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# ANAGRAFE CENTRALE

# COMUNE DI TORINO

ANALYSIS & CONCEPTUALIZATION REPORT

# DIGITAL DESIGN STUDIO

POLITECNICO
MILANO 1863

**Project specifications**
This is a report describing an educational assignment in Digital Design Studio, Master of Digital and Interaction Design, Politecnico di Milano for Anagrafe Centrale Comune Di Torino

Analysis and conceptualization in relation to the central Registrar's Office of Turin

**Project period**

20th of February to 6th of June 2019

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## Contributors and design

Fonts: GT America designed by Noël Leu and Seb McLauchlan, San Francisco designed by Apple Inc. Design inspiration: In 2019 the 100th anniversary of the founding of Bauhaus is celebrated. Primitives, bold colors and flat design.

Image credits: Felicitas S., Zhang Zhan, Irina Nikulina, Sarah Kraanen, Alexander Dummer, Ines Alvarez, Edgar Chaparro, Olena Sergienko, Gage Skidmore, David Shares, Pngtree, Sergio Ruiz, Tetra Pak, Stadsloket



# Introduction of team

1.1

Hailing from five different countries, other than our national flags share the color of red, we have many more things in common —

Passion for design, for creating a better system or to improve the niches for us human beings. In this project, we team up to research, analyze, design the Central Registrar's Office of Turin, relevant to the citizens of nearly one million in the city. We are excited to tackle existing issues and propose smart yet easily accessible digital solutions in the field of public sector by putting our complementary skill sets into practice.

**Alessandro Ceriani**

• Politecnico di Milano, School of Design
• MSc Digital and Interaction Design, First Year
• Gallarate
• "Details are emotions."

**Malte Simon Christensen**

• The Royal Danish Academy of Fine Arts, Schools of Design
• MSc Graphic Communication Design, First Year
• Copenhagen
• "Successful communication depends on how well we listen, rather than how well we push our opinions on the person seated before us." - Kenya Hara





**Sarah Kraanen**

• Delft University of Technology
• MSc Design for Interaction, Second Year
• Amsterdam
• "A good design needs to fits its user."

**Irina Nikulina**

• Politecnico di Milano, School of Design
• MSc Digital and Interaction Design, First Year
• Saint-Petersburg
• "Design can do more than just a pretty thing"

**Zhang Zhan**

• Politecnico di Milano, School of Design
• MSc Digital and Interaction Design, First Year
• Shanghai
• "An idea is salvation by imagination." - Frank Lloyd Wright

# Introduction of project

1.2


**PHOTO**
Central Registrar's Office
Felicitas S.

## Redesign of the services at the Central Registrar's Office of Turin

"Italian bureaucrats would appear to love red tape and have invented official papers and stamps for every possible occasion and purpose. Just finding the right office is a challenge and when you finally locate it, it's invariably closed (many offices open on a few days per week for a couple of hours only). You even need documents to obtain other documents and the laws governing the issue and use of these documents are frequently incomprehensible."


**FIG. 1, 2**
Central Registrar's Office
Felicitas S.

Whether being a stereotype or not, this paragraph from one of the "Italy Guide"① adequately summarizes outsiders' views on and general reputation of Italian bureaucrats. With the unique yet extremely fundamental function, the Central Registrar's Office of Turin is not an exception — long wait, insufficiency, chaos, incomprehensibility are what visitors are going through when they visit the site. The overall experience seems simply painful. With the trend of improving citizen's overall experience within public sectors by implementing digitization around the world, the Central Registrar's Office of Turin is definitely falling behind. For an overview of the entrance of the office in Torino see fig. 1 and 2.

In this project, we begin with context analysis to identify user's and employee's needs and allocate touchpoints. Then we rely on User Centred Design approach based on a process of design-evaluation-redesign of the digital touchpoints of the Central Registrar's Office of Turin. They are followed by development and implementation. In the project's final piloting and integration phase, we test the developed services with a pilot and integrating them with the existing systems. (see fig. 3)

**① Italy Guide**
https://www.justlanded.com/english/Italy/Italy-Guide/Visas-Permits/Bureaucracy

# Process plan

1.3

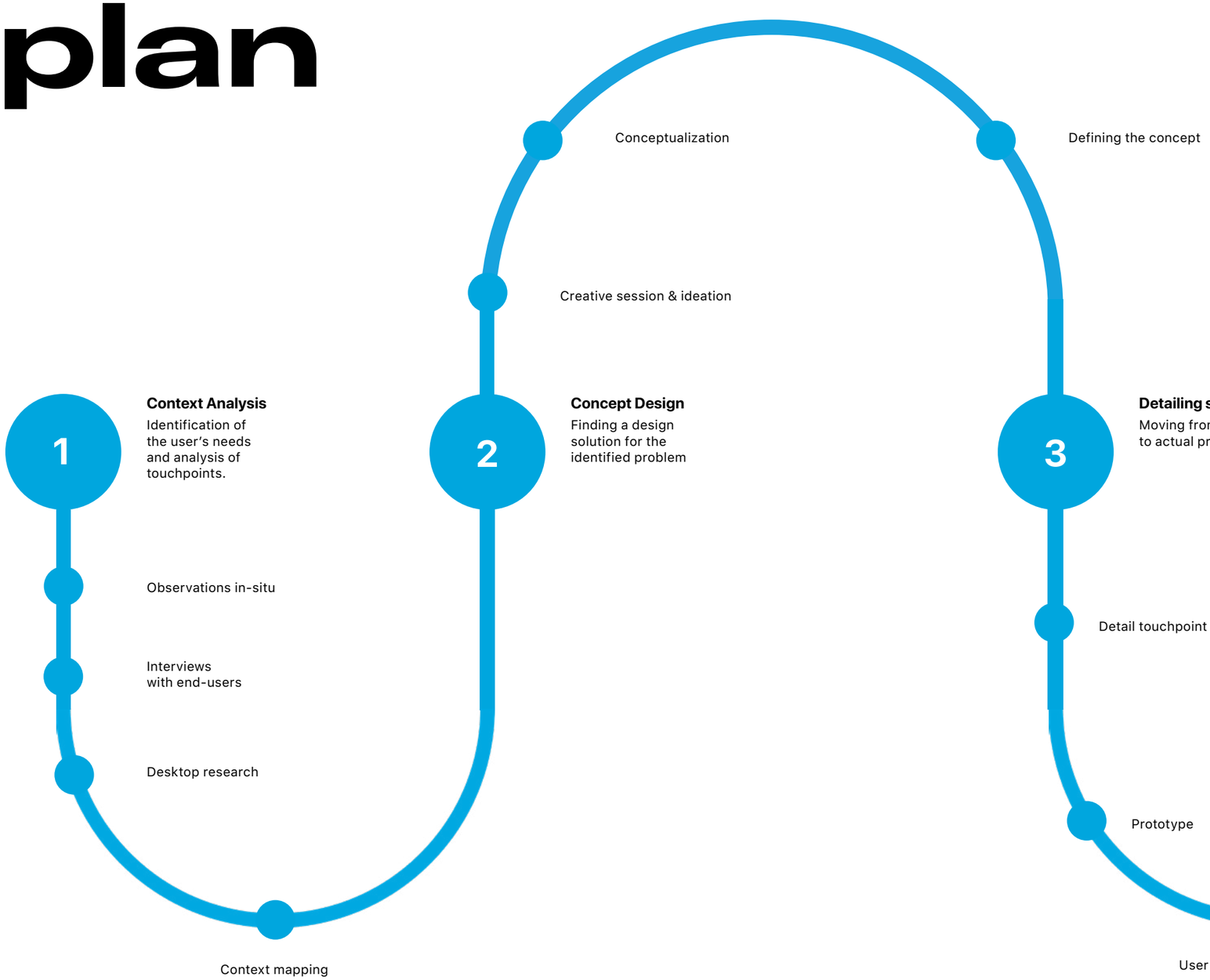



**FIG. 3**
Process plan

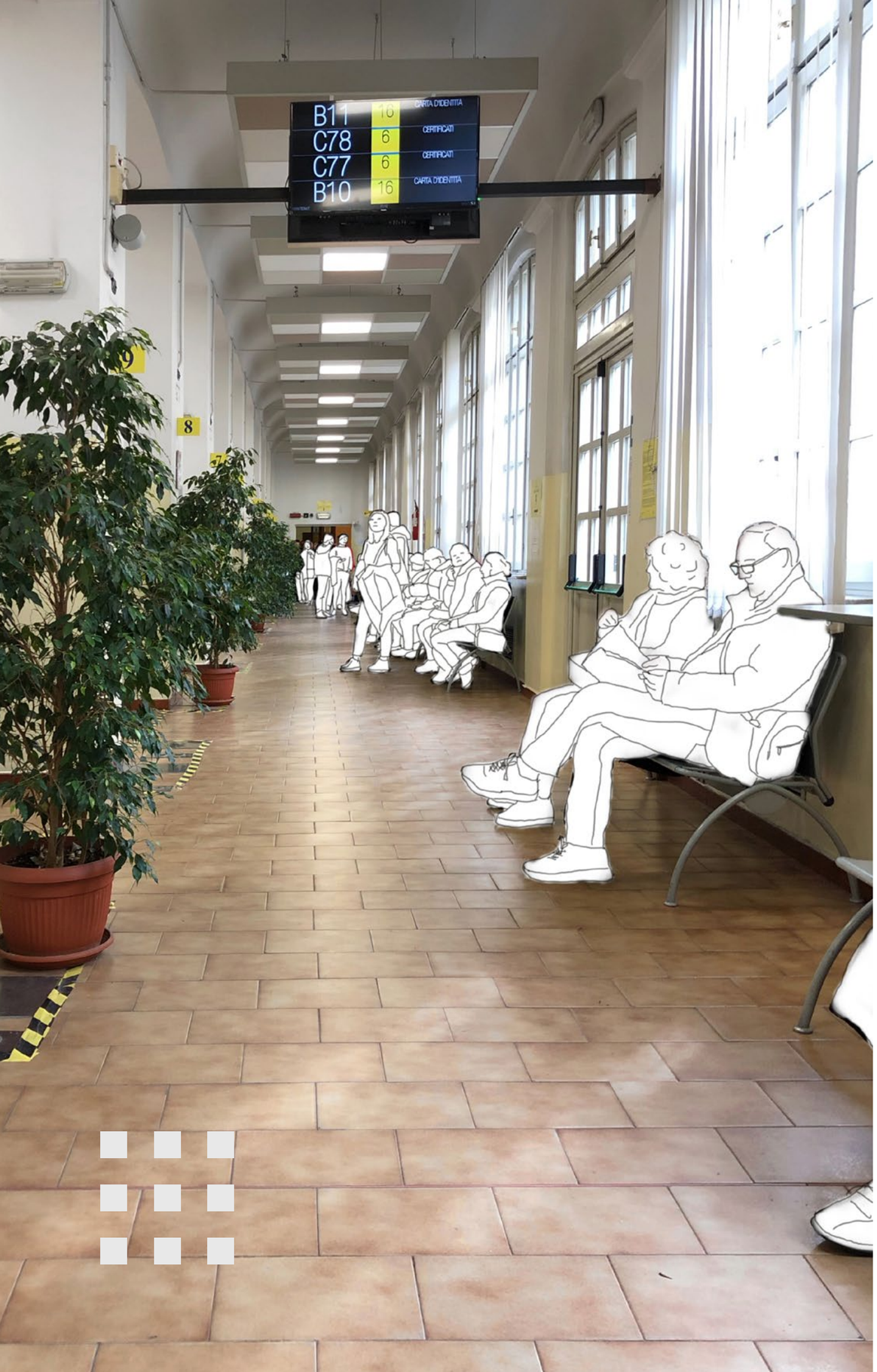



**FIG. 4**
Central Registrar's Office

02

# Internal analysis

This chapter compromises an analysis of the online and offline environment.

To create a comprehensive overview of the environment, both the online and the offline environment of the Central Registrar's Office of Turin was analyzed. For the online area the focus was on the Registrar's Office website and the TorinoFacile online platform, an auxiliary service of the municipality. For the offline area was made an on-site inspection, observing both the architecture and signposting of the building and the people present there, working or not (fig. 4). To get closer and understand people problems were conducted several semi-structured interviews.

# Online environment

2.1

We identified and analysed most popular services at the Registrar’s Office based on desk research and observations. The most popular cases are making an ID card, changing the residence and getting certificates. Users can visit Registrar’s Office of Turin either with appointment or without it. For complex cases task flows were created (see next page). They represent the ideal flow and mention all the requirements and possibilities to get the service.

## Characteristics of layout

The online website presents a poor and old graphic style (fig. 5). Since there isn’t a strong visual hierarchy the information are not well organized as they should and this doesn’t help the visitor search for the information he needs. The website is in italian and this suggest a foreign user to search for the button to change language which is not present: the visitor is then forced to translate the website resorting to a translate plugin of the browser, resulting in a poor and ineffective translation. In the top there are the contacts, a telephone number and two e-mail addresses: one is called “email” and the other one is “posta certificata”, nothing specifies which a visitor should use. Information are repeated multiple times: on the top there is a drop-down menu that ask you “what are you looking for?” that let you browse through all the services but right under it there are boxes, which are actually buttons, that offer the same information organized in a different way. This hierarchy conflict can lead to a disorienting experience rather than help the visitor find what he’s looking for. Under these boxes there are others that contain information about different kind of residence: they could be added to the main residence page. In the bottom there are information about privacy and links to do reports and complaints.

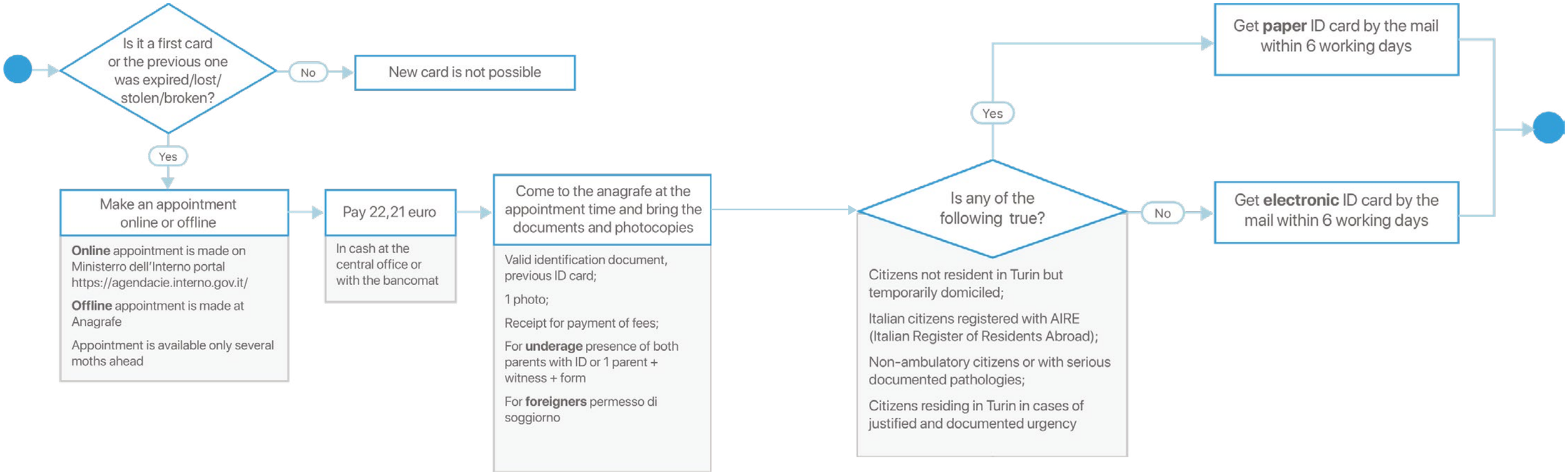
There is no style and graphic costintency with the main municipality website and within the Registrar’s Office itself, every sub-page has a completely different layout: the id card page is organised in dropdown menus and videos, the civil state page has 24 buttons that change the text at the bottom of the page, the electoral services button is linked to a different section of the municipality website, with completely different graphic style. Several pages are just a block of text that helps the user only to get lost in it.

Despite the poorly managed organization and hierarchy most of the information needed are on the website but others are missing: the information should be comprehensive and easy to access, also an online chat could be helpfull.

**Fig. 5**
Central Registrar’s Office Website

**Fig. 6**
Central Registrar's Office
Task flow

## ID Card




## Change residence

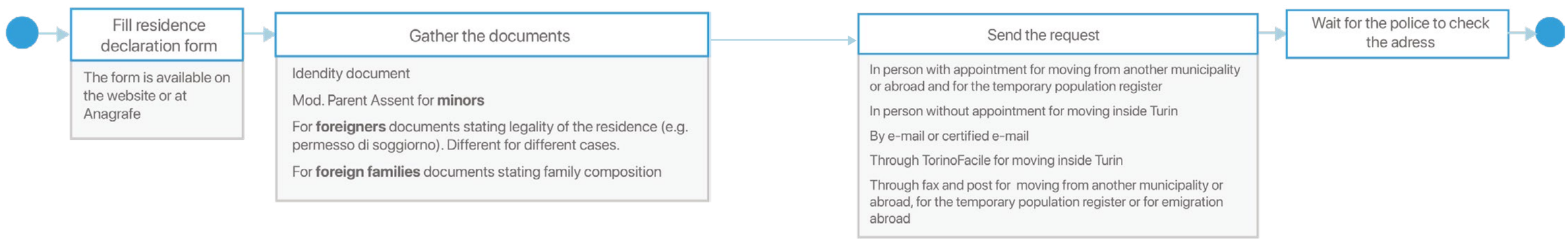
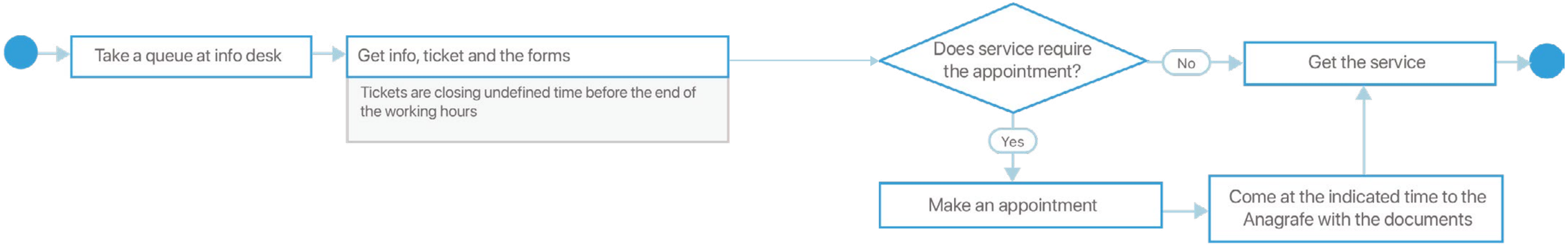
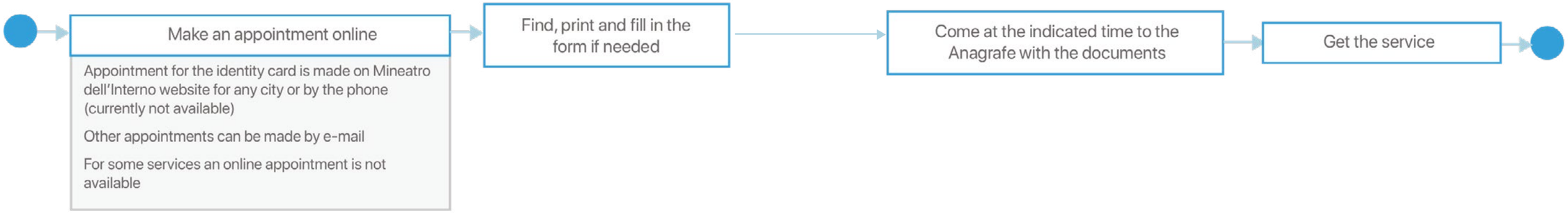


**Fig. 7**
Central Registrar's Office
Task flow

## Visit CRO without appointment




## Make an online appointment




## Certificates and other services

Some certificates can be made online via website, app or totem TorinoFacile
Citizens born before 1971 and emigrated outside Turin before 1990, or never resident have to apply for the marital certificates online or at Anagrafe and get it at Anagrafe
Other certificates and certificates for abroad usage must be requested at Anagrafe or by post or at Sportello Amico
Other services are provided according to the indevated procedures (very different)

## Get access to TorinoFacile services

To register to TorinoFacile user can use SPID or electronic ID card.
Service is not possible without electronic ID card.

# Offline environment

2.2

The central Registrar's Office of Turin is located in an historical building at Via della Consolata (fig. 8), 23, 10122 Torino TO. The building is separated in two parts, based on the different services (fig. 9). Via this entrance the municipality is only accessible by stairs (fig. 10). Both parts have one long corridor with on one side all the desks and on the other side waiting chairs and some little tables (see fig. 11).

When entering the left side a screen with ticket numbers is shown and a sign suggested where to get this ticket (fig. 12). Behind this wall a employee is standing next to a ticket totem and he takes the right ticket for you out of the machine (see fig. 13). After this there are chairs available to wait and a screen is visible which show when it is your turn (fig. 14).

A lot of the deks are closed and open desks are used by more than one visitor (fig. 15). There are a lot of people in the room, which creates a lot of noise. People are calling (fig. 16), talking to each other, babies are crying. This creates a noisy environment.

On the right side, the interior looks the same, but it is mirrored from the other side (fig. 17). The only difference is the entrance of the area. On this side there is no ticket totem, but an information desk, where you can get information or get the right ticket. This desk has often a long waiting line.

The visual signage is not consistent and together with all the different styles of providing informations, this creates chaos and confusion for the visitors.

## User research

To analyse the users on the first stage of the project qualitative methods both attitudinal and behavioural were used. We observed the behaviour of the Registrar's Office visitors, conducted interviews with them. Also digital ethnographic research was conducted: we analysed user reviews on Google maps and user stories in the local newspaper. See Appendix 1 (interview transcript) for the summary of the interviews and the review.






Fig. 8


Fig. 10


Fig. 13

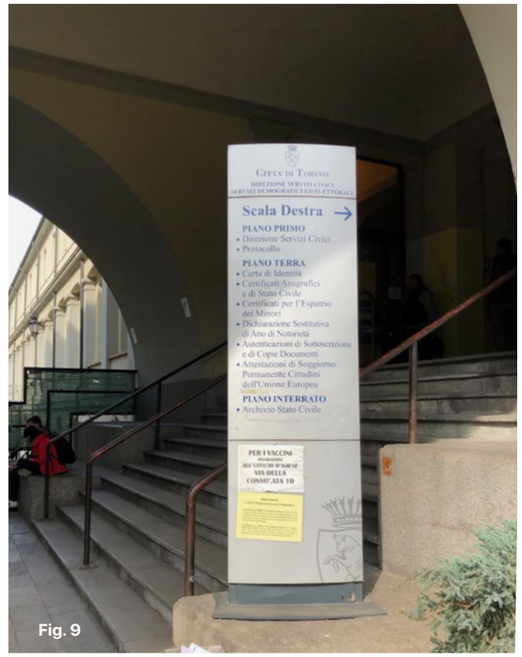


Fig. 9

Fig. 12

PHOTOS
Central Registrar's Office
Observations

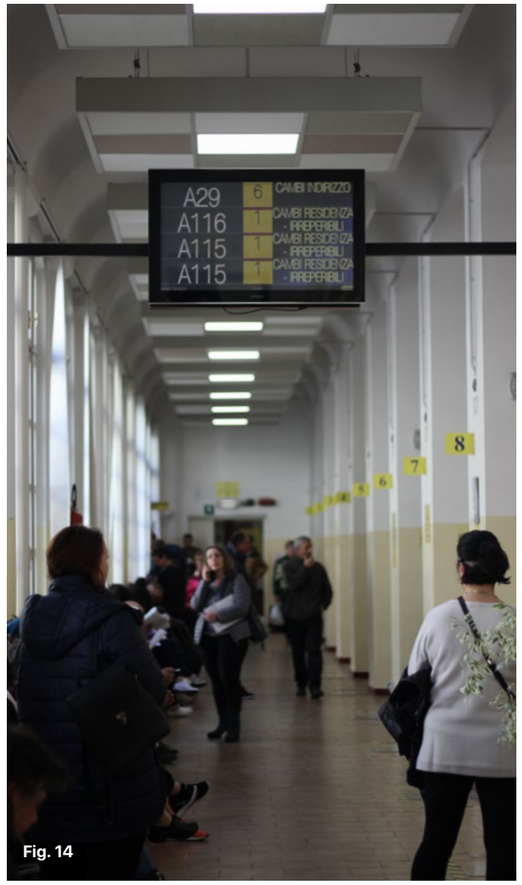


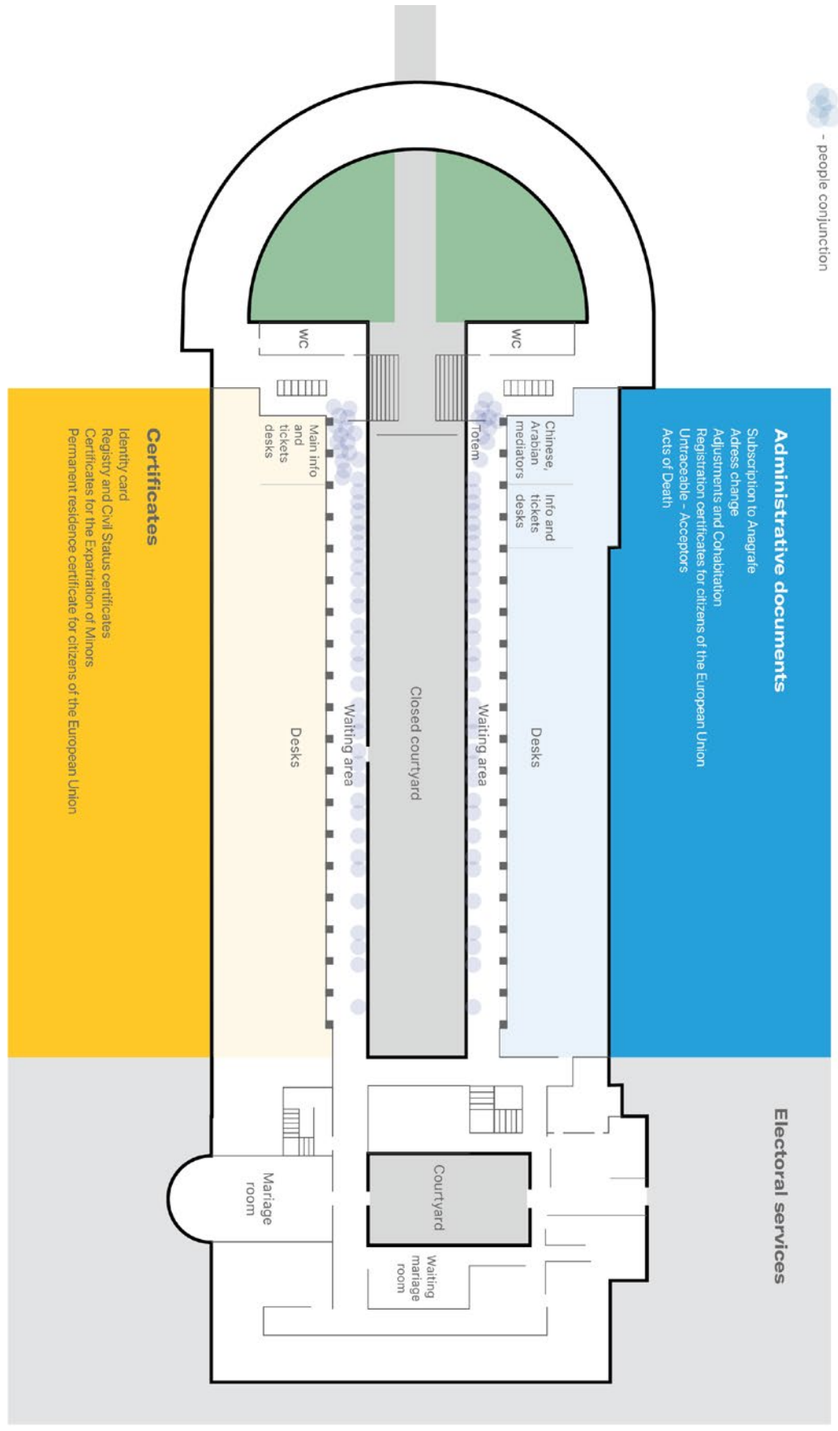
Fig. 14

Fig. 15

Fig. 17

Fig. 16

**Fig. 11**
Central Registrar's Office
Ground floor



# User research

2.3

To analyse the users on the first stage of the project qualitative methods both attitudinal and behavioural were used. We observed the behaviour of the Registrar's Office visitors, conducted interviews with them. Also digital ethnographic research was conducted: we analysed user reviews on Google maps and user stories in the local newspaper. See Appendix 1 for the summary of the interviews and the review.

# Personas 2.3.1

To develop a user-centered, user-friendly solution, identify design issues, prevent self-referential design and create a clear perception of the target groups and their goals this paragraph presentes five personas. Frank Long writes: “Personas are fictional user archetypes based on user research.” (Long, 2009).

Wray et. al. further highlights the importance of using personas: “personas provided important details about users’ attitudinal and emotional contexts (...) personas also provided insights about the aesthetic experience that might be most appealing to users”. Thus the use of personas enables the designer to take the point-of-view of the user - which eventually is empathy.

The first four personas is developed as end-users, based on the interviews conducted at the Central Registrar’s Office, while the last persona is developed as stakeholder, based on observations and desktop research. Based on the user research results 5 main user’s types were identified. First user type is a mother that came with a kid (fig. 18). Despite that Registrar’s Office infrastructure is not suitable for children of any age there were many of them. People come with small kids because they cannot find anyone to leave them with for a long time and they come with big kids if it is the kid who need a document. Second common user is a working person, who is very sensitive to the time loss and ready to put more effort to avoid it (fig. 19). Third user type is an old person, who has some physical difficulties to use the Registrar’s Office service (see fig. 20). Young immigrant is a new trend user (see fig. 21). As the world becoming global, people mobility increases. This kind of users are modern, open to technologies and not always able to speak italian. We also included an employee (see fig. 22) as a potential user as they closely communicate with customers, work in the Registrar’s Office environment and sometimes had to be mediators between online services and users.



**PHOTO**
Source **unkown**

Fig. 18

## Alessia, 38

End-user

**“I only visit Anagrafe when it is necessary. No one wants to go there, right?"**

### Keywords

**Mother, housekeeper, garden lover, likes to cook, tradiotional**

### Occupation

Doesn’t work, italian, has 2 kids 12 and 1 years old

### Difficulties & Frustrations

A lot of desks in the office, but almost all of them are closed
Spoiled the mood, because personal was rood with her
Had to come with the kid, kid was bored and bothering her
Had to pay attention both for the display and for the kid
The kid got exhausted and hungry waiting

### Behaviour

She lives outside the city and usually goes to the local anagrafe. But to get marriage certificate she has to go to the central one. She already knew what ot do, but to get a ticket she had to stay in a general queue. She came with the kid, because she didn’t find someone who would take care of him for this time. She checked the website, but it was said there that she had to go personally.

### Needs

Comfortable service
Child-friendly environment
Easily accessible and accurate information

Fig. 19

**PHOTO**
Source unkown

# Andrea, 35

End-user

## “I speak italian, but I don’t understand anything here”

### Keywords

**Engineer, busy person, likes modern technologies, pragmatic**

### Occupation

Works as an engineer, Italian

### Difficulties & Frustrations

Had to skip his work, which was very difficult
Can’t plan his day, because doesn’t know when he will be free
Was redirected from one desk to another several times
Couldn’t make a photocopie in anagrafe, had to make another appointment

### Behaviour

Recently he moved to another place and needs to change the residence. He made an appointment online because he wanted to save time. But in anagrafe he was redirected several times from one desk to another and in the end he discovered that he miss one photocopie, so he had to make another appointment. He lost half of working day and didn’t manage to do what he wanted to do.

### Needs

Efficient service
Access to all supporting services
Easily accessible and accurate information



Fig. 20

**PHOTO**
Filipe Almeida

# Franco, 70

End-user

## “They just have to use the brain to make it better. This is not the way it should be organised”

### Keywords

**Retired, traditional, hard-working, health problems, fear of technology**

### Occupation

Retired,  Italian

### Difficulties & Frustrations

Lack of fresh air made him  feel dizzy
Stairs are difficult to climb
Difficult to stand for a long time at the desk

### Behaviour

His last ID card is expired so he came to make a new one. He didn’t check anything online. He spent 4 hours at the Anagrafe just to make an appointment. While waiting his blood pressure raised, because of the bright sun shining through the windows and the lack of fresh air. He was disappointed about Anagrafe organisation.

### Needs

Assistive service
Elderly-friendly environment
Easily accessible and accurate information

**PHOTO**
Matheus Ferrero

Fig. 21

# Abeer, 24

End-user

**“English, anybody? Why can’t I just download an app?"**

## Occupation
Studies art at the university, doesn’t speak italian well

## Difficulties & Frustrations
First had to fix permesso problems
Had to come with italian speaking friend
Lost trying to find the restroom

## Behaviour
She studies at Torino and rents a room there. She plans to stay in Italy after her education, so she made a residence there. She was home on holidays and then rented another room. So she needs to change the residence. She doesn’t speak Italian well, so she asked her italian speaking friend to help her. Last time it was very difficult to make a residence because no one spoke English with her. She checked the website, but couldn’t do anything there in advance.

## Needs
Independent service
Language support
Easily accessible and accurate information

## Keywords

**Student, non italian citizen, artist, fashion lover, modern, idealistic, open-minded**



**PHOTO**
Alexander Dummer

Fig. 22

# Francesca, 48

Stakeholder

**“Can you take my shift? I wanna go home. I need air”**

## Occupation
Anagrafe employee

## Difficulties & Frustrations
Stressful environment
Slow computer
Pressure from visitors
Colleagues often don’t know how to help

## Behaviour
Recently he moved to another place and needs to change the residence. He made an appointment online because he wanted to save time. But in anagrafe he was redirected several times from one desk to another and in the end he discovered that he miss one photocopie, so he had to make another appointment. He lost half of working day and didn’t manage to do what he wanted to do.

## Needs
Comfortable and pleasant work environment
Supporting tools to communicate with users

## Keywords

**Hard working, gradually loosing faith in the public system. Need vacation.**

# Touch-points

2.4

We mapped all the touchpoints as the part of system analysis (fig. 23). They fall in three category: inside the Registrar's Office building, outside it and online touchpoints. The map represents the touchpoints and its function. There are only few services that can be done avoiding the inside touchpoints: getting some certificates and changing the residence inside Turino for ID card holders. Other services require the interaction with almost all internal touchpoints and sometimes with the external one. In the online section it is seen that Registrar's Office doesn't have one consistent online system. Different functions require different touchpoints.

**FIG. 23**
Touchpoints

## Online touchpoints

Torinofacile App Web
Some certificates, residence change

MINISTERO DELL'INTERNO Web
Appointment for an ID card

**E-mails**
Appointments and document sending for some services

CITTA' DI TORINO Web
Information & forms

## Touchpoints inside CRO

**Kiosk with employee**
Info & tickets

**Sportello 1,2**
Info, tickets, forms

**Chinese & Arabic mediators**
Translation

**Other sportellos**
Service provision, payment

**Tickets display**
Organizing the queue

## Touchpoints outside CRO

Torinofacile **Kiosks**
Some certificates, residence change

AMICO Posteitaliane
Some certificates

**ATM, Tabbacheria**
Payment

**Print shop**
Photocopies

**Photo cabin**
Photos

# Current Customer journey

2.5

Based on the internal analysis, the customer journey is mapped out. The most common procedures the customer goes through is “changing residence“ and “renew ID card“. This is why the choice is made to choose these procedures as a reference for the customer journeys. Because visitors of the Registrar’s Office have different experiences when coming into the office with or without appointment, these two different journeys are shown in the customer journeys (fig. 24 and 25). In the first layer of the journey the steps are shown the visitors of the Registrar’s Office are going through. In the next layer to problems are mapped out, based on the observations and interviews. In the layer below this, quotes of the visitors are shown about their experience with each step.

**FIG. 24**
Customer journey

# Visit CRO without appointment - changing residence

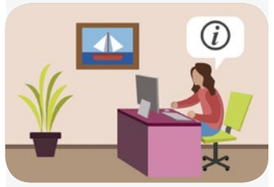
| | Preparation → | | Entering → | | Preparing for getting service → | | Service → | After |
|---|---|---|---|---|---|---|---|---|
| **PHASES** | | | | | | | | |
| **STEPS** | Look for information on the website | Ask relatives and friends for infomation | Choose entrance | Get ticket at ticket machine | Wait in line at information desk | Get info and form | Waits in line at information desk | Deliver all documents need and the employee changes your residents | Visit by employee from the municipality |
| **PROBLEMS** | • Visitors do not check out the website before going to the municipality<br>• Unclear structure | | • Lack of consistency of visual system:<br>- No hierarchy or structure: printed information on the walls that are messy, chaotic, misleading, various-sized, all over the places<br>- No consistency in style: different colors, typefaces, paper, size<br>- Only text, no icons or explanation visuals<br>- Only one language available<br>• No infrastructure for blind people<br>• Not suitable for disabled and people with baby carriages | • No info which queue to take<br>• Help needed from employee to get the right ticket | • Long waiting time<br>• No clue how long to wait<br>• Children and dogs with the owners<br>• Several queues for one task<br>• Many closed desks | • Workers are not recognizable, because they are not in uniform | • People circulation in the building is rigid. Forces people to move in a certain way, too narrow.<br>• Sun through the windows created a lot of heat, difficult to stay on the sun<br>• No trash cans, place for paperwork, pens<br>• No understanding of the terms on the form | • Poor sensitive scape<br>• People have to stand sometimes for a long time in front of the desk. Not suitable for wheelchair<br>• Sound is chaotic, mixed together: babies crying, people speaking, cars | • The citizen does not know when the municipality is visiting to check if the citizen is living on the adress |
| **EXPERIENCES** | "I checked online, but I didn't understand clearly what to do." | "My parents told me where to go and what to do." | "A decadent place, an obsolete structure with architectural barriers unworthy of a civilized country." | | "The bigger problem is that we have to do 3 queues for getting the service I need." | "They yelled at me and give me a ticket, I'm still not sure if it's the right one." | "I've been waiting for 3 hours and this is the third time I've been here." | "The staff acts rude if you don't understand things the first time, the ambient is really noisy and is difficult to hear them through the glass." | |

**FIG. 25**
Customer journey

# Visit CRO with appointment - renewing electronic ID card

PHASES

## Preparation →



STEPS

**Abeer looks for information on the website**

PROBLEMS

- Find the form and fill it in advance
- Difficult to find a button that creates an appointment

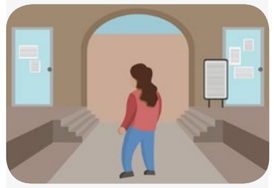
**Abeer makes an appointment**

- Difficult to find a button that creates an appointment

EXPERIENCES

"I tried to make an appointment but the mail I received did not specified what documents I should bring."

## Entering →



**Abeer chooses entrance**

- Lack of consistency of visual system:

  - No hierarchy or structure: printed information on the walls that are messy, chaotic, misleading, various-sized, all over the places
  - No consistency in style: different colors, typefaces, paper, size
  - Only text, no icons or explanation visuals
  - Only one language available

- No infrastructure for blind people
- Not suitable for disabled and people with baby carriages

"They could give you directions in the mail, I had to ask to know where to go."


**Abeer goes to assigned desk and waits in front of the desk**

- Some desks were closed even if they had an online appointment at this time

## Getting service →


**Delivers all documents needed and the employee orders the new e-ID card**

- Poor sensitive scape
- People have to stand sometimes for a long time in front of the desk. Not suitable for wheelchair
- Sound is chaotic, mixed together: babies crying, people speaking, cars

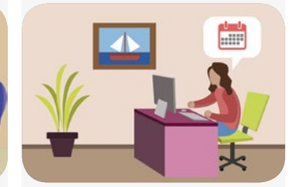

**Desk is not available**

- Appointment information is not correct

"The sportello was closed so they bounced me from one to another, at the end they told me to make another appointment."


**Waits in line at information desk**

- Only one information desk for all different questions
- Chaotice waiting line, no proper space to wait in line

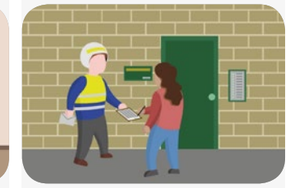


**Missing some documents, so makes new appointment and goes home**

- No photocopies and photos, which means that if you forgot to make it in advance, you have to make another appointment

"The website was not clear if you need a photo."

## After



**Abeer receives ID card by mail**

- The citizen does not know when the municipality is visiting to check if the citizen is living on the adress

Intended steps

Common steps

# Main Problems

2.6

In the form of statements this paragraph shortly reflects on the main problems and user needs, establishing a basis for the next step:

1) The users have a bad experience when the employees are not working optimal

2) The end user is not provided any indications of how much time a service takes.

3) The wayfinding system is unclear. (fig. 26, 28)

4) The layout of the physical space contributes to discomfort among both stakeholders and end users.

5) There is no symbiosis or collaboration between the physical space and the digital platform.

6) The service flow is irregular. The info-desk is the only way to get information, tickets, appointments and forms. The info-desk appear to be the touchpoint that is exposed to the most stress.

7) Infrastructure is not suitable for people with disabilities and people with kids. (fig. 27)

8) Users can not get the information easily through any of the touchpoints.

9) Supporting services like photocopy, ATM or photomachine are not present inside the office.

10) Fragmented competence of employees creates queues for certain tasks.

11) Visitors are not distributed evenly, some places are crowded, some empty.

**PHOTOS**
Central
Registrar's Office

Fig. 26

Fig. 27

Fig. 28

# 03

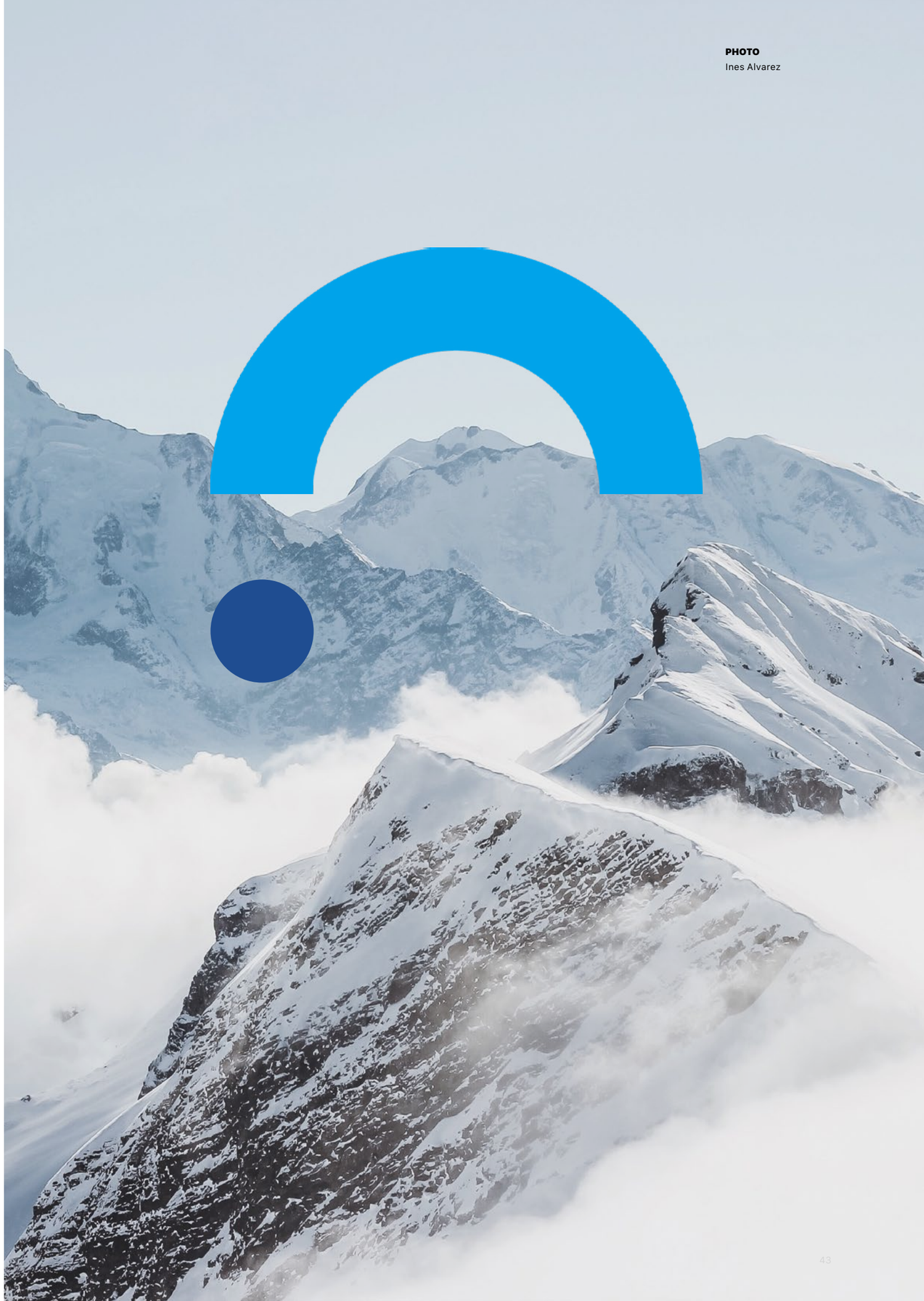
# External analysis

This chapter analyses external factors that could inspire and influence development of the new service and thus it encompasses a Trend analysis (3.1), five Case studies (3.2) and Benchmarking of the case studies (3.2.1).

The first part of the external analysis, 3.1, seek to investigate tendencies in the macro environment which potentially could influence the meso-environment - the sector in which the service is operating - and inspire development of the end product (cf. Van Vliet, 2010). The case studies, 3.2, describe current solutions in comparable contexts and is conducted in order to further drive inspiration and reflection on the end product. The benchmark analysis compares the cases with a particular focus on applied technologies.



**PHOTO**
Ines Alvarez



# Trend analysis

3.1

This chapter focuses on current trends as an initial source of inspiration and mapping of potential opportunities in relation to development of the end product.

The DEPEST analysis model was used to structure the trend research. Acronym for six distinct factors, the DEPEST model is used to investigate Demographic, Economic, Political, Ecological, Social, Technological aspects (cf. Van Vliet, 2010). Rooted in economic theory developed by american marketing professor Philip Kotler in Principes van Marketing, the DEPEST model is an evolved and synthesized analysis model of marketing environments, (cf. Kotler P. et. al. 1996). The trend analysis was conducted as an initial source of inspiration and mapping of potential threats and opportunities in relation to development of the end product. Often the DEPEST model is foreshadowing a SWOT analysis.

Introducing each DEPEST aspects is a short quote from Muilwijk's summary of the model (cf. Muilwijk, 2014).

The first socio political trend, **i-government** or e-government , might be considered an umbrella-trend in relation to the project, encompassing trends like **tranparency** and **customization**.

## Social-Cultural and Political-judicial

"Social-cultural factors are characteristics of the culture and customes [...] Political-judicial factors are characteristics of government decisions" (Muilwijk, 2014)

**PHOTO**
CRO Milano

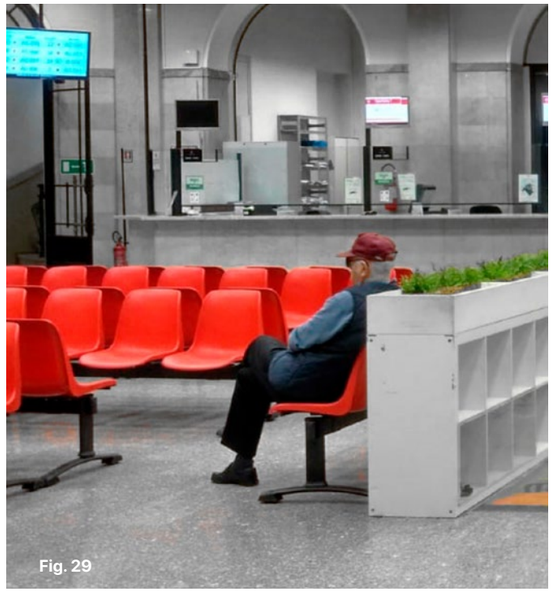


Fig. 29


Fig. 30

## *i-government*

**TREND:** Currently a shift from s-government to i-government is taking place (fig 29, 30). "S-government is characterized by large-scale, standardized solutions. [... while] i-government solutions focus on developing more intelligent, interactive solutions that focus on individual needs" (ISS[1])

**CONTEXT:** i-government solutions has been applied in the following contexts: Estonia (www.e-estonia.com)

Netherlands (www.government.nl) Denmark (www.borger.dk) South Korea (https://www.gov.kr/portal/service) UAE (https://dubainow.dubai.ae/en/Pages/default.aspx).

**NEEDS:** i-government solutions correspond to the following user needs: People's freedom of interacting with the public services or running errands according to their own schedule and preferences, way less limit of physical locations or time. People don't have to wait as long (shorter latency). People can have better orientation and clear guidance. Low-cost for governments.

**RELEVANCE:** this trend is relevant for the project because: i-government solutions is an area where government and tech intersect. It can be considered an umbrella / the global trend Improvement of efficiency.

# Customization

**TREND:** In relation to public services custom output to many people or “mass-customization” is a rising trend (fig 31). General about customization: “‘We believe [customization] is the new form of luxury, which is really a return to the old form of luxury in the idea of having something made just for you […] Except with using technology, we’re able to scale that and address a much bigger market and make it accessible to more people… The phone is uniquely positioned to be at all places at all times—that’s a huge opportunity.” (Dave Gross cited by Raphael, FastCo., 2016)

**CONTEXT:** customization is especially present in ecommerce (Nike, Converse, Adidas, B&O etc.) In relation to the public sector: light personalization: 24/7 call centers, booked appointments, timely access to standard services. Heavy personalization: self-management, self-organization, service plans for individuals and families with special needs.

**NEEDS:** to feel special, individualization, the right service at the right time, faster and more convenient experience, People want the channel to be direct and clear. Not much energy or time have to be spent on figuring out and navigating to the right source.

**RELEVANCE:** Improve the relationship between authority and citizens (trustful, attentive). Encourage greater participation in public system / political participation. Tailored services for governments to get a better understanding of the needs of citizens and communities. Provide the right service at the right time.

**“The phone is uniquely positioned to be at all places at all times—that’s a huge opportunity.”**

Fig. 31

# Transparency

**TREND:** Greater openness in the relationship between consumer and producer, between government and citizen. In relation to public sector citizens can have a better understanding of the status of their documents or request, overview of the process, and monitoring.

**CONTEXT:** In relation to the public sector a trend towards openness and transparency is occuring to prevent “shadow governments” / “invisible” (controlled by private sector). In relation to eCommerce, transparency especially concerns the source of raw materials / resources, work environment, social responsibility etc.

**NEEDS:** accountability, accessibility of info, visibility, trust, insight into future operations / orientation / strategies. People need to know the government decisions and current situations, such as performances.

**RELEVANCE:** “Transparency is imperative to effective public sector operations and the provision of public services in that government maintains a fundamental responsibility to citizens and society.” (ISS: 57). Empowerment of citizens.



# Social Media

**TREND:** “forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as videos)” (Merriam-Webster) fig. 32

**CONTEXT:** Facebook (Danish Prime Minister)
https://da-dk.facebook.com/larsloekke
Instagram (Russian prime minister)
https://www.instagram.com/damedvedev/?hl=en
Twitter (POTUS) https://twitter.com/POTUS?lang=en
Weibo (Zi Guang Ge (the official magazine on political affairsrunbytheChineseCommunistparty.)https://www.weibo.com/u/5467852665. Shanghai Metro. https://www.weibo.com/shmetro?topnav=1&wvr=6&topsug=1, Shanghai Traffic Police

**NEEDS:** Feeling connected and accessible. Instant updates. Being entertained. Freedom of expression.

**RELEVANCE:** Building trust. Encourage people to participate. Making ‘images’, strategic. Reach people faster than other channels (especially young segment). As a tool to create discussion. Users as content creators.


Fig. 33

**PHOTO**
Edgar Chaparro Olena Sergienko Gage Skidmore


Fig. 32

## Technological

“Technological factors are characteristics of the development” (Muilwijk, 2014)

# Big Data, A.I.

**TREND:** Data harvesting, analysis of big datasets. artificial intelligence and machine learning. (fig 33)

**CONTEXT:** Conceptual example IBM Watson & VAIOT - intelligent contracts, dialogue-based interaction: https://vimeo.com/308071291. In eCommerce context: increasing sales through monitoring of customer behaviour, personal recommendations. Location-based marketing, analysis of social media immediately (sentiment data), connecting offline and online services (Cross channel / Omni channel) Modern systems can track water pressure and alert workers to fix pipes before they burst. Traffic cameras automatically detect vehicles and this information is sent back to a central control centre where algorithms estimate the density of traffic on the road. The system then alters the traffic lights based on real-time road congestions.

**NEEDS:** A more intelligent experience. The right information and informed choices available. When users need it.Accurate, quick-to-respond.

**RELEVANCE:** Improves customer service experiences, encourage engagement with services that drive revenue

Listens to the pulse of the city AI changes that dynamic by tapping into social media to learn about problems in real time. AI empowers decision-makers to see whether their policies are working as intended cities can catch up to the big brands on the market and provide citizens with the high-quality experiences they expect. Predictive elements in AI help cities analyse infrastructure issues and fix small problems before they grow larger.

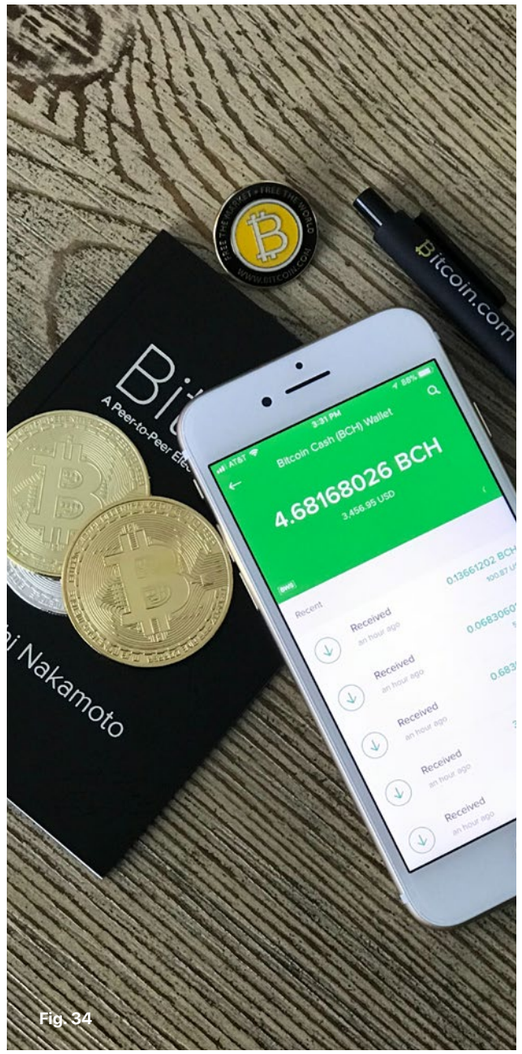


Fig. 34

# Blockchain

**TREND:** Blockchain: “an open, distributed ledger that can record transactions between two parties efficiently and in a verifiable and permanent way” (Lansiti, 2017) (fig. 34)

**CONTEXT:** The public sector is responsible for many areas of trust and services so there are a large number of use cases across countries including: the European Union (EU—anti-counterfeiting), Estonia (Digital Government), US (FDA, DHS, HHS, GSA—security, anti-counterfeiting), China (Payments), India (Payments, Land Registrar’s), Switzerland (Identity), Denmark (Voting), Dubai (Digital Government), Georgia (Land Registrar’s), Gibraltar (Stock Exchange), and many more.

**NEEDS:** Security, safety, efficiency.

**RELEVANCE:** Decentralization. Trust in the relationship between government and citizen.

“Provide a better foundation for identity (all data is recorded on the ledger via a consensus mechanism which enlists multiple parties to verify that the data is correct before it is written, all transactions in the ledger are immutable and digitally signed, which means the records are unchangeable and those who wrote the records are accountable for any issues, the digital, immutable record can be linked to a biometric or set of biometrics (i.e. thumb print, facial scan, etc.) which means that it is unique, easily verifiable, and nearly indestructible.”

“The immutable nature of the blockchain means that these digital documents are impossible to duplicate or forge because there is only a unique, single record. Additionally, the digital documents can be made accessible only by a biometric scan, First, it can provide a secure digital identity; next it digitizes all new data transaction data automatically and securely; and finally, it creates an interoperable platform across departments and agencies. Blockchain-based systems can create a unified and secure digital identity.Listens to the pulse of the city AI changes that dynamic by tapping into social media to learn about problems in real time. AI empowers decision-makers to see whether their policies are working as intended cities can catch up to the big brands on the market and provide citizens with the high-quality experiences they expect. Predictive elements in AI help cities analyse infrastructure issues and fix small problems before they grow larger.



# Gamification

**TREND:** Gamification creates an environment where people compete to win prizes as part of a game, and through the process learn something new or behave in a desirable manner (fig. 35).

**CONTEXT:** “Hawaii has used gamification for a less obvious reason: as a means of unifying often siloed departments. Hawaii gamified its online services, enabling users to create one profile in order to access services from every department. The new site provides users with badges that show how much time, paper and mileage they have saved by completing government transactions digitally, and includes a community board that allows residents to compete against the aggregate savings of others. When someone finishes paperwork for one department, the site then prompts them to go to another in order to maximize savings, improving digital access across government.” (Bousquet et. al. 2017)

**NEEDS:** Fun, entertainment, good experience

**RELEVANCE:** New ways of encouraging public participation. Nuding residents toward healthy behaviour. Promoting civic engagement. Bringing departments together.

**“Hawaii has used gamification for a less obvious reason: as a means of unifying often siloed departments.”**

**PHOTO**
David Shares Pngtree


Fig. 35

# Biometric authentication

**TREND:** using biometrics to authenticate your identity. Using biometrics to for login to devices

**CONTEXT:** iPhone, Airport security, facial recognition, DNA matching, iris recognition, fingerprint recognition, Voice recognition, signature recognition

**NEEDS:** safety (maybe it’s easier to fool a human than a machine), fast access, less human interaction: feeling independent, individualization

**RELEVANCE:** building trust btw. government and citizen, faster and more secure services, low-cost compared to using human resources for authentication.


PHOTO
Austin Berner

# *Augmented reality, virtual reality, mixed reality*

**TREND:** Experienceing a blend of physical, digital, and artificial environments through stimuli provided by a computer (fig. 36)

**CONTEXT:** Virtual Showrooms, real estate walkthroughs, military training, healthcare.

Spacial kinetic typography by DIA:

https://www.instagram.com/p/BZMzNQ2FZyx/?hl=da

https://www.instagram.com/p/BZ2BY4OI6vz/

IKEA's Place app: https://www.youtube.com/watch?time_continue=9&v=r0ViFTEb8aQ

Input methods fx includes eye tracking, voice, recognition, hand gestures, finger bone tracking.

**NEEDS:** Immersive digital experiences, Fun

**RELEVANCE:** Information overlay, enhanced physical world with more immersive, experiences, transforming limites physical space to unlimited, virtual space

## Environmental and Economic

"Economic factors are characteristics that describe the economy [...] Ecological factors are characteristics of the physical environment" (Muilwijk, 2014)

# *Circular economy*

**TREND:** Using environmental friendly energy sources. (fig. 37) "A circular economy is an alternative to a traditional linear economy (make, use, dispose) in which we keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life." (WRAP, 2019) Basically synonymous with recycling.

**CONTEXT:** Across all sectors. Sustainability, recycling, upcycling, renewable energy sources.

**NEEDS:** "Doing more with less", preserving environment for future generations, good consciousness, optimization

**RELEVANCE:** environmental impact of service delivery, reduce waste, drive greater resource productivity

## Doing more with less


PHOTO
Sergio Ruiz
Tetra Pak

# *Sharing economy*

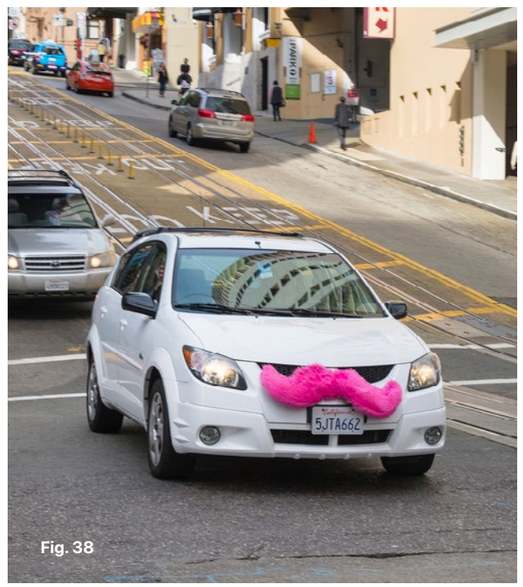
**TREND:** An economic system in which assets or services are shared between private individuals, either free or for a fee, typically by means of the Internet. (fig. 38)

**CONTEXT:** Mobility services, Accommodation sharing, Gig labor, Uber, Airbnb

**NEEDS:** Paying less to enjoy more, Increasing accessibility to self-employment, opportunities, More, business opportunities

**RELEVANCE:** capitalizing on underutilized assets using Internet platforms, maximizing social resources, Embeds a sense of trust in the community, Lower ownership, Easier access to capital

## Paying less to enjoy more



# Case studies

3.2

## 3.2.1

# GosUslugi

Russian e-service government system,  2008 - now

### Main functionalities
A citizen creates an account entering his documents data and receiving the password with physical letter.

The user can:
-get all the guidelines  about any document procedure, info about any government system
- apply, fill and send the required forms for many documents, get an appointment
- pay taxes and fees with discounts
- make an appointment to the doctor
- subscribe children to the kindergarden, school
- many other communications with the government are supported, even paying electricity bills or getting school children marks
- go to one of many of multifunctional and do the same offline
- an app is available, e-mail, push and sms notifications citizens of the European Union

### Technologies applied
Web, database, design and communication system, marketing, physical multifunctional centers (fig. 39)

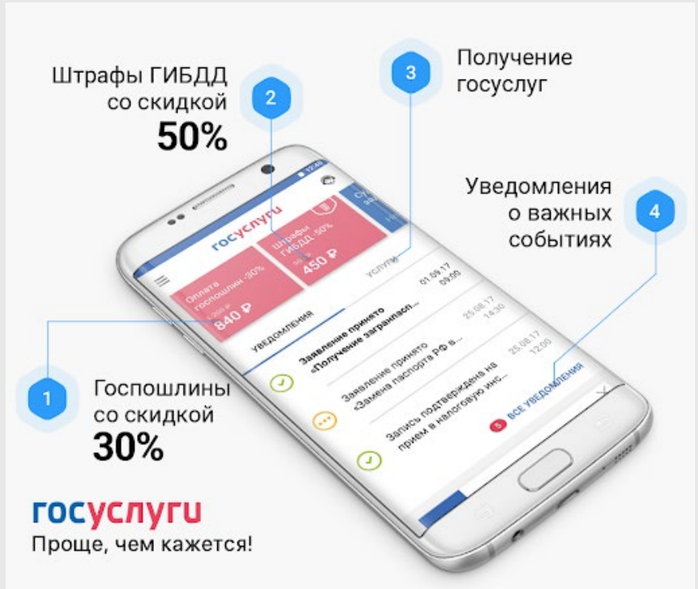
### Values
- Government builds a holistic communication  system in all the country online and offline

### Strengths
- All in one place, online and offline
- All government services are accessible and consistent

### Weaknesses
- Waiting time in offline offices sometimes can be still quite long in russian people minds (about an hour)
- Only for Russian speakers. Online system is only for Russian citizens
- For many services the personal visit is still required
- User is required to add all the documents by himself, this can be done automatically



**FIG. 39**
Goldensite KP.by




3.2.2

# Stadswinkel

Rotterdam government service

## Main functionalities

Online system to make appointments to get certain documents and certificates. With your DigiD you can login in the platform. After getting an appointment, you get welcomed by an employee at the municipality. He/she helps you to get the right ticket (with your appointment code). In the waiting room you can use computers to look for more informations and keep track when it is your turn on the screens provided. All the desks are positioned in a square setup, but there are also extra desks where it is possible to sit down with an employee.
- Providing information about any documents procedure
- Providing information about government system focussed on the commune of Rotterdam
- Make appointments to get certain documents and what is required to do before the appointment and view appointments that are already made
- Pay taxes and fees
- Manage your family situation, such as child daycare, new borns
- Changing your residence
- Providing forms and brochures about the government system

## Technologies applied

Web, database, physical offices in the city (fig. 40)

## Values

- Easy access to information for Rotterdam citizens
- Efficient way of working in the office when working with appointments

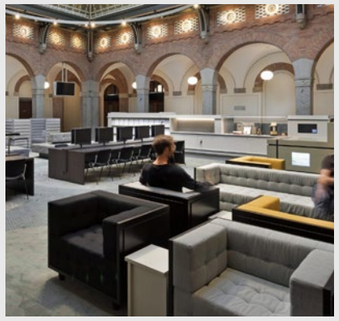
## Strengths

- Less waiting time in the office when making a appointment
- All information available in just a few clicks
- Welcoming environment
- Clear connection between online and offline environment
- Pleasant and comfortable environment
- Good accessibility

## Weaknesses

- No english version of online environment
- In every city in the Netherlands it works differently
- First entrance bit unclear, employee is needed to inform you about the ticket machine





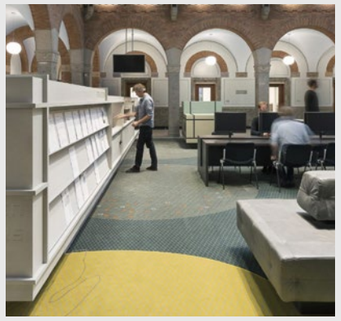


**FIG. 40**
DMDJ.nl

3.2.3

# DubaiNow

Dubai Smart Government and Emirates Identity Authority | 2015 - present

## Main functionalities

DubaiNow is the first unified Dubai government services smart app offering over 50 smart services from 22 government entities. The categories Utilities & Bills, Driving, Public Transport, General, Islam, Health, Residency Visas, Housing, Security & Justice, Education, Business & Employment. It has a built-in AI chatbot “Rashid”.

## Technologies applied

Web, database, mobile app, design, voice recognition, artificial intelligence, chatbot (fig. 41 )

## Values

- The attempt of integrating AI
- Mature network and integration of different services

## Strengths

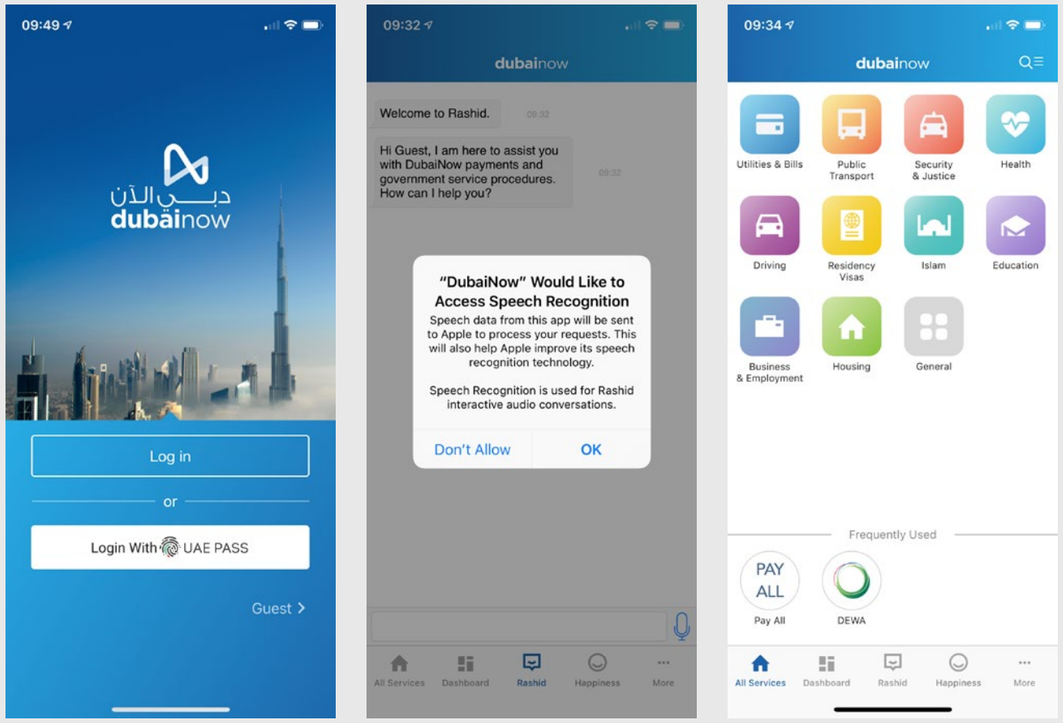
- Highly integrated with an extensive network of services
- Bilingual
- Easier and quicker navigate with the help of AI
- Customizable front page for quick access

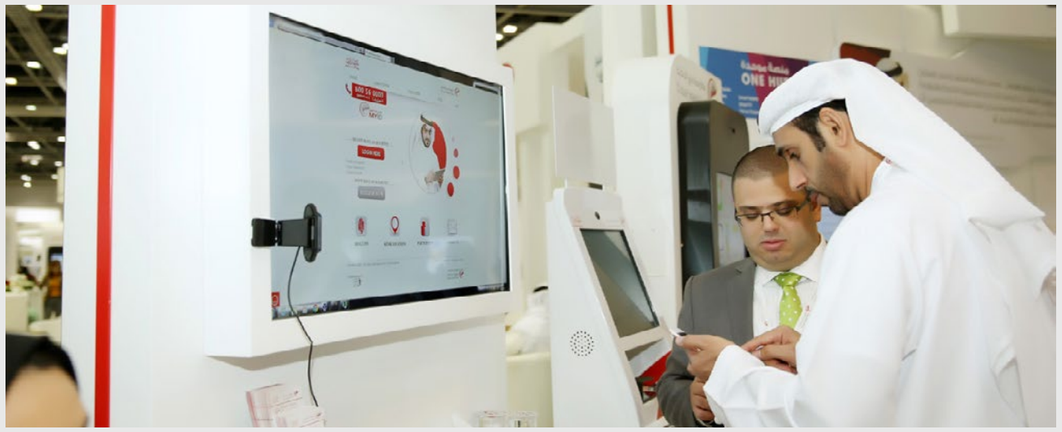
## Weaknesses

- AI Chatbot isn’t returning the ultimate answer as expected, only directing you to the necessary services
- Some of the services don’t have intuitive or indicative names, users have to read the description to see if it provides the specific service you are looking for.



**FIG. 41**
Dubainow.dubai.ae Menaherald.com



3.2.4

# Stadsloket

Amsterdam government service

## Main functionalities

When your driver's license is going to be expired, you get a letter with a notification about it and with instructions where and how to renewal the license. This letter is sent by mail and by e-mail (with a link to the online platform of the government). It also explain what to bring to the office. It is not possible to make an appointment, but when arriving at the office, a screen show what the average waiting time is. To get the service you have to take a ticket out of the electronic totem, when help is needed a security employee is available to help you. The ticket numbers are categorized in different services. The waiting area is provided with some benches.
After delivering all the required materials and paying for the new license, you have to come back after five working days to pick up your new license. During this pick-up all the data is checked again for security reasons.

## Technologies applied

Web, database, mail, physical offices in the city (fig. 42)

## Values

- Good expectation management
- Welcoming environment

## Strengths

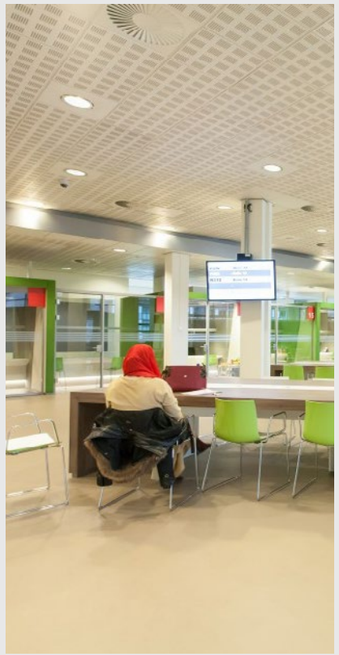
- Citizens know what to expect from the office
- Citizens know what is expected from themselves
- Clear procedure

## Weaknesses

- Not able to make an appointment for getting new drivers license, ID card or passport



**FIG. 42**
Stadsloket



3.2.5

# CLEAR

Private American Company
founded 2010

## Main functionalities
Clear is using biometric verification to automate everything from baggage check to the boarding process. Part of Clear's plan is to offer a "totally frictionless 'curb-to-gate' experiences for travelers." (cf. FastCo.) "With CLEAR, your eyes and fingertips get you through security faster at airports and stadiums."

- Go to a CLEAR pod
- Verify it's you (fingerprint, iris)
- You're in

## Technologies applied
Biometric verification tech, Iris-scanner, fingerprint-scanner
Touchscreen
(Industrial design of pods) (fig. 43)

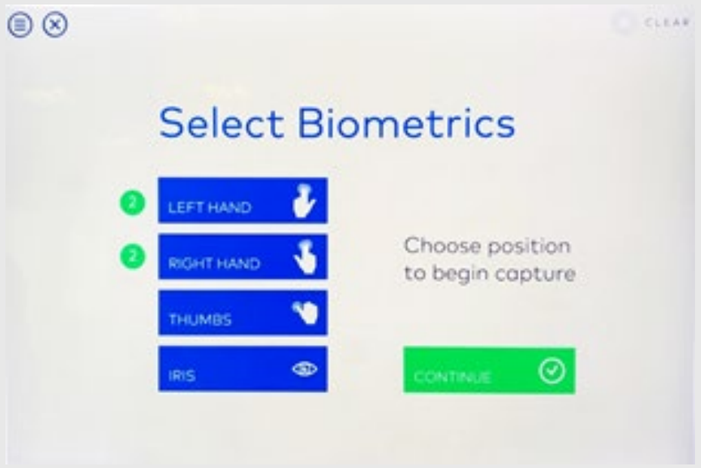
## Values
- Ensures security in public systems while still having open environments / spaces.
- Fast identification of many users

## Strengths
- No queues / no waiting time. Convenience
- Verified ID in seconds. Efficiency
- Secure private data. Trust
- Highly scalable
- Low-cost compared to HR

## Weaknesses
- Loss of human connection. Loss of authenticity
- Highly dependent on power-grid and complex technologies
- Reliant on physical presence. Sign up process



**FIG. 43**
CLEAR instagram CLEAR.com

# Bench-marking

3.3

With a particular focus on applied technologies this comparison highlights the strengths of the individual cases (fig. 44).

**FIG. 44**
Benchmarking case studies

| | CASE 01<br>GosUslugi | CASE 02<br>Municipality of Rotterdam | CASE 03<br>DubaiNow | CASE 04<br>Municipality of Amsterdam | CASE 05<br>CLEAR |
|---|---|---|---|---|---|
| **OBJECTIVES** | Government builds a holistic communication system in all the country offline and online on different platforms | Consistent online and offline system of register office. Offline space designed that way so it is quick and easy to get the service, comfortable to wait for visitors and work for employees | Unified Dubai government services smart app offering over 50 smart services from 22 government entities combining most of your daily government needs in Dubai | The municipality informs you through mails and e-mails if you have to do something(ex. renewing driver license) and how to do it. The whole process is guided and efficient to make it as pleasant as possible. | Scalable, fast, frictionless, queue-less, secure enter-procedure for air travellers and stadium-goers |
| **TECHNOLOGIES** | Web, database, IOS and Android app, cryptography, social media, big data, customer support service | Web, interior design, navigation system | Web, database, mobile app, voice recognition, artificial intelligence, chatbot, NFC | Web, database, mail, physical offices in the city | Touchscreens and biometric verification, technologies - iris-scanner and fingerprint-scanner - implemented in custom-made totems. |
| **USERS** | Russian citizens | Citizens of Rotterdam | Citizens of Dubai and visitors | Citizens of Amsterdam | Air travellers<br>Stadium-goers |
| **AESTHETICS / USABILITY** | Aesthetics: Holistic design consistent styleguide. Focus on tone-of-voice. Flat design<br>Usability: Easy to use on the go<br>Personal data is stored, so it is easy to fill the forms.<br>The interaction with all the government services can be done through one channel<br>Good notification system<br>Flexible navigation for different user | Aesthetics:<br>Welcoming environment.<br>Big and light open space.<br>Clear navigation system.<br>Modern materials.<br>Contemporary interior design.<br>Comfortable waiting area.<br>Good combination of historical and modern design elements<br>Usability: the website is simple and minimalistic. Easy to find information. Limited possibilities on the web. Good accesibilty. | Aesthetics: Simple and clear<br>Different services are grouped into icons, pastel colors<br>Usability: List if icons, easy to navigate. The interaction with all the government services can be done through one channel<br>Customizable main screen providing easy access and navigation for different users<br>Frequently used section based on user's usage.<br>Dashboard might come off as information overload. | Aesthetics:<br>Mail: Clear structure<br>website: Website style is dry but efficient. Word-style<br>Usability: Mail: Try to contact you in different ways (physical mail and e-mail). Contains all information you need. Website: Minimal style,hence no distractions. Information are well organized in branches for and easier browsing. | Usability: Smooth and simple. Very user friendly.<br>Aesthetics: Brand: Minimal, deep blue, white and grey, generic logo based on circles. Font combination of Post Grotesk and Lyon.<br>Totem: Aluminium, black plastic housing and stand,, rounded corners. Very simple interface based on wizard/ tunnel interaction, text supplemented by icons. |

# Part 2
## Conceptualization

The internal analysis revolved around acquiring knowledge and empirical data in relation to the Central Registrar's Office of Turin, by observing in-situ, reading articles and conducting interviews. The external analysis reflected on current trends in society, politics and technology with a focus on their relevance in relation to the meso-environment. Personas were developed in order to create an overview of the user requirements and subsequently the most extreme pain points were highlighted. Five case studies in direct or indirect relation to the public sector and service design was analyzed and compared in a benchmark analysis. Having a clear mind of the findings and results from the analysis, the project was ready to enter the next level where focus and creation played a leading role.

A clear envision of the ideal holistic service was formalized with multiple touchpoints and stakeholders being modified to a very large extend, one digital touchpoint was set to become the focus of the design to truly fulfill the selected personas needs. With a concrete foundation of understandings and clear goals, we conducted brainstorm and conceptualized the touchpoint focus whose details are elucidated in the following chapters.

# 04

# Ideation

## With a concrete base of internal and external analysis, the creative juices could finally start flowing.

In this chapter, the ideation phase follows a funnel model – go broad without limitations to create a wide selection of ideas, then go narrow for choosing the most potential and suitable touchpoint by mapping them onto a matrix to go deep for further development (fig 45).

**PHOTO**
Creative session,
25th march 2019

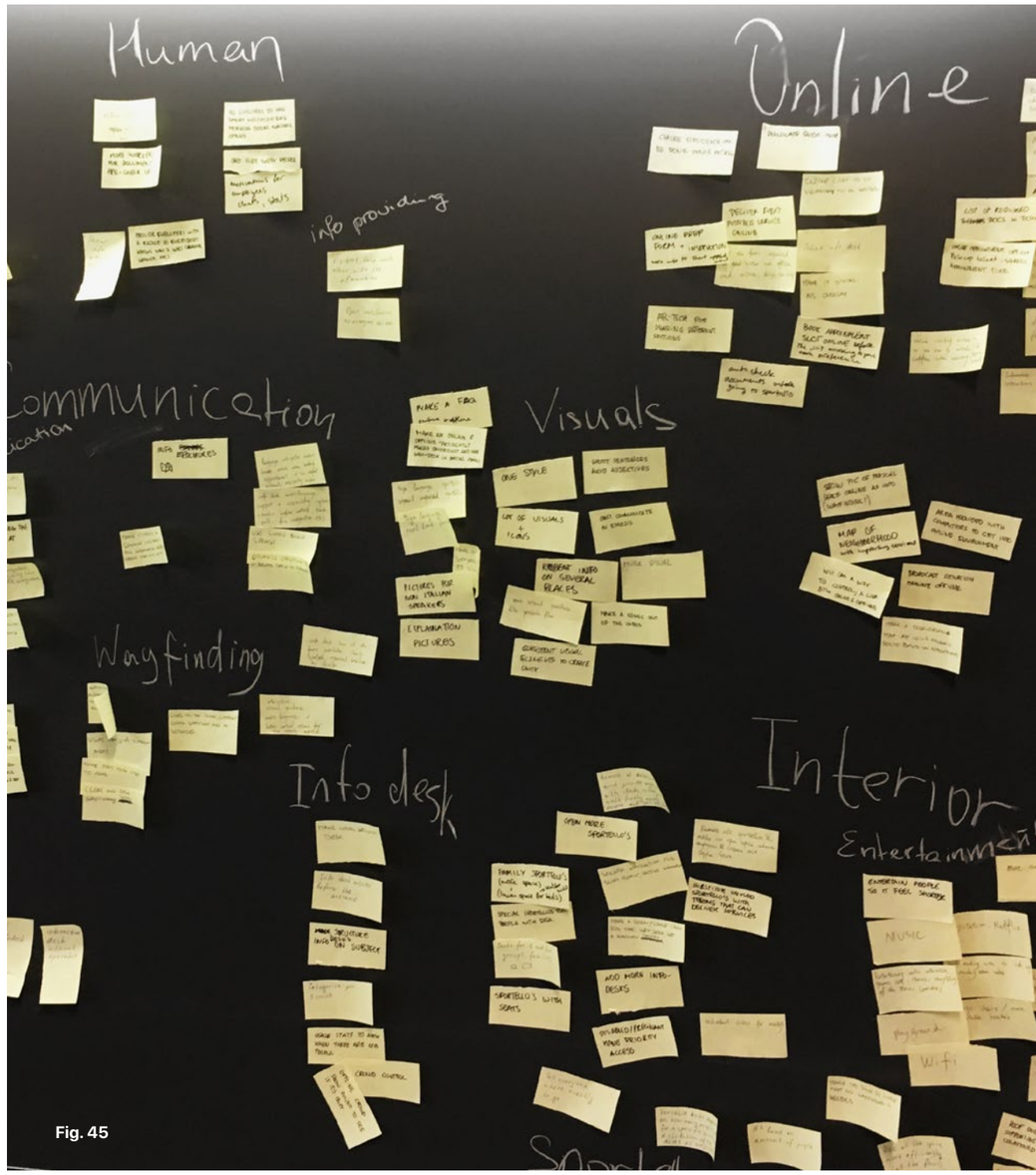



Fig. 45

# Creative session

4.1

Responding to the list of main problems, the list of 11 “HOW-TO” questions was formed as a guide for the creative session. “HOW-TO”s are problem statements written in the form of questions that support idea generation.

Each of the “HOW-TO” questions written in the center of a canvas, surrounded by post-its and each of them had a possible solution on it. We then grouped these post-its on the blackboard (see fig. 20), and we grouped them  according to potential value belonging and characteristics such as, online, wearable devices, way-finding, supporting systems, etc. then we reached 11 ideas. (See fig. 46, 47, 48, 49)

**1) How to create good communication between users and employees?**

**2) How to make the waiting time more comfortable?.**

**3) How to improve the wayfinding system?**

**4) How to design the physical space?**

**5) How to connect the online environment with the offline space?**

**6) How to improve the info-desk?**

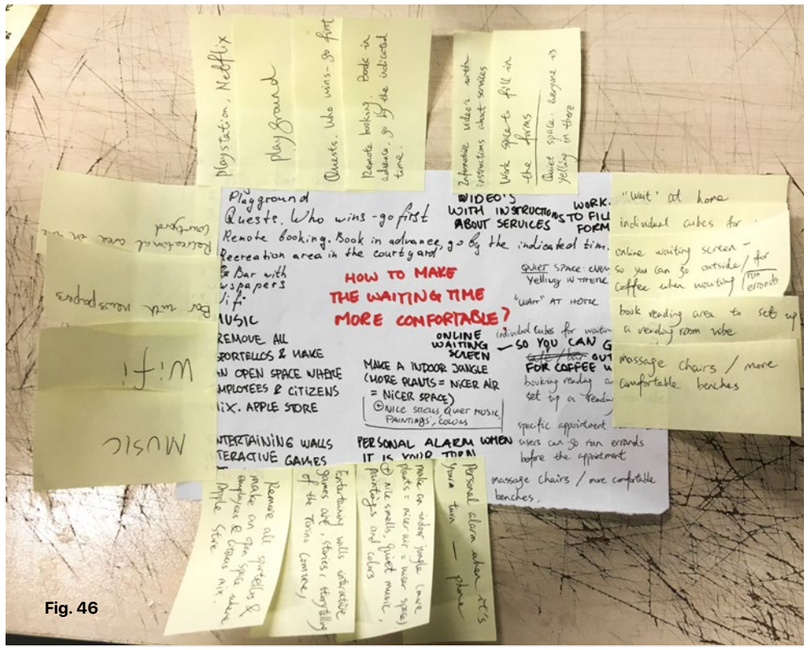
**7) How to improve accessibility?**

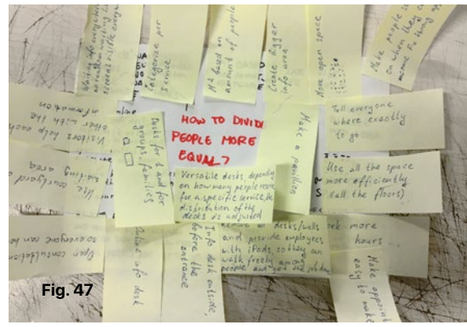
**8) How to give understandable information to users?**

**9) How to introduce supporting service?**

**10) How to shorten the waiting time?**

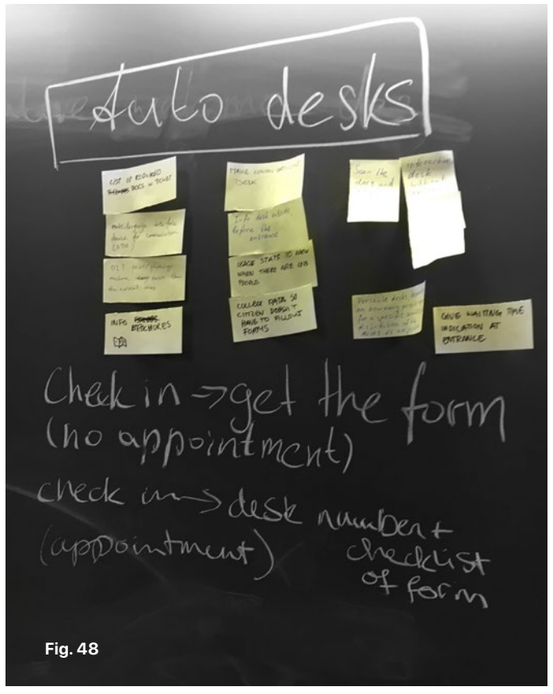
**11) How to distributed the people more evenly?**

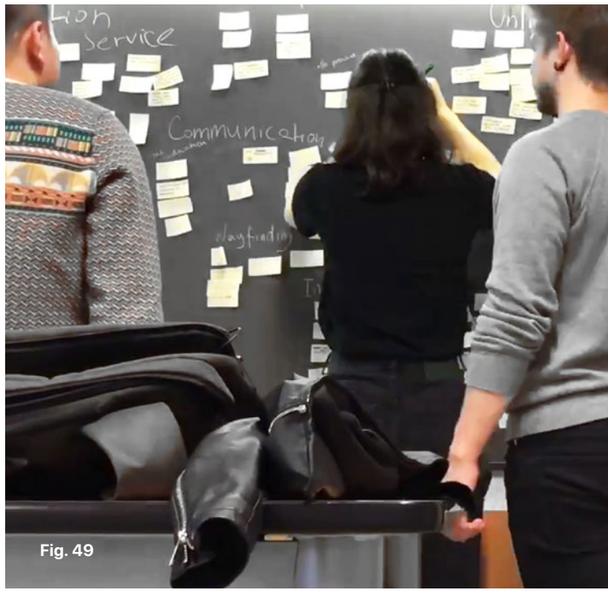



**PHOTOS**
Creative session,
25th march 2019

Shared brainstorming from key questions




Grouping and rearraing ideas in global themes and solutions

# Collection of ideas

4.2

The post-its containing our ideas were grouped to provide guidance and inspiration, from which 11 more detailed ideas derived.


Fig. 50

1

**Smart queueing system**

Providing multiple channels to be in a queue with functions such as multiple notifications, easy cancellations, waiting time estimation, etc. (fig. 50)


Fig. 51

2

**Gamification**

Gamified guidance with a cartoon character that communicates with user online and offline. The character upgrades and reacts on user actions to motivate users to perform essential actions for using the service better. (fig. 51)

3

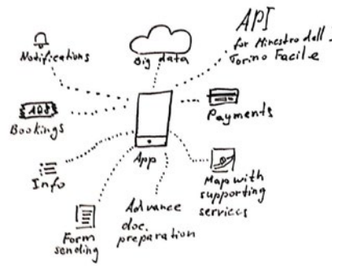



Fig. 52

**App**

A holistic platform that allows user to perform tasks remotely, makes the process easier and provides all the necessary information. (fig. 52)

Fig. 53

4

**Buddy on site**

A multifunctional portable device that user gets onsite. It works as a navigator, personal translator, personal notification, information provider, and user identificator to guide users throughout the entire visit. (fig. 53)

5

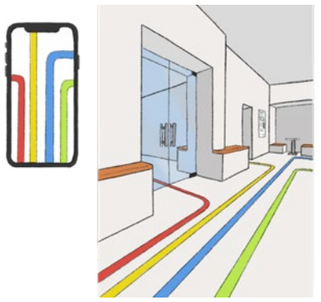


Fig. 54

**Consistent visual environment**

Unified offline and online visual identity. Color coding is used both for branding and navigation. All services have a particular color which alleviates the wayfinding. (fig. 54)

Fig. 55

6

**Interactive projection wall**

An interactive wall in the waiting area that provides visitors with necessary information and storytelling of the city history. It also provides entertainment for kids. (fig. 55)

7

**Employee-visitor mediator**

A device that supports the communication and increases the accessibility of the service. It translates real time and help decrease the paper usage. (fig. 56)

**Fig. 56**

**Digital 24/7 info-desk**

A device capable of handling simple procedures and is open 24/7. It reduces waiting time for the majority of visitors and provides user with necessary information. (fig. 57)

**Fig. 57**

8

9

**Multifunctional structure**

A place inside the building where people can make photocopies and photos. It provides flyers about service offered in the office. (fig. 58)

**Fig. 58**

**Employee ranking system**

A system gathering feedback from visitors and auto-analysing of the recorded video of the desks. The information is put together to find the problems in the working process and motivate the employees to deliver high quality service. (fig. 59)

10

**Fig. 59**

11


**Intelligent ID card**

An ID object (in the form of a digital and/or physical card) storing all the personal data. It creates a convenient and personalised service experience by having all the necessary information ready in the system. (fig. 60)

**Fig. 60**

Please see the appendix for more detailed idea cards.

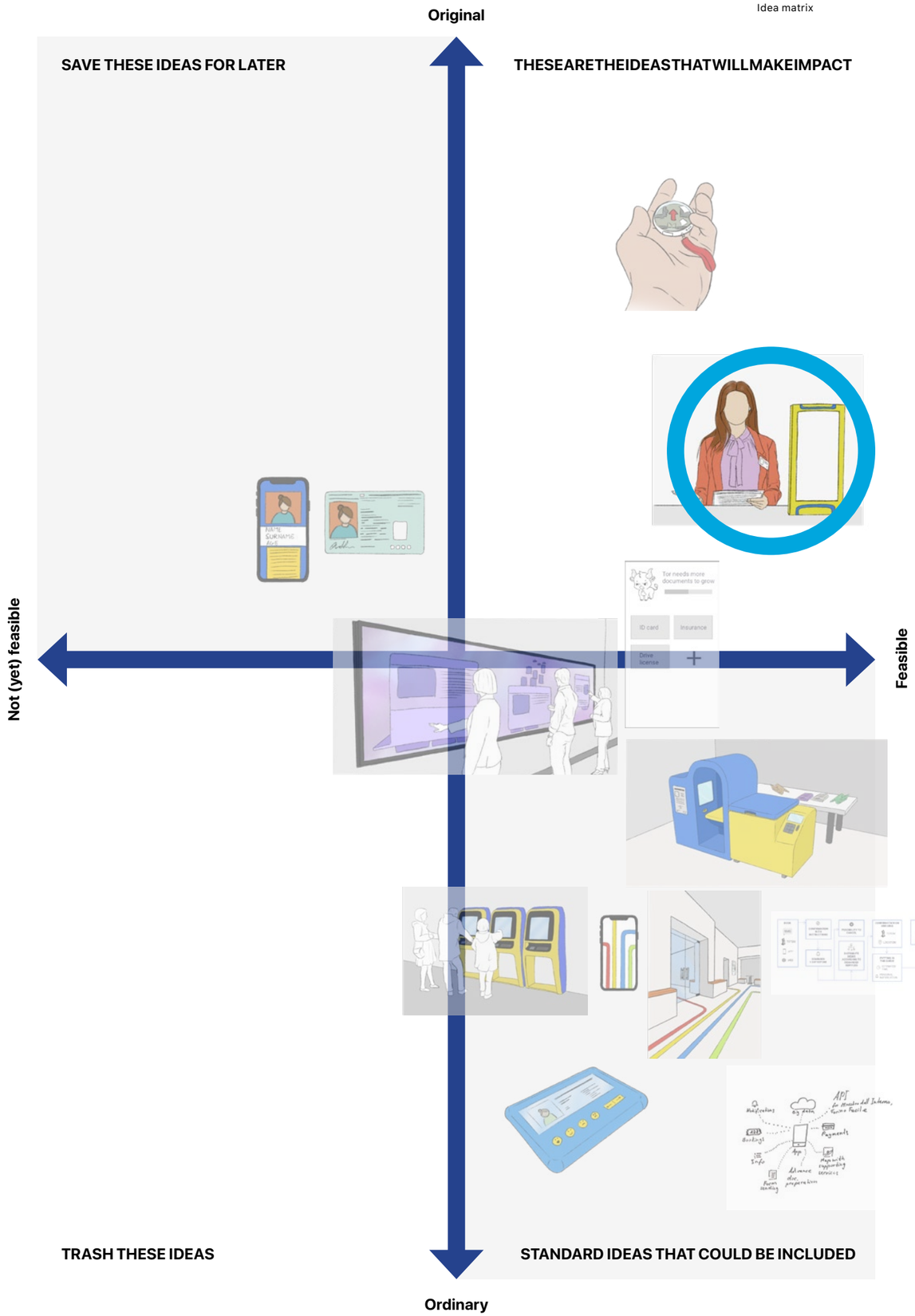
# Idea selection

4.3

A comparison matrix was adopted to compare the 11 ideas we came up with within the dimensions of feasibility and originality (fig. 61). After being mapped onto the matrix, three of the projects fell into the “Original - Feasible” quadrant **employee-visitor mediator**, buddy on site and Gamification.

These three were the ideas that would make an impact theoretically, and their scale were adequate regarding the project timeline and our capability with outstanding feasibility practically. After rounds of discussion and consulting with professors, we decided to focus on the employee-visitor mediator idea. Most of the major problems discovered during the analysis phase are caused by lack of communication from the Central registrar’s office to the visitors. When creating a mediating support between the visitor and the employee, this lack of communication is replaced by efficient communication with the help of translation and guidance. The user experience becomes more pleasant. It also provides an opportunity to make the service at the the Central Registrar’s Office of Turin.

**FIG. 61**
Idea matrix



05

# Concept

The ideas generated at the creative session was the starting point for a new customer journey. Preceding this, a future vision was developed.

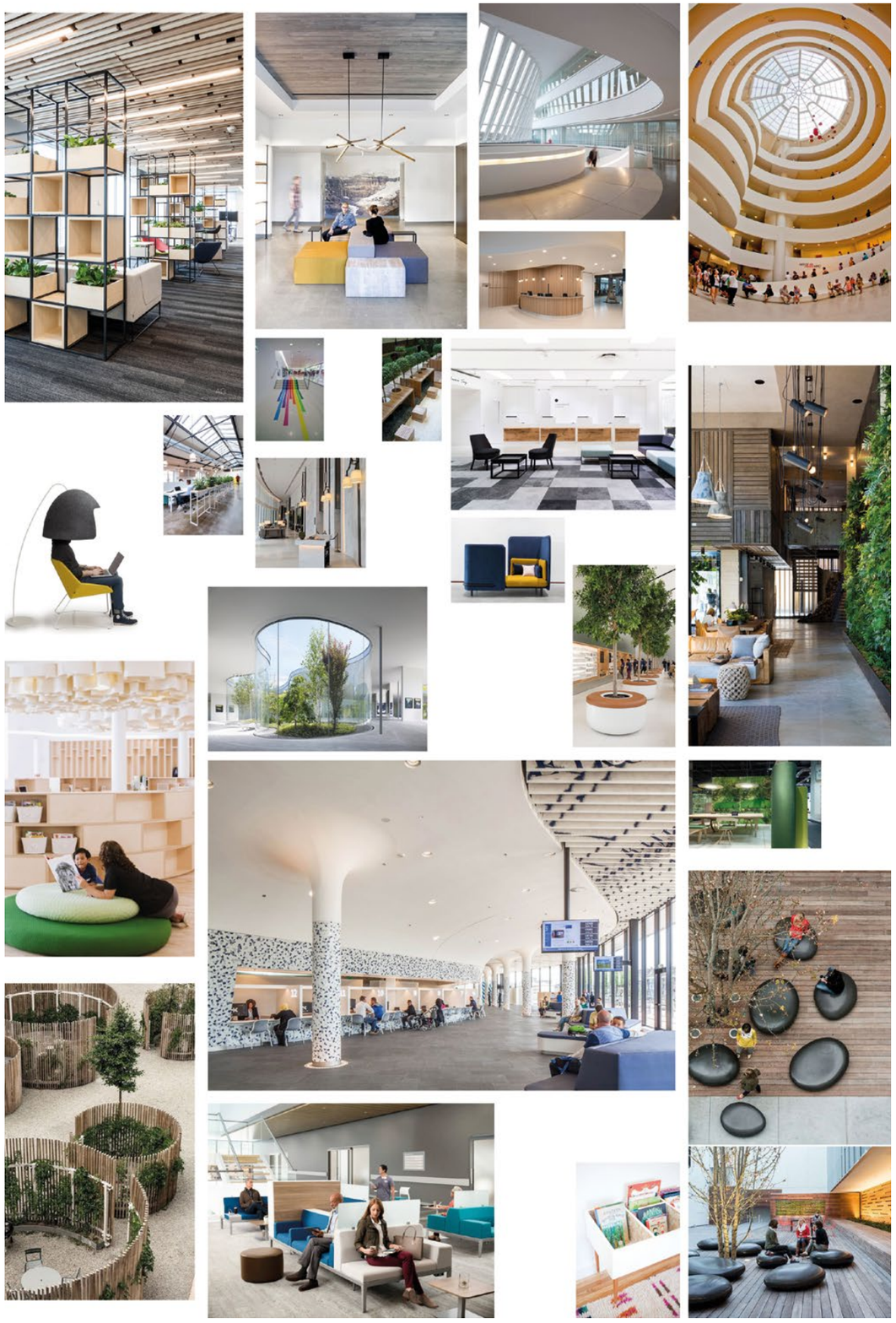
The vision outlines optimized solutions for each step, thus describing a smoother user journey. The vision was inspiration for a concept that potentially could be integrated in the future.

# Vision

5.1

To build a holistic and broad picture of the service we created the concept of the possible future service redesign (see the moodboard fig. 62). The customer journey of a new service starts with a little investment of creating an account on digital platform. This only needs to be done once, in the further cases user can skips this step. The looking for an information step is supported by a broad range of touchpoints: website, app, facebook page, voice and chat bots, outdoor 24/7 totem, info-desk. Making an appointment through the app goes smoothly, because users don't have to fill any information. Since all the data is already in the system, users just need to choose an convenient time slot. In the future concept service the experience onsite should be changed completely. The modifications in the interior, visual infrastructure, queueing system have to be made to support a good experience of the service. During the user research stage we gathered a lot of problems on the stage of interaction with the employee. These problems can be solved with the help of digital mediator, that supports the communication. For an outline of the customer journey for the future service see appendix 4.

**FIG. 62**
Future vision moodboard



# Persona focus

5.2

## Abeer, 24

End-user

FIG. 63

Most of the major problems that are discovered during the analysis phase are caused by lack of communication from the Central registrar's office to the visitors. One of the personas who had a big problem with this was Abeer. She is living in Turin, and her mother tongue is not Italian, but she can speak English. Her mother tongue or English is not supported in the registrar's office. This mismatch together with the lack of clear visual explanations creates a bad user experience for her. Besides Abeer (fig. 63), there are a lot of other visitors in the registrar's office with the same experience. Since globalization is an increasing trend,  this problem will become even larger in the foreseeable future.

To create a new, clear customer journey for Abeer, we decided to develop it around a common service that was inspected in the analysis phase, namely the procedure of renewing the electronic ID card. Aiming for an improved connection between online and offline environment, the procedure seemed ideal to develop, particularly because it includes an online step.

For this procedure and for the chosen persona the solution that can have the biggest impact on the user experience in the near future is the digital multifunctional mediator. When creating a mediating support between the visitor and the employee, the lack of communication becomes smaller and the user experience becomes more pleasant.



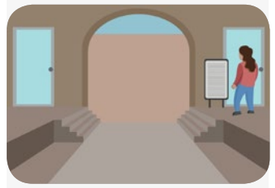
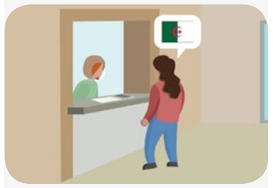
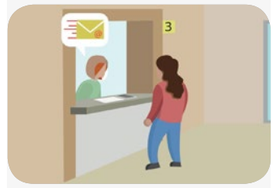
**PHOTO**
Matheus Ferrero

# New customer journey

5.3

To define the touchpoint that is going to be redesigned a customer journey is created which defines all the steps of the new process and all the new touchpoints (fig. 64).

**FIG. 64**
New user journey

| | Preparation → | | Entering → | | Getting service → | | | | After |
|---|---|---|---|---|---|---|---|---|---|
| KEY STEPS |  |  |  |  |  |  |  |  |  |
| | **Abeer looks for information on the website** | **Abeer makes an appointment** | **Abeer chooses entrance** | **Abeer goes to assigned desk and waits in front of the desk** | **Employee and Mediation Support welcome Abeer at the desk and Abeer confirms the type of procedure and her preferred language.** | **Abeer identifies herself and employee checks all information Abeer delivered online, before the appointment. All supported by the Mediation Support since Abeer cannot speak Italian very well.** | **Double-check of documents by employee and Abeer and last task for Abeer (signing), supported by the Mediation Support** | **Employee orders electronic ID card and sends tracking code to the emailaddress of Abeer.** | **Abeer receives ID card by mail** |
| NEEDS | • Abeer wants information about the procedure, the requirements and the preparation that is needed for the appointment<br><br>• Abeer wants customized information that fits her situation (based on age, nationality, single/ married, etc.)<br><br>• Abeer wants to see where she needs to go C(locations, opening hours, facilities) | • Abeer wants to make an appointment (date/time/location/ desk) based on the desired service.<br><br>• Abeer wants to receive information about procedure and the preparation (check-list, forms, direction tot locations)<br><br>• Abeer wants to prepare as good as possible (fill in required forms, collect all otther documents needed)<br><br>• Abeer wants to <note> her preferred language, since her Italian is not really advanced | • Abeer wants to follow the clear navigation in the building (desk number, floor, building section) | • Abeer wants a comfortable waiting space where she can check if she prepared everything well | • Abeer wants to understand the information despite of language barrier | • Abeer wants transparancy where she is in the process, during the procedure | • Abeer wants to be in control of the process | • Abeer wants to know at to expect after finish the procedure at the registrar's office | |
| TOUCHPOINTS | • Via website (Website of municipality of Torino)<br><br>• Via info-desk at the Central registrar's office | • Make appointment via website (Website of municipality of Torino forwards visitor to Website of the Minestro dell'Interno), receive all information via e-mail, fill in all forms via website)<br><br>• Make appointment via info-desk at the Central registrar's office | • Visual navigation system in building | • Waiting area with comfortable chairs, notification screens with show which ticket is at which locations and gives a alarm when it is the turn of the next in line | To support the communication between the employee and the visitor a screen is provided, this is part of the Mediation Support, together with supported microphones, speakers and headphones. The Mediation Support that translates all the information from the employee to the visitor and the other way around. (It is equipped with a microphone for the employee and a microphone for the visitor. If needed there is also headphones for the visitor) The Mediation Support shows the visitor where she is in the process. The Mediation Support support the procedure with explanatory visuals and a zoom-option when needed. The Mediation Support has an integrated payment function. | | | | |

# Chosen touchpoint

5.4

During the initial analysis it was discovered that most major problems to some extend relates to or directly was caused by lack of communication or miscommunication between the Central registrar's office and the visitors. The chosen touchpoint thus revolves around mediation between these two user groups. Developing a mediating support (see fig. 65) between visitor and employee, the miscommunication or lack of communication is significantly reduced and the user experience becomes more pleasant. The design of the mediator will especially take into consideration users whose mother tongue is not Italian.

**FIG. 65**
Concept Sketch

# Part 3
## Design

Having chosen to introduce a mediating device for translation and facilitating the overall processes for each visitor into the Central Registrar’s Office of Turin, the designing phase of this touchpoint was started. The phase started off by identifying the core functionalities, and three variations of concepts featuring different approaches of realizing these functionalities were created, followed by user testing with three paper prototypes. With the valuable insights collected, the design directions were much clearer. The first design with a interactive prototype was then created followed by another round of user testing and evaluation, where more detailed user interaction was focalized. After absorbing all the findings and transferring them into upgrades on the first design, the final design of the device was created, which is called AMICO.

06

# Concept Design

Before testing, the concept functionalities were specified. Three different concepts were created based on these functionalities. These concepts are tested with paper prototypes and the results of this test are used to create the first redesign.

# Concepts

6.1

The core functionalities are defined and converted into three different concepts.



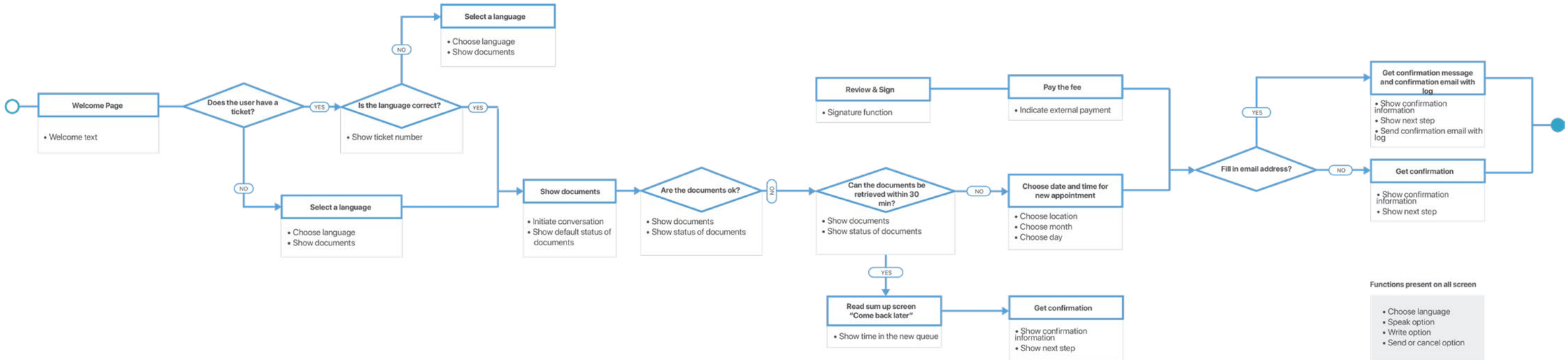


## 6.1.1

# Core functionalities of the touchpoints

The core functionalities of the concept are presented in fig. 24. To start the mediator there are two options. The first option is when the user has no appointment. He or she can activate the system by choosing their preferred language and the system will start translating. When the user has an appointment the employee will activate the system and it will be automatically in the preferred language of the user. When the employee started the correct procedure the user will go through the required steps, shown in fig. 24. When there is a problem within the procedure, the employee can activate the function of making a new appointment. In appendix 5 the product specifications are presented. The following concepts contain all these functionalities, but the structures of the concepts are different.

**FIG. 24**
Task Flow




# 6.1.2 Technology and Hardware

In order to get a better understanding of the current trend and cutting-edge technology regarding the core functionalities in our product, a series of benchmarking regarding translation technology, translator product, typing technology, and hardware were made.

After a thorough comparison and evaluation, we decided to adopt voice-to-voice translation as the product's main translation mode, which would enable the text-to-text translation mode as well. Thus, Google Translate would be an ideal platform for its versatility, speed, and accuracy combined with a microphone as the default voice input combined with voice recognition. However, a virtual keyboard could be an alternative way of input for accessibility reason. A speaker would function as the default sound output along with the text as the default visual output. Huawei MediaPad T3 10-inch was picked to be the hardware platform to run our application due to its affordance and well-rounded technology specifications including opensource Android operational system and versatility.





**FIG. 66**
Task flow 01

## 6.1.3

# Step-by-step

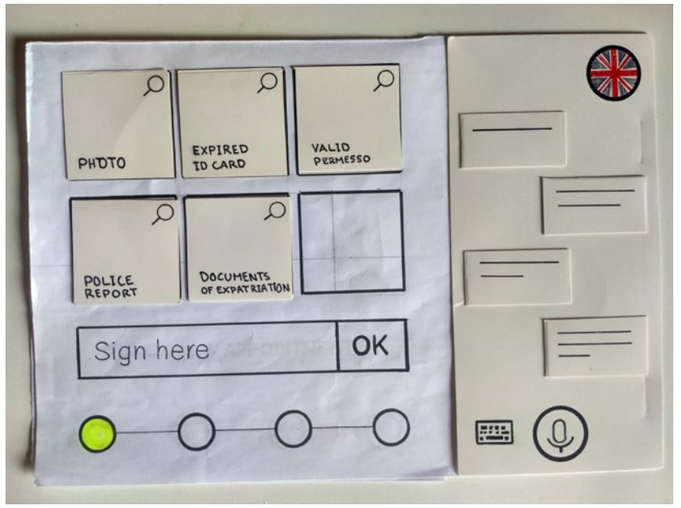
### Step-by-Step Concept

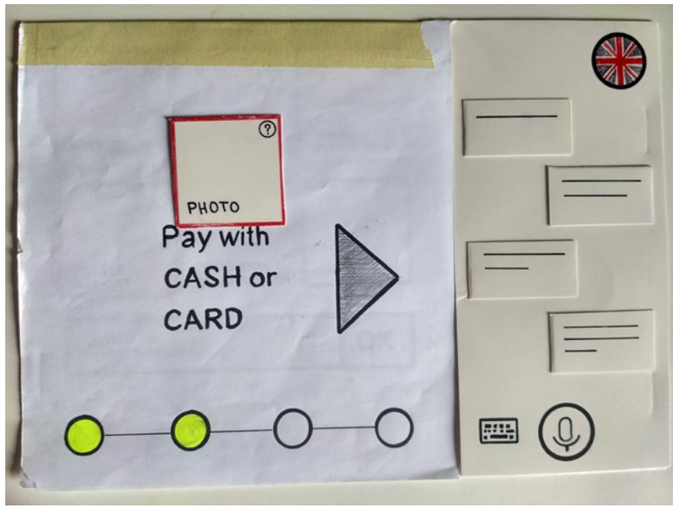
The concept comprises a step-by-step structure which is typical for booking systems, online shopping and generally moving through information one step at a time. An overview of all steps are visible at all times at the bottom of the interface, and the current step is highlighted. The users begin by choosing their preferred language from a list of the 10 most common languages (English, Chinese, Hindi, Spanish, French, German, Arabic, Russian, Bengali, Portuguese). The ticket-call, procedure and document review is organized in a single screen in which the user is also graphically informed about the document status (missing or OK) and can tap on the documents to zoom in. The user will sign and pay in separate steps and a conversation window is visible at all times in the right side of the interface. When the user wish to write using the digital keyboard, it will appear on the bottom of the screen in the screens total width. This step-by-step concept, combined with a chat includes: welcome page, ticket-call, procedure, document review, signature, payment, confirmation.

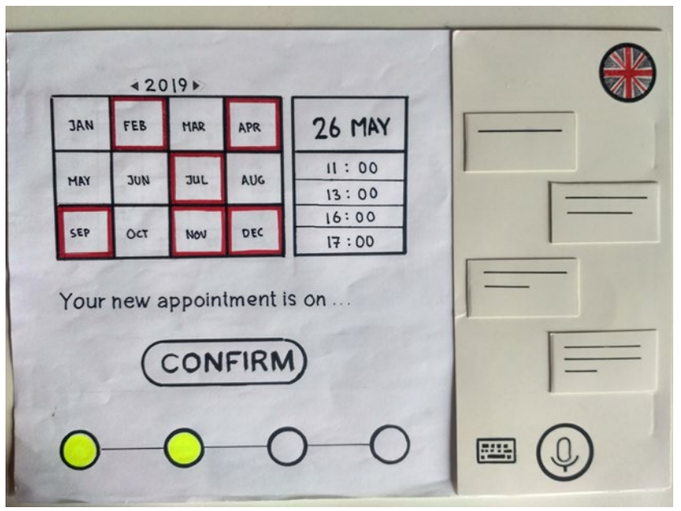




**FIG. 67**
Paper Prototype 01



## 6.1.4

# Tab concept

### Tab Concept

This concept is featuring a tab layout as the control panel located on the left side of the screen, with which the user can select languages, activate the translation panel, adjust accessibility settings such as color scheme, contrast, text size, and volume level. (fig. 68) The overall process is visible at all time on the main section of the screen next to the tab layout. However, only the current step has a more detailed list of requirements documents (including indications for “submitted” or “missing”) or other actions. For steps that have been done or future steps, the details are unexpanded. Translation panel is on the left, and the user can decide to open it or close it. Voice is the default input but by clicking the keyboard button next to the voice input button, the user can switch to a virtual keyboard on the bottom of the screen to type.

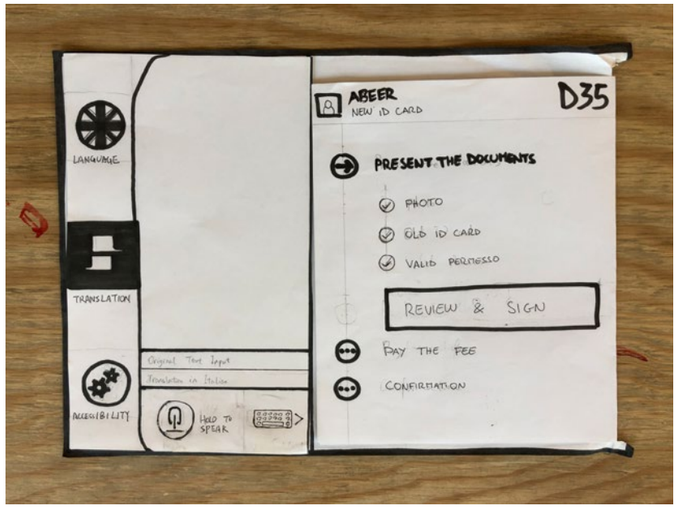




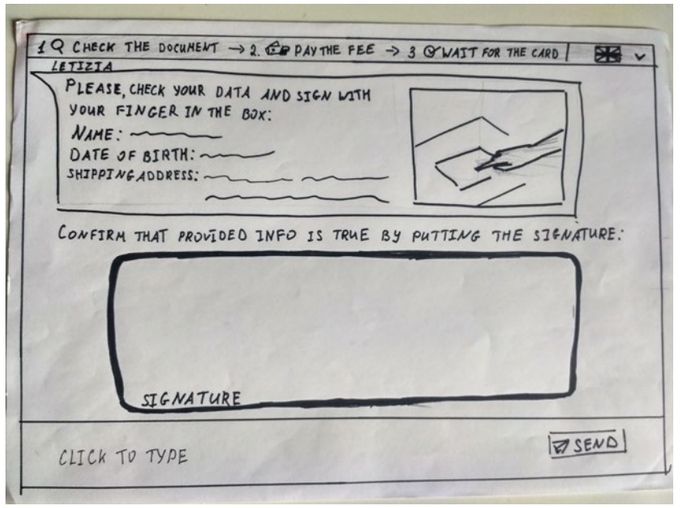

**FIG. 68**
Paper Prototype 02

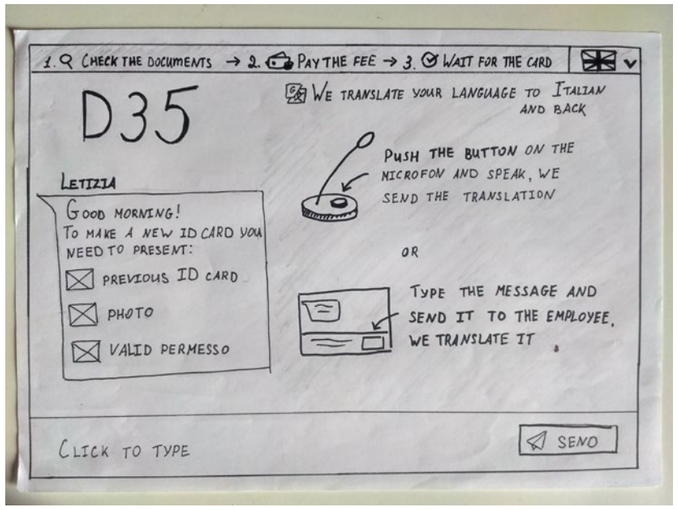
6.1.5

# Conversation concept

## Conversation Concept

The third concept is based on keeping the conversation between the employee and the visitor as the main guide. The visitor needs to press a button to speak and send the translated sentence. Built-in animation, graphical instructions, and interaction subsections are highly integrated within the conversation structure according to the process. One big area of speech bubbles on both sides and box areas of graphical instructions takes up the majority of the screen. Overall steps are visible at all time on the top left. Ticket calling and document submission procedure are showing up on the screen as the leading of the conversation and the required documents are represented by their images. The interaction flow is controlled by the employee and users are only reading to understand the process with visual support, and perform certain actions according to the graphical instructions.



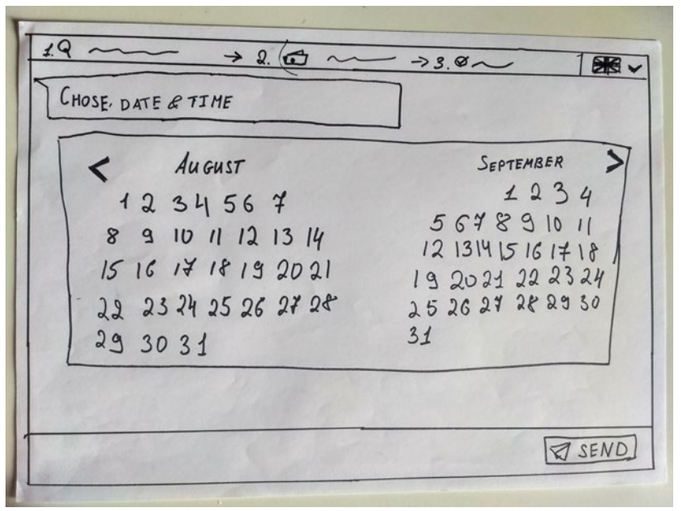




**FIG. 69**
Paper Prototype 03

# User test with paper prototypes

6.2

To see which concept was best received by the users, a paper prototype of each concept was tested (fig 70).

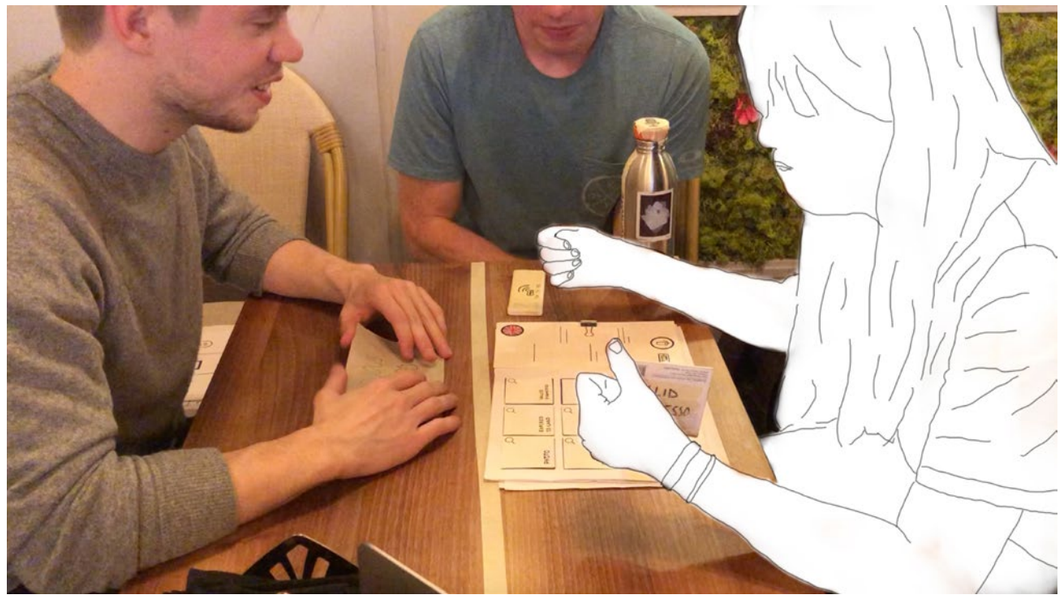


**FIG. 70**
User test setup

## 6.2.1

## Research goal

The goal of the test was to see which structure of each concept worked best for the user.

## 6.2.2

## Research method

Three paper prototypes were made and tested with five participants. The participants were asked to follow the procedure of renewing their ID card. For the test the translation function of the google translation function was used, or an actor played the translation machine. Also an actor was used as employee and this one also controlled the paper prototype for the user.

**FIG. 71**
User test results

## 6.2.3

# Results

All tests were video recorded and all problems based on observation are shown in fig. 71.

| | Step-by-Step Concept | Tab Concept | Conversation Concept |
|---|---|---|---|
| **Problems** | • The text “TALK TO ME” wasn’t clear to the participant<br>• Signature function was clear<br>• Payment method by card function was clear<br>• Confirmation buttons were not used.<br>• Confirmations buttons and others are not needed, since the employee can control this<br>• Participant focused most on the translator function | • Not clear that she is able to & where to change the language of the translator or open the chat box<br>• Uses translated text in the chatbox to reread the task she is given by the employee.<br>• The mediator is in this case used as a conversation facilitator, both employee and participant<br>• It is not clear how to activate the keyboard | • The text “TALK TO ME” wasn’t clear to the participant<br>• It is not clear pressing the button to activate recording button to record herself.<br>• Signature function was clear<br>• Used a imaginary pencil to sign<br>• Payment method by card function was clear<br>• Participants did not understand what a log is. When employee explain what the log was the participant answered by voice instead of using the buttons on the screen |

## 6.2.4

# Conclusions

Since the interaction and the conversation between the employee and visitor is most important, the main function of the mediator is translating and providing textual back-up for this translation. This is why the first design is based on the Conversation Concept.

Some problems occurred in all concept this is why the instruction text of language page should be changed (this page is only shown when visitor has no appointment). Also the explanation of the purpose of the email address should be more clear, this will be done in the first design.

07

# First Design

Having absorbed the insights from the concept design and user testing with three paper prototypes, the project moved to the first design phase where digital prototyping tools, Figma and Principle, were used to create the digital prototype.

It was supported by more detailed technology, hardware, and carefully designed UI to better implement and convert the conversation concept into a functioning prototype.





## Physical Design

7.1

To use the mediating device the most optimal, also the physical environment of the procedure needed a new design. So the desks are changed and the optimal hardware and technology is chosen based on the benchmarking (see chapter 6.1.2).

## 7.1.1

# Hardware

The design of the physical space especially take into consideration the privacy and comfort of the visitor. Thus they include a semi-closed desk which implements soundproof panels, that, besides ensuring private conversation, also optimize the space for voice recognition technology. The design includes ideas for desks where you can both sit and stand.

Elo I-Series 2.0 for Android 15″ AiO Touchscreen was chosen as the touchscreen device. Its Android-based system allows to use standard solutions and the big screen makes it comfortable to read and write for the user. This screer will be used in portrait mode so the user is able to see most of the conversation as possible.





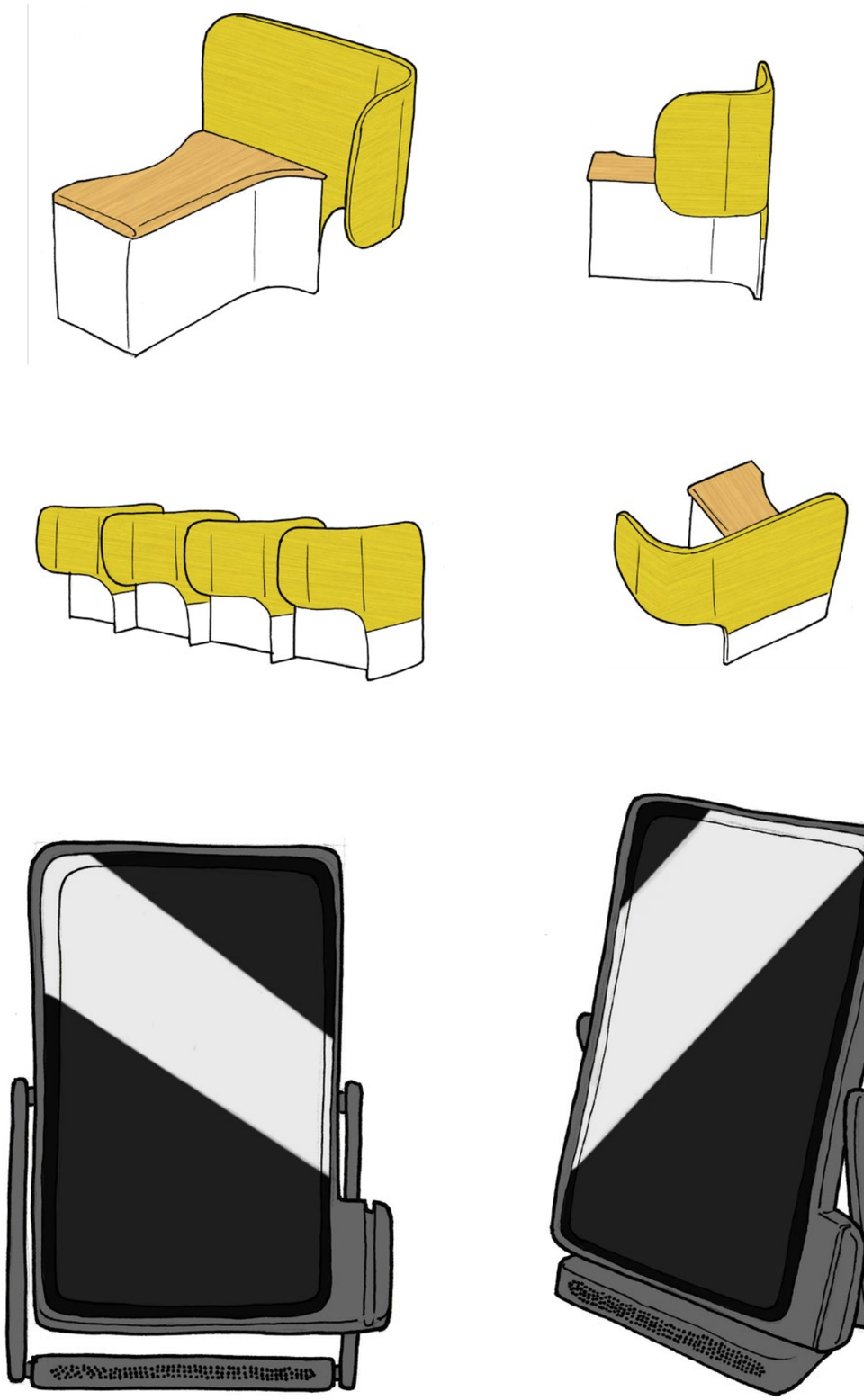
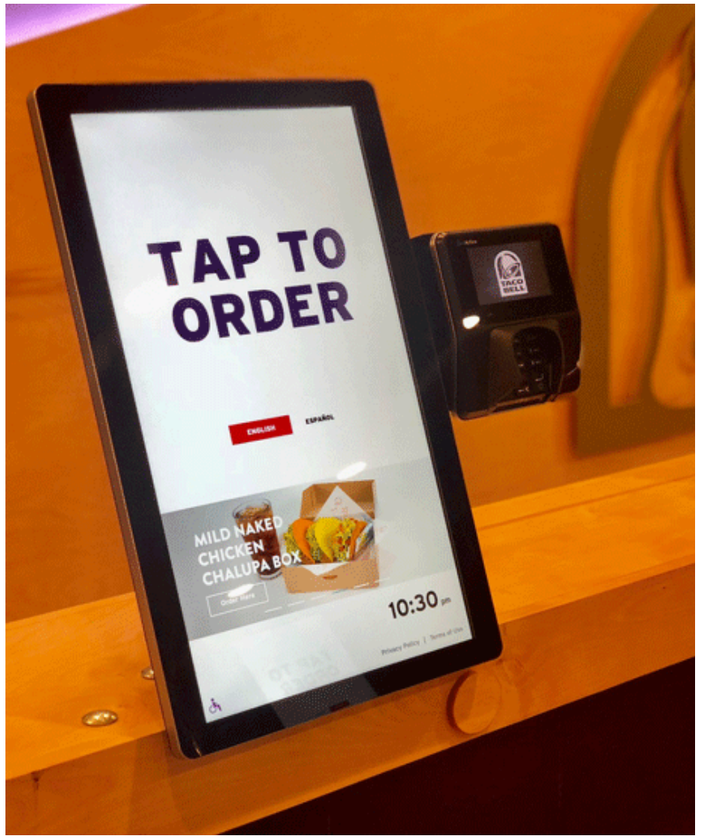


**FIG. 72**
Sketches for physical design

## 7.1.1

# Technology

Google Translate API is used for voice recognition and conversation-like real-time translation. The device is always listening and smartly parse the visitor's talking i.e. it is able to start picking up the sentence when the visitor starts talking and finishing the sentence when the visitor pauses. Then, the translation is performed. In an extremely short time, translated text and voice over will reach to the user side.



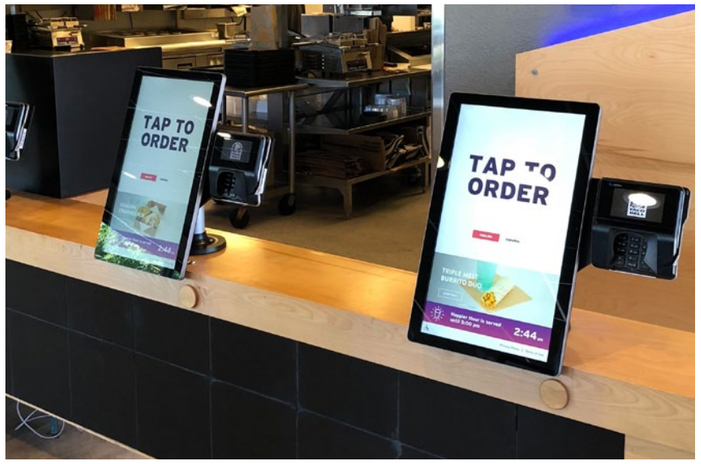



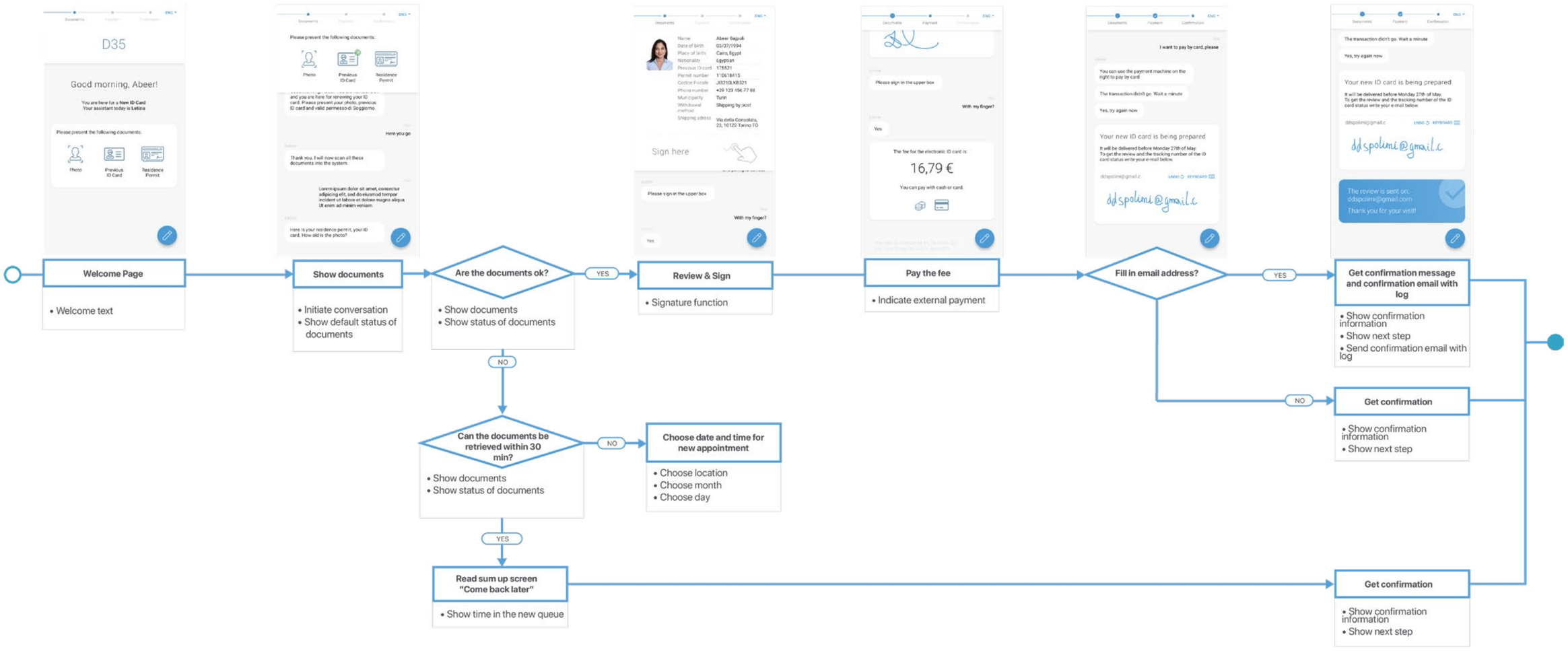

**FIG.73**
Hardware

**FIG. 74**
Taskflow first design

# Interactive Design

7.2

The interface is designed as a chat window, framing the conversation between employee and visitor in the preferred language of the visitor. All messages from the employee-instructions, interactive elements, and normal speech - are pushed in white “speech-bubbles” and requirements stick to the top of the screen until the visitor has fulfilled them. All steps of the process are shown in a bar at the top of the screen. Interactive elements are blue while the background is gray and the messages from the visitor are black. The overall UI is inspired by Google’s material design and thus the fonts in use are Roboto Regular, Medium, Bold and Noto Sans to support the Chinese and Japanese alphabet.



# 08

# User test

To better understand and discover potential problems and interaction flow between the users and our design, the prototype of the first design solution was tested.





## Research goal

8.1

The goal of the user test is to see how the product supports the interaction between the employee and the visitor during the procedure. Does the visitor understand the procedure? Does the visual illustration help the visitor fulfill the procedure? Do people use the written text during the procedure? And do the users have a pleasant experience of the procedure? Based on the results of the test improvements will be made on the design.

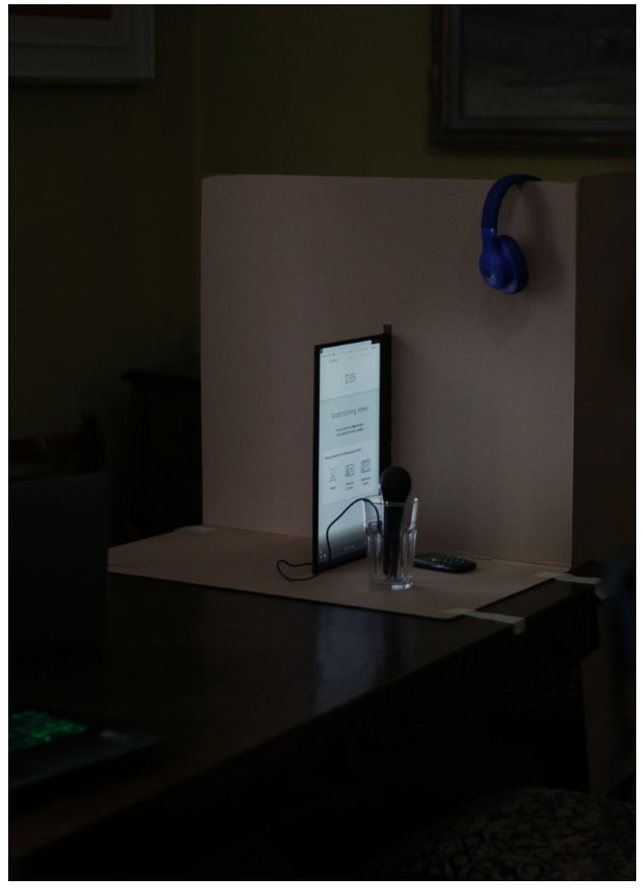


**FIG. 75**
User test setup

# Research method

8.2

For user testing, the first design was evaluated on usability and user experience, and an interactive prototype of the design was used (see fig. 76), simulating the procedure of renewing an ID card. The prototype is shown on a screen fig. 75. A detailed plan of the prototype is shown in fig. 74.

The participants were asked to follow the procedure of renewing their ID card. A ‘Wizard of Oz’ technique was used to simulate the actions of the employee and the participant in the prototype. The other materials (ID card, resident permit, photograph) were substituted, as were the microphone and headphone. The screen of the participant is mirrored by another screen which is controlled by one of the researchers. The live text translation was done by one of the researchers hidden behind a wall, so the participant only could hear the voice of the live translation. To avoid they could understand what the employee was saying, the employee spoke in Danish (see Appendix 10 for script). The rest of the test was in English, so the translation provided was also in English. Before starting the test, the participants were screened of their ability to speak English. See fig. 76.

**Time and location**

The test is conducted on Monday 20th of May, 2019 in a quiet living room, which was temporarily converted to a registrar’s office environment.

**Participants**

Three participants were invited to test. The sample of participants were men and women between 20 and 30 years old. They were all exchange students, so originally not from Italy.

**Session**

All participants filled in the consent form (appendix 11). The test started with an introduction, a pre-test interview, and a task instruction. After this, the test was conducted followed by a short questionnaire and a post-test interview. The facilitator script is shown in appendix 12.

**Roles**

For this test was a facilitator (moderating, interviewing), a data logger (managing cameras), a “Wizard of Oz” (manage prototype), an actor (playing employee) and an actor (playing translate function).





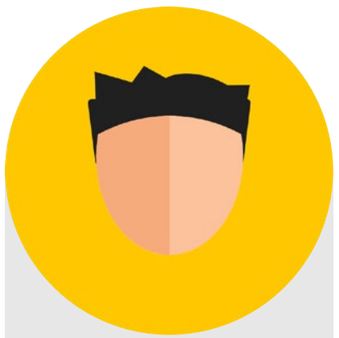
**FIG. 76**
User test setup

# Results

## Pre-test interview

To see if the participants were appropriate for the test, some introduction question were asked. See fig. 77 for the profiles of the three participants. All the participants fit the persona for which the design was made for.

**FIG. 35**
Profiles of the three participants



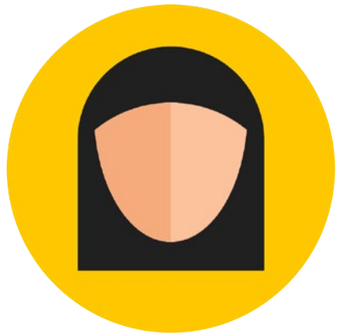
Occupation
**Student**

Age
**23**

Gender
**Man**

Nationality
**Spanish**

Speaks Spanish & English
Never visited Central Registrar's office of Turin
Got his ID renewed in Spain



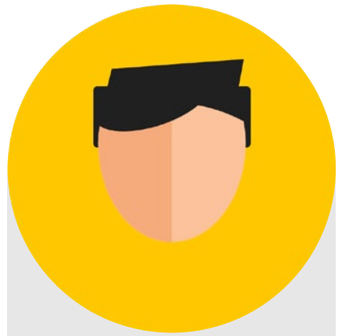
Occupation
**Student**

Age
**22**

Gender
**Woman**

Nationality
**Mexican**

Speaks Spanish, English & Italian
Never visited Central Registrar's office of Turin
Got her ID renewed in Mexico



Occupation
**Student**

Age
**25**

Gender
**Man**

Nationality
**Turkish**

Speaks Turkish, English & Italian
Never visited Central Registrar's office of Turin. Got his ID renewed in Turkey
Got his ID renewed in Turkey





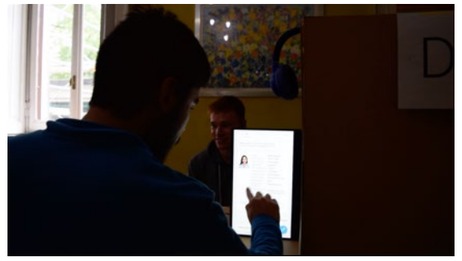
8.4

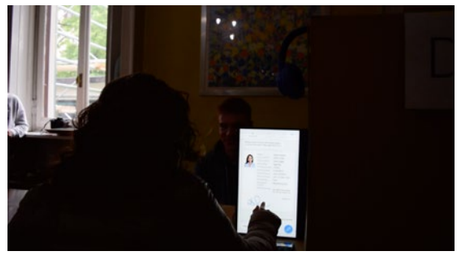
## Observations and post-test interview

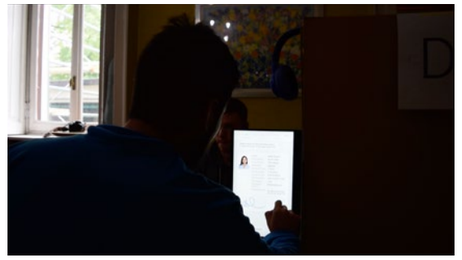
All the interactions with the prototype during the test were recorded by video with two cameras, one focussed on the behaviour of the participant and the other one focussed on the interaction with the interface. The interviews were recorded by video and audio. A list of problems was made when analysis the observations and interview answers. The list of problems is shown in fig. 78.

| Number | Problem | Severity* | Amount of participants | Quotes |
|---|---|---|---|---|
| 1 | Participants did not know what to expect in the beginning. | 4 | 2 out of 3 (P1, P3) | “He was speaking another language. I wasn’t ready for that” (P1) “The moment that you face the process when you don’t know how it is going to work I missed some signs that would lead me” (P3) |
| 2 | It was not fully clear where to sign. | 3 | 2 out of 3 (P1, P3) | “Should I sign here?” (P1) |
| 3 | Vertical screen was not comfortable to use when signing. | 3 | 2 out of 3 (P2, P3) | “Rotation of the screen, I needed to sign.” (P3) |
| 4 | Participant used ”cancel”-button to confirm signature. | 3 | 1 out of 3 (P3) | Participant tried to hand employee her payment card (P2); Participant picked up the payment machine to show employee she was paying (P2) |
| 5 | It was not clear where to pay with the payment card. | 2 | 1 out of 3 (P2) | The translation interrupted an interaction. Test person hesitated, listened and didnt input her mail. “It was a bit confusing, I think I didn’t need the voice, I didn’t need someone to read it for me” (P2) |
| 6 | The three different kind of input (voice of employee, voice of translation and written translation) created confusion for the participant. | 3 | 1 out of 3 (P2) | |
| 7 | It was not clear the email address could be added by hand. | 2 | 1 out of 3 (P3) | Participant tried to call the keyboard, did not understand that he can write by finger even though input box with the illustration was the same. (P3) |

*0 = I don’t agree that this is a usability problem at all
1 = Cosmetic problem only: need not be fixed unless extra time is available on project
2 = Minor usability problem: fixing this should be given low priority
3 = Major usability problem: important to fix, so should be given high priority
4 = Usability catastrophe: imperative to fix this before product can be released







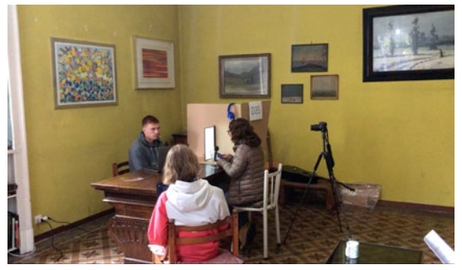


**FIG. 78**
User test results

## 8.4

# Conclusions

The design of the physical space especially take into consideration the privacy and comfort of the visitor. Thus they include a semi-closed desk which implements soundproof panels, that, besides ensuring private conversation, also optimize the space for voice recognition technology. The design includes ideas for desks where you can both sit and stand.

Elo I-Series 2.0 for Android 15″ AiO Touchscreen was chosen as the touchscreen device. Its Android-based system allows to use standard solutions and the big screen makes it comfortable to read and write for the user. This screen will be used in portrait mode so the user is able to see most of the conversation as possible.

# 09

# Final Design

The first design was polished based on the findings from the user testing session along with the development of complementary physical kiosk and hardware parts involved in order to optimize the effectiveness and performance of the design.





## Physical design 9.1

The final physical design centers on a desk where the visitor sit down and go through the procedures with the employee. The decision to create a design for sitting was mainly taking into consideration people in wheelchairs. The curved design of the soundproof panels and desk ensure safety but also make the touchpoint more welcoming. The stand for the mediator includes payment machine and a flexible ‘hinge’ that ensures a comfortable experience when the visitor is interacting.

## 9.1.1

# Hardware

The final physical design centers on a desk where the visitor sit down and go through the procedures with the employee. The decision to create a design for sitting was mainly taking into consideration people in wheelchairs. The curved design of the soundproof panels and desk ensure safety but also make the touchpoint more welcoming. The stand for the mediator includes payment machine and a flexible ‘hinge’ that ensures a comfortable experience when the visitor is interacting.

Based on the previous hardware choice, Elo I-Series 2.0 for Android 15″ AiO Touchscreen, an adjustable backing structure is added for the user to adjust for the most comfortable viewing angle. An adjustable unidirectional microphone is integrated with the backing structure to optimize the voice recognition with smart parsing, and the speaker is integrated into the bottom panel yet a pair of headphones is provided for those with needs. A card payment widget is attached to the side of the screen.

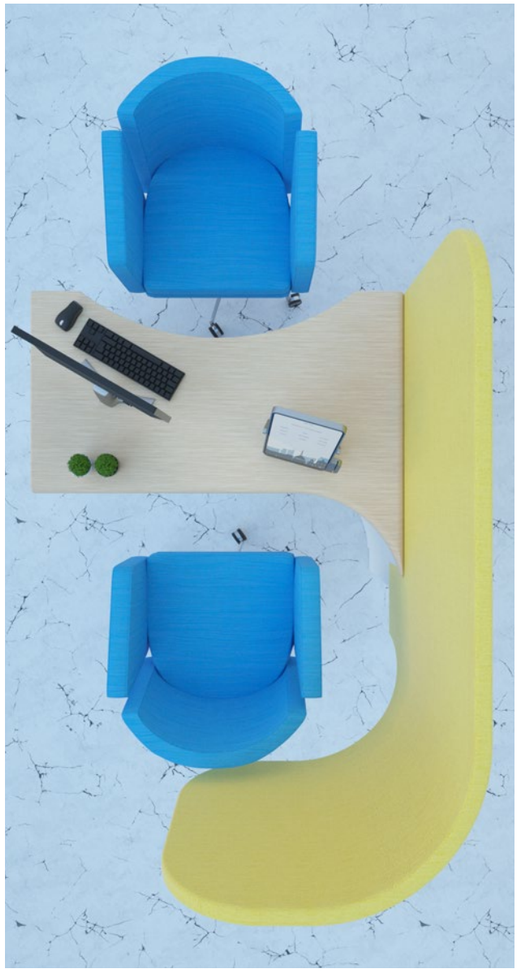


**FIG. 79**
Renders of design





## 9.1.2

# Technology

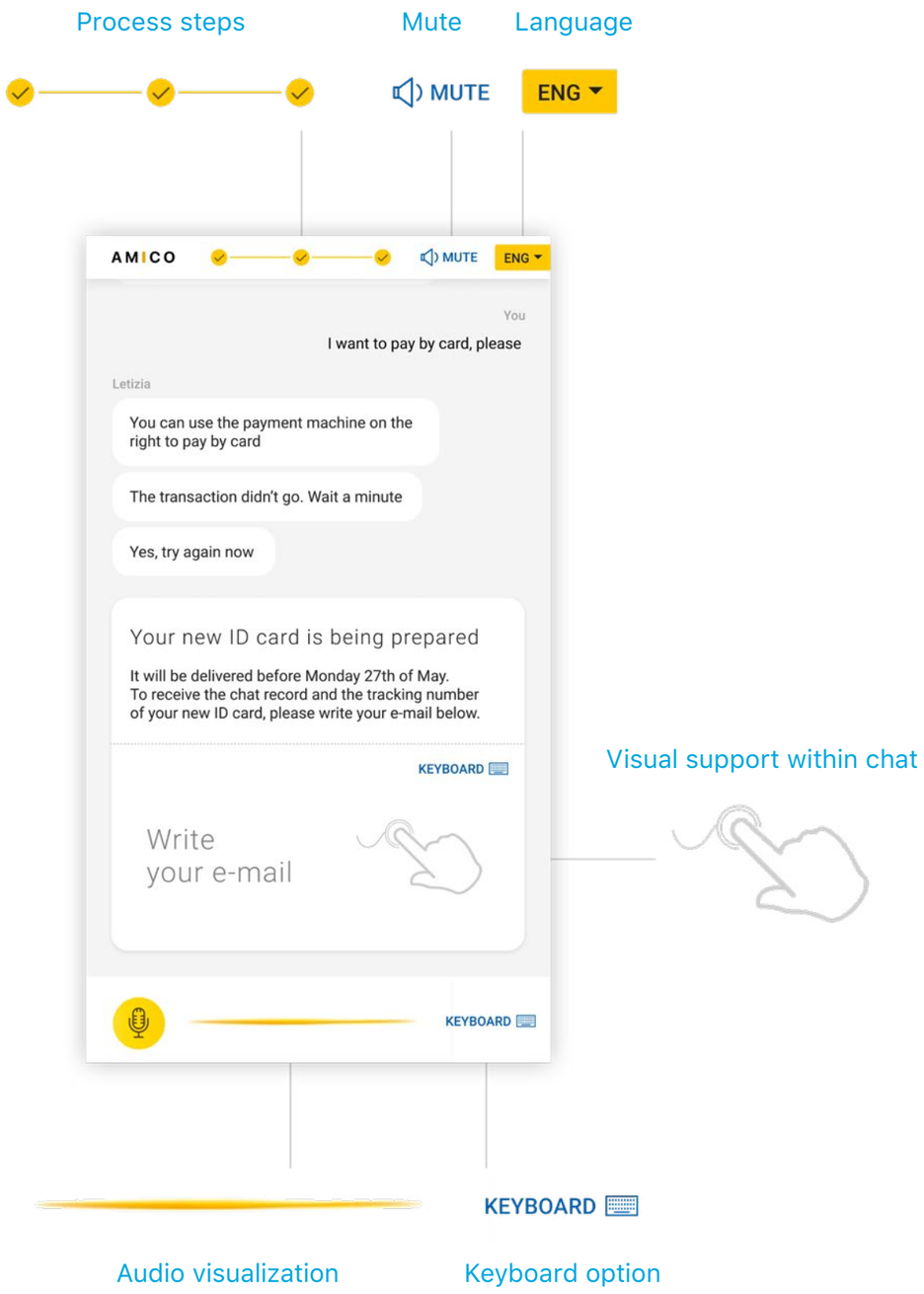
Inherited from the previous design, Google Translate API is used for voice recognition and conversation-like real-time translation with the device always listening and smart parsing. The possibility of muting the speaker is also added.

# Interactive Design

9.2

The final design is organized as a single interactive chat/conversation window showing the messages exchanged between employee and citizen in the preferred language of the citizen. For better communication and accessibility, the messages from the employee are supported by visuals, while the relatively big screen size (15″) also allows for legible font size. The conversation is initiated by the employee requesting the required documents of the citizen while the device is automatically recording, translating and showing the message as a simple speech bubble. The visitor is similarly allowed speech-to-text and keyboard-input but can also use a finger to write.

Heavily inspired by Google's material design, the UI of the chat is characterized by dark text (#262626) on a light background (#F4F4F4), interactive elements are highlighted in a blue hue already in use by the Office of Torino. Also the yellow color of the Office of Torino is used to highlight elements. To be able to support multiple languages (Latin, Arabic, Chinese, Cyrillic), Roboto Light, Medium and Regular were used in five different styles.



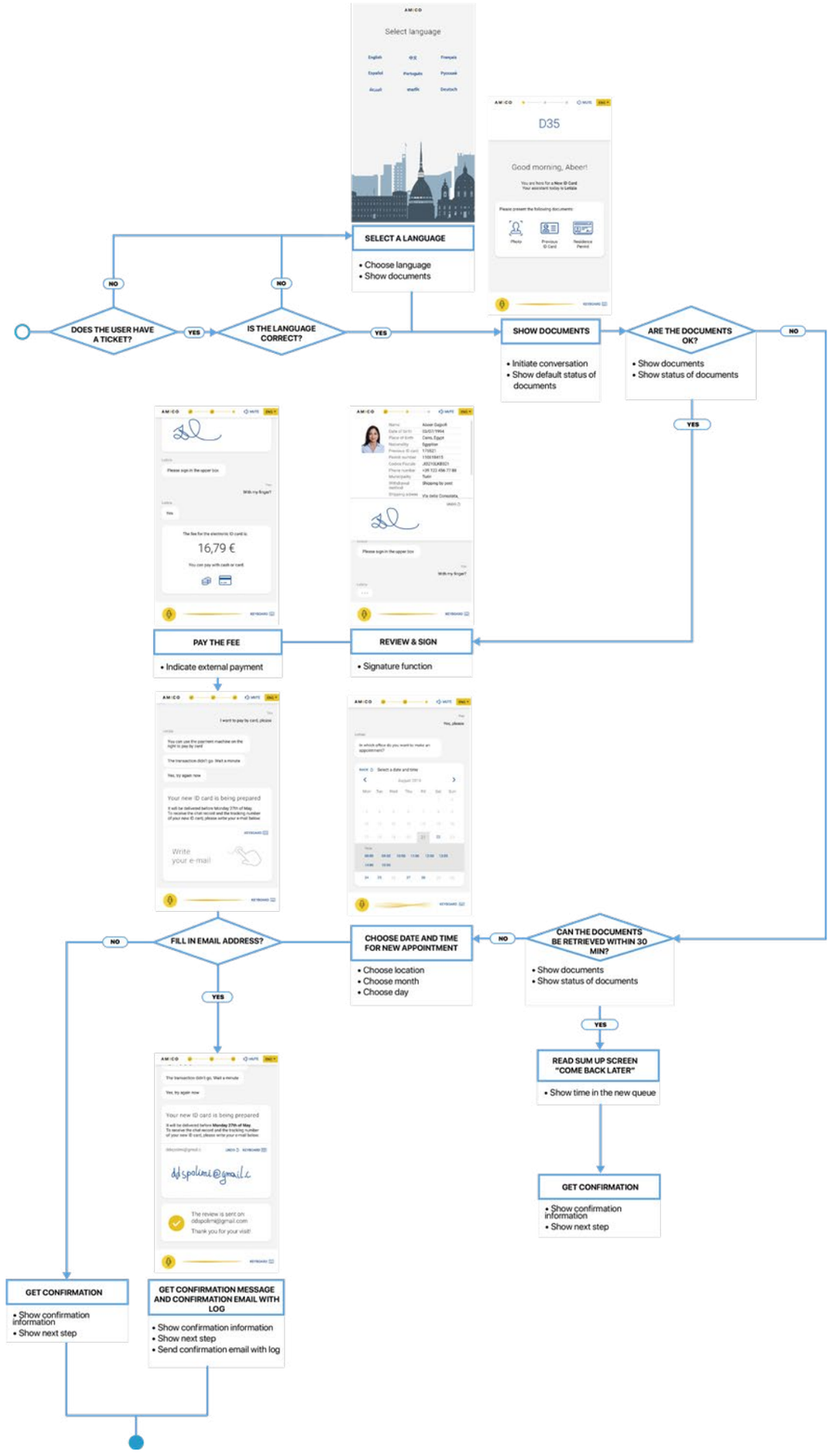




**FIG. 80**
Final task flow

# References


**Amsterdam**, StadsLoket, 2019, retrieved from: https://www.amsterdam.nl/contact/stadsloket-centrum/, visited 07.03.2019

**Bousquet**, Chris. "Boosting Engagement by Gamifying Government" in Gov Tech, http://www.govtech.com/civic/GT-September-2017-Boosting-Engagement-by-Gamifying-Government.html, visited 10.03.2019

**Buzzolan**, Arturo, "Torino, quattro ore per una carta d'identità: la mia odissea tra i dannati dell'Anagrafe" in R.it, 2018, the story of the experience at Anagrafe from mother with kids, retrieved from: https://torino.repubblica.it/cronaca/2018/07/22/news/torino_quattro_ore_per_una_carta_d_identita_odissea_tra_i_dannati_dell_anagrafe-202430224/?ref=search, visited 21.03.2019

**De** Munnik-deJong architecten, Stadswinkel Stadhuis Rotterdam genomineerd voor "Interieur van het jaar", 2018, retrieved from: https://www.dmdj.nl/portfolio/publiekslocatie-centrum-stadhuis-rotterdam/, visited 07.03.2019

**F**landers, Service Design Toolkit, 2019, retrieved from: https://servicedesigntoolkit.org/downloads.html, visited 07.04.2019

**Gosuslugi**, Russian e-government portal, 2019, retrieved from: https://gosuslugi.ru, visited 21.03.2019

**Granelli**, Emanuele, "Nasce Sanbot, il nuovo robot-assistente dell'Anagrafe di Torino" in Futura News, robot for Torino Anagrafe (announcement 1 year ago), 2018, retrieved from: https://www.futura.news/2018/02/08/nasce-sanbot-robot-semplifichera-la-nostra-esperienza-allanagrafe/, visited 21.03.2019

**ISS**, Instituttet for Fremtidsforskning, ISS 2020 Vision - Future of Public Sector Outsourcing, 2014: http://www.publications.issworld.com/ISS/External/ISS/ISSWhiteBookTheFutureofPublicSectorOutsourcing/?page=15#/, visited 10.03.2018

**Iansiti**, Marco; Lakhani, Karim R. (January 2017). "The Truth About Blockchain", . Harvard Business Review. Harvard University. https://hbr.org/2017/01/the-truth-about-blockchain, visited 10.03.2019

**Longhin**, Diego di, "Torino, anagrafe modello ipermercato: entro l'anno postazioni " fai da te" in R.it, 2018, plans to introduce self-service kiosk at Anagrafe, retrieved from: https://torino.repubblica.it/cronaca/2018/12/30/news/torino_anagrafe_modello_ipermercato_entro_l_anno_postazioni_fai_da_te_-215512540/, visited 21.03.2019

**Long**, Frank, Real or Imaginary: The effectiveness of using personas in Product Design, first published in the Irish Ergonomics Review, Proceedings of the IES Conference 2009, Dublin. ISSN 1649-2102 – © Copyright 2009, retrieved from: https://www.frontend.com/thinking/using-personas-in-product-design/, visited 17.03.2019

**Merriam**-Webster, "Social Media", 2019, retrieved from: https://www.merriam-webster.com/dictionary/social%20media, visited 17.03.2019

**Muilwijk**, Edwin, DEPEST Analysis, 2014, retrieved from: https://www.intemarketing.org/marketing-information/marketing-analysis/DEPEST-analysis, visited 17.03.2019

**NNGroup**, Christian Rohrer, When to Use Which User-Experience Research Methods, 2014, https://www.nngroup.com/articles/which-ux-research-methods/, visited 17.03.2019

**Ricca**, Jacopo, Caos all'anagrafe, l'assessora Pisano: "Mai più in coda per quattro ore, così cambieremo tutto" in R.it, Interview with the councilor about Anagrafe problems (lack of personal, electronic queues, plans to redesign the environment), 2018, retrieved from: https://torino.repubblica.it/cronaca/2018/07/23/news/caos_all_anagrafe_l_assessora_pisano_mai_piu_in_coda_4_ore_cosi_cambieremo_l_anagrafe_-202496041/?ref=search, visited 21.03.2019

**Ricca**, Jacopo, "Torino: tensioni all'Anagrafe, i dipendenti chiedono la scorta dei vigili urbani" in R.it, employees point of view, 2018, retrieved from: https://torino.repubblica.it/cronaca/2018/07/24/news/torino_tensioni_all_anagrafe_i_dipendenti_chiedono_la_scorta_dei_vigili_urbani-202522486/?ref=search, visited 21.03.2019

**R.it**, "Anagrafe di Torino, con lo smartphone la coda si farà da casa" in R.it, 2016, failed try to introduce a remote electronic queue, retrieved from: https://torino.repubblica.it/cronaca/2016/08/03/news/anagrafe_di_torino_con_lo_smartphone_la_coda_si_fara_da_casa-145316490/?ref=search, visited 21.03.2019

**Rossi**, Andrea, A Torino in fila dalle 4 del mattino "All'anagrafe si entra solo così" in La Stampa Italia, 2018, queues at Anagrafe form 4am at the morning 1 year ago, 2018, retrieved from: https://www.lastampa.it/2018/03/31/italia/a-torino-in-fila-dalle-del-mattino-allanagrafe-si-entra-solo-cos-H6LzAJm7IzYkQZCCTrPzON/pagina.html, visited 21.03.2019

**Rotterdam**, MijnLoket, 2019, retrieved from: www.rotterdam.nl, visited 07.03.2019

**Stadsloketten** West en Centrum te Amsterdam – renovatie, 2019, retrieved from: https://salverda.nl/projecten/stadsloketten-west-amsterdam-renovatie/, visited 07.03.2019

**Van** Vliet, V., DEPEST Analysis. 2010, retrieved from: https://www.toolshero.com/marketing/DEPEST-analysis/, visited 17.03.2019

**WRAP**, WRAP and the circular economy, 2019, retrieved from: http://www.wrap.org.uk/about-us/about/wrap-and-circular-economy, visited 10.03.2019

**Wray** et. al., User-centered, interaction design research approaches to inform the development of health risk behavior intervention technologies, retrieved from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6222087/, visited 17.03.2019


# Appendix 1: Interview transcript

Could you please briefly introduce yourself? What's your occupation? Why are you in Torino?

"I grew up here in Torino, but I am a Chinese passport holder"

Why did you come here today?

"I am here in this office because I recently just moved to a new place I need to change my residence address"

Since you are waiting to be called, how are you feeling?

"This is really slow..."

How long have you been waiting?

"I don't quite remember, but when I came here this morning they were calling number 70 or 80 something"

How did you get this number?

"I asked them for the number"

Did you come here with all the documents and asked the guy at the door for the number?

"Yes"

How did you know what kind of documents are required?

"I came here to ask and I also asked my sister and friends to see how they did it"

Did you check out their website?

"No"

How often do you come to this office?

"Not often"

Among the few times you have been here, what's the worst experience you have encountered?

"Ummm not really because I really don't come here often"

Mainly the waiting time or anything else?

"Yes"

So you are #127 and it is calling #113

“I came here at 10ish”

It has been two hours

“Haha yes, it’s quite slow”

If you have a magic power, what would you change in the register office first?

“If I could, I want to make sure all the sportellos are open and running, because the majority are closed and wasted while only a few people working. It would be faster”

Do you know if you could make photocopies of the documents you need for changing your address here?

“I made photocopies at a chinese-owned mobile store near a chinese store/ street(?) and there’s another place nearby but the ones owned by non chinese can be a little more expensive”

So you were aware they don’t do photocopy here?

“Yes, they don’t do photocopy here. They have a sign sticked somewhere”

On the TVs over there, the yellow number 1 means sportello 1 right? It seems all the people are waiting for sportello 1?

“Only Sportello 1 is open, and sportello 2 was open but it just got closed”

So only two were open earlier?

“yes”

I saw some people with numbers. They seemed that they had made reservations online

“Oh I think the biggest problem is that you have to go through Sportello 1 or 2 or 3 then go to another Sportello to make reservation for changing the address”

What do you mean?

“You have to get the documents checked first here then you can get a number for making a reservation to change the address, then the police will come to your house to make sure you are living there. Then they can decide if they wanna give you the ID card. This whole process is way too troublesome I think.”

So you have the ID card already, and you just need to change the address on it. But the police has to come to your place to check?

“Yes they come to my new house and check”

What do you mean by “you have to go through Sportello 1 or 2 or 3”?

“It means that you get this number, and then they will give you this form to fill out”

Then you go wait over there (Sportello further away) to make reservation for the police visit time?

“Yes”

So sportello 1 and 2 are only for checking the documents and also making sure your form is filled?

“Yes”

What if your form is not filled correctly?

“Not sure but I think they can help you correct it. I came here already so I just wanted to ask them to direct me to other sportello to make a reservation skipping the line. Otherwise I will have to wait for the new number to be called. It’s giving me a headache”

Did you come here to apply for your ID card?

“Yes”

Do you remember the experience?

“Haha no I was a kid back then”

How often do you have to get it replaced?

“10 years”

Do you think it is common for foreign residents to change the address?

“I think so, because it very unlikely you stay at the same place for a long time. At least you will have to come here to change the address a few times. It takes time. So if I could do it online it would be much more convenient.”

Do you know how soon the police can come check house?

“I am not sure but my sister says they will come to check it out”

## Story

Young italian man, came to help a friend who don’t speak italian. They made an online appointment, but the sportello that was in the appointment was closed. The add on the closed sportello said to go to sportello 4. After a queue they found out that in the sportello 4 they don’t know anything. They asked a totem guy and joined the queue to the sportello 1. Then they were redirected to another one, so they stand in a queue again. Then they found out that some photocopies were needed and they had do go outside to make it. The woman was kind enough to wait for them and not to give an another appointment. “Io parlo italiano e non ci capisco niente, per lui è impossibile”.

## Interview 2

Introduction

Woman, mother, doesn’t work

Purpose

Change the residence

Describe the experience

“Ci sono le ore di attesa, pochi sportelli aperti, anche personale non mi sembra simpatico, non mi sembra gentile”

Bad, long waiting, little opened desks, the staff is not nice, it is the third time she is there, because previous times she missed some documents, so she has to come again. She doesn’t know when will be her turn. The other problem that after 2 hours working they have a pause and close the sportelli.

How did you find out what documents are needed, did you searched online?

She didn’t check online, she came directly here and waited in the queue for the information

How often do you visit the anagrafe?

Not often “Essenziale, nessuno vuole venire qui, guisto”

What would you change?

More staff, increase the speed, make it accessible for disabled people and for children. There are a lot of children waiting here.

“Sono bambini che sono qua ore, ore, ore, che sono piccolissimi”

## Interview 3

Introduction

Young woman, studies art in college, non italian, but speaks fluently

Purpose

Change the residence

Describe the experience

She had some documents problem, but I didn’t understand what exactly.

How did you find out what documents are needed, did you searched online?

Her parents knew how to do that and told her.

How often do you visit the anagrafe?

It was her second time

What would you change?

More opened sportelli, more staff

## Interview 4

Introduction

Retired woman, non italian, speaks fluently. Came with her son.

Purpose

Change the residence

Describe the experience

?? Long, but she accepted it. A lot of unrelated staff. They first went to another anagrafe, they told her to go there. She is there for the first time.

How did you find out what documents are needed, did you searched online?

They told her in anagrafe and found out what is needed

How often do you visit the anagrafe?

-

What would you change?

She wouldn’t change anything.

## Interview 5

Introduction

Retired man, italian

Purpose

Change the residence. He wants to go abroad, but haven’t decided yet where to go. He  wants to change the residence from where he was before to “la casa comunale”

Describe the experience

First he has to make “l’assistenza sanitaria” and had to go to somewhere else (?) and then to anagrafe. He was there already for 3 hours and it was his 3rd attempt to get things done in anagrafe.  “Sono quasi 3 ore ed è la terza volta che vengo”. First time I went there I had to wait in a queue and there was no one who can make an appointment for me. Second time I went there, I had to come before 12. This time I came at 10 and I am still waiting (12.36). ,

How did you find out what documents are needed, did you searched online?

He went to the information desk to get the information and all the necessary forms

How often do you visit the anagrafe?

What would you change?

“From my point of view the sense is missing, there is no one who use the brain to make the things work well” “This is the bureaucracy”, “What is this all [troubles] for?”  (“Secondo me manca un buon senso” “Cosa serve tutto ciò?” “La burocracia piu o meno questo”)

## Interview 6

Introduction

Italian man, 46 years old, working

Purpose

Get marriage certificate to apply for the divorce

Describe the experience

I am waiting a little, about an hour, I guess there will be a couple of hours more. It is not difficult to make the certificate, but I have to wait

How did you find out what documents are needed, did you searched online?

I went to the information desk and asked.

How often do you visit the anagrafe?

Not often

What would you change?

Reduce the lunch pause. I guess they are slow also because of this. This is absurd. If I need the certificate, I must be able to print it at home. Period.

## Interview 7

Introduction

Italian woman, 48, non working

Purpose

Marriage certificate

Describe the experience

Negative. There are a lot of sportelli, but many of them are closed. So there is a long waiting time.

How did you find out what documents are needed, did you searched online?

I knew what to do, but I thought I can take a ticket by myself. Instead I had to wait in the queue at the information desk. And I am not sure my ticket is correct. I checked the information onlline, but I couldn't make the appointment online and had to go there

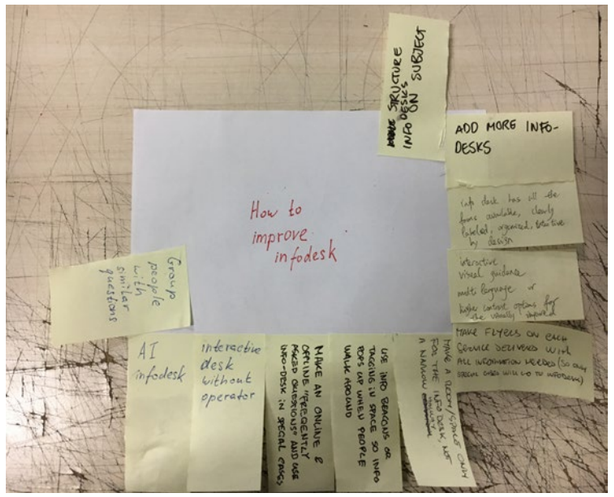
How often do you visit the anagrafe?

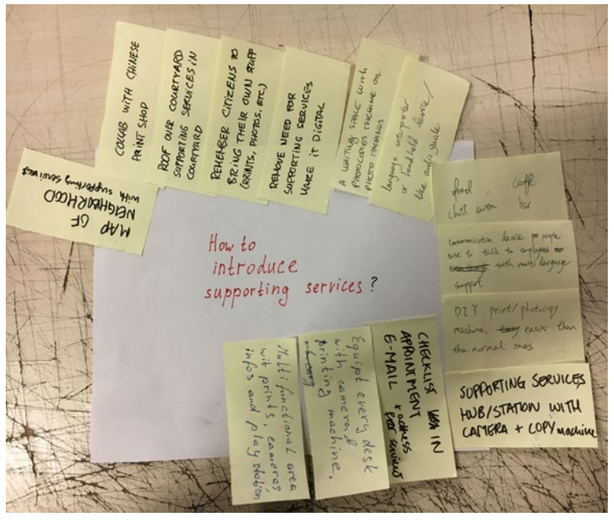
No. I live outside Torino, but the certificate I have to make it there

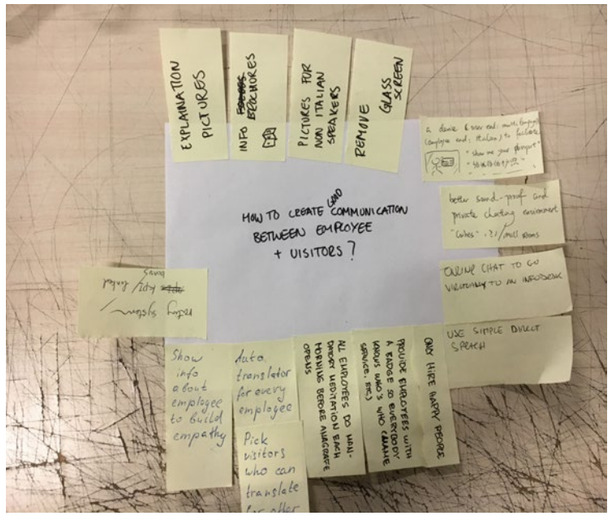
What would you change?

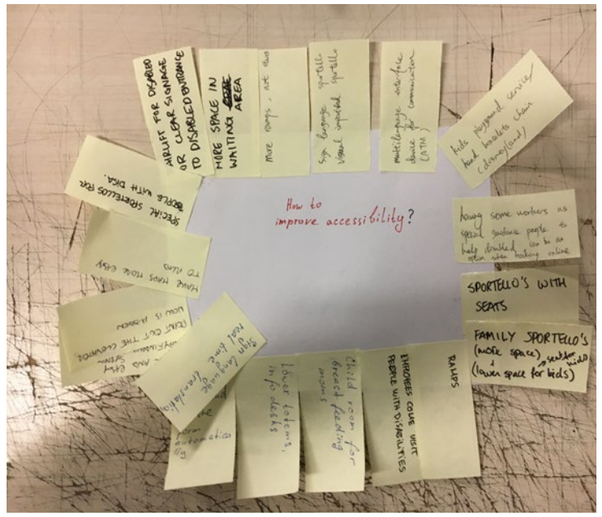
I would make all the desk open, independently lunch pause, coffee and smoking

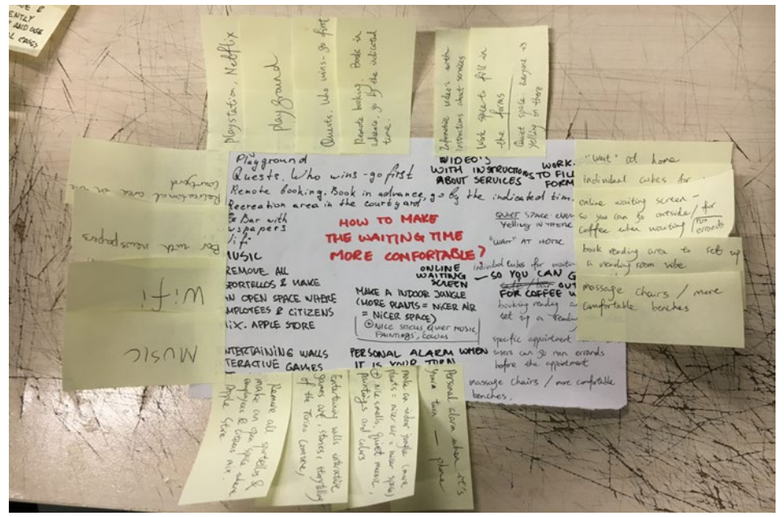
# Appendix 2: Creative Session

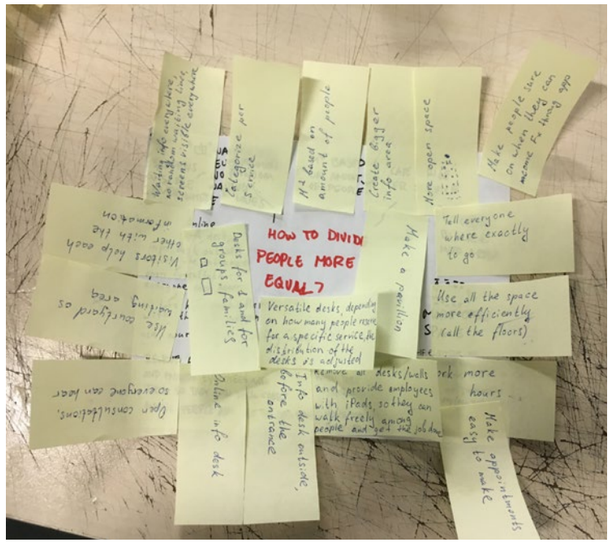


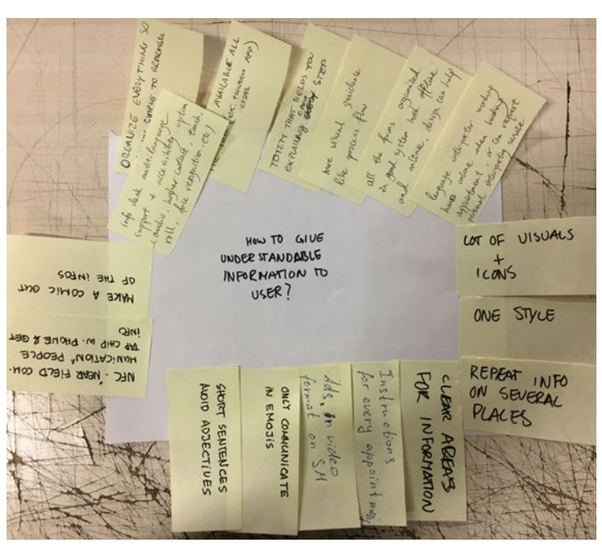



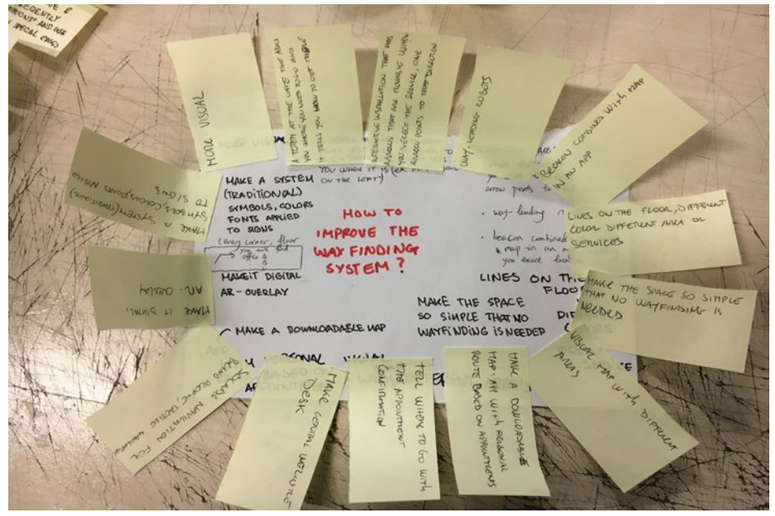

EXPLANATION PICTURES
INFO BROCHURES
PICTURES FOR NON ITALIAN SPEAKERS
REMOVE GLASS SCREEN
HOW TO CREATE GOOD COMMUNICATION BETWEEN EMPLOYEE + VISITORS?
better sound-proof and private chatting environment "cubes" -> 2/3 small rooms
CALL UP CHAT TO GO VOLUNTARILY TO AN INDUSTRIONE
USE SIMPLE DIRECT SPEACH
Show info about employees to build empathy
Auto translator for every employee
Pick visitors who can translate for caller
PROVIDE EMPLOYEES WITH A BUTTON TO BE RECORDED (VOICE, VIDEO, GESTURES ETC.)
ONLY HERE HAPPY PEOPLE

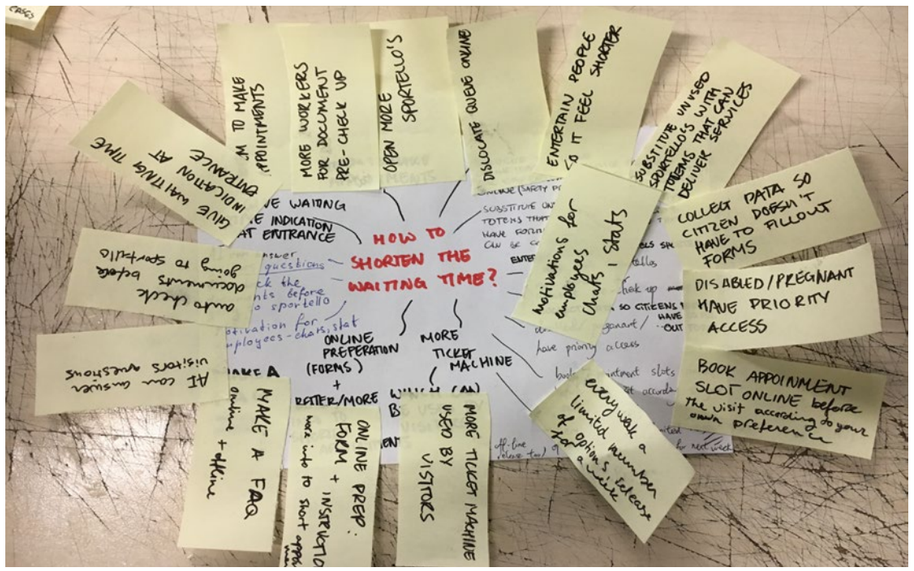

How to improve accessibility?
SPECIFIC SPORTELLOS FOR PEOPLE WITH DICE.
SPORTELLO'S WITH SEATS
FAMILY SPORTELLO'S (MORE SPACE) + (LOCKED SPACE FOR KIDS)
EMPLOYEES COME VISIT PEOPLE WITH DISABILITIES

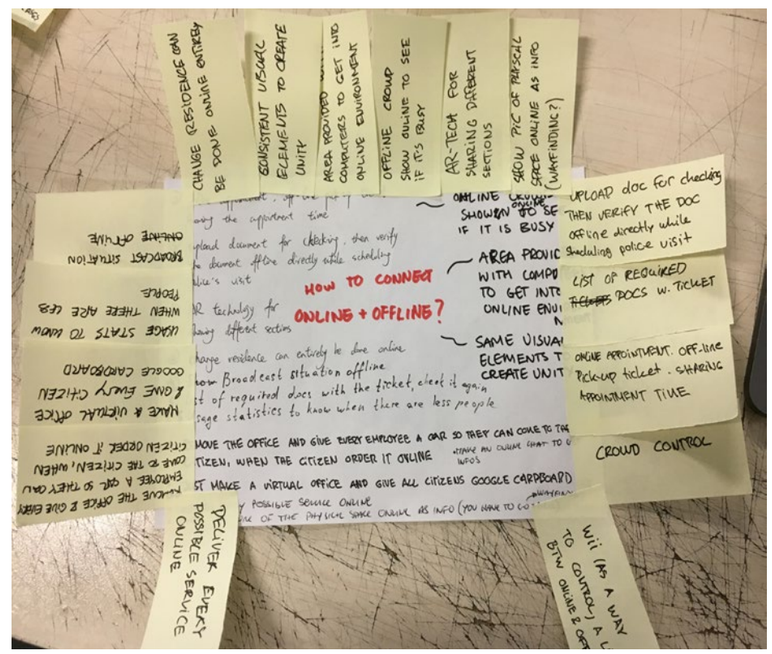

HOW TO MAKE THE WAITING TIME MORE COMFORTABLE?
MUSIC
REMOVE ALL SPORTELLOS & MAKE AN OPEN SPACE WHERE EMPLOYEES & CITIZENS MIX. APPLE STORE
MAKE A INDOOR JUNGLE (MORE PLANTS = NICER AIR = NICER SPACE)
PERSONAL ALARM WHEN IT IS YOUR TURN
ENTERTAINING WALLS
INTERACTIVE GAMES
ONLINE WAITING KIOSK
SO YOU CAN GO FOR COFFEE
MASSAGE CHAIRS / MORE COMFORTABLE BENCHES


HOW TO DIVID PEOPLE MORE EQUAL?
Versatile desks, depending on how many people reserve for a specific service the distribution of the desks as adjusted
Info desk entrance, before the entrance
Online info desk
Make appointments easy to make
Use all the space more efficiently (all the floors)
Tell everyone where exactly to go
Make a map
Have open space
Make people save on when they can come for having app
Create bigger info area
Have a dedicated amount of people
Use consultancy as a intelligence service


HOW TO GIVE UNDERSTANDABLE INFORMATION TO USER?
LOT OF VISUALS + ICONS
ONE STYLE
REPEAT INFO ON SEVERAL PLACES
CLEAR AREAS FOR INFORMATION
Instructions for every appointment
ONLY COMMUNICATE IN EMOJIS
SHORT SENTENCES AVOID ADJECTIVES


HOW TO IMPROVE THE WAY FINDING SYSTEM?
MAKE A SYSTEM (TRADITIONAL) SYMBOLS, COLORS FONTS APPLIED TO ROOMS
MAKE IT DIGITAL AR-OVERLAY
MAKE A DOWNLOADABLE MAP
MAKE THE SPACE SO SIMPLE THAT NO WAYFINDING IS NEEDED
LINES ON THE FLOOR, DIFFERENT COLOR DIFFERENT AREA OR SERVICES


HOW TO SHORTEN THE WAITING TIME?
MORE TICKET MACHINE
MORE WORKERS FOR DOCUMENT PRE-CHECK UP
OPEN MORE SPORTELLO'S
ENTERTAIN PEOPLE SO IT FEEL SHORTER
COLLECT DATA SO CITIZEN DOESN'T HAVE TO FILLOUT FORMS
DISABLED/PREGNANT HAVE PRIORITY ACCESS
BOOK APPOINTMENT SLOT ONLINE before the visit according to your own preferences
MAKE A FAQ
ONLINE PREP. FORM + INSTRUCTIONS
MORE TICKET MACHINE USED BY VISITORS
GIVE WAITING TIME INDICATION AT ENTRANCE


HOW TO CONNECT ONLINE + OFFLINE?
CHANGE RESISTENCE CAN BE SOLVE ONLINE ENTIRELY
CONSISTENT VISUAL ELEMENTS TO CREATE UNITY
AREA PROVIDED COMPUTERS TO GET INFO ONLINE ENVIRONMENT
OFFLINE CROWD SHOW ONLINE TO SEE IF ITS BUSY
AR-TECH FOR SHARING DIFFERENT SECTIONS
SHOW PIC OF PHYSICAL SPACE ONLINE AS INFO (WAYFINDING?)
SAME VISUAL ELEMENTS TO CREATE UNIT
UPLOAD doc for checking THEN VERIFY THE DOC offline directly while scheduling police visit
LIST OF REQUIRED ~~TICKETS~~ DOCS W. TICKET
ONLINE APPOINTMENT. OFFLINE PICKUP TICKET - SHARING APPOINTMENT TIME
CROWD CONTROL
DELIVER EVERY POSSIBLE SERVICE ONLINE

# Appendix 3: Idea Cards

**Idea 01:**

## Smart queueing system

### What challenge is the idea addressing?

Improve waiting time experience

### What are the needs?

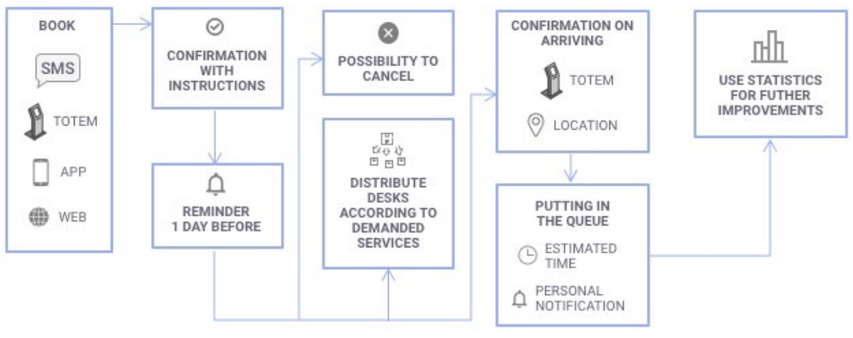
Shorten actual waiting time and reduce perceived waiting time

### What does the idea achieve?

- Order the queue
- Removes unnecessary waiting time
- Fights with unused tickets
- Helps with time managment

### How?

People can take a tickets by themselves using different means: sms, app, website, totem.. They can do it in advance and then they would be asked for a confirmation 1 day before to avoid booking an unused time. The system tells the estimated turn time and suggests places nearby where they can spend it. The system warns the visitors 20 min in advance first through the sms or push-notification, so they can prepare for their turn or cancel the booking. For every service there is a document  checklist with the nearest supporting services addresses and estimated time on filling the form. The ticket can be canceled. To prompt people to cancel the booking if they don't need it and calm them about waiting time  we provide a statistics of hosted people and people in the queue.




**Idea 02:**

## Gamification

### What challenge is the idea addressing?

How to help people prepare the documents, get the service from the first attempt, create an empathy

### What are the needs?

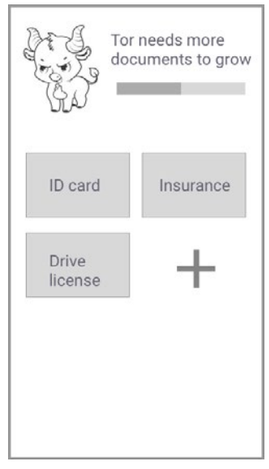
Easily accessible and accurate information
Easy document preparation

### What does the idea achieve?

Motivate users to input the data online, make a boring procedure more interesting

### How?

Character that communicates information online and offline. Tells what to do step by step, answers the questions with AI. In online space there is a possibility to upgrade the character by uploading document information that can be reused by the system (ID card, insurance, residence, info about kids and etc.) That data can be used in later session for forms autocomplete and service provision.



## Idea 03:

# App

## What challenge is the idea addressing?

Improve the efficiency of the service

## What are the needs?

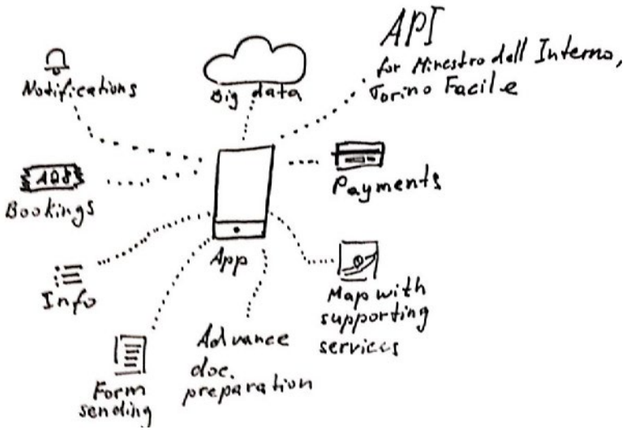
Independent, efficient service
Shorten the waiting time
Multi Language support

## What does the idea achieve?

Transfer the work from employees to the system and users, giving users more flexibility to get the service

## How?

App that allows users get the tickets, make an appointment, fill and send the forms and documents in advance.
For the services where user's presence is necessary the system can automatically prepare for the user's visit based on the documents that they uploaded. So when users come minimum action is necessary from the employee to provide the service.
App also provides users with all the necessary information, support fee payment, sends notifications
App connects through API with Minestro dell Interno and Torino Facile (or whatever TorinoFacile connects). Which allows it to provide their services on one platform. Provides the support for offline environment (navigator, notification about users turn, status, etc.)




## Idea 04:

# Buddy on site

## What challenge is the idea addressing?

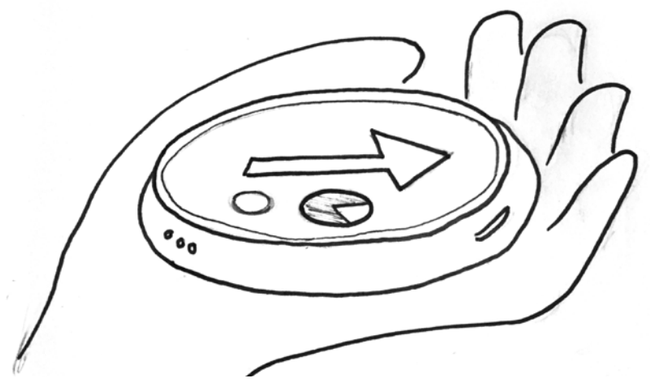
2. The end user is not provided any indications of how much time a service takes
6. The service flow is irregular

## What are the needs?

Easily accessible and accurate information
Independent service
Assistive service
Comfortable service

## What does the idea achieve?

Creating a personalized experience of the service based the users needs.
Avoid confusion.



## How?

This buddy is like a compass through the registrar's office. At the entrance you choose the service you need at a ticket machine. You get this buddy device, which is programmed based on the needs of the user. This device functions as navigator through the office and as notification device when it's the turn of the user. Works also like a personal identification. We scan the user's ID card and recognise him. Also provides a personalized information and works as a translator.

**Idea 05:**

## Consistent visual environment

### What challenge is the idea addressing?

3. The wayfinding system is unclear
5. There is no symbiosis or collaboration between the physical space and the digital platform
8. Users cannot get the information easily through any of the touchpoints

### What are the needs?

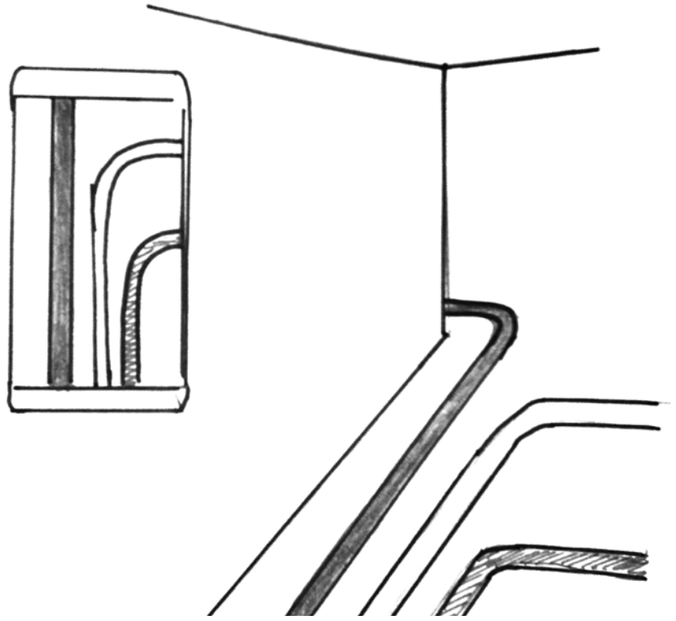
Easily accessible and accurate information
Independent service

### What does the idea achieve?

A visual system that is continuous, clear and simple. A visual system that connect all the seperate aspects of the registrar's office together.

### How?

With similar color-coding in the office and website, the users can recognize where to go for each specific service. This will also create clarification which area has which purpose. This colors can be applied on the online service, on the floors and desks in the building and also on the brochures and forms.



**Idea 06:**

## Interactive projection wall

### What challenge is the idea addressing?

1. The users have a bad experience when the employees are not working optimal
2. The end user is not provided any indications of how much time a service takes.
11. Visitors are not distributed evenly, some places are crowded, some empty. Waiting experience can be painful

### What are the needs?

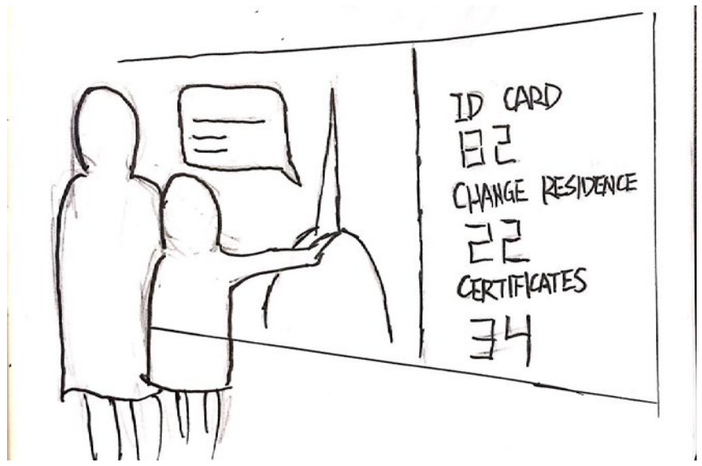
Comfortable service
Child-friendly environment
Comfortable and pleasant working environment

### What does the idea achieve?

To turn the miserable and dull waiting time more playful and fun
To grab people's attention to info display such as animation format for a better understanding

### How?

Projection on a wall or LED screens, with Kinect or webcam working as motion sensor.
Live update information display of waiting time, checklist reminder and visual representation of the procedure in animation format on the designated area of the screen



## Idea 07:

# Employee-visitor mediator

### What challenge is the idea addressing?

7. Infrastructure is not suitable for people with disabilities
8. Users cannot get the information easily through any of the touchpoints.
9. Supporting services like photocopy, ATM or photomachine are not present inside the office.
language barrier
visual/speech/hearing impaired people have trouble communicating

### What are the needs?

Independent service
Communication in English (or their own language)
Easily accessible and accurate information
Elderly-friendly environment
Supporting tools to communicate with users

### What does the idea achieve?

Provide visual and audio guidance in multiple languages for people who don't speak Italian
Help certain groups of disabled people such as visually impaired, hearing impaired, and speech impaired to communicate with workers

### How?

Workers can decide what instruction to show on the screen according to the procedures, such as "please show me your passport", "please submit two photo IDs" etc. These instructions will display on the screen in the language the visitor picks accompanied with visuals, and special options for the disabled visitors such as having louder volume, high contrast, etc.


## Idea 08:

# Digital 24/7 info-desk

### What challenge is the idea addressing?

Automatization of simple procedures, reducing waiting time, give info, crowd control

### What are the needs?

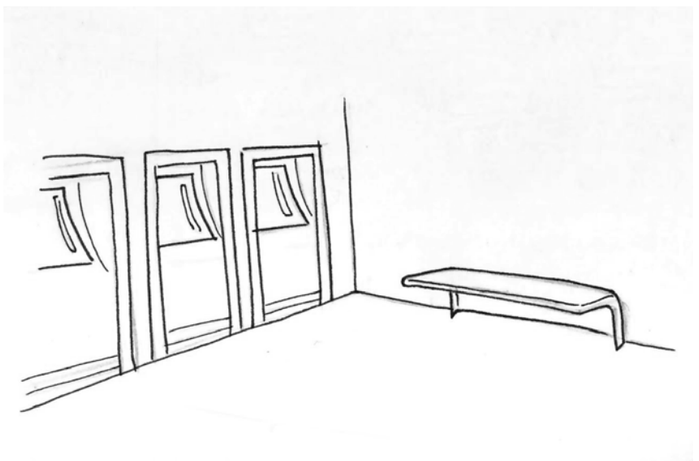
People have to wait too long, info are sometimes unclear/not understandable, queue at the infodesk and the ticket totem are too long(they go outside the building) and people have to wait standing

### What does the idea achieve?

Reduce waiting time and speed up the whole process, give clear and understandable info, provide crowd control inside/outside the building, make life easier for employees

### How?

It reduces the number of queues from 3(get ticket, info desk, service desk) to 2(access automatic desk, service desk). It's multilanguage so foreign people can use it with ease. It can process both people with or without appointment, provide useful info, service flyers and all the needed forms. It can book appointments and provide a documents checklist for everyone that already have an appointment. It can dislocate the people crowd to an another side of the building, maybe a waiting room.



## Idea 09:

# Multifunctional supporting structure

### What challenge is the idea addressing?

Improve place independency, save people time and money, reduce stress

### What are the needs?

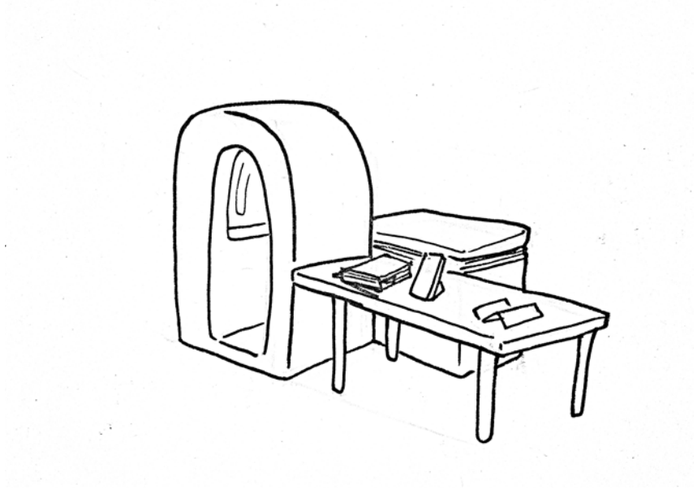
People needs to make photocopies of documents or portrait photos without having to go to other places and take another appointment

### What does the idea achieve?

It let people save time, money and stress. It allows to complete all the services that the office proposes remaining in the same building and in a single session.

### How?

It provides a place inside the building where people can go and make the photocopies and photos they need and forgot about. It provides flyers about service offered in the office.



## Idea 10:

# Employee ranking system

### What challenge is the idea addressing?

1. The users have a bad experience when the employees are not working optimal

### What are the needs?

Easily accessible and accurate information

### What does the idea achieve?

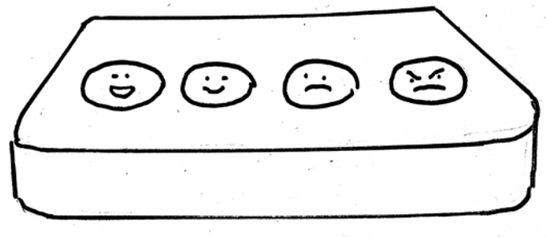
Personal motivation of stakeholders to deliver the best possible service to the citizens.
Better communication between employees and citizens and thus enhanced user experience.
Provides the office with an evaluation system that could be used for future improvement / An ongoing optimization of the office.
A way to analyze and acquire knowledge about the soft skills of employees
A way to acquire customer reviews

### How?

The CRM analysis system could be realized in multiple ways:
A simple device on the counter allowing the end-user to evaluate the employee after the service, ie. via four buttons with four smileys:.

A follow-up email asking the citizen to evaluate the meeting via simple online survey. These Customer Reviews could subsequently be fed to a nationwide scoreboard showing which office delivers the best user experience.

Recording of the employee via camera and for example the Azure api (for image recognition): ie. how many times does the employee smile, how happy is the tone-of-voice, how many citizens is expedited. This data could then be fed to a scoreboard / internal ranking showing which employee is delivering the best customer experience, which could lead to a more competitive working culture and a self-reinforcing system centered on good communication.



**Idea 11:**

## Intelligent ID card

### What challenge is the idea addressing?

5. There is no symbiosis or collaboration between the physical space and the digital platform.
6. The service flow is irregular.

### What are the needs?

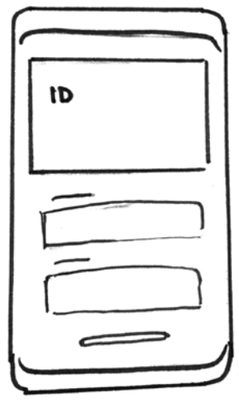
Fast service, Personal freedom, A customized experience, The right information the right time

### What does the idea achieve?

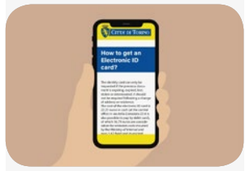
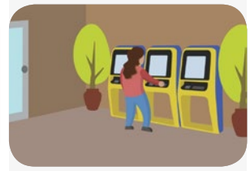
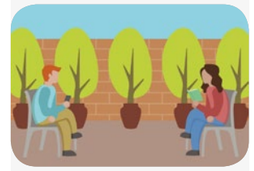
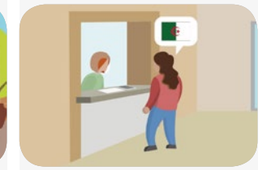
More personal freedom, Easier access to information, A customized experience

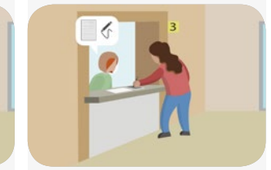
### How?

An ID object  (in the form of a digital and/or physical card) stores all your personal data. As a digital solution it could be made as an APP. In the app you provide all possible information about yourself. To make the digital card even more accessible the app could collaborate with Apple Wallet (All users with an iPhone already has it preinstalled and its an app which already allows users to store Wallet-passes, meaning coupons, boarding passes, student ID cards, event tickets, movie tickets, public transportation tickets, store cards, credit cards, etc.).
The more data you feed the app / card – for example by connecting your social media accounts – the better it knows your needs and the more customized the experience you get. If you for example tick off that you need a new passport in the app,  you can proceed to make an appointment and the ID card will store the information so you just have to scan it when you enter the registrar's office.
To motivate citizens to fill out information, people could get rewarded by paying less taxes the more they do by themselves.  The more the citizens do, the less the state has to do.




# Appendix 4: Future Vision

| PHASES | Before → | Preparation → | Entering, waiting → | Getting service | | | | |
|---|---|---|---|---|---|---|---|---|
| |  |  |  |  |  |  |  |  |
| KEY STEPS | Get account, fill in nessary documents | Browse the app, ask chatbot | Chose possible date/time, No need to fill any information everything is already in the system, Gets the confirmation with instructions | Scans QR code provided in booking confirmation Getting the ticket with estimated time | Waiting | Getting a notification of her turn on the app Finding the desk with the help of provided scheme | Employee and Mediation Support welcome the visitor | Documents are checked by employee, supported by the Mediation Support |
| NEEDS | • Get an Anagrafe service remotely | • Find out how to get service in her situation | • Find the most appropriate date/time that fits her schedule | • Understand what to do while entering and what to do next | • Have comfortable space to study while waiting | • Understand what to do next Don't miss her turn | • Understand the information despite the language barier | • Understand what she has to do |
| EXPERIENCES | "I tried to make an appointment but the mail I received did not specified what documents I should bring." | APP<br>Via website<br>Via facebook<br>Via telephone<br>Via totem<br>Via info-desk<br>chatbot | Via APP<br>Via website<br>Via website<br>Via telephone<br>Via totem (digital info-desk) 24/7 outdoor<br>Via info-desk<br>Chatbot | Nice chairs<br>Small play area for kids<br>Space to fill in forms, when this is not done online yet<br>Space to look for extra information (info desk, infographics, computers)<br>Supporting services (photo making machine)<br>Waiting screens: with ticket numbers + location + turn alarm: sound when ticket number changes + estimated waiting time<br>APP : personal turn alarm + estimated waiting time | App, info screen | To support the communication between the employee and the visitor a screen is provided, this is part of the Mediation Support, together with supported microphones, speakers and headphones. The Mediation Support that translates all the information from the employee to the visitor and the other way around. (It is equipped with a microphone for the employee and a microphone for the visitor. If needed there is also headphones for the visitor.) The Mediation Support shows the visitor where she is in the process. The Mediation Support support the procedure with explanatory visuals and a zoom-option when needed. The Mediation Support has an integrated payment function. | | |

| PHASES | Getting service | |
|---|---|---|
| |  |  |
| KEY STEPS | Double-check of documents and last task for visitor (signing), supported by the Mediation Support supported by the Mediation Support | Finish procedure |
| NEEDS | • Abeer wants to be in control of the process | • Abeer wants to know at to expect after finish the procedure at the registrar's office |
| EXPERIENCES | | |

# Appendix 5: Functionalities and concept characteristics

## WELCOME PAGE

### Specific functions

Welcome text

### General functions

Choose language (10 most common: English, Chinese, Hindi, Spanish, French, German, Arabic, Russian, Bengali, Portuguese)
Speak option
Write option
Send or cancel option

“Talk to me”

## TICKET CALLING

### Specific functions

Show ticket

### General functions

Choose language
Speak option
Write option
Send or cancel option
“D35”

## **PROCEDURE** (optional, together with ticket calling)

### Specific functions

Show procedure steps

### General functions

Choose language
Speak option
Write option
Send or cancel option
“Step 1: Deliver documents and check documents
Step 2: Pay the fee
Step 3: Receive confirmation”

## **DOCUMENTATION REVIEW** (optional together with procedure)

### Specific functions

Show documents
Show status of documents

### General functions

Choose language
Speak option
Write option
Send or cancel option
Presence of the interested person
Photo of the interested person (according to ICAO Standards)
Expired ID card
(if lost the police report and another valid identification document)
Valid permesso
if it’s the first time, documents of expatriation

## **SIGNATURE** (optional, together with documentation review)

### Specific functions

Signature function

### General functions

Choose language
Speak option
Write option
Send or cancel option
“Please sign here”

## PAYMENT

## GOOD BYE

### Specific functions

Show confirmation information
Show next step
Choose to send log or not
Fill in e-mail address
Send button

### General functions

Choose language
Speak option
Write option
Send or cancel option

<confirmation text>
Congratulations
Finishing procedure text:
Your ID card is ordered
“Your ID card will be delivered on Monday 27 August”

Made new appointment:
Your new appointment will be on 24 June 2020

## CHOOSE NEW APPOINTMENT

### Specific functions

Choose location
Choose month
Choose day

### General functions

Choose language
Speak option
Write option
Send or cancel option

<instruction text>

# Appendix 6: Technology Benchmarking

## Text-to-text translation

### 1. Tech Specs

• The decoding of the meaning of the text/message.
• The re-encoding of the meaning in the target language.

• Four approaches:

**1) Rule-based.** This approach is usually used in producing dictionaries and grammar programs. It includes interlingual, transfer-based, and dictionary-based translation.

**2) Example-based.** As the phrase implies, this approach makes use of exemplifications to generate translations. It employs a corpus with pre-translated texts, with which the text that is to be translated is compared to find the appropriate translation.

**3) Hybrid machine translation.** This approach incorporates statistical and rule-based methods. It can mean the use of rules post-processed by statistics or statistics directed by rules.

**4) Neural machine translation.** Based on deep learning, neural machine translation employs a massive artificial neural network to analyze and predict the message a string of text means, and convert it to the target language. Google Translate uses this approach at present, which arguably results in better translations.

### 2. Tools required

• Keyboard and screen

### 3. Examples

• Google translation - texet input

## Voice-to-voice translation

### 1. Tech Specs

**A. Real time voice translation based on machine:**

**1) Speech recognitions.** The computer recognizes what the speaker says and transforms that into written text. Same technology as in any speech recognition or dictation software

**2) Automatic translation.** In step 1 the speech was transformed into text. That text is now translated with machine translation engine.

**3) Speech synthesis.** The translated text (obtained in step 2) is now spoken out loud. In many automatic telephone services one can hear robots speaking

### 2. Tools required

• Microphone, speaker, computer, network, translation engine, speech recognition / speech to text engine (Baidu Deep Speech)

### 3. Examples

• Google translation - voice input or conversation mode
• Translation sticks/portable device https://www.kickstarter.com/projects/smark/smark-translator-your-cross-border-sidekick

**B. Human remote translation:**

1) The speaker connects to a live language interpreter
2) Human interprets live time
3) Sends it back to

### 2. Tools required

• Tools required: A mobile device with microphone, network, headphone

### 3. Examples

• Elsa / RTT Mobile Interpretation

## Deaf-Mute communication

### 1. Visual Keyboard

**Tech specs**
Low-tech, multilingual visual text input and output

**Tools required**
Keyboard

### 2. Camera and computer vision

**Tech specs**
Multiple layers of a single webcam input, depth, skin detection, contour of hand gestures (mainly)
Pattern matching

**Tools required**
Webcam, (network), a bit machine learning, a screen, user interface

**Examples**
https://www.youtube.com/watch?v=ITeSHLVNXN8

### 3. Infrared based

**Tech specs**
Devices have infrared cameras built in, and it records a series of hand gestures
Pattern matching

**Tools required**
Kinect or leap motion, a screen, machine learning

**Examples:**
https://www.microsoft.com/en-us/research/blog/kinect-sign-language-translator-part-1/
https://www.youtube.com/watch?v=P757tX28Xe4

### 3. Sensor integrated wearable device

**Tech specs**
Flex sensors and accelerometers
Pattern matching

**Tools required**
Sensors, machine learning, wearable device

**Examples**
Gloves: https://thingamaneed.com/products/gesture-control-robot-smart-car-starter-kit

## Blind communication

### Braille and voiceover

**Tech specs**
Braille is low-tech, but it can be combined with a typewriter device(text to screen and voiceover) or phone (vibration) to enable the communication

**Tools required**
Screen, speaker, braille keyboards

**Examples**
The Deafblind Communicator with refreshable Braille display
https://www.puc.state.or.us/rspf/Spec-DBC.pdf
https://www.indiegogo.com/projects/real-deaf-blind-communicator

## E-Signature

- https://www.capterra.com/digital-signature-software/
- https://www.hellosign.com/
- https://www.docusign.com/solutions/industries/government
- https://www.securedsigning.com/

## Augmentative and Alternative communication

### Picture communicators for visually impaired

**Tech specs**
- Progressive communication devices like this one allow users to develop communication skills, convey messages to others and interact with people from a distance.
- Can add vocabulary as communication skills and needs increase
- Record and playback distinct sets of messages

**Tools required**
Pre-made icons, LEDs, recorder, speaker, microphone

**Examples**
https://enablingdevices.com/product/7-level-communication-builders/

# Appendix 7: Translator Product Benchmarking

## Earphones translators

### Brands

- WT2 Real-time Wearable Translator
- Pilot Translating Earphones

### How it works

The pair of the earphones with microphones for 2 people translates in real time the speech from other earphone. Can be used with the app: one is speaking to the phone and another gets translation to the ear.

### Strengths

- Real time translation
- Hands free
- No physical barrier in the communication
- Fast to set up with the new user (no app downloading for the second person is necessary)

### Weaknesses

- Inaccurate translation
- Requires internet
- Hygiene problems, not suitable for many people usage
- Not suitable for noisy environment

## Portable microphone/speaker

### Brands

- Smark Translator
- Ili
- Many others

### How it works

Interview-like pass to talk and listen device. The first example can be split and used by the two people without passing.

### Strengths

- Real-time translation
- Easy to change users
- Easy to recognise the voice in noisy environment

### Weaknesses

- Non accurate translation
- Not comfortable for big groups
- Difficult to listen in noisy environment
- Creates physical barrier in conversation
- Requires internet, offline translation is very limited

## Real time translation with remote human operator

### Brands

• Elsa

### How it works

User connects to the operator and asks for the translation. Operator translates in real time two ways. Translation service provider has many operators with different languages. They translate for all their clients

### Strengths

• Very accurate translation
• No need to download or setup anything with new users

### Weaknesses

• Requires human operator
• Might be difficult to hear in noisy environment
• Requires internet

## Augmented reality apps and glasses translations

### Brands

• Many apps, all glasses are in prototyping stage

### How it works

Text recognition through the camera, translation on the chosen language

### Strengths

• Possibility to translate text in the physical environment
• Some can work offline

### Weaknesses

• Requires app downloading or high-tech glasses
• Doesn’t work in bad lighting conditions

## Mediation devices for speech and hearing impaired people

### Brands

• UNI
• SingAloud

### How it works

Hand recognising technologies capture the hands movement and pronounce/ write the translation. First example has a microphone and can write back the speech that it captured.

### Strengths

Enable the communication with such people without any special skills

### Weaknesses

• No free hands
• Quite big and grumpy
• Speech to text case is not designed well
• Error prone

## Multilanguage totems

### Brands

• Multiple

### How it works

The service is available on several languages. Requires user to interact with UI to get the necessary information.

### Strengths

• Possibility to discover all by the user itself
• Graphic information supports the text
• No human communication is necessary
• Accurate translation

### Weaknesses

• Difficult to manage user custom input if necessary
• Limited flexibility, not suitable for specific user demands
• Limited amount of available information

## Multilingual layouts

### Brands

Applied in many contexts, ie. the The Five Language Visual Dictionary (English, French, German, Italian, Spanish)

### How it works

Everything is written in multiple languages.

### Strengths

• Does not require interaction (other than reading)
• Text and image support each other
• Works on print and digital

### Weaknesses

• User has to ‘search’ for the information needed
• Complex / intimidating aesthetic

## AI Speakers

### Brands

• Amazon Echo
• Google Home
• Apple HomePod

### How it works

AI system / assistant integrated in physical device / speaker

### Strengths

• Multifunctional (beyond translation)
• Voice-interaction (easy interaction)
• Can be updated

### Weaknesses

• Voice-interaction (not working in noisy contexts)
• Clearly representing / advertising for a specific brand

## Holographic AI assistant

### Brands

Ie.: Private project build with cortana https://www.youtube.com/watch?time_continue=23&v=fggE3VI3NRg

### How it works

Combining a simple “pepper’s ghost hologram” and Microsoft’s native cortana experience the device is able to deliver the impression of an ‘intelligent’ holographic assistant.

### Strengths

• Aesthetics aesthetics aesthetics
• Welcome to year 2049
• Multifunctional (beyond translation)

### Weaknesses

• Complex to coordinate 3D visualization and ai system. Time consuming to record body language that fits voice commands
• Custom build

## Blending physical and digital functionalities

### Brands

• Samsung

### How it works

The screen-stand becomes multifunctional. Fulden Dehneli, the designer, writes: “Instead of a lone standing object, the design make the TV stand as an element which can fit anywhere, helps users to reflect their own taste &  style while creating a harmony with its’ surrounding objects and becomes what users want.”  AI system / assistant integrated in physical de

### Strengths

• Aesthetics, enhancing interior environment
• Multifunctionality
• Making the screen a ‘friendly’ object

### Weaknesses

• Requiring relatively much space
• Probably expensive

## Movie Theater Ticket Office Screen

### Brands

Various

### How it works

The screen is used as ticket-buying system, viewed by both customers and workers. Workers do the main clicking and other actions, audience views the seating map and pick their prefered seats, and also double check the essential information such as money and time.

### Strengths

• Visual way for audience to do some choices
• Providing a clear guidance of the process flow
• Ensuring everything has been done correctly

### Weaknesses

• Oral communication required
• Function wise it is too single layered and can totally be replaced by an electronic kiosk
body language that fits voice commands
• Custom build

## Square POS system - point of sale

### Brands

Square
https://squareup.com/us/en/software/point-of-sale

### How it works

One screen for vendor to take orders, and other screen for users to view the receipt, swipe the card, sign their names, and choose tip amount.

### Strengths

• Displaying options as menu items on vendor side
• User can interact with it such as leave signature and touch
• Same information but in two different design languages - vendor: visual images to make sure the order is correct; user: money is the priority
• Avoiding unclear communication in terms of pricing and confirming orders
• Stress-free when paying and tipping
• Beautiful installation on the counter, they also have the ones vendors can turn and show to the users to pay

### Weaknesses

• Users can’t choose items on their screen other choosing how much to tip
• Only in English

## Augmentative and Alternative Communication Device

### Brands

• tobiidynavox
• DynaVox V - https://www.youtube.com/watch?v=ZhIOl3wvKIM
• Indi 7 - https://www.tobiidynavox.com/devices/multi-access-devices/indi-7/#Software

### How it works

How it works
Designed for people with cerebral palsy or stroke etc, AAC devices are mainly picture/icon based, covering all the daily usage of words and phrases to communicate. They are organized in a grid system, and once you choose the first part of the sentence or topic, you enter the second layer and so on to complete what you want express.

### Strengths

• Customizable
• A good selection of pre-config.d things that people can just use to cover most of their expression needs. Can be applied to anagrafe where most of the users have a fixed set of things to communicate in order to get job done / fixed procedures for handling documents
done correctly

### Weaknesses

• Graphic input by user -> audio output for whoever wanna communicate with the user, only helps one way of communication

# Appendix 8: Typing Technology Benchmarking

## Standard ways to input text

### Keyboard

Technology
Keyboard

Best example
Any physical keyboard

Flexibility
Cheap, everyone knows how to use it

Additional
Can be easily embedded in most devices. There are a lot of layouts, so people from all over the world may find difficult or confusing to use a different layout.

### Digital Keyboard

Technology
Digital keyboard, OS

Best example
Any digital keyboard

Flexibility
Cheap, everyone knows how to use it, the touchscreen could be used for a lot for purpose

Additional
Literally everyone knows how to use it, even a lot of grandmas and grandpas.

### Handwriting recognition

Technology
Handwritingwriting recognition, app, OS

Best example
INKredible(app with the best algorithm yet)

Flexibility
Just need to write(then it transplate automatically?)

Additional
Just need a screen(tablet or embedded in another device) and a pen to write with

## Future ways to input text

### Gesture Recognition

Technology
Gesture Recognition, sensor, OS, app

Best example
Leap Motion

Flexibility
No need to touch surfaces, really precise
Could translate hand speech

Additional
This technology seems futuristic but is already applied in many fields: is used in game consoles like Microsoft kinect and high-end AI research environments. For everyday use, Leap Motion controller is designed to work in conjunction with a standard keyboard to track finger movement within 1/100 of a millimeter.

### Speech Recognition

Technology
Speech Recognition, microphone, OS, app

Best example
Skype Real-Time Translation

Flexibility
Will be able to translate all languages
Everyone can easily use it

Additional
Thanks to recent technological advances in artificial intelligence and deep learning algorithms this technology has become more and more reliable. Can be used in a lot of scenarios: from hands-free computing for disabled people to in-car voice commands to mobile device virtual assistant. Recently Skype took it to the next level, introducing actual real-time translation(between english and spanish) using machine learning and natural-language interface technolgy.

### “Keyboardless“ keyboard

Technology
“Keyboardless“ keyboard, Sensor, OS, app

Best example
Noki(AirType)

Flexibility
No need for surface
Still concept, could evolve in something better

Additional
AirType uses a set of sensors that wrap around your hands and track your finger movement as you type on a keyboard that isn’t there at all. You can type on any surface or none and the sensors are designed to learn your particular typing habits. Dynamic text correction prediction can help but you’ll have to be a proficient typist to make this work well

### Projected keyboard

Technology
Projector, OS, app

Best example
Noki(AirType)

Flexibility
Can be used on any surface
Optimize mobility

Additional
Depending on configuration, projection keyboards typically use a combination of lasers, sensors and infrared beams to replicate a traditional QWERTY keyboards on a flat surface.

### Brain optical imaging

Technology
Brain optical imaging, OS, hardware

Best example
Facebook mind typing system

Flexibility
Think-type(then auto-translate?)

Additional
Facebook says researchers at Stanford have created a system for letting a paralyzed patient type eight words per minute using only her thoughts. However, that example is with an invasively implanted electrode array. The ultimate goal of Facebook is a system that allows you to type even faster than your physical hands, at upwards of 100 words per minute. Using neural imaging may be the only non-invasive approach capable of transmitting neural activity into inputs for electronic devices. This could be some type of cap you wear on your head, but Dugan adds that this technology does not exist yet and would have to be developed over the course of many years.

# Appendix 9: Hardware Benchmarking

## Unconventional solutions

### Sony Xperia Touch Multi-Touch Projector

**Price**
€1499

**Display Size**
Adjustable

**Flexibility**
Turn any flat surface into a touchscreen

**System**
Android

**Context**
Versatile use, most optimal function in dimmed environment but also functional in normal lit environments

### Puppy Cube Multi-Touch Projector

**Price**
Unknow

**Display Size**
Adjustable, from 23" up to 100"

**Flexibility**
Standalone ultra short-throw projector that can turn any flat surface into a touchscreen

**System**
Android

**Context**
Versatile use, domestic, office, not rugged, optimal function in dimmed environment

### Dell S2340T Multi-Touch Monitor

**Price**
€530

**Display Size**
23" Full HD
21.8 x 56.2 x 41.5 cm

**Flexibility**
"zero-gravity hinge", any position

**System**
Connect to computer via. hdmi

**Context**
Office, (Good option if we connect it to employees computer)

### HP ElitePad G2 1000 Rugged tablet

**Price**
€399

**Display Size**
10.1" (1920x1200px)
215.15 x 287.1 x 36.4 mm

**Flexibility**
---

**System**
Windows 10, Intel Atom Bay Trail-T Z3795 Quad Core 1.6 GHz, 4GB ram, 128gb storage

**Context**
"The HP ElitePad 1000 is a fantastic business laptop, and it can be config.d to come in a rugged design that is IP65 and MIL-STD 810G tested."

## Unconventional solutions

### Conker NS12 Rugged tablet

**Price**
Unknown

**Display Size**
12" Full HD

**Flexibility**
Stand and keyboard is built into cover

**System**
Windows 10, Intel quad core 4GB ram, 128GB storage

**Context**
"Used in extreme marine environments, by Chester Zoo and for biodiversity recording"

## Standard solutions

### Samsung Galaxy Tab A SM-P580

**Price**
€269

**Display Size**
10.1" (1920x1200px)
16,4 x 0,8 x 25,4 cm

**Flexibility**
---

**System**
Android, 3Gb ram, 16GB storage

**Context**
Versatile use, domestic, office, not rugged

## Huawei MediaPad T3

### Price
€123

### Display Size
10″ (1920x1200px)
15.9 x 0.7 x 22.9 cm

### Flexibility
---

### System
Android 7.0, 2Gb ram, 32GB storage

### Context
Versatile use, domestic, office, not rugged

## ALLDOCUBE Knote8 2-in-1 Tablet PC

### Price
€589

### Display Size
13.3″ 2K (2560x1440px)

### Flexibility
Detachable keyboard

### System
Windows 10, 8Gb ram, 256GB storage

### Context
“Offering good experience for watching videos and browsing the Web 8GB RAM+256GB SSD Storage Capacity, offers you a high-impact gaming experience, advanced multitasking, ensures smooth operation”

## Linx 12X64

### Price
€199

### Display Size
12.5″ (1920x1080px)
1.07 x 18.9 x 31.5 cm

### Flexibility
Detachable keyboard

### System
Windows 10, 4Gb ram, 64GB storage

### Context
Versatile use, domestic, office, not rugged

## Toshiba Excite 13

### Price
Unknown

### Display Size
13″

### Flexibility
2 different positions enabled by stand

### System
Android

### Context
Office, home, versatile use

# Appendix 10: Translator Script

## ENGLISH

Employee: Good morning! You are number D35 and you are here for renewing your ID card. Please present the following documents:

<AUTOMATIC GENERATED DATA>
Participant: There you go.

Employee: Thank you. I will now scan all these documents into the system. Please check if all the information below is correct and sign in the upper box if it is.

<AUTOMATIC GENERATED DATA>
<VISUAL SUPPORT ILLUSTRATION>
Participant: Everything is correct.

Employee: Please sign in the upper box.

<VISUAL SUPPORT ILLUSTRATION>

Employee: The new ID card will be 16,79 euros. Do you want to pay by card or by cash?

<VISUAL SUPPORT ILLUSTRATION>
Participant: I want to pay by card, please.

Employee: You can use the payment machine on the right to pay by card.

<VISUAL SUPPORT ILLUSTRATION>

Employee: Your payment is accepted and your ID card is ordered. Your ID card will arrive at your house before Monday 27th of May. If you fill in your email address in the upper box a confirmation email will be send. Do you want have a copy of this translated conversation in the attachment of the email? So you can have the record for references.

<VISUAL SUPPORT ILLUSTRATION>
Participant: Yes, thank you.

Employee: The email is sent. Thank you for visiting the Central Registrar’s Office of Turin!

## ITALIAN

Employee: Buongiorno! Il tuo numero è D35 e sei qua per rinnovare la tua carta d’identità. È pregato di presentare i seguenti documenti:

<AUTOMATIC GENERATED DATA>
Participant: Ecco a lei

Employee: Grazie. Ora scannerizzo tutti i suoi documenti e li inserisco nel sistema. È pregato di controllare se tutte le informazioni sottostanti sono corrette e firmare nell’apposito riquadro.

<AUTOMATIC GENERATED DATA>
<VISUAL SUPPORT ILLUSTRATION>
Participant: Tutto corretto

Employee: Preso firmi nel riquadro.

<VISUAL SUPPORT ILLUSTRATION>

Employee: La nuova carta costa 16,79€. Preferisce pagare con la carta o in contanti?

<VISUAL SUPPORT ILLUSTRATION>
Participant: Voglio pagare con la carta grazie.

Employee: Per pagare con la carta può usare la macchina sulla destra.

<VISUAL SUPPORT ILLUSTRATION>

Employee: Il pagamento è andato a buon fine e la sua nuova carta è stata ordinata. La sua carta arriverà direttamente a casa sua Lunedì 27 Maggio. Se inserisce la sua mail nel riquadro le verrà inviata una mail di conferma. Vuole una copia tradotta di questa conversazione all'interno della mail? In questo modo potrà rileggerla a casa se ne ha bisogno.

<VISUAL SUPPORT ILLUSTRATION>
Participant: Si, grazie.

Employee: La mail è stata inviata. Grazie per essere venuto all'Anagrafe Centrale di Torino!

## DANISH

Employee: Godmorgen! Du er nummer D35 og du er kommet for at forny dit ID-kort. Må jeg bede om følgende dokumenter?

<AUTOMATIC GENERATED DATA>
Participant: There you go.

Employee: Mange tak. Jeg scanner alle dokumenterne ind i systemet. Vil du være venlig at checke om den følgende information er rigtigt og underskrive i boksen?

<AUTOMATIC GENERATED DATA>
<VISUAL SUPPORT ILLUSTRATION>
Participant: Everything is correct.

Employee: Vær venlig at underskrive i boksen.
<VISUAL SUPPORT ILLUSTRATION>

Employee: Det bliver 16 euro og 79 cent for dit nye ID-kort. Vil du betale med kort eller kontant?

<VISUAL SUPPORT ILLUSTRATION>
Participant: I want to pay by card, please.

Employee: Du kan bruge terminalen til højre hvis du betaler med kort.
<VISUAL SUPPORT ILLUSTRATION>

Employee: Din betaling er accepteret og dit nye ID er bestilt. Det vil ankomme på din hjmmeadresse før mandag den 27. maj. Hvis du udfylder din e-mailadresse sender vi også en bekræftelse. Vil du have en kopi af den oversatte samtale vedhæftet mailen? Så har du en kvittering at referere til.

<VISUAL SUPPORT ILLUSTRATION>
Participant: Yes, thank you.

Employee: Mailen er sendt. Mang tak fordi du tog dig tid til at besøge Det centrale justitskontor i Torino.

# Appendix 11: Consent Form

### Consent Form for User test of mediator for Central Registrar's Office of Turin

| ***Please tick the appropriate boxes*** | **Yes** | **No** |
|---|---|---|
| **Taking part in the study** | | |
| I have read and understood the study information dated 20/05/2019, or it has been read to me. I have been able to ask questions about the study and my questions have been answered to my satisfaction. | ☐ | ☐ |
| I consent voluntarily to be a participant in this study and understand that I can refuse to answer questions and I can withdraw from the study at any time, without having to give a reason. | ☐ | ☐ |
| I understand that taking part in the study involves an audio- and video recorded pre- and post-interview, an audio- and video recorded user test and a short questionnaire. The audio and video will be transcribed as text, screenshots and parts of the video will be used for reporting. | ☐ | ☐ |
| **Use of the information in the study** | | |
| I understand that information I provide will be used for reports and an explanation video of the concept. | ☐ | ☐ |
| I understand that personal information collected about me that can identify me, such as my name or where I live, will not be shared beyond the study team. | ☐ | ☐ |
| I agree that my information can be quoted in research outputs. | ☐ | ☐ |

**Signatures**

| Name of participant | Signature | Date |
|---|---|---|
| | | |

I have accurately read out the information sheet to the potential participant and, to the best of my ability, ensured that the participant understands to what they are freely consenting.

| | | |
|---|---|---|
| Sarah Kraanen<br>Researcher name | Signature | Date |
| Zhang Zhan<br>Researcher name | Signature | Date |
| Malte Christensen<br>Researcher name | Signature | Date |
| Irina Nikulina<br>Researcher name | Signature | Date |
| Alessandro Ceriani<br>Researcher name | Signature | Date |

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# Appendix 12: Consent Form

FACILITATOR SCRIPT

**Introduction + agreement**
Welcome to our user test, thank you for participating. My name is Sarah and I will guide you through the test. If anything is unclear, please let me know. The test will be in conducted in English.

The purpose of the research is to evaluate the prototype of a new concept a translation mediator for the Central Registrar's Office of Turin. We will not focussing on you skills, but we will focus on the functionality and usability of the product.

We want you to ask to fill in this consent for before starting with the test. Please take you time to read is carefully.

[Hand-out consent form]

**Pre-test interview**
Before we start the procedure we would like to ask you some introduction questions.

What is your age?
What is your occupation?
What is your nationality?
Which languages to you speak?
Did you ever get your ID card renewed? Yes, where?
Did you ever visit the Central Registrar office of Turin?

Thank you for your answers. We will now move on the the second part of the test: experiencing our mediator device.

**Prototype introduction + task instruction**
For the test I want you to imagine you are at the Central Registrar's Office of Turin. You made an appointment on the website for renewing your ID-card. You also have given your preferred language to speak on the website; which is in this case English. This is why the prototype will support the conversation in English.

[Hand-out all materials need to go through procedure:  ID card, resident permit, payment card, photo, ticket]

For the test you will use this ID card as your *expired ID card* you have to bring to the appointment, this *valid resident permit* and this is your *passport photograph* of yourself. And this is your payment card to pay for the new card. This is your ticket with your ticket number. When your ticket is called you can go to the assigned desk.

Since it is a prototype the generated text on the prototype is fixed, but the voice translation is real.

**Post-test questionnaire**
Could you fill in this short questionnaire.

[Hand-out questionnaire]

**Post-test interview**
How did it go?
Did you encounter any problems within the procedure? Yes, can you explain what happened and why?
Was it clear what the employee need from you?
Were the steps of the procedure clear to you? In which way?
When did you need to use the interface?
Did you understood the purpose of the screen?
How did the procedure make you feel?
Can you name 3 things that you (dis)liked?

**De-brief**
Thank you very much for participating. We will take good care of all the recordings we have.
Do you have any questions or remarks?

**Digital Design Studio**

Analysis and conceptualization in relation
to the Central Registrar's Office of Turin

by

**Irina Nikulina, Zhang Zhan,**

**Sarah Kraanen, Alessandro Ceriani,**

**Malte Simon Christensen**

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