This support system should consist of digital and offline functionalities that could solve the five identified bottlenecks. For example, a helpdesk that supports the PA with the registration, but also providing internet access could be a support system functionality.

Support system functionalities are different for every context 121 is being used, therefore it is important to identify and solve the biggest bottlenecks. An example of a bottleneck that is present in the Dutch pilot, is the lack of internet connection when living on the streets. Without access to internet, the 121 product cannot be used, registration is impossible and digital vouchers cannot be received. A solution that could solve this bottleneck is providing Free Wi-Fi spots at central locations, such as a train station. In that way undocumented migrants could connect to internet, register and receive digital vouchers.

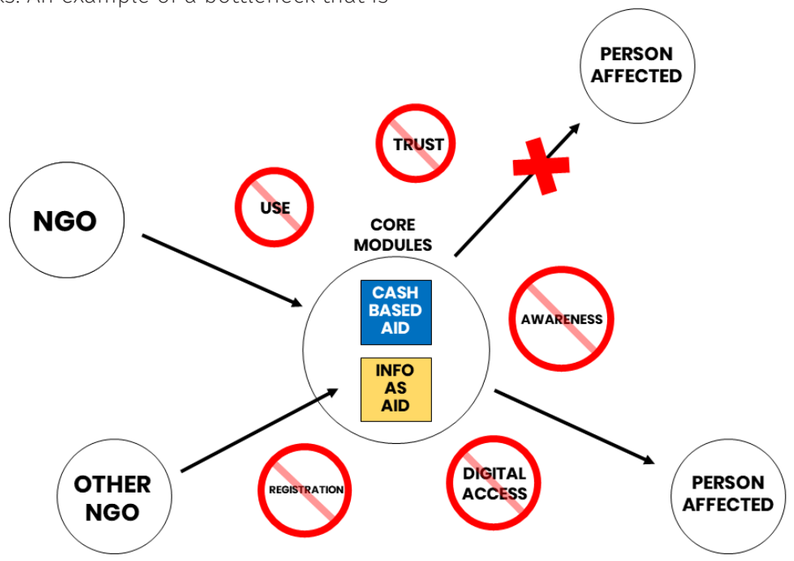


Figure 2.7 - 121 without support system

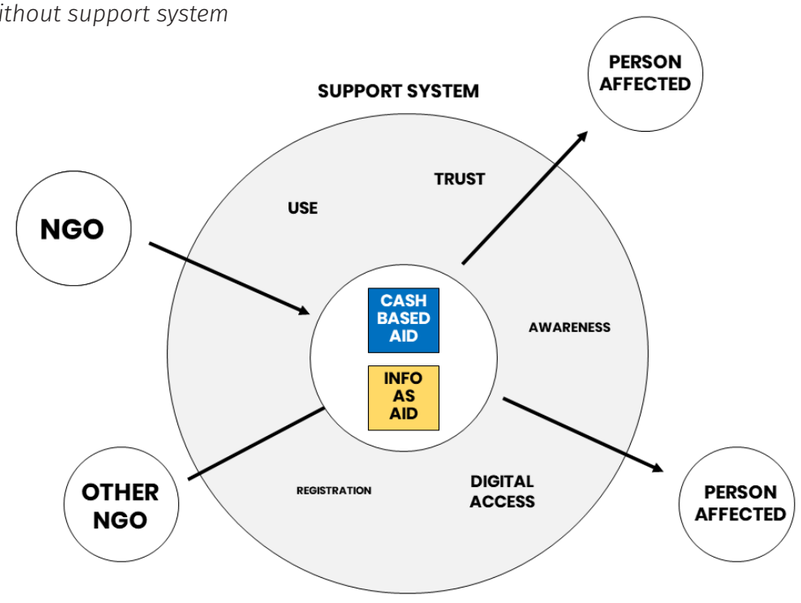


Figure 2.8 - 121 with support system

2.4 Organisation and development

Data and digitalization initiative 510

510 started in 2017 with the vision that with smart use of (big) data, humanitarian actions could be faster, better and more cost effective. The purpose of 510 is to:

"Improve the speed, quality and cost-effectiveness of humanitarian aid by using data & digital products." (510, sd).

From a core team of 3 people in 2017, 510 has grown to a team of around 90 team members, consisting of staff & volunteers, at the time of writing. The team consists of data scientists, developers and Human Centred/Strategic Product Designers.

The 510 initiative main clients are the Red Cross National Societies and their local partners with a drive for data & digital transformation. 510 specialises on several aspects: Digital Risk Assessment, Predictive Impact Analytics, Emergency Data support and Direct Digital aid. For each aspect, corresponding digital products have been developed.

The goal of 510 is to leverage data & digital to improve the ways humanitarian action could take place. As the world becomes more digitally connected, big data and digitalization are some of the developments that already do, and will even more influence human life.

Products of 510

There are four main focus points for the product development of 510 (see figure 2.9) which focus on actions before, during and after disasters.

Based on these four focus points, the following products and services have been developed:

- Community risk Assessment (CRA)
- Epidemic Risk Assessment (ERA)
- Impact Based Forecasting (IBF)
- Surge Information Management Support (SIMS) (lead by American Red Cross)
- Damage Assessment Tool
- 121 CBA: Cash Based Aid

The focus of the graduation assignment is on the last product 121 CBA.

Figure 2.9 - 510's four focus points for product and service development

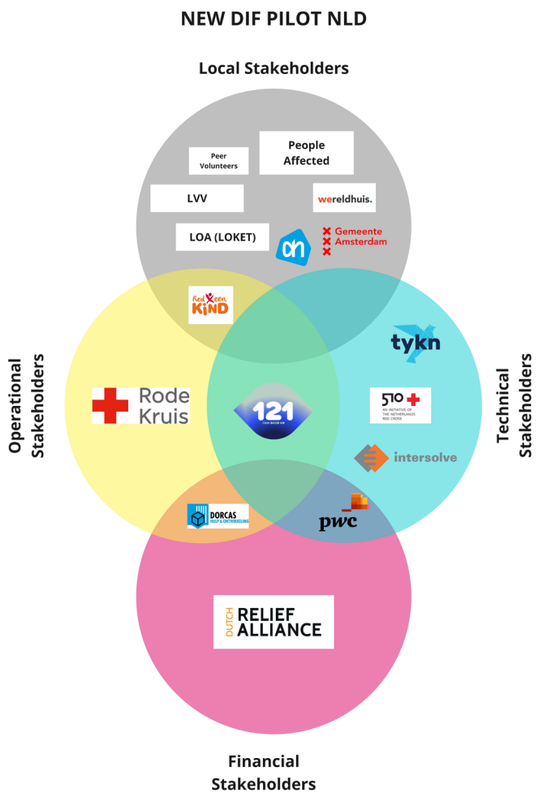


Figure 2.10 - Stakeholders involved in the DIF consortium (the 121 Netherlands pilot)

121 Development

121's product development is different than the development of a commercial product. Because humanitarian aid is program based, for every program a specific program proposal is written. Donors and aid organizations come together in consortia and define who needs help, what budget is available and what should be delivered (see figure 2.10).

As 121 is a humanitarian product, the development also took place through a program-based format, this format happened to have two pilots. As the product itself does not create revenue, it is always dependent on money from donors or funds. The program-based development approach could be compared to seed investment rounds for a commercial startup. In these rounds, investors invest money in startups so they can further develop their promising ideas or products. In this analogy, the seed rounds would refer to the investments made by donors at each pilot.

The only problem with this analogy is, that with seed rounds the investor does not have a big influence on where the money is spent on, while donors demand that certain aspects need to be delivered. For a startup, failure is an option and losing the money of the investor is part of the investors risk. But for a humanitarian organization, money from donors needs to be tracked. This creates a situation where in the program proposal it is already defined what elements need to be developed by the end of the pilot.

However, during the development of a new product, there are always uncertainties and unexpected turns of events. While invested money for a commercial product could be reallocated to where it is most needed, money from program-based programs is fixed and cannot be changed to other features or aspects, even when research or best practices show that the money is better spent on other features.

Pilot structure

Several pilots have been organised for the development of 121 (see figure 2.11). The setup of a pilot is always the same, the HCD department organises co-design sessions to gather user insights from the end users, and the development team works on developing technical functionalities that will be tested during the pilot.

The first pilot took place in the end of 2018 at St. Maarten in collaboration between 510 and Red Cross St. Maarten. The NLRC also started subcontracting the private sector organization Tykn to help with software development. The goal of the pilot was to co-design and test with end users and to test the technical functionalities of registration, validation and token distribution.

Just after the St. Maarten pilot, the Ukraine pilot took place. This pilot was in collaboration with humanitarian organization Dorcas and funded by the Dutch Relief Alliance (DRA). This second pilot had the goal to pilot the registration and validation of the PA and test the digital identity system and inclusion protocols.

The third and fourth pilot were planned to take place in Malawi and Ethiopia in 2020. In this pilot the Cash distribution system was going to be tested. Again, Dorcas and the DRA were involved, together with several other organizations (see figure 2.11). Because of the COVID-19 pandemic, the pilot could not take place in the selected countries. Therefore, it was decided to combine the pilots and change the scope to the Netherlands. This is the Netherlands pilot this graduation project is focussed on.

The Netherlands pilot takes place around the same time as the 5th pilot in Kenya, that started at the end of 2020. Despite the pandemic, the Kenyan pilot could still proceed in the same context. This pilot was in collaboration with the Kenyan and British Red Cross, funded by GSMA and IKEA foundation and with technical partner Safaricom for the distribution of cash, through their M-Pesa system.

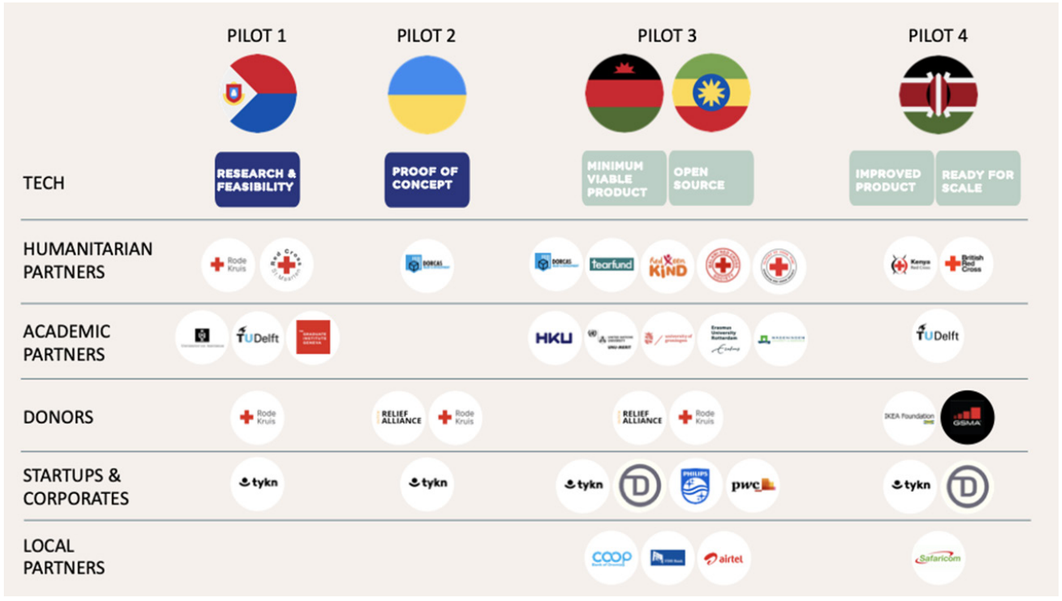


Figure 2.11 - Overview of 121 pilots

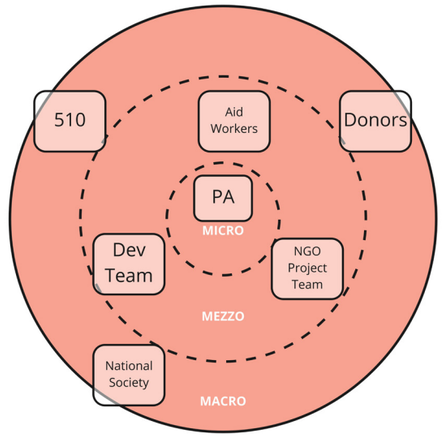


Figure 2.12. - Stakeholder levels

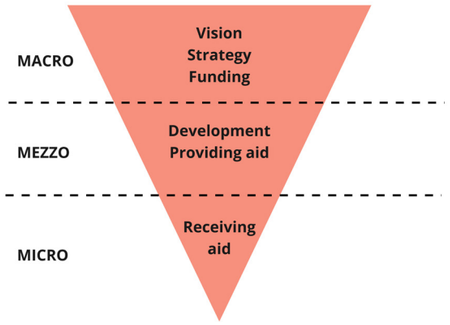


Figure 2.13. - Roles of stakeholders

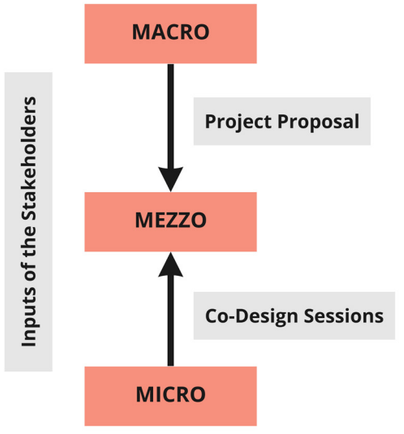


Figure 2.14 - Inputs streams from stakeholders

Stakeholder influence in the development of 121

In the humanitarian sector, three stakeholder levels can be defined: A macro, mezzo and micro level (see figure 2.12).

On the macro level, the top management and external parties such as donors and other NGOs are positioned. They generate the development strategy and formulate what features need to be developed for each pilot. These requirements are then translated into a program proposal.

Developers and designers are positioned in the middle of the model, in the mezzo level. On this level the product and functionalities are developed.

At the micro level the PA and AW are positioned. Their tasks are the delivering and receiving aid (see figure 2.13).

Input streams

There are two input streams for the development of 121 (see figure 2.14). One stream from macro level in the form of the program proposal, and one stream from the micro level in the form of insights from co-design sessions and interviews with end users.

These micro level insights identified that there is a need for a support system. On the other hand, in the program proposal there was no space or budget allocated for the development of a support system.

This misfit between the program proposal and the insights from the field is undesirable, because therefore the possibility exists that end users of the product are not able to receive the aid they need.

2.5 Conclusion

This chapter started with discussing humanitarian aid, humanitarian programs and current trends in the humanitarian landscape. The trend of providing cash and voucher assistance (CVA) instead of traditional in-kind assistance, was the reason for the digital product 121 to be developed.

The product 121 can be used by humanitarian organisation to provide Cash Based Aid and Information as Aid, to people affected by a humanitarian disaster. Research showed that the core modules CBA and IAA cannot always be accessed by the end users and therefore a support system is needed. This support system ensures that bottlenecks for accessing and using the 121 product can be solved.

Furthermore, the client organisation 510 and other stakeholders in the humanitarian sector that influenced the development of 121 were introduced. The structure of development through pilots and the binding role program proposals have here, has been explained. This chapter shows, that in the humanitarian sector many stakeholders are involved that influence and affect the development of 121. It should be safeguarded that the right things are addressed and developed, so that people affected by disaster receive the aid they need.

The need for a support system was identified, as well as the importance of stakeholder involvement for allocating space and budget to the development of a support system. The next parts of this report will discuss how stakeholders can be involved and fitting support systems can be designed.

To narrow down the scope of the graduation assignment, a specific case study has been researched. The context of this case study is the Netherlands pilot of 121, which addresses the needs of undocumented migrants. The next part will discuss this case study.

PART 2

Case Study

CHAPTER 3

121 Netherlands pilot

3.1 Introduction

To narrow down the scope of the graduation assignment, it was decided to carry out a case study. The goal of the case study was to gain insights in the support system of a specific context, and to eventually use these insights for the development of an overarching approach for support system design.

The humanitarian context of the case study was undocumented migrants, in need of shelter, food and information about available aid services in the Netherlands. The main reason for choosing this context was that a pilot with 121 was planned to take place in Amsterdam from the beginning of November 2020 until the end of May 2021. This pilot was an ideal moment for researching the support system.

The situation of undocumented migrants has been researched through both desk and field research. First the humanitarian context will be discussed. Then, the daily reality and experience of undocumented migrants will be explored through a design ethnography. And last, the 121 product will be evaluated in the humanitarian context.

Results from the case study have been used as inputs for the design phase which will be discussed in part III of this report.

3.2 Setup of the Netherlands pilot

Goal
The goal of the Netherlands pilot was to support undocumented migrants by helping them meet their needs and to find out if 121 could be used for this. Insights from co-design sessions with undocumented migrants that were organized by 510 indicated that there was a clear humanitarian need for support, the target group had high digital literacy and smartphone technology was abundant.

Tests
The technical functionalities that needed to be tested were the self-registration module for people affected, a referral system with information as aid and a humanitarian organization portal for the project managers.

Location
The initial location for the pilot was planned to be Amsterdam, as a lot of research had taken place there, and also because a big network of aid organisations is involved in the issue of undocumented migrants. Such an organization is the Worldhouse, a day shelter for undocumented migrants. There was already a connection between the NLRC and the Worldhouse, as NLRC worked together with them by temporarily opening and running the shelter on the weekend. This place had also been used before to facilitate user tests and co-design sessions with undocumented migrants, as it's a place they know and like to be at.

Local partners
The Worldhouse was also the place where a physical helpdesk was organized every Thursday afternoon. People with questions about the pilot, or people who needed help with registering in the system could visit the Worldhouse and have a conversation with a helpdesk volunteer from the NLRC.

Another local partner is the Loket Ongedocumenteerde Migranten (LOA) or, shortly, Loket. This place is responsible for registering undocumented migrants for the LVV 24h shelter program. At the Loket, people can ask questions and get referred to aid organizations within Amsterdam. As the Loket is organized by the municipality of Amsterdam, their employees can also directly contact and consult governmental bodies such as the IND (Immigration Services).

Target group
When providing aid, there should be conditions on who receives aid and who will not. Otherwise, the target group would be too big, or people who do not need the aid could still benefit from it. Therefore, a specific target group was selected for the NLD pilot. This group needed to have clear, verifiable characteristics, so that it could be easily checked whether someone was eligible for the support.

The specific target group eligible for the support were undocumented migrants on the LVV-waiting list. The LVV (Landelijke Vreemdelingen Voorzieningen) program is a pilot program organized by the Dutch government together with five participating municipalities and is oriented at helping undocumented migrants finding a way out of living an undocumented life while providing 24h shelter. When migrants get included in the program, they get a place to live assigned. However, as there are only limited places available, there is a wait list. It can take weeks or months before someone on the wait list gets included and, in the meantime, there is (almost) no support for the undocumented migrant. Therefore, this group of people could really use support in the form of CBA. By defining these eligibility criteria, checking if someone can be included for the CBA support is now a matter of checking whether people are on the wait list of the LVV program.

Distribution of CBA
At the start of the pilot, all people on the LVV wait list on that moment did receive a text message with a link to the registration web app. When successfully registered, the PA would receive a digital Albert Heijn (supermarket) voucher every Tuesday afternoon through WhatsApp. In case the PA did not have WhatsApp, there is the possibility to collect a physical voucher at the Loket.

Every week the wait list is updated, removing the people who got into the 24h shelter and adding people who have signed up for the program and are on the wait list.

Helpful information website
The other element that is tested during the pilot is a website containing helpful information for undocumented migrants (and aid workers).

The website has 6 categories, where people can find relevant and up to date information on where to find the aid they need (figure 2.5). The website is shared and promoted by everyone involved in the CBA program, and flyers of the website are available at the Loket and at the Worldhouse.

Helpdesk
The last element of the 121 NLD pilot is a helpdesk service which is available both online and offline. Offline there is a physical helpdesk in the Worldhouse every Thursday afternoon (figure 3.2). Online, people could contact helpdesk volunteers through sending a message with WhatsApp. This WhatsApp helpdesk is available every day from 12:00 – 20:00 (figure 3.1).

The goal of the helpdesk is to answer questions related to the CBA program. For example, about how to register or when to receive the voucher. The helpdesk was also used to answer questions unrelated to this specific pilot. For example, questions about access to a doctor or where to find a place to sleep.

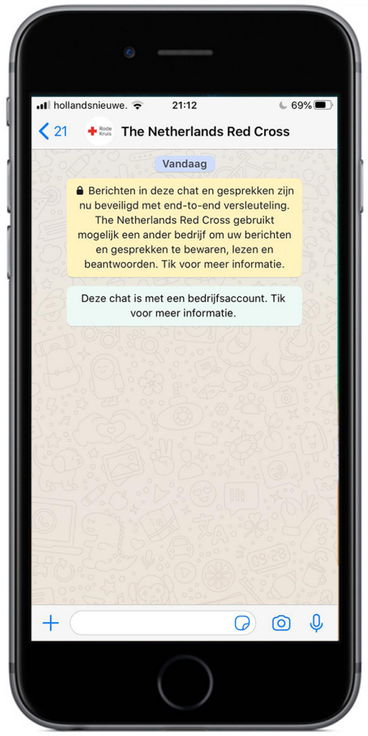


Figure 3.1. - The Red Cross WhatsApp helpdesk number

Figure 3.2 - Red Cross volunteer assisting PA with CBA registration, at the Worldhouse helpdesk

CHAPTER 4

Humanitarian context

4.1 Introduction

The first step of the case study was to research the humanitarian context. To get an understanding of the challenges of the issue of undocumented migrants, and to see what stakeholders and organisations are involved in this issue. The results from this study are discussed in this chapter.

4.2 Research setup

Goal of the research

The goal of the research was to understand the situation of undocumented migrants in the Netherlands. What is the humanitarian context and how do people end up there? The issue of undocumented migrants is an underexposed issue, and therefore research was needed to shed light on this context.

Method

Internet sources from governmental websites have been consulted to get an understanding about the organizations involved and the procedure asylum seekers have to go through. This research led to an overview of the asylum process. Furthermore, different literature and web sources have been used to understand the role of other stakeholders such as municipalities, in the issue. Last, internal literature from the Netherlands Red Cross and conversations with NLRC aid workers has been used to understand their view on the issue, and to see on what aspects the NLRC is focussed on providing aid for undocumented migrants.

Figure 4.1 - People outside asylum complex in Ter Apel

4.3 Context analysis

Undocumented Migrants in the Netherlands

Migration is of all times, but the reasons why people migrate will be different for every situation. However, there is one main reason why people migrate, and that is the belief that moving to another place will be an improvement compared to their current situation. At a daily basis, migrants try to cross the Mediterranean Sea to reach southern Europe by boat, while others travel over land through Turkey and Eastern Europe (Frontex, 2021).

Eventually, some migrants might end up in the Netherlands. Some may have planned to go there, some may just have ended up there actually aiming for another country, some may be unknowingly smuggled into the country by human smugglers. When arrived in the Netherlands, migrants have two options, either apply for asylum, or stay unnoticed and start living undocumented.

Staying in the Netherlands without a residence permit is illegal and therefore the Dutch government acts through discouraging policies and measure (Amnesty, n.d.). Undocumented migrants are therefore excluded from social services and thus cannot take a job or apply for permanent housing. If people get arrested by the police, they can be put detention and handed over to the Repatriation and Departure Service who will return the undocumented migrant to their country of origin (Illegaliteit/Vreemdelingen, sd).

Because undocumented migrants try to keep a low profile, it is hard to estimate the exact number of undocumented migrants living in the Netherlands. The people going through an asylum centre (AZC) are counted, but when they are urged to return to their home country, many of them leave with destination unknown. The Netherlands Red Cross estimates that there are between 23.000 and 58.000 undocumented migrants living in the Netherlands (Rode Kruis, n.d.). Some of this group will have found their way in the society, having a network of friends or fellow undocumented migrants. Some will be in contact with aid organizations or volunteer-based initiatives which support undocumented migrants. Others will be lost or on their own, not knowing where to go, where to find help, or to find basic amenities like food and shelter. It is this last group that is in direct need of humanitarian aid.

Undocumented migrants and the Netherlands Red Cross

The Red Cross, as a humanitarian organization acts independently off political views and believes and has the sole purpose to help people that need aid (Rode Kruis, n.d.) (IFRC, n.d.). Many undocumented migrants are in a vulnerable position where they need aid. Therefore, the NLRC has several initiatives to support undocumented migrants and conducts research to find out in what way this group can be best supported. Research by the NLRC showed that the need for help is different for every migrant, but that migrants can be classified into five stadia, according to their situation (see figure 4.2). It is different per person where to end up after leaving the AZC. Some migrants know their way around, have some friends or a network who tell them where to go to find food and shelter. Others will have no idea where to go and find aid and start in stadium 1. Migrants can both move up and down is stadia. If for example, due to policy changes, night shelters close, migrants can end up sleeping back on the streets again.

People in stadium 1 and 2 are in the most vulnerable situation and are in immediate need of emergency aid.

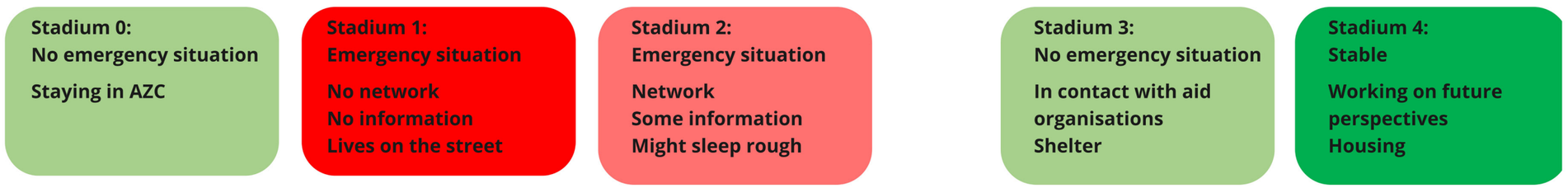


Figure 4.2 - Undocumtented migrant stadia defined by Netherlands Red Cross

Asylum Procedure

If a migrant applies for asylum, they must report in person at the application centre in Ter Apel. After successful registration, the migrant can enter the general asylum procedure which takes 8 days. During these days the migrant is interviewed on the reasons why they apply for asylum in the Netherlands. In the meantime, the migrant gets housing in an AZC. After the general asylum procedure, the migrants could either get a temporary asylum residence permit valid for maximum of 5 years, or enters the extended asylum procedure or gets a negative decision which means the migrant has to leave the country within 28 days. The migrant is able to appeal against this negative decision to a Dutch court. It can then be decided to start over again and go back into the 8 days general asylum procedure (IND, sd).

All the options of the asylum procedure are depicted in figure 4.3.
There can be several reasons why people receive a negative decision. It is then up to the person to decide what to do next. Migrants have 28 days to voluntarily leave the AZC and leave the country. However, for many migrants this is not an option. They either do not want to leave the county, are physically and mentally not capable to do so, or will not be accepter anymore in their country of origin because they have lost their formal travel documents. If they do not leave the AZC within 28 days, they will be handed over to the Repatriation and Departure Service (DT&V, sd) who will assist in getting people back to their country of origin.

To prevent being forced to return to their country of origin, some migrants leave the AZC and choose to stay undocumented in the Netherlands.

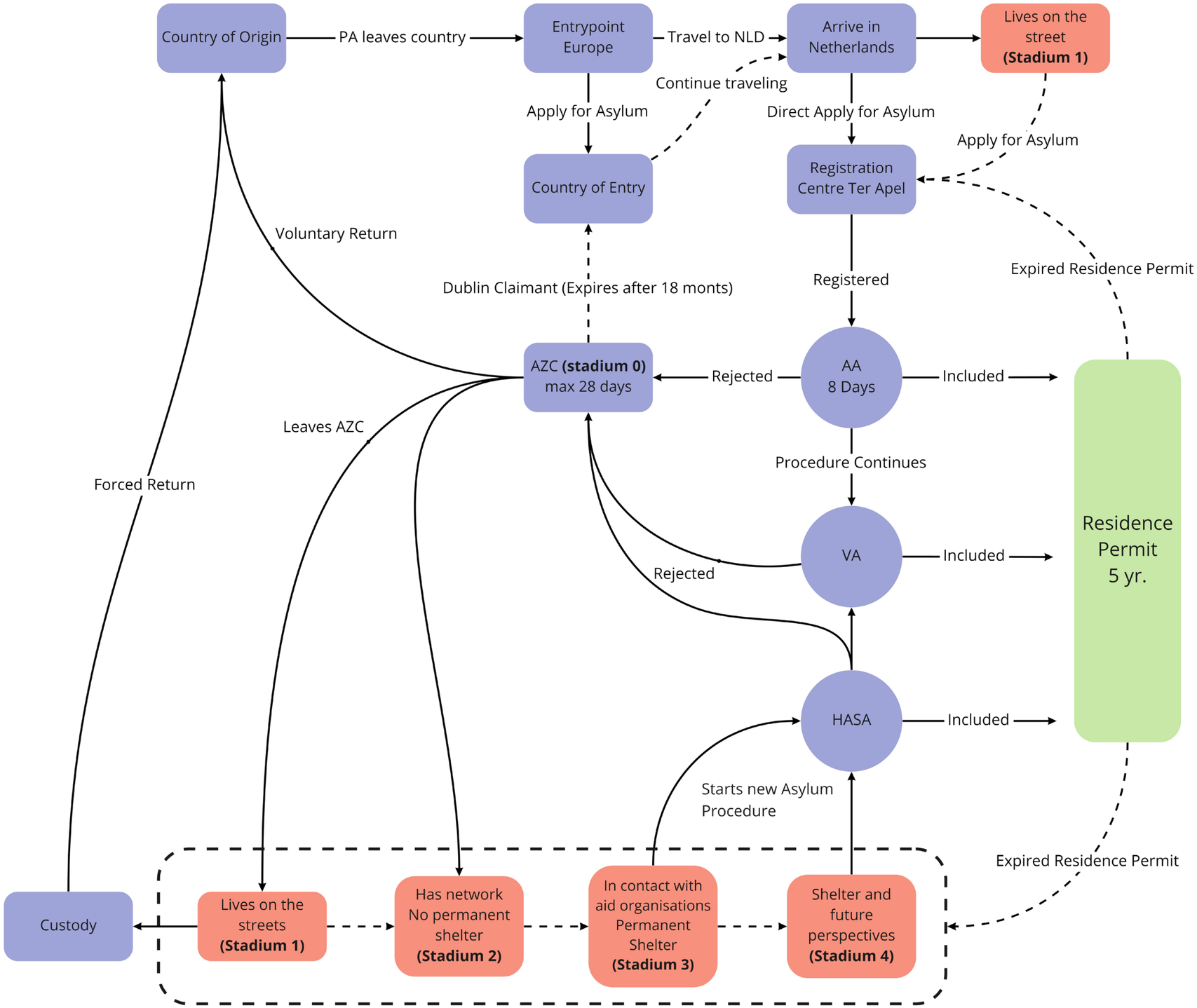


Figure 4.3 - Flowchart of asylum procedure

Journey scenarios from AZC to Amsterdam
In figure 4.4, three journey scenarios are shown of migrants arriving leaving the AZC and moving to Amsterdam. The three scenarios have different outcomes because of different interventions by 121. In the first scenario there is no intervention of 121. Important to notice here, is that when the undocumented migrant does not know where to go, they can get stuck in stadium 1 until they find out where to go.

In the second scenario (consisting of an A and B version) 121 is available with both Information as Aid and CBA. Here it is visualized that through the availability of Information as Aid, the PA could move more easily from stadium 1 to stadium 2. In stadium 2, the PA does have enough information to know that they have to go to the Loket for registration for the LVV programme. When put on the wait list, they will receive a message through WhatsApp (scenario A) or SMS (scenario B) that they can register for the CBA program. If they have successfully registered, they will receive the voucher through WhatsApp, or get a notification through SMS and have to pick up the voucher in person at the Loket.

The third scenario shows the effect of information as aid on the stadium the PA will start their journey. If the PA already has some information on where to go, in or directly after they leave the AZC, they could skip the first stadium and go directly to stadium 2 or higher.

Political situation
Although the political debate on the undocumented migrant issue is out of scope for this graduation assignment, some things are important to know, to understand the situation undocumented migrants live in, and aid workers operate in. Political parties have different views on what to do with undocumented migrants staying in the Netherlands. Because of these different views, policies will change when a new government is formed. These policy changes affect the lives of undocumented migrants as for example funding for night shelters will stop and shelters will close. There is also disagreement between municipalities and the national government in the Hague on how to deal with the issue of undocumented migrants. A recent example of the effects of policy changes is the Bed-Bad-Brood facility (shelter, food and shower facility) in the city of Leiden. This facility closed in the beginning of 2020, as funding from the municipality stopped and other funding could not be secured. Migrants were urged to move to the LVV location in Rotterdam. But many migrants did not do this, or were rejected for the LVV program, ending up living on the streets in Leiden (Van Slooten, 2020).

Undocumented migrants and municipalities
Before the LVV pilot programme, municipalities were responsible for dealing with undocumented migrants, as there was no support from the national government (Vissers, 2020). Often municipalities struggled with what to do with migrants, as not accommodating them meant people living on the streets. Therefore, there were numerous local initiatives for Bed-Bad-Brood (shelter, shower and food), to accommodate undocumented migrants, sometimes partially financed by the municipality. At the end of 2018 it was decided by the government that there should be a form accommodation organized by the government accessible for undocumented migrants, the so called Landelijke Vreemdelingen Voorzieningen (LVV) (Rijksoverheid, 2018).

The LVV programme
Since the beginning of 2019, five big cities (Amsterdam, Rotterdam, Utrecht, Eindhoven and Groningen) started developing LVV accommodations. When included in the programme, the undocumented migrant could get 24h shelter in these LVV accommodations, as well as a small living allowance. The LVV programme started as a pilot programme to test if the programme would work and have the intended effects. Inclusion in a LVV programme is not without obligation, as the migrant needs to work on a solution for their current situation, which often is voluntary return to their country of origin (Rijksoverheid, 2018). Therefore, some undocumented migrants do not want to sign up for the LVV programme.

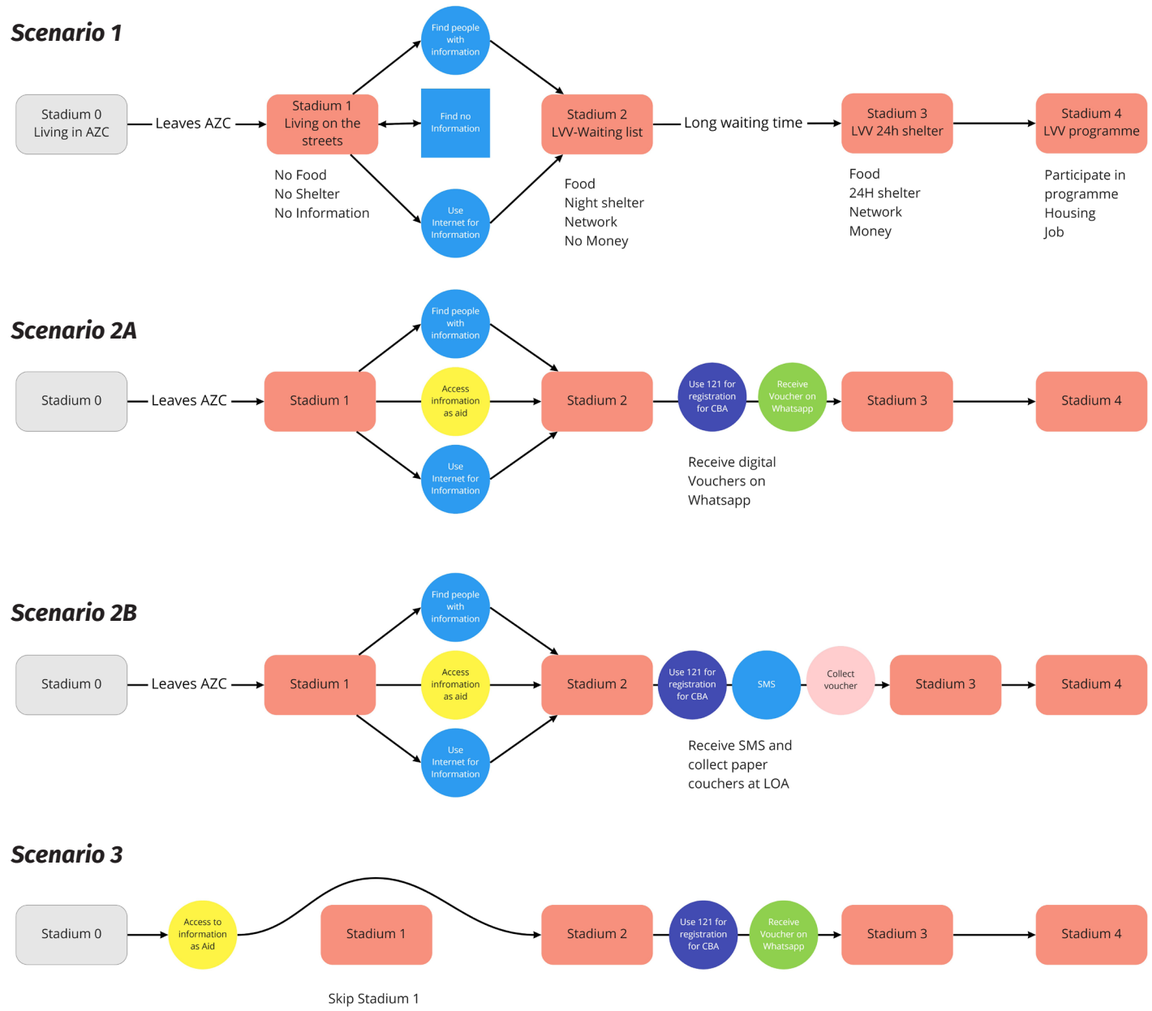


Figure 4.4 - Three journey scenarios from leaving the AZC until living in Amsterdam

4.4 Support system design

A flowchart has been made to indicate the different challenges and bottlenecks undocumented migrants could face with accessing or using 121 (see figure 4.5). The flowchart can be divided into five elements.

(see appendix B for a larger picture of the flowchart)

Access to 121
This section evaluates if the PA does have digital access. Without a digital device, internet connection or power, the PA is not able to use 121. The red crosses, indicate possible interventions that could be provided by the Netherlands Red Cross, to solve those problems. For example, providing a digital device or providing free WIFI could be solutions provided by the Netherlands Red Cross to facilitate digital access.

Familiarity and awareness
In this element it is about the knowledge of 121. If people know about 121, they could possibly use the product, however if they have never heard of it, they have no access to 121.

Inclusion in CBA program
This element is about eligibility for the CBA. When the person is eligible, they can get included in the program and proceed to the next section. If they are not eligible for aid, they have no access to 121 until their situation changes.

Registration and validation
If people are eligible for CBA, they can go on to the registration section. Here it is all about being able to register autonomously or with help from the helpdesk. If people are not able to register themselves, they cannot access 121.

Receiving and using CBA
The last section is about receiving and using the digital voucher. First, did the PA receive the voucher or did something go wrong? Did they contact the helpdesk to solve the issue or just accept the situation that it does not work? If they have received the voucher, do they know how to use it or do they have difficulties with this las step?

What the flowchart shows, is that there are many moments the PA could drop out of the process because they do not understand what is happening and got discouraged. There are many bottlenecks in the delivery and use of the product 121 and these bottlenecks need to be solved to ensure everyone can receive the aid they need.

A support system could resolve the bottleneck issues. By providing support functionalities at all the places where people might need more assistance, it can be prevented that people get discouraged or frustrated and drop out of the process. The next chapters are dedicated to the design of such a support system.

4.5 Conclusion

This chapter researched the humanitarian context of undocumented migrants in the Netherlands. This is important to understand where 121 could be positioned in this landscape. First a general understanding of the issue of undocumented migrants in the Netherlands was created through analysing the stakeholders involved and procedure migrants have to deal with.

The last part of the research, was the creation of a flowchart to show the many challenges and barriers undocumented migrants could face, when trying to access 121. These problems need to be solved to make 121 accessible and usable for as many people as possible.

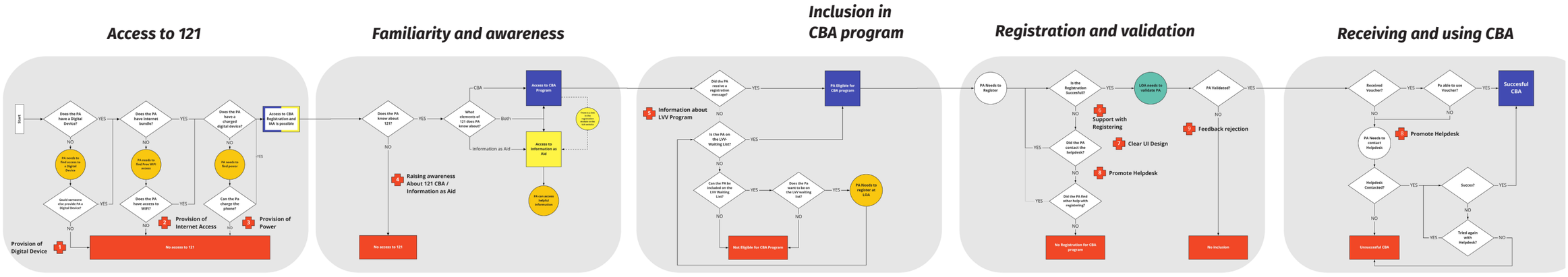


Figure 4.5 - Flowchart indicating bottlenecks for the access and use of 121

CHAPTER 5

End user analysis

5.1 Introduction

The previous chapter discussed the humanitarian context and issue of undocumented migrants in the Netherlands. The problem was defined and the complexity of the issue addressed. So far, the focus has been mainly on the product, context and system. Therefore, insights on the humans that live in this context need now to be researched. For 121 to be successfully used by undocumented migrants, it is important to understand this target group. Therefore, research was needed on the situation and lives of undocumented migrants.

An ethnographic study was chosen as the research methodology for this analysis. In an ethnographic study, the researcher immerses in the world of the researched people. This methodology is therefore useful to understand the world of the undocumented migrant.

The research insights were then translated into personas and persona journeys. Persona mapping is a useful method, to create archetypical representations of a target group. Therefore, they are useful for visualising and communicating the research findings from the ethnographic study. Persona journeys, have been used to visualise the journeys of the personas from country of origin to the Netherlands. These journeys provide insights in the various touchpoints, organisations and emotions that people encounter during their journey.

The outcomes from the end user analysis, together with the outcomes from the previous and next chapter, are useful for the design phase. Because the success of 121 is dependent on the fit between the product and the needs of the end users.

Figure 5.1 - Outside view of the Worldhouse in Amsterdam

5.2 Research setup

The goal of the end user analysis was to make the hidden world of the undocumented migrants visible. This step is necessary to see how 121 fits in this world, and what support system is needed.

Method

A design ethnography has been conducted to gain insights in the world of undocumented migrants. Ethnographic research originates from anthropology. A classic ethnographic study could take the time span of months up to years, where the researcher becomes part of the community to be studied and observes and interact with people (LeCompte & Schensul, 1999). A design ethnography differs from an anthropological ethnography by its shorter duration and the difference in goal. A design ethnographic study is more focused and result oriented, as outcomes need to be translated into design directions (Clarke, 2018). But the same methods are being used, observations combined with conversations with the people of the study.

Finding and interviewing undocumented migrants on the street would have been a difficult task, as undocumented migrants live under the radar and are therefore hard to find. Furthermore, it is difficult conducting a structured interview with a stranger, without building trust first. It was therefore decided to conduct the study at the Worldhouse in Amsterdam. In this place many undocumented migrants gather during the day. Therefore, eliminating the need to seek out undocumented migrants on the streets. Furthermore, because the Worldhouse is a safe place that people trust, it was easier to strike up a conversation then it would have been on the streets.

In total, there have been seven visits to the Worldhouse, out of which 4 times in the role of a helpdesk volunteer. Volunteering was a useful way to get acquainted, both with the Worldhouse staff and some of the regular visitors.

During the visits there have been conversations with 20 men and 5 women of which 21 undocumented migrants, 2 aid workers and 2 former undocumented migrants.

The setup of the conversations was in the beginning unstructured, to get a more overall feeling of the situation the people are in, but over time the conversations were in a semi-structured manner, having certain questions or topics in mind to discuss.

Conducting the research

The goal was to gain insights from undocumented migrants without being too intrusive into their privacy. Therefore, the conversation started by getting acquainted with the person. If trust was built, certain topics could be discussed. However, it was not always easy to start talking about certain topics due to the nature and difficulty of the persons situation.

The following topics were explored:

Journey

- Why did the person come to the Netherlands?
- Did the person go to an AZC?
- Did the person connect with others in the AZC?
- What organisations did the person contact?
- Why did the person come to Amsterdam?
- How did the person find their way in Amsterdam?

Current situation

- What does a normal day of the person look like?
- How does the person feel?

121 & technology

- Does the person have a smartphone?
- Does the person have internet access?
- Did the person look up information on their phone?
- Did the person know about 121?

Through these topics, an understanding could be created about how people ended up in Amsterdam, how they found their way to the Worldhouse, if they had access to technology, and what their current situation was.

(See appendix C, for the notes of the ethnographic study.)

Limitations of the field research

For a deeper understanding of the situation of undocumented migrants, more research is needed. In general, the Worldhouse is one of the most well-known day shelters in Amsterdam and therefore the research data provides a proper insight in the demographics and context of Amsterdam's undocumented migrants. However, the study could be improved by a larger sample size as well as expanding the places to conduct the ethnographic study, as there are other organizations in Amsterdam that attract other migrants.

Figure 5.2 - Welcome sign outside the Worldhouse

Figure 5.3 - Red Cross volunteer, assisting a PA with CBA registration at the Worldhouse helpdesk

5.3 Main research outcomes

The research outcomes have been visualised through personas and persona journeys. The reason for presenting the outcomes in this way, is to make the outcomes tangible and easier to digest. With these tangible outcomes, it is easier to identify problems and design solutions, and it is easier to discuss the context with others.

Before discussing the personas and journeys, first some of the main insights are listed below:

1. **People have serious reasons to migrate.** As one of the undocumented migrants put it: *"Nobody dares to leave home unless home is danger"*. Often people did not plan to go to the Netherlands but just ended up here. They want to stay, as they finally found a place where they can be safe.
2. **The biggest need for undocumented migrants is shelter**: "Shelter before anything else". People first need to be in a stable situation, before they can make plans for the future.
3. **People are in a hopeless situation without a clear future.** Most people do nothing during the day except trying to find a place to sleep and some food to eat. *"Since I left the AZC I am waiting. And it is still the same situation, nothing has changed."*
4. **This situation is a depressing situation for people:** *"A person who cannot go anywhere, who cannot work, is like a dead person."*
5. **When people create a network in the AZC this is useful for finding their way around.** If people then leave the AZC, they know where to go to find aid or shelter.
6. **People who did not create a network in the AZC often are lost when they leave the AZC**: *"I was lost, there was no information. Information is not written on billboards "*
7. **Most people have a smartphone, but of all people spoken to, no one has internet connection outside free WIFI spots.**

5.4 Personas

For the creation of personas, you need to look for behavioral patterns, commonalities, differences and particularities (Van Boeijen, Daalhuizen, Zijlstra, & Van der Schoor, 2013). Quotes co-design data from the NLRC were clustered in certain topics, such as "Migration", "Asylum Procedure" or "Current Situation in Amsterdam" (see appendix D). The clustering made it possible to create stories out of the collected data. Together with the data from the ethnographic study, five personas could be created. These five personas depict the general demographics of the undocumented migrants that were observed in the Worldhouse. The personas where originally created with stock photographs representing the persona. However, the NLRC chooses not to use photographs but rather illustrations so in this report, the pictures have been removed. All personas can be found in appendix E.

Outcomes
All personas contain the same elements (see figure 5.4). First, some basic demographic information such as age, gender and country of origin is stated. In the next field, a large space is reserved for the journey from country of origin to Amsterdam. It is in this journey that there are a lot of differences between the personas. The right side of the persona is reserved for information on the emotional wellbeing of the migrant. How is the experience of living undocumented, how is the person feeling and what are the biggest needs and wishes of the person? The last part is allocated for information about the available technology, questions like: Does the migrant have a smartphone and does the migrant have access to internet?

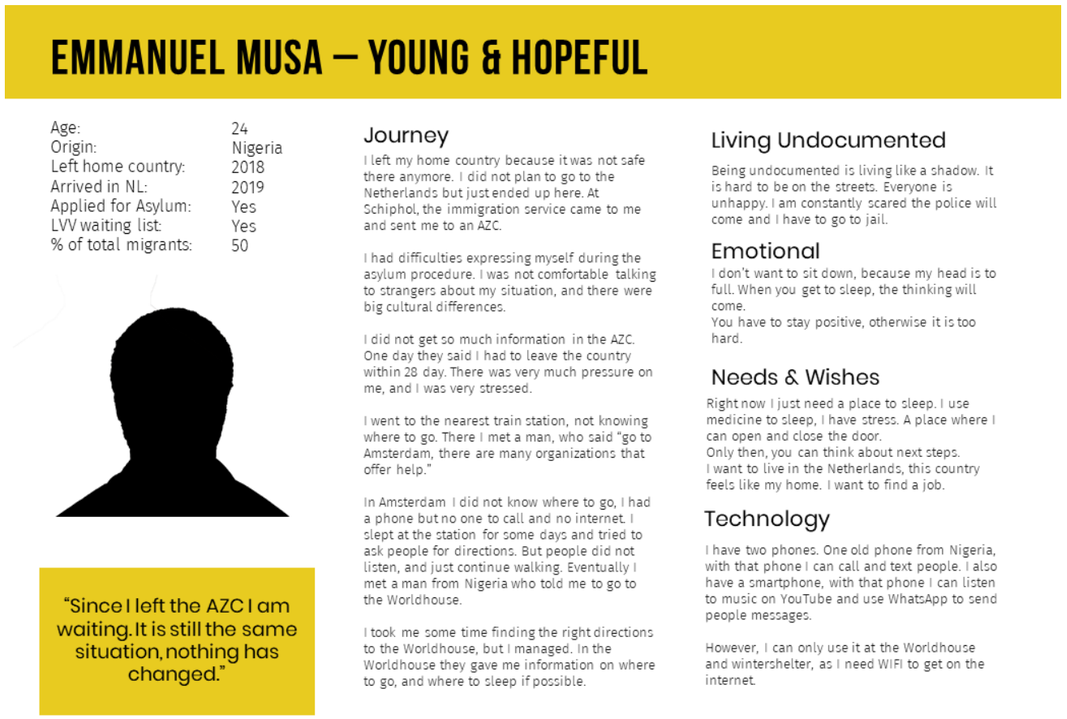


Figure 5.4 - Undocumented migrant persona

5.5 Persona categories

As the individual personas are rich in information and therefore take some time to process, a more generalized overview was created. In this generalized overview, five persona categories were created based on the individual personas (see figure 5.5).

Long in the Netherlands and hopeless

This group consists of older undocumented migrants. They are in the country for many years and often have had a residence permit in the past. However, after this residence permit expired after some years, they did not leave the country but started living undocumented. This group of people is often depressed and exhausted, as they have no future perspective and all resources for restarting their asylum case are used up. They often blame the system they are in, and do not understand why younger migrants can still receive a lot of support and help from aid organizations while they cannot be helped anymore.

Positive but stressed

This group has a young demographic, and consists of people that have just arrived in the country. Their stress levels are high as they are new in the country and do not know how everything works. They have had a long and stressful journey before they arrived in the Netherlands, and therefore having their request for asylum denied was a hard hit to take. However, there are still possibilities for their cases to be re-evaluated, so they are hopeful that they could stay in the country and build a new life here.

Young and future aware

As the only female out of 5 personas it depicts the actual situation that there are more men than female undocumented migrants. The female migrants that do come to the Worldhouse often work hard for their case. They have a network of friends, mostly female, and are in touch with aid organizations. They have the clear goal that they want to stay in the Netherlands and build a life there and they work hard to reach that goal.

Young worker

The young workers often originate from “safe” countries. Therefore, they have low chance of getting a residence permit and therefore do not go to an asylum centre but go straight into the undocumented circuit. They have left their home country because there were no opportunities for work, and therefore they are looking for a better future elsewhere. In the Netherlands they quickly build up a network with other undocumented migrants, often from the same country. Because of their network they could find small jobs, and therefore they earn some money. However, these jobs are very insecure and often they have no income. As they still live undocumented, they have similar problems as the other groups, like finding a safe place to live.

Dublin claimant

This group of people often travelled for a long time through Europe before ending up in the Netherlands. It is here that they would like to stay, and build a new future. They apply for asylum but get rejected because they are Dublin claimants. The Dublin agreement (Amnesty International, n.d.) states that asylum seekers have to return to the country where they have first applied for asylum. This group of people is often confused about this rule and do not want to go back to that country. They are frustrated that they cannot apply for asylum here and have to live undocumented in order to stay in the Netherlands.

Feedback

The personas have been discussed with several aid workers and volunteers from the Netherlands Red Cross and 510 who have experience with working with undocumented migrants. They confirm that these groups are a realistic depiction of the people visiting the Worldhouse. They also confirmed the usefulness of identifying and creating personas and could use the personas for further research and development of 121.

Discussion

Because personas are a generalization of a certain group of people, there will always be individuals falling outside these generalized groups. Although the Worldhouse is one of the most renowned day shelters for undocumented migrants, there will be people who have never found the Worldhouse or go to other places for shelter and food.

For a complete picture of the undocumented migrants, more places should be researched and more data should be collected. It is then expected that more persona groups can be created. However, within the scope of this graduation project, these persona groups already cover the majority of undocumented migrants in Amsterdam.

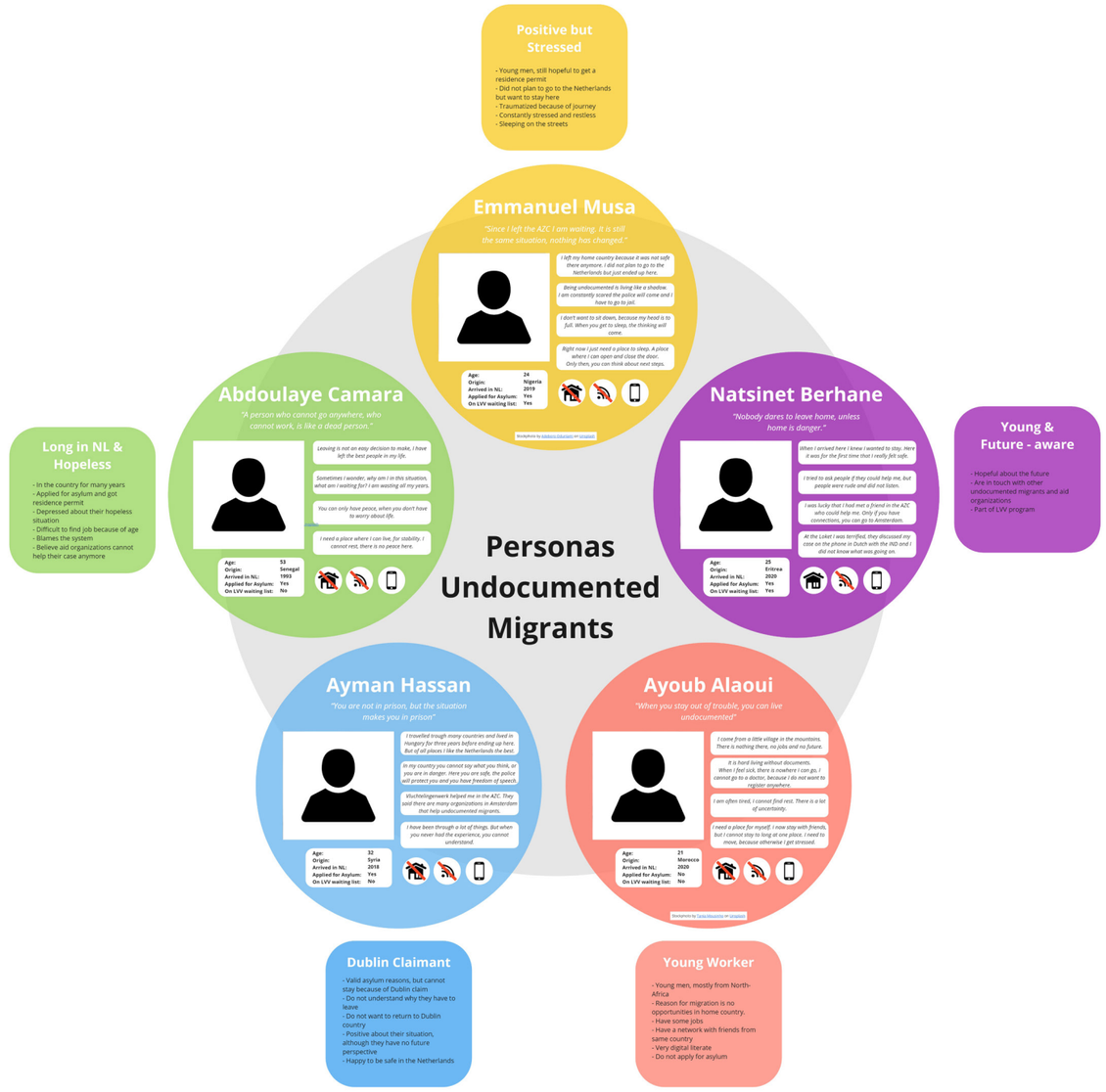


Figure 5.5 - Persona categories

5.6 Persona journey

Approach

Customer journey mapping is a tool originating from service design. The goal of mapping out customer journeys is to show the interactions between the consumer or "user" and the touchpoints offered by the company or organisation (Van Boeijen, Daalhuizen, Zijlstra, & Van der Schoor, 2013). In the customer journey map, it is about the experiences the user has during the journey. By mapping out these experiences, product and service delivery can be adjusted to the needs of the customer.
For this case study, customer journey maps have been made of the five personas, hence called persona journeys. The goal of mapping the 5 journeys was to identify similarities, overlapping touchpoints and bottlenecks that the undocumented migrants encounter.

Outcomes

The persona journeys (see figure 5.6) all have the same elements on the left side of the map. Starting with the "steps in journey" the physical journey of the undocumented migrant is described.

Next, is space for the feelings of the person. This section is important for example, to identify where people feel safe and secure enough to be approached by aid workers or when they possibly will be interested in the product 121. The feeling section is supported by a quote from the co-design data.

The last sections are about mapping out the possible interactions the person has with other people and organizations. These are interesting sections, as they show possible partner organisations of the Netherlands Red Cross, and people they could work together with to reach out to undocumented migrants.

The top part of the persona journey shows the different touchpoints in the journey, from leaving the country of origin until arriving in Amsterdam and their present-day situation. In between the touchpoints the destination is unknown. For aid organizations it is impossible to provide aid in these places, as the undocumented migrant is out of their sight. This has implications for the design strategy on how to reach and help migrants. The focus should be on the touchpoints where the migrants are visible. For many personas the journeys follow the same patterns, and the same touchpoints are being visited. These similarities between the touchpoints were the starting points for a generalized persona journey. All journeys can be found in appendix F.

Emmanuel Musa 	**Journey**	**AZC (Gate)**	**Destination Unknown**	**Amsterdam Central Station (Gate)**	**Destination Unknown**	**Worldhouse (Touchpoint)**	**Loket/LOA (Touchpoint)**	**Lives on street**
Steps in Journey	1. Leaves home country 2. Travels to Europe 3. Ends up in NL 4. Is sent to AZC	5. Starts Asylum Procedure 6. Gets in touch with aid organizations 7. Gets info in camp 8. Denied asylum 9. Leaves Camp	10. Goes to train station 11. Gets info to get to Amsterdam 12. Arrives at Amsterdam CS	13. Ask people where to go 14. Does not get answers 15. Sleeps at station 16. Get location to get to shelter/aid organization	17. Lost on the street 18. Finds way to NGO 19. Find other migrants	20. Arrives at Worldhouse 21. Observes the place 22. Goes inside 23. Gets help and information from aid workers 24. Leaves WH	25. Arrives at LOA 26. Gets info 27. Registers for LVV program 28. Leaves LOA	29. Sleeps on the street 30. Find people where he could stay 31. Goes often to WH/LOA
Feeling	- Traumatized - Stressed - Tired	- Stressed - Confused	- Confused - Stressed - Tired - Hungry	- Confused - Stressed - Tired - Hungry	- Confused - Stressed - Tired - Hungry - Anxious	- Stressed - Tired - Anxious	- Stressed - Tired - Anxious	- Stressed - Tired - Anxious
Quotes	***"I just left because of danger"***	***"I did not understand them, and they did not understand us"***	***"I did not know where to go, I just left the AZC"***	***"People won't listen to you"***	***"When I was in Amsterdam I didn't know what to do"***	***"I came here first time to observe the place"***	***"They called the IND in my presence, that made me very stressed"***	***"I need a place to be safe, to be homeless is difficult"***
Interactions	- Other migrants - Human smugglers - Border Police	- Other migrants - Aid workers - Immigration workers	- People on the streets - Other migrants	- People on the streets - Other migrants	- People on the streets - Other migrants	- Aid Workers - Other migrants	- Aid workers - Municipality	- People on the streets - Other migrants
Organizations	- Marechaussee - COA - IND	- COA - IND - Vluchtelingenwerk		- NS - Amsterdam Municipality - GVB - Tourist Office		- Worldhouse Aid Workers - Other aid Workers - Red Cross	- IND - Amsterdam Municipality	

Figure 5.6 - Persona journey

5.7 Generalized persona journey map

The individual persona journeys showed that there were certain touchpoints that multiple personas were going through. Furthermore, there were touchpoints that some people visited while others completely missed these places. Therefore, a distinction was made between these different kinds of touchpoints. Places that the majority of people go through were called “gates”, while other places that people could visit, but also could miss were called “touchpoints”. The gates, touchpoints and the possible path that the undocumented migrant could go, are depicted in a generalized journey overview (figure 5.7).

Gates

Some places are visited by the majority of the undocumented migrants from the research. For example, the asylum centre is a place that many people go through before ending up in the undocumented circuit. Of the 5 persona groups, only the young workers did not go to the asylum centre.

Another important gate is Amsterdam Centraal Station, almost everyone goes through this place when they end up in Amsterdam. It is therefore a place of a high strategic importance, if you want to reach this target group.

Touchpoints

The touchpoints consist of the individual aid organizations that are present in Amsterdam. These places such as the Worldhouse can be invaluable for undocumented migrants. However, in contrast to the gates, these touchpoints can easily be missed. Only when people know how to find these places, they can go there. And even then, it is sometimes hard to find the right place to go.

Advantages of generalized persona journey map

The generalized journey map is a clear and easy visualisation of the humanitarian context and the possible routes undocumented migrants could take. It is also a good tool to understand the impact of positioning interventions.

For example, currently people hear about 121 when they have already arrived in Amsterdam and sometimes even only when they have arrived at the Worldhouse or Loket. The goal of the information as aid module, is helping undocumented migrants find their way to appropriate aid providers. Therefore, it is needed that people know about this 121 module as quickly as possible. For many migrants their journey starts after leaving the AZC, it is therefore important that information about 121 has already been distributed in the AZC. That is the only way of preventing people leaving with destination unknown and ending up on the streets because they do not know where to go.

The touchpoint and gate classification helps understand the effect of the different interventions and positioning of these interventions. For example, having an intervention at a gate has a bigger impact than targeting touchpoints for interventions, as many people go through gates, but people are likely to miss a touchpoint.

On the other hand, the touchpoints together could make a network of aid organisations that could refer to each other. In this case the migrants only need to find one touchpoint, to get referred to other aid organizations. The only problem then, is how to find the nearest or most suitable touchpoint. This problem could be solved by providing information at gates, on how to find the closest or most relevant touchpoint.

This could be provided by both online and offline means, for example small cards with the walking route to the nearest touchpoint that could be dispensed at train stations, or posters with information about 121 at important gates and touchpoints.

Another important intervention that has to take place at gate and touchpoints is the facilitation of internet access through free Wi-Fi spots. This is essential if you want people to use a digital service which need internet connection. As the ethnographic study showed, many migrants do not have internet connection outside free Wi-Fi spots. Providing free internet access at for example Amsterdam Centraal Station is something the Netherlands Red Cross should seriously consider.

Feedback

The generalized persona journey map can thus be used to understand the need for a support system and the importance of where to position interventions. Positive feedback on the generalized persona journey map was received when presented to 510 and Netherlands Red Cross employees. The simplicity of the map helped showing the relevance of the positioning of intervention and support system element. The map can really help showing the relevance of gates and the importance of the provision of information about 121, at those places.

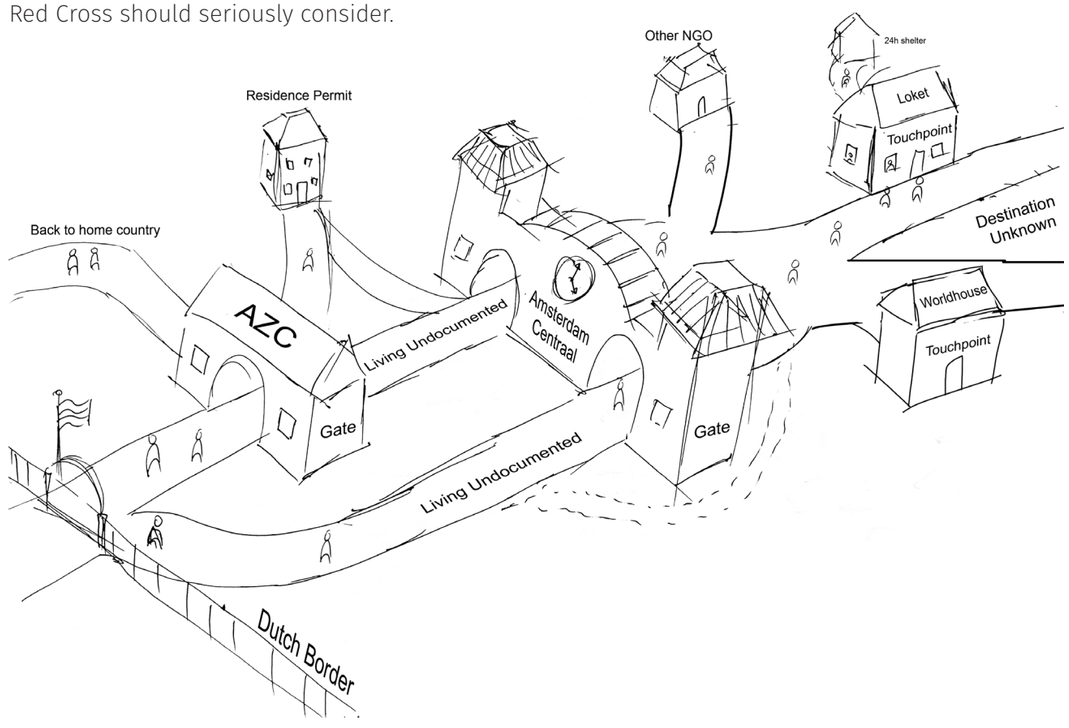


Figure 5.7 - Sketch of generalized persona journey map

5.8 Conclusion

The goal of the end user analysis was to make the hidden world of the undocumented migrants visible. To see how 121 would fit in this world and what support system would be needed, so that undocumented migrants could use 121.

Through the design of personas and persona journeys, the insights could be translated into tangible inputs for the development of a support system. Furthermore, the generalized persona journey map proved to be useful for illustrating the context of the undocumented migrant and indicating where possible interventions could be place. The map also shows the different effects the interventions can have when positioned at touchpoints or gates.

The last step of the case study research would be the evaluation of the product 121 in the context of undocumented migrants. The next chapter will discuss this evaluation.

CHAPTER 6

121 in context analysis

6.1 Introduction

The previous chapters of part II, discussed the context and end user analysis of undocumented migrants in the Netherlands. This last chapter of part II, evaluates the product 121 in this context.

During the ethnographic research and helpdesk sessions, the product 121 as tested during the Netherlands pilot could be evaluated. Insights from the observations and the ethnographic study are collected in this chapter.

The goal of this evaluation is to identify specific support system bottlenecks for using 121. With these bottlenecks identified, a support system can be designed and visualised, which will be discussed in part III of this report.

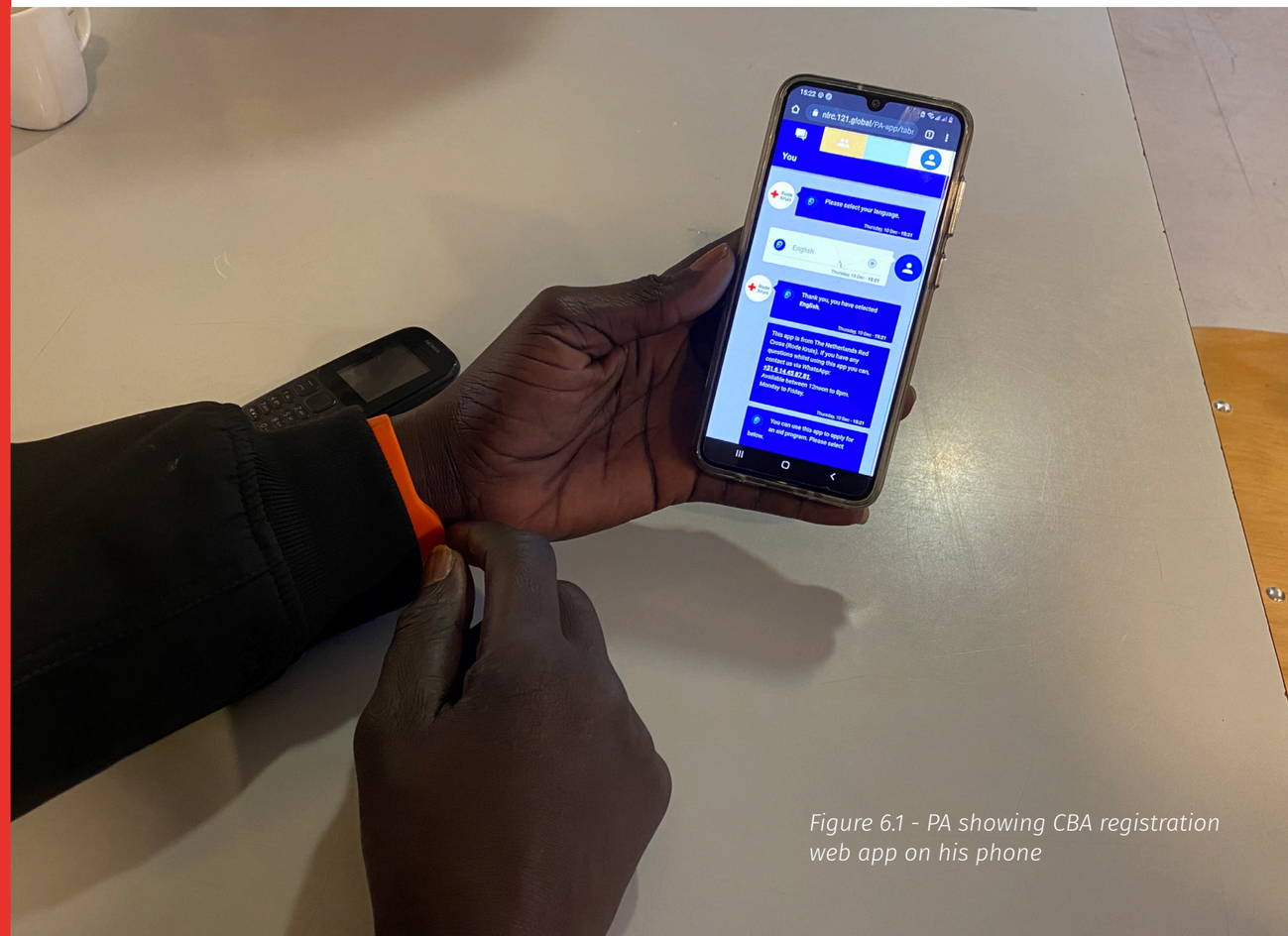


Figure 6.1 - PA showing CBA registration web app on his phone

6.2 Evaluation of 121 in context

During the fieldwork, the two core modules of 121 and the helpdesk have been analysed in the context of undocumented migrants in Amsterdam. Through asking people about 121, and by observing people using 121 during the helpdesk sessions, insights could be gathered.

CBA
The CBA module (figure 6.2) is mostly known by people who have been to the Loket and have been registered for the LVV programme. However, many others do not know about 121, or think it is not relevant for them.

Because only people on the LVV-wait list are eligible for aid, a large group of people are left out. For example, undocumented migrants who have never been to an AZC. This can cause friction between undocumented migrants, as it is often unclear why one person gets included while others are not. The eligibility criteria could be broadened to solve this problem.

Next, clear communication why people are included or not should be provided. Some people are dropped from the LVV wait list without knowing why, this is very confusing and frustrating. Clear communication is key here.

Furthermore, the registration for 121 is not always seamless. Owning a smartphone does not mean people are digital literate, and undocumented migrants have been observed having difficulties going through the digital interface.

Also, there are some technical bottlenecks. For example, the registration does not always work on all internet browsers. Some people have internet browsers that are unconventional in the Netherlands. They cannot register using these browsers, leaving them confused and frustrated. The technical problems could be solved with a technical fix, or people should be instructed to use a specific internet browser such as Safari or Google Chrome.

Difficulties with registration could be solved by analysing and further refining the user interface of the web app.

Information as aid
The information as aid web app is in its current form, of little use for undocumented migrants, as many people do not know about it. It is therefore important to promote the website, preferably already in an early stage of the persona journey, so that people are informed the moment they leave the AZC.

Another bottleneck, is that the web app is only available with internet connection. As undocumented migrants often do not have internet connection on the streets, they cannot use the web app. Being able to save certain pages of the web app in an offline version could be a useful feature.

For aid workers, the current tool is relevant and useful as a reference tool on the current aid offering in Amsterdam. Many aid workers see the relevance of the tool, as even for them it is often difficult to know where to refer people to because the aid network is scattered. The web app could create links between aid organisations and stimulate more collaboration, as the web app functions as an aid network map of Amsterdam.

Helpdesk
Both the physical and WhatsApp helpdesk proved to be valuable elements of the program. The main benefit of the helpdesk functionality is that customization is possible. Therefore, people could contact the helpdesk not only with questions about the program or registration, but with more general questions as well.

The helpdesk has helped many undocumented migrants who would not have found solutions if they had to find them without help. Diverse types of questions are asked, ranging from general questions to specific aid request or emergency situations. The downside of the WhatsApp helpdesk is the lack of access when there is no internet connection.

Experience from the helpdesk showed that some people have difficulties expressing their problems through WhatsApp. This could be the case because people have difficulties typing messages as they are low literate, or because people have difficulties in general with expressing their problems. A workaround for low literate and illiterate people is to send voice messages, this workaround proved to be successful in many cases.

In an extreme case, an aid worker contacted the undocumented migrant through phone to resolve a problem, as it was difficult to communicate through WhatsApp. The problem was then solved quick and easy, which indicates that a phone helpdesk could be a promising solution. But more research is needed to support this hypothesis.

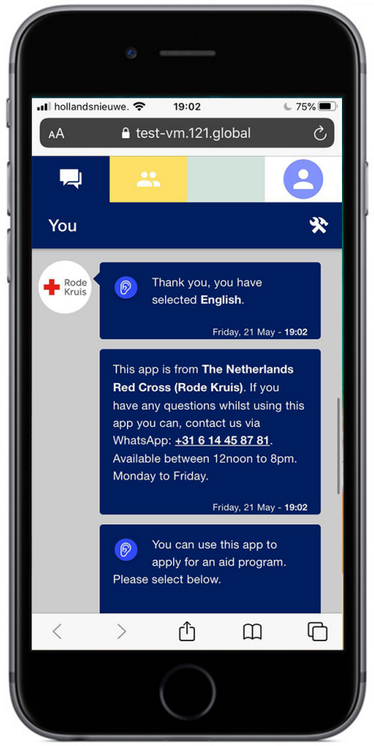


Figure 6.2 - The CBA registration web app interface

Figure 6.3 - Contact info of the Netherlands Red Cross WhatsApp helpdesk

6.3 Conclusion

In this chapter, the CBA, Information as Aid and helpdesk functionalities of 121 have been evaluated. Problems and bottlenecks have been identified and solutions have been proposed.

This chapter was the concluding chapter of the case study part. In this part, the context, end users and product in context have been analysed. The goal of the case study was to understand the situation of undocumented migrants in the Netherlands and to identify the need for a support system.

The need for a support system is confirmed and five possible bottlenecks for accessing or using 121 have been identified.

These research outcomes have been used to create two concepts which will be discussed in the next part of the report.

PART 3

Design

CHAPTER 7

Program context map

7.1 Design phase introduction

The goal of case study was to make the hidden world of the undocumented migrants visible and to see how 121 would fit in that world. The research showed that with 121 as standalone product, some undocumented migrants would not be able to use 121.

For example, internet access is a bottleneck for using 121, as many undocumented migrants do not have internet access outside free WIFI spots. Without internet connection it is not possible to reach the helpful information website, receive CBA or contact the WhatsApp helpdesk.

This is an example of a bottleneck that could be solved through a technical solution. For example, by providing free WIFI access throughout the city. Bottlenecks could also be of a different nature, for example an undocumented migrant that does not trust 121, and therefore would not register for the CBA. A solution for this problem could by both technical and non-technical. For example, by promoting 121 through an aid worker that the undocumented migrant trust. A technical solution could be, branding 121 with the logos from a trusted organisation, such as the Worldhouse or the Red Cross, convincing the undocumented migrant that the product can be trusted.

The need for a support system is thus confirmed, the remaining questions are now: What support system functionalities should be in this support system, and how to convince stakeholders that the support system is essential and need to be developed? Through several design iterations and concept, answers to these questions have been sought.

The first concept that has been developed is a program context map. The goal of this map was to visualise the hidden world of the undocumented migrant, and in this way show the need for a support system. This map could be a detailed and interactive visualisation of the humanitarian context, displaying stakeholders, touchpoints and possible interventions.

The second concept that will be discussed (in the next chapter) is a universal approach for support system design. This approach can be used to identify support system functionalities, that are needed for a specific context. The approach is accompanied with a support system canvas, to facilitate problem identification and solution finding for the support system.

7.2 Design requirements

To guide the design process, requirements for the final design deliverable have been formulated. These requirements were based upon the problem definition and assignment from the original design brief.

1. **The design should show the need and relevance for a support system**
2. **The design should show what support system functionalities should be developed.**
3. **The design should be scalable for all contexts of 121.**

The first requirement is important, because without showing the need and relevance for a support system, there will be no budget allocated for the development of the support system. The second requirement is important, because the team needs to know what functionalities should be developed. The third requirement is important, as 121 is scaling up to other contexts and in this way the design deliverable is still valuable in the future.

7.3 Introduction program context map

The first concept is an iteration on the generalized persona journey discussed in chapter 5 (figure 7.1).

This generalized journey was effective in showing the context of undocumented migrants and therefore shedding light on this hidden world.

The reasoning behind the program context map, was that by showing stakeholders the hidden world of the undocumented migrants and what effects possible interventions could have, they would realise the importance of a support system. Therefore, meeting the first design requirement.

By expanding the map and making it more detailed than the generalized persona journey the support system functionalities could also be displayed in the map. Therefore, meeting the second design requirement.

By formulating design steps for the creation of the map, the map could also be replicated in other contexts. Therefore, meeting the third design requirement.

7.4 Elements of program context map

First iteration

The first iteration of the program context map (figure 7.2) was an expansion of the generalized persona journey map. The context area was expanded with an area “before” the Netherlands, and more touchpoints were added in the Netherlands and Amsterdam area. The reason for expanding the area beyond the Dutch borders, was to show the different and difficult routes migrants could have taken before they arrived in the Netherlands. For example, emphasising the effect of the journey of a Dublin Claimant on their asylum procedure in the Netherlands.

Touchpoints

Extra touchpoints were added to the program context map.

Schiphol Airport was added as an extra touchpoint within the Netherlands to show the different points of entry into the Netherlands.

Amsterdam has some extra touchpoints compared to the generalized persona journey map:

- “Bijlmer” as this is a place many undocumented migrants live or end up when they first arrive in Amsterdam.
- Church, because churches play an important role in the aid network of undocumented migrants. Many undocumented migrants find help by people from churches.
- Hospital, as this is a place people end up when they are in an emergency situation.
- ASKV, as this is one of the more prominent aid organisations involved in the cause of undocumented migrants.
- Rode Kruis, just to show there is a Red Cross office in Amsterdam.
- Park, as a place where people end up if they did not find a place to sleep.

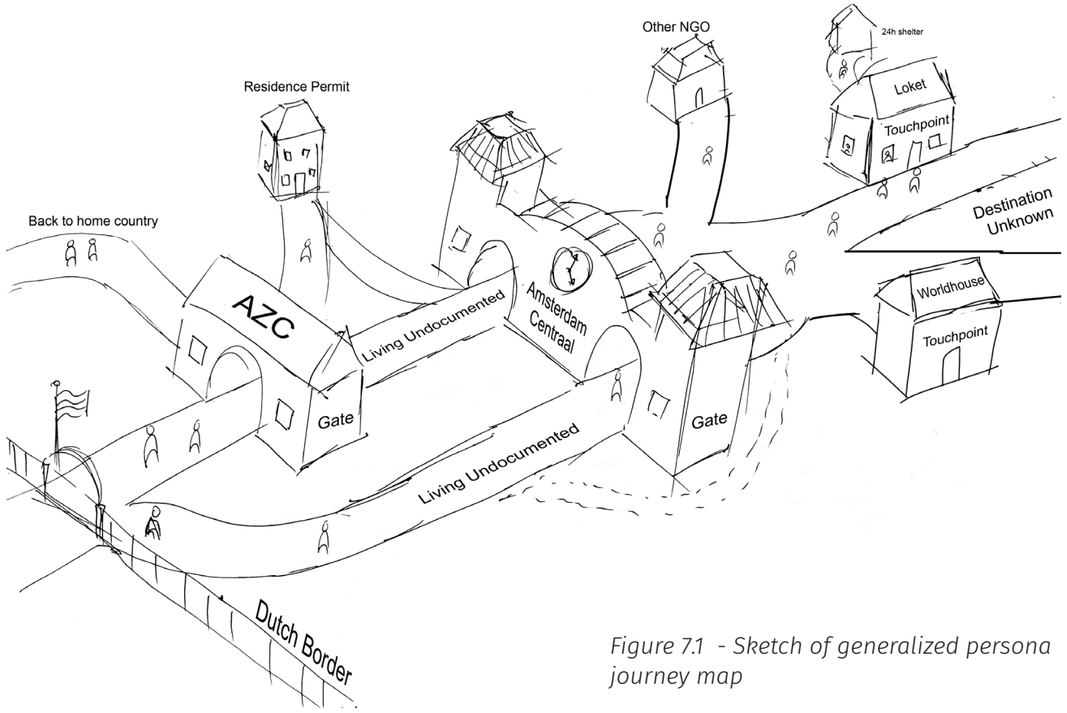


Figure 7.1 - Sketch of generalized persona journey map

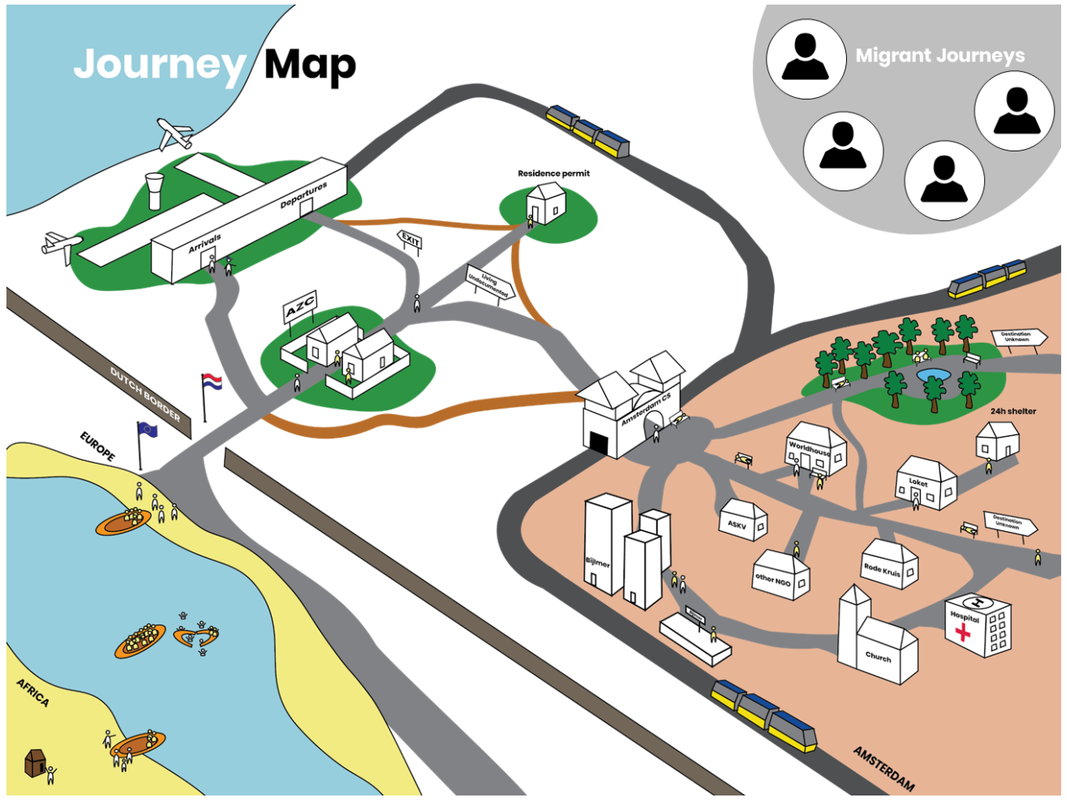


Figure 7.2 - First iteration of program context map

Interaction with the touchpoints

To provide a lot of information, it was decided to make the map interactive. People would be able to click on a touchpoint and see extra information. This extra information would be about the facilities of the touchpoint, the relationship of the undocumented migrant with the touchpoint and possible interventions that could be positioned at that touchpoint. In this way, the viewer of the map would get an impression of the possible support system functionalities that could be needed (see figure 7.3).

Migrant journeys

Another interactive element of the map, was a button in the corner that could be clicked to go to an overview of migrant stories (see figure 7.4). These migrant stories were based on the personas that have been developed earlier. When clicking on a persona, the whole journey from country of origin until living in Amsterdam was displayed in an interactive storyline mode (see figure 7.4). People could go through the stories to get a deeper understanding of the situation of the undocumented migrants.

Because the personas “move” through the map with their story, more emphasis is focused on the relevance of a support system.

Design of the program context map

The interactive map was developed in PowerPoint. The reason for this, is that almost everyone has this program and can use it. Therefore, the program context map could easily be updated or adjusted by 510 or the program team. Limitations of the use of PowerPoint are that there are less functionalities possible for interaction, compared to a more complex program. Ideally this map would be accessible through a URL, so that people could easily check and use the map for insights and reference.

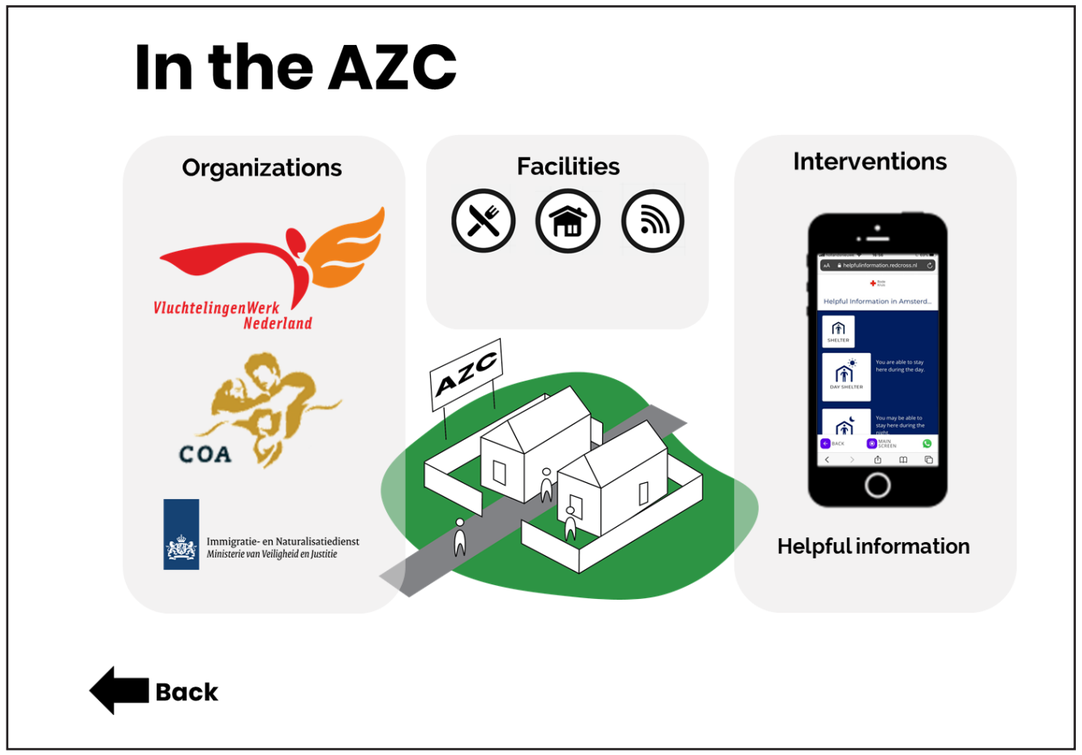


Figure 7.3. - “Gate” interaction screen

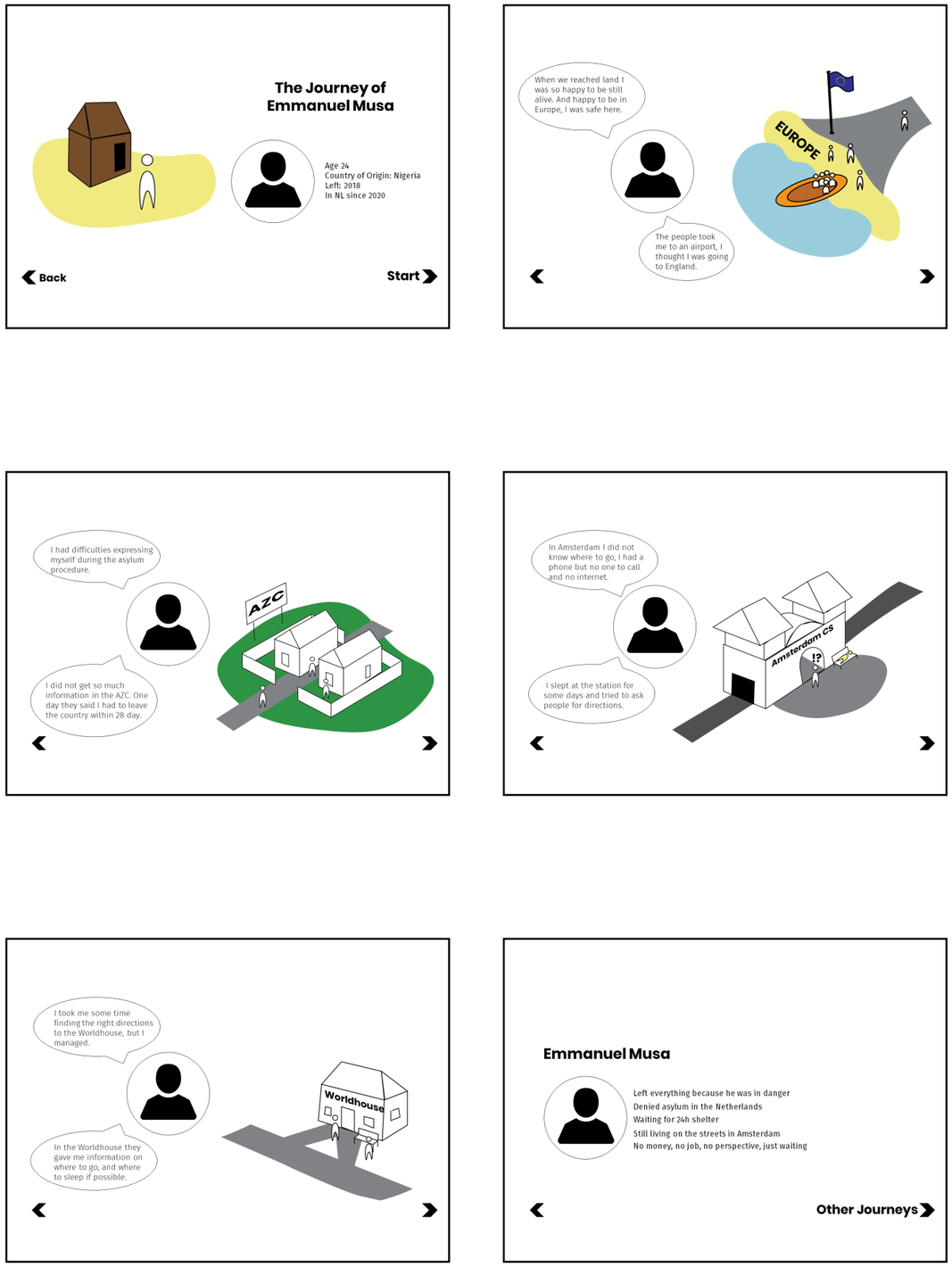


Figure 7.4 - Screens from the migrant journey

Second iteration of the program context map

The second iteration has the same functionalities as the first iteration but a different visual style (see figure 7.5). The biggest difference with the first iteration is the multi-level layout. Specific context areas, such as the AZC and the Park are now positioned at a specific level. Therefore, there could be specifically zoomed in on such a level. The other reason for making this map multileveled, is to mimic the undocumented migrants' stadia defined by the NLRC (see figure 4.2). The lower the level, the lower the undocumented migrant is in the stadia. This literally shows the hierarchy of the levels, as the higher levels in the map have better conditions for the undocumented migrant.

The undocumented migrant journeys are also slightly different compared to the first iteration. Where in the first iteration the touchpoints of the journey were visualised in a separate storytelling screen, in this iteration the touchpoints are showed directly on the map (see figure 7.6). Making the journey through the map even more clear.

Figure 7.5 - Second iteration of the program context map

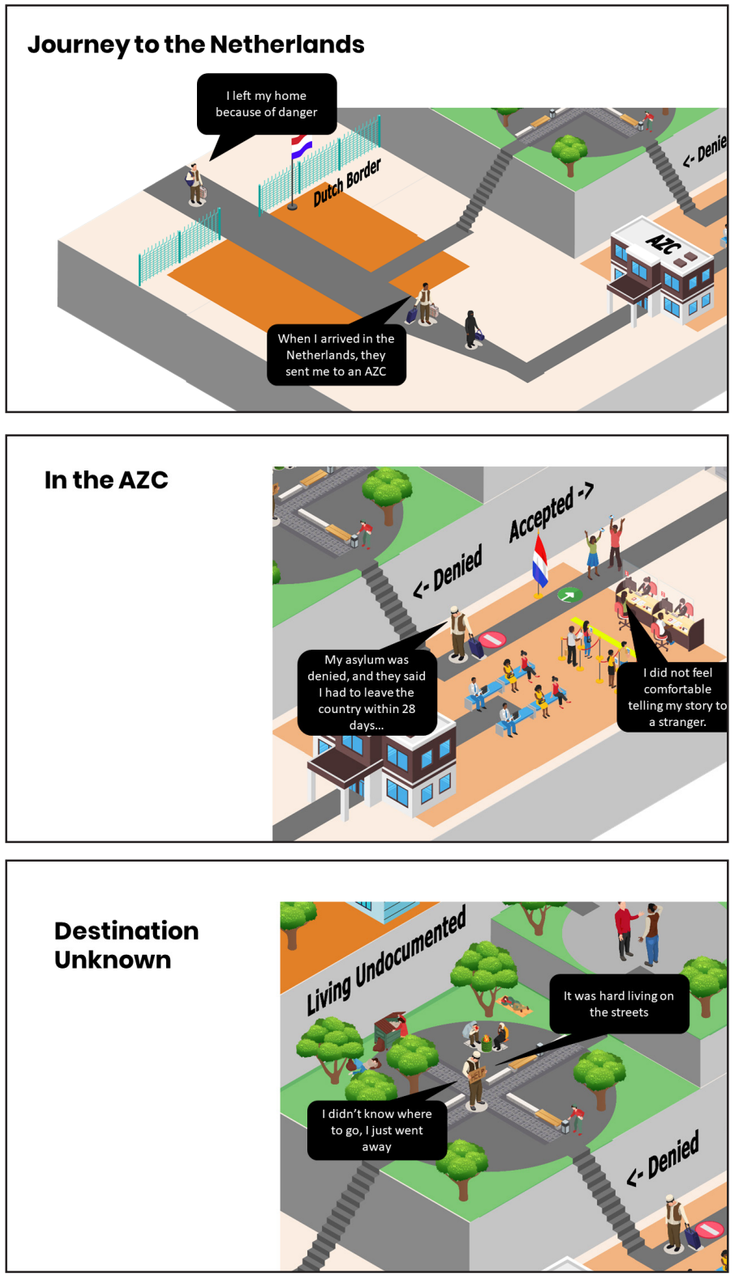


Figure 7.6 - Screens from a migrant journey

7.5 Design steps for creating the map

Six steps were formulated for the design of the program context map.

1. End user analysis

Start with the end users of 121, the person affected and aid workers and find out the needs and wishes of these groups of people. This can be done by conducting interviews, through co-design sessions or ethnographic studies.

2. Analyse the humanitarian context

Find out what the infrastructure is of the current aid offering. What stakeholders are involved, what is already be done to solve the problems of the end users. Again, interviews could be conducted with several organisations such as aid organisations or the municipality.

3. Make a persona journey

With this persona journey, the most important touchpoints of the end user are displayed.

4. Identify bottlenecks

Analyse the previous steps and identify where bottlenecks could occur. Make a list of these bottlenecks and make a selection of what bottlenecks to address.

5. Find solutions for the selected bottlenecks

Through brainstorm sessions, solutions could be found for the bottlenecks. The most promising solutions can then be listed and incorporated in the program proposal.

6. Visualise the program context map

Visualize the context and the support system functionalities that have been defined.

The first three steps can be done with a part of the team, for example human centred designers. If possible, the last three steps should be undertaken with a diverse group of people from different departments of the organisation, to ensure the support base for the support system development.

7.6 Feedback

Presented to one of the aid workers from the NLRC program team, it was confirmed that the visualisation is a realistic representation of the context of undocumented migrants in Amsterdam. Besides the added value of the tool for internal communication, it was also stressed that the tool could be useful for the undocumented migrants, to show them what an undocumented life would look like. It was even suggested to use an adaptation of the tool as information tool inside AZCs. For example, as an animation.

7.7 Evaluation

The first design requirement was about showing stakeholders the need and relevance of a support system. Support system elements could be plotted on the map, for example by clicking on a touchpoint the user could see what possible support system functionalities could be positioned there. Furthermore, by showing the journeys of the undocumented migrants, the user could see the barriers and challenges the personas were faced, which could be solved by support system functionalities.

However, stakeholders still needed to be convinced of the support system elements. They should go through the map themselves, and empathize enough to understand the need. The support system functionalities are not forced on the user of the map.

The answer to the second design requirement is related to this. To understand what support system element are needed, the user should go and click on every item on the map. If the user would not do that, or incidentally miss a touchpoint, support system functionalities that could be relevant could be missed.

The third design requirement was about the scalability of the design deliverable. To make the program context map scalable the steps taken to design the map should be replicable. Although the steps could be replicated, it is a laborious process to create the map, especially the visual and interactive part (step 6). Therefore, the scalability of the map is not very good.

7.8 Conclusion

The program context map is a detailed visualisation of the humanitarian context. The interactive element invites the user to go through the map and get a better understanding of this context. The map is effective in displaying the context, and creating understanding of the context. For people who do not know anything yet about a certain context, the program context map could be a valuable tool.

However, for support system design the map is not very effective. Although the support system can be visualised on the map and the understanding of the need and relevance for the support system could be created, the map is not the best way to do this. It is dependent on the user of the map if design requirements 1 and 2 will be met, therefore the program context map is not the best tool for these requirements.

Furthermore, because of the detailed visualisation and the possible interactions, the map takes a lot of time and expertise to create. Therefore, the map is not very scalable, and does not meet the third requirement.

Another design was needed that would fulfil the requirements; therefore, another concept was created, which will be discussed in the next chapter.

CHAPTER 8

Support system design

8.1 Introduction

As the program context map did not fulfil the three design requirements, a new design was needed. The previous design was too detailed and focussed on a specific context (the context of the case study). Therefore, a design was needed that was more generalized. Like a template that could easily be filled in for every context of 121.

It was decided to not throw away everything from the program context map, but use the insights for this new design. The starting point for the new design were the design steps of the program context map. If these steps could be simplified and generalized for every context of 121, this could be a promising concept.

The first step was to erase the visualisation step. By cutting out this last step, a lot of complexity was already gone, and the remaining steps could be insightful enough to design the support system functionalities.

Then, the other steps were critically evaluated and adapted to practises that are already known by 510. The steps should be tangible with clear action to be taken and frameworks or canvasses to use. For example, using the value proposition canvas for the end user analysis.

This second concept was therefore more aimed at delivering a design approach for the support system. An approach that could be added to current approaches and methodologies used by 510.

8.2 Support system design approach

The support system design approach consists of four steps that should be taken to design the support system of a specific context. For the last step a new canvas was designed, the support system canvas. These four steps, together with the accompanying canvasses, and an explainer of the approach, can be delivered to 510 as a complete package to design support systems.

The session

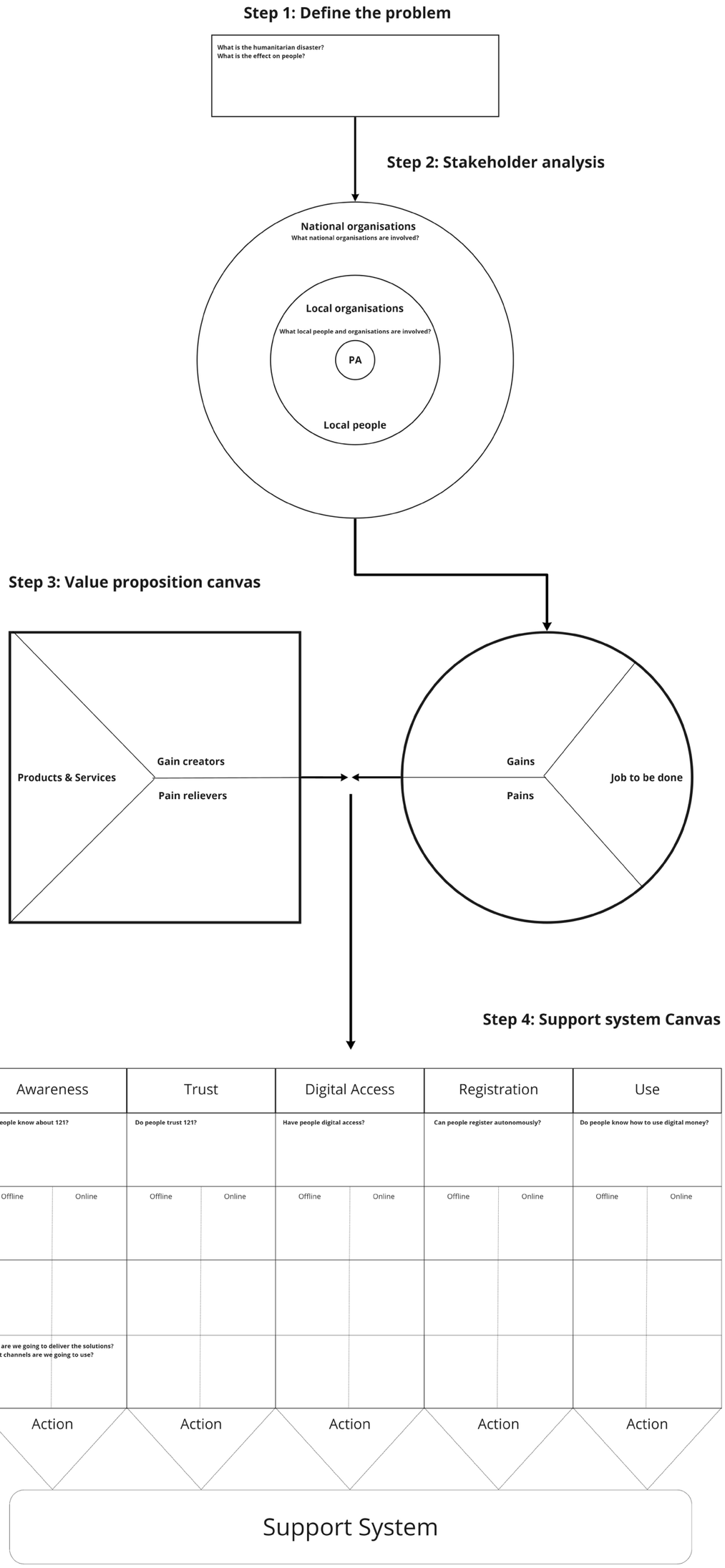
The support system canvas can be filled in during a creative session. For the session it is important that important stakeholders of the program are involved, such as managers, team members from HCD, developers, and the program team. One person should be the facilitator leading the session. The facilitator should manage the time of the session and dedicate fixed timespans to the specific blocks of the canvas. Furthermore, the facilitator should know about brainstorming and brain writing techniques so that those techniques can be applied if necessary.

The session ends when the whole canvas is filled in (or at least the sections that are most important) and there is consensus on the elements of the support system that need to be developed. The facilitator then writes down and summarizes this support system design and have it checked by all members of the session before making it official.

Preparation

The canvas can be filled in digitally through software such as Miro (Miro, n.d.) or physically when the canvas is printed on a big sheet of paper. For the session (digital)post-it notes in at least 2 different colours are needed to identify offline and online solutions. The facilitator (together with a team member or expert in the field) should pre load the (digital) canvas with solutions in the toolbox. Inspiration from previous sessions could also be used to fill out this toolbox.

Figure 8.1 - The four steps of the support system design approach



Step 1. Problem definition

In the first step, the problem needs to be defined. The main questions here are: What is the humanitarian disaster? And, what is the effect on people?

This problem definition can be formulated in a couple of keywords or a short sentence, that can be put in the box (see figure 8.2).

Examples: Undocumented migrants have to live on the streets, they have no food or shelter. They have no access to social services. People do not know where to go.

Step 2. Stakeholder analysis

To get an understanding of the context and the stakeholders involved in this context, the second step is a stakeholder analysis. For this analysis a canvas is displayed consisting of three circles (see figure 8.2). In the outer circle the national organisation can be put. For example, the COA (responsible for the AZCs) or the Dutch government. In the middle ring, local organisations and local people can be placed. For example, the Loket and the Worldhouse can be positioned here. The inner circle is where the person affected should be placed, in this example the undocumented migrants.

After the stakeholders are placed in the circles, lines can be drawn to show relationships between stakeholders. For example, the municipality (on the edge of the outer and middle ring) could be connected to the Loket and the LVV.

Step 3. Value proposition canvas

The value proposition canvas (see figure 8.2) is a part of the business model canvas, which is a template that is widely used to create business model strategies (Strategyzer, n.d.). The value proposition canvas is a powerful canvas to show the fit between a product and its end users. On the right side the user is displayed, and their pains, gains and jobs to be done can be filled in. On the other side the product is placed, here gain creators and pain relievers can be places as well as the product and services that are offered. For a successful product-user fit, the boxes on the left should be solutions for the corresponding boxes on the right.

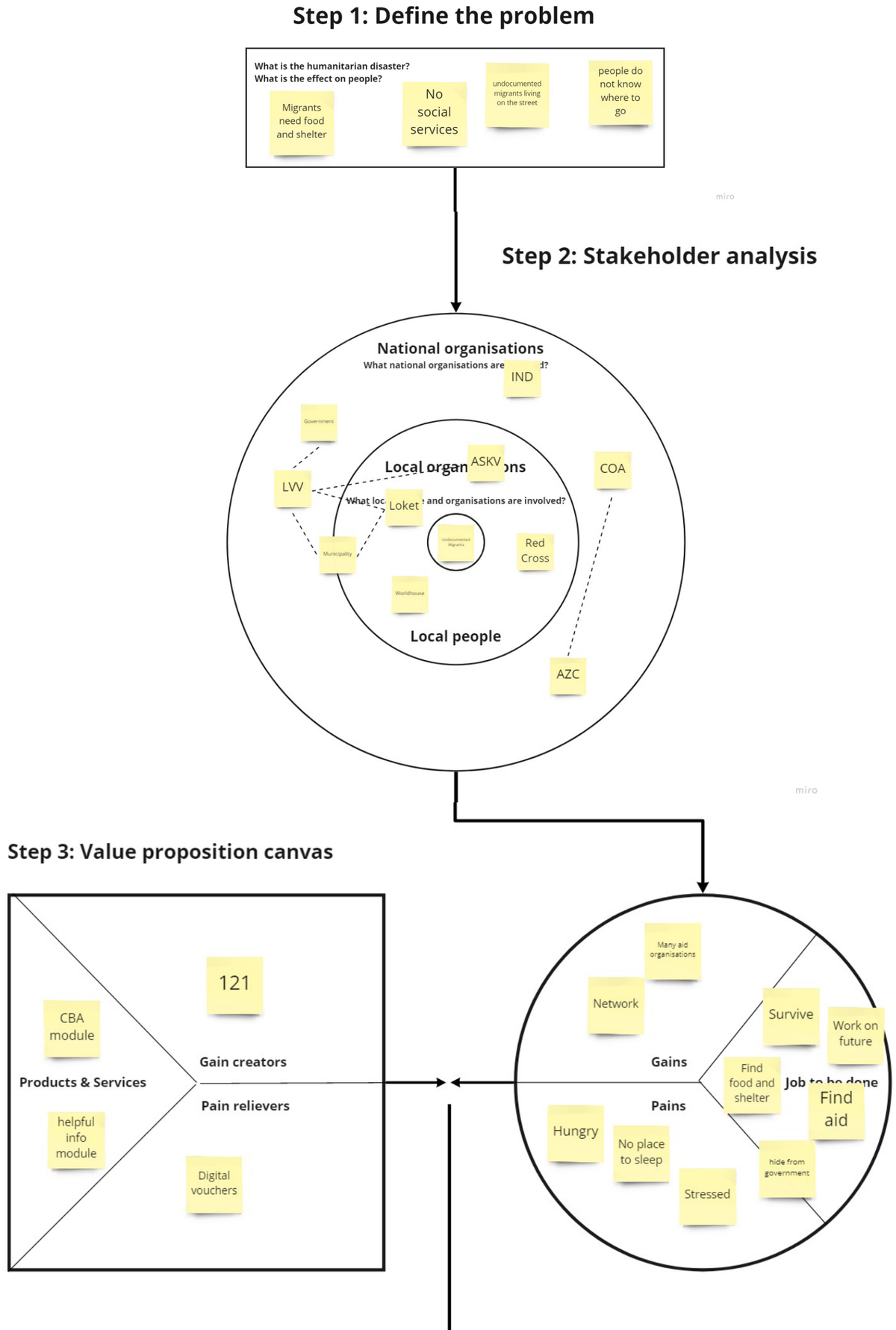
510 already used this canvas for the value proposition of 121, therefore team members are familiar with filling in this canvas.

First, the right side of the canvas should be filled in to define the end user of 121, the person affected. When this part is complete, corresponding functionalities of 121 can be selected. For example, the choice for either CBA and IAA or both. After filling in both sides, it is clear what the pains, gains and jobs to be done are of the person affected, and what functionalities of 121 could part of these problems.

In the ideal situation, the steps of the approach would end here. In that situation all the selected functionalities of 121 would solve the problems of the end user. However, in reality it is now known that a support system is needed to support the digital functionalities of 121 and enable as many end users as possible to make use of 121.

Therefore, the final step of the approach is filling in the support system canvas.

Figure 8.2 - The first three steps of the support systemd design approach



Step 4. Support system canvas

This canvas (see figure 8.3) has been designed with the goal to have an easy to understand template that could be filled in for every context of 121. Other canvasses, such as the business model canvas, have been an inspiration for the design of this canvas.

Next, the procedure for filling in the model will be discussed.

The easiest way to go through the model is from top to bottom per silo. So, for example, first the silo “awareness” is discussed and filled in, then the silo “trust” is filled in, and so forth. However, the team can always decide what works best for them, as it is also possible to fill in the boxed first from left to right and then from top to bottom.

On the top of the canvas there are 5 bottlenecks defined. These bottlenecks are based on the research from the case study and describe 5 topics where the person affected could experience difficulties with using 121 or accessing 121. Under each bottleneck there is a box for problem definition with guiding questions about this bottleneck. For example, in the awareness silo, a guiding question could be: Do people know about 121? Possible problems can be defined and put in this box. The team can come up with as many problems possible.

The team should then define what problems are most urgent and need solving. The selections of problems can be done by simple techniques such as “dot voting”, where every team member gets a fixed number of dots (stickers) to put on their problem(s) of choice.

The next step, is to find fitting solutions for the selected problems. From here a distinction is made, between offline and online solutions.

Instead of starting from scratch with generating solutions, there is a toolbox in between. This toolbox can be pre filled with current solutions that are already in place, and solutions that have been used in the past, for example in other contexts. By using a toolbox, it is prevented that people reinvent the wheel. The facilitator of the session, could fill in this toolbox with other team members or experts beforehand.

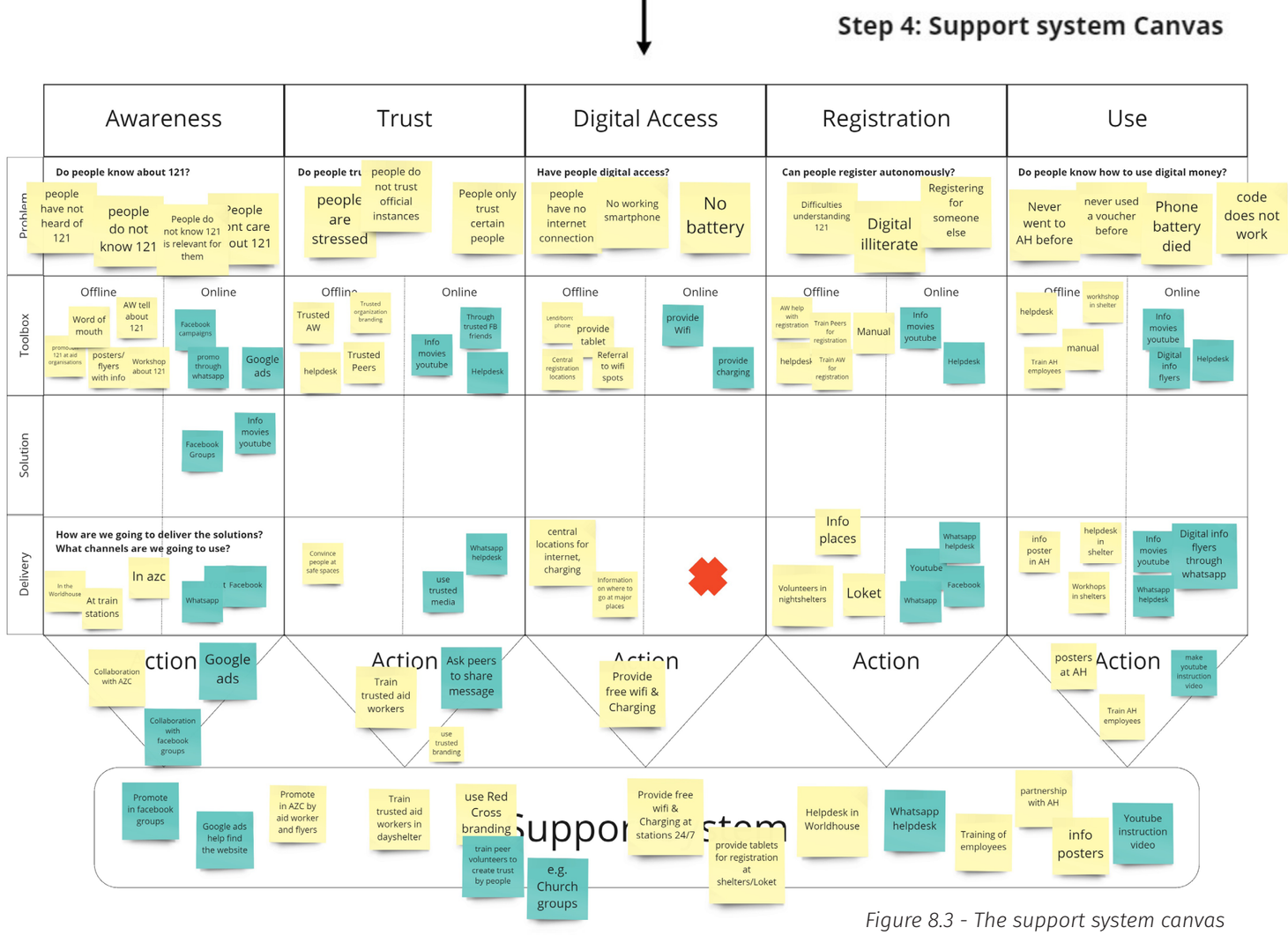


Figure 8.3 - The support system canvas

Fitting solutions from the toolbox can be moved to the solution section. If no fitting solutions can be found in the toolbox, the team needs to come up with new solutions. Those can be put in the solution section as well.

The next step is the delivery. Guiding questions here are: How are we going to deliver the solution? And, what channels are we going to use? Here as well, a distinction between online and offline delivery is made.

After solutions have been found, and the delivery of the solutions has been defined. The next step is to fill in the action box. What actions do need to happen for the solutions to be delivered. For example, is there a need for new partnerships, and with who? Do certain solutions need investments of money or creative capacity? All actions that are needed for the delivery of the solutions can be put in this box.

The next step, is linking everything together. Here, the chosen solution, delivery and action need to be formulated in a short sentence, and put in the “support system box”.

When all silos are filled in from top to bottom, the team ends up with a filled “support system box”. The last step of the approach is to make a final selection of these support system items. Some items may be more important than others, some items may be too difficult or expensive to implement. Also, it could be the case that some items could be combined, or the team comes up with a new item based on other items.

Therefore, the last step is a thorough selection of the most promising and fitting items. This selection should be done after discussing all the items. For the selection, a similar voting technique as earlier can be used, or other selecting methods that are preferred by the team.

After the selection the team ends up with support system items that need to be developed. They can then discuss these items with the stakeholders involved in the set-up of the program proposal, to assure space and budget is allocated to the development of the support system items.

Implementation
The support system approach is an addition to the toolbox of 510. Therefore, it can seamless be integrated in the current working structure of 510.

For the timing it is important that the support system design session takes place before the program proposal is definite. Otherwise, it cannot be ensured that there will be space and budget allocated to the development of a support system.

8.3 Feedback

The approach and canvas received positive feedback from 510 team members. The canvas shows potential to be added to the toolbox of methods and approaches of 510.

The flow of the model was perceived as pleasant, having a timeline with touchpoints of the persona journeys from left to right, and a timeline of actions from top to bottom.

Potential was seen for the toolbox section, as this section could become an integral part of 510's best practises with 121.

For implementation, it is important that there are clear guidelines or guiding questions to fill in the canvas. In this way, teams from 510 could use the approach.

What should be clear in the use of the approach is how to prioritize the solutions, this is something that could be more looked into.

8.4 Evaluation

Three design requirements for the final design have been formulated at the beginning of the previous chapter. This section is about the evaluation of the support system approach and canvas and evaluates if the design requirements were met.

For reference, the three design requirements are restated below:

1. **The design should show the need and relevance for a support system**
2. **The design should show what support system functionalities should be developed.**
3. **The design should be scalable for all contexts of 121.**

The first design requirement was about showing the need and relevance for a support system. This requirement was formulated, so that eventually space and budget could be allocated in the program proposal for support system development. By going through the approach with a diverse group of stakeholders, such as developers, managers, designers and people for the program team, a support base for the development of support systems could be created. The step-by-step approach, guides people through the approach, and forces people to think about possible problems. Therefore, the approach helps acknowledging the need and relevance of a support system.

By going through the approach and filling in the support system canvas, support system functionalities are identified. Therefore, this requirement is met.

The third design requirement is about the scalability of the design deliverable. Because the approach and canvas can be filled in for different contexts, this condition is also met. However, it could be possible that the identified bottlenecks change over time. For example, because the core functionalities of 121 change, or because of technological advancements eliminating certain bottlenecks.

8.5 Validation

At the moment, it has only been tested if case study insights could be filled on the canvas. Therefore, further testing and validation is needed. The next step in the development of the support system approach and canvas, is to test and validate this canvas for several contexts. This validation falls outside the scope of the graduation project, but is an essential step for 510 to undertake. The approach and canvas also need to be tested with different configurations of team members, to test if the approach is easy to follow and that it is clear how to fill in the canvas.

8.6 Conclusion

This chapter was designated to the development of an approach for support system design. This approach is an answer to the main research questions and problem definition defined in the first chapter of this report.

Together with recommendations on implementation, this framework can be used by 510 to design the support system for every context of 121. Ideally the support system design takes place at the initiation of a new program, so to incorporate space and budget for the development of the support system in the program proposal.

In this way it can be assured that 121 will be used with a support system in place, so that the people who need it the most can receive the aid they need.

CHAPTER 9

Conclusion & recommendations

9.1 Conclusion

This graduation project focused on the digital product 121 developed by 510. This product can be used to provide Cash Based Aid and Information as Aid to people affected by humanitarian disasters.

Research showed that not all end users of 121 could use the product autonomously, and the need for a support system was identified. Furthermore, within the organisation there was a lack of support for the development of a support system, as the focus of the organisation was aimed at developing digital functionalities. The research question was therefore twofold:

1. **What support system is needed for 121 to function optimally?**
2. **How can support be created within the organization, for the development of a support system?**

The goal of the graduation project was to come up with an approach to design the support system of 121. This approach needed to be applicable for every humanitarian context where 121 could be used. Furthermore, it is essential to involve stakeholders from all stakeholder levels, to show the need and relevance of a support system. This second step is essential, as the development of 121 is dependent on program proposals. To ensure budget is allocated to the development of the support system, the support system should be incorporated in future program proposals.

The starting point for support system design, was a case study on the 121 Netherlands pilot. This pilot was focussed on providing Cash Based Aid and Information as Aid to undocumented migrants in the Netherlands. Through desk and field research, insights were gathered about the problem and the end users of 121 in this context. Persona creation and customer journey mapping have been done to make sense of the research data and visualize the outcomes.

These visualisations, were the input for a larger visualisation of the humanitarian context in the form of a program context map. The idea behind this map was that it could be used to show the humanitarian context and the support system, that would be needed in that context. However, although the map did a good job of visualizing the context, it was less useful for support system visualization or design. Another method was needed to understand and design the support system.

Where the program context map was high in detail, the support system approach needed to be more generalized, so that it could be used for different contexts of 121. Lessons were taken from the development of the program context map and an approach for support system design was developed. This approach was accompanied by a support system canvas. This canvas has been designed based on all research insights from the graduation project. The case study research identified 5 bottlenecks for access or use of 121. The support system canvas addresses these 5 bottlenecks and helps the team formulate solutions and actions to solve these challenges. By going through the approach and filling in the canvas, 510 team members could better understand the need and relevance of a support system and come up with solutions for the biggest bottlenecks. These solutions combined make up the support system for that specific context.

Through the support system design approach and canvas, support systems can be identified for all contexts of 121. By going through the approach with a diverse group of stakeholders, support can be created within the organisation for the development of that specific support system. In this way, the support system design approach could be the solution to the research questions that were formulated in the beginning of the graduation project.

9.2 Recommendations

Providing assistance to people in need, is the most important thing a humanitarian organisation should do. Therefore, it should be assured, that there is a fit between the receivers of the aid and the way the aid is provided.

Therefore, thorough research is needed per context, to find out the biggest needs of the person affected, as well as possible bottlenecks in the delivery of the aid.

To enable as many people as possible, to use 121 for receiving CBA and Information as Aid, a support system should be designed for every specific context where 121 is used.

The design of support systems should therefore become an integral part of the working methods of 510. The support system design approach and canvas, can be useful for the team to understand and design a specific support system for a context.

As the approach and canvas need more testing and validation, it is important that the 510 team picks up this new approach as soon as possible and test and tweaks the approach to their preference.

By incorporating the approach in the working structure of 510, better support systems can be designed. And through better support systems, more people can use 121 to receive the aid they need.

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Figures

APPENDIX

Appendix A – Original Design Brief

Appendix B – Flowchart

Appendix C – Ethnographic Study Notes

Appendix D - Co-Design quotes clustering

Appendix E – Personas

Appendix F - Persona Journeys