ELENA TONELLI, MARK KRUIJTHOFF,
VALENTINA GUADAGNO, VIRGINIA FACCIOTTO
COACH: IANUS KELLER
CLIENT: ADRIAN LIESZNER

geldmaat


# Final Report

08/02/2024

CHAPTER 0

# Introduction

Geldmaat is a Dutch financial services company that operates a network of ATMs throughout the Netherlands. They were established as a collaboration between three Dutch banks: ABN AMRO, ING, and Rabobank.
Their primary goal is to streamline and modernise the ATM landscape in the Netherlands by providing a standardised and easily recognisable ATM experience for customers of various banks.
Geldmaat aims to offer greater convenience and accessibility for consumers by consolidating the ATM services previously offered by the participating banks. They place a strong emphasis on inclusivity and continually explore ways to ensure that all Dutch residents can readily access cash whenever they require it.

One significant challenge Geldmaat faces is that not all Dutch citizens can easily retrieve money from ATMs for numerous reasons. This can include individuals with visual impairments, those who are not digitally connected, and non-Dutch speakers, among others. This issue aligns with the stance of the European Central Bank, which emphasizes the importance of equitable access to financial services.

In the phase 1 analysis report (Facciotto et al., 2023) our team identified the different challenges faced when using ATMs by two groups: the elderly and visually impaired individuals. This report builds further upon the previous work through narrowing down the target group and developing a solution for the challenges they are experiencing.

A total of four iteration rounds were made which were used to narrow down the scope of the project. By testing with users during each iteration, valuable insights were obtained which were used in following iterations. The outcome of this report suggests a product-service system solution which helps elderly users to learn and become confident in their ability to use ATMs.

Concluding the report follows certain suggestions on how to implement this solution and what the subsequent actions are to take.

CHAPTER 0

# The Team

**Virginia Facciotto**

Design for Interaction, Italy

**Elena Tonelli**

Design for Interaction, Italy

**Valentina Guadagno**

Design for Interaction, Italy

**Mark Kruijthoff**

Integrated Product Design, Netherlands

CHAPTER 0

# Table of Contents


**1. Recap of the Research Phase 4**
1.01 Project Brief and Context 5
1.02 Design Goal and Interaction Qualities 6
1.03 Target Group 7
1.04 Research Main Insights 8

**2. Final concept 9**
2.01 Service 10
2.01.01 The Geldmaat Winkels Assistance 10
2.01.02 The Workshops 11
2.01.03 Direct Manual Request 11
2.01.04 Ecosystem Map 12
2.01.05 Marketing Plan 13
2.01.06 Workshops - Storyboard 15
2.01.07 Workshops - Service Blueprint 19
2.01.08 Geldmaat Winkels Assistance -Storyboard 21
2.01.09 Geldmaat Winkels Assistance - Service Blueprint 24
2.01.10 Manual Request - Storyboard 25
2.01.11 Manual Request - Service Blueprint 27
2.02 Manual 28
2.02.01 Manual Description 28
2.02.02 Desirability 29
2.02.03 Feasibility 29
2.02.04 Viability 29
2.03 Conclusion 30

**3. Iterations 31**
3.01 Iteration 1 32
3.01.01 Concepts 32
3.01.02 Evaluation 33
3.01.03 Reflection 34
3.02 Iteration 2 35
3.02.01 Concepts 35
3.02.02 Evaluation 36
3.02.03 Reflection 38
3.03 Iteration 3 39
3.03.01 Concepts 39
3.03.02 Evaluation 40
3.03.03 Reflection 41
3.04 Iteration 4 43
3.04.01 Concept 43
3.04.02 Evaluation of the Workshop 45
3.04.03 Evaluation of the Winkel Assistance 46
3.04.04 Reflection 47
3.05 Conclusion 49

**4. Recommendations 50**
4.01 Limitations 51
4.02 Future Steps 52
4.03 Additional Suggestions 53

**5. Conclusion 54**
**6. References 55**
**7. Appendix 56**

CHAPTER 1

# Recap of the Research Phase

This chapter summarises the midterm report (Facciotto et al., 2023), displaying the changes made in both the design goal and the target group. Additionally, the argument behind these changes is addressed.

RECAP OF THE RESEARCH PHASE

# 1.01 Project Brief and Context

The Netherlands presents a mixed payment landscape, with cash representing 20% of transactions, while card payments make up the remaining 80% On the other hand, cash continues to serve several important roles. It acts as a backup for electronic payments, in ensures accessibility for vulnerable individuals, and functions as a public means of payment *(De Nederlandsche Bank & Betaalvereniging Nederland, 2022)*. However, this shift raises concerns about the exclusion of specific groups from unassisted banking, potentially deepening societal divisions *(Digital Banking Is a Struggle for Many, 2023)*.

Currently, **Geldmaat is exploring several options to improve the inclusivity of its services**. Examples include training software designed to simulate ATM interactions, a digital store assistant and organising client safaris for the assistants aimed to better understand their users' needs (A. Lieszner, personal communication, September 26, 2023). **The project's main goal is to increase the accessibility to cash through Geldmaat's services** and improving the experience of the chosen target group in using them.

**This report outlines the final two stages of the project addressed to reach Geldmaat's goal**, during which the design team created a sequence of prototypes via four iterations of prototyping and evaluation (Image 1), ultimately resulting in a final concept design.

*Image 1. The design team working on the prototypes.*

RECAP OF THE RESEARCH PHASE

# 1.02 Design Goal and Interaction Qualities

Following the first two iterations of evaluation (see *Iterations* Chapter) the design goal and the interaction vision qualities that had been decided at the end of the midterm were changed as follows.

We want elderly and visually impaired ATM users to confidently recall and understand the required actions when using ATMs.

↓

**We want elderly ATM users to confidently and autonomously operate an ATM.**

Regarding the design goal, the main changes made include the target (the reasons why it has been changed will be explained in detail at chapter 3.01.03) and the desired effect. If the primary purpose was formerly to assist the elderly in recalling and understanding the necessary actions, **it has been revised to assist them in operating an ATM**. This change will be addressed in more detail later, but in general, it was discovered through testing that the **elderly lack the incentive to learn new things due to age** (See chapter 3.03.03).

Moreover, the **skill of recalling was found in the team's research activities to be very hard to train through a design solution** (See chapter 3.02.03). For this reason, it was found more effective to find a way to **make them operate an ATM autonomously** rather than designing a solution to make them learn at home and subsequently recall all the steps.

Interaction qualities:
Confident | Safe | In control | Independent

↓

Interaction qualities:
**Confident | Guided | In control | Independent**

Additionally, one interaction quality was changed as well, from being safe to being guided. According to the design team, the term *safe* was no longer fitting the updated design goal, while ***guided*** **could reflect better the sense of support** that the new design solution should give.

RECAP OF THE RESEARCH PHASE

# 1.03 Target Group

The target group **shifted from elderly and visually impaired to only elderly** for several reasons that are further explained in the *Iterations* Chapter. These are the main reasons why the scope was narrowed down:

- **Visually impaired users have predefined features to operate Geldmaat's ATMs** that are already officially predefined . These features resulted to be already very effective, so shifting the focus towards helping the elderly might have been more useful (See chapter 3.01).
- **Elderly have several of issues caused by age** such as decreasing memory, lack of digital literacy and technofobia (see chapter 1.04), making it difficult for them to use ATMs. For this reason, **it was found more challenging and stimulating for the group to further investigate on this target group**.

On the left it is reported the persona that was used by the design team to start the design process (Image 2).

*"In this village, life may have changed, but a friendly face and a helping hand mean more than any digital wizardry. My daughter's visits and the weekly trips to the ATM – they're the real currencies that matter in my world."*

Sanne van Dijk

84, The Netherlands

**BIO**

Sanne, an 84-year-old widow, lives alone in a cozy village near Utrecht. Living a quiet life, her daughter, who lives nearby, visits daily to assist with essential tasks like grocery shopping and weekly cash withdrawals of 50 euros. While her daughter usually helps, there are times when Sanne, grappling with low digital literacy, faces the challenge of navigating ATMs on her own.

**NEEDS**

- Remembering daily tasks and receiving support to navigate daily life
- Improve her digital literacy
- Values in-person transactions and wants a supportive environment in bank buildings

**CHALLENGES**

- Difficulty in remembering the necessary steps to do a transaction in an ATM
- Has a negative self-perception related to her physical and mental abilities
- Feels anxious and vulnerable when she has to approach ATMs and she is alone

*Image 2. Persona description*

RECAP OF THE RESEARCH PHASE

# 1.04 Research Main Insights

The following section contains a recap of the main insights collected during the initial research of the project (from the start to the midterm).

- *Literature review*
- *Market research*
- *Interviews*

## Elderly users:

**CHALLENGES:**

- **Decreasing memory:** they have difficulty remembering information and actions to perform
- **Lack of digital literacy and technophobia:** they never learnt how to use digital supports and they feel intimidated by them, so they are unable to learn them *(Castilla et al., 2018)*
- **Decline of operative memory:** that results in the lack of ATMs' language comprehension *(Tarakanov-Plax, 2005)*
- **Negative internal attributions:** lack of self esteem related to their own physical and mental skills *(Castilla et al., 2018)*

**HABITS:**

- They **avoid digital banking** and prefer the use of cash because it helps them to keep track of the expenses
- They limit the use of ATMs by **withdrawing cash for the whole week** at once
- They prefer carrying out financial operations in **bank's buildings with human support**

**EMOTIONS:**

Vulnerability | Anxiety

**EXISTING SOLUTIONS:**

There are **no existing solutions** that help elderly individuals in the use of ATMs

**RECCOMENDATIONS:**

- Using a **simplified and familiar** UX/UI *(Chan et al., 2009)*
- **Training** shortly before the use of an ATM and with the support of someone else

CHAPTER 2

# Final Concept

In this chapter, the final concept and result of the work of the last months is explained in detail. The concept is a product-service system, in which the service part (chapter 2.01) focuses on training Geldmaat users and the product (chapter 2.02) focuses on assisting them in the moments of need.

FINAL CONCEPT

# 2.01 Service

Geldmaat provides a service tailored to elderly users who request **assistance and guidance to effectively and independently carry out ATM transactions**.
The service includes access to instruction manuals for various types of operations, allowing users to study and consult them during ATM transactions. Additionally, Geldmaat conducts workshops where a team of volunteers and Geldmaat employees demonstrate how to perform transactions to a small group of participants.
In chapter 3, we will delve into the iterations and considerations that led to these choices.
The service unfolds across three scenarios: the **assistance inside the Geldmaat winkels**, the **participation to interactive educational workshops**, and the **direct request of instruction manuals**.

## 2.01.01 The Geldmaat Winkels Assistance

The first scenario involves the use of instruction manuals for different operations, available inside Geldmaat stores (Image 3). **These manuals, positioned on shelves**, are accessible to individuals requiring assistance with specific transactions. Users can consult these manuals on the spot and retain them. This scenario also provides the option to **call a support service**, prominently displayed through a service number, in case a problem arises that the manuals cannot resolve. Further details on this are explained in chapter 2.01.08.

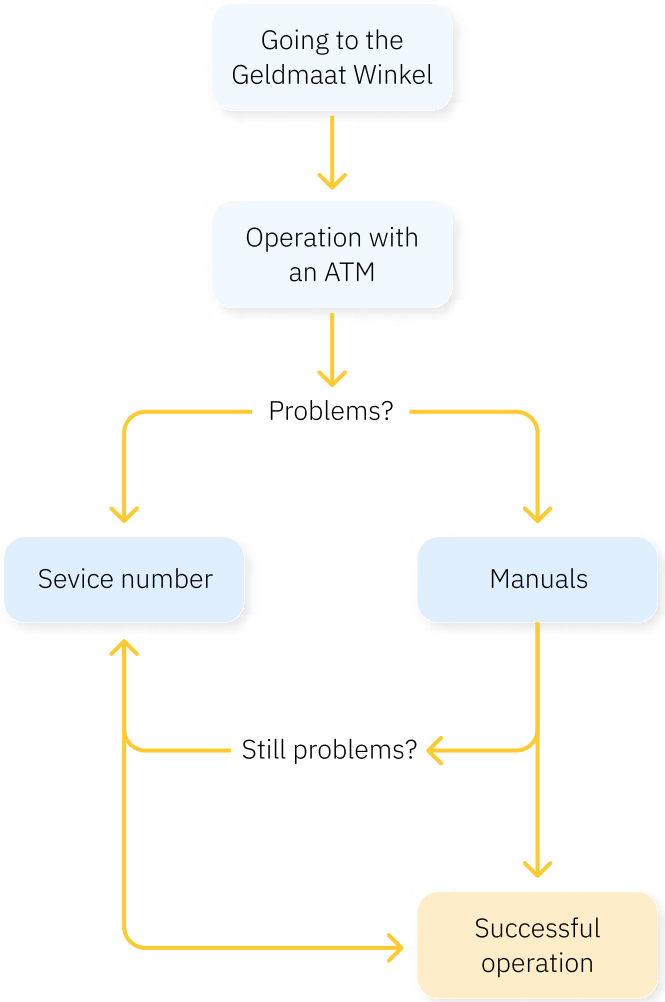



*Image 3. Workflow of the Winkels Assistance*

## 2.01.02 The Workshops

The second scenario, promoted through advertising activities and various communication channels, offers the opportunity to participate in **interactive workshops in public facilities** such as libraries, or elderly care houses (Image 4). Volunteers or Geldmaat employees guide users through the main ATM operations using a demonstration on the previously designed **Shuberg Philis demo** (see Appendix A). This demo simulates the necessary steps on a screen or totem to withdraw money, but plans to illustrate other transactions as well. The workshop is interactive, with participants encouraged to try and anticipate the next steps, fostering discussion and questions. The workshop facilitators are trained to follow general guidelines for conducting these events, but the actual flow depends on their own teaching style and the participating group. At the end of the demonstration, participants **receive manuals to review** during ATM transactions. More details are explained in chapter 2.01.06.

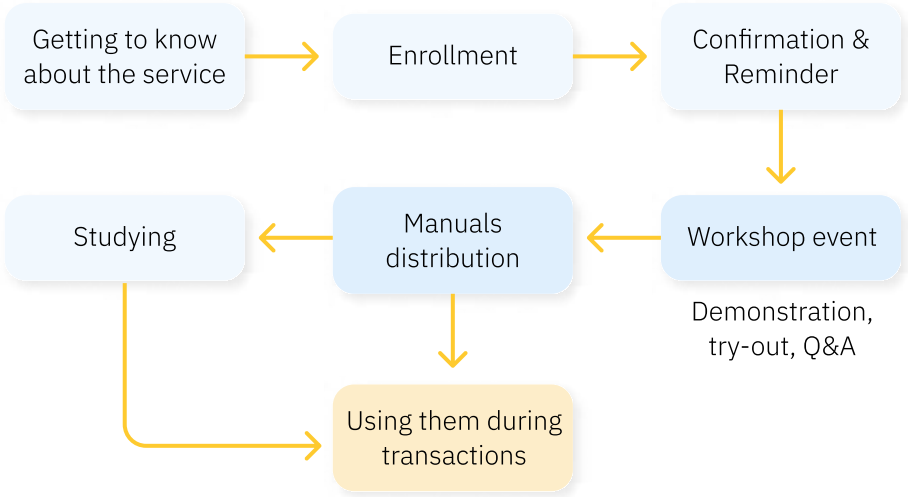



*Image 4. Workflow of the Workshops*

## 2.01.03 Direct Manual Request

The third and final scenario allows users to directly request desired manuals for **postal delivery** (Image 5). This can be done through a dedicated **section on the Geldmaat website**, accessible by navigating the site or scanning a QR code on informational and promotional materials. Alternatively, users can call the designated service number, also provided on informational materials and the website. In this mode, an operator will process the shipping request based on the information obtained from the user. The manuals are then dispatched and delivered in an envelope.

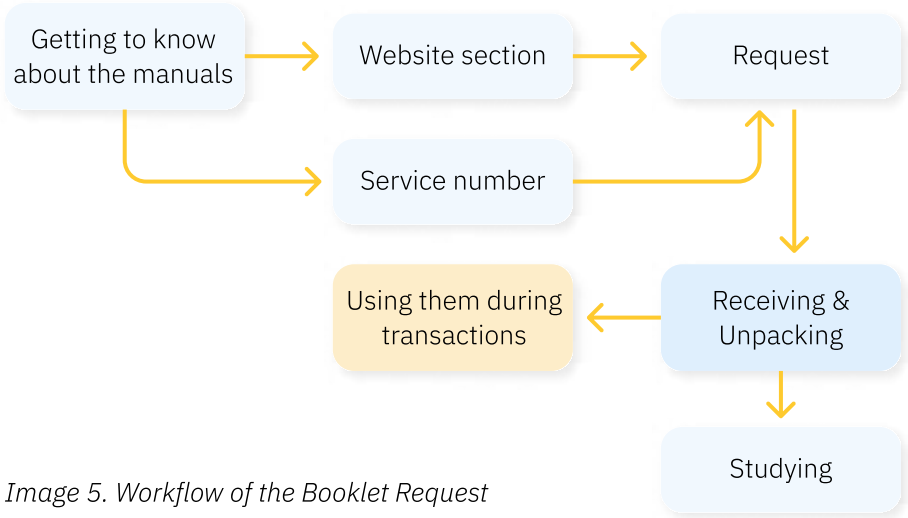



*Image 5. Workflow of the Booklet Request*

## 2.01.04 Ecosystem Map

The ecosystem map (Figure 6) describes the collaborative relationships between stakeholders and how they work together to provide a cohesive and user-centric service, as well as the interconnected elements and interaction that are part of it.

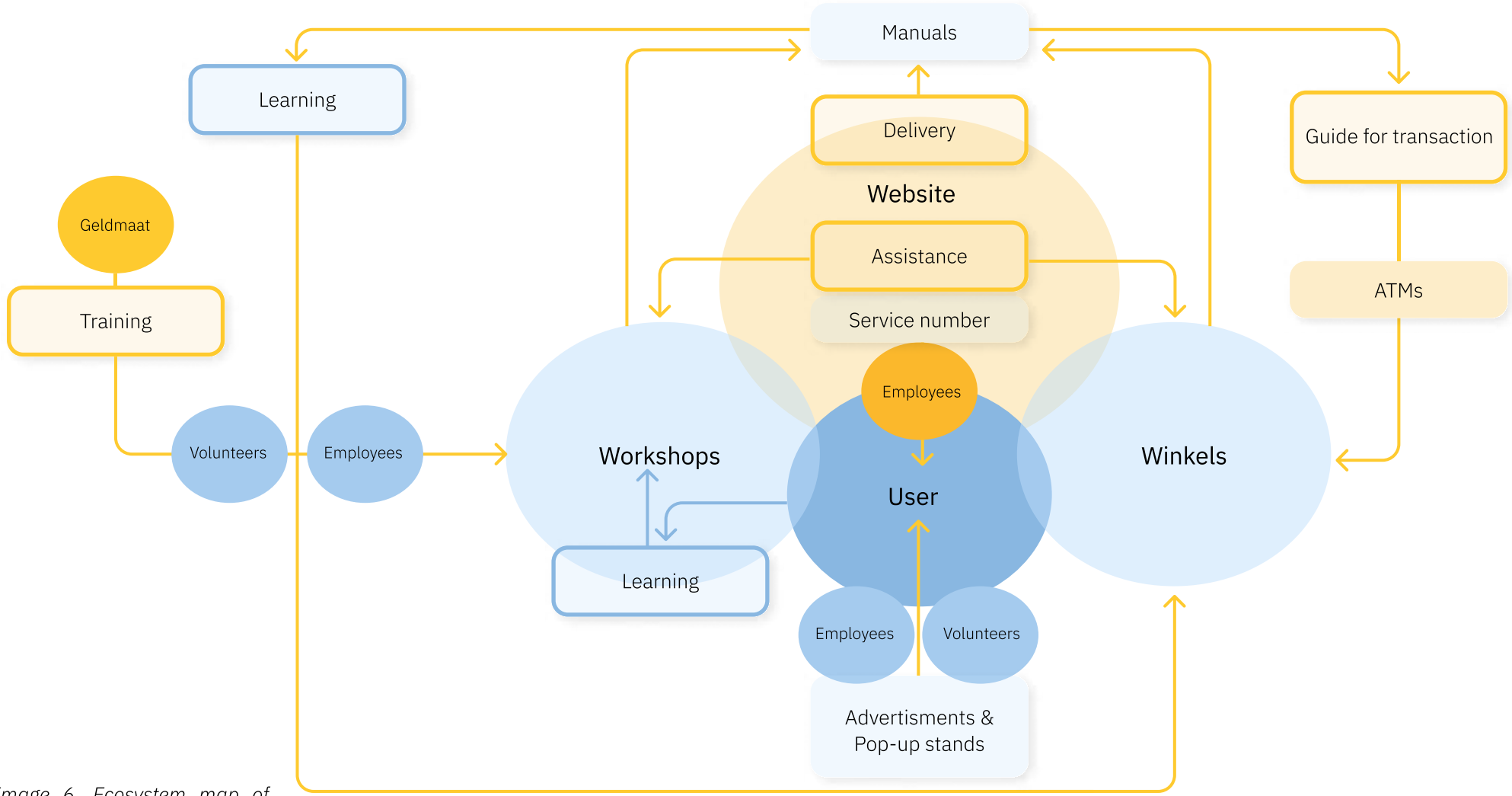



*Image 6. Ecosystem map of our product-service system*

## 2.01.05 Marketing Plan

*Target audience*

While the service is specifically designed for elderly users, communication and advertising efforts will be directed towards a broader audience.

Primarily, the project research and testing activities have demonstrated that seniors often either refuse to admit to difficulties or are unaware of them. The concept aims to **avoid framing the service as for individuals who are considered more fragile or in greater need of assistance**. Instead, it wants to make ATM usage more accessible to anyone. The service should not be promoted as an "activity for the elderly," nor should it exclusively depict elderly individuals through figures or images.

Additionally, the marketing plan aims to **target families and caregivers of elderly individuals**, recognizing that they may have access to multiple sources of information, such as social media. It is expected that they will inform elderly people about the service, accompany them to workshops, or assist them with the registration process.

Moreover, beyond end-users, there are **other organizations and individuals that will be involved**. Firstly, public places where workshops will take place, such as retirement homes, libraries, or cafes, will be approached to host these educational events. Secondly, volunteers will be recruited and trained to facilitate the workshops by Geldmaat.

*Wording*

As mentioned in the previous paragraph, the service should never be promoted as targeting struggling seniors, to avoid making them feel belittled. Many may not admit or be aware of their difficulties, and it would be counterproductive.

Instead, it has been chosen **not to use negative words indicating difficulty, lack of knowledge, or inability** when referring to the service. The service will be promoted as a learning opportunity for anyone willing to learn or as an easier and more immediate way to perform ATM transactions.

*Communication channels*

Since the service is directed at both elderly individuals and their caregivers, it will be promoted through various communication platforms. **Flyers or brochures** (Image 7) will be distributed in mailboxes or popular locations frequented by the elderly, such as supermarkets, churches, bars, markets, and community centers.

In these same locations or their proximity, **pop-up stands** will be set up. Geldmaat representatives will distribute flyers, promote the service verbally, and assist individuals with on-the-spot registrations.

Considering the preference of the elderly for television and newspapers, **advertisements** will be created and distributed for broadcast and publication. **Emails and newsletters** will be sent to retirement homes or other institutions that can directly inform the elderly and organize workshops.

# FINAL CONCEPT

These institutions, along with public places like libraries, will be contacted to collaborate with Geldmaat in organizing workshops.
To reach families and caregivers, the service will be promoted on **social networks** such as Facebook or Instagram. Geldmaat will have a page on these platforms to share photos, videos, and promotional posts.

Regarding volunteer outreach, Geldmaat will directly sponsor the activity on its website and social platforms. Additionally, volunteer organizations or social service entities will be contacted to promote workshop moderation as a social volunteering activity for the elderly.


*Image 7. Example of a flyer*

## 2.01.06 Workshops - Storyboard

A storyboard was created to explain in details a possible scenario of how the instructive workshops will work. It was decided to use the same persona mentioned in chapter 1.03.
Each phase of the storyboard is explained in its modalities as well.

*Getting to know about the workshops*
The user can get to know about the existence of the instructive workshops through the modalities described in the "Communication channels" paragraph in Chapter 2.01.5. (Image 8, point 1)

*Registration process*
Registration for workshops can be completed through various methods. Participants can register by **calling the service number** and providing their details to an operator who will facilitate the registration process.
Registration can also be done in person at a **pop-up stand**, following the same procedure as calling the service number but with the assistance of a representative. They can also register through a **dedicated section on the Geldmaat website**, accessible either by scanning a QR code on promotional materials or navigating the site.
During the registration process, participants will be asked to provide their details, and they will also indicate their preferred method of receiving **confirmation for their registration**—whether via email or SMS. (Image 8, point 2)

1

Sanne gets to know that Geldmaat is providing a service to teach elderly how to use an ATM through an advertisement on a newspaper.

***motivated to learn***

***curious about the service***

2

Sanne enrolls to in their first available spot in her area for the workshop, by calling the service number on the advertisment. A Geldmaat employee assists and enrolls Sanne.

***confused on how to start the enrollment at first***

***supported thanks to Geldmaat assistance***

*Image 8. Storyboard of the Workshops scenario*

# FINAL CONCEPT

Whether completed online or with the assistance of a representative, participants will be presented with the first available workshops based on the date and time within the participant's specified area and they can then select the one that best suits their preferences.
After completing the registration, a confirmation email or SMS, based on the user's preference, will be sent containing the date, time, and location of the scheduled workshop. Additionally, a **reminder** with the same information will be sent on the day of the event.

*Event day*
On the day of the workshop, participants, alone or accompanied, will proceed to the workshop location. At the reception, a staff member will **check the participant's registration** email or SMS or ask for their name to verify their presence on the list of registered participants.
Subsequently, participants will be guided to the designated area, where they will take their seats along with other participants. If present, accompanying individuals can choose to observe the workshop from a slight distance or wait elsewhere.
Workshops are conducted in **groups of 5-6 people and are facilitated by a Geldmaat volunteer**.
The moderator will use a totem or screen to demonstrate the necessary steps for key ATM operations, encouraging participants to interact, try to anticipate the next steps, and engage in discussions and collaboration. Each volunteer follows guidelines learned during training with Geldmaat but will bring their own moderation style.


3

Sanne gets a notification of confirmation that she's going to participate to the event.

***relieved that she managed to complete the enrollment***

***motivated to start learning***


4

Sanne gets a notification of reminder that today she will participate to the event.

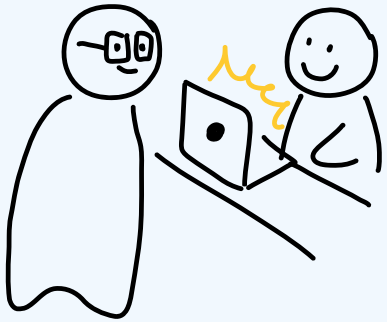
***excited about the new experience***

***concerned about whether she will be able to do it***

*Image 9. Storyboard of the Workshops scenario*

# FINAL CONCEPT

Each workshop is unique, shaped by the moderator's approach and the dynamics of the group. (Images 10-11, points 5,6).
The workshop concludes with the **distribution of instruction manuals**, which participants can look at again or use as a reference while performing transactions at the ATM. (Images 11-12, points 7,9)



5

Sanne arrives at the place of the event and an assistant checks her registration.

***excited about the new experience***

***concerned about whether she will be able to do it***

*Image 10. Storyboard of the Workshops scenario*

6

Sanne attends the workshop in which she learns how to use an ATM thanks to the demonstration of an assistant, where she interacts with the ATM demo on a screen to practice together with the other participants.

***curious about the new experience***

***interested about the topic***

***focused on memorizing the right steps***

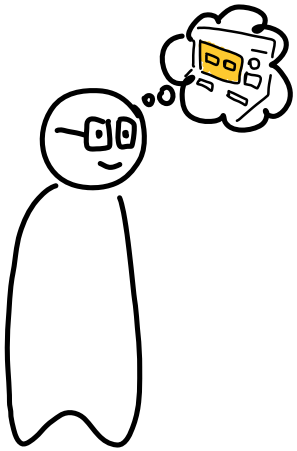
7

At the end of the workshop Sanne gets a little manual to bring with her every-time she needs to make an ATM operation if she gets confused.

***happy that she has learnt something new***

***amused by the interactive experienced with other people***

*Image 11. Storyboard of the Workshops scenario*



8

Sanne goes back home with her mind clear about how to use an ATM.

***happy that she has learnt something new***

***self-confident on her abilities***

9

Sanne tries for the first time to use an ATM by herself. She can complete all the operation thanks to the knowledge gained and thanks to the little manual for her uncertainties.

***concerned about whether she will be able to do it***

***satisfied that she managed to get what she wanted autonomously***

***self-confident on her abilities***

*Image 12. Storyboard of the Workshops scenario*

## 2.01.07 Workshops - Service Blueprint

To establish clear and precise connections between different service components and users within this service system, a service blueprint has been developed. (Images 13-14)

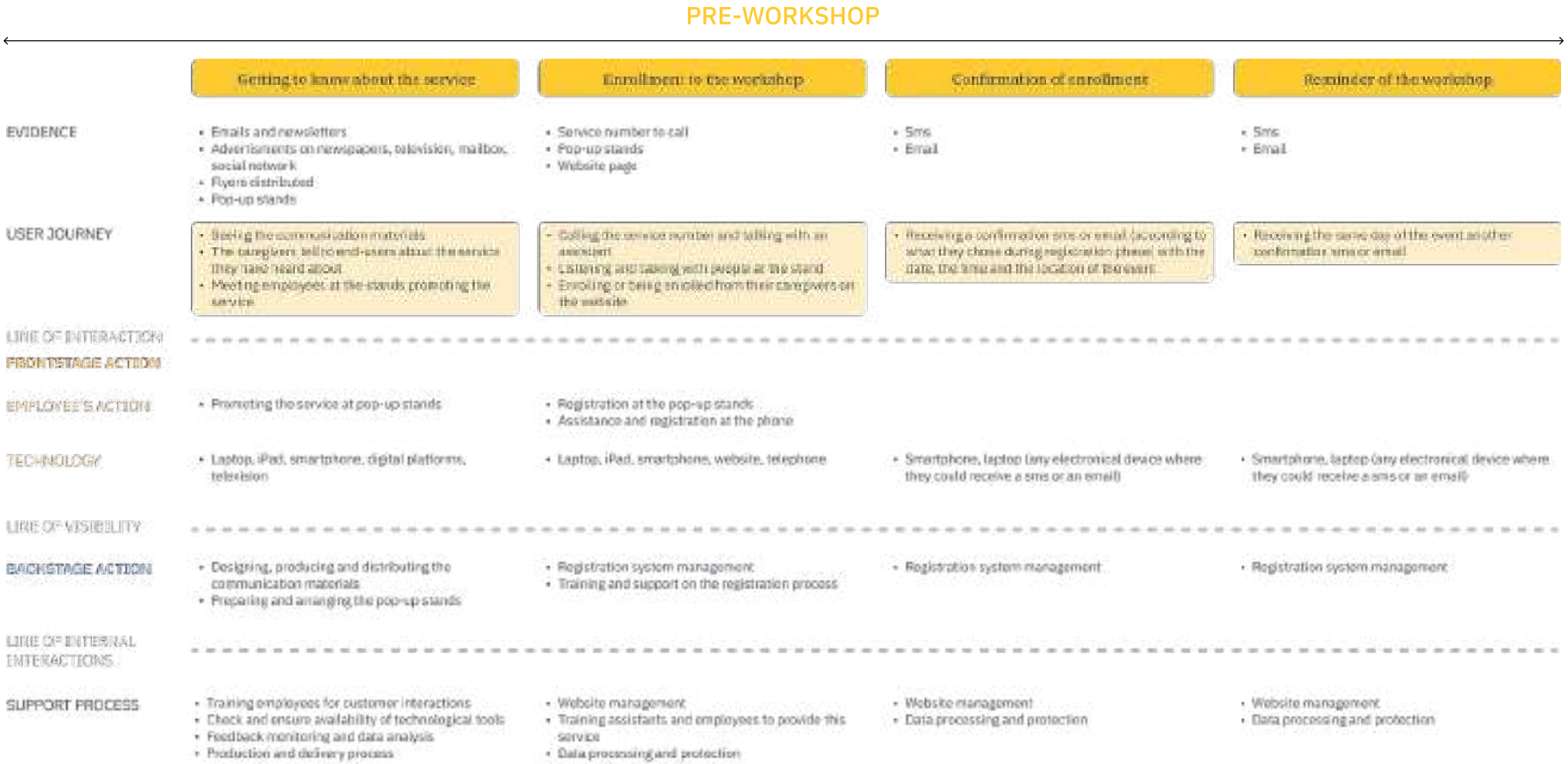



*Image 13. Service blueprint of the Workshops*

# FINAL CONCEPT

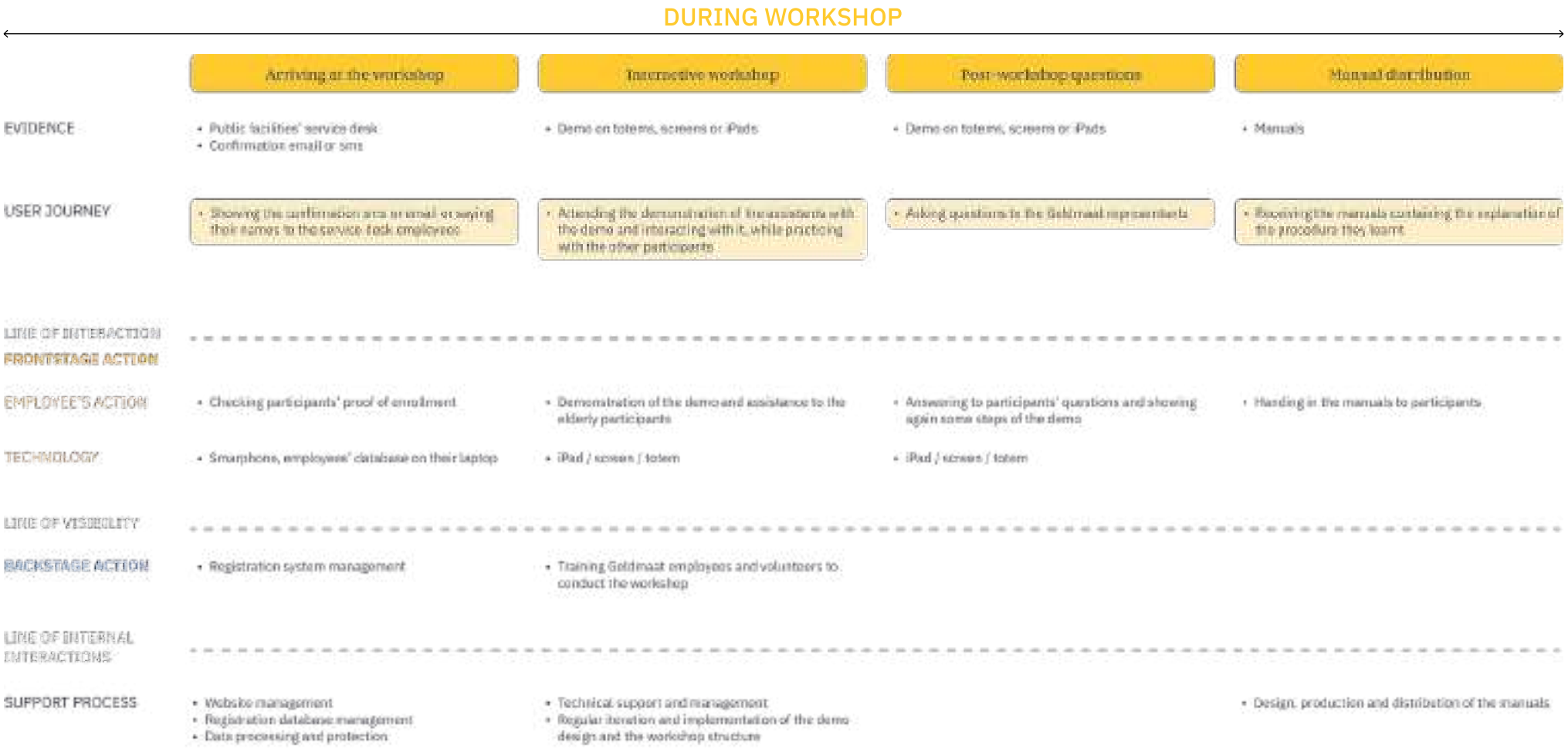


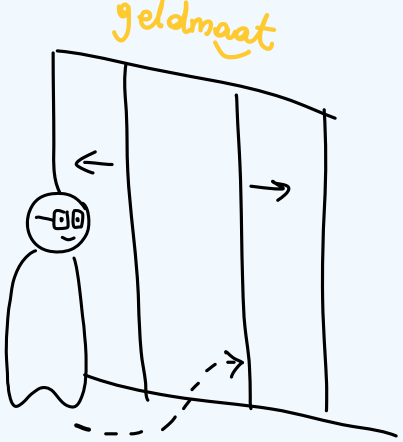

*Image 14. Service blueprint of the Workshops*

## 2.01.08 Geldmaat Winkels Assistance - Storyboard

A storyboard (Images 16-17) was created to explain in details a possible scenario of how the Geldmaat Winkel assistance would work. It was decided to use the same persona mentioned in chapter 1.03.

There is no planned advertising campaign for the winkel assistance service, as **materials are made directly available in the Geldmaat winkels** where users already enter to perform ATM transactions.
Within Geldmaat winkels, a **dedicated shelf** will be provided, featuring manuals for various operations (Image 15). Users can freely take a manual and browse through it while doing a transaction, following the provided instructions. After use, they can either return the manual to the shelf or take it with them.
The shelves will be regularly restocked to ensure a continuous supply of materials.
In case the manuals cannot address any alternative issues users may encounter during an ATM transaction, a **service number** will be prominently displayed. Users can call this number, and a telephone operator will guide and assist them in resolving the problem.


*Image 15. Example of how the shelf would appear*



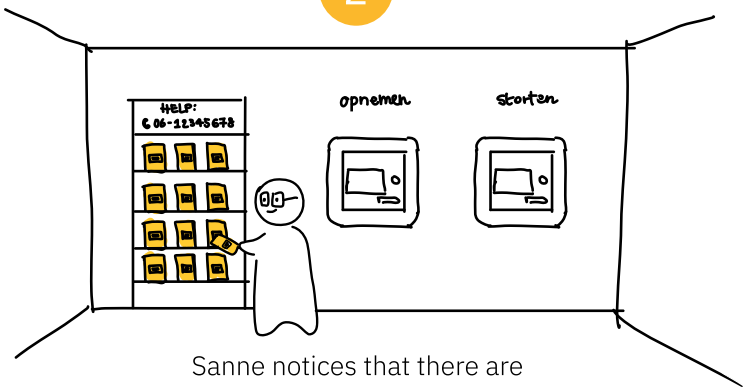

1

Sanne enters in the Winkel to deposit money.

***determined to withdraw cash***

***worried about whether she will manage to withdraw cash***

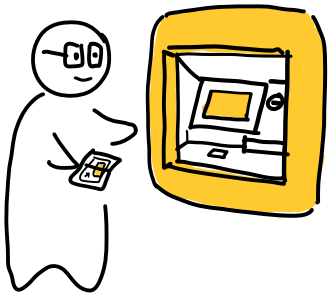
2




Sanne notices that there are exhibitors displaying manuals of Geldmaat.

***surprise to see the new feature in the winkels***

***curious about what the manuals display***



3

Sanne starts the operation while reading the instructions on the manual.

***curious to see if the instructions are really helpful***

***confident about the positive outcome***

4

An unexpected problem occurs: her banknote is not accepted by the machine.

***frustrated because she doesn't know what's the problem and what to do***

***worried because she can't complete the operation***

*Image 16. Storyboard of the Winkel assistance scenario*

# FINAL CONCEPT


5

Sanne decides to call the service number displayed on the shelf to ask for help.

***hopeful to find someone that could solve her problem***

***worried because she doesn't know if someone will answer or will be really helpful***

6

An operator answers an guides Sanne step by step to solve the problem, and she manages to complete her transaction.

***supported thanks to Geldmaat assistance***

***relieved because she could solve the problem and get her money***

*Image 17. Storyboard of the Winkel assistance scenario*

## 2.01.09 Geldmaat Winkels Assistance - Service Blueprint

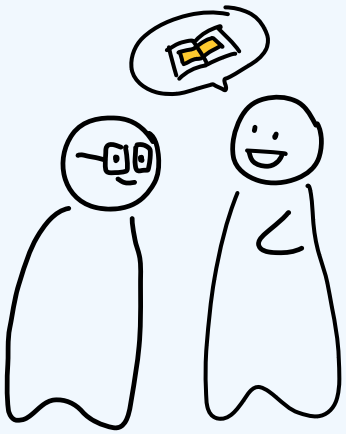
To establish clear and precise connections between different service components and users within this service system, a service blueprint has been developed. (Image 18)


*Image 18. Service blueprint of the Manual request*

## 2.01.10 Manual Request - Storyboard

A storyboard (Images 19-20) was created to explain in details a possible scenario of how the manual request would work. It was decided to use the same persona mentioned in chapter 1.03.

For those who wish to have the instruction manual but may not feel the need or are unable to attend workshops for various reasons, **ordering one is possible through the Geldmaat website or by calling the regular service number**. The promotion methods for this service mirror those used for workshops.
Whether interacting with a telephone operator or using the website section, users will be asked to provide their information regarding where they want the product delivered.
Upon completing the transaction, the manual will be **delivered in a sealed envelope** to the address previously indicated by the user.

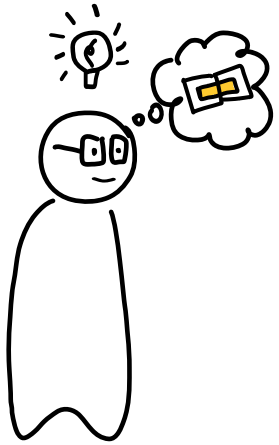


1

Sanne's daughter tells her that she found out that Geldmaat produces now these new manuals of instruction for operations at ATMs.

***happy to hear about such a useful news***

***curious of owning a manual***



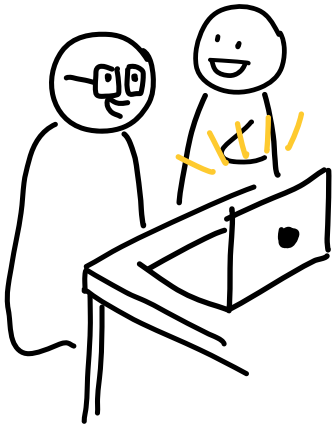
2

Sanne thinks it might be useful to have one and decides she wants to order it.

***motivated to order a manual***

***curious of owning a manual***

*Image 19. Storyboard of the Manual request scenario*

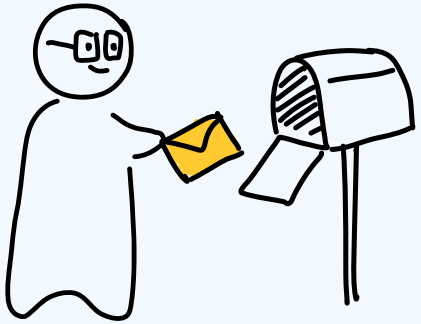


3

Sanne, helped by her daughter, orders a copy of “Draagbare handleiding om geld op te nemen” from Geldmaat website.

***curious of owning a manual***

***excited about the upcoming manual***



4

Sanne receives the copy in her mail box a couple of days later.

***happy about her new manual***

***excited at the idea of performing an ATM transaction on her own***

***curious to see if it is really going to be helpful***

*Image 20. Storyboard of the Manual request scenario*

## 2.01.11 Manual Request - Service Blueprint

To establish clear and precise connections between different service components and users within this service system, a service blueprint has been developed. (Image 21)

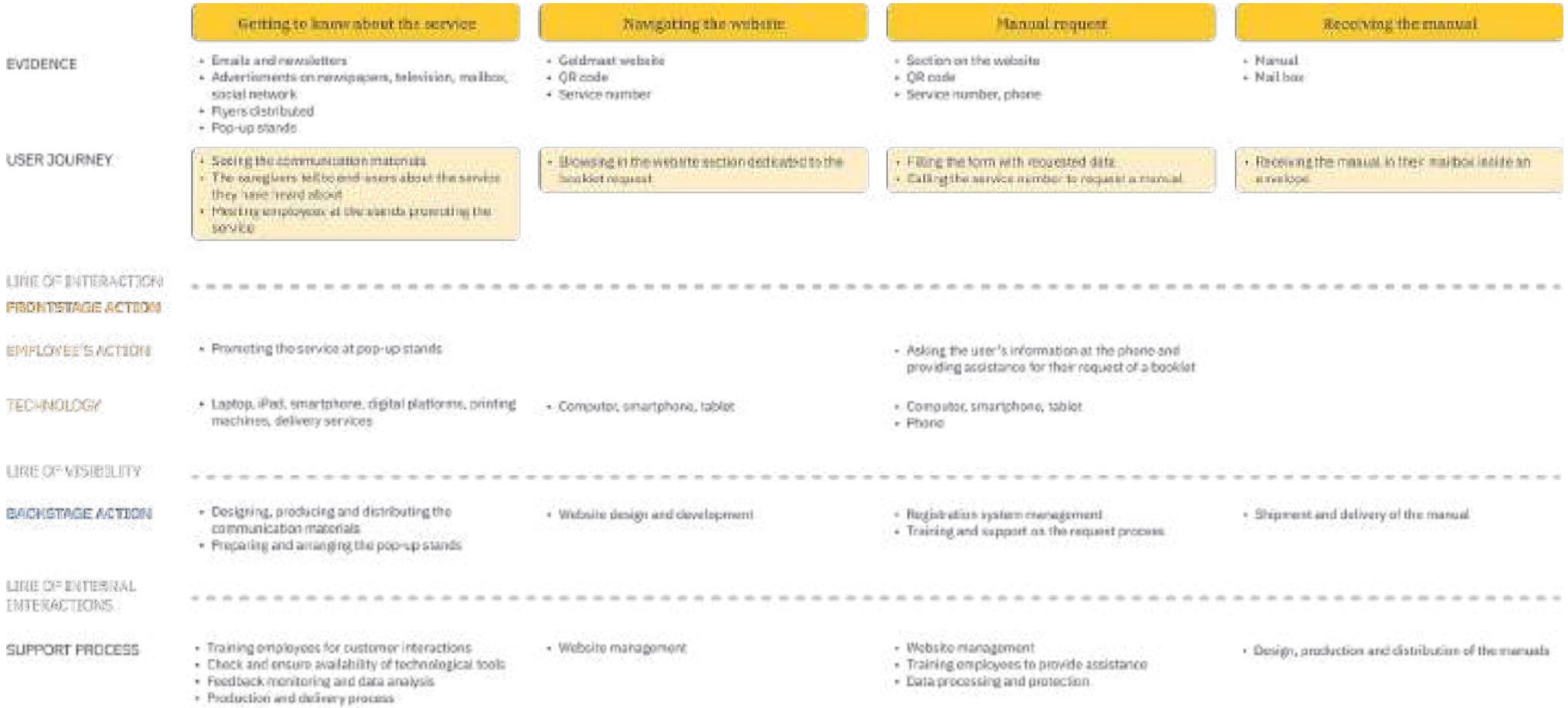



*Image 21. Service blueprint of the Manual request*

# 2.02 Manual

## 2.02.01 Manual Description

The manual (Image 22), which is handed out at the end of the workshops and which is available next to Geldmaat ATMs for assistance or by ordering it, is meant to be used at the ATM as a step-by-step guide while carrying out an operation. Furthermore, it can be used as a tool to recall and practice the use of ATMs at home.

The manual shows the **eight necessary steps to take in order to withdraw cash and provides an URL that can be used to try the demo** at home if desired by the user.

The manual has several design features that assure its readability, portability and accessibility.

*Easy to understand*

Being in a numbered chronological order from steps one to eight, the booklet is **easily comprehensible**. Users can look at specific steps anytime and quickly which is useful in the situation of retrieving money, in which users are often wary of their surroundings. **The instructions themselves are concrete, to-the-point** where the most important features per step are highlighted.

*Portable and readable*

A **comprise between portability and readability** has been made as the booklet in its folded shape is compact (A6) and easily fits


*Image 22. Manual at Geldmaat ATM.*

inside a pocket of a jacket. When folded open, the booklet extends to an A5 landscape format which allows the text to be large and easily readable. Other options such as a map or folder layout were explored but due to their complexity of folding open (which is not something users would like to do at an ATM), it was decided to keep it as simple as possible. (See chapter 3.04.01)

*Clear visual communication*
Specific graphic design choices of the booklet have been made in order to improve readability and communication effectiveness of the manual. Namely, **visual and symbolic elements have been implemented to make communication clear** for all kinds of users, including the ones that are not comfortable with reading. Furthermore, **the cartoon style improves contrast between features** such as text, text boxes and hands, and the **colour palette has been designed taking into account the needs of colour blind people**. Lastly, the cartoon hands have been designed with the goal of allowing **all users to identify themselves in the drawings**. To do so, the research of Scott McCloud has been taken into consideration (The Harvard Gazette, 2018). Appendix B shows the content of all the pages of the manual.

## 2.02.02 Desirability

From research conducted in the first phase of the project, it was found that elderly often experience difficulties using ATMs and that there is a need for a solution that can be used by people with limited knowledge of technology.
During a visit to the Geldmaat Winkel in Zoetermeer (see chapter 3.04.03) the desirability of the manual was tested. Passer-bys were asked to comment on the design of the booklet. Overall, **it was well-received by the public as it was found to be clear and easy to understand**. When handed the booklet, there was little to no confusion on its purpose and users immediately figured out how it works.

## 2.02.03 Feasibility

Being a standard dimension brochure, the booklet can easily be produced by a domestic printing company which is both **affordable and fast solution for Geldmaat**. In the case of this project, the printing has been ordered at Drukwerkdeal which arrived within two working days and costs €0.35 per booklet for 1000 pieces (incl. VAT). More about the costs can be found in Appendix C. A first test-sample can be used to distribute and test out among participants. **Any feedback can be quickly implemented in an iterative manner** with each batch of booklets. Furthermore, the manual can be easily translated and produced in multiple different languages to reach a wider number of end users.

## 2.02.04 Viability

The solution presented is closely aligned with Geldmaat's vision to become more inclusive and independent when it comes to ATM usage; which is similar to the European Central Bank guidelines. Being a low-cost solution, **there is very little risk associated with the manual for Geldmaat**. Furthermore, the goal of Geldmaat's services to become accessible to anyone echoes the format used, which is **very accessible due to its simplicity, independent of age**.

FINAL CONCEPT

# 2.03 Conclusion

In this chapter, the service designed for Geldmaat was described, aimed at assisting elderly users in effectively and independently carrying out ATM transactions. Three main scenarios have been developed to address to the diverse needs and preferences of the targeted users.

The first scenario involves the availability of instruction manuals within Geldmaat stores, providing users with immediate access to guidance for specific transactions. This approach ensures convenience and accessibility for individuals seeking assistance while performing ATM transactions.

The second scenario highlights the interactive educational workshops conducted in public facilities, where participants receive hands-on guidance from trained volunteers and Geldmaat employees. These workshops not only impart essential skills but also foster a sense of community and empowerment among participants.

Lastly, the third scenario allows users to directly request instruction manuals for postal delivery, providing an alternative option for those unable to attend workshops or visit Geldmaat stores. This mode of delivery ensures accessibility for individuals who may face mobility challenges or prefer learning in the comfort of their own homes.

Furthermore, the marketing plan emphasizes inclusivity and accessibility, aiming to reach a broader audience beyond just elderly individuals. By avoiding stigmatizing language and negative framing, ATM usage is promoted as a learning opportunity for anyone willing to enhance their financial independence.

Through clear communication channels and strategic outreach efforts, ATM usage is made more accessible and empowering for all individuals.

The following chapter will highlight the iterative research activities conducted by team that brought to the final concept design.

CHAPTER 3

# Iterations

In this chapter, the iterative process that led to the development of the final design described in chapter 1 is explained step-by-step. Starting off with exploring designs for visually impaired users, it moves designs targeted towards elderly. During each iteration, different concepts have been explored: prototypes have been built and tested with the target group and the results of the tests have been analyzed and reflected upon. Each iteration builds on the results of the previous. In total, four iterations were made which are explained in detail. Image 23 shows an overview of the iterations and their main focus.

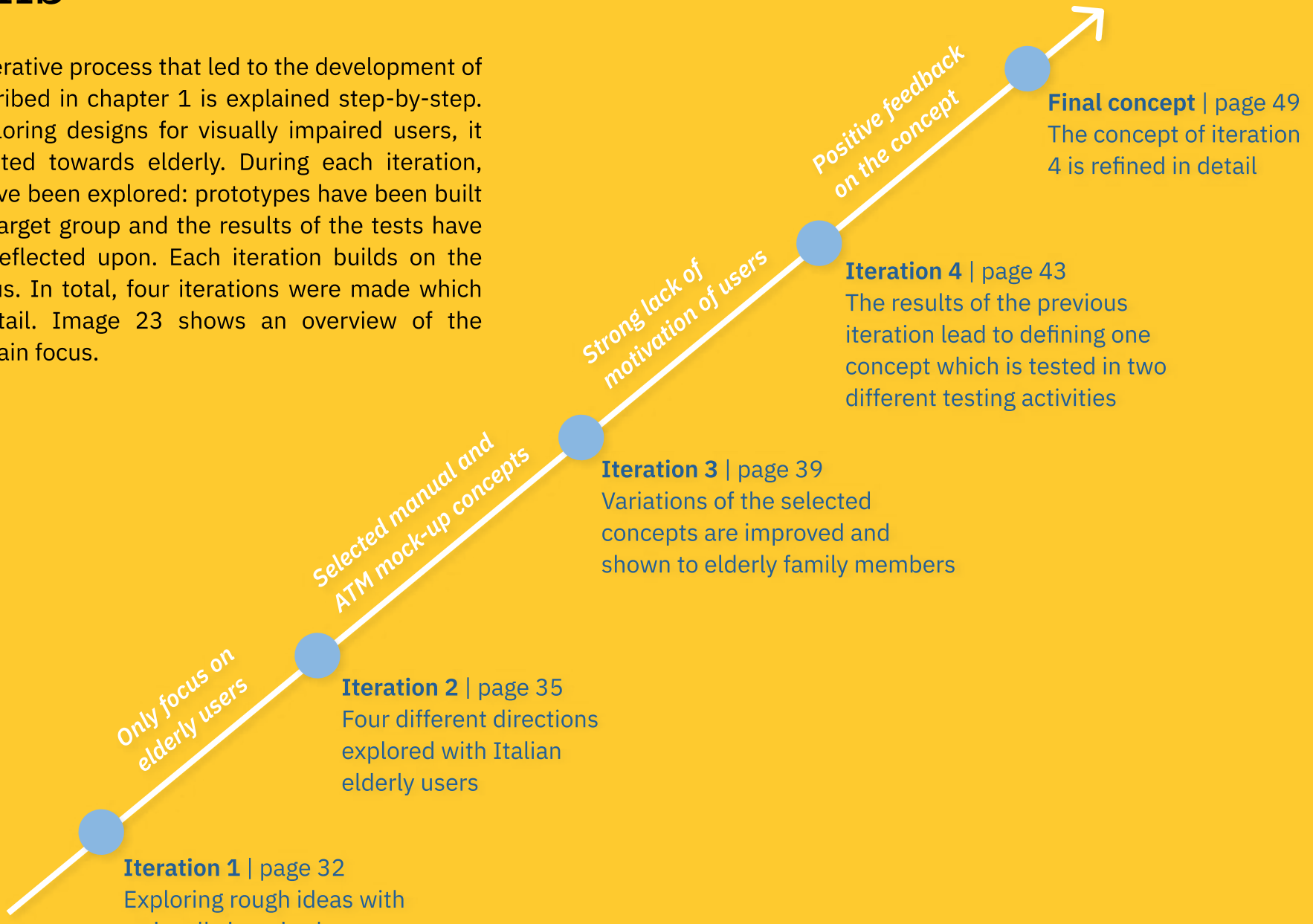



*Image 23. Overview of the iterative process*

# 3.01 Iteration 1

The goal behind the first iteration was to test out different types of prototypes with a **visually impaired user** to better understand what works and what doesn't. These included a fully software-based demo (Schuberg Philis & Geldmaat, n.d.) and a physical cardboard mock-up of an ATM with a voice-assisted solution (Image 24). The ideas for these prototypes came up during an initial brainstorm session in which the team explored opportunities for both elderly as well for visually impaired users (see Appendix D). The consent form used can be found in Appendix L.

## 3.01.01 Concepts

*Geldmaat demo*

**The Geldmaat demo is an online tool which mimics the real functioning of an ATM** (Image 24). After inserting a digital bankcard, instruction on the screen will appear and when followed, the user can retrieve fake, digital cash money. This software was developed by **Schuberg Philis** and is meant to be run on a digital totem (see Chapter 3.04) and as a tool that can be digitally spread around to users for practice. See Appendix A for all the displays.

*ATM mockup & voice assistance*

One model which was brought was a **cardboard mock-up of an ATM machine with a physical pinpad.** The idea behind this prototype was to mimic the look and feel of a real ATM in a more portable form factor **to train at home.** Geldmaat ATM's have a special **"visually impaired mode"** (*Visio Kennisportaal - Kennisplein Voor Mensen Met Een Visuele Beperking. - Visio Kennisportaal,* n.d.) when headphones are plugged in which changes the UI navigation from the screen-buttons to the pinpad in conjunction with a higher contrast display and spoken instructions (Image 24).


*Image 24. Top: Geldmaat software demo (https://geldautomaat-training.geldmaat.nl/)*
*Bottom: cardboard mockup of ATM*

This was simulated by recording the instructions and playing them back during the user test. A paper display mockup was made which was turned over in case an action was completed.

## 3.01.02 Evaluation

During the first phase of the project, through a mailing list (Bols, n.d.), the team was able to get in contact with a handful of visually impaired people. One of them was willing to invite the team over to her place in Brakel and try out the prototypes.
She is a 32 years-old woman, living with her husband and shortsighted. Her disability implies that **she is not able to withdraw cash alone due to being unable to read the text on the screen** and would need help from someone she trusts. The only way she is able to read text is by being very close to it (<10 cm).
The main goal of this visit was to better understand how a visually impaired user is able to perform certain tasks, specifically regarding the withdrawal of cash money and the prototypes. For showcasing the Geldmaat demo, a laptop screen was used and for the ATM mock-up with voice assistant a recording of the ATM instructions were made beforehand and played back on a mobile phone. (Image 25)

*Geldmaat demo*

The test procedure involved the participant to autonomously try out the demo on a laptop, with and without spoken instructions from a member of the team. The aim was to understand if the features provided by the demo were sufficiently efficient to be understood by a visually impaired person in order to complete the operation in autonomy.

The demo resulted **completely practically unusable for the participant,** and even with spoken instructions was not possible for her to perform the needed actions.
Presenting only a visual interface, it resulted to be extremely difficult to orientate on a screen without physical buttons as reference points were missing. This conclusion could consequently be extended to people presenting the same or a major visual impairment.
However, she confirmed that training is something that would definitely help her to gain confidence at the ATM.

*ATM mockup & voice assistance*

The task given to the participant involved listening to the recorded instructions and following them using the cardboard mockup. A team member facilitated the test by turning over a paper display mockup every time the action was completed.

*Image 25. Testing out the ATM mockup with a visually impaired user.*

The objective was to simulate a training experience as closely as possible to that with a real ATM. Therefore, a prototype was provided for practice, equipped with buttons and slots, along with the same audio feedback that visually impaired users hear when conducting ATM transactions. The aim was to assess whether rendering the experience as lifelike as possible would facilitate user learning and instill greater confidence in approaching an ATM. It was found that the **spoken instructions given by the ATM when headphones are plugged in are clear to follow** and she was able to **successfully complete the task.** The change in UI was found to be very useful for the navigation **using the ATM keypad** instead of the buttons on the side of the machine or the touchscreen. She could easily orientate herself on the pinpad as its position is standardized, therefore she already learnt how to move and its features such as the tactile bump on top of the middle key.

## 3.01.03 Reflection (Image 26)

*Conclusion*

During this test, the team found out that the participant was **unaware of the "visually impaired mode"** of the ATM. However, during the test the team observed that it is possible for someone with a severe visually impairment to withdraw cash with the spoken instructions given when headphones are plugged into the ATM. **Communication** regarding the visually impaired mode of the Geldmaat ATM's when plugging in headphones presents **an opportunity for improvement.** This is because, through the research, it has been discovered that to many users it is unclear that these features are there.

Clarifying this information could be make the difference, potentially enabling heavily visually impaired users to withdraw cash when they might otherwise be unable to do so. Given the already effective features in place to assist visually impaired individuals, it is evident that communication is the primary issue. Consequently, it is concluded that **shifting the design focus towards assisting the elderly** may be more beneficial. Elderly individuals face a variety of challenges related to aging, which can make ATM usage difficult for them. Further investigation into this area would be particularly valuable.

*Limitations*

Besides surveys, the team was only able to **conduct a single user test** with a visually impaired person, which is less than initially planned for. As there are many different types of visual impairment, having met more users would generate a better overview. This would have likely been the next step if the design goal had stayed to design for visually impaired users as well.

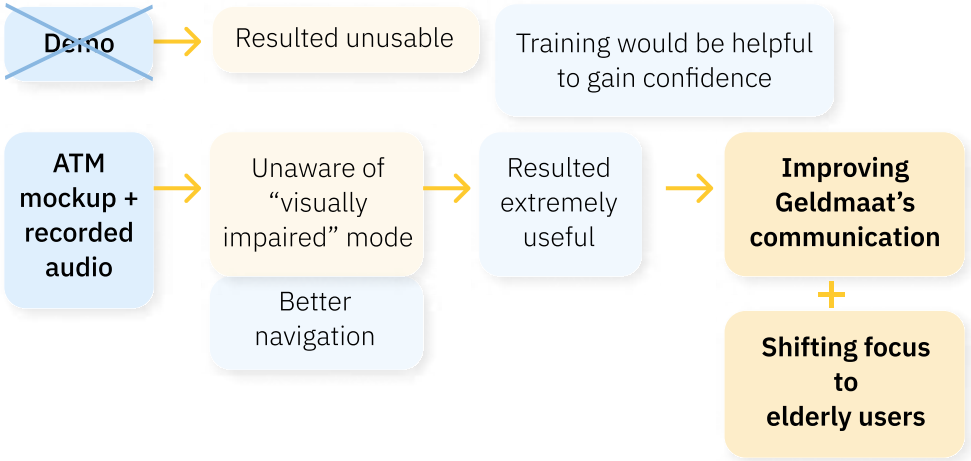



*Image 26. Overview of the final insights of iteration 1*

# 3.02 Iteration 2

## 3.02.01 Concepts

Following the results of the first iteration, it was decided to shift the focus from the visually impaired users to elderly users. Furthermore, six new concepts have been developed with the **purpose of determining the most effective approach of learning how to use an ATM at home and memorising the PIN code**.
Appendix E shows the brainstorming that led to the six concepts.

*ATM mock-up with small manual*

For the first prototype (Image 27), a **cardboard scaled and analogic version of the Geldmaat ATM** was designed to train the users on how to operate an ATM at home. In the screen part of the prototype a **small manual is placed to describe each step of the transaction**. The goal was to test if training actively by interacting with something that resembles reality **could help elderly to train motor memory and remember the sequence of actions**.

*Pop-up analogic ATM*

The second prototype (Image 28), was a **pop-up ATM** where users can train themselves by **opening numbered boxes and reading instructions** on what to do and train their movements with cardboard insertion behind the boxes. This alternative version of the ATM mock-up had the goal to **summarize all the main information plus the numeric sequence of the actions** in a whole board, so that users could be assisted in the memorization by having a **complete overview of the process**.

*Image 27. ATM mock-up with manual.*

*Image 28. Pop-up analogic ATM.*

*Instruction manual*

The third prototype (Image 29), a **manual of instructions** to read where each step of the transaction is specified. This training method is expected to be **more familiar with how elderly people have learned to gain knowledge**, with **linear learning** on books instead of interactive interfaces (Castilla et al., 2018).

*Pin memory techniques*

The fourth prototype (Image 30) involved testing a few **techniques to enhance pin recall** among elderly users, specifically focusing on their visuospatial memory, a pertinent issue (Rolle et al., 2017).
Remembering PIN numbers can be an issue for older adults, and while writing them down may seem like a solution, it compromises security, as the purpose of PINs is to securely identify account owners or eligible service users. For this reason, remembering PINs is recommended (Gardner et al., 2011). The initial approach involved **overlaying a transparent paper on the keypad**, prompting users to illustrate the **movements corresponding to their pin numbers**. This technique aimed to leverage visual patterns for improved memory retrieval. Another method targeted memory through language, meanings, and stories, associating a rhymed word with each pin number (Hodges, 1982).

*Image 29. Instruction manual prototype.*

The third method emphasized customization, enabling users to associate each number with a personally chosen meaning (Derwinger et al., 2003).

## 3.02.02 Evaluation

The six prototypes have been shown to **four Italians** with an **age ranging between 78 and 86 years old**. in Verpleeghuis De Klinker, Amsterdam (Image 31). The test was designed as a **simultaneous session**, with all participants testing the various prototypes at the same time, two guided by one team member each and two guided by the other team member. **All the prototypes were presented on a table**; then the topic of research was introduced and the elderly were asked to start from picking the prototype that intrigued them the most. In this way the team was able to catch their attention to immerse them in the topic gradually, and then asking opinions for all the prototypes left. It was also decided to **get insights on the Geldmaat Demo** so it was tested with the participants on a laptop guided by the design team. The session lasted one hour and thirty minutes. All the **insights were collected by observations and qualitative interviews** in order to gather more comprehensive and open-ended insights without biases or preconceptions.

*Image 30. Pin memory techniques prototypes.*

*Feedback on the ATM mock-up*
All the participants had **positive feedback** on the first prototype. It captured their attention and it stimulated a **playful interaction** and cheerful comments about it. Since it resembled reality quite accurately, it was **easy to navigate for them**. The only part of the prototype that was not found clear was the hole for picking up the money. **Two participants out of four reported that they would have chosen it as a way to practice at home**.

*Feedback on the pop-up analogic ATM*
All participants were not impressed by **the pop-up analogic ATM**. They showed difficulties in using it because it was **not immediately clear** for them that they had to open the little boxes to read the inside. **It didn't catch their attention** and it was quickly discarded because the ATM mock-up was considered more fun to interact with sharing the same goal.

*Feedback on the instruction manual*
Three participant out of four appreciated the **instruction manual**. They reported that it was **really clear to interpret** because everything needed was **written down in a simple way**. The manual was found very useful **not only to read at home but also to bring with them** in case they may need to take a quick look at it when they are operating an ATM.
However, they discovered that **it required too long to read**, and the machine would terminate the operation before they finished. **A more summerized form**, such as the little manual that is part of the screen of the ATM mock-up prototype, might be used as the manual to bring along.

*Feedback on PIN memory techniques*
None of the participants was interested in using the methods designed to help **memorizing their PIN code**. It was found that **memorizing codes is a very personal practice** that implies that individuals usually create their own way to do it, usually way more effective than imposing a predefined method.

*Feedback on the Geldmaat Demo*
Interacting with the demo was found difficult by the participants because of **uncertainties on how to use a laptop**. Two participants out of four knew the process of using an ATM but **couldn't proceed with the Demo because of their lack of digital literacy**. For the other two participants the analog solutions were found more immediate to understand the process. **The participants have never used digital devices** and every operation that require the use of a laptop/phone is done by their sons.

*Image 31. Evaluation session with Italian elderly in Amsterdam.*

## 3.02.03 Reflection

*Conclusion*

The group's reflections were influenced by the outcome of the evaluation session.

First of all, it was found that **participants wouldn't use any digital solution by themselves**. They consider themselves too old to learn how to use a technological device, so **if an electronic element needs to be included** in the final concept **it has to be either supported by someone or look "analog"** to their eyes.

Additionally, it was discovered that one of the participants was illiterate, making some of the prototypes quite incomprehensible to him. For this reason, it was decided by the team to further explore **how to include sounds in the following prototypes to make it more inclusive for those who can't read**.

In conclusion, the **manual emerged as the optimal alternative** due to its user-friendly nature, comprehensibility, and portability. A participant who lacked knowledge on how to use an ATM chose to keep the manual in order to learn on his own.

*Limitations*

The evaluation of the second iteration also comes with some limitations.

First of all, **due to the informal situation it was not possible to test with all the participants individually** but the session was carried out with all of them together at the same time. The three team members evaluate with one/two participants each but since everyone was seated near to one another at the same table, it was inevitable that **they would occasionally make comments about each other's sessions**.

For this reason, **they have probably influenced/biased each others**. For instance, two participants initially expressed great enthusiasm for the ATM mock-up, believing it to be the optimal solution for learning how to use an ATM. However, their opinion changed when another participant became highly enthusiastic about the manual. Consequently, they decided to mainly support the manual. Another limitation is in the fact that **two of the four participants were already able to use an ATM**. During the evaluation, individuals were **instructed to imagine not having experience in it, but this might have had an effect on the result**. Moreover, the **participants were all of Italian nationality** so the team couldn't test if there were **biases based on cultural differences.** (Image 32)

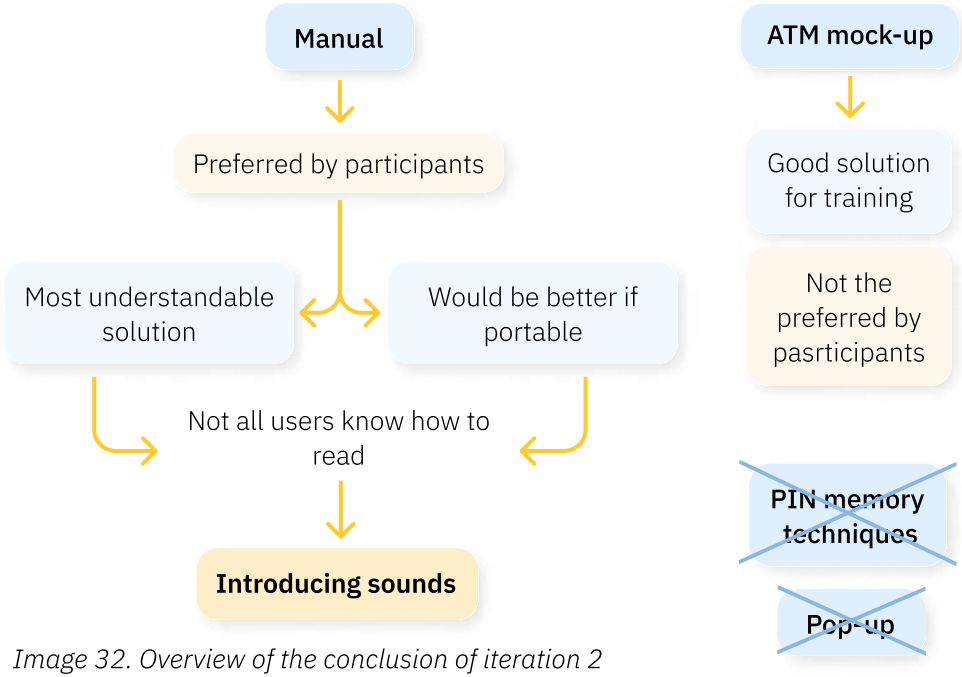



*Image 32. Overview of the conclusion of iteration 2*

# 3.03 Iteration 3

## 3.03.01 Concepts

Following the results of the second iteration, it was decided to drop the idea of PIN memory techniques as it was found not to be useful to the participants (see chapter 3.02.03 for more). Furthermore, three new concepts have been developed, with the goal of testing variations of the manual and the ATM mock-up and experiment the use of sound. Appendix F shows the brainstorming that led to the three concepts.

*A5 summarized manual*

For the first prototype (Image 33), the paper folder that functioned as screen of the ATM model from the previous iteration (see chapter 3.02.01) was transformed in a small manual (A5 size) that shortly summarizes the steps to withdraw cash. The goal, when testing this manual, was to discover if a very small amount of text would be enough to efficiently understand the needed operations and if users would bring a booklet of such size with them when going to the ATM.


*Image 33. A5 summarized manual*

*Extensive manual + notebook*

The second prototype (Image 34), was a second variation of the manual concept. It included an A4 size extensive manual with a big quantity of written information. Included with the manual, there is a smaller booklet (smaller than A5) that can be used to take personal notes to bring to the ATM. The goal of making this prototype, was to understand if users are willing to write their own notes and if they would better remember how to withdraw money when writing the information themselves.

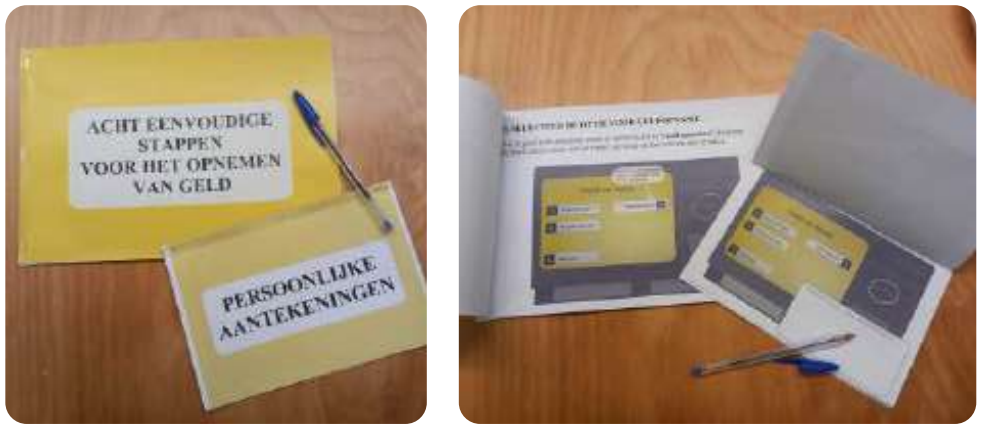



*Image 34. A4 extensive manual in combination of a booklet for personal notes*

*Sound exploration*

The third and last prototype (Image 35), was built with the intention of exploring the use of sounds, as some people in the target group are not comfortable with the action of reading. The prototype was composed by two elements: a manual with sound buttons and an ATM mock-up. The mock-up is very similar to the one used during the previous iteration (see chapter 3.02.01). The manual includes the same graphic elements of the A5 summarized manual but with the addition of sound explanations that can be activated by pressing a button. A script of the content of the audio notes can be found in Appendix G. The concept is intended to be used at home to practice and not to bring to the ATM.

*Image 35. Sound exploration*

## 3.03.02 Evaluation

The three prototypes have been shown to five elderly users which are part of the families of the Italian members of the group. For this reason, the testing was structured as four separate informal chats and exchange of opinions and feedback, in which pictures have not been taken to preserve the comfort and privacy of participants. Table 1 shows the demographical information and level of experience of the five participants. Fictitious names are given for privacy purposes. Appendix H shows the feedback that each participants provided about the prototypes, while this chapter will provide an overview of the combined feedback.

*Table 1. Overview of participants characteristics*

| | Age | Gender | Level of experience with ATM's | Additional information |
|---|---|---|---|---|
| Anna | 76 | F | No experience | Memory related issues |
| Luciano | 78 | M | Experienced | Experienced with digital tools |
| Claudia | 84 | F | No experience | Lives in the countryside away from ATMs or other facilities |
| Giovanna | 75 | F | Experienced | - |
| Emma | 81 | F | Very experienced | Used to be a literature professor and reads and writes in her free time |

*Feedback on the A5 summarized manual*
All participants had positive feedback on this prototype. They found it easy to understand and not overwhelming. Of this concept, they appreciate that it doesn't require to engage in a training activity at home, this lowers a lot the level of effort required from them. The main pain point for the prototype is that it is too cumbersome to be carried around.

*Feedback on the extensive manual + notebook*
All participants expressed that, in contrast to the summarized manual, the amount of text in the extensive manual is unnecessary and overwhelming. Two of them expressed their lack of motivation in writing on the notebook and spending time at home learning. Furthermore, other two were strongly sceptical on whether the proposed learning strategy would be effective, considering their decreasing memory issues.

*Feedback on the sound exploration*
Three participants expressed a positive opinion about this concept, since they think that trying out an ATM mock-up would be more helpful in remembering and understanding how to use it. Furthermore, they felt that the use of sound instructions could be useful because it requires less effort than reading and feels like instruction are provided by a real person. However, two participants expressed their adversity to the idea of having such an object at home. Furthermore, they explained that, even if useful, they wouldn't be motivated to actually use it. One participant also pointed out that she wouldn't bring the manual outside because she would feel embarrassed to play the sounds in public.

## 3.03.03 Reflection

*Conclusion*
The feedback resulting from this third iteration lead the group to some general reflections which directly affected the next concepts (Image 36).
First of all, it was sensed a **general lack of motivation in engaging in learning activities at home**. Whether they require to read, write, listen or perform actions, participants expressed that they would not do that by themselves, either because it requires a lot of effort or because they lack of confidence about their memory skills. For this reason, it has been decided to **focus on solutions that they can carry with them and use as assistance** while operating the ATM, such as the A5 summarized manual. However, **the training method still seems to be a valuable element** that should be present in the final concept so the open question "*How can we also engage users in a training activity despite their lack of motivation?*" remains.
The second consideration is related to the use of sounds. During this iteration, it has been concluded that the **sounds can be a useful** mean to make information understandable also for users which are not confident with reading. However, since the final solution should be something to carry around and use on the moment of the ATM operation, **the sound shouldn't be played out loud, to not make them feel uncomfortable** or expose them as vulnerable people. Furthermore, since elderly people are **not practical in the use of headphones** or other tools for playing sounds, it might be difficult to implement something functional for them. For this reason, it has been decided to **focus on exploring the use of visuals and symbols** to better communicate the required actions to people who don't know how to read.

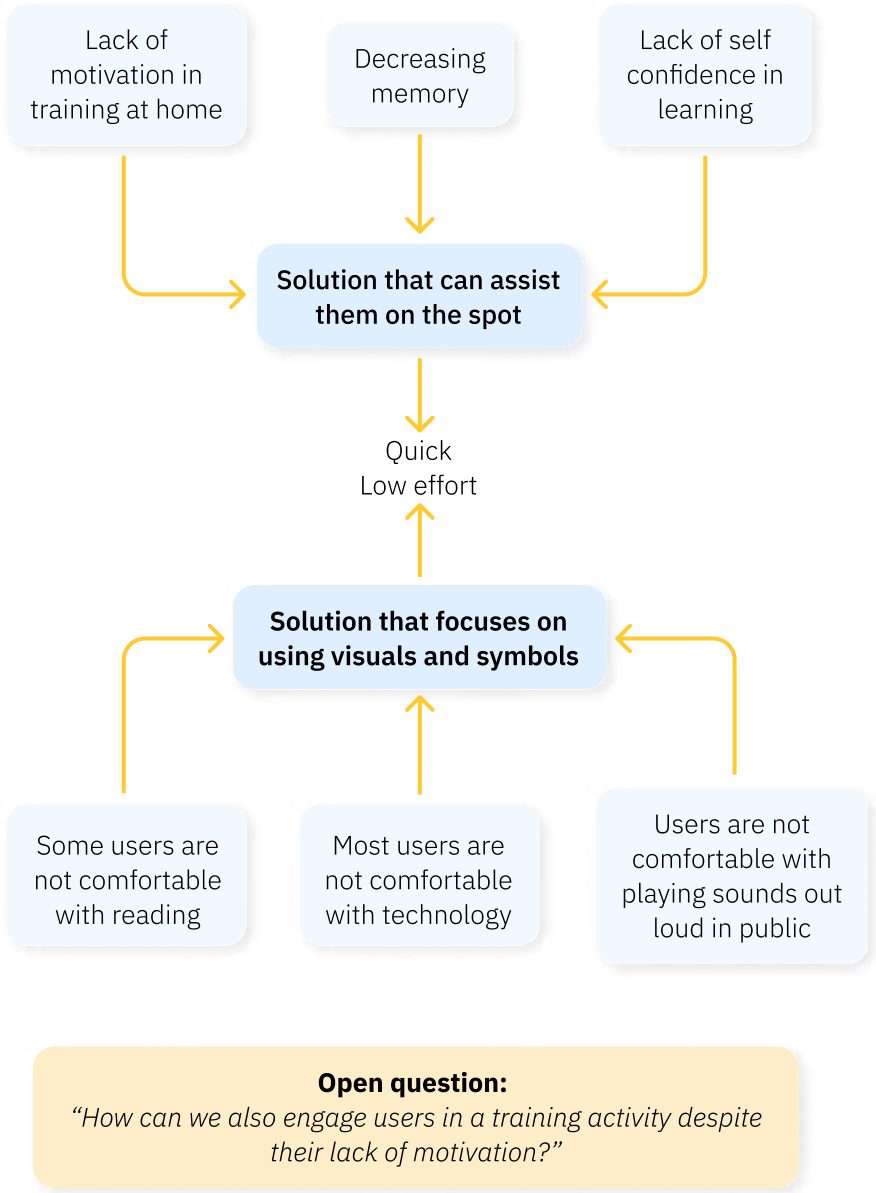



*Image 36. Overview of the conclusion from the insights of the evaluation of iteration 3*

*Limitations*

The evaluation of the third iteration also comes with some limitations.

First of all, as already shown in the participants characteristics table (Table 1), **three out of five participants were already able to use an ATM**. During the evaluation, they have been asked to imagine to not be experienced in it. However, it is safe to assume that their judgement might still be influenced by this factor.

Additionally, two of the three concepts were focused on helping participants in remembering how to use an ATM. However, due to the circumstances (informal testing situation, geographical location and more than half of the participants already experienced with ATMs), **it was not possible to test if the concepts have a real impact on the memory** of elderly users. For this reason, future iterations are based only on the preference and opinions of end users and not on objective proofs.

Overall, it is still possible to affirm that the future directions are valuable, because they are **based on the lack of motivation of elderly people in learning and training**, which can be proved thanks to the received feedback.

# 3.04 Iteration 4

## 3.04.01 Concept

Based on the conclusion of iteration 3 (see chapter 3.03.03) and on the insights gained during an interview with the team of Schuberg Philis (Appendix I) which is developing the demo, a new concept has been developed. This concept aims to provide users of both a supervised training activity and support material to use when operating an ATM. Furthermore, it takes into account feasibility and viability and it mediates with already existing Geldmaat solutions, such as the demo and the Infopoints.

The concept consists in a **service that aims to provide educational opportunities** for elderly users through workshops and training activities in public facilities combined with assistance for users in Geldmaat Winkels (Image 37). At the end on any educational event, **users receive a small portable manual** that they can read while they carry out operations with the ATM. Following, each element of this service is explained in detail.

*Instructive workshop*

The first element of the service are the instructive workshops, which take place in public facilities such as libraries. Here, a Geldmaat representative demonstrates ATM transactions using the demo on a laptop or screen. Then elderly users can try the demo with the help the representative and discuss with each other tips and tricks. A blueprint showing the first iteration of this idea can be found in Appendix J.

*Assistance in Geldmaat Winkels*

The second element of the service is the assistance provided in Geldmaat Winkels. Here Geldmaat representatives can assist users in need by demonstrating the operation on the demo and letting users try it too. In this way, the privacy of users is protected since nobody uses the ATM in their place.

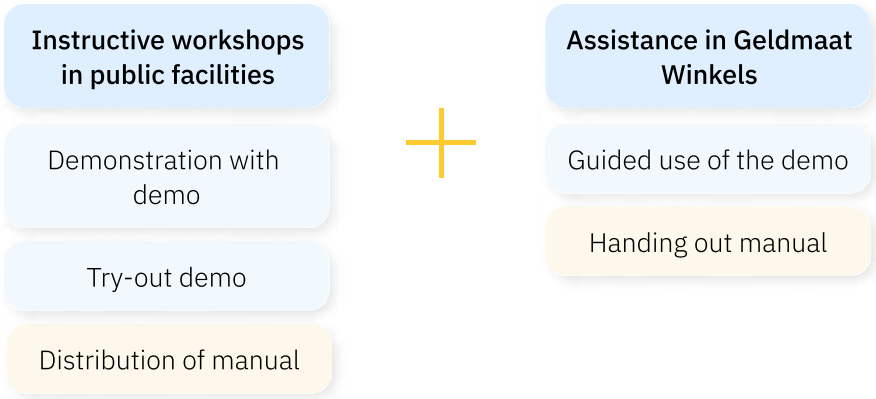



*Image 37. Overview of the elements of the service*

# ITERATIONS

*Portable manual*

At the end of both activities, users receive a small manual that shows the necessary steps required to complete the activities they have troubles with. The design of this manual is an iteration of the A5 summarized manual explained in chapter 3.03.01. Different tests (Image 38) have allowed to conclude that the most optimal size is an A6 that extends to A5 when open, with the image distributed on both pages. This makes the booklet small enough to fit in a pocket and the text and images big enough to be seen properly also by users with reduced eyesight.

Furthermore, the illustrations have been improved: arrows and texts have been replaced by drawings of hands that perform the required operation. To design all the symbols properly, the program SymWriter (Widgit, n.d.) has been used as a source of inspiration (Image 39).

Additionally, a pop-up version of the same booklet has been built, with the goal of testing if the presence of moving elements is useful to improves the desirability and the clarity of the information (Image 38). The pop-up manual has been tested only in the second testing activity, since during the first it wasn't ready.

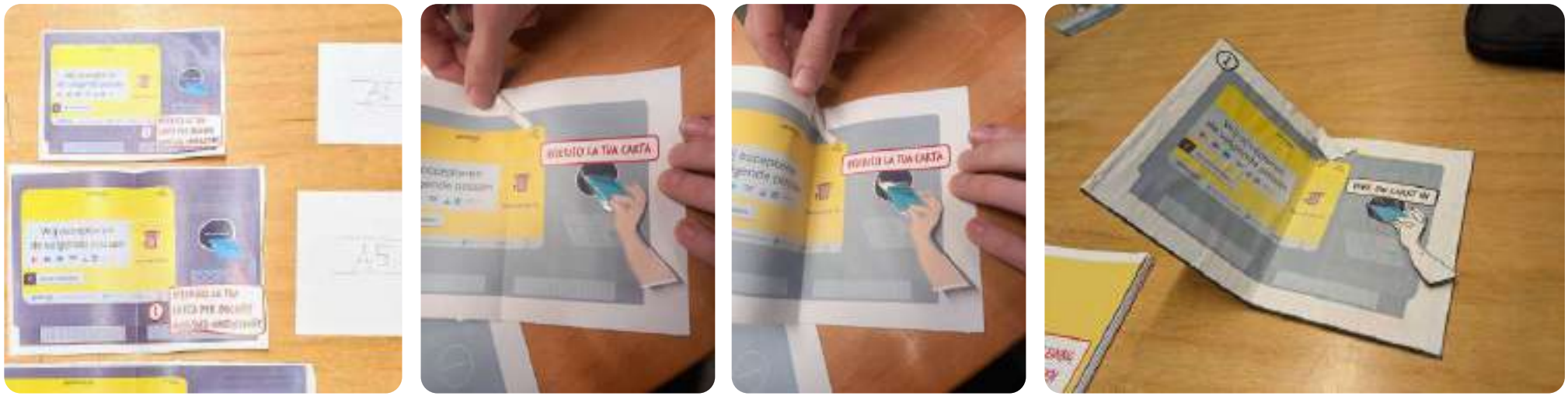


*Image 38. From left to right: tests for the manual size, first version of the pop-up manual, final version of the pop-up manual*


*Image 39. Symbols from the program Symwriter*

## 3.04.02 Evaluation of the Workshop

The first testing activity aimed to collect the necessary insights to evaluate and iterate on the concept of the workshop and get feedback on the clarity and format of the booklet. **The test has been carried out with five Italian elderly users in Den Haag** (Image 40) and it was structured as a simulation of the workshop designed for Geldmaat. The users were all male of age ranging between 60 and 90 years old, they all have lived in the Netherlands for multiple decades but their mother tongue is Italian. All the users claimed to be expert in the use of ATMs.

After introducing the activity and outlining its goals, the demo has been showcased on a laptop by one of the team members, which explained the eight steps to withdraw cash. The participants showed a **high level of active participation**, by trying to anticipate actions and discussing with each other. Despite the initial plan to separate the "demonstration" and "try-out" phases, the participants' attitude led to a **blend of both elements in a unique** assisted workshop.

While they were confident about their ability to perform ATM transactions, some difficulties emerged in their interactions with the demo. An observation was the **confusion about the use of a laptop as the medium for the demo**. Participants, despite the given instructions, attempted to navigate with the keyboard and trackpad instead of touching the screen. This insight highlighted the need for a more straightforward setup, such as using an iPad or a standalone screen.

At the end of the activity, participants received the small manual and were asked to assess its clarity and portability.

Afterwards, the assessment was supposed to be done through an evaluation form, the goal of this choice was have quantitative results to showcase as final evaluation of the project. However, participants did not fully understand how to use the evaluation form that was previously prepared, so the evaluation was approached in form of a qualitative discussion (Appendix K shows the original plan).

*Image 40. Italian elderly users testing the demo*

**Overall, participants were convinced of the potential usefulness of the service and manual**, particularly for people facing challenges with ATMs due to cognitive or memory-related issues. However, they felt they did not learn anything new, due to their existing ability in ATM usage.

## 3.04.03 Evaluation of the Winkel Assistance

For the service of customer assistance in Geldmaat Winkels, the team visited the Geldmaat Winkel located in Zoetermeer. The activity focused on testing the interest and usefulness of the overall concept and the clarity and portability of the manual. The Geldmaat demo was installed on a totem with touch navigation and set-up in the store (Image 41).
With the Geldmaat t-shirts on, team members were available to help any customer who needed assistance and asked to six Geldmaat elderly customers for feedback on both tools and their opinion on the concept as a whole. This activity lasted for 2.5 hours and was done during a weekday from late morning until midday. Due to the situation, with people rushing to go away, the feedback was given in form of small improvised chats.


*Image 41. Group members ready to start the evaluation*

*Feedback on the portable manual*
Overall, the booklet was well-received by passer-bys. When handed the booklet, **users instantly knew how to use it and after a quick scan-through had seen it all**. They found it easy to comprehend, structured and logical. The users overall liked the format of the booklet as it was portable while still being readable. Most users said they didn't experience difficulties with using ATMs but could empathize with people that did struggle with using ATMs. One user asked to keep the booklet, so they received one to bring home.
One participant suggested highlighting the option of choosing a custom amount of cash at the screen where one needs to select the withdrawal amount. This is an option that had been left out of the booklet for simplicity-reasons.
When presented with the pop-up variant of the booklet, users were mildly interested. **Most users gave no preference for the regular booklet or the pop-up variant**, and one of user mentioned its fragility.

*Feedback on the Geldmaat Demo*
On the other hand, users were **less interested in the Geldmaat demo**. When explained it's functioning, none of the participants were keen on trying it out and didn't understand the reason for

such a device being placed inside a Geldmaat store. Furthermore, one participant was wary to try it out as she is very cautious when it comes to places for withdrawing cash money and the people surrounding them.

*Feedback on the concept as a whole*
When explaining the concept, **participants generally thought it could work well** for elderly that struggle with operating ATMs. One participant mentioned a promising place in Zoetermeer for such a workshop as it is one commonly visited by the target group.

## 3.04.04 Reflection

*Conclusion on the instructive workshop*
The results of testing activity show that the concept of the workshop is a **good solution to motivate elderly users to train themselves in the use of ATMs**. During the activity, participants showed that their motivation to participate increases when they are in group and that the guide of an external person is needed to help them operating the demo.
Testing the instructive workshop was also helpful to understand the dynamics of such events. Based on the insights, it is possible to conclude that **the most effective group size for it is of five or six people**. This group size encourages hands-on interaction with the demo facilitated by Geldmaat employees and it creates a good setting for the creation of discussions between participants. Furthermore, as previously mentioned (chapter 3.04.02), the dynamics of the test were useful to understand that the activity needs to be **structured as a whole organic session, in which oral instructions and practical activities blend together** according to the behaviour of the participants.
It is, however, important to mention that **all the participants in the testing activity claimed to be expert in the use of ATMs**. This means that they were not fully part of the target group of the project and the test should be carried out again with participants who feel insecure about their ATMs' skills.

*Conclusion on the assistance in Geldmaat Winkels*
The feedback gathered during the store visit confirms the need for a straightforward instruction manual for the withdrawal of cash at an ATM. Furthermore, the overall positive feedback shows the clarity and portability of the design, and the potential the participants saw in this solution. All in all, in it's current state, apart from the need of minor adjustments, **the booklet is ready for implementation as it helps users with withdrawing cash money from an ATM**.
The Geldmaat demo wasn't as successful as the booklet in this test. This is very likely due to the context in which it was placed, as the people that arrived in the store already knew how to use ATM's and a having a training device in a Geldmaat store is confusing. This suggests the need for a more thorough test, where a larger quantity feedback can be gathered and details on how the design can be further improved. Ideally, this would be during the testing or implementation-phase of the concept so it can be gradually improved upon.
**Overall conclusion of this test is that the demo should be used in a workshop-setting** where participants are unfamiliar or uncomfortable with using ATM's and can train in a setting which feels safer than an ATM-store.

For this reason, **in the final design, it was decided to not include the totem with the demo** in the Winkels assistance.
The limitation of this evaluation is that the whole concept was only briefly introduced so it could be argued that the idea was sketched superficial. Even though, overall feedback of the concept was positive and besides users asked not having the need for such a solution, they did see the potential of it.
**A future step in the design of this service would be to simulate the entire service system as a whole with a trial-run**. From advertising to the workshop experience, each step needs to be carefully evaluated and reflected upon how it could be improved.

More detailed information on the next steps can be found in Chapter 4.02. An overview of the conclusion can be seen in Image 42. To read how the conclusion of this last iteration affected the final concept go to chapter 2.

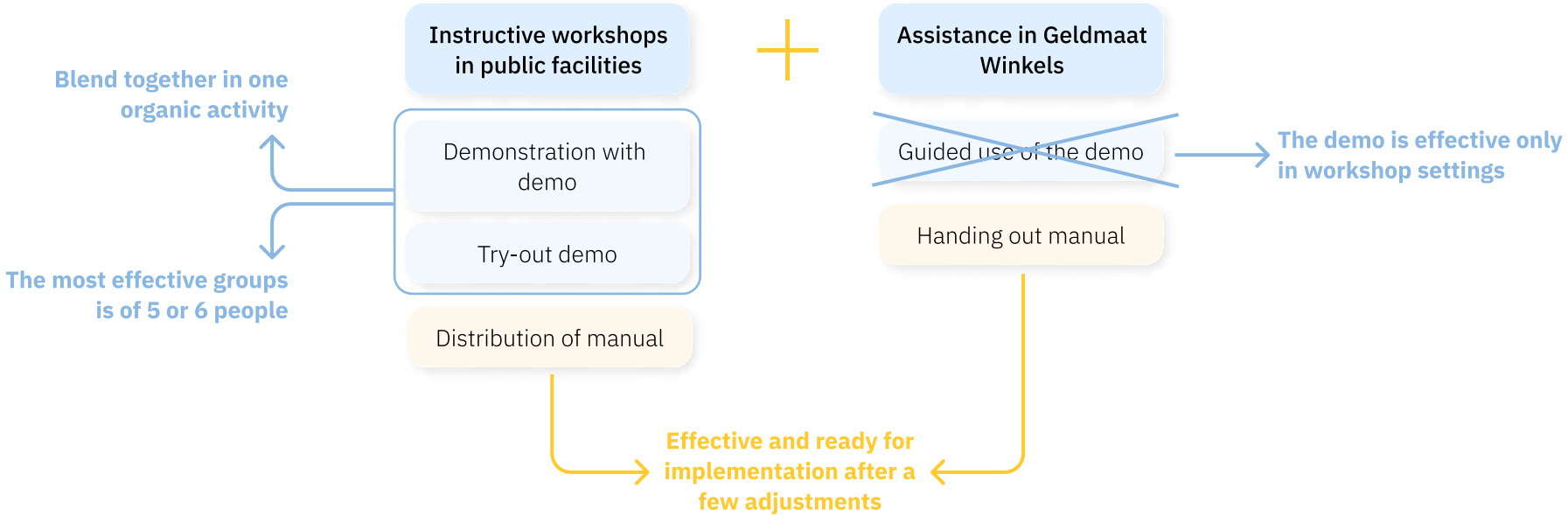



*Image 42. Overview of the conclusion of iteration 4*

FINAL CONCEPT

# 3.05 Conclusion

This chapter outlined the iterative process that brough to the definition of a design solution aimed at enhancing ATM usability for elderly users. Through multiple rounds of testing and analysis, the final concept emerged, shaped by insights gained from earlier iterations.

Initially, prototypes were explored for visually impaired users, but the focus shifted to elderly users due to observed challenges and opportunities. Each iteration allowed for a deeper understanding of user needs and preferences, leading to the development of concepts centered around practicality, accessibility, and user-friendly design.

Reflections from each iteration guided the design approach, highlighting the limitations of digital solutions and the effectiveness of manual-based guidance.

The final concept consists of a holistic service offering educational workshops in public facilities and assistance in Geldmaat Winkels, complemented by portable instructional manuals. Through workshops and personalized guidance, elderly users can gain confidence and proficiency in ATM transactions, supported by user-friendly materials.

Testing and feedback highlighted the effectiveness of workshops in motivating participants and the clarity of instructional manuals.

Overall, the iterative approach allowed for refinement based on user experiences and feedback, ensuring maximum usability and accessibility for elderly users. Prioritizing user-centered design principles aims to empower elderly individuals to navigate ATM transactions independently.

For detailed insights into how previous iterations influenced the final concept, refer to Chapter 2. Continued evaluation and refinement will ensure that the solution meets the evolving needs of users, fostering independence and inclusivity in ATM usage for all.

CHAPTER 4

# Recommendations

In this chapter, recommendations are suggested for future implementation of the concept. Starting off, the limitations of the project are recognised and in which way(s) they could have influenced the results. Furthermore, future steps are laid out on how the solution could be made more robust and verified. Finally, a few additional suggestions are listed.

RECOMMENDATIONS

# 4.01 Limitations

In the development of the final concept, it is important to recognize that due to time limitations, a comprehensive test of the complete service was not feasible. Instead, the team was limited to gathering feedback without participants actively experiencing the entire service. Recognizing this, a pilot test must be done, allowing participants to engage with the service in real-world scenarios. A pilot test will provide valuable insights into the practical application of the concept, addressing potential issues and refining the service before its full-scale implementation.

The testing phase mostly involved Italian participants, as a consequence of three-quarters of the group being Italian. The decision to focus on Italian-speaking individuals was driven by the necessity of effective communication with participants, since English is not a language spoken (confidently) by Dutch elderly individuals. However, the ultimate target audience for the service is Dutch elderly, as the service is designed for a Dutch company with ATMs in The Netherlands. This language and cultural shift from Dutch to Italian could introduce relevant difference that may impact the effectiveness of the service. Recognizing the potential influence of cultural differences on the outcomes, a broader and more representative testing approach is recommended to ensure the applicability and success of the service in the intended Dutch context.

To comprehensively assess the workshop concept, it should be tested over the intended timeframe, comprising two distinct phases: an initial period where participants attend the workshop, and a subsequent phase where they use the manual during the transaction. Unfortunately, testing both phases with the same participants was not feasible; instead, these phases were assessed separately, or opinions on the second part were gathered from those who participated in the workshop test. Obtaining feedback on the entire process would be more valuable in determining the effectiveness of the concept in achieving the design goals.

RECOMMENDATIONS

# 4.02 Future Steps

*Making a manual for each operation*
This step involves creating similar manuals for all the other specific ATM operations. By providing comprehensive guidance for various transactions, users, especially the elderly, can refer to these manuals as a reliable resource during their interactions with ATMs.

*Translating the manuals in different languages*
Recognizing the diverse linguistic backgrounds of potential users, translating the manuals into different languages is necessary for ensuring inclusivity. While the primary target may be Dutch-speaking elderly individuals, considering translations broadens the service's accessibility.

*Making a manual for instructors of the service*
In addition to user manuals, providing a guide for instructors might be an option. This manual should equip service instructors with the necessary tools and information to effectively facilitate workshops.

*Making the workshops available in other languages*
Extending the availability of workshops to other languages, even though with a lower frequency, ensures to target a more diverse audience and extends the accessibility. This step involves identifying languages spoken by potential users and recruiting volunteers proficient in those languages.

*Doing a pilot test of the full service*
Before the full-scale implementation of the service, conducting a pilot test is needed. This involves testing the entire service, including workshops and manual distribution, in a real-world setting. The pilot test allows for the identification of potential challenges and overall validation of the service's effectiveness.

RECOMMENDATIONS

# 4.03 Additional Suggestions

Using the demo on laptops presents challenges as the interaction with a keyboard and mouse proves counterintuitive, failing to accurately simulate ATM movements. The absence of touch-based interactions, prevalent in ATM usage, mines the effectiveness of the learning experience. Hence, it is recommended that Geldmaat advises to exclusively utilize the demo on touch-screen devices such as tablets, totems, or screens, ensuring a more authentic representation of ATM usage.

Testing revealed a lack of awareness among visually impaired users regarding the possibility to plug in headphones at the ATM for a specially designed interface. This feature offers spoken instructions facilitating ATM transactions for visually impaired users. However, the absence of awareness presents a barrier to those who could benefit. Consequently, it is recommended that Geldmaat enhances communication efforts to raise awareness about this feature.

CHAPTER 5

# Conclusion

In conclusion, this report has outlined a comprehensive product-service design solution aimed at improving ATM usability for elderly users, encompassing multiple scenarios. By addressing diverse needs and preferences through instruction manuals, educational workshops, and personalized assistance, the service aims to empower elderly individuals to perform ATM transactions independently while fostering a sense of community and inclusivity.

The iterative approach, guided by user feedback and reflections from each iteration, has resulted in a final concept that prioritizes practicality, accessibility, and user-friendly design. Moving forward, continued evaluation and refinement will ensure the solution remains responsive to the needs of users, ultimately promoting financial independence and inclusivity in ATM usage.

CHAPTER 6

# References


Bols, K. (n.d.). Contact. Kim Bols. https://www.kimbols.be/contact

Castilla, D., Botella, C., Miralles, I., Bretón-López, J., Dragomir-Davis, A. M., Zaragozá, I., & García-Palacios, A. (2018). Teaching digital literacy skills to the elderly using a social network with linear navigation: A case study in a rural area. International Journal of Human-Computer Studies, 118, 24–37. https://doi.org/10.1016/j.ijhcs.2018.05.009

Chan, C. C., Wong, A. W., Lee, T. M., & Chi, I. (2009). Modified automatic teller machine prototype for older adults: A case study of participative approach to inclusive design. Applied Ergonomics, 40(2), 151-160.

Derwinger, Anna & Neely, Anna & Persson, Marie & Hill, Robert. (2003). Remembering Numbers in Old Age: Mnemonic Training Versus Self-Generated Strategy Training. Aging Neuropsychology and Cognition - AGING NEUROPSYCHOL COGN. 10. 202-214. 10.1076/anec.10.3.202.16452.

Digitalisering van het betalingsverkeer: een uitkomst voor de één, een uitdaging voor de ander. (2023). In De Nederlandsche Bank. Retrieved November 21, 2023, from https://www.dnb.nl/media/twyi3pla/impact-digitalisering_nl_web.pdf

Drukwerkdeal. (n.d.). Geniete brochures & magazines drukken. Drukwerkdeal.nl. https://www.drukwerkdeal.nl/nl/producten/promotie/brochures-en-magazines-geniet

DNB. (2023, June 27). Digital banking is a struggle for many. https://www.dnb.nl/en/general-news/news-2023/digital-banking-is-a-struggle-for-many/

European Central Bank. (2023, July 10). The Eurosystem cash strategy. https://www.ecb.europa.eu/euro/cash_strategy/html/index.en.html

Gardner MK, Hill RD, Was CA (2011) A Procedural Approach to Remembering Personal Identification Numbers among Older Adults. PLoS ONE 6(10): e25428. https://doi.org/10.1371/journal.pone.0025428

Geldmaat. (n.d.). Automaten met spraak. https://www.geldmaat.nl/geldautomaten/biljetten-opnemen/geldmaten-met-spraak

Hodges, D. L. (1982). A Teacher's Guide to Memory Techniques. Focus on Productivity, N7 P23-27 Spr 1982. https://files.eric.ed.gov/fulltext/ED220155.pdf

Camarin E. Rolle, Joaquin A. Anguera, Sasha N. Skinner, Bradley Voytek, Adam Gazzaley; Enhancing Spatial Attention and Working Memory in Younger and Older Adults. J Cogn Neurosci 2017; 29 (9): 1483–1497.

Schuberg Philis & Geldmaat. (n.d.). Geldmaat ATM Demo. https://geldautomaat-training.geldmaat.nl/

Tarakanov-Plax, A. (2005, April). Design concept for ATM machine, accessible for the elderly users in Israel. In Proceedings of the International Conference on Inclusive Design (Vol. 2005).

The Harvard Gazette. (2018, October 1). The serious business of comics. https://news.harvard.edu/gazette/story/2018/10/scott-mccloud-explains-the-serious-business-of-comics/#:~:text=McCloud's%20central%20point%20was%20that,organize%20images%20into%20certain%20patterns.

Visio Kennisportaal - kennisplein voor mensen met een visuele beperking. - Visio Kennisportaal. (n.d.). Visio. https://kennisportaal.visio.org/nl-nl/documenten/ergo-tips-pinnen-met-de-geldmaat

Widgit. (n.d.). SymWriter 2. https://www.widgit.com/products/symwriter/index.htm

CHAPTER 7

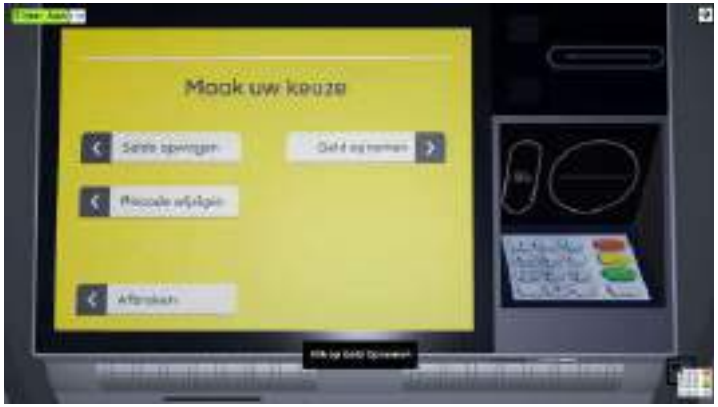
# Appendix

APPENDIX A

# Demo

*Reference: Schuberg Philis & Geldmaat, n.d.*

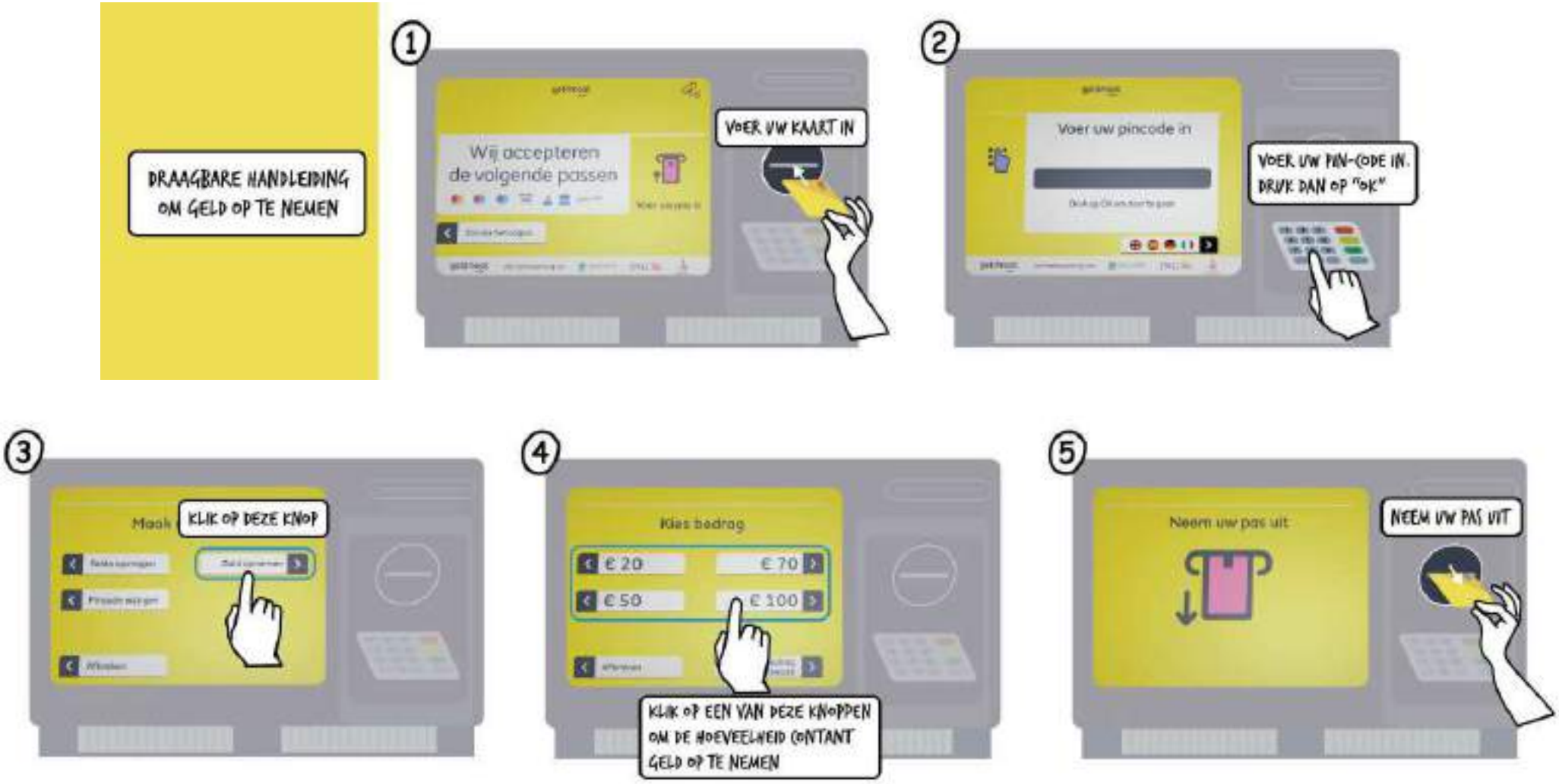




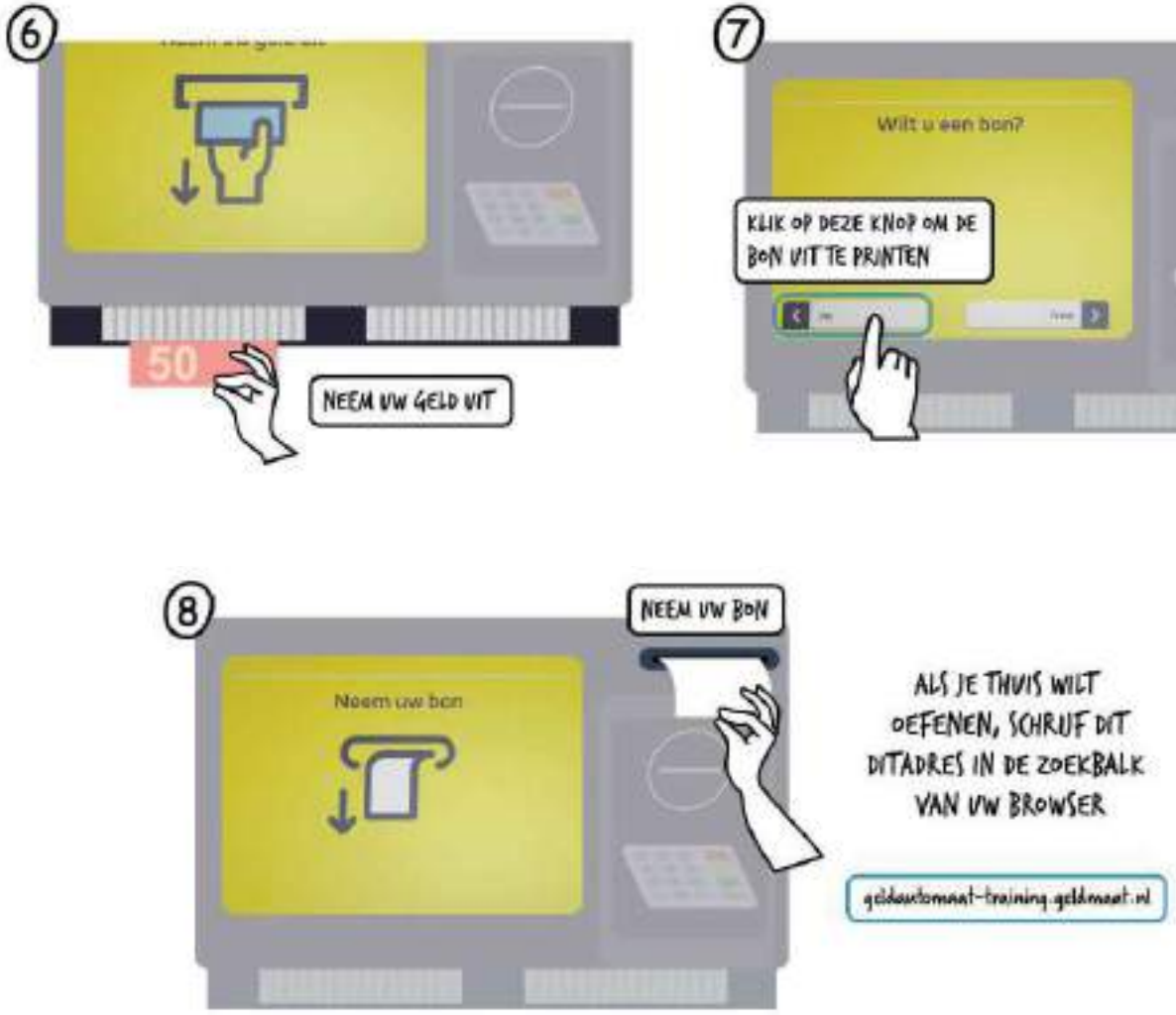



APPENDIX B

# Manual Pages



APPENDIX B


6
50
NEEM UW GELD UIT
7
Wilt u een bon?
KLIK OP DEZE KNOP OM DE BON UIT TE PRINTEN
8
NEEM UW BON
Neem uw bon
ALS JE THUIS WILT OEFENEN, SCHRIJF DIT DITADRES IN DE ZOEKBALK VAN UW BROWSER
geldautomaat-training.geldmaat.nl

APPENDIX C

# Manual Costs

**Full color offset**

Voordeliger bij grote oplages

Vaste oplage en levering

| Oplage | Normal vr 2 feb |
|---|---|
| 250 | 252,24 Incl. btw |
| 500 | 272,69 Incl. btw |
| 1000 | 354,84 Incl. btw |
| 2000 | 543,91 Incl. btw |
| 3000 | 716,05 Incl. btw |
| 4000 | 888,21 Incl. btw |
| 5000 | 1.060,37 Incl. btw |

*Costs brochure (1000 pieces): €0.35 a piece (Drukwerkdeal, n.d.)*

QinPrinting

QUOTATION

Shanghai QinQin Printing Company Ltd.

Name: Susan

Email: susan@qinprinter.com

Tel: +86 21 6534 1780

Address: Room 503 Building 2, Riverside International Plaza, No. 1002 Yangshupu Road, Shanghai China 200082

To:

Name: Mak

Email: M.J.Knigge@student.tudelft.nl

| Item | Specifications | Quantity | COU: USA Netherlands Unit price | Subtotal |
|---|---|---|---|---|
| Book | Size: 105 x 148mm, two sheets of 300gsm C1S paper glued together, 28 pages including cover, 4 pages are with pop-ups, self-cover board book binding | 1000 | US$3.32 | US$3,320 |
| | | | Total | US$3,320 |

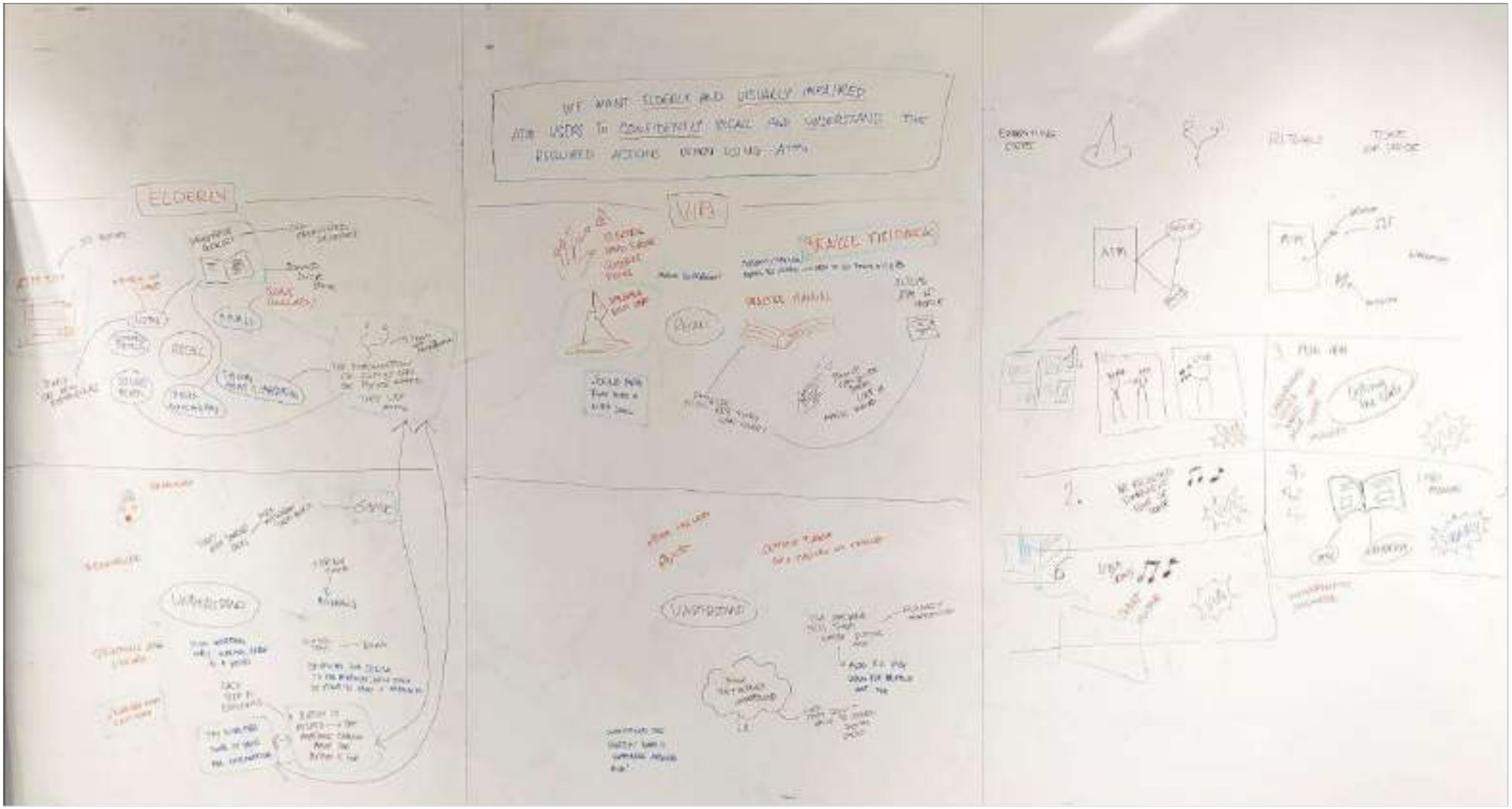
Notes:

1. The total cost includes credit cards and sea shipping from to USA Netherlands.
2. If not [illegible] sample fees.

*Costs pop-up booklet (1000 pieces): $3.32 a piece (quote from QinPrinting)*

APPENDIX D

# Brainstorming Iteration 1



APPENDIX E

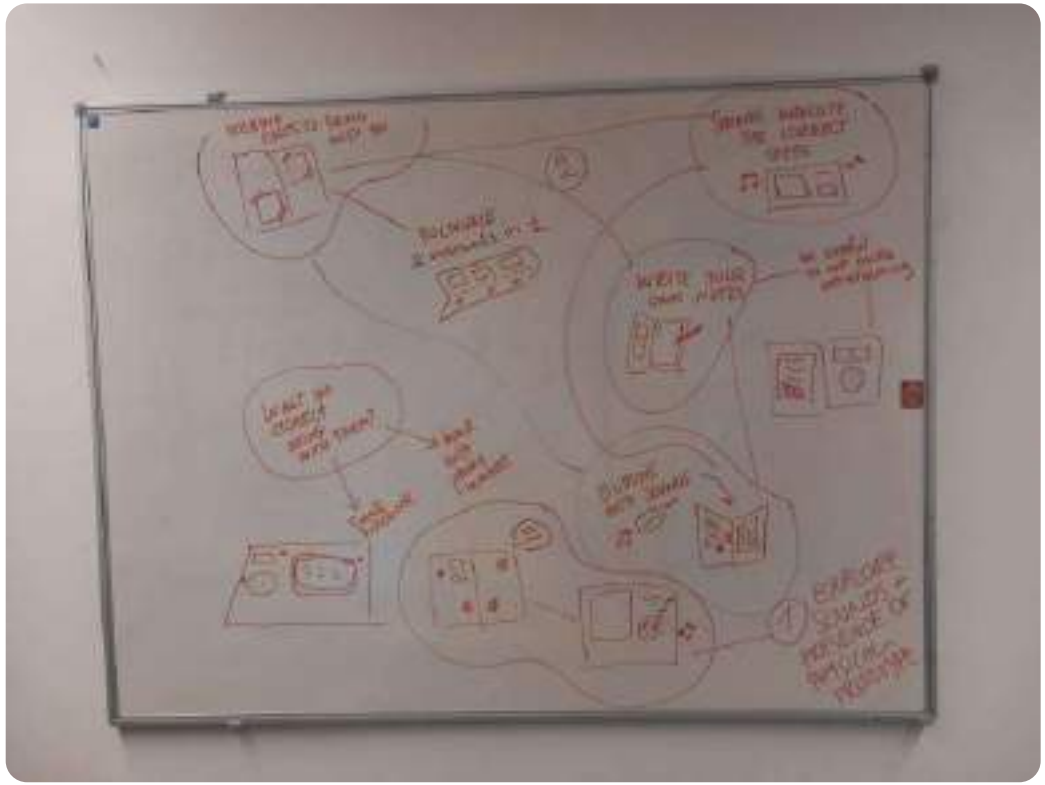
# Brainstorming Iteration 2

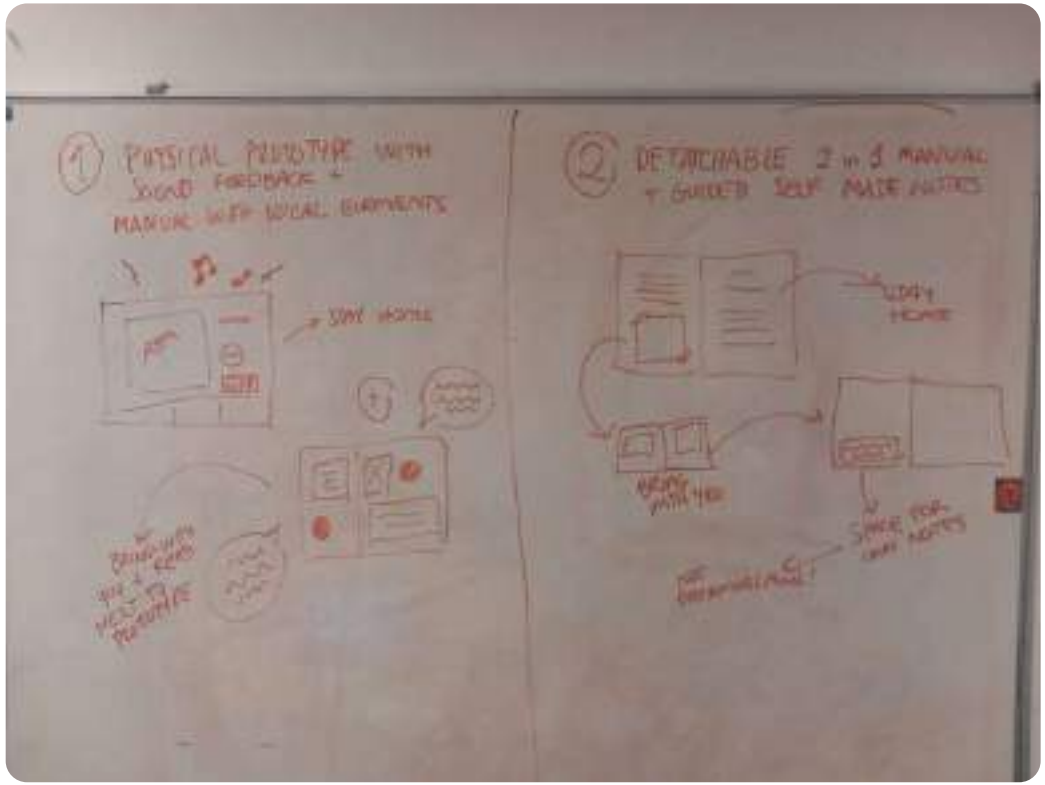
*These showcase the different ideas prototyped for iteration 2.*

*They showcase a paper ATM mockup (top-left), a PIN-remembering technique (top-right), an ATM mockup with detachable manual (bottom-left) and a paper pop-up ATM (bottom-right).*

APPENDIX F

# Brainstorming Iteration 3





APPENDIX G

# Sound Exploration Script

This the script of the sound notes provided by the manual with sounds designed during the third iteration. The script has been translated in Dutch and Italian for being used with participants from both nationalities.

1. Welcome to your personal ATM guide! I will guide you through the process of using an ATM! You are now looking at an ATM. An ATM can be used for several actions including the withdrawal of cash money, checking your saldo or changing a pincode. On the right hand side you see a slot above the pinpad where you can insert your bankcard. To start your action, please insert your bankcard

2. Good job! Next, you enter your pincode on the pinpad on your righthand side. Always be careful to hide your pincode from others. If you would like to continue, press the green button after inserting your pincode. If you would like to start over, press the red button. If you would like to correct your pincode, please press the yellow button.

3. Now you are in the main screen of the ATM. If you would like to withdraw money, press the “withdraw money” button.

4. Now you can choose the amount of cash money you wish to be withdrawn by pressing one of the adjacent buttons.

5. After you have chosen the amount of cash you wish to be withdrawn, retrieve your bankcard from the right hand side.

6. Please withdraw your cash money from the slots underneath the screen.

7. Now you can select if you would like to receive a ticket. We recommend pressing “yes” for security reasons.

8. Please take your receipt from the top-right side of the machine. Congratulations! You have successfully withdrawn money from an ATM! We are proud of you!

APPENDIX H

# Feedback Iteration 3

## Anna and Luciano

*A5 summarized manual*

- If you want to carry it around, it is too big. It would be more efficient to have something to look at when you're at the ATM that fits just one paper with very straightforward explanations.
- The shorter texts are more efficient because they do not want to read long description, also because their memory it's not good enough to remember all the information.

*Extensive manual + notebook*

- Too long to read, elderly people/people in general do not want to read that much and easily forget about things.
- Not sure about the training/learning method: after a certain age, memory is not good enough and it's better to have something to look at when you need it.
- The manual, even if it is thought to be portable, it's too big. Better to have something small and fits the wallet to carry.

*Sound exploration*

- They think it would be the best idea because you actually train and do actions instead of just reading it, so it might be more efficient to train the motor memory
- The manual that they skim through here should be with short texts and explanations as well
- The use of sound both for feedback and for vocal explanation would be really useful because it's like to have someone next to you that guides you in the process and you don't feel lost

## Giovanna

*A5 summarized manual*

This is better because it requires no effort and preparation at home, for her this is good enough to understand (however, she uses ATMs frequently).

*Extensive manual + notebook*

- She wouldn't write notes on the insertion for notes, the shorter manual is good enough.
- Generally she wouldn't want to invest time at home learning ATMs but she would just want a support when there.

*Sound exploration*

Same as bigger manual she wouldn't want to spend time at home doing this, she also doesn't want to have such an object at home because she has already too many things and wouldn't know where to keep it.

APPENDIX H

## Emma

*A5 summarized manual*
This is very clear and can easily take place of the notebook.

*Extensive manual + notebook*
- She thinks that the explanations on the manual are too long, not necessary because the shorter manual is clear.
- She likes the concept of writing notes but she would just write them on her own notebook if necessary.

*Sound exploration*
She thinks this could be very effective for people who do not know how to use the ATM because it creates the whole experience, but she prefers reading than having the sounds.

## Claudia

*A5 summarized manual*
Good because there's not a lot to read, she doesn't see well so everything needs to be big enough.

*Extensive manual + notebook*
- She wouldn't note down stuff, she knows how to write but she never does that. (complaining about the fact that she doesn't see well etc).
- She would only take the short manual with her. She would only read it before leaving the house if she really has to do it by herself, she doesn't want to spend her time to train on that because her sons would do it for her anyways (she doesn't find it as an interesting activity to learn).

*Sound exploration*
- She would like to use the manual at home. She likes the fact that something has sound (she has Alexa at her place and she talks to it sometimes). She wouldn't use the sound option outside because it would be to embarassing for her and weird to be seen in a small village
- She wouldn't use the ATM model because she doesn't want to spend her time on training on how to use an ATM. she believes that after a one time use she would never use it again and it's not something that she would like to keep in her house.

APPENDIX I

# Notes from the Meeting with Schuberg Philis

William is the designer of the demo, he is a game and digital designer and he has been instructed by Geldmaat to create a digital twin of the ATMs

We think it would be nice to take in consideration their point of view and design something that can go together with the demo. Or give them recommendations on how to use it and how to redesign it

The demo has been tested once with a group of people over 55 and they didn't have problems with digital supports. But that might be because the average age is lower than the one of our target group

The demo targets all ATM users and the goal is for them to practice in advance so that they feel more confident when they do it for real. Right now he's developing a second demo for depositing money, the one we know is the final version.

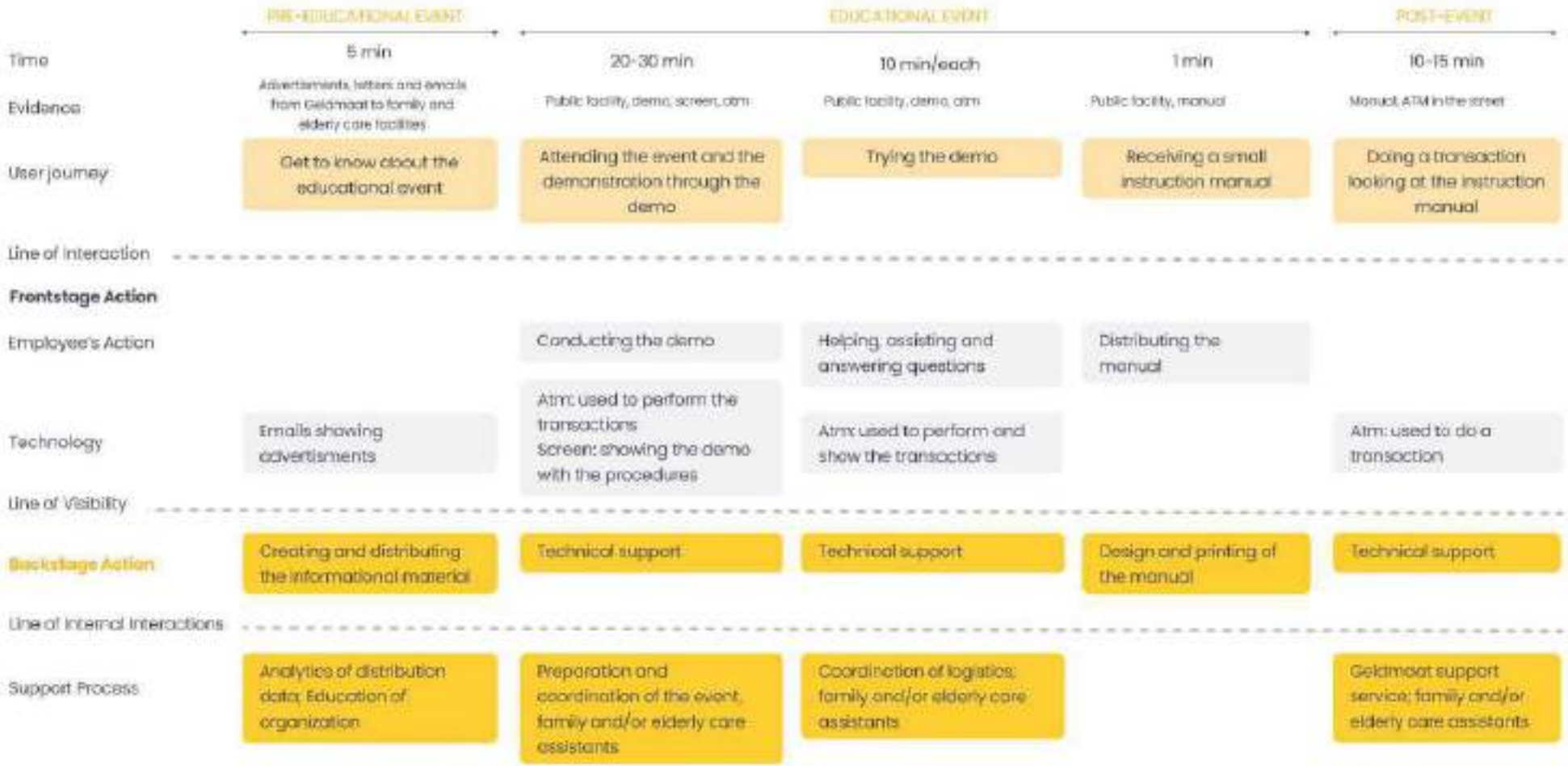
The demo also has the problem of the language, some people complained for that. Adrian thinks that having a paper support would make cheaper and quicker to translate to different languages

William was very interested in our prototypes and test results and he would like to stay in touch with us.

The demo has initially been designed to be used by instructors that would visit elderly homes. Later iterations resulted in the idea to make it a website open to everyone.

APPENDIX J

# Service Blueprint Iteration 4



APPENDIX K

# Evaluation Plan Iteration 4

| Activity | Duration | Description | Materials |
|---|---|---|---|
| Arriving/Introduction | 5 min | Finding the reference person, explaining what we want to do, finding target users | |
| Introduction to the group + agenda | 10 min | Explaining to the group our goal and the planned activities | |
| Time for questions | 10 min | extra range of time in case of questions/ interruptions | |
| Demo tutorial | 10 min | explaining every step of the demo to the audience, ask every new screen if there are questions, start from the second screen (skip run the demo) | laptops with demo |
| Demo trial | 20 min | ask the participants to try the demo, assisting them during the test | laptops |
| Giving manuals | 10 min | Distributing and showing the manuals, skimming through them while discussing about it | Manuals |
| Evaluation | 20 min | Asking questions to the participants about the session | Evaluation form |
| Conclusion | 5 min | Wrapping up + thank you | |

*How much do you a agree with the sentences from 1 to 10?*

*Experience*

1. I found this experience useful
2. I feel like I learned something new
3. I would participate to an event like this if someone proposed it to me
4. I feel like I am more able to make a withdrawal from an ATM than before
5. I think this service can efficiently guide me in completing transactions at an ATM
6. I feel like I have more control over the situation when withdrawing from an ATM than before
7. I feel like I could make a transaction at an ATM without depending on anyone else anymore

*Demonstration*

1. I think the demo is easily understandable
2. I think the demo is easy to use on your own
3. I think I would use the demo again at home on my computer or phone to practice

*Questions about the booklet*

1. I plan to use this little book when I go to withdraw money
2. I think the booklet is easily understandable
3. I think the booklet is convenient to carry and browse

APPENDIX L

# Consent Form

Toestemmingsformulier

U wordt uitgenodigd om deel te nemen aan een onderzoek door Virginia Facciotto, Elena Tonelli, Valentina Guadagno en Mark Kruijthoff van de TU Delft.

Het doel van dit onderzoek is om inzichten te verzamelen over hoe gebruikers van geldautomaten het gebruik van geldautomaten ervaren en om feedback te krijgen op een aantal bestaande prototypes die zijn ontworpen om het gebruik van geldautomaten te verbeteren. De gegevens worden gebruikt om iets te ontwerpen om deze klantenservice te verbeteren en worden verzameld in een rapport dat niet wordt gepubliceerd. We zullen u een aantal vragen stellen over uw ervaring met geldautomaten en om een aantal prototypes uit te proberen en feedback te geven.

Door dit toestemmingsformulier te ondertekenen geeft u toestemming voor het verzamelen van anonieme foto's en video's.

Uw antwoorden in dit onderzoek zullen vertrouwelijk blijven. We minimaliseren eventuele risico's door: je echte naam of persoonlijke gegevens niet te gebruiken op het gepubliceerde materiaal; alle foto's te anonimiseren en alle verzamelde gegevens na 6 maanden vanaf de datum van dit interview te verwijderen.

Uw deelname aan dit onderzoek is geheel vrijwillig, u kunt zich op elk moment terugtrekken en het staat u vrij om vragen achterwege te laten.

De contactgegevens van de onderzoekers zijn:

m.j.kruijthoff@student.tudelft.nl

v.guadagno@student.tudelft.nl

Door dit formulier te ondertekenen geeft u toestemming voor het verzamelen en behandelen van gegevens zoals beschreven in het formulier.

Handtekening deelnemer | Handtekening onderzoeker | Datum