

IO App

IO System Redesign

Digital Design Studio

Students: Elie Barakat, Marco De Cristofaro, Manuel Reale, Martine Saxebo

Person Code: 10836086, 10589130, 10679828, 10842699

Professors: Francesca Rizzo, Davide Spallazzo, Felicitas Schmittinger



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Executive Summary

IO is a mobile application that acts as a single access point allowing users to interact with local and national Italian public services. This report features the second part of an ongoing study dedicated to assess and enhance the usability of the IO mobile application. The first part of the study identified six problematic areas listed from most to least severe: information architecture, navigation, affordances, use terminology, aesthetics, and system errors. The recommendations to deal with these problems (provided in the first report and in the appendix of this report) served as the foundation for the second part of the study that focused on the redesign of the application.

This document demonstrates the process that led to the final redesigned version of the IO mobile application. The process began with card sorting followed by tree testing that led to the development of wireframes. After that, two different User Interfaces were drafted and tested to assess which is more suitable for an authoritative mobile application. Based on those results, the final output of this study was a high-fidelity prototype that was subject to a heuristics evaluation by another team of experts and the same usability testing that the existing version of IO was subjected to in the first part of this study. The final usability test was conducted on site between the 8th and the 10th of April 2022 in Lombardi, Italy.

The user driven approach was implemented considering the initial five tasks that were highlighted in the first study: storing the green pass, accessing the information of public administrations, completing PagoPA payments, searching for discount cards and checking messages from public administrations. Given that IO is used by both Italians and expats living in Italy, both types of users of various age groups were included in all the steps previously stated to ensure that the final redesign caters to the mental models of users who utilize IO in Italy.

Overall, fifty nine different people participated in the various methods throughout the redesign process that led to one final high-fidelity prototype. This prototype then underwent a Heuristic Evaluation by four experts (different than the people conducting this study) and then revised to be finally for a usability testing session in which ten people participated.

The usability test adopted in the end is similar to the one that was used to assess the usability of the existing version of IO in the first phase of this study. The results of the heuristics evaluation and usability testing conducted in the second part of this study suggest that the methodology adopted successfully led to the improvement of the usability of the redesigned interface.

This report showcases the methodology followed throughout this study and contains all the documents pertaining to the process of generating and measuring results.

Introduction

On the 17th of March 2022, an initial assessment of the Italian IO mobile application was presented. The initial study conducted saw the team performing a heuristics evaluation and develop a framework for usability testing that was implemented on a small population of users. This led to the identification of six overall problems that were classified into three levels of urgency: high, medium, and low. The urgency was established based on the impact the problem had on the ability of users to achieve their goals through IO.

Recommendations to be attended to with high urgency include reorganizing the information architecture to facilitate the flow of action to perform tasks within the application, in addition to rearranging the hierarchy of the elements within layouts to facilitate how users navigate between the screens. Recommendations to be attended to with medium urgency include Improving the affordances of visual elements, and also ensure cohesiveness of the use of terminology and language throughout different sections of the application. Recommendations to be attended to with low urgency include making sure that visual elements are consistent throughout the IO application, and to improve the development of the application to eliminate all system errors that might prevent users from completing tasks.

To translate these recommendations into actual solutions, the team adopted a user-centered approach and devised as strategy to maximize the involvement of users. Open card sorting was the starting point and it was followed by closed card sorting and then tree testing. By that point, paths followed by users to complete tasks were becoming evident, so the team moved on to conduct two rounds of wireframe testing, followed by an A/B testing session that provided users with two different User Interfaces to see which one they preferred. In parallel to the A/B testing, the team sent out a poll of these two User Interfaces to get input from a wider audience which version was more suitable for an official governmental mobile application. The user feedback made it clear which user interface was more suitable for IO and directed the team to develop the final prototype of the redesigned version of IO. This prototype was then subjected to a heuristics evaluation by another team of experts and to the same usability testing that was implemented in the first phase (on the existing IO application). These two steps allowed the team to assess to what extent the redesign process improved the overall usability of IO.

This report showcases the redesign of the IO mobile application as it serves as a follow up to the initial study conducted and aims at providing a solution to the problems that were highlighted during the first phase of this study. As outlined in the previous report, the high number of stakeholders surrounding IO impose legal and administrative restrictions that limit the area of intervention. Therefore, it should be clarified that the resolutions provided at the end of this redesign process were developed within the predetermined scope of interference. The main challenge of this study mainly lies in the fact that different countries have different legal structures, which limited the ability of the team to conduct proper benchmarking of digital solutions used by public administrations of other countries. Another challenge was to utilize the existing design system of IO, a system whose components are not visually consistent, and which were frequently referred to by users as being outdated. The team had to address this issue by recreating elements to fit the existing visual language and to draft the redesigned version keeping in mind that it has to look trustworthy and welcoming all the while following the brand style guide.

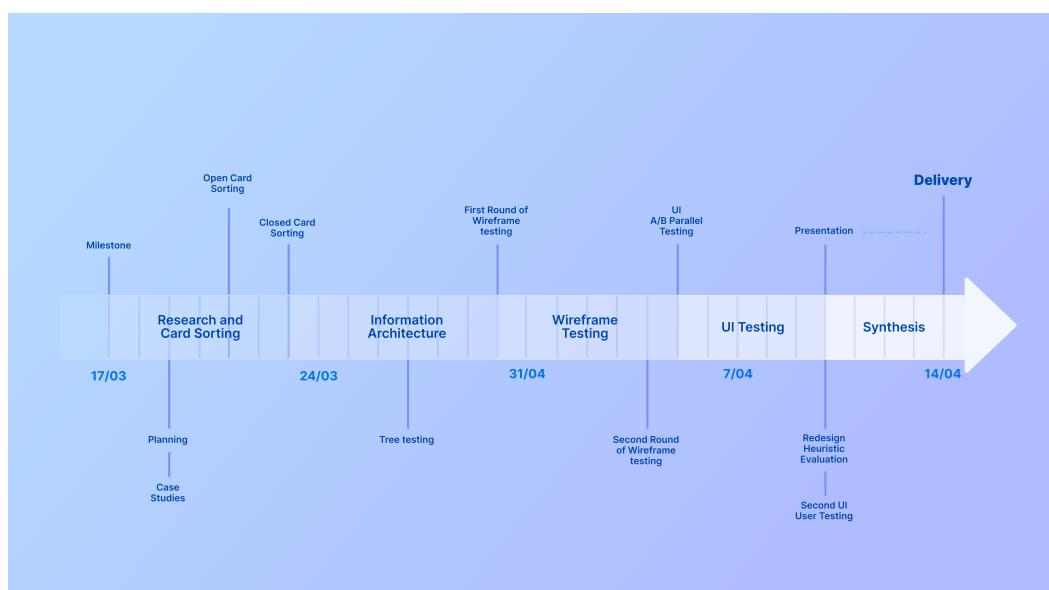
The report will begin with a detailed explanation of the methodology adopted by the group conducting the redesign and then proceed to share the data collected and how it was treated to conceive the final prototype that was then assessed to evaluate the efficiency of the overall redesign process of the IO mobile application

Methodology

This section of the report demonstrates the methods that were used throughout the redesign of the IO mobile application. To get an understanding of how different public administrations around the world communicate with citizens through digital solutions, the team conducting the study started by doing some benchmarking to look at alternative approaches that dealt with similar content. Given that the two main problems discovered in the first phase were the information architecture and navigation, the team conducting the study decided to start with open card sorting to get a sense of how users would potentially group pieces of content into categories that make sense to them. This gave an estimate as to how some users cluster together content and even suggested some common clusters that can be generalized into sections within the application.

The suggested categories were then tested out in a round of closed card sorting where users put pieces of content into the pre-established groups that were derived from the open card sorting. Having addressed the issue of information architecture, the navigation issue had yet to be attended to. After the card sorting, a new navigation structure had been established. Tree testing was used to validate the restructured navigation of the mobile application. With the results of the tree testing in mind, the team proceeded with an iterative design approach to create the wireframes. Two rounds of wireframe testing shed light on small layout and functionality problems that were eliminated before moving on to the Parallel Design approach. During this phase the team developed two User Interfaces that were used for A/B testing on two clusters of ten different users. As the A/B testing took place, a form showing the two User Interfaces side by side was sent out to gather additional feedback regarding the look and feel of the interfaces (and which is more suitable for IO). In view of these results, the team concluded with Competitive Testing where a high-fidelity prototype was developed, subject to a heuristics evaluation by another group of experts and then utilized for the identical usability test that was used to assess the version of IO that is currently on the market. The results of these two evaluations were used to approximate the improvement of the usability of the redesign against that of the existing version of IO. It should be mentioned that the users on which these methods were tested on were both Italian and Foreigners (living in Italy) and belonging to different age groups. A diverse pool of users was picked to ensure that the process followed includes mental models representative of the diverse population that lives in Italy.

The following timeline represents the chronological order of the steps adopted by the team members to conduct the redesign.



Card Sorting:

Given that one of the primary problems identified in the first part of this study was the information architecture of the IO mobile application, it was evident that the content had to be restructured. To build the new structure of the information architecture, card sorting was used since it is a method that allows users to categorize topics/pieces of content into clusters that make sense to them. The results of this method will give an understanding of the users' expectations and how they perceive the topics. Since one of the other problems discovered was the use of terminology throughout the application, the team decided to follow a hybrid card sorting approach. A round of open card sorting would be initially implemented where participants would be asked to group content and freely name the clusters. This would give an approximation of how users group topics and generate suggestions for labels of clusters, some of which could potentially be repeated across users. A round of closed card sorting with a different set of users would follow: participants would be asked to sort the same content that was used in the open card sorting, but this time into pre-established clusters that were obtained from the first round of open card sorting. The results of the closed card sorting would relatively reinforce the clusters of content that were identified in the open card sorting and validate the new labels generated. The results of the two rounds of card sorting would guide the creation of a new structure of information architecture for the redesigned IO mobile application.

The following forty cards used for the sorting were derived from the content of the existing version of IO.

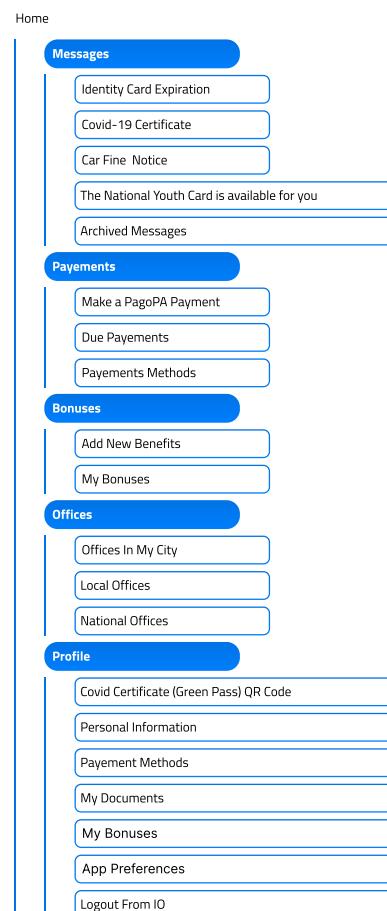
Description of Turin TARI communications within IO	Car Tax Expiration Reminder	Add new benefits	Car Fine Payment	Credit/Debit/ Prepaid/ Bancomat Cards	Send suggestions to IO	Ministry of Labour and Social Policy Info	Comune di Milano website
Notification settings from Agenzia delle Entrate	Holiday Bonus	Green Pass QR Code	App Preferences	New Bonus Available Notice	Update for Requested Document	Car Tax Payment	National Youth Discount Card
Call the Registry office of Naples	Notification settings for upcoming events in Venice	Write an email to INPS	App Security settings	Supermarket Credit cards	ID card Renewal date Reminder	Cashback	Call ACI Office
Your Personal Codice Fiscale	Car Fine Notice	Demographic office of Rome address	Notification settings for ISTAT	Full Covid Certificate (Green Pass)	Contact IO support	Logout From IO	Personal Information
Write an email to Florence Education office	Make a Pagopa Payment	Previous transactions	App Description	General Notification settings	Add new Payment method	Codice Fiscale Barcode	Education Ministry Contacts

Tree Testing:

Consecutive to the card sorting, tree testing would be applied to evaluate the new hierarchical structure that would come after the card sorting. Given that navigation is a severe problem in the existing version of IO, tree testing would be crucial in determining how easily people can find information through the new navigation structure that resulted from the previous step. Tree testing would also help validate both the categorizations and their labels that resulted from the card sorting.

As for the tree itself, it would be constituted from the forty cards used for the card sorting however in this case the content would be categorized hierarchically, based on the categories that would emerge from the card sorting. The tasks followed by users while doing the tree testing would determine the quality of the insights gathered from the test, therefore they should be simple to understand as well as validate the new navigation structure.

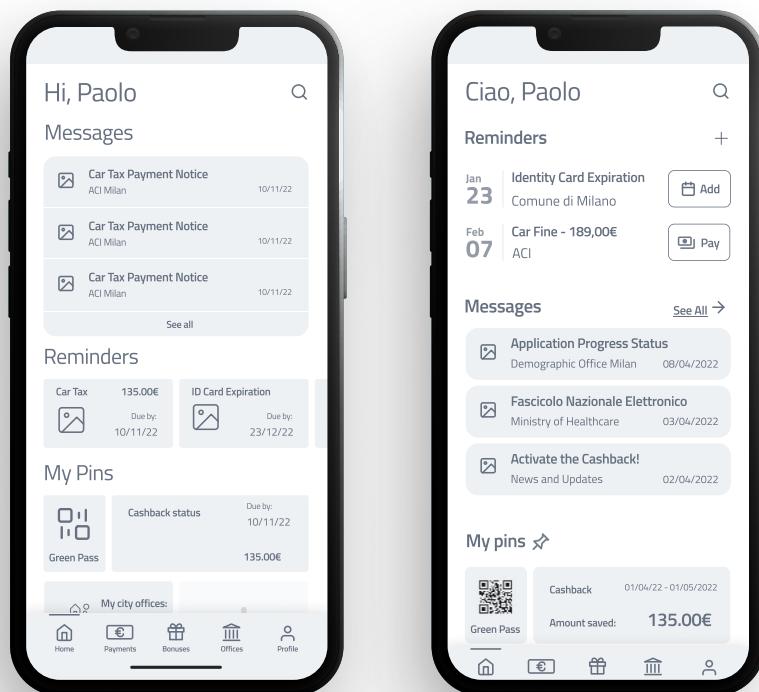
The tasks to be done by users would include the original five tasks delineated in the first part of the study as well as other potential tasks that could arise in case some new categorizations from the card sorting needed additional validation. The results of the tree testing would show whether or not the proposed navigation structure is easy to follow by users as well as indicate which paths users would initially follow to complete a task, possibly hinting at new navigational patterns that are not yet evident.



Iterative Design Phase

Considering the results of the tree testing, a preliminary version of wireframes would be developed to test the layout content and hierarchical structure of some pages of the mobile application. The main purpose of these wireframes would be to understand how users would read the content of the pages and validate whether the terminology and structure of the mobile application meets user expectations.

These wireframes would be developed quickly and tested on a small sample of users to get an initial set of feedback early in the design process. Users would be asked to complete the five primary tasks that were identified as being the core features of IO. Iterations would be made to the wireframes with the insights from the first round of testing and then the wireframes would be tested again on a different and slightly larger sample of users to get another set of feedback. Ideally, this process would be repeated several times however given the time limitations of this project only two rounds of iterations would be held. This iterative approach with low-fidelity wireframe prototypes would validate page content and functionality and improve these features incrementally throughout each iteration. Keeping track of the number of clicks and paths followed to complete tasks would give an idea of the improved usability between the iterations. The results of the wireframe testing followed during the Iterative Design phase would serve as the basis for the higher fidelity prototypes that would be developed during the forthcoming Parallel Design phase.

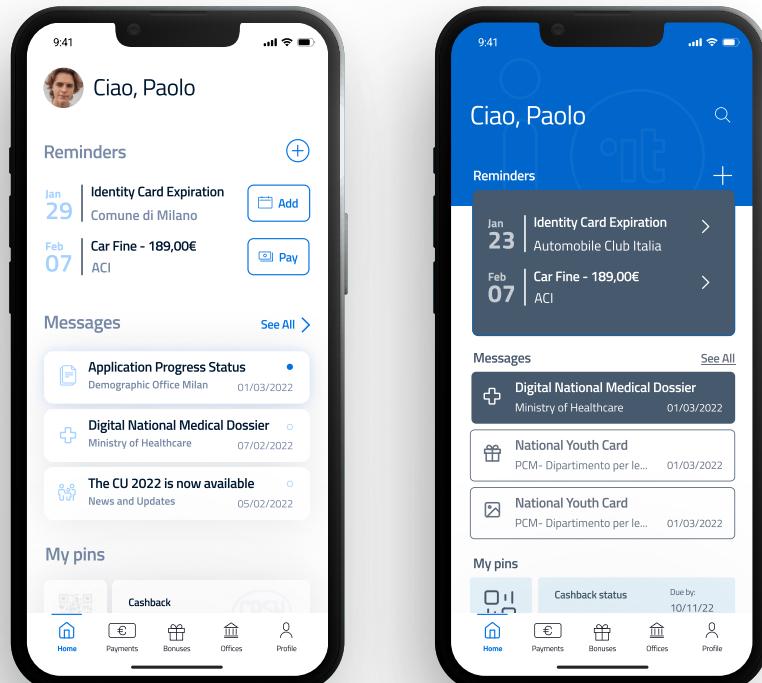


Parallel Design Phase

In the parallel design phase, two alternative prototypes would be developed at the same time, each alternative by two members of the group conducting the study. The content of the pages would be identical as it will be based on the results of the Iterative Design phase, however the prototypes would differ in terms of functionality and look and feel (both alternatives would still follow the same IO style guide however). This phase will also include some research that will help understand what sense of aesthetics is best suitable for a government mobile application that should convey to users a sense of trustworthiness and reliability.

In this part of the process the fidelity of the prototypes would be increased in terms of: visual refinement, breadth and depth of functionality, interactivity, and data model. Once completed, these two prototypes would serve as the basis for a round of A/B testing where a different set of users would test each alternative (ten users would test version A and ten other users would test version B). It should be mentioned that the users would be different than the ones that participated in the previous Iterative Design phase to prevent any potential bias that might arise from a past experience. The A/B testing would have users complete the same five main tasks that are serve to assess the core features of IO. The results of the A/B testing would indicate which features would be implemented in the final prototype that will be delivered at the end of this study. Similarly to the wireframe testing, keeping track of the clicks and paths followed would give indications on the effectiveness of each alternative compared to the other. Simultaneously to the A/B testing, a form would be sent out online to get insights from a wider audience on which look and feel they think would be more suitable for a mobile application that handles public administration matters in Italy. The form would focus on the look and feel, and will not test functionality, as responders will only be asked to pick between two alternatives of the same page (and potentially explain their choice) but not deal with any interactive prototype.

The results of the A/B testing and the form should clarify which alternative to develop as a final prototype. However, it should be acknowledged that the results might not be as disjointed as expected, which could potentially suggest a third hybrid alternative that merges aspects of both designs.



Competitive Testing Phase

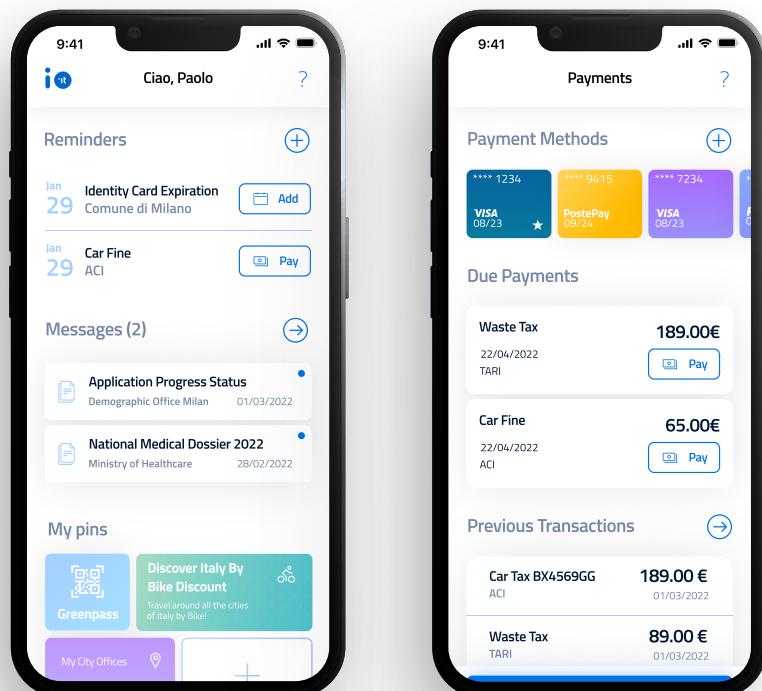
This phase would be the final part of the redesign process: in light of the results of the Parallel Design phase, one final high-fidelity prototype would be built, tested, and then benchmarked against the existing version of the IO mobile application.

For the competitive testing to be accurate and effective, the same process that was used in the first study to measure the usability of IO should be followed to measure the usability of the redesigned solution.

The prototype would initially undergo a Heuristic Evaluation to highlight potential residual problems, with the same standards set by Jakob Nielsen's '10 Usability Heuristics for User Interface Design'. The level of involvement of the group members conducting the study in developing the high-fidelity prototypes should be taken into consideration as it might bias the Heuristics Evaluation. For that reason, another group of four experts with similar expertise in usability engineering (classmates in the Digital Design Studio course) would be asked to perform the Heuristics Evaluation.

The high-fidelity prototype would then be subject to the same usability test that was developed in the first part of the study. To prevent any bias that might have developed from the round of usability testing conducted in the first study, a new set of users would be asked to participate in the test. The full procedure followed for the usability testing is attached in the appendix of this report.

The data that will be collected during this phase would be used to measure the usability of the redesign of the IO mobile application using the same metrics that were used to evaluate the usability of the existing version of IO on the market. The benchmarking of these results against those collected during the first study will approximate to which extent the redesign process was successful in improving the overall usability of IO.



Tests Procedures & Data Compilation:

The redesign strategy adopted throughout this study is linear and therefore all the methods previously listed should be conducted in the chronological order in which they were presented.

The results collected from each method would be served as the foundation of the following method in the process. Given the short time frame of the study, not all the tests would be administered on site. Excluding the Usability Testing and Heuristic Evaluation of the high-fidelity prototype that will be exclusively administered on site, the remaining methods (from the card sorting to the A/B testing) will be administered in a hybrid manner to be able to reach a wider range of participants for the tests.

In all tests, participants would be asked to perform the CTA (Concurrent Think-Aloud) method to provide the team with additional qualitative insights. For the tests performed in the Iterative Design, Parallel Design, and Competitive testing phases screen recordings would take place to ensure that the metrics to be measured are accounted for. The methods followed during the redesign process would provide the team with both quantitative and qualitative data, however given the small number of pool of users that participated in the tests, the data cannot be used as statistical data that is representative of actual user base of the IO mobile application. These metrics would help the team understand the behavior of users and combined with the qualitative data gathered, would lead to more concrete findings that would chronologically guide the redesign process leading to the final high-fidelity prototype.

Results

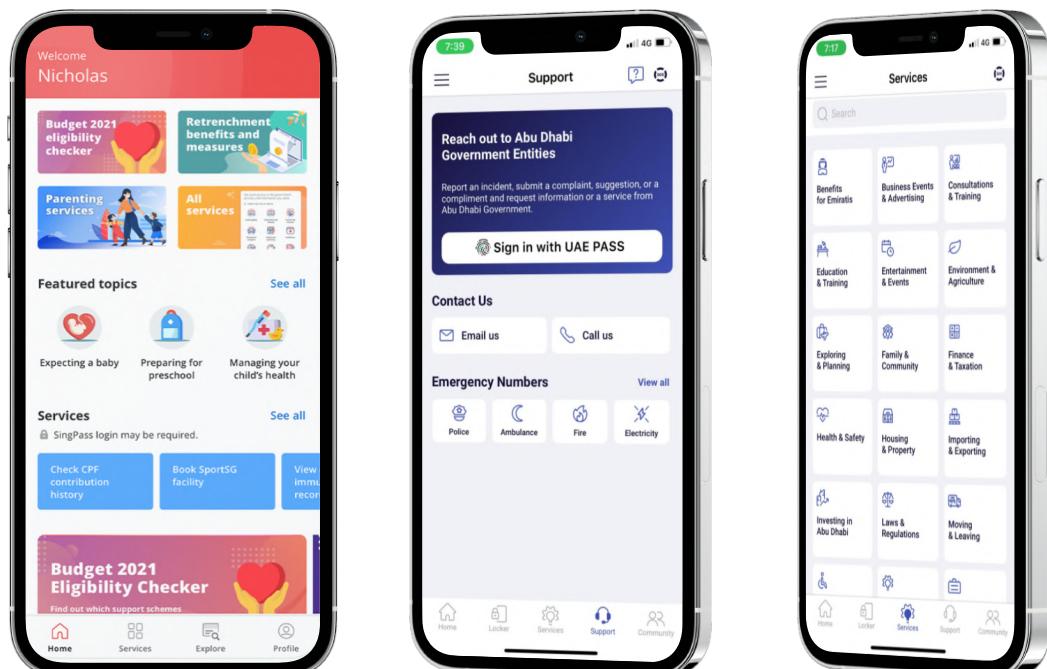
The following section of the report contains the results of the various methods that were employed throughout the study. The results are reported in the same order as the methods that led to them as they were used throughout the study.

Case Studies

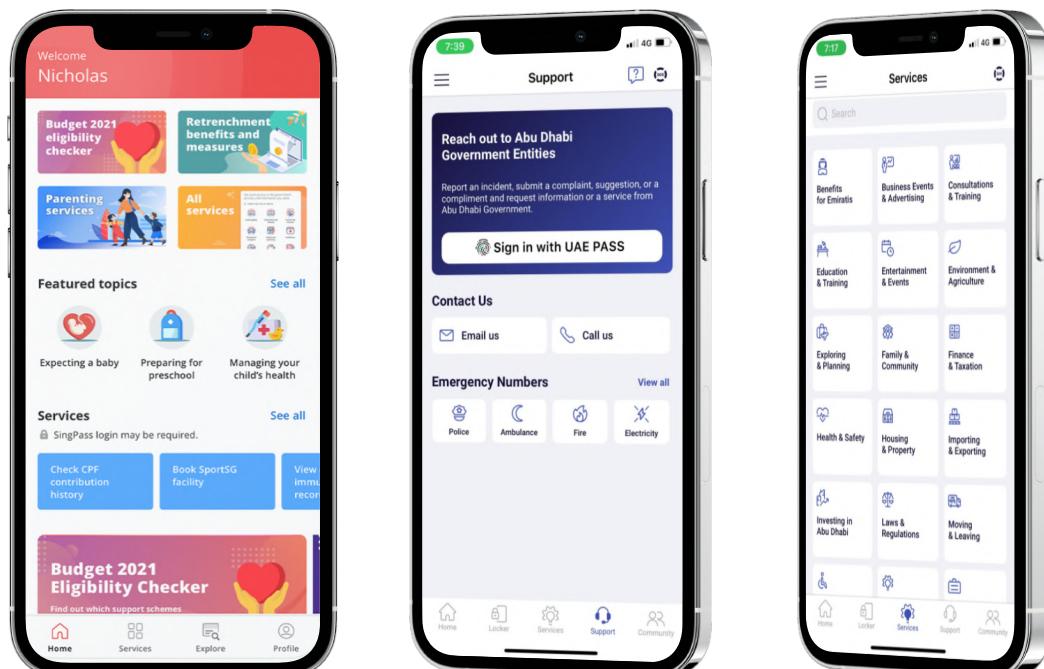
To initiate the redesign process, the group would start by doing some benchmarking to understand how mobile applications from other countries simplify handle complex legal structures and simplify them into a manageable touchpoint for the end user. The main purpose of the benchmarking is to assess how other digital solutions present to users information regarding various public administration, given that this part (that is related to the information architecture structure) was one of the most problematic sections of the existing IO mobile application.

Three main case studies were used for this part of the analysis:

1. Singpass: a Singapore government agency mobile application that allows citizens to access government data sources and public services.
2. Démarches: a French mobile application that explains to citizens the various services that public administrations fulfill.
3. Tamm: Abu-Dhabi government mobile application that informs citizens of all governmental services.

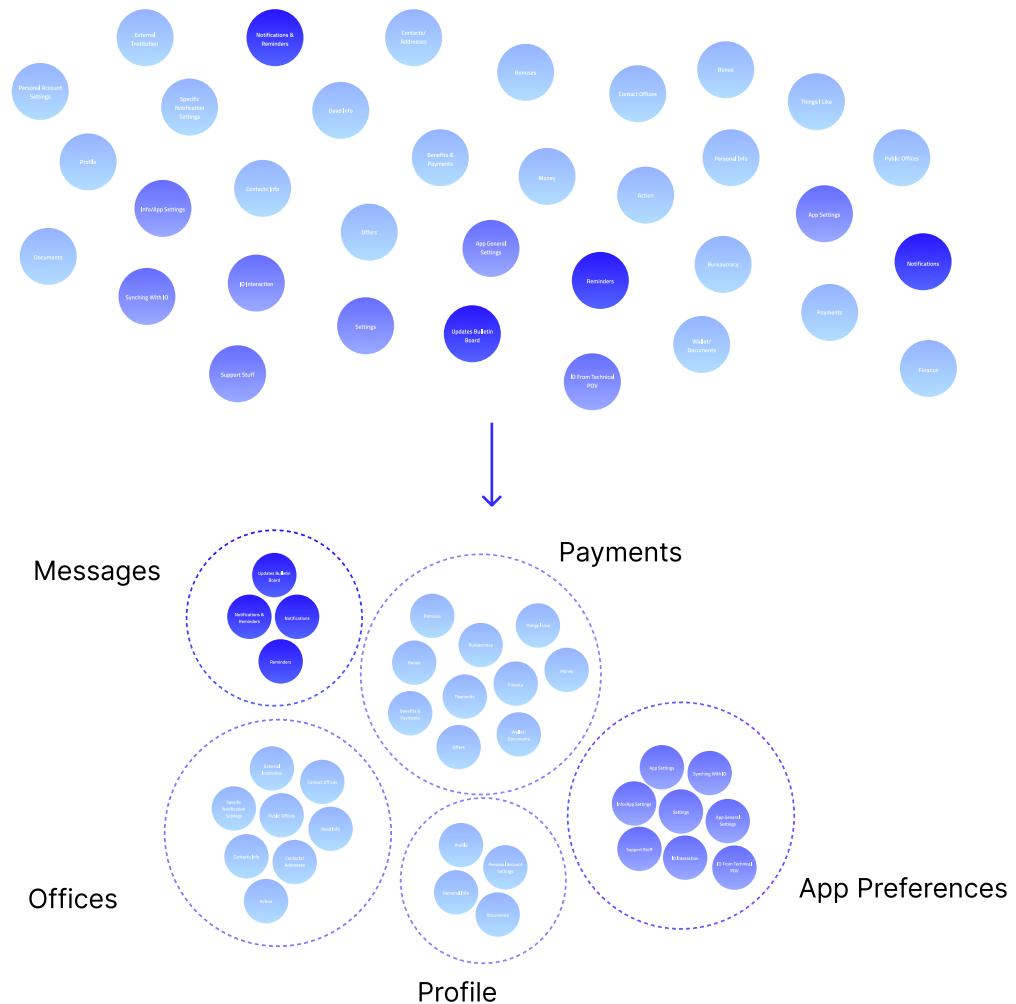


It should be noted that all countries have a different legal structures that translate differently into the information architecture structure of the mobile application that is developed by these countries governments. For this reason, the benchmarking will only look at how the information architectures of these applications deal with the numerous number of public administration and present the information to users. The three digital solutions have a similar approach to IO (despite the different User Interface) where they present the information with really long lists. Even if in the case of these three applications these lists are grouped into categories that the users have to pick between, the problem is still there as users still have to follow a long journey before finding the information that they need. This tabbed view approach could work if the steps were not that numerous, however in the case of IO it would be counter productive as the Local Services sections that contain more than a thousand entry (all Comunes in Italy and the services they provide). For this reason, the team decided to adopt a hybrid information architecture approach that combines the tabbed view approach and the dashboard approach. Given that the local services depend on geography, the information could be presented through a dashboard that utilizes intelligence to present to users the local services that are available in the city they are located in. This would eliminate an unnecessary long process where users have to browse through all the services in Italy just to find the ones that are near to them. Given that the National Services are less numerous and more structured, they could be handled with a tabbed view information architecture. The remaining sections of the application would also follow a tabbed view information architecture pattern.



Open Card Sorting

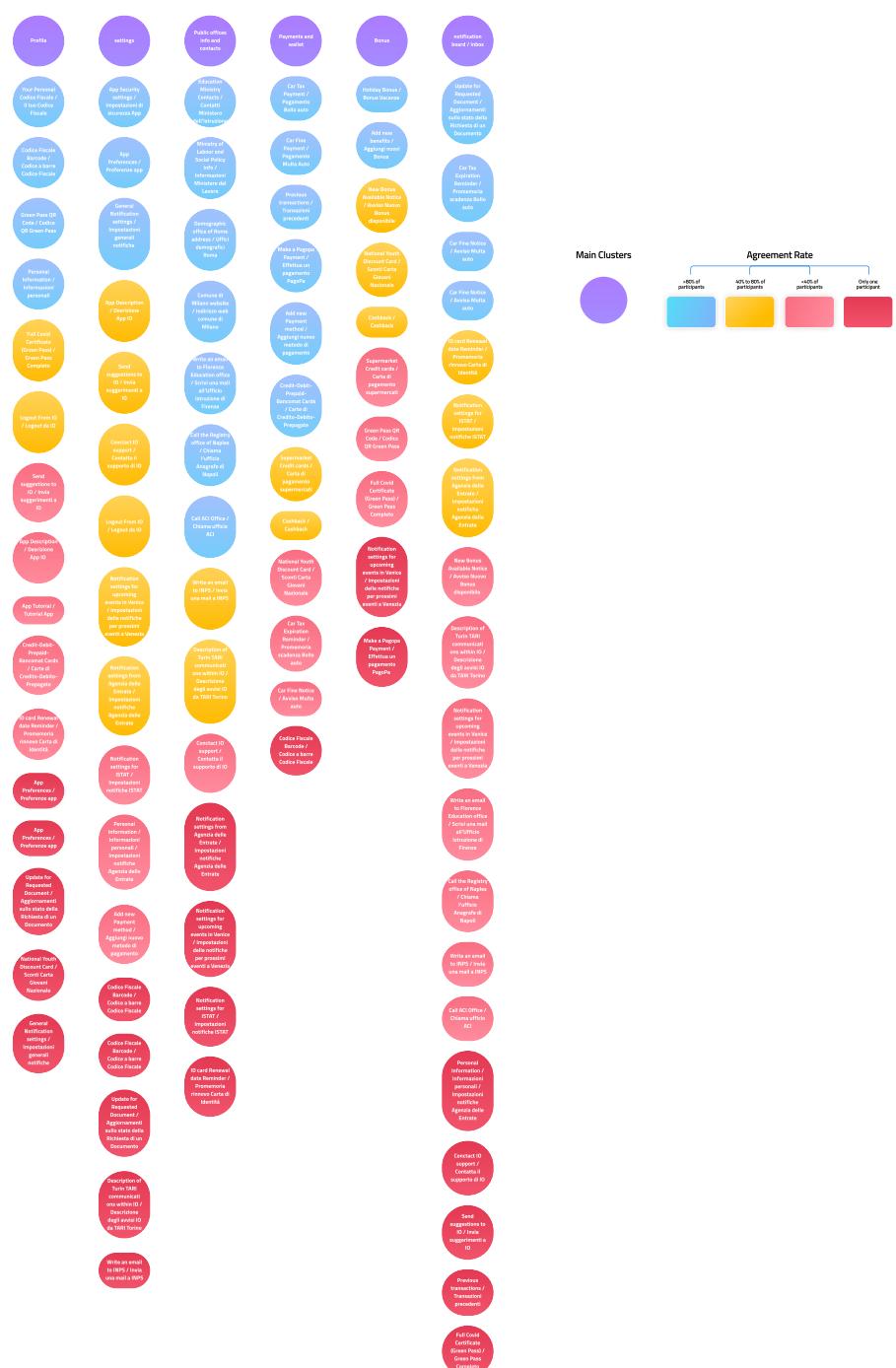
During the initial round of open card sorting, seven participants rearranged forty cards freely into clusters that made sense to them and then proceeded to name these clusters as they saw fit. For the detailed results of the open card sorting, kindly refer to the appendix. In total, the participants of the open card sorting created thirty-four clusters that they gave labels to. These labels were then grouped together thematically into five categories by the members of the team conducting the study and finally each category was given a label. The diagram below shows the process that was followed to handle the results of the open card sorting.



These five categories would be tested out in the closed card sorting. A different set of participants would be asked to group the same forty cards used in the open card sorting into these pre-established categories to test the efficiency of these labels.

Closed Card Sorting

Twelve users participated in this second round of card sorting. This round served as a validation for the labels that were generated in the previously held open card sorting session. It is interesting to note that some users placed pieces of content in unexpected categories, however after revising these results it turned out that sometimes these suggestions made sense and were included within the new structure of the information architecture as they could appeal to the existing mental models of some users. The cards were filtered based on the agreement rate (compatibility percentage in the placement of cards across the different categories) and based on those results, the structure of the information architecture was drafted. The results of the closed card sorting are documented in the scheme attached below.

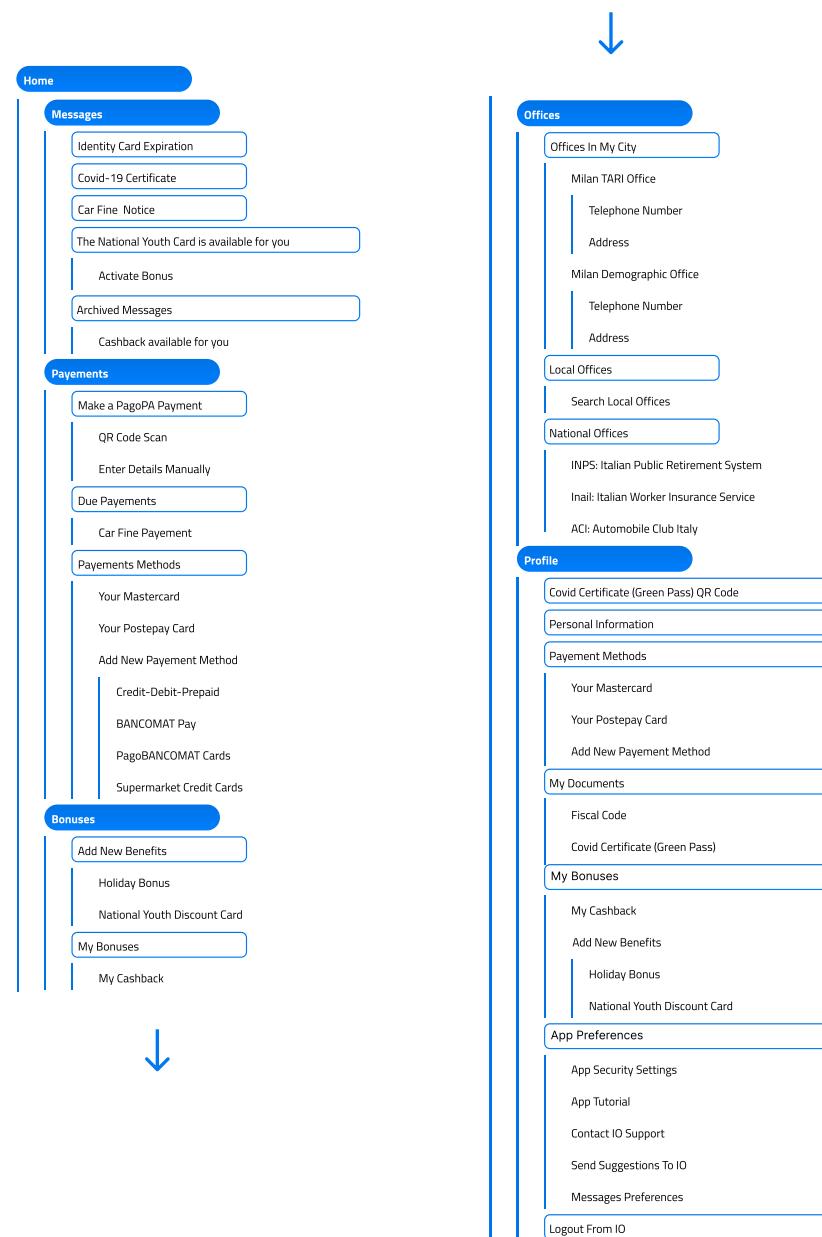


Tree Testing:

Now that the new structure of the information architecture has been more or less established, tree testing would clarify if users would be able to navigate through these labels to find the information they are looking for to complete the tasks. The number of tasks that were used for the tree testing was increased for the sake of testing all the categories of the information architecture (and not just those limited to the five main tasks previously outlined).

The tasks that users performed were:

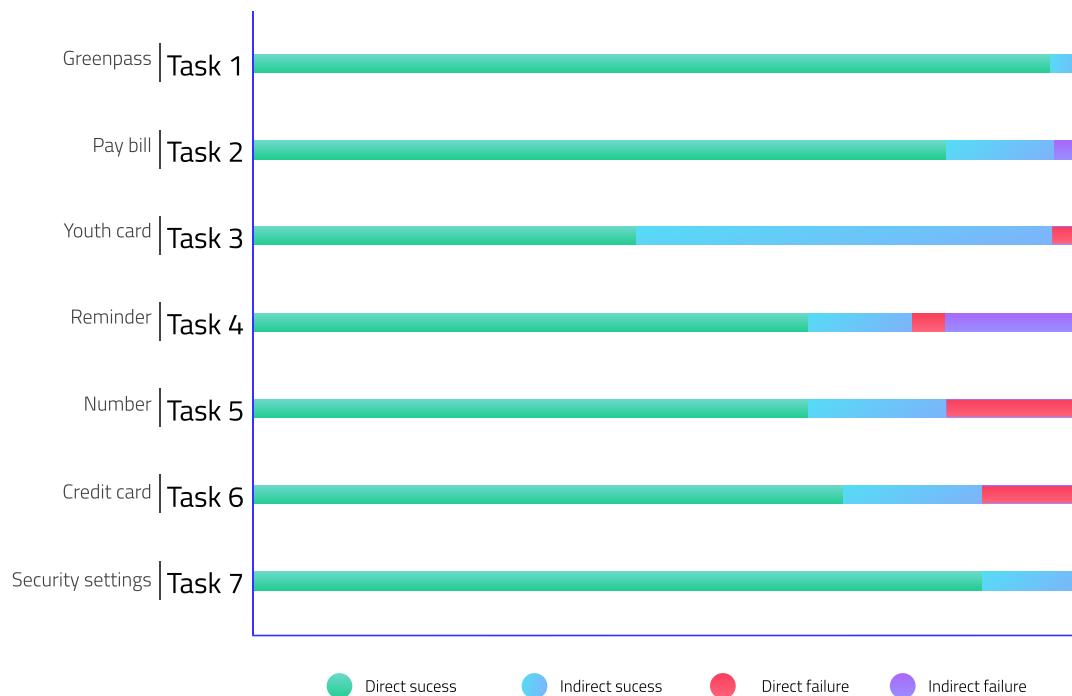
- Access your GreenPass
- Pay a PagoPa bill by scanning the QR Code you received
- The National Youth Discount Card is now available for you. Activate it.
- You received a reminder from your Comune. Go read it.
- Find the number of the demographic office of Milano.
- Add your Credit Card as a new payment method
- Check the app security settings



Twenty four users participated in the tree testing and the results, that are reported in detail in the appendix of this report, suggest the following:

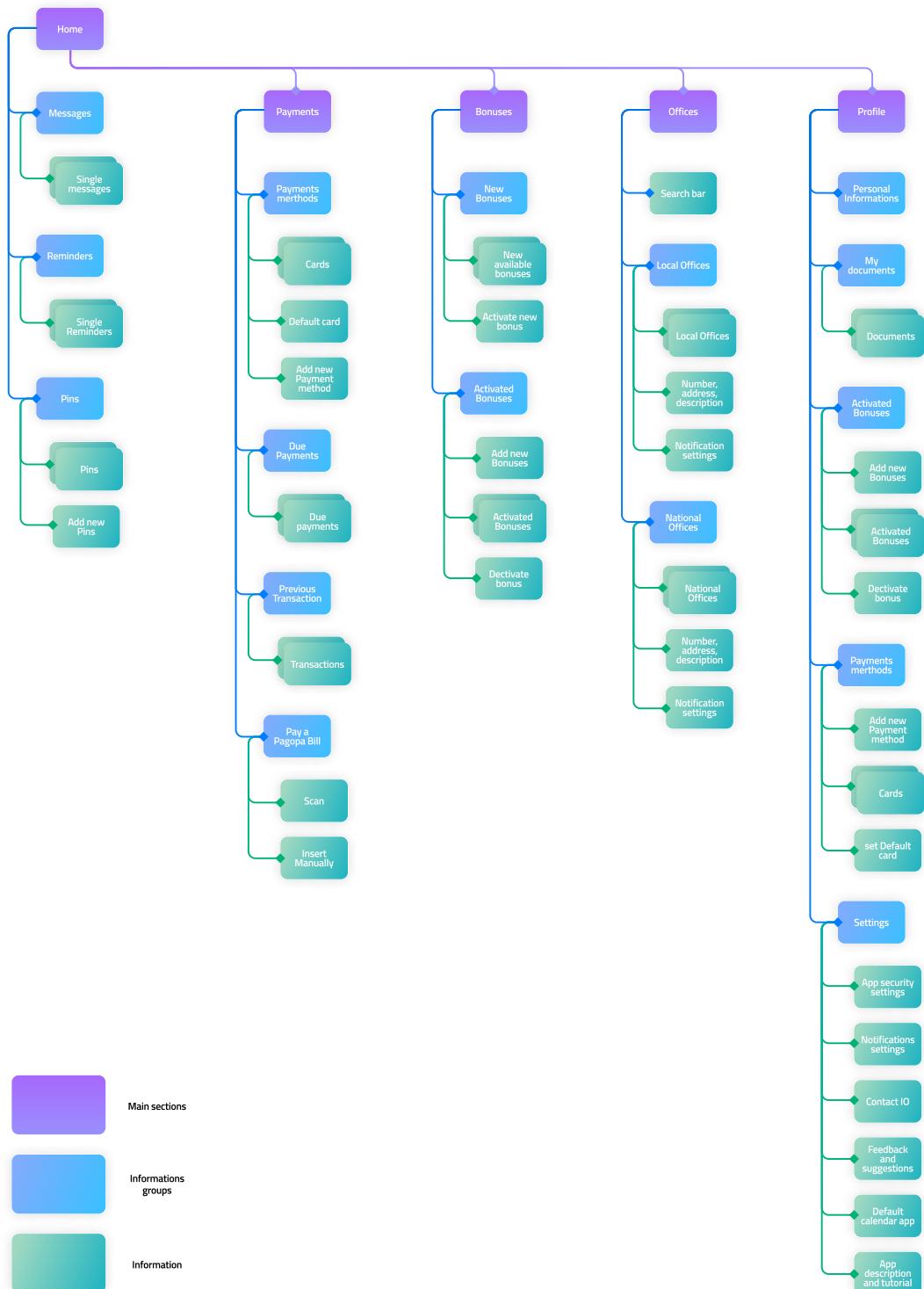
Majority of users effortlessly found the content they were searching for in the new divisions of the application that were generated from the card sorting.

Small number of users still took paths that they are used to following in the existing version of IO. Therefore, following Dan Brown's 'The principle of front doors' the navigation structure of the redesigned version of IO should also cater to the behavior of these users given that they are accustomed to performing tasks a certain way.



Information Architecture:

The findings validate the new structure of the information architecture that is represented in the following map.

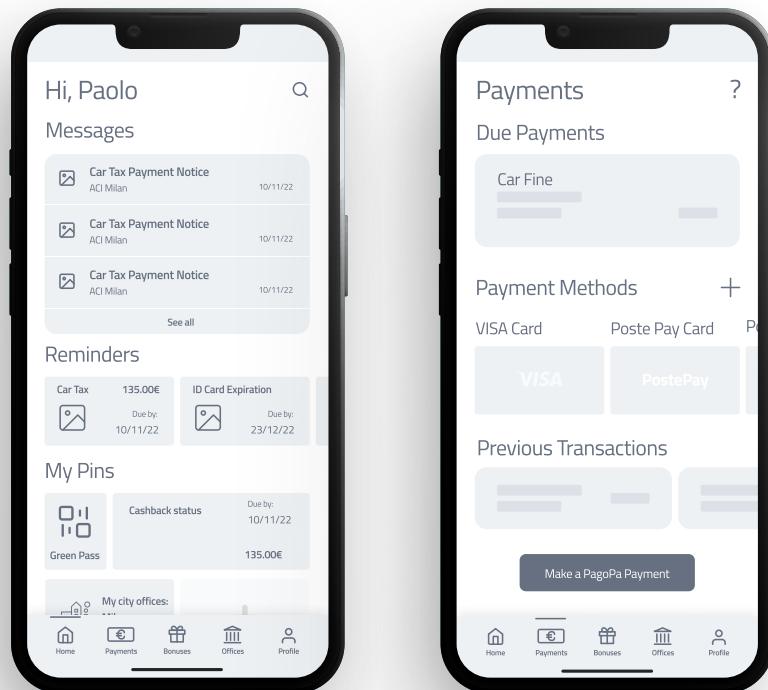


Iterative Design

To translate the content into the tabbed view and dashboard information architecture patterns that will be adopted for the redesign, the first decision that was taken was to add a homescreen that provides to users relevant content. It should be highlighted that the existing version of IO does not have a homepage. Given that messages and reminders are two of the main features of IO, the team thought it would be best if they could be easily accessed from the homescreen. Given the richness in content of the application, giving users to pin certain information, more notably personal documents , to the homescreen would save users from having to explore the application everytime they need to access the same piece of content. For these reasons, the homescreen will contain three sections: 'Messages', 'Reminders', and 'My Pins'. The decision to split up the 'Reminders' from the 'Messages' came from the fact that messages might become hidden with time whereas users might need to be reminded of some official legal tasks (paying important bills for example).

Based on the findings from the card sorting rounds and tree testing, the team developed preliminary wireframes that would be tested on five users where they were asked to perform the seven tasks previously highlighted. This test was informal and was only used to gather qualitative feedback from users. The most imported results of this test are documented below:

- One user suggested to raise the button to make it more evident
- One user suggest that the app preferences in user profile could be labeled as settings.
- All five users successfully achieved the seven tasks easily. This suggested that the test was too easy and the limitations of the prototype might have biased the results and guided the participants into taking the correct paths.



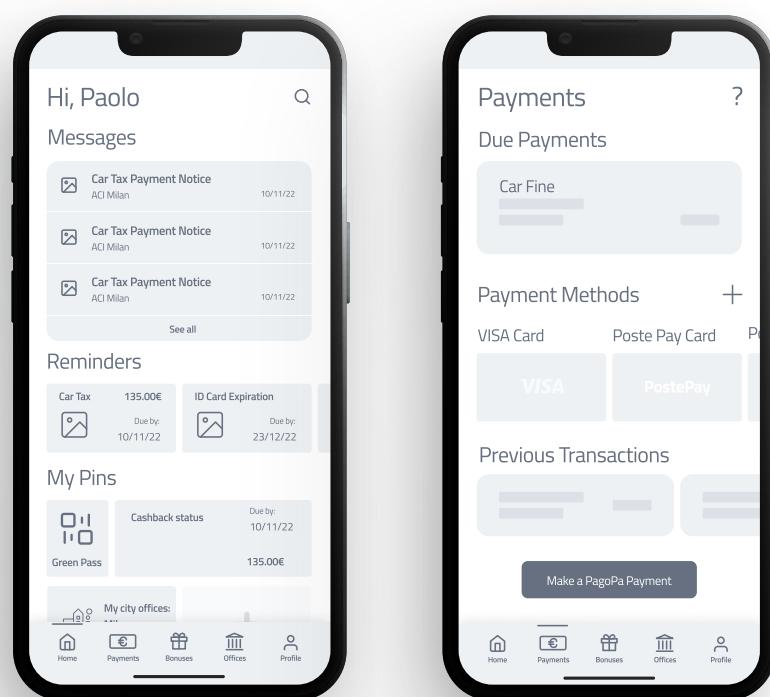
Iterative Design

Iterations for next round:

Develop more encompassing flows of the prototypes to prevent users from being guided by the responsiveness of the prototype as opposed to the content of the wireframes.

Increase number of links within pages.

Increase the number and complexity of the tasks to efficiently assess the design.



Iterative Design

After completing the iterations from the first round of wireframe testing, a second round was conducted with ten different participants. This round was done to validate the previous assumptions while attending to the insights from the first round of wireframe testing. Furthermore to test out different sections of the wireframes and how they relate to each other, participants were asked to perform eleven tasks that are more complex to more efficiently assess the content and functionality of the wireframes.

1. Access your GreenPass and save it on your Gallery
2. Pay a PagoPa bill by entering the details manually
3. The National Youth Discount Card is now available for you. Activate it.
4. You received a reminder from your Comune. Add it to your phone Calendar.
5. Find the number of the demographic office of Milano and tap on it.
6. Add your Credit Card as a new payment method
7. Check the app security settings
8. Pin "Offices in my city: Milan" to the dashboard
9. Turn ON push notifications from the national service ISTAT
10. Make "PayPal" your preferred payment method
11. You need to check the message "Ministero dell'Interno" sent you on the date 13/03/2022 and archive it

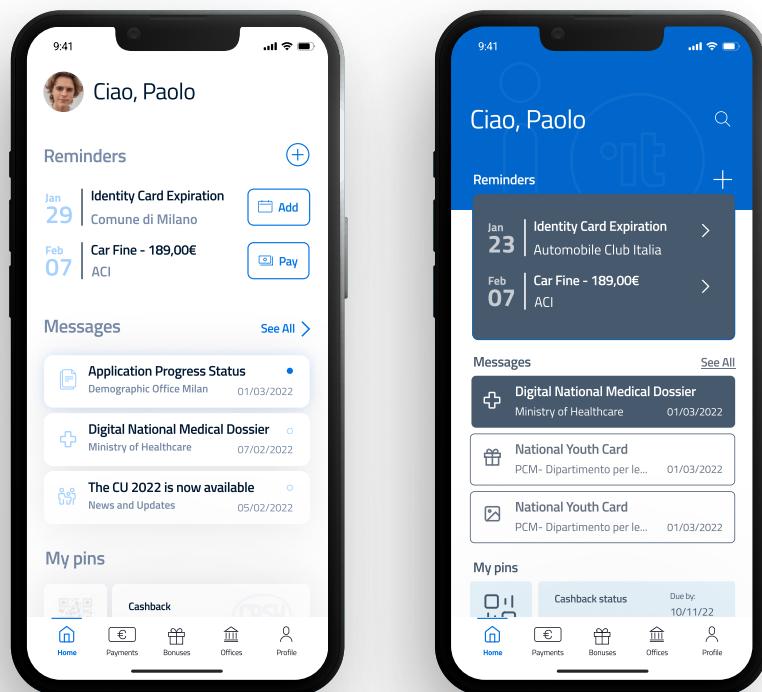
Many of the tasks could be achieved from different sections of the wireframes so it was important to understand which paths participants were following, and what guided them to take those paths in particular. In this second round of Iterative Design, qualitative and quantitative data were gathered. The quantitative data pertained to recording the number of steps and time needed to perform tasks while qualitative data explained while participants made certain decisions. The results of the test are documented in detail in the appendix of the report.

Ten out of Ten users successfully completed the eleven tasks. This meant that the information architecture and navigational structures are easily understood by users through the wireframes and that it was time to move on to prototypes with higher dimensions of fidelity to start testing the User Interface of the redesign.

Task n	Task 2nd Wireframe	Success Rate	Avg Time	Avg Clicks
TASK 1	Access your GreenPass and save it on your Gallery	100%	31.5s	8.7
TASK 2	Pay a PagoPa bill by entering the details manually	100%	39.1s	7.3
TASK 3	The National Youth Discount Card is now available for you. Activate it.	100%	20.7s	5.5
TASK 4	You received a reminder from your Comune. Add it to your phone Calendar.	100%	22.2s	2.8
TASK 5	Find the number of the demographic office of Milano and tap on it.	100%	32.3s	12.4
TASK 6	Add your Credit Card as a new payment method	100%	10.7s	3.7
TASK 7	Check the app security settings	100%	12.2s	3.1
TASK 8	Pin "Offices in my city: Milan" to the dashboard	100%	24.7s	5.3
TASK 9	Turn ON push notifications from the national service ISTAT	100%	45.6s	7.1
TASK 10	Make "PayPal" your preferred payment method	100%	10.0s	4
TASK 11	You need to check the message "Ministero dell'Interno" sent you on the date 13/03/2022 and archive it	90%	1m 44s	15.5

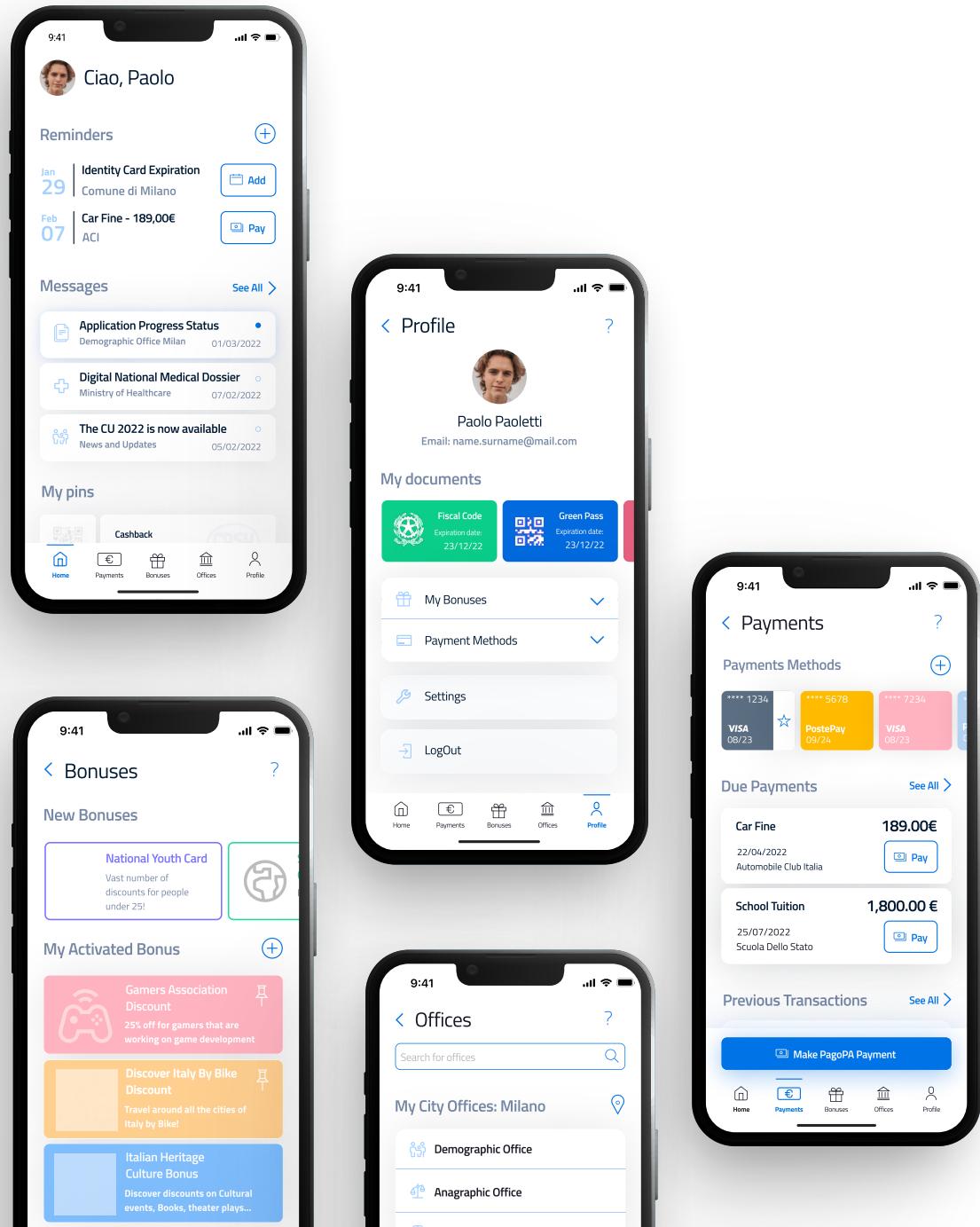
Parallel Design

Based on the findings that emerged from the Iterative Design phase, two different versions of the prototype were developed. This was done to test some functionality aspects that still had question marks from the wireframe testing. This would also help understand which look and feel is more appropriate for a mobile application like IO. During the first phase of the study, some participants reported that the application looks outdated. The visual language of the existing IO User Interface did not obstruct participants from achieving their goals during the usability testing conducted in the first study (information architecture and navigation structures had a much stronger negative impact) therefore aesthetics was classified as a low urgency problem. For this reason, the team decided to work with the existing style guide of IO and recycle the existing elements into different designs that would appear as being more contemporary and up to date to users, all the while conveying trustworthiness and reliability that are needed for the image of a governmental mobile application. The mobile applications used for the benchmarking (Singpass, Démarches, Tamm) served as a good starting point to understand the aesthetics of User Interfaces of other governmental mobile applications around the world. The illustrative aesthetic of the 'Singpass' application contrasts to the more sober approach followed by the IO design team, for this sake 'Singpass' will not be used as visual reference.



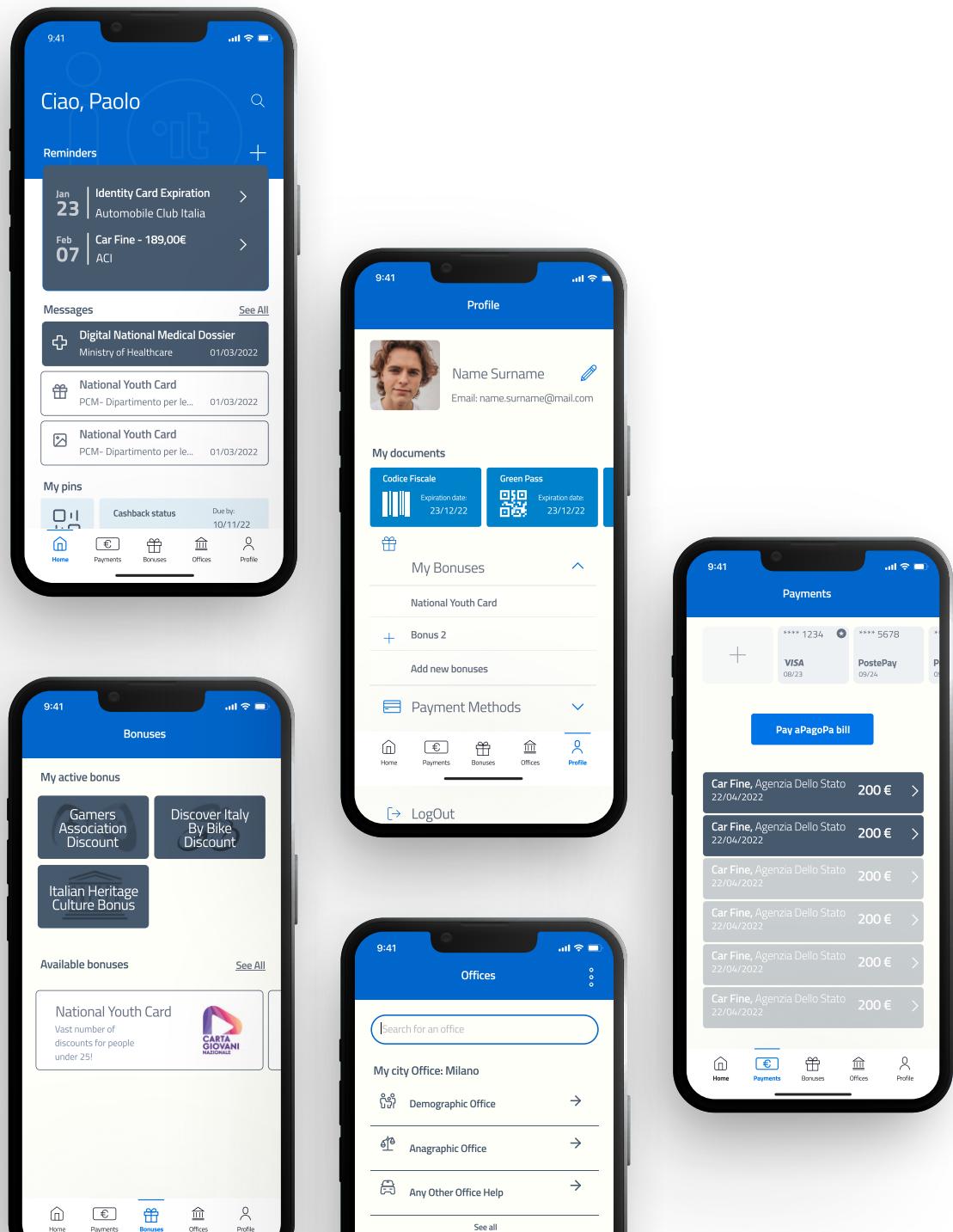
Parallel Design Version A

The 'Tamm' application follows a slightly different approach where shadows are used to create depth and icons are used in a less intrusive manner where they act as backup affordances rather than big decorative elements. The layouts of the User Interface are cleaner and easier to read. This is achieved through the usage of smaller typographic elements, the usage of different shades of the same color and the employment of shadows and colors that hint to users which elements are clickable. The second alternative prototype will follow a similar strategy to achieve a contemporary and user friendly look and feel utilizing the existing components of the IO style guide.



Parallel Design Version B

The User Interface of the 'Démarches' application is similar to that of IO in terms of use of white space and color, even if the layouts of the French application can be considered as too packed they have better hierarchy. The use of flat colors similar to the IO style guide works well, for this reason one of the two alternatives developed will follow the identical visual language of the existing version of IO with alterations to the usage of the existing visual elements (color, typographic sizes, icons...).



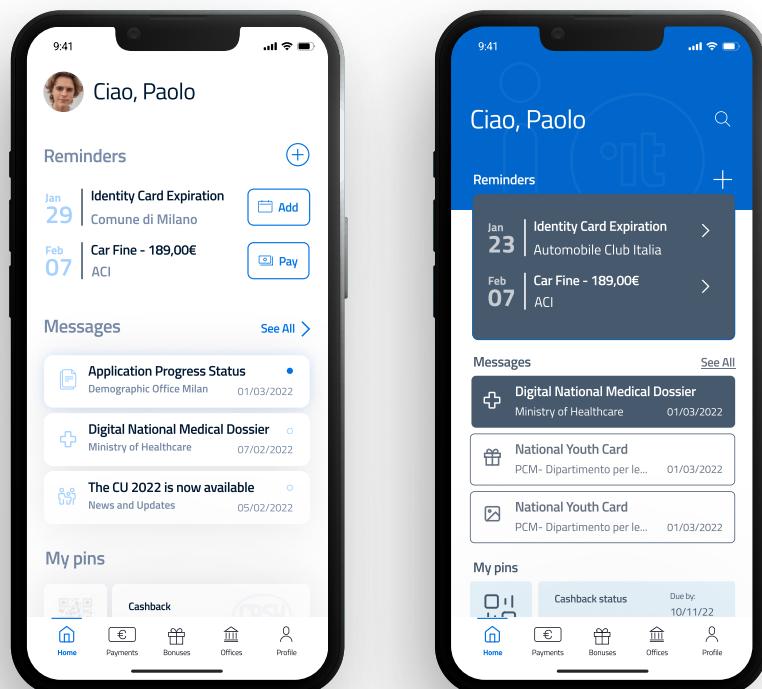
Parallel Design A/B usertest

Both of these new User Interfaces were translated into two different mid-fidelity prototypes that were used for a round of A/B testing. Each version was tested on different groups of ten users who were asked to complete the following tasks:

1. Open the Green Pass and save the code to your gallery
2. You received a message from the medical office, find it and read it.
3. You received a PagoPA bill without a QR code on it, pay it by adding the details manually.
4. Sustainable Consumption Discount card: The sustainable consumption discount is available to you, find the sustainable consumption discount card and activate it.
5. Find the number of the ISTAT National Institution and call them.

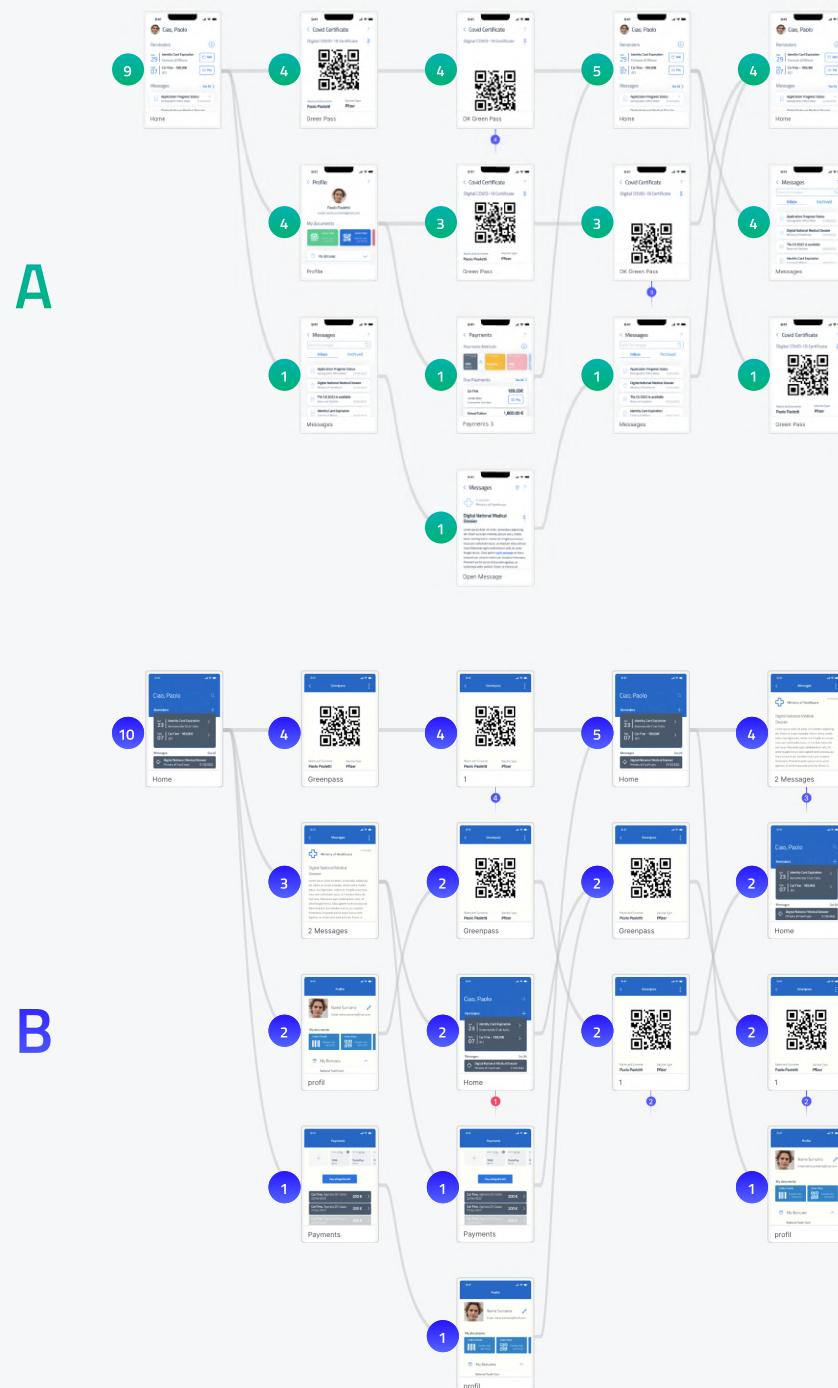
With a total of twenty user, where ten tested version A and another ten tested B, the data collected include clicked elements (represented through heatmaps), time measurement, misclick rate, number of steps, and success rate (all features provided by the service used for the test).

The results showed that version A allowed for a higher success rate than version B. However, version A had a higher misclick rate - clicks on elements that are not clickable- (forty-three percent) compared to version B (twenty-two percent). The heatmaps below illustrate that participants who tested version A clicked more on elements that were not clickable, hinting that the affordances of the visual elements used had to be revised.



The A/B results where compared and analysed, understand their performance in terms of time and step/clicks. And also to be able to understand the paths taken by users.

The schemes below illustrate how the results were tracked and then analyzed by the team conducting the study. The full data that was used to assess these tests is attached in the appendix of the report.



The diagram below illustrates an overview of the A/B tests results:

Version A

Version B

Users

Users that successfully completed all tasks

9/10



Time

Overall average time

2 min 59s



Misclick rate

Clickes outside the hotspot

43%



Users

Users that successfully completed all tasks

10/10



Time

Overall average time

2 min 2.7s



Misclick rate

Clickes outside the hotspot

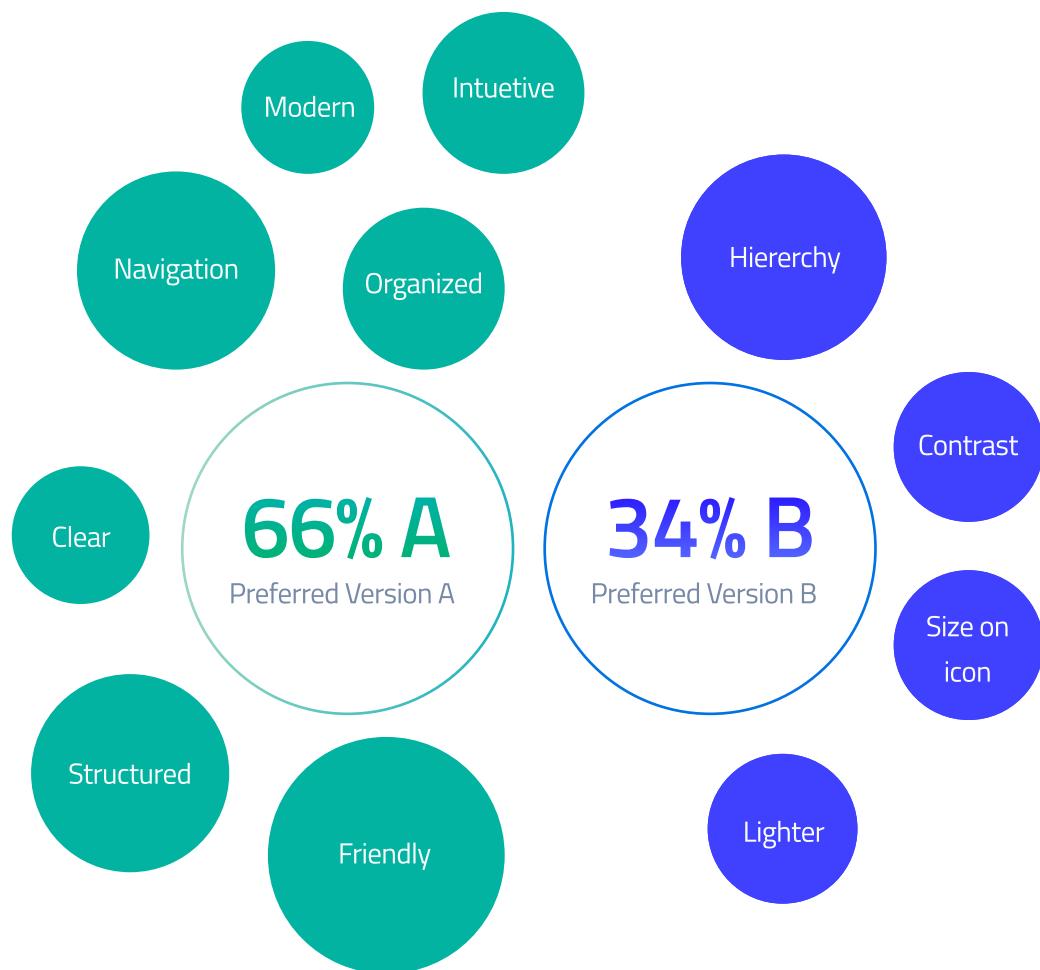
26%



Parallel Design

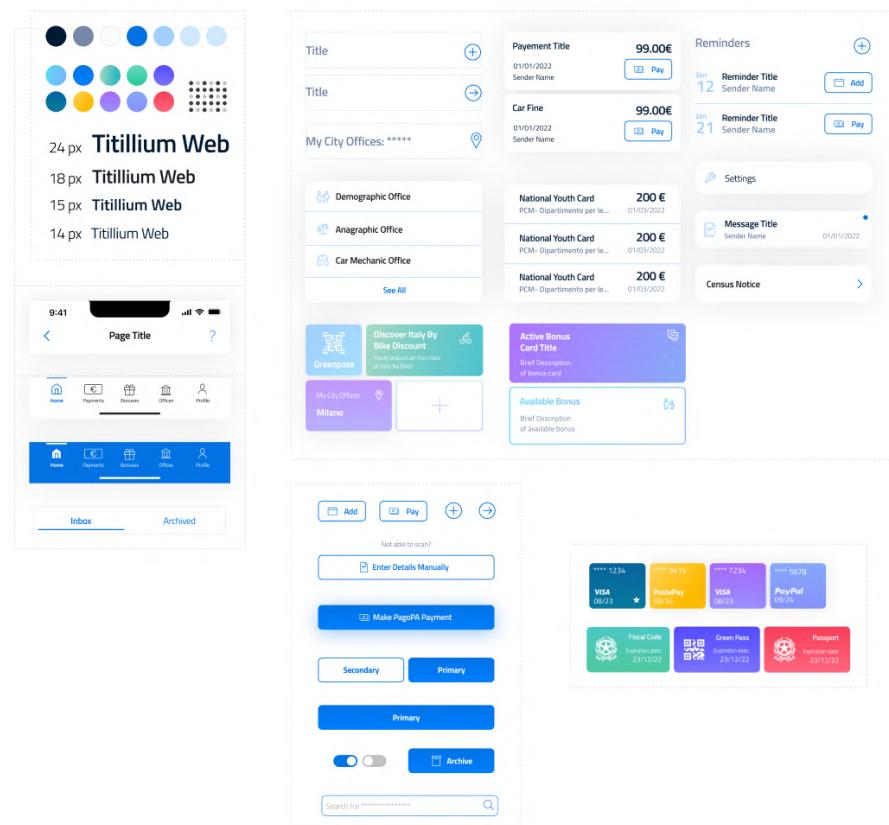
While the two versions were being tested, an online form was drafted and sent out to participants that did not participate in the previously described test. The form featured the same six main pages (homescreen, messages, payment, offices, bonus, and profile) of both versions opposing each other to see which version participants preferred. Participants were asked to pick which User Interface they preferred for a governmental mobile application that had to convey trustworthiness, reliability and authority. Participants were also asked to justify their choices.

A total of twenty-two participants responded and the results showed that version A was preferred in terms of aesthetics. The results of the form are reported in the appendix of this report.



Competitive Design

The results of the Parallel Design phase suggest that the two versions tested should be merged in a way: the aesthetics of one version should be combined with the visual **hierarchy and affordances** of the second. Users preferred the aesthetics that came with the shadows and use of additional colors. For that reason, the high-fidelity prototype would include these elements all the while following the existing IO style guide. With the parameters set, the team conducting the study unified a design system that combines the IO visual language with some new additions that compliment the usability of the User Interface all while making it appear more contemporary. The new User Interface would utilize the same colors, icons and typographic already employed by IO in different manner. The full design system that was used to create the final prototype is attached in the appendix of this report.

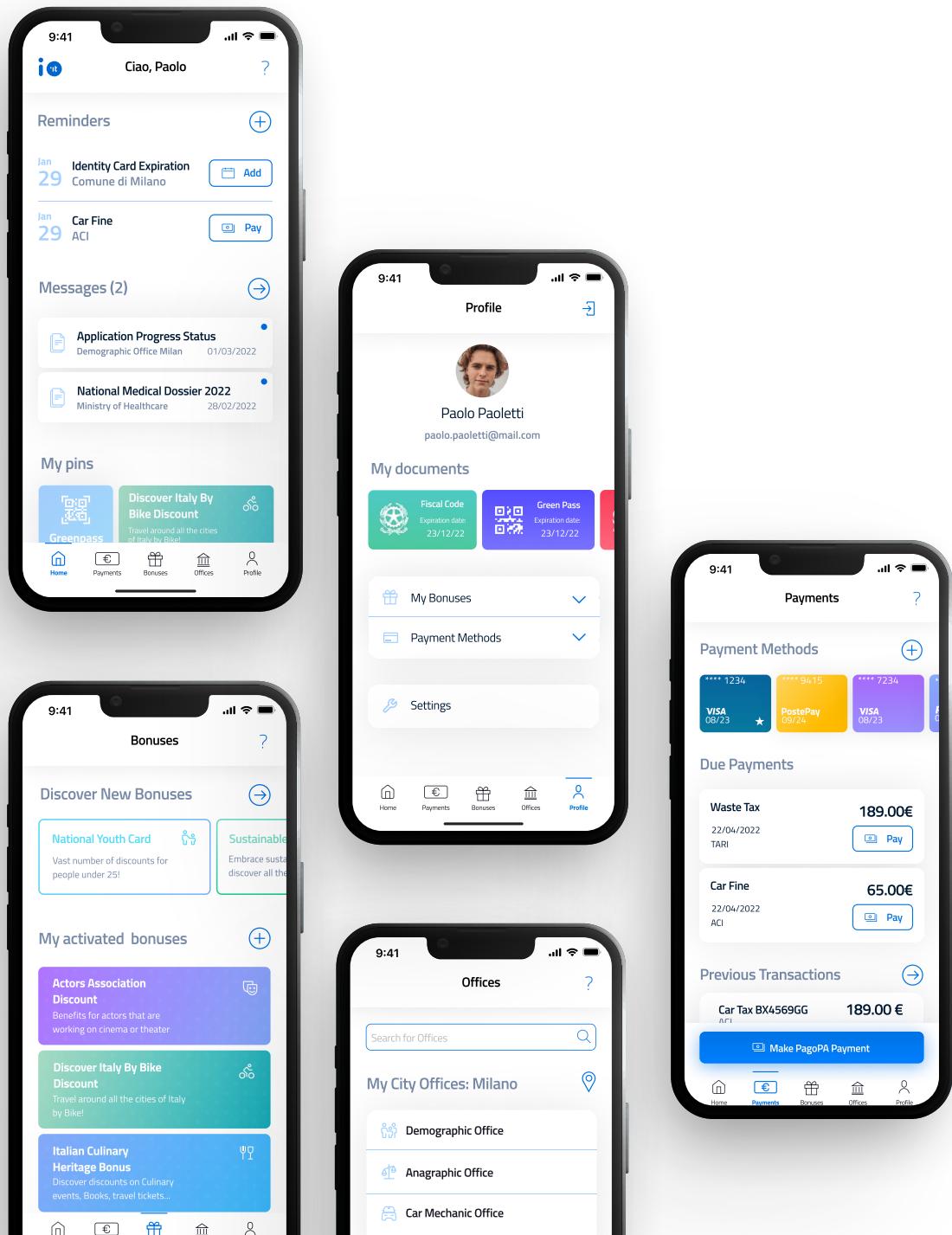


High-fidelity prototype

Once the final prototype was completed, it was subject to a round of Heuristics Evaluation by another group of four experts to highlight potential problems that the team doing the redesign might have overlooked. The full results of the Heuristics Evaluation are reported in the table below. Overall, the results were positive as the group of experts did not highlight any major violations. The most notable insights that emerged from the Heuristics evaluation were:

- Some inconsistencies in the use of iconography throughout the pages of the application.
- The button used to make payments looks different than all the other buttons for no justifiable reason.

These suggestions were addressed and implemented to the prototype before it was used for the final round of usability testing.



Problem	Heuristics	Rate 1-5	Redesign suggestion
The make pago pa button has a strange blurred effect that is not present in any other component	8	1	Remove the effect to improve the coherence in the app
Messages are not in chronological order, and there is no way to sort/filter them	7	2	Provide a way to filter, sort messages
Pin button is different from others buttons as far as I can see, they always have a circle around, this one and the gps one do not. Also the button does not clearly state the function, I see a pin, but do not know what's and where it is gonna pin exactly	4	2	I would make the buttons more consistent and clear. Both in terms of visual and feedbacks. The pop up windows does not say anything about the pin action.
Before the payment there is no popup to ask for confirmation before the transaction takes place	5	3	design a pop up that asks the user if he's sure of his decision
In the green pass screen, the certificate details could be just presented below the qr code, to avoid a step more, also because the function "details" doesn't have the same weight as the "save to gallery" function.	8	2	Remove button and provide details below Maybe you could add a smaller icon if you still want to keep details as a side function
in the messages there is no possibility to filter by any date or similar and the messages are not divided by month	7	3	provide filters and maybe a separator between months (a line or smt from your design system)
in the screen of the payment you use the symbol + or the arrow as buttons, but in the screen of officies apparently you use the pin icon only as an aesthetic/support function, there is no consistency	4	3	use the icons in different modalities
when i enable the notifications for istat i would like to receive a feedback (not very sure as the toggle button still works fine, but think about it)	1	1	provide a feedback maybe a pop-up(?)
In the bonuses page the new bonuses are almost hidden or secondary compared to the ones you already have activated.	6	2	NEW bonuses are a novelty, they should pop up more, be more highlighted, as they are the "new Thing"
In the national office page the contacts should be before the general notifications, below the description.	2	1	Change the hierarchy, the contacts should be put first.

Usability Testing

The revised high-fidelity prototype was ready to be benchmarked to the existing version of the IO mobile application. Ten people participated in the same protocol of usability testing that was conducted in the first part of the study using the existing version of the IO mobile application. The test gathered both qualitative data (emotions experienced, thoughts on prototype) and quantitative data (number of clicks, success rate, misclick rate) that were collected in the previous test to efficiently compare the redesign to the existing version of IO. Given that the data collected is not a statistical representation of the IO user base, the change in usability of the interfaces of both versions can only be approximated and not statistically measured.

Participants were asked to complete a total of ten tasks (five tasks that were followed in the previous usability test and five additional test that will help assess additional functionalities of the redesign):

1. You are in line to enter a restaurant. Show the Green Pass to enter.
2. You have received a letter containing a PagoPA bill in the mail at your house. Use the IO app to pay for it by inserting the details manually.
3. A friend told you that the National Youth Discount Card is now available in the IO app. Activate it.
4. You need to check the message "ACI: Automobile Club Italia" sent you on the date 14/01/2022 and archive it.
5. A friend asked you to help him find the demographic office number of the your city Milan. Find the number in the app and tap on it.
6. Add your Credit Card as a new payment method.
7. Open the app security settings.
8. Pin the national office "ACI: Automobile Club Italia" to your Home.
9. Turn ON push notifications from the National Service ISTAT.
10. Make your "PayPal" card (*5678) your preferred payment method.

Kindly refer to the appendix for the full procedure followed for the test and the results that came from it. A summary of the results of the usability test is listed in the diagram below.

IO 2.0

Users
Users that successfully completed all tasks

10/10



Time
Overall average time

5 min 36s



Misclick rate
Clickes outside the hotspot

16%



Findings from the Usability Testing

- Overall there was a lower misclick rate from the two versions that were developed in the Parallel Design phase, suggesting that the affordances of the User Interface were improved.
- For the initial five tasks that participants also completed in the first part of the study (with the existing version of IO) the number of clicks and steps needed to achieve the goal was significantly lower.
- For the green pass task, seven out of the ten participants followed the new path provided by the 'My Pins' section in the homescreen instead of taking the longer path that the existing version of IO provides to users.
- All ten users successfully completed the task asking them to find the number of an office in Milano, a drastic improvement from the first study where only one out of the seven participants was able to successfully complete the task.
- The results of the additional five tasks that were not included in the first usability test showed that the elements that were added to support the existing functionalities of IO ('My Pins' section for example) work well within the structure of the app and assist users in their behaviors.

The diagram below shows compares the results of the usability test with the existing version of IO to the results of the usability test with the redesign at a high level. The full results are reported in the appendix of the report but this overviews hints at the superior usability of the redesigned version of IO

IO 1.0

Users

Users that successfully completed all tasks

1/7



Time

Overall average time

7 min 41s



IO 2.0

Users

Users that successfully completed all tasks

10/10



Time

Overall average time

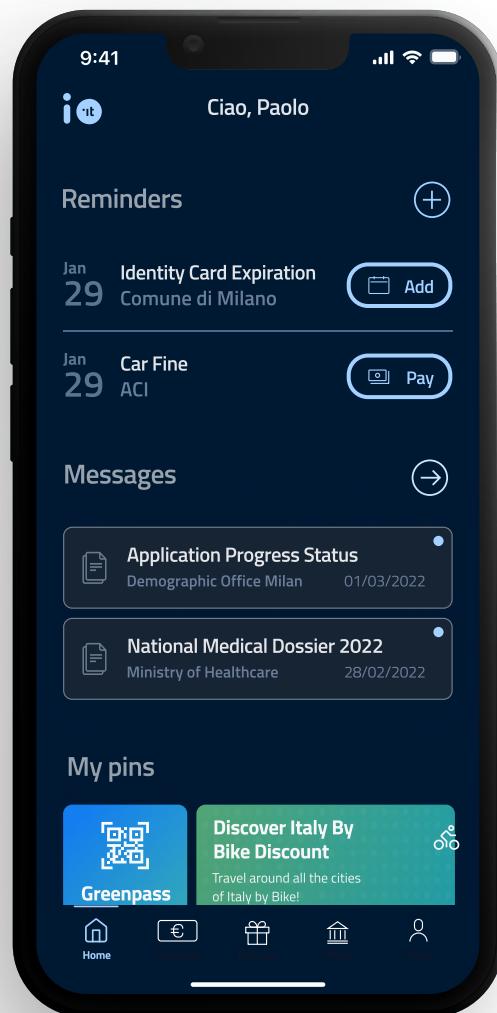
5 min 36s



Additional Developments

Additional development

Given that IO is growing at a fast rate in the Italian market, it would be no surprise if the majority of the population would be using the application in a couple of years. This means that in order for IO to be taken seriously, the team behind it should be responsible as keeping it as contemporary as possible. One of the most relevant trends is User Interface design is dark mode. For this reason, the team conducting the study created one page of what the application might look like in dark mode, as incentive to show the potential of the redesigned IO in a dark mode version.



Conclusion

As previously mentioned, the small number of users that participated in the testing prevents an accurate numeric percentage of the Delta (Δ) of the usability of the interfaces of IO and of the redesign. However, the results of the heuristics evaluation and usability testing indicate an improvement in the usability of the interface of the redesigned version compared to that of the existing IO mobile application. The methodology adopted for the redesign process followed a User-Centered Approach from beginning to end. Various people were included throughout all the steps of the redesign process to make sure that the provided design solution appeals to as many mental models as possible. The positive results of that came from the competitive design phase testify to the improvement of the interface and to the overall efficiency of the methodology followed. The design decisions taken throughout this study also cater to the scalability of IO. This was important to keep in mind since the application is still in development and the platform announced that they are working on adding new content to the application in the near future. The new structure of the information architecture developed is flexible to incorporate said added content. This is mostly related to the offices section (that was revisited with a dashboard and tabbed view information architecture patterns) and to the personal digital documents that IO will allow users to add in near updates. The results of the final usability test also indicate that participants did not face any issues related to the navigational structure of the mobile application. Information architecture and navigation were the two most severe problems to be addressed in this study, followed by terminology, affordances, aesthetics, and system errors (listed from most to least severe). The new terminology and affordances employed in the redesign supported the behavior of users as reflected in the positive results of the tests conducted. The new aesthetics of the User Interface that was created with the existing IO style guide is more suitable for a governmental mobile application as it looks contemporary and trustworthy (as confirmed by the small pool of users it was tested on). As for the minor system errors that were identified in the first part of this study, they are outside of the scope of this redesign and should be addressed by the team responsible for developing the product.

The end results suggest that the methodology adopted within the scope of intervention was successful in translating the recommendations that resulted from the first study into an alternative version of IO that is improved in terms of usability.

Bibliography

Listed below are the references that were used throughout this study:

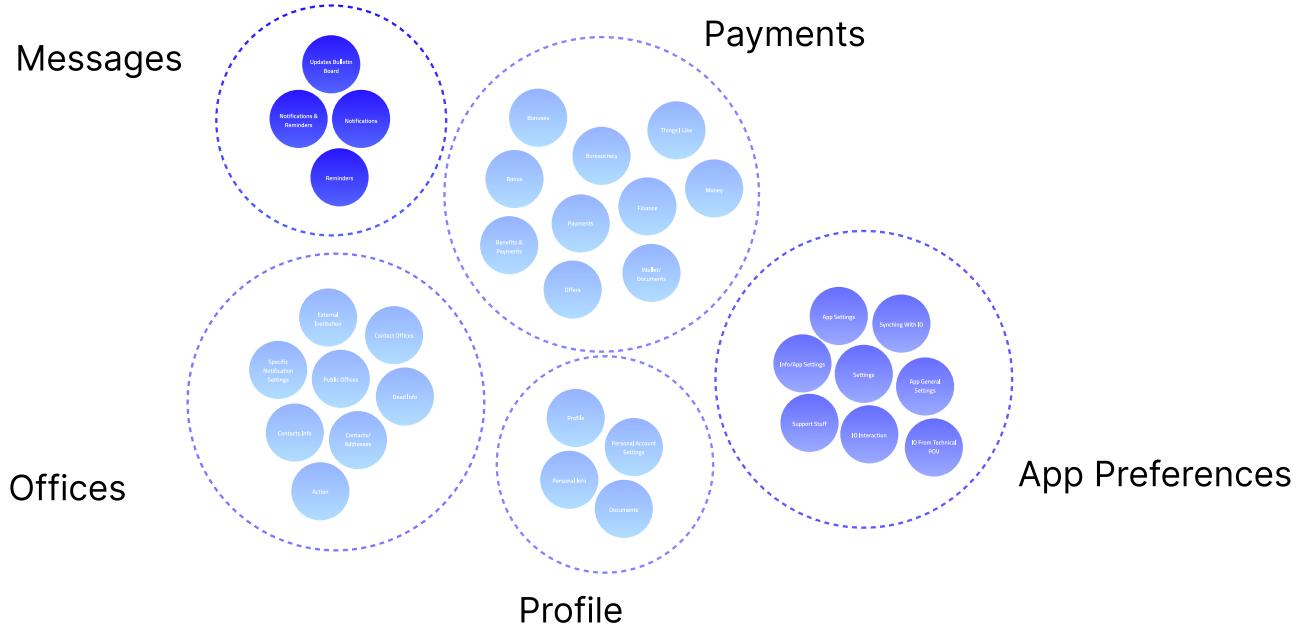
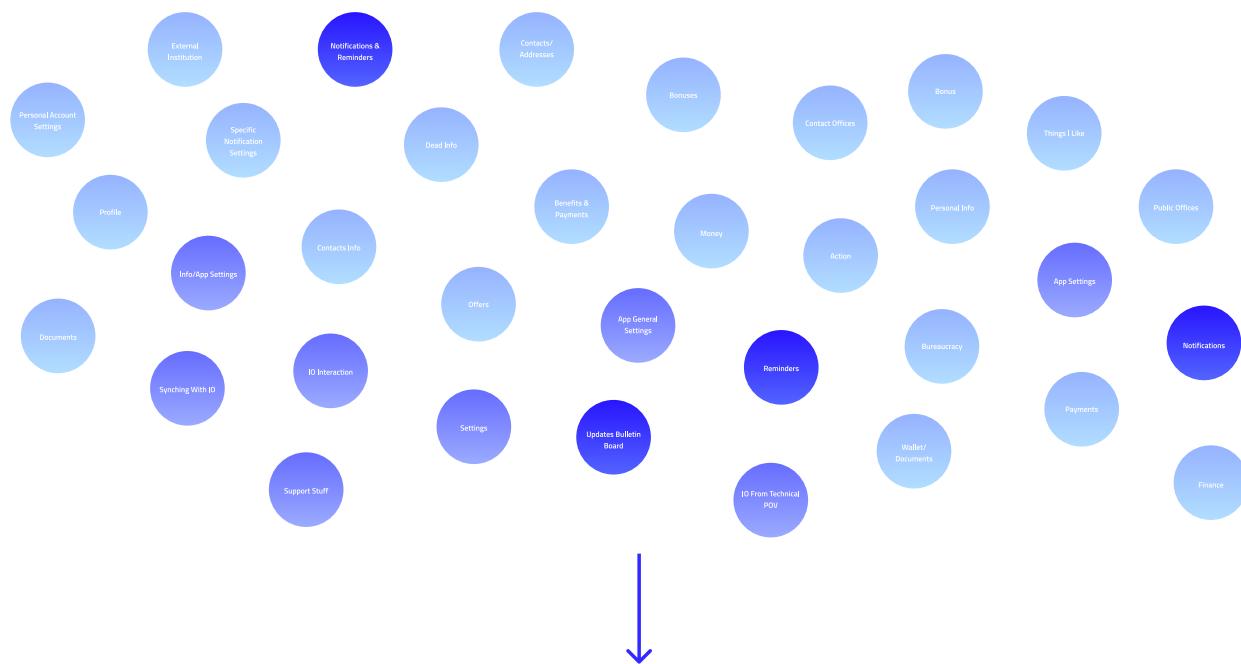
- Don't Make Me Think, Steve Krug
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- Guide to Tree Testing - https://www.optimalworkshop.com/learn/101s/tree-testing/?utm_source=google&utm_medium=cpc&utm_campaign=row-beta-tree-testing&keyword=information%20architecture&matchtype=p&network=g&gclid=CjwKCAjw_tWRBhAwEiwALxFPoVBfwLQr53un6uXh6djj49z2i36ltKzOTrqp85TNVUTHuFCPWzJHrRoCLAUQAvD_BwE
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- Wireframe Testing: How to Find Usability Issues Early On, Ivan Kreimer - <https://maze.co/blog/wireframe-testing/>
- Why You Only Need to Test with 5 Users, Jakob Nielsen - <https://www.nngroup.com/articles/why-you-only-need-to-test-with-5-users/>
- Parallel & Iterative Design + Competitive Testing = High Usability, Jakob Nielsen - <https://www.nngroup.com/articles/parallel-and-iterative-design/>

Appendix

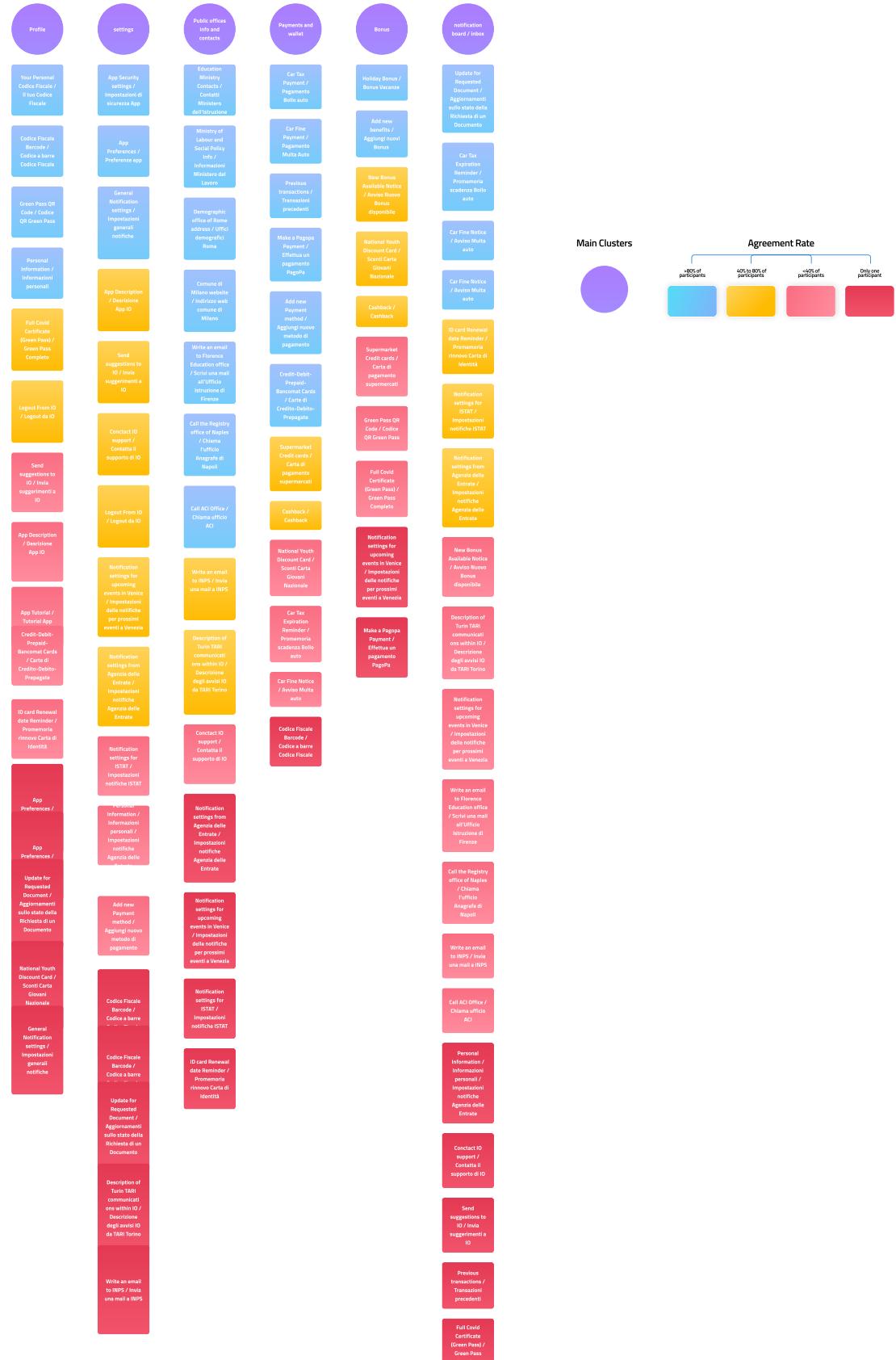
Cards - Open Card Sorting

Description of Turin TARI communications within IO	Car Tax Expiration Reminder	Add new benefits	Car Fine Payment	Credit/Debit/ Prepaid/ Bancomat Cards	Send suggestions to IO	Ministry of Labour and Social Policy Info	Comune di Milano website
Notification settings from Agenzia delle Entrate	Holiday Bonus	Green Pass QR Code	App Preferences	New Bonus Available Notice	Update for Requested Document	Car Tax Payment	National Youth Discount Card
Call the Registry office of Naples	Notification settings for upcoming events in Venice	Write an email to INPS	App Security settings	Supermarket Credit cards	ID card Renewal date Reminder	Cashback	Call ACI Office
Your Personal Codice Fiscale	Car Fine Notice	Demographic office of Rome address	Notification settings for ISTAT	Full Covid Certificate (Green Pass)	Contact IO support	Logout From IO	Personal Information
Write an email to Florence Education office	Make a Pagopa Payment	Previous transactions	App Description	General Notification settings	Add new Payment method	Codice Fiscale Barcode	Education Ministry Contacts

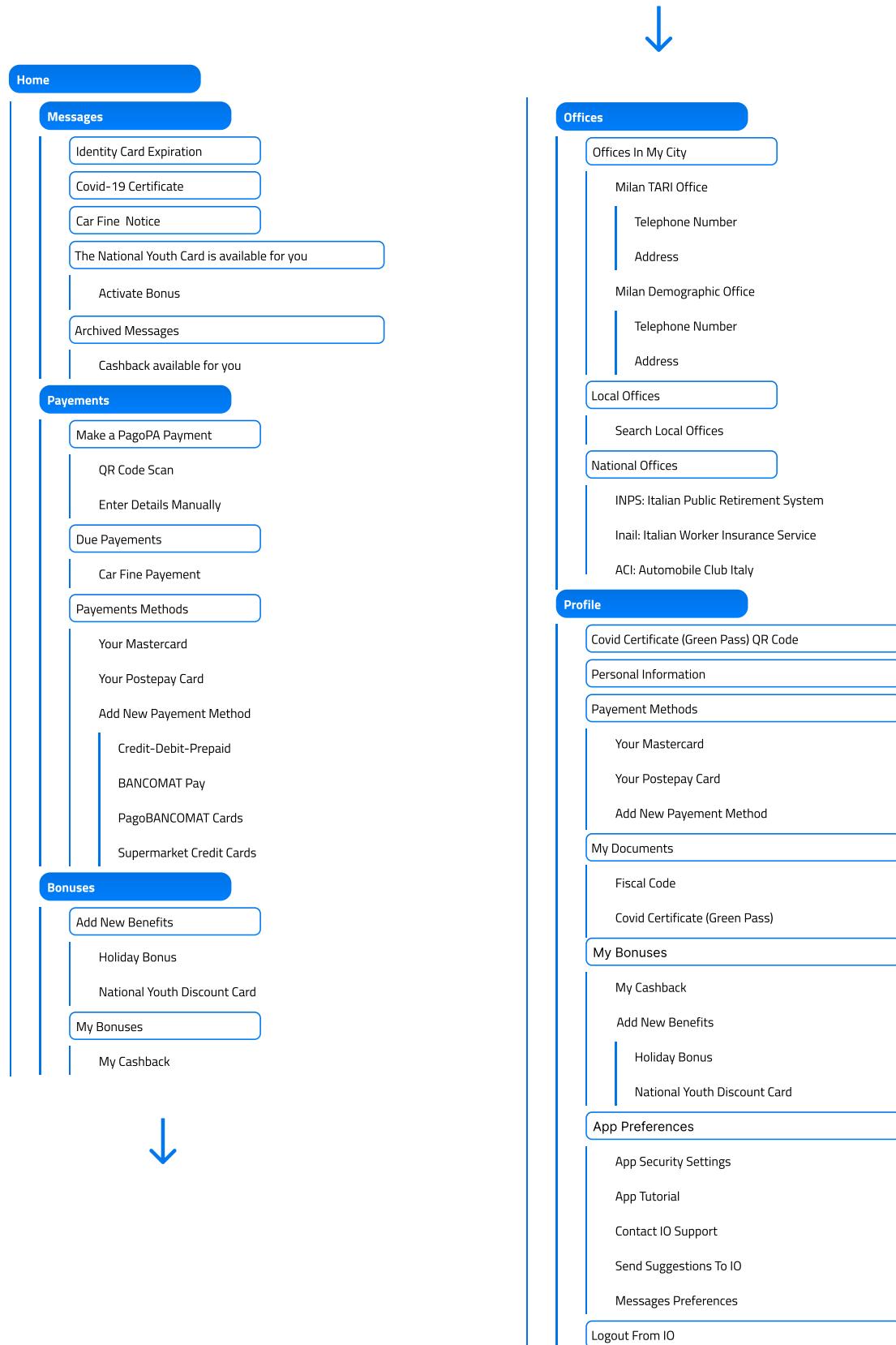
From Cards to Clusters



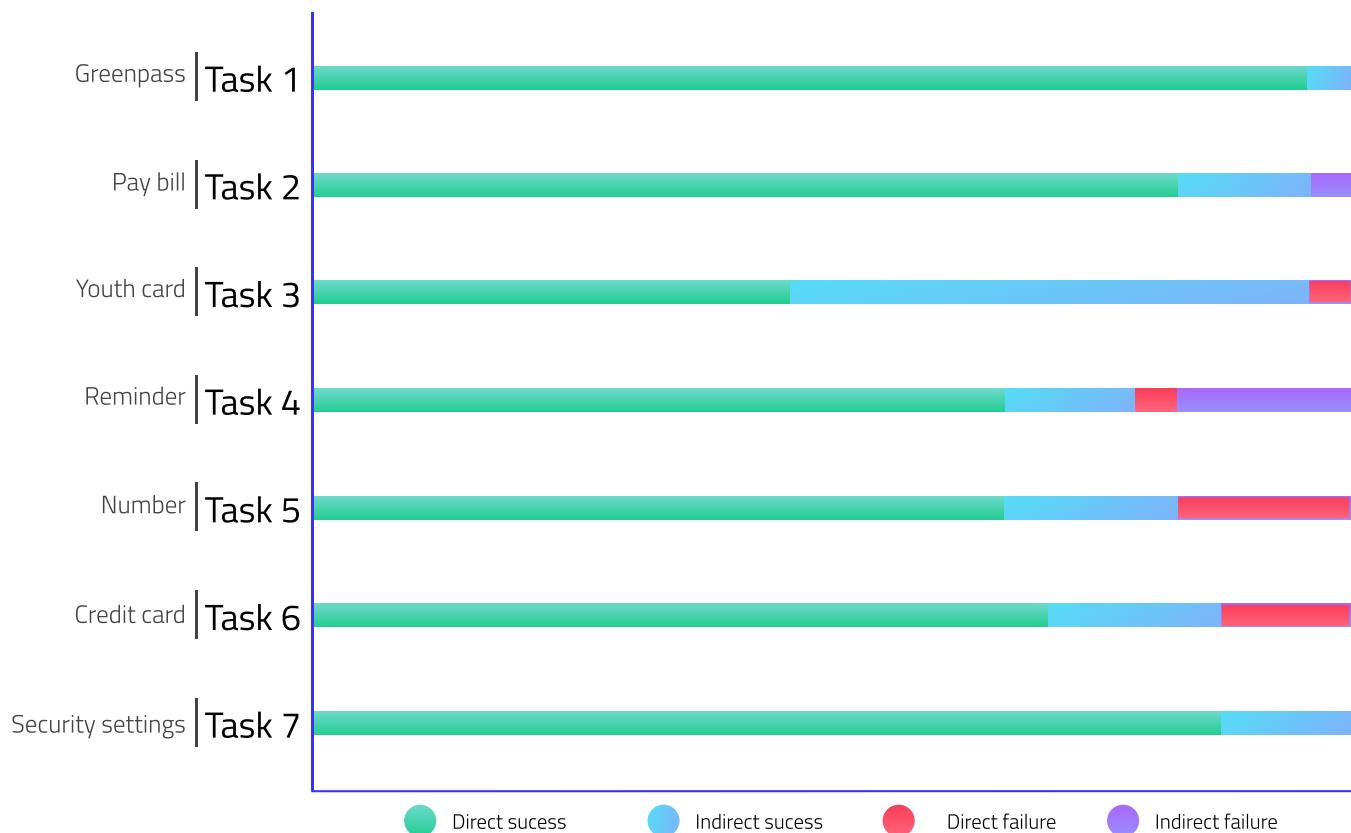
Closed Card Sorting - Agreement Rating



Architecture for Tree Testing



Tree Testing Results



Tree Testing Results Task 1 - Access the GreenPass

4 Messages

Payments

Bonus

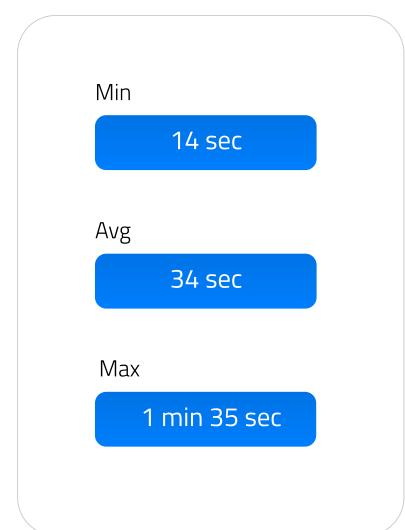
Offices

20 Profile

4 Covid certificate

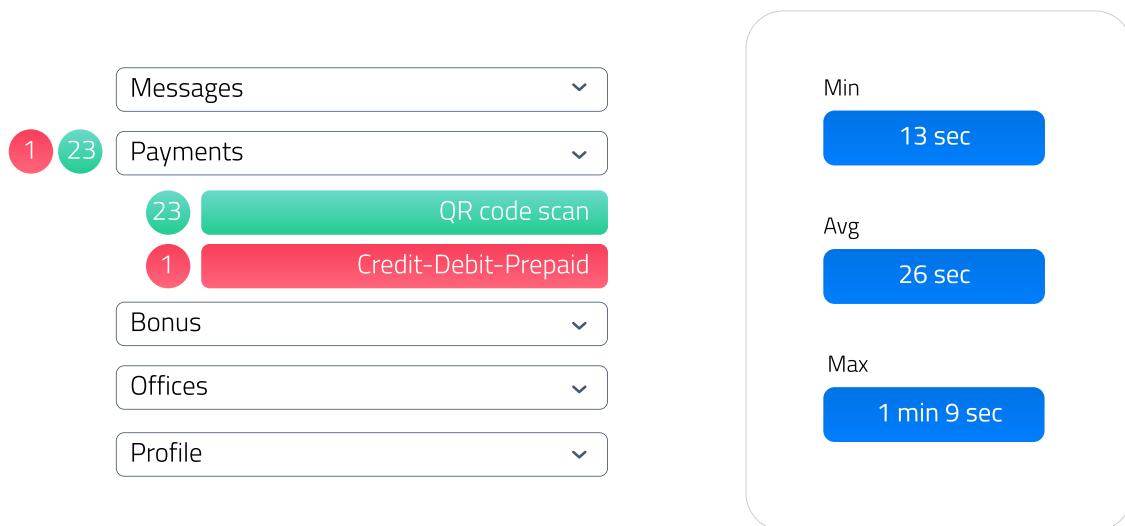
17 Covid certificate

3 My documents



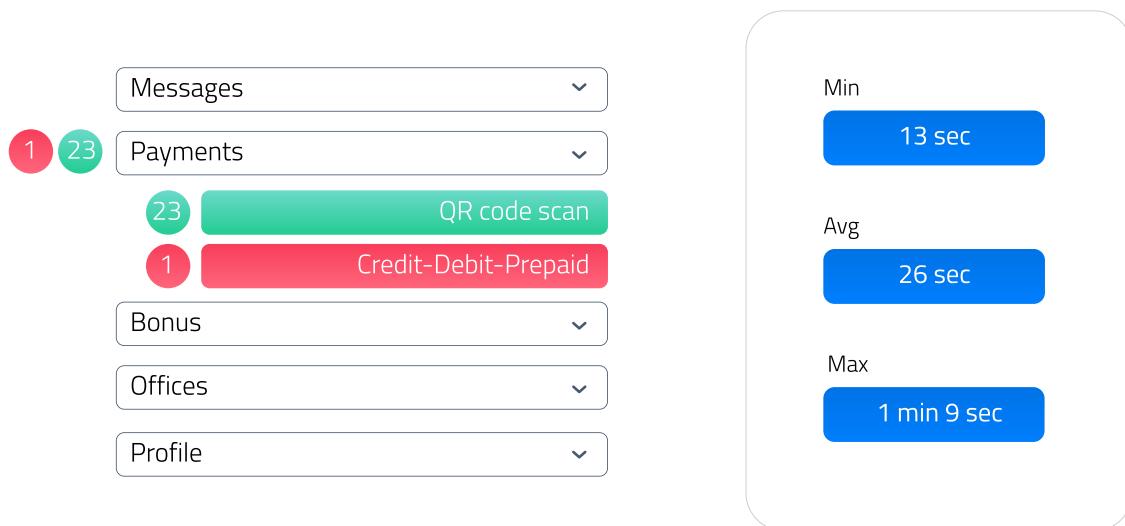
Tree Testing Results

Task 2 - Pay a PagoPa Bill by QR code



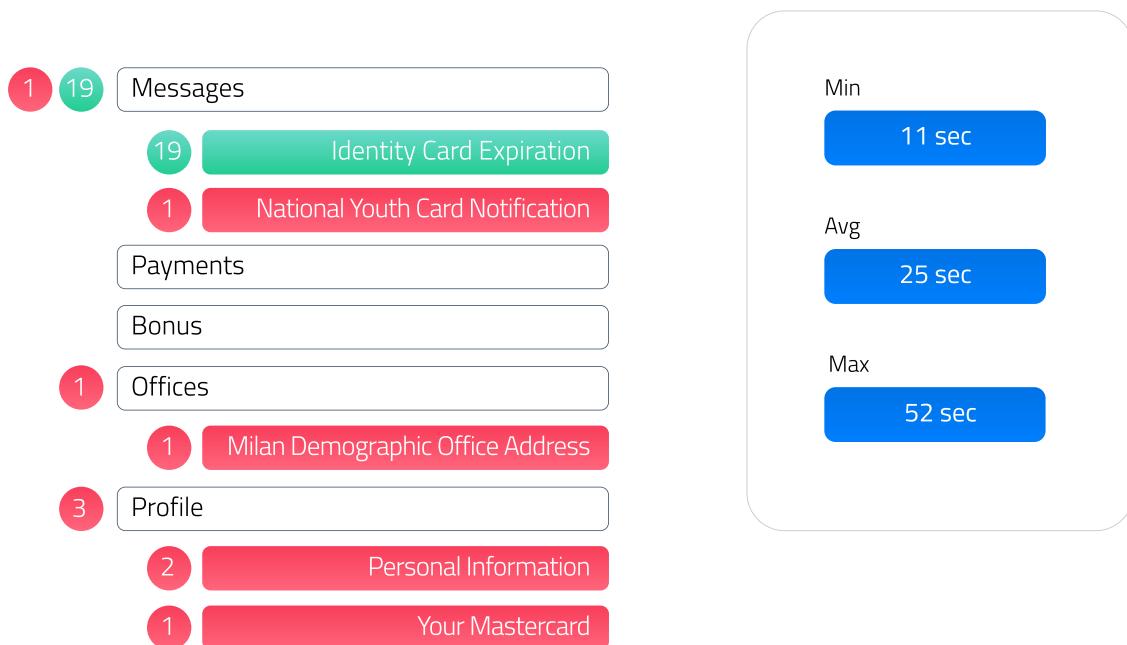
Tree Testing Results

Task 3 - Activate The National Youth Discount Card



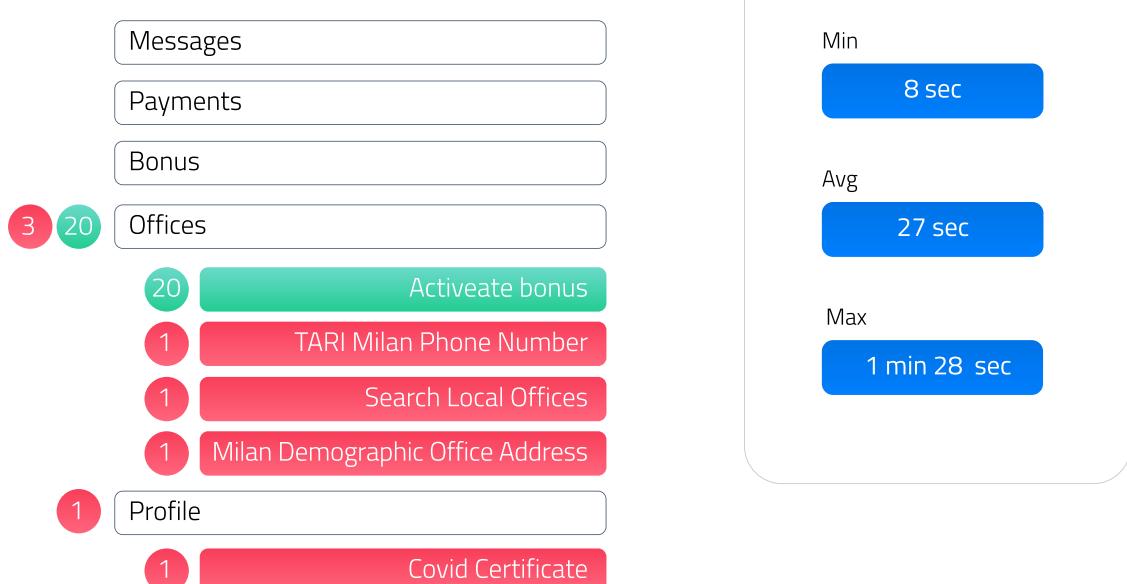
Tree Testing Results

Task 4 - Find the remainder of the expiration of the ID card



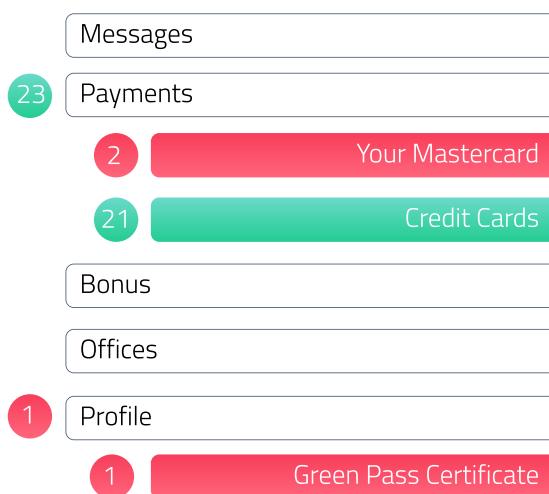
Tree Testing Results

Task 5 - Find the number of the demographic office of Milan



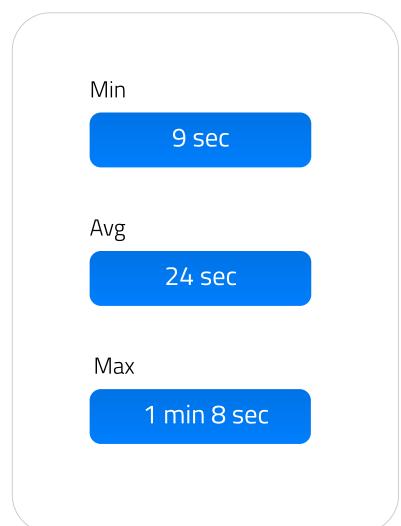
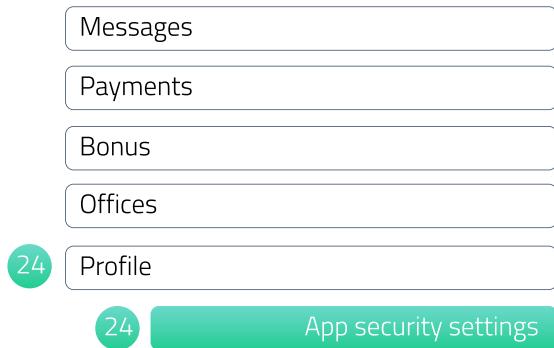
Tree Testing Results

Task 6 - Add your Credit Card as a payment method

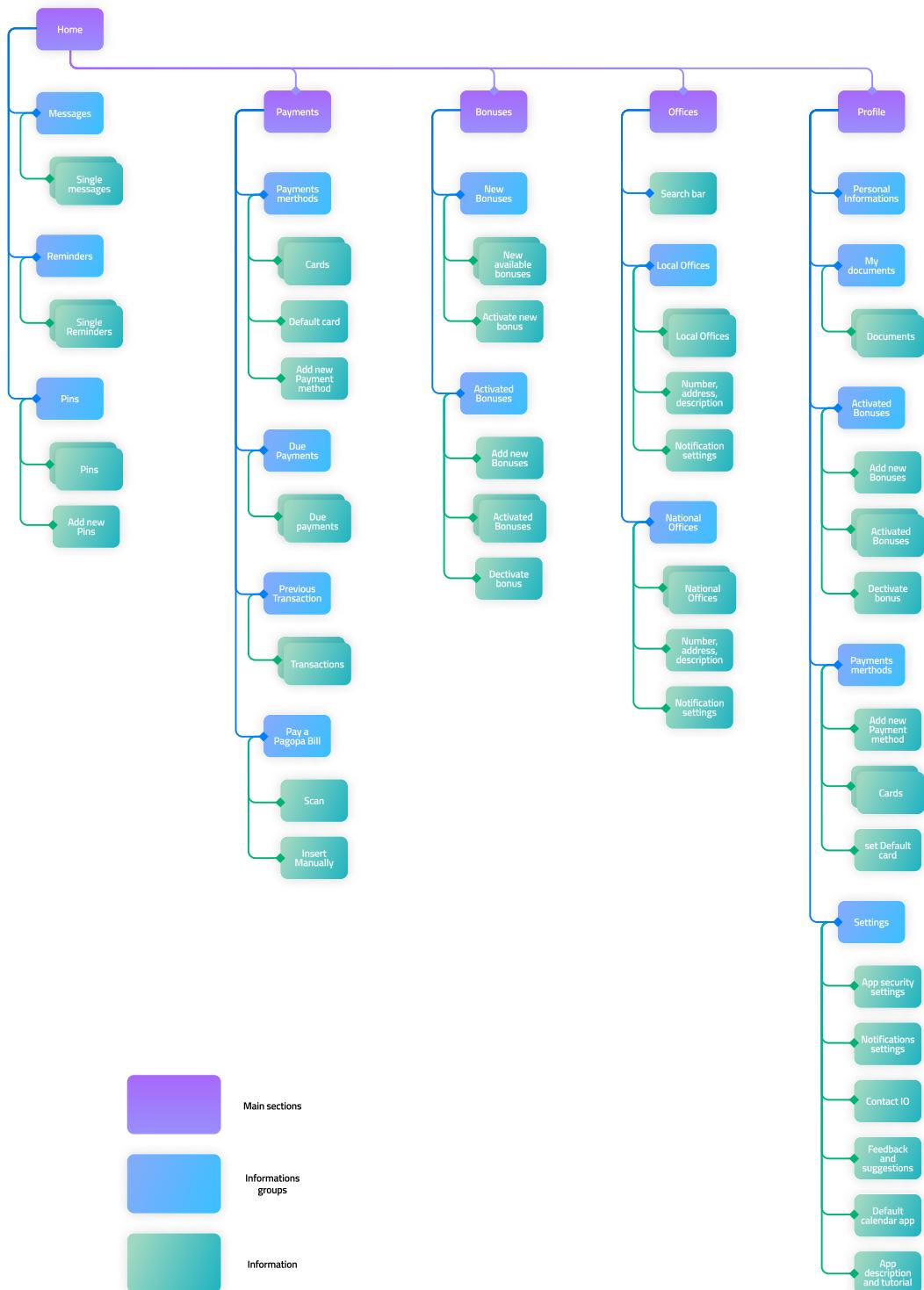


Tree Testing Results

Task 7 - Find the number of the demographic office of Milan



New Information Architecture Structure



Wireframe - Preliminary

Profile

ID Expiration

Youth Card

National Office

Add Payment Method

Profile

Payments

Messages

Bonuses

Green Pass

Fiscal Code

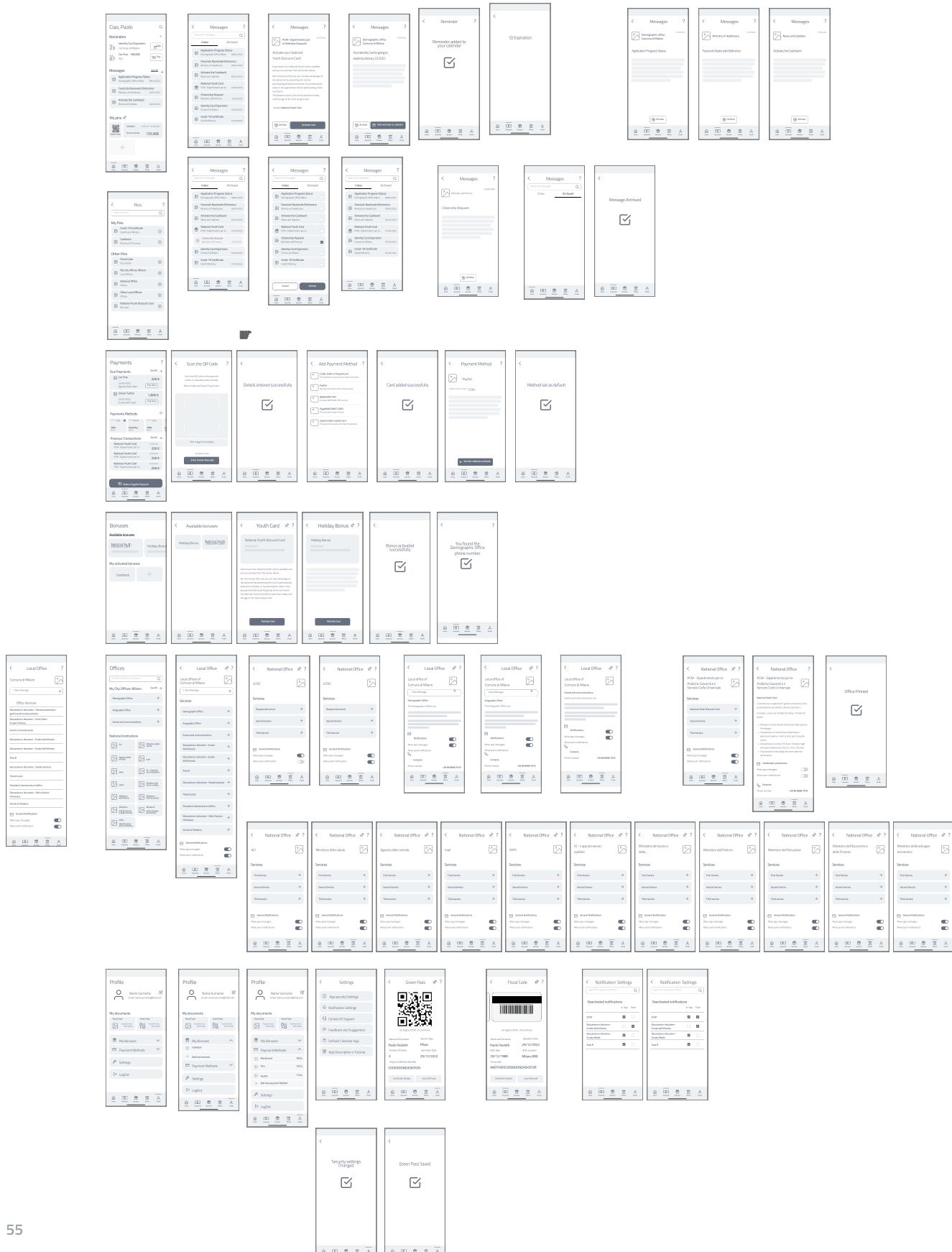
Office Services

National Institutions

Local Office

Preferences

Wireframe - Definitive



Wireframe - Usability Test Results

Task n	Task 2nd Wireframe	Success Rate	Avg Time	Avg Clicks
TASK 1	Access your GreenPass and save it on your Gallery	100%	31.5s	8.7
TASK 2	Pay a PagoPa bill by entering the details manually	100%	39.1s	7.3
TASK 3	The National Youth Discount Card is now available for you. Activate it.	100%	20.7s	5.5
TASK 4	You received a reminder from your Comune. Add it to your phone Calendar.	100%	22.2s	2.8
TASK 5	Find the number of the demographic office of Milano and tap on it.	100%	32.3s	12.4
TASK 6	Add your Credit Card as a new payment method	100%	10.7s	3.7
TASK 7	Check the app security settings	100%	12.2s	3.1
TASK 8	Pin "Offices in my city: Milan" to the dashboard	100%	24.7s	5.3
TASK 9	Turn ON push notifications from the national service ISTAT	100%	45.6s	7.1
TASK 10	Make "PayPal" your preferred payment method	100%	10.0s	4
TASK 11	You need to check the message "Ministero dell'Interno" sent you on the date 13/03/2022 and archive it	90%	1m 44s	15.5

A/B Testing - Version A

The image displays a grid of 18 screenshots from the IO System Redesign app, illustrating the A/B testing process for Version A. The screens are organized into four rows:

- Row 1:** Reminders, Payments, and Details Manually.
- Row 2:** Bonuses.
- Row 3:** Profile.
- Row 4:** Offices.

Reminders Screen (Top Left): Shows a list of reminders such as 'Identity Card Expiration' (Milan), 'Car Fine' (Milan), and 'CU 2022 is now available'. It includes sections for 'My pins' and navigation icons.

Payments Screen (Top Middle): Shows a list of payments like 'Car Fine' (Milan) and 'School Tuition' (Milan). It includes a QR code scanner and manual entry fields.

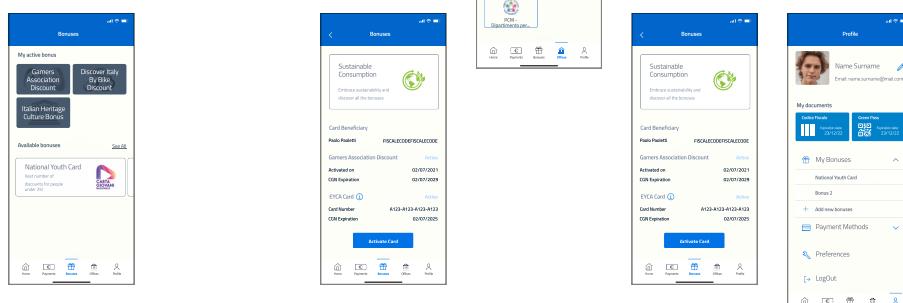
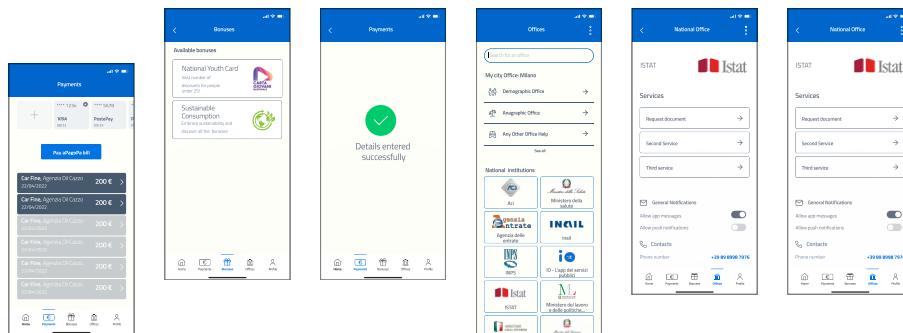
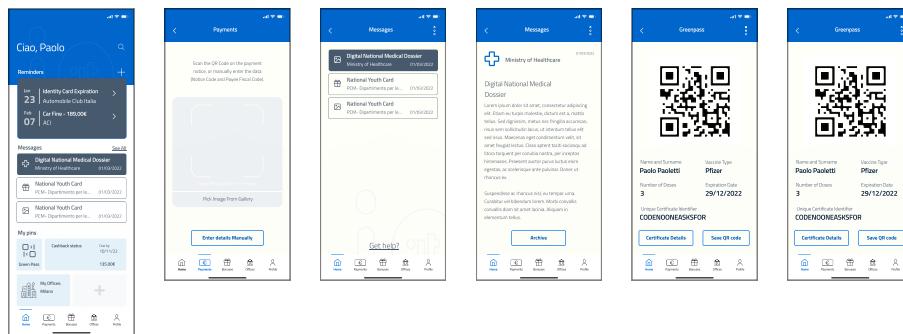
Details Manually Screen (Top Right): A note stating 'details entered manually'.

Bonuses Screens (Row 2): Five screenshots showing various bonus categories: New Bonuses, My Activated Bonus, All Available Bonuses, Bonus Details (e.g., National Health Card, Sustainable Consumption), and Card Beneficiary (e.g., FISCALCOOP REALESCODE).

Profile Screens (Row 3): Three screenshots showing the user profile (Paolo Poletti), documents (Real Card, Green Pass, Visa), bonuses (Discover Italy By Bike), payment methods (Visa, Prepaid), settings, and log out.

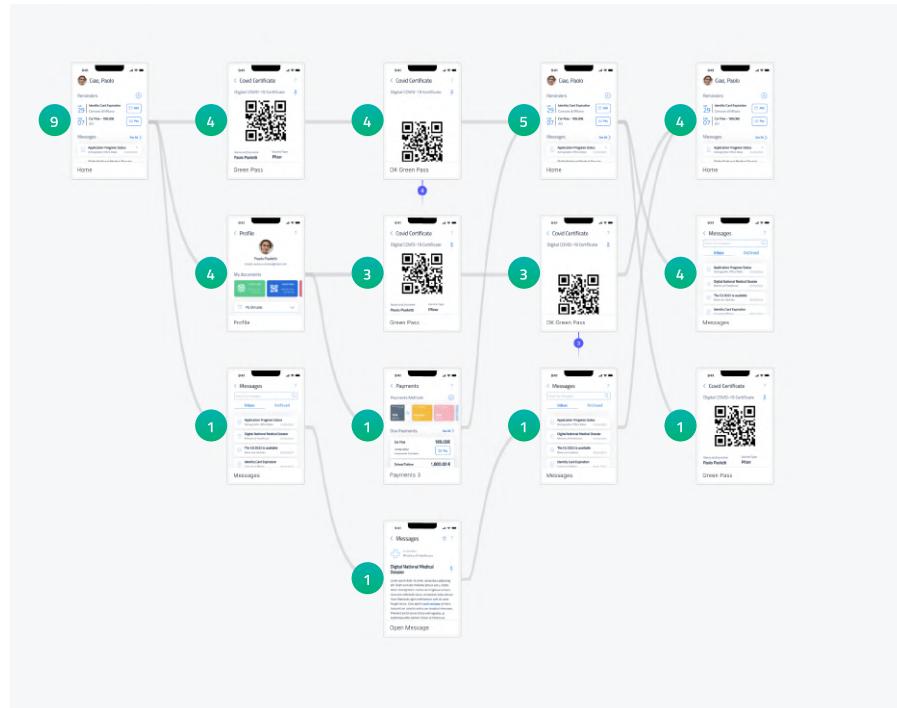
Offices Screens (Row 4): Four screenshots showing the 'Offices' section with 'My City Offices Milano' and links to Demographic Office, Anagraphic Office, Car Mechanic Office, National Institutions (ISTAT, MIUR, ANAS, MATTI, MIUR, ANAS), and a COVID-19 certificate section.

A/B Testing - Version B

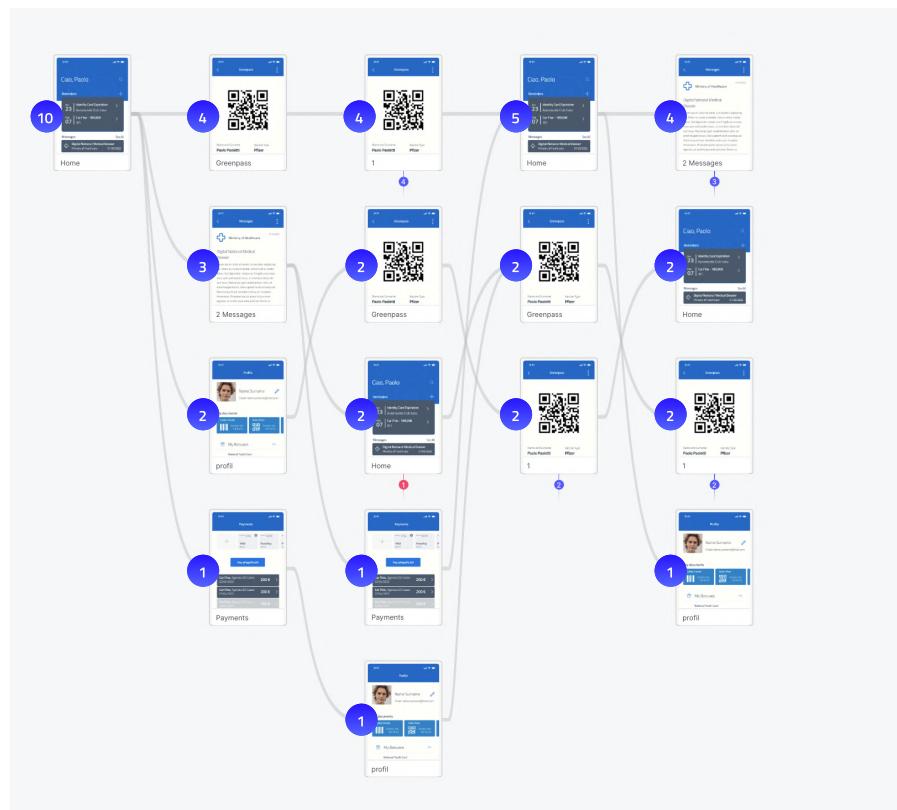


A/B Testing - Flow Comparison

A



B



A/B Testing - Heatmap Comparison

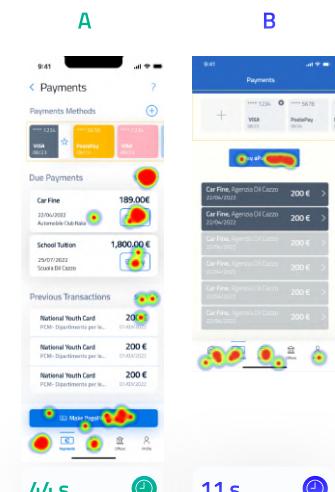
Task 1



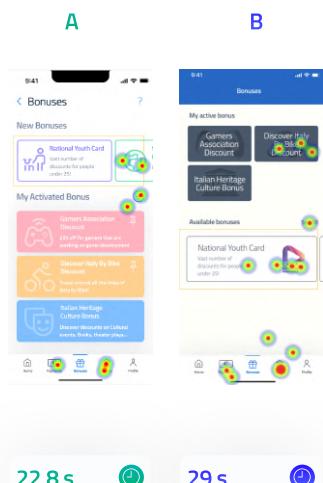
Task 2



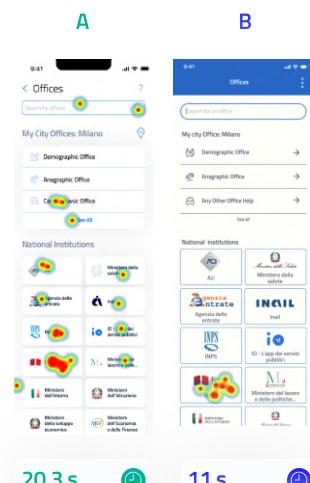
Task 3



Task 4



Task 5



A/B Testing - Performance Overview

Version A

Summary

Users

Users that successfully completed all tasks

9/10



Time

Overall average time

2 min 59s



Misclick rate

Clicks outside the hotspot

41%



Version B

Summary

Users

Users that successfully completed all tasks

10/10



Time

Overall average time

2 min 2.7s



Misclick rate

Clicks outside the hotspot

26%



A/B Testing - Questionnaire results

Version A

User quotes

"User friendly and the colors are eye-catching"

"A looks more friendly and modern"

"The contrast which suggest the higher in importance to certain stuff. Also it makes it easier to process the information because with one look you know what belongs together"

Version B

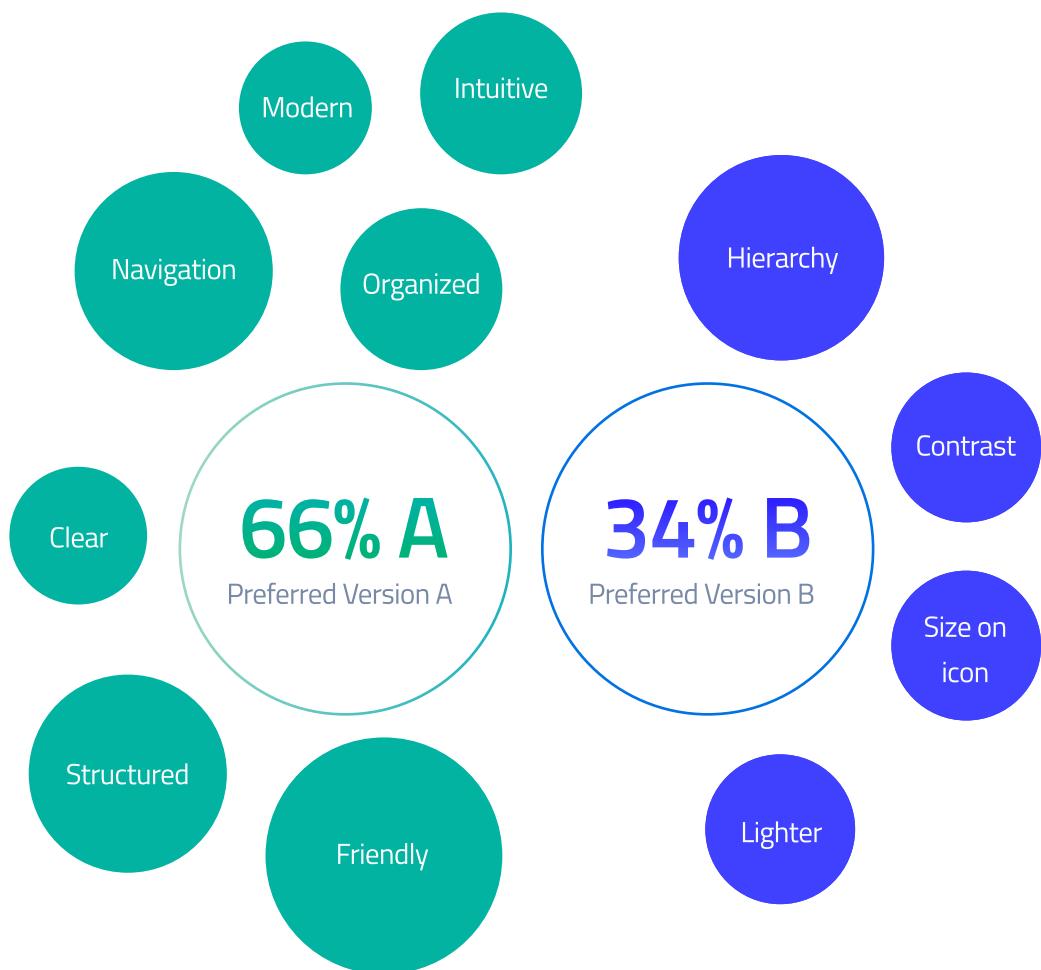
User quotes

"Option B is much lighter on the eyes, having the buttons displayed on the top right"

"Elements are more defined and there's an hierarchy of importance between informations in the screen."

"Presents a clearer hierarchy of information"

A/B Testing - Questionnaire results



Final User Interface - Design System

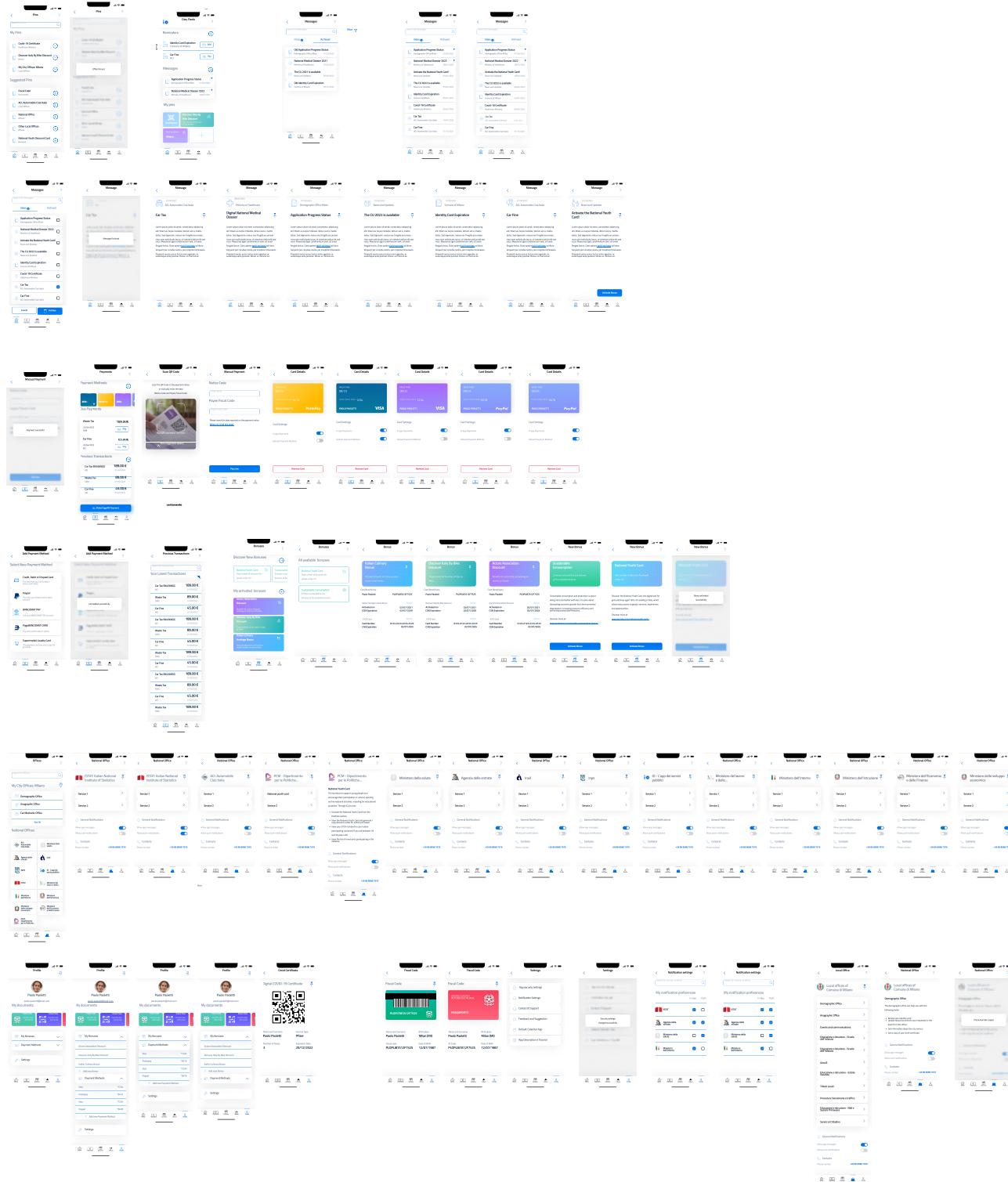
Color Palette:

- 24 px Titillium Web
- 18 px Titillium Web
- 15 px Titillium Web
- 14 px Titillium Web

UI Components:

- Page Title:** Home, Payments, Bonuses, Offices, Profile.
- Header:** Title, My City Offices: *****, Demographic Office, Anographic Office, Car Mechanic Office, See All.
- Payment Section:** Payment Title (99.00€), Car Fine (99.00€), National Youth Card (200 €), National Youth Card (200 €), National Youth Card (200 €).
- Reminders:** Reminders for Jan 12 and Jan 21.
- Demographic Office:** Active Bonus Card Title (Brief Description of bonus card).
- Bonus Section:** Available Bonus (Brief Description of available bonus).
- Payment Method Selection:** Add, Pay, +, Not able to scan?, Enter Details Manually, Make PagoPA Payment, Secondary, Primary, Primary, Archive, Search for *****.
- Payment Cards:** VISA 08/23, PostePay 09/24, VISA 08/23, PayPal 09/24, Fiscal Code (Expiration date: 23/12/22), Green Pass (Expiration date: 23/12/22), Passport (Expiration date: 23/12/22).

High Fidelity Prototype Screens



Final version - Heuristics Evaluation

Problem	Heuristics	Rate 1-5	Redesign suggestion
The make pago pa button has a strange blurred effect that is not present in any other component	8	1	Remove the effect to improve the coherence in the app
Messages are not in chronological order, and there is no way to sort/filter them	7	2	Provide a way to filter, sort messages
Pin button is different from others buttons as far as I can see, they always have a circle around, this one and the gps one do not. Also the button does not clearly state the function, I see a pin, but do not know what's and where it is gonna pin exactly	4	2	I would make the buttons more consistent and clear. Both in terms of visual and feedbacks. The pop up windows does not say anything about the pin action.
Before the payment there is no popup to ask for confirmation before the transaction takes place	5	3	design a pop up that asks the user if he's sure of his decision
In the green pass screen, the certificate details could be just presented below the qr code, to avoid a step more, also because the function "details" doesn't have the same weight as the "save to gallery" function.	8	2	Remove button and provide details below Maybe you could add a smaller icon if you still want to keep details as a side function
in the messages there is no possibility to filter by any date or similar and the messages are not divided by month	7	3	provide filters and maybe a separator between months (a line or smt from your design system)
in the screen of the payment you use the symbol + or the arrow as buttons, but in the screen of offices apparently you use the pin icon only as an aesthetic/support function, there is no consistency	4	3	use the icons in different modalities
when i enable the notifications for istat i would like to receive a feedback (not very sure as the toggle button still works fine, but think about it)	1	1	provide a feedback maybe a pop-up(?)
In the bonuses page the new bonuses are almost hidden or secondary compared to the ones you already have activated.	6	2	NEW bonuses are a novelty, they should pop up more, be more highlighted, as they are the "new Thing"
In the national office page the contacts should be before the general notifications, below the description.	2	1	Change the hierarchy, the contacts should be put first.

Final version - Performance Overview

Users

Users that successfully completed all tasks

10/10



Time

Overall average time

5 min 36s



Misclick rate

Clicks outside the hotspot

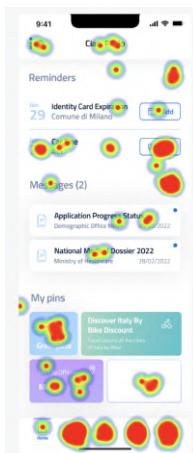
16%



Final Prototype - Heatmaps

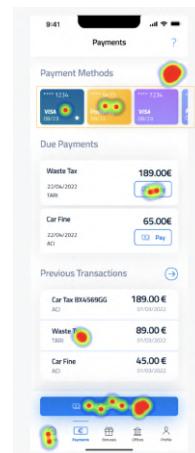
Task 1

Showing the Green Pass



Task 2

Pay a pagoPa bill



Task 3

Activate National Youth Discount Card



7,2 s



44 s

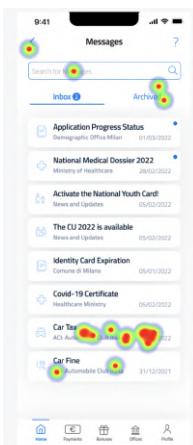


13 s



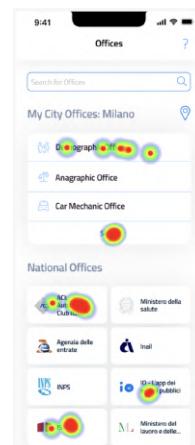
Task 4

Archive message



Task 5

Find office phone number



38 s



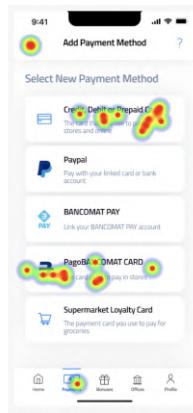
20s



Final Prototype - Heatmaps

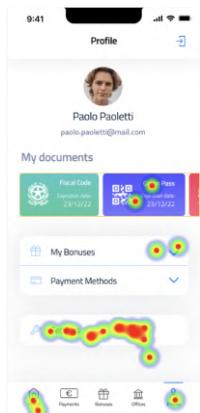
Task 6

New payment method



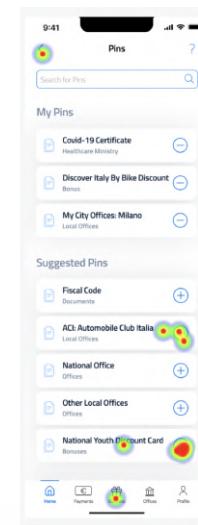
Task 7

Security settings



Task 8

Add a new pin



8,4 s



13 s

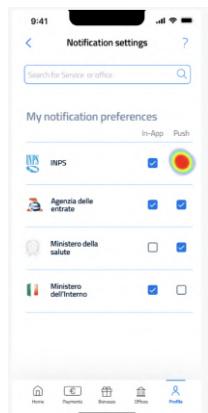


11.4 s



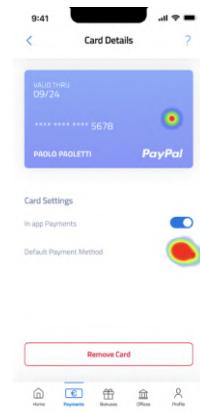
Task 9

Notification settings



Task 10

Preferred Payment method



15 s



9 s



69

Usability Test Protocol

After the preliminary testing the group revised the usability test and came up with the following framework that they followed to administer the usability test:

Part One

1. Introduce everyone administrating the usability test to the participant and explain the purpose of the study.
2. Ask for consent to record the usability test and to share results of the results of the test.
3. Disclose to participants that the test has three parts: brief questions, scenario completion and finally a post-test survey.
4. Categorize participants based on the following questions:

- How old are you?
- What is your gender?
- What is your Nationality?
- Are you a student or a worker?
- Do you deal with documents and public administration often? If yes how often?
- Do you know what IO is? (If they answer no explain what IO is).
- Have you used IO before?
- Do you use digital solutions for public services tasks or do you do those procedures in person?

Part Two

1. Tell participants that in this part of the test they are asked to complete the five different scenarios.
 2. Explain Concurrent Think-aloud Method and clarify that it is crucial for participants to share as many of their thoughts as possible.
 3. Make it clear that for the participants that there are no right or wrong actions during the test and that they should behave as freely as they can.
 4. Explain to participants what the Premo test is and how they should share their answers to the test and explain their choices to the administrators after having completed each of the scenarios (ask questions like "what made you feel this way").
 5. Login to IO using administrator's personal SPID.
 6. Ask participants to complete the following five scenarios:
 - You are waiting in line to enter a restaurant, and you need to show the Green Pass to enter.
 - You received a PagoPA bill in your post. Pay it with the IO mobile application.
 - A friend told you about discounts in the IO mobile application, you are interested, find the ones that are available to you.
 - Read messages you received in the IO mobile application, and archive or delete the ones you don't find useful anymore.
 - A friend asked you if you can help him to find the number of the "Anagrafe" office in the Comune of Milano. Find it in the IO mobile application and send the number to him via Whatsapp or a messaging application.
- N.B: While participants are completing each scenario, one of the administrators is responsible for taking notes of the verbal comments of the participant while another administrator is responsible for measuring the following metrics:
- Task time.
 - Number of steps taken by participants to complete the scenario.
 - What obstacles did the participant face?
 - Did the participant ask for assistance? If yes for what?
 - Did the participant complete the task successfully?

Usability Test Protocol

Part Three

1. Ask the following questions:

- Did the app meet your expectations?
- Do you see yourself using IO? For what? How often?
- What did you like the most about this product?
- What did you like the least? Did any parts cause frustration?
- Do you think is there a better way to perform the tasks that you just did?
- If users navigated to a different section within the application to complete a task that cannot be completed from there ask: why did you to do?
- Did you find the aesthetics of the application appropriate to its purpose? Why?
- Will IO effectively help you organize and achieve your public service tasks? Why? What features is it lacking?
- Was it intuitive to perform the specific tasks you've done? why not or what was in the way?
- Do you have some thoughts you want to add?

Usability Test - User Quotes

Straightforward and easy to navigate through.

How efficient it is to have everything in one place

The product is easy to use and can be customized.

I think there is a lot of information so its still a bit hard to personalize it, but much much better

It was intuitive. There was no out of place button or section that made it difficult to get the task completed.

The aesthetics are appropriate and they serve as a guidance

Usability Test - Questionnaire Results

	Michel	Robin	Alessandro	Alessandro	Yara	Linda	Nathalie	Amanda	Michele	Georges
How old are you?	45	23	23	23	57	25	31	23	41	54
What is your gender?	M	M	M	M	F	F	F	F	F	M
What is your Nationality?	Foreign	Italian	Italian	Italian	Foreign	Italian	Foreign	Foreign	Foreign	Foreign
You are	Student	Both	Both	Student	Worker	Both	Both	Student	Student	Worker
Do you deal with documents and public administration often? If yes how often?	no, perhaps once a month	sometimes	Not really, about 1/2 time a year	Rarely	No	Not so often, when it's required...	Very often	about once a year	yes, not very often	No
Do you know what IO is?	no	yes	yes	yes	no	yes	no	not really	no	no
Have you used IO before?	no	yes	yes	yes	no	yes	no	no	no	no
Have you used IO before?	digital solutions	I use digital solutions if available	Digital solutions	both of them	Digital	When possible I do so, even though I prefer talking with a real person (to ask for better information, eg)	Digital	digital solutions	digital	digital
Did the app meet your expectations?	yes	yes	yes	yes	yes	yes	yes	Yes, it did. I understood it quite fast	yes	yes
Do you see yourself using IO? For what? How often?	yes, if I had the need to use it I would	Yes, to use national services twice a month	To do some bureaucratic tasks, when I need to do that.	yes sometimes	Yes, for receiving data and easier transactions daily.	Maybe when I'll become an adult it will be useful :)	I see myself using the IO for all administrative procedures.	If I were in Italy longer, then probably	yes, very often	For its intended purpose as often as necessary
What did you like the most about this product?	simple design and similar navigation as other apps	The look and feel of the app	I can find some information about Offices only using the app. The fact that I can do whatever I want in the home section	the app feels clean	Straightforward and easy to navigate through.	Lots of things in the same place	The product is easy to use and can be customized.	How efficient it is to have everything in one place	that you can use it easily	Simple
What did you like the least? Did any parts cause frustration?	no	na	The Message section was a bit confusing	nothing	Nothing seemed to fall short of expectations, so no.	In my head maybe I would have destined an entire section to messages	I was not frustrated by any parts	I think there is a lot of information so its still a bit hard to personalize it, but much much better	the first task	No
Do you think is there a better way to perform the tasks that you just did?	no	nope	Maybe yes but I don't have any suggestions in particular	I don't know	Not to my knowledge.	I don't know if it's the best in general, what it counts for me was that I needed and understood what I could find - everything	No	No, I found it efficient	No	No
Did you find the aesthetics of the application appropriate to its purpose? Why?	yes, It was a clean and simple design	yes it's fresh like ice cold tea	The app aesthetics is ok but maybe the different color in the same section don't have a specific meaning in my opinion (es. Paypal is not blue)	yes it was quite enjoyable	Yes, clean interface makes it easy to go through.	I think the clean appearance matches its duty. The colors are fine and although it is not too flat like an old-institutional website	Yes the aesthetics are appropriate and they serve as a guidance	Mostly yes, I would like maybe colors to better distinguish different categories	yes, you don't postpone tasks	Ye it's straight forward
Will IO effectively help you organize and achieve your public service tasks? Why? What features is it lacking?	yes, i am not aware of what it could lack	yes it could be a good portal to sum up all national services	In this Moment I don't have nothing to suggest	hopefully	Yes, it can effectively help because of the way it's designed; simple and straightforward.	see above	Yes because it contains all needed public service tasks.	Yes, it will help a lot. I think once you've personalized it it will work very well	yes it helps	Not sure
Was it intuitive to perform the specific tasks you've done? why not or what was in the way?	yes it was intuitive	yes	yes	yes	Yes, it was intuitive. Then there is out of place button in section that made it difficult to get the task completed.	The labeling and the element position was intuitive, so it's difficult not to find something.	Yes it was intuitive	Yes, I found it intuitive	yes it was easy	Yes
Do you have some thoughts you want to add?	no	no	Nothing in particular	no	Seems like a very effectively helpful appl	I'd ask... when I download it, is there the presentation tutorial which presents each part?	No	Well done	no	no

Usability Test - Average Number of Clicks Through Tasks

Task 1

Average number of clicks

1.2

Task 2

Average number of clicks

11.5

Task 3

Average number of clicks

4.3

Task 4

Average number of clicks

11.0

Task 5

Average number of clicks

4.7

Task 6

Average number of clicks

4.4

Task 7

Average number of clicks

4.1

Task 8

Average number of clicks

3.3

Task 9

Average number of clicks

3.8

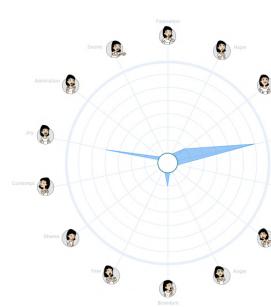
Task 10

Average number of clicks

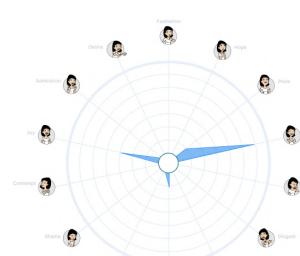
3.1

Usability Test - PrEmo Test Results

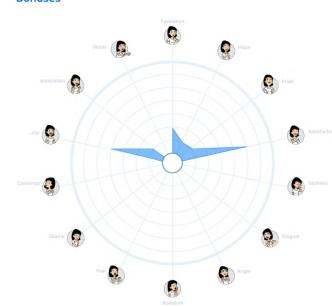
Task 1
Showing the Green Pass



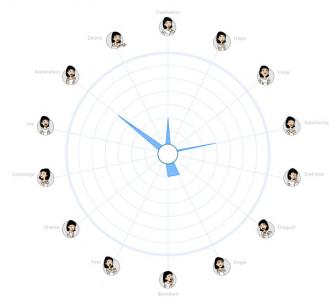
Task 2
Paying a PagoPa Notice



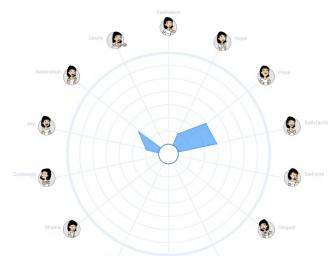
Task 3
Accessing Discounts and Bonuses



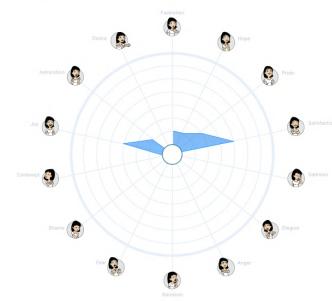
Task 4
You need to check the message "ACI: Automobile Club Italia" and archive it



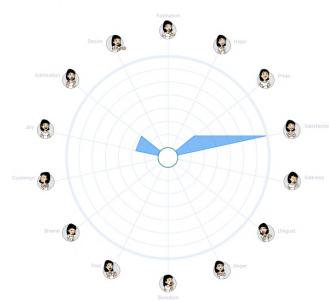
Task 5
Find a demographic office number of your city Milan



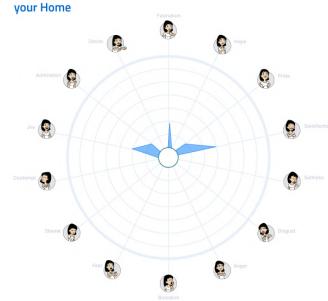
Task 6
Add your Credit Card as a new payment method



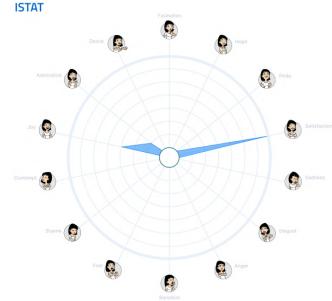
Task 7
Open the app security settings



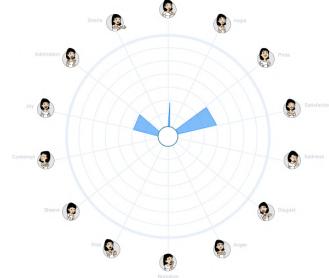
Task 8
Pin the national office "ACI: Automobile Club Italia" to your Home



Task 9
Turn ON push notifications from the National Service ISTAT



Task 10
Make your "PayPal" card (#5678) your preferred payment method



Final version - Overview Comparison

IO 1.0

Summary

Users

Users that successfully completed all tasks

1/7



Time

Overall average time

7 min 41s



IO 2.0

Summary

Users

Users that successfully completed all tasks

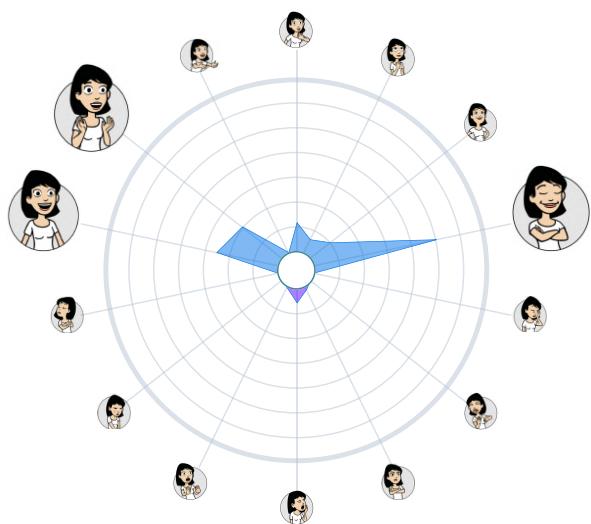
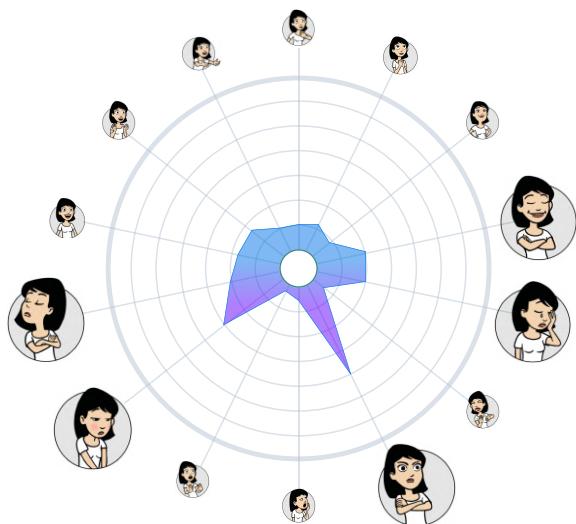
10/10



Time

Overall average time

5 min 36s



Links to Prototypes Used for Testing

Wireframe Testing I

<https://www.figma.com/proto/dxLCoZ89xswojpTPHJJFAV/Digital-design-studio?page-id=599%3A12129&node-id=599%3A12130&viewport=359%2C48%2C0.36&scaling=scale-down&starting-point-node-id=599%3A12130&hotspot-hints=0>

Wireframe Testing II

<https://www.figma.com/proto/dxLCoZ89xswojpTPHJJFAV/Digital-design-studio?page-id=740%3A15198&node-id=740%3A15611&viewport=359%2C48%2C0.33&scaling=contain&starting-point-node-id=740%3A15611&hotspot-hints=0>

Version A Prototype

<https://www.figma.com/proto/dxLCoZ89xswojpTPHJJFAV/Digital-design-studio?page-id=761%3A18118&node-id=761%3A18185&viewport=359%2C48%2C0.48&scaling=scale-down&starting-point-node-id=761%3A18185&hotspot-hints=0>

Version B Prototype

<https://www.figma.com/proto/dxLCoZ89xswojpTPHJJFAV/Digital-design-studio?page-id=933%3A25346&node-id=957%3A26237&viewport=359%2C48%2C0.29&scaling=scale-down&starting-point-node-id=957%3A26237&hotspot-hints=0>

Prototype Used for Heuristics Evaluation

<https://www.figma.com/proto/dxLCoZ89xswojpTPHJJFAV/Digital-design-studio?page-id=1120%3A31964&node-id=1189%3A52341&viewport=359%2C48%2C0.49&scaling=scale-down&starting-point-node-id=1189%3A52341&hotspot-hints=0>

High-Fidelity Prototype

<https://www.figma.com/proto/dxLCoZ89xswojpTPHJJFAV/Digital-design-studio?page-id=1691%3A87275&node-id=1691%3A89353&viewport=241%2C48%2C0.53&scaling=scale-down&starting-point-node-id=1691%3A92925&hotspot-hints=0>