Aria Configurator

Enterprise Data Platform

Digital Design Studio

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

Person Code: 10836086, 10589130, 10679828, 10842699

Professors: Francesca Rizzo, Davide Spallazzo, Felicitas Schmittinger

POLITECNICO
MILANO 1863

DIPARTIMENTO DI DESIGN

Table of content

Executive Summary

Aria Configurator is a website that acts as a portal connecting SMEs (Small and Medium Enterprises) with Public Administrations in the region of Lombardy in Italy to ensure a responsible allocation of public funds. This report features the development of an enterprise data platform from the research phase up until the prototype development phase. The brief given by the client, Intellera, was used to guide the development of this product and several reviews were schedule with client representatives from beginning to end to ensure that the end product meets the client's needs and expectations.

This document demonstrates the process that led to the final prototype of the Aria Configurator. The process began with desk research, interviews and analyzing case studies that all led to the development of wireframes. After that, the team adopted an iterative design approach to start getting user feedback as quickly and as frequently as possible. The fidelity of the prototype in terms of visual refinement, data inputted, breadth, depth and interactivity evolved incrementally with each iteration. Based on those results, a mid-to-high fidelity prototype was presented to the client on 26th of May 2022 for revisions and was then subject to a heuristics evaluation and usability testing by another team of experts. The results of those reviews were positive as they showed that no drastic changes were needed to the product, only minor improvements. The changes needed were then implemented and resulted in a high-fidelity final prototype that was subject to one final usability test was conducted on site between the 14th and the 16th of June 2022 in Lombardy, Italy.
The user driven approach was followed considering the tasks accomplished by users from both sides of the public fund management transaction: people that work in SMEs when searching for public funding and public administration workers that need to be informed on how to allocate the funds available. Given that this website will be used by Italians from several age groups, education levels and digital literacy the users that were asked to participate in the expansion of the product were as diverse as possible to ensure that the final design caters to the mental models of users who search for and distribute public funds in Italy.

Overall, fifty three different people (SME employees, public procurement experts, and usability experts) participated in the various methods throughout the design process that led to one final high-fidelity prototype. This prototype then underwent one final round of usability testing in which ten SME employees participated. The resuts of the last test validate the effectiveness of the methodology adopted into successfully leading up to one high-fidelity prototype, with certified functionalities and level of usability, that is to be delivered to the client.

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

Introduction

Public fund management is complex mechanism that must operate to satisfy two main considerations: economic growth and social responsibility. The research conducted for the sake of this project prioritized understanding what legal and societal factors affect public fund management in Italy (in the region of Lombardy specifically), what support employees in SMEs searching for tenders and funds need and also what information Public Administrations need to make their decisions when it comes to signing contracts and allocating funds.

To reach these understandings and then translate them into a concrete product, the team adopted a user-centered approach and devised as strategy to maximize the involvement of users whenever possible. Desk research and looking at case studies were the starting point as they allowed for an initial knowledge of the topic and this guided the questions that would be asked in interviews. By that point, the team had a comprehension of what users needed and moved on to conduct two rounds of wireframe testing that would validate the findings of the previous steps and give further insights. The feedback gathered from lay and expert users at the beginning from the 'quick and dirty' prototypes made it clear which features were helpful and which were difficult to utilize and needed to be revisited. The fidelity of the prototype increased after every iteration and the fourth version (a mid-to-high fidelity prototype) was presented to the client and then subject to a heuristic evaluation and usability testing by ten users and then by four other experts that were asked to evaluate the product. The results of these reviews directed the team to develop the final prototype of the Aria Configurator. The final high-fidelity prototype underwent usability testing by ten expert users (SMEs employees). The results of the final round of testing allowed the team to assess the overall usability of the designed product and compared its performance against that of an existing website already used in Lombardy through competitive testing.

Public fund management in Italy and in Lombardy more precisely is subject to many European, National and Regional rules and regulations that dictate how assets are distributed and how contracts are signed. Therefore, it should be noted that all the legal and administrative restrictions limit the area of intervention and dictate the main functionalities of the end-product. The main challenge the team faced while conducting this study mainly lies in the fact that only two out of four members are Italian. This obstacle became evident when doing desk research and conducting interviews where speaking Italian and having connections in Italy to get in contact with interviewees and expert users for testing were crucial credentials. Another challenge manifested through the discrepancies in legal structures between different countries, which limited the ability of the team to conduct proper benchmarking of digital solutions used by both employees (to find funds and contracts) and public administrations (to manage funds and contracts) of other countries.

The report will begin with a detailed explanation of the methodology adopted by the group throughout the development of the product 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 design process of the Aria Configurator.

Methodology

This section of the report demonstrates the methods that were used throughout development of the Aria Configurator. The two main elements that affect public fund management in Lombardy, and more specifically how SMEs get public funding and win bids, are regulations and both the behaviors of SMEs and Public Administrations.

To understand all the characteristics of these mechanisms, the team would start by doing some desk research, interviews and benchmarking to understand what are the restrictions involved with such a complex field and to discover the existing solutions on the market (and what can be learnt from their strengths and weaknesses). Doing so gave an estimate as to what existing user behavior, laws and societal trends the solution would have to cater to while simultaneously clarifying what possible room for innovation there is. The process of triangulating findings generated a preliminary information architecture structure that could be used as a base for low fidelity wireframes which would also allow to test a preliminary navigational structure of the website. Another round of wireframe testing was then implemented to further improve the structures previously mentioned based on the initial feedback collected from the participants.

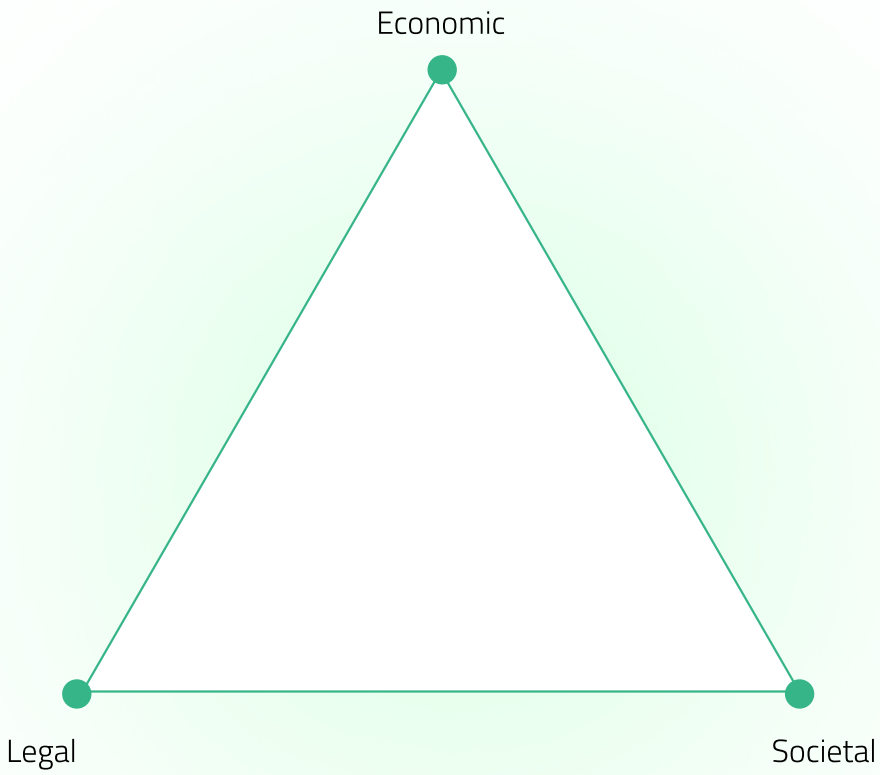
This iterative design approach resulted in both information architecture and navigational structures being validated in addition to highlighting some usability problems that were addressed, allowing the team to increase the fidelity of the prototype and test out more innovative features that would support users in achieving their goals. After three iterations, the fourth prototype was presented to the client for feedback and then tested on ten SME employees and four usability experts that performed a heuristic evaluation in addition to the standard usability testing.

The results of these evaluations would be used to guide the synthesis of one final high-fidelity prototype that would be used for competitive testing. This prototype and the existing website for acquiring public funds and bids would be subject to the same usability testing protocol from two groups of ten different target users and the results of this comparison would determine the improvements and advantages the new designed solution has over the existing website.

Desk Research:

To initiate the design process, the team would start by doing some desk research to learn about all the stakeholders concerned in addition to all the implications of awarding public funds and bids in the region of Lombardy. The research would cover three main areas: legal, economic, and societal. The material covered includes: bulletins, research papers, journal publications, and newspaper articles and blogposts. The data collected from this research would be qualitative in nature and serve as the foundation of the design process as it would clarify the scope of the digital intervention given all the implications involved.

Desk research would be divided in three categories that will frame the actual scenario.



Benchmarking/Case Studies:

In parallel to the desk research, the group would be doing some benchmarking to understand how existing digital solutions from Italy and other countries navigate complex legal structures and simplify them into a manageable touchpoint for the end user. The main purpose of looking at case studies would be to understand how other solutions present to users information regarding public funds and bids distribution (from the sides of both those seeking and distributing funds and bids). This would allow the team to understand what information architecture and navigational structures users are accustomed to and set some high-level guidelines for the product that is to be developed since designing something to drastically different would be counterproductive. Digital solutions to be analyzed would include the existing Italian portals, portals used on a European Union level, and also portals from several countries around the world. The qualitative data collected would be triangulated with that of the desk research to assist in perceiving potential areas for innovation that would make the tasks of public funds and bids management more advantageous for all the stakeholders involved.

Interviews:

The data collected from the desk research and case studies analysis would have given the group a good comprehension of the majority of factors that affect public funds and bids management in Lombardy and what are the existing solutions on the market. However, given the meticulous nature of the topic, it is highly probable that the group will need additional clarifications to gain a stronger understanding of the field. For this reason, sets of interviews and shadowing sessions were to be planned with two categories of people: experts/academics in public funds and bids management and users that have direct experience with existing portals for public procurement. Interviews with the first cluster would give insights related to implicit regulations and behaviors of companies and Public Administrations that could be omitted from official documentations. Interviews and shadowing sessions with the second cluster would give insights on users' behaviors, needs, frustrations and emotions that arise when handling the existing digital solutions. Both encounters would also validate or invalidate preliminary an information architecture structure that would be drafted based on the understandings gathered from the previous methods. The qualitative data gathered would highlight findings that could have been overlooked during the desk research and case studies analysis and could even potentially suggest additional research questions that need to be answered.

- Interview with procurement
- Interview with Company woman
- Interview with procurement specialist
- Shadowing session Polimi Procurment Office and interview

Triangulation With Clusters:

After collecting all the information obtained from the previous activities into a Gigamap, the group conducting the study would analyze them to find possible links that could be followed for finding meaningful hints. From these, hints would be translated into insights in order to define the principles, values and guidelines that will support the system.

Iterative Design Phase:

Considering the results of the previous methods, a preliminary version of wireframes would be developed to test the layout content and hierarchical structure of some pages of the website. 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 digital solution meets user expectations.

These wireframes would be developed quickly and tested on a small sample of users (not necessarily target users) to get an initial set of feedback early in the design process. Users would be asked to complete the tasks related to acquiring public funds and looking up information for tenders. 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 set of users more experienced with public procurrement to get another set of feedback. Three rounds of iterations would be held, the fidelity of the prototype increasing with every iteration in terms breadth and depth of functionality, visual refinement, interactivity, and data model. This iterative approach would validate page content and functionality and improve these features incrementally throughout each iteration. Measuring the System Usability Scale and keeping track of the number of clicks and paths followed to complete tasks would give an idea of the improved usability between the iterations and would give insights as to what users are feeling and thinking when using the website. The fourth and last prototype of the Iterative Design phase would be presented to the client for revisions and subject to a heuristic evaluation from a group of expterts in addition to the standard usability testing that the previous versions were subject to. The qualitative and quantitative data collected from the fourth round would serve as the basis for the final high-fidelity prototype that would be delivered at the end of the design process.

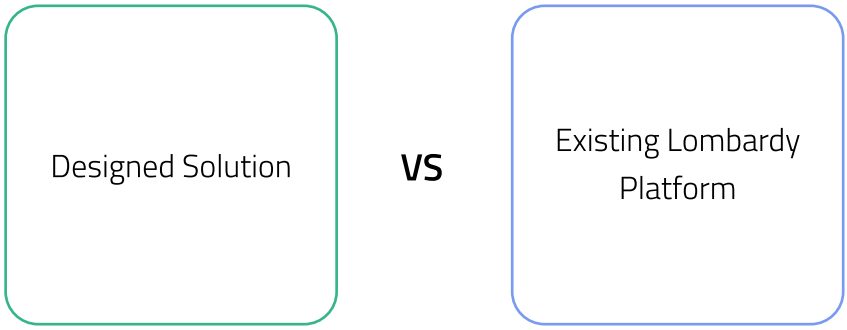
Competitive Testing Phase:

In light of the results of the previous iterations, one final high-fidelity prototype would be synthesized, tested, and then benchmarked against the main existing portal for public procurement in Lombardy.

For the competitive testing to be accurate and effective, the exact same process should be used to measure the both the usability of the newly designed Lombady Configurator and that of the existing portal.

To prevent any bias that might have developed from previous rounds of usability testing 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.

Both the qualitative and quantitative data collected during the final round of testing would be used to measure the usability of the final high-fidelity prototype of the designed product, the Lombardia configurator. The benchmarking of these results against those collected during the usability testing of the existing Lombardia portal will give an approximate of the extent to which the design process was successful in delivering a product with improved functionalities and usability.



Tests Procedures & Data Compilation:

Given the exclusiveness of the topic, finding target users who are knowledgeable in the the processes of public procurement might be a bit cumbersome. For that reason, the group conducting study would be reaching out on specific facebook groups and linkedin profiles to get in contact with people who have experience in public procurement under the umbrella of SMEs.

The design strategy adopted throughout this study is not purely linear since the group conducting the study is aware that they might have to revisit the initial methods (desk research, case studies, interviews) to gain additional knowledge before implementing the iterations to the prototypes.

Given the short time frame of the study and the specificity of the target users , not all the tests would be administered on site. Excluding some shadowing sessions with target users, the client review, Heuristics Evaluation of the mid-to-high fidelity prototype and the usability testing of the high-fidelity prototype that will be exclusively administered on site, the remaining sessions 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 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 design 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 the wide supposed user base of the Aria Configurator. These metrics would help the group understand the behavior of users and combined with the qualitative data gathered, would lead to more concrete findings that would guide the design process leading to the final high-fidelity prototype of the website.

Results

Desk Research:

The findings of the desk research were divided into three main categories: three main areas: legal, economic, and societal. Summarized below is the main knowledge gathered and how it would be translated/adapted into the functionalities of the designed solution.

Legal Knowledge:

- Public procurement in the region of Lombardy is subject to many regional, national and European regulations.
- Users can only apply for tenders and grants on the official portals.
- There are 3 groups of documents required to apply for a tender: Legal/Administrative, Technical and Economical.
- There are various types of tenders and grants and they have varying procedures for applications.
- According to the 2012 Law Severino "Transparency as a Tool to Prevent Corruption", Administrative transparency was originally perceived and by consequence treated by legal practitioners as an obstacle to the work of Public Administration so it was believed that lack of participation and knowledge on the part of the citizen could only lead to a "saving" of time.

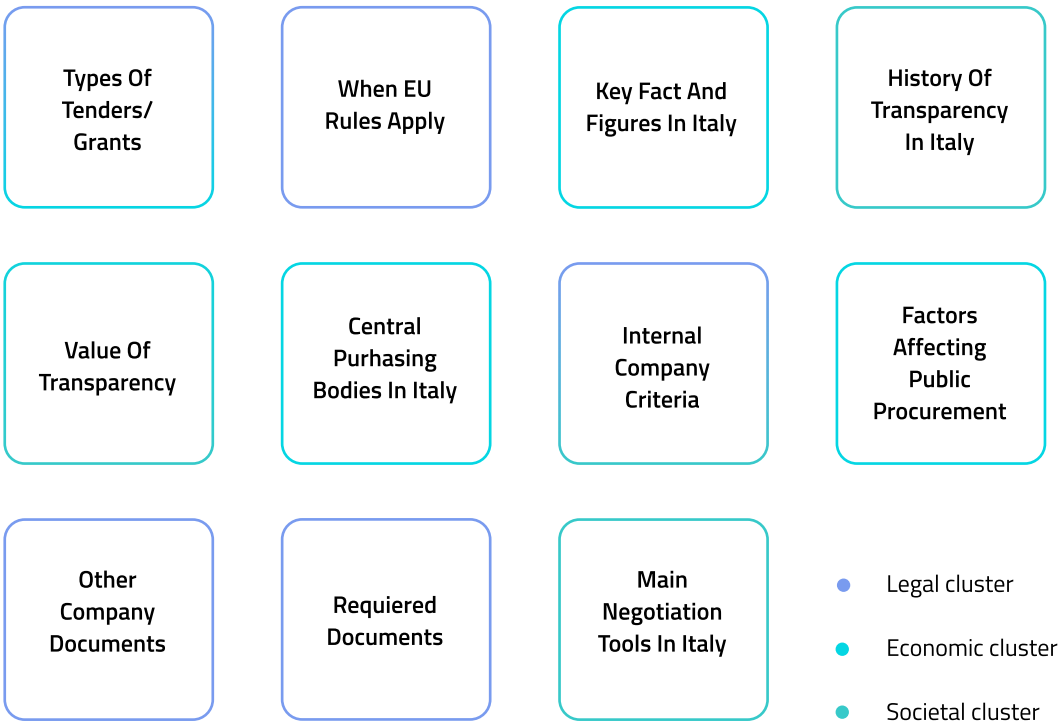
Economic Knowledge:

- Small and medium-sized enterprises have a crucial impact on the Italian economy.
- In 2014 Italy reduced the tender contracting stations from 32000 to 34 Central Purchasing Bodies.

Societal Knowledge:

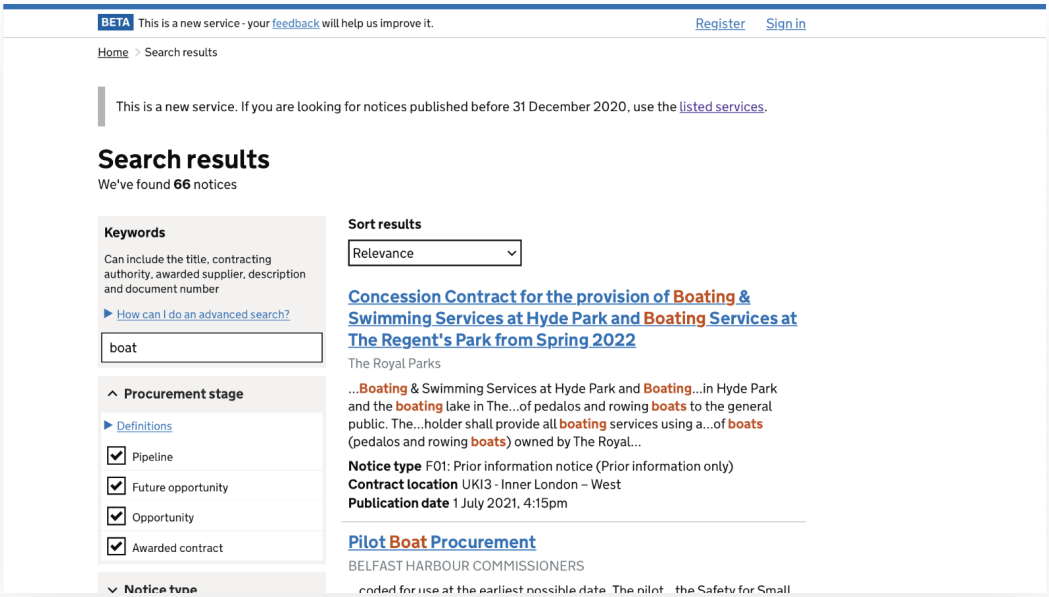
- A vast amount of data related to public procurement is legally available to the public in Lombady however it is scattered and sometimes made difficult to find (use of discretion as a tool to cover corruption).
- There are three main negotiation tools in Italy (The Mepa, The Sdapa, and Tenders in Asp).
- Both SMEs and Public Administrations participate in acts of corruption that impede the proper operations of public fund management in Lomabrdy.

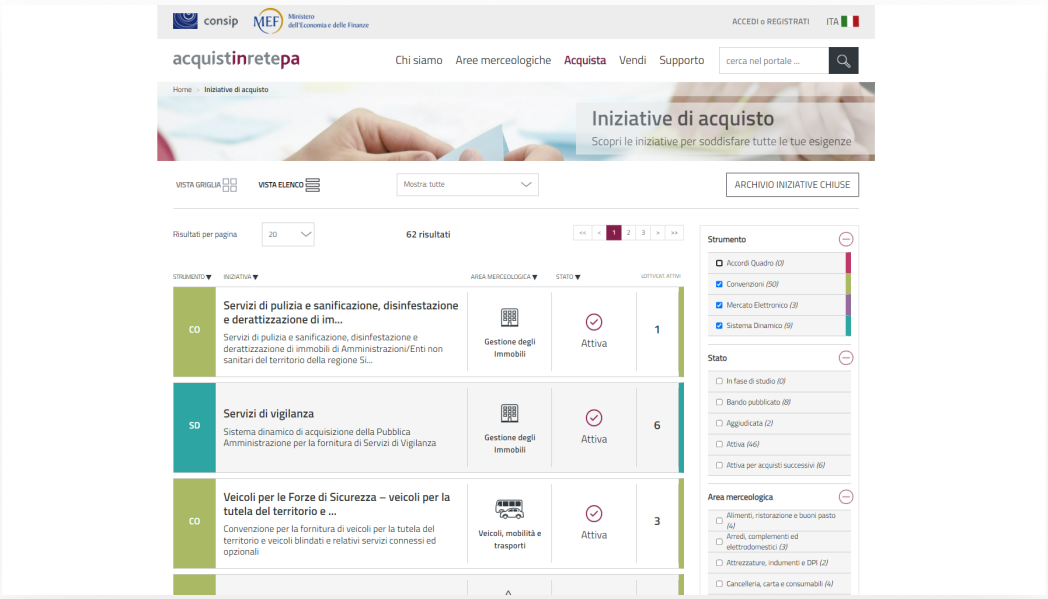
For a detailed list of the bibliography that was used to guide this study, kindly refer to the appendix of the report.



Benchmarking:

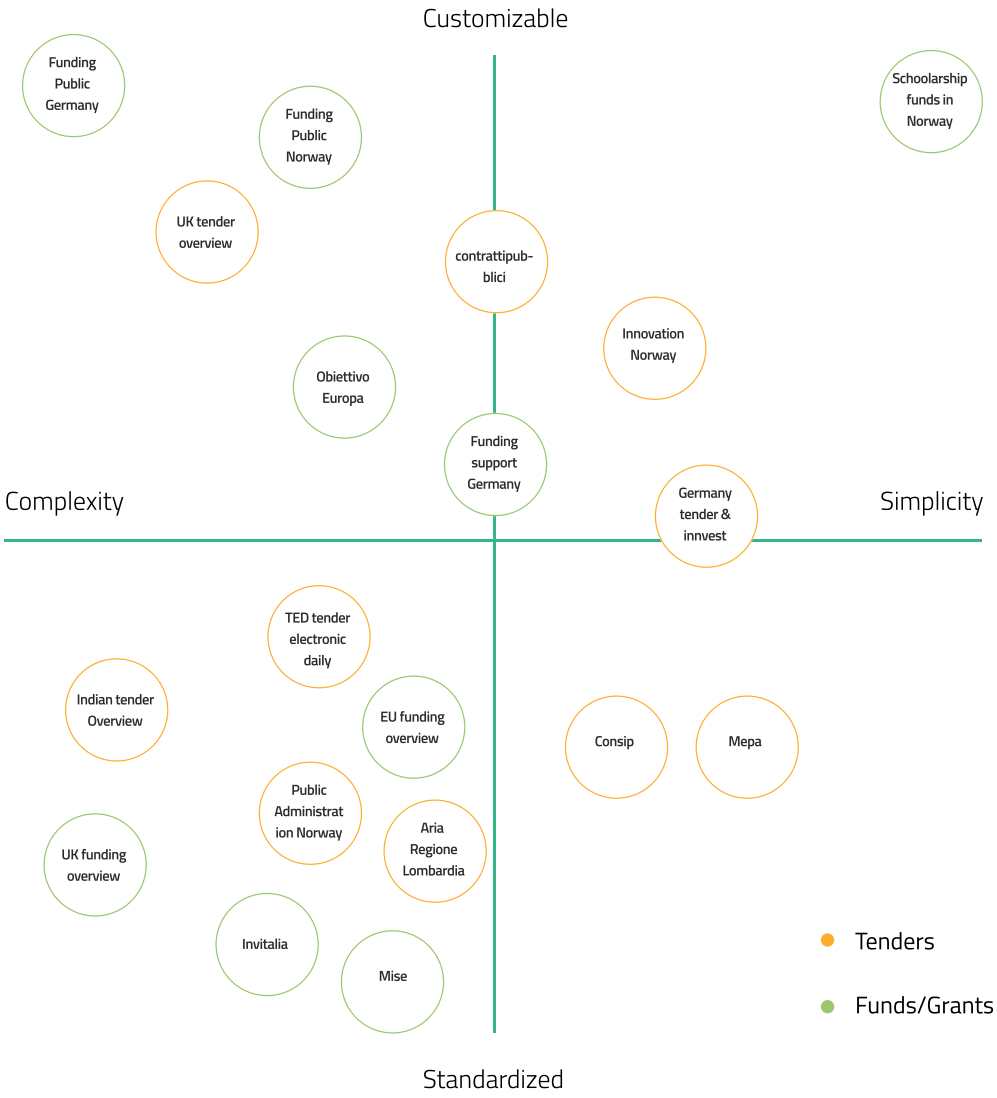
The benchmarking phase was a valuable process to start collecting information about how the existing tools and platforms tackled the search of public fundings. For example it gave the group a basic understanding of most relevant variables in the filtering and search system. One of the key findings was that different types of grants and tenders were accessible from different platforms and tools, which makes the search much more complex and inefficient. The group also noticed that in most platforms there was very little customization and intelligence which, together with a steep learning curve for beginners and lack of documentation, contributed to the general complexity and time required to use this systems.





Benchmarking

The Benchmarking phase gave to the group a deeper understanding on the digital procurement market, both from a national and international perspective. This was crucial to understand the type of product that would be most useful and effective in the current market. The map of the analyzed platform that is shown below illustrate how most of the platforms are in the complex and standardized area which explains why most of them require expertise to be used. For a detailed list of the websites that were used for the benchmarking, kindly refer to the appendix of the report.



Interviews

By this point, the group had a stronger grasp of the topic and had a preliminary proof of concept that, if validated, could evolve into a tangible product. However, there were still some areas of doubts that needed some clarification. For that reason, two types of interviews were scheduled:

1. Interviews with SMEs, academics and experts in the field of public procurement in Italy.
2. A shadowing session with users who depend on the existing portals in Lombardy to participate in the procedures of public procurement in Italy.

This section of the report contains the main observations and hints that arised from this process:

Interview with Paola Paterno (Tendering Office Xlam Dolomiti)

- SOA Qualifications are the way to be recognized by public administrations
- Portals are almost the same from different public administrations and they ask the same information in different ways
- PAs have the possibility to check all the certifications but they ask nonethless
- Input information is reduntant and repetitive
- Now most of the tendering happens online
- Three kind of information: anagraphic, economic and financial qualifications and legal requirements
- Public Administrations also contact companies to find partecipants

Interview with Francesco Molinari (Public Procurement Specialist)

- PAs are not interested in PAs financial growth
- Different PAs may have different interests
- Finding relevant information for PAs is difficult since the objectives are not clear

Interview with Michele Popesso (Procurement Manager)

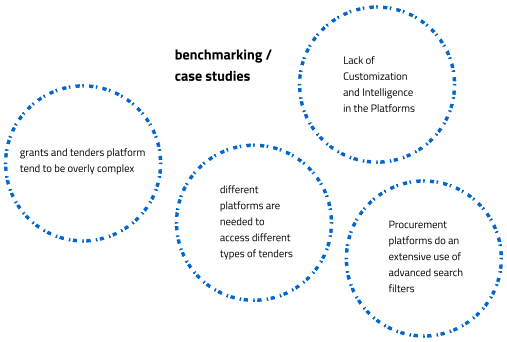
- PAs are not directly interested in economic growth
- PAs are interested in virtuous projects and values
- PAs are interested being transparent and accessible by everyone
- PAs have different missions based on current planning from the government

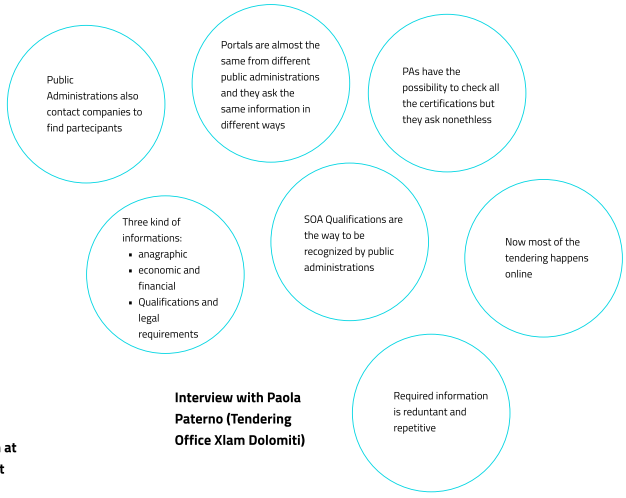
Shadowing Session at Polimi Procurement Office

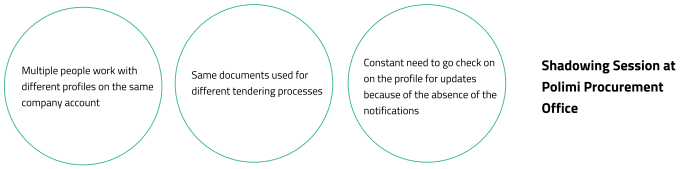
- Constant need to go check on on the profile for updates because of the absence of the notifications
- Multiple people work with different profiles on the same company account
- Same documents used for different tendering processes

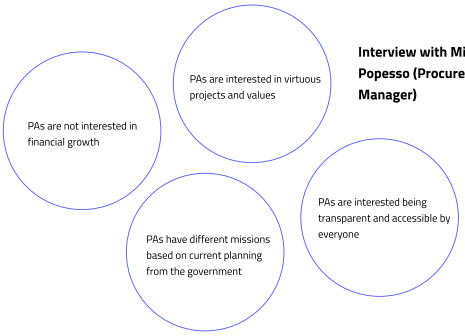
Findings From The Different Research Methods

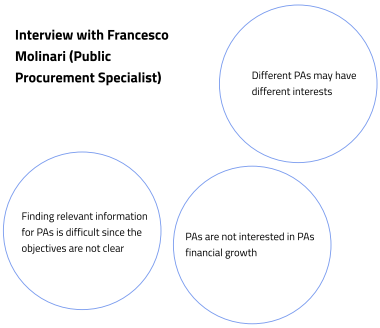
This map have been created to collect all the main findings from the different research methods in order to find possible connections as hints.





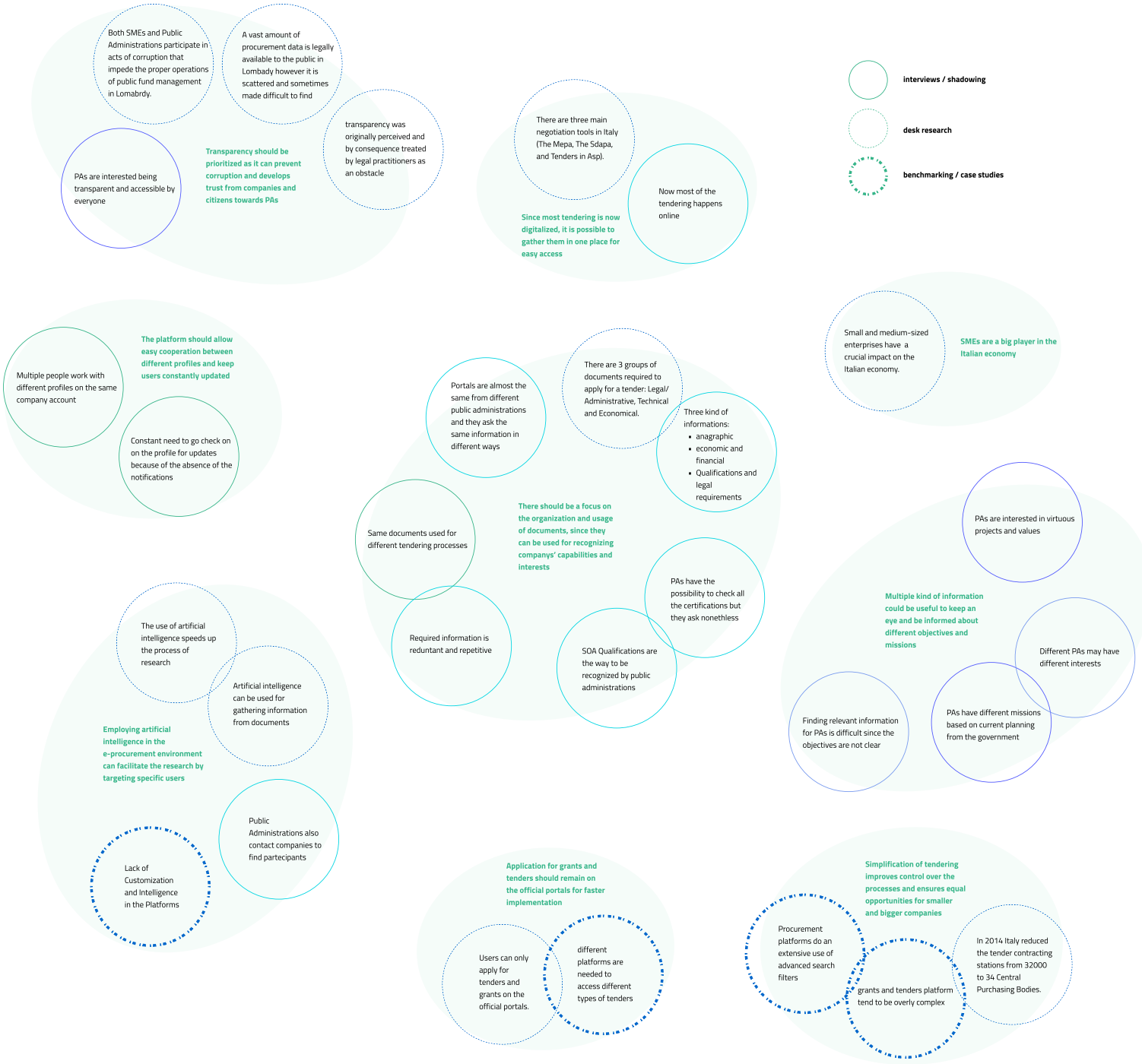






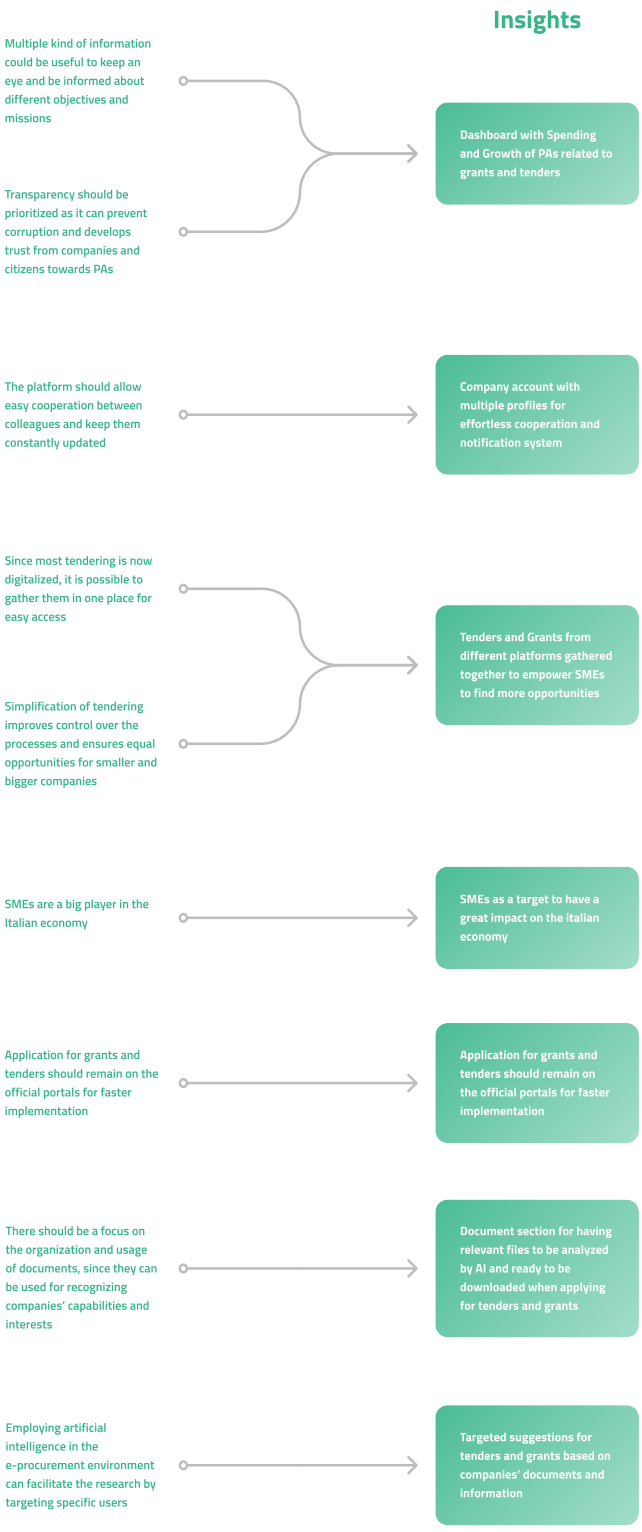
Triangulation Of The Findings

All the findings got from the different research methods have then been gathered in clusters to get some meaningful hints that could become design insights.



From Findings to Hints

To find design elements and principles that should be implemented in the system, hints from the previous phase have been analyzed and processed into insights that will guide the development of the Aria Configurator that is to be designed.



Digital Solution

All of the research conducted was triangulated under the scope of the brief given by the client to guide and synthesize a website that acts as an enterprise data platform that will optimize the management of public funds in the region of Lombardy. Since SMEs have a crucial impact on the Italian economy (as of 2020 there are more than 800,000 registered SMEs in Lombardy alone) the website would serve as a tool that will support these enterprises in their acquisition of public funds (signing contracts for tenders and getting grants). The intervention would support public procurement procedures in the region of Lombardy in Italy by allowing SME employees to browse tenders and grants listed in the region and by giving them access to one unified touchpoint that shows how regional, national and European funds are being managed in the Public Administration of the region (all information is legally publicly available however it is scattered across several platforms). The proposed website would be implemented within the existing ARIA platform (ARIA stands for Regional Company for Innovation and Purchasing) to facilitate the exchange of data between all the stakeholders involved.

The guiding principles and values behind the designed solution would be:

- Transparency
- Reduced Transaction Cost
- Healthy Competition
- Socially Responsible Fund Management

The main features of the enterprise data platform include:

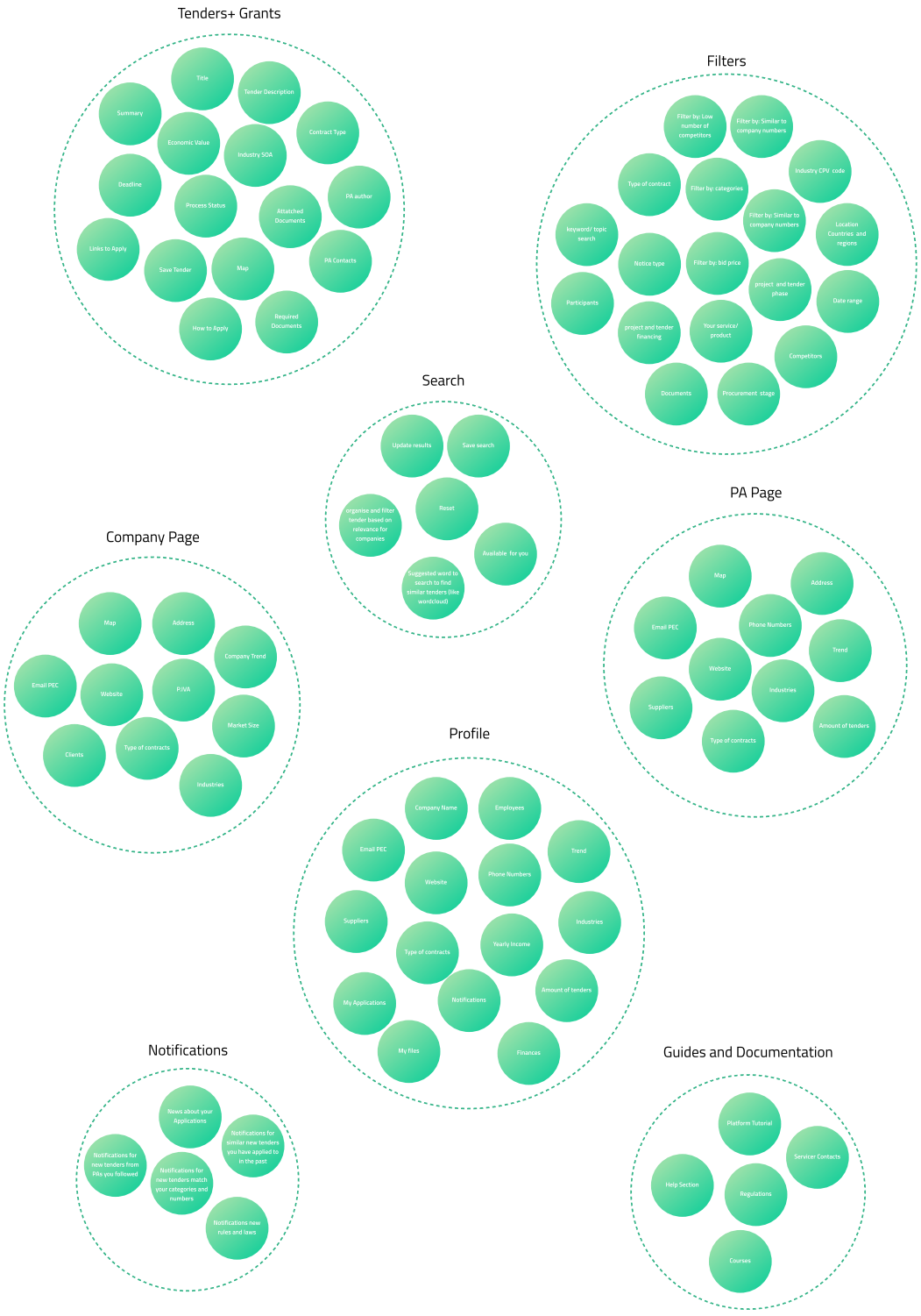
- The system will utilize artificial intelligence to analyze documents (mostly RFIs and RFPs) users upload and give tailored recommendations to which funding opportunities they are more suitable to apply for.
- The system will utilize artificial intelligence to analyze documents users upload and inform users an estimate of how suitable funding opportunities.
- The system will scrape publicly available data from the existing portals to give users an estimate of the application status of some open procedure tenders and grants (who already applied, amount of bid, bid average...). The system would do the same for calls that were closed to give users an understanding of what they can improve for futur applications.
- The enterprise data platform would pool together data at the level of the Public Administration that legally should be available to the public and present it to through a Regional Dashboard section. This would allow users to see how public funds are really being utilized (legally certified level of transparency) and to check what is driving the decisions for these allocations of funds.

- The platform should allow easy cooperation between different profiles and keep users constantly updated
- Having SMEs as target will have a big impact since they are a big player of the Italian economy
- Employing artificial intelligence in e-procrement can facilitate the research by targeting users based on submitted documents
- Transparency should be prioritized as it can prevent corruption and develops interoperability between SMEs and PAs
- Simplification of public procurement improves control over the processes and ensures equal opportunities for smaller and bigger companies
- Application for grants and tenders should remain on the official portals for faster implementation
- There should be a focus on the organization and usage of documents, since they can be used for recognizing companys' capabilities and interests
- Multiple kinds of information could be useful to stay informed about different objectives and missions

For a detailed explanation of the service surround the Aria configurator, kindly refer to the Strategic Service Design section of this report.

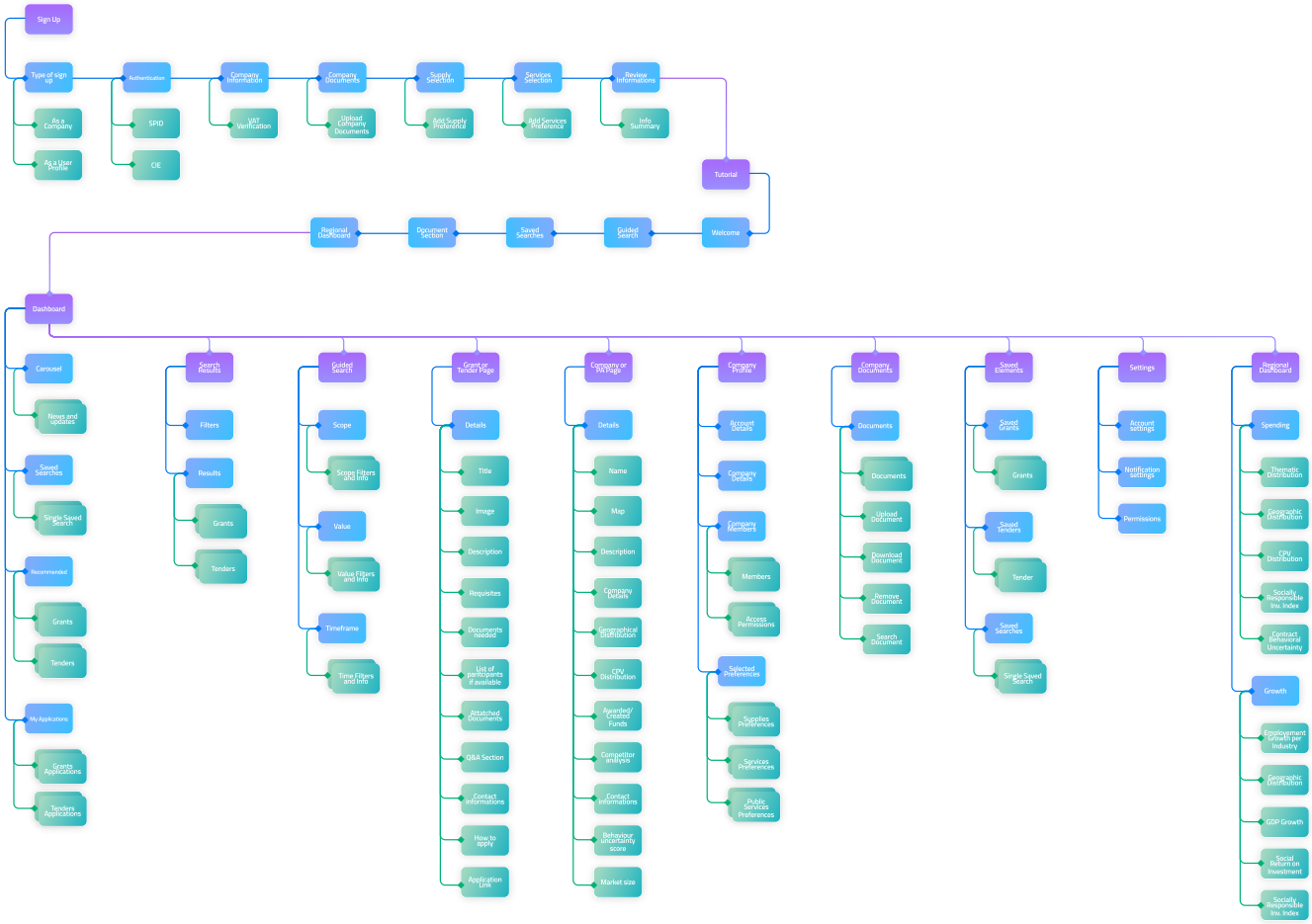
Information architecture components

All of the findings from the previous methods were translated into components that served as the foundation for the structure of the information architecture of the website.
Since expert users were a bit difficult to reach at earlier stages of the study, the group responsible for the design process used the interpretations of the previous findings to clusterize the content through an informal internal card sorting session. This structure would be revised and validated by expert users in following usability testing sessions. The diagram below illustrates the initial clusterization of components and functionalities of the website



Information Architecture

The findings generated the following preliminary information architecture structure that is to be tested in the low-fidelity wireframes.



Iterative Design Round I

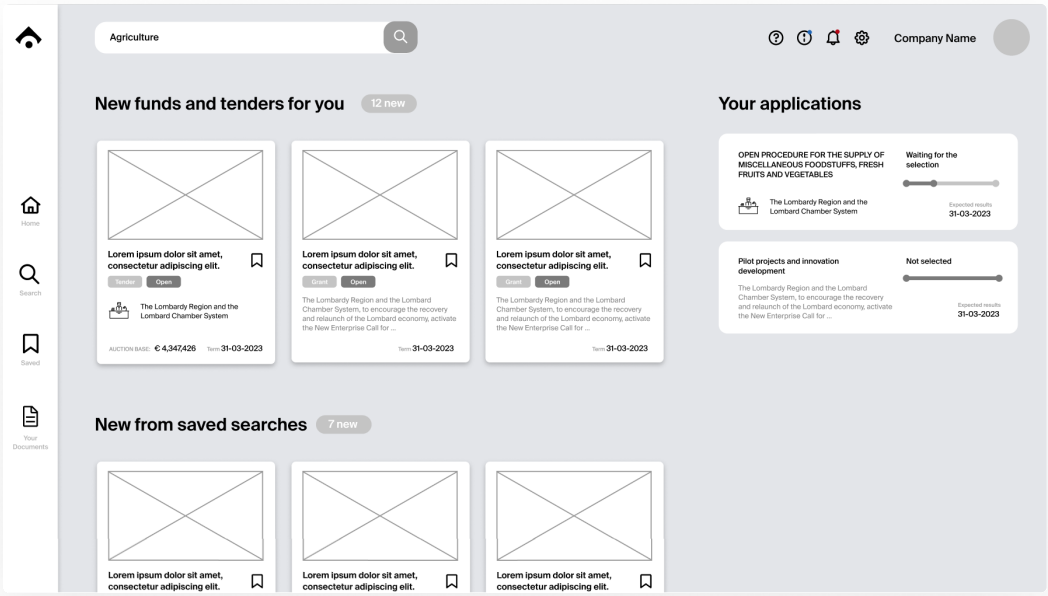
Previous discoveries led the team to translate the content into a hybrid tabbed view, dashboard, and filtered view information architecture patterns that will be adopted for the design of the website. This decision was taken based on what was observed from the case studies and how the established functionalities of the designed solution should be accessed by users.

Based on the findings from all the previous methods, the team developed preliminary wireframes that would be tested on five users non-expert users where they were asked to perform the following seven tasks:
1. Sign up for the configurator as a company.
2. Perform a search using the “guided search” feature.
3. Search and apply for a tender of your preference.
4. Upload a new company document.
5. Check the overview of one of your competitors.
6. Check the fundings suggested to you and save your favorite one.
7. Check for updates from your saved searches.

This test only assessed the enterprise data platform wireframes from the theoretical perspective of the SMEs employees. The sessions were informal and were only used to gather qualitative feedback from users.
The outcomes of the first round of wireframe testing were insightful as participants highlighted some problems. The sessions clarified what improvements need to be done to the information architecture and navigational structure of the website to improve the overal usability.
The results of this test indicated that the most prominent iterations to be done for the next round of testing are those that are documented below:

- Change position of search function and make it accessible from only one place because users thought that the several search access points were different.
- Saved searches feature not clear and needs more explanation in how it is communicated to users.
- Users expected to see notifications in the dashboard.

The average System Usability Scale score of the five users that participated in this round of wireframe testing was 64 which indicated that many improvements were needed to reach a good level of usability.



Iterative Design Round II

After completing the iterations from the first round of wireframe testing, a second round was conducted with ten different participants. Involving expert users by this point seemed appropriate given that the foundation of the wireframes was mostly established and validated.For this reason, five expert and five non-expert users were asked to participate in this round. This round was done to validate the previous assumptions while attending to the insights from the first round of wireframe testing. From this round of testing onwards a unified protocol was developed to test the usability of the interface developed. For the full protocol implemented, kindly refer to the appendix of this report.
To test out different sections of the wireframes and how they relate to each other, a participants were asked to perform ten tasks that are more complex to more efficiently assess the content and functionality of the wireframes:

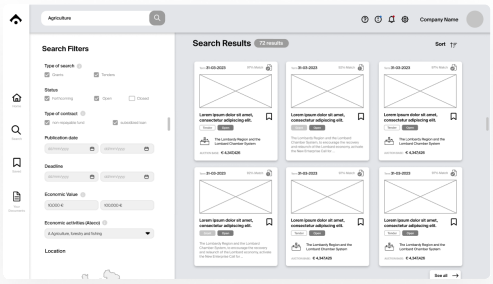
1. Sign up for the configurator as a company.
2. Perform a search using the “guided search” feature.
3. Browse the list of tenders and grants and apply to one of your choice.
4. Search for woodworking tenders, and then save one of your choice.
5. Check for updates from your saved searches.
6. Upload a new company document.
7. Check the overview of one of your competitors.
8. Check the fundings suggested to you and save your favorite one.
9. Perform a search for woodworking, the modify the filters with parameters of your choice.
10. Check how compatible your company is for applying for any tender or grant of your choice.

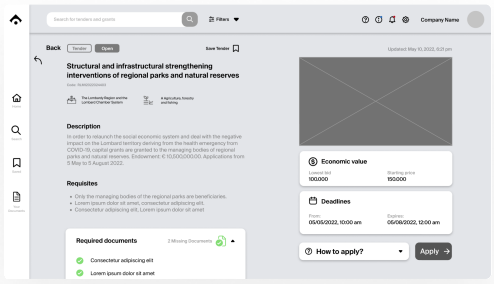
Some of the tasks could be achieved from different sections of the wireframes so it was important to understand which paths participants were following, and what guided them to take those paths in particular. In this second round of Iterative Design, qualitative and quantitative data were gathered. The 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.

Seven out of Ten users succesfully completed the ten tasks. The average System Usability Scale score of the ten users that participated in this round of wireframe testing was 72 which proved that changes are being made in the right direction, however there still was a lot of room for improvement.
This meant that the information architecture and navigational structures are roughly understood by users through the wireframes however there were still some iterations to be included in the following prototype with higher dimensions of fidelity that would generate more accurate results.

These iterations include:

- Changing the placement of the guided search.
- The bar on the left confused users so it’s best if it is removed
- Add Q&A section in each open tender and grant page
- Give more information regarding which documents are missing in hover feature.





Iterative Design Round III

In light of the positive results of the previous test, the group conducting the study decided that it was time to start increasing the dimensions of fidelity of the prototype incrementally. The third version of the prototype would cover the iterations previously highlighted and have increased visual refinement, breadth, depth, interactivety and data model. This meant that a visual language had to be articulated for the user interface. Guidelines set by the client, Intellera, impose that the visual elements used should come from the official Italian style guide. With the limit of these requirements, the group started to develop a user interface that would be seen as innovative, formal and trusthworthy all the while utilizing the elements from the proposed style guide. The third prototype was a bit higher in fidelity than the previous two and featured the firt sketch of the user interface.

Seven expert and three non-expert users were asked to participate in this round since it was more beneficiary to include expert users given the relative development of the prototype. Participants were asked to complete the following tasks:

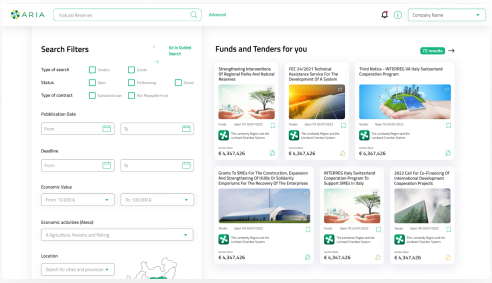
1. Sign up for the configurator as a company.
2. Search for tenders that have May 16th as a starting date.
3. Apply to "Grant for small enterprises that follow an inclusive and diverse hiring strategy".
4. Navigate to "Saved Elements" and open one tender or grant.
5. Ask a question in the "Q&A section" of one tender or grant.
6. Check for updates in your saved search "Woodworking Grants".
7. Check the overview of one of your competitors.
8. Check the fundings suggested to you and save your favorite one.
9. Perform a search for woodworking, the modify the filters with parameters of your choice.
10. Check how compatible your company is for applying for any tender or grant of your choice.

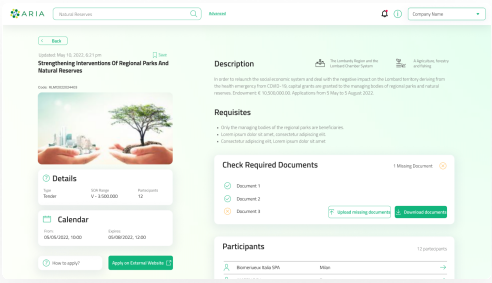
The results were positive because eight out of ten users succesfully completed the tasks however there were still some minor usability issues that had to be attended to.
The average System Usability Scale score of the ten users that participated in this round of wireframe testing was 81 which implied that the website reached an overall good level of usability.

The results of this round of testing suggested the following Iterations:

- Add open application page of tender/grant with progress details of application.
- Allow companies to search for other companies from the search bar.
- Briefly explain somewhere the technology behind the system to make users understand it and trust it more.

The outcome of this test validated the functionalities (and how they relate to each other) developed so far. The team conducting the study was convinced that the prototype reached a good level of development and was ready to incorporate the regional Public Administration dashboard into the following versions of the prototype.



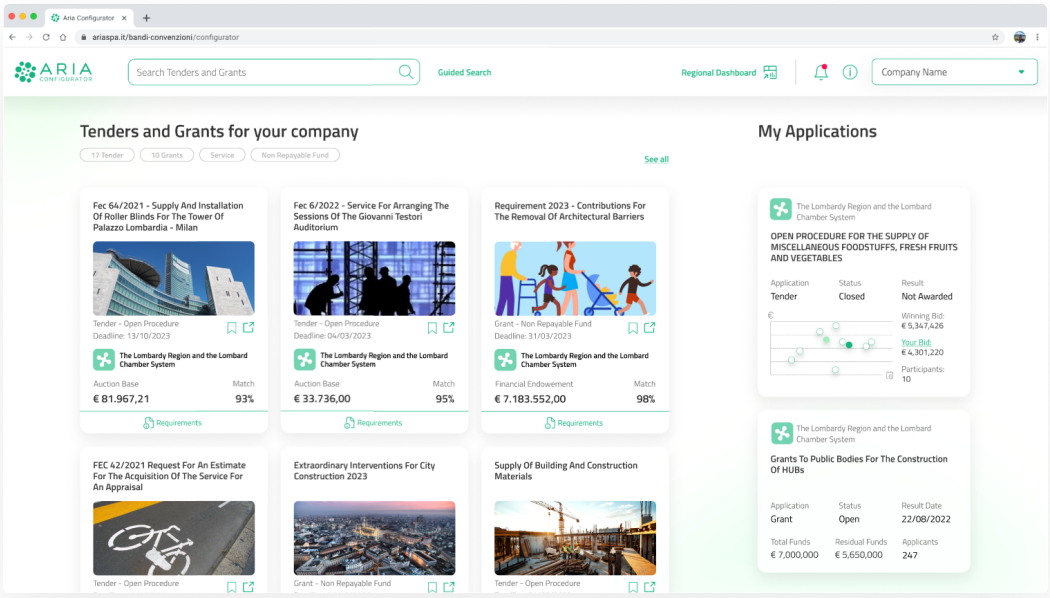


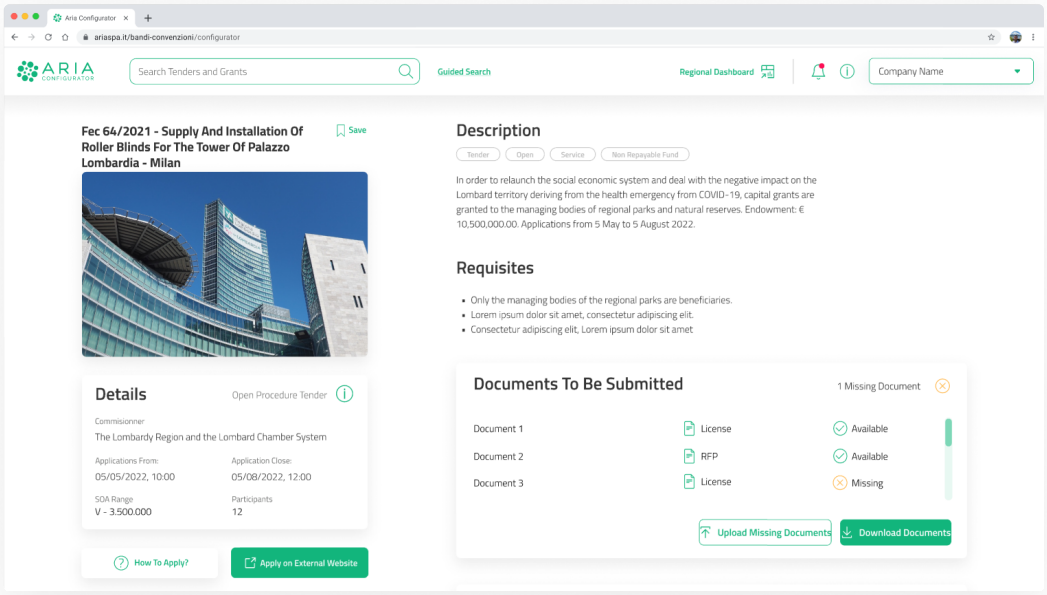
Iterative Design Round IV - Client Presentation

The findings from the previous test were used to synthesize a fourth version that had increased dimensions of fidelity, which elevated it to the rank of mid-to-high fidelity prototype. This version would be subject to usability testing by ten expert users however what makes it more essential is the fact that it was presented to the client for validation and also subject to a usability testing and heuristics evaluation by four usability experts.

The client's review of the Technological Readiness Level 5 (Technology Validated in Relevant Environment) prototype went really well. The client approved the use of Artificial Intelligence for the process of public fund management, validated all the functionalities offered and appreciated the small adjustments implemented to the style guide that was utilized for the User Interface.

The only feedback received from the client was that the initial configuration process could be split into sections to make the process easier





Iterative Design Round IV - Experts Usability Testing

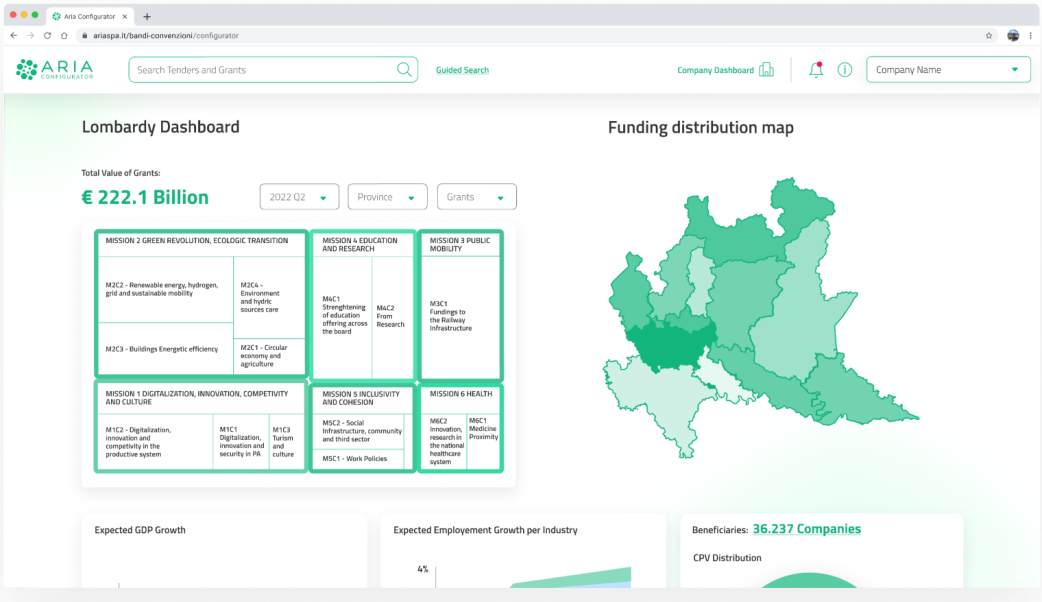
This prototype was also subject to a usability testing and heuristics evaluation (with the same standards set by Jakob Nielsen's '10 Usability Heuristics for User Interface Design') from four usability experts. The level of involvement of the group members conducting the study in developing the prototypes should be taken into consideration as it might bias the Heuristics Evaluation, which is needed to highlight potential usability problems in the User interface and the team conducting the study might have overlooked. For that reason, another group of four experts with similar expertise in usability engineering (classmates in the Digital Design Studio course) were asked to perform a Heuristics Evaluation after having performed the usabillity testing (for the full protocol of testing followed, kindly refer to the appendix of the report).

The four experts were asked to perform the following tasks:

1. Sign up for the configurator as a company.
2. Perform a search using the "guided search" feature.
3. Browse the list of tenders and grants and apply to one of your choice.
4. Search for woodworking tenders, and then save one of your choice.
5. Check for updates from your saved searches.
6. Upload a new company document.
7. Check the overview of one of your competitors.
8. Check the fundings suggested to you and save your favorite one.
9. Perform a search for woodworking, the modify the filters with parameters of your choice.
10. Check how compatible your company is for applying for any tender or grant of your choice.
11. Check the expected employment growth by industry for 2024 for all of the region of Lombardy.
12. Check the distribution of expendatures in the region of Lombardy for the 2nd quarter of 2022

The results of the the tests were positive as the four expert users successfully completed all the tasks without facing any problems. Kindly refer to the table attached in the appendix to check the results of the usability testing of the expert users.

The average System Usability Scale score of the four experts was 87.5, testifying that the prototype had acheived high levels of usability that would facilitate the tasks of users.



Iterative Design Round IV - Experts Heuristic Evaluation

Overall, the heuristics evaluation went really well as the group of experts did not highlight any major violations. The most notable insights that emerged from the Heuristics evaluation were:

- Increase the feedbacks given to users after having completed some actions.
- Re-add the back button from the open tender/grant page (it was decided to remove it after a previous round of iterations however it was proven that the button was needed).
- Increase the affordances of some visual elements.

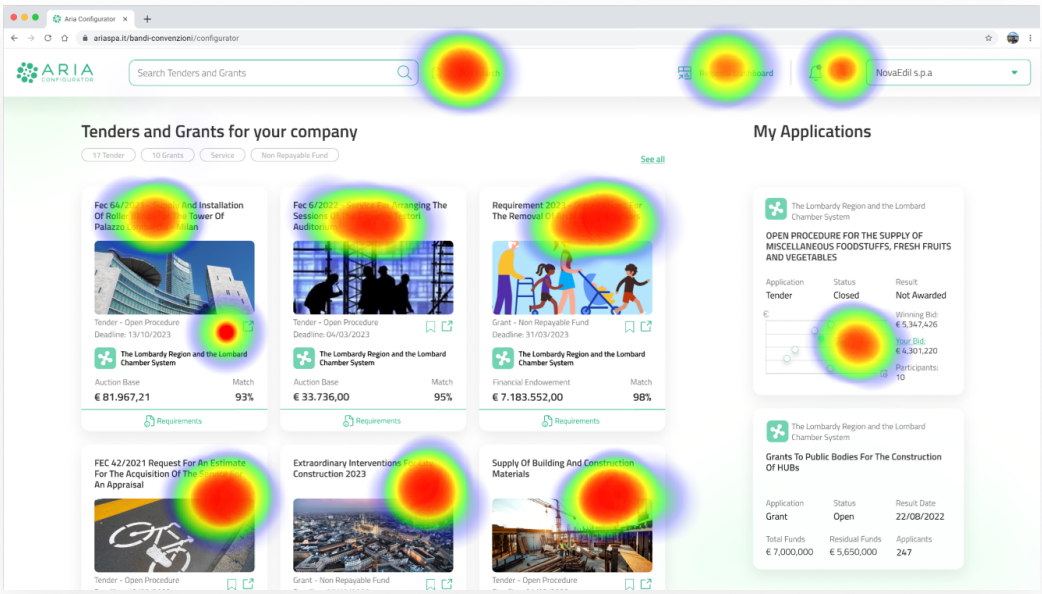
The results of the Heuristics Evaluation are reported in the table attached below.

Problem	Heuristics	Rate 1-5	Redesign suggestion
After I saved a tender i don't have any confirmation	4	2	provide notification
provide checkbox for the initial setup to ouck the supplies	7	1	provide notification
There is no back button when you enter a specific tender page	8	3	Provide the back button
the information pills in the homepage under "tenders and grants for your company" look like you can interact with them	4	3	Don't use pills (they are a standard for filters) or make them editable (maybe you can delete or edit that information from there)
In the company registration process, there is no input to scroll down.	2	1	put an input to scroll
In the lombardy dashboard, in the mission tabs, missions are not highlighted enough	4	1	Make mission bolder or bigger/colored.
In the guided search, the guiding questions are not that visible.	4	2	Put questions above and make the progress bar smaller and less invasive.
requirement looks like a button, so I clicked it without hovering on the card	3	3	Take out the line above requiremnts and leave the hover on the card to disclose more information
I pressed the "close filters" button in the search dropdown by mistake, so I think it might be in the wrong position	5	1	Change the position of the button
there is no info for the "Guide Research"	5	1	provide more info
In the dashboard while presenting the tenders for a PA there is not enough clarification of why those tenders are there	2	3	provide more explanations
Little to none difference between the page of categorized results and the search results page	1	3	increase the differenciations between the sections

Iterative Design Round IV - Usability Testing

Ten additional experts users participated in a round of usability testing identical to the one the team of experts was subject to (previously mentioned in the report).
The results were good because the ten expert users successfully completed the twelve tasks without running into any problems. Through the use of heatmaps, it was discovered that the misclick rate was a bit high (35%) , validating the feedback given from the group of experts that suggested that the affordances of some visual elements had to be revised. For the results of this round of usability testing, kindly refer to the appendix of the report.

The average System Usability Scale score of the ten users that participated in this round of testing was 86, proving that all the changes made led to the improvement of the usability.



High-fidelity Prototype

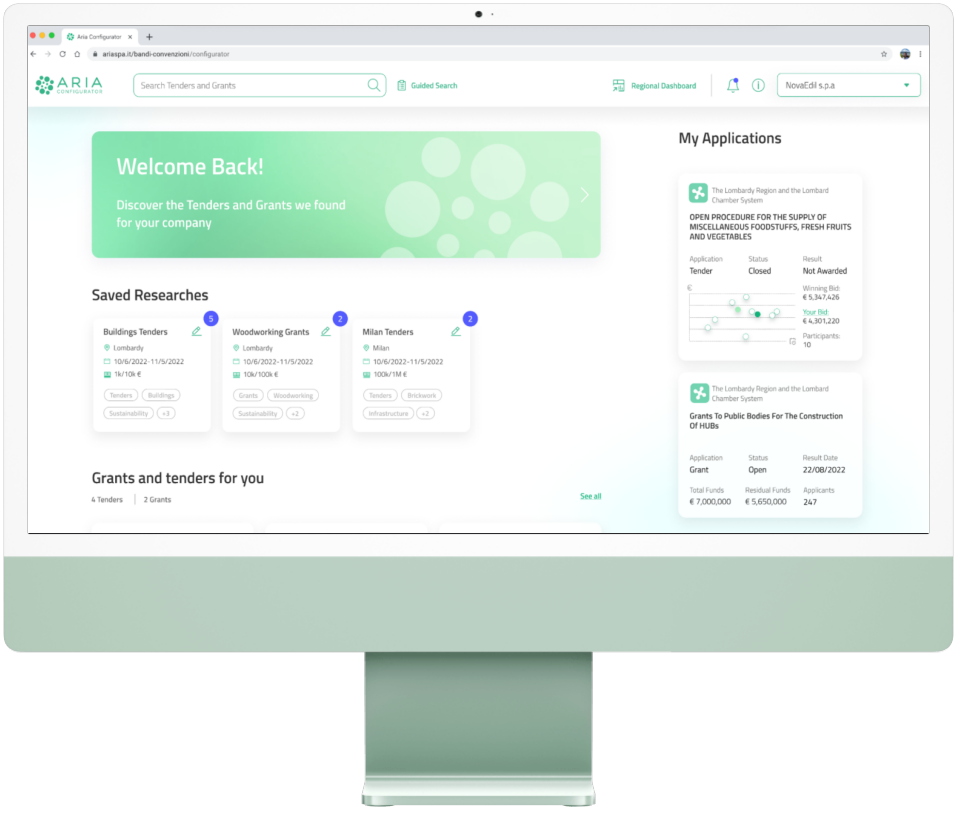
The findings that emerged from the reviews and tests of the fourth mid-to-high fidelity prototype previously mentioned, the following iterations should be implemented into creating the final high-fidelity level prototype:

- Make feedback more obvious after users complete some actions
- Add a tutorial section that explain what the enterprise data platform does
- The affordances of some visual elements still had to be revised
- Divide the regional dashboard into smaller segmentations with less information.

The client's review and appreciation of the visual direction gave the group conducting the study the green light needed to move on with the development of a design system that would serve as the foundation for the User Interface of the final high-fidelity prototype. With all the parameters set, a unified a design system was drafted and it combined the Italian governmental visual language with some new additions that compliment the usability of the User Interface all while making it appear more contemporary and innovative.

The new User Interface would utilize the same icons and typographic standards already employed with some modifications to the use colors and animations.
The main reason to add animations was to cater to the existing users frustration of always having to refresh the static pages to see new results. As validated during user tests, the animations scattered throughout the interface have users the impression that the pages were constantly being updated and they no longer felt the need to refresh to see new results. As for the colors proposed, they were picked to elecit positive emotions of calm and reassurance to support users in their search for public funds and make the process less stressful.

The feedback gathered throughout all the tests made validat these assumptions and guided the development of the full design system that is attached in the appendix of this report.



Competitive Design - Final Usability Testing

The revised high-fidelity prototype was ready to be benchmarked against one of the most popular existing portals used for public procurement in the Region of Lombardy. The final prototype was tested on ten expert users whereas the existing solution (https://www.bandi.regione.lombardia.it/procedimenti) was tested on five experts users.
The same protocol of usability testing that was conducted throughout this study was implemented again for this final round of testing.
The test gathered both qualitative data (emotions experienced, thoughts on prototype) and quantitative data (number of clicks, success rate, misclick rate and heatmaps - the misclick rate and heatmaps were only captured for for the prototype because of technological limiations). The results of how the two different public procurement digital solutions performed were compared to assess whether or not the new intervention, the Aria Configurator, offered improved usability and more practical ways for users to complete their tasks. Given that the data collected is not a statistical representation of the user base of public procurement seekers, the change in usability between the interfaces of both digital solutions can only be approximated and not statistically measured.

For the usability test with the high-fidelity prototype, participants were asked to complete a total of ten tasks:

1. Create a new company account
2. Use the search bar to search for "Woodworking" Tenders and Grants
3. On this page save the first grant (Requirement 2023...)
4. Find the Tender "Supply Of Construction Material For Maintenance Of The Central Building" that you will find in the section "Grants and Tenders for you" in the company dashboard, and apply for it on the external website.
5. Check for updates on the Saved search: "Buildings Tenders"
6. Upload a new company document
7. Perform a search using the "guided search" feature
8. Check the expected employement growth by industry for 2024, in the regional dashboard
9. Change your company profile selected preferences
10. You received a notification related to the new "Rules and policies of Aria" find it and open the website
11. Logout from the Aria configurator

Given the absence of the some functionalities and regional dashboard in the existing website, the tasks related to that side of the website were reserved for the usability testing of the ARIA Configurator.

For the usability test with the existing regional website, five different expert users were asked to complete a total of five tasks:

1. Use the search bar to search for "Woodworking" Tenders and Grants
2. Save a funding opportunity of your choice
3. Find the Tender "Piano Lombardia 2 - interventi per il servizio idrico integrato" and apply for it
4. Find the Tender "BANDO EFFICIENZA ENERGETICA COMMERCIO E SERVIZI" and ask a question regarding the application process
5. Logout from the website

Kindly refer to the appendix for the full procedure followed for the test and the results that came from it.

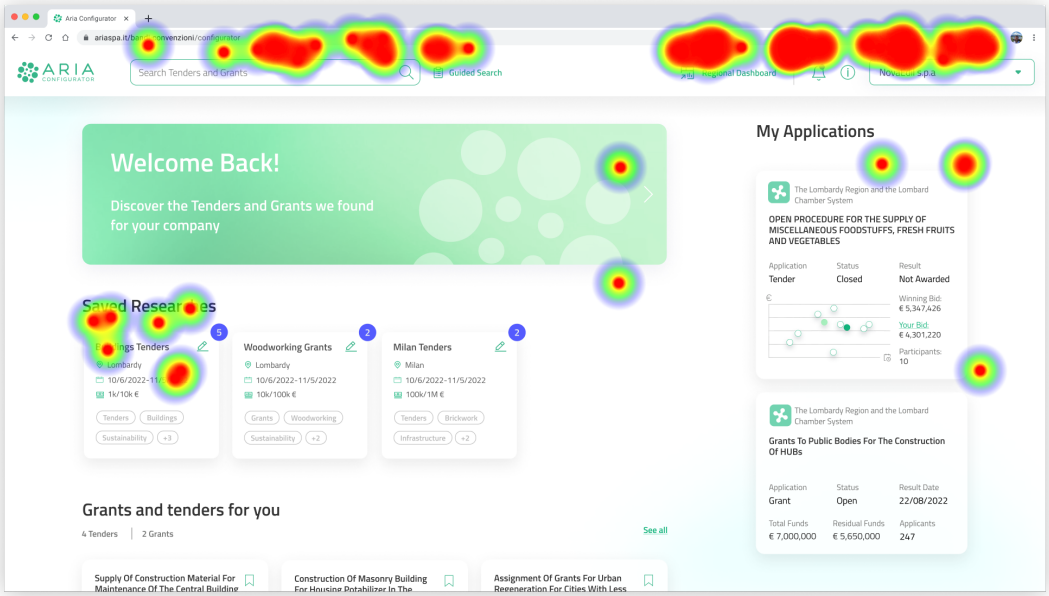
Findings from the Usability Testings

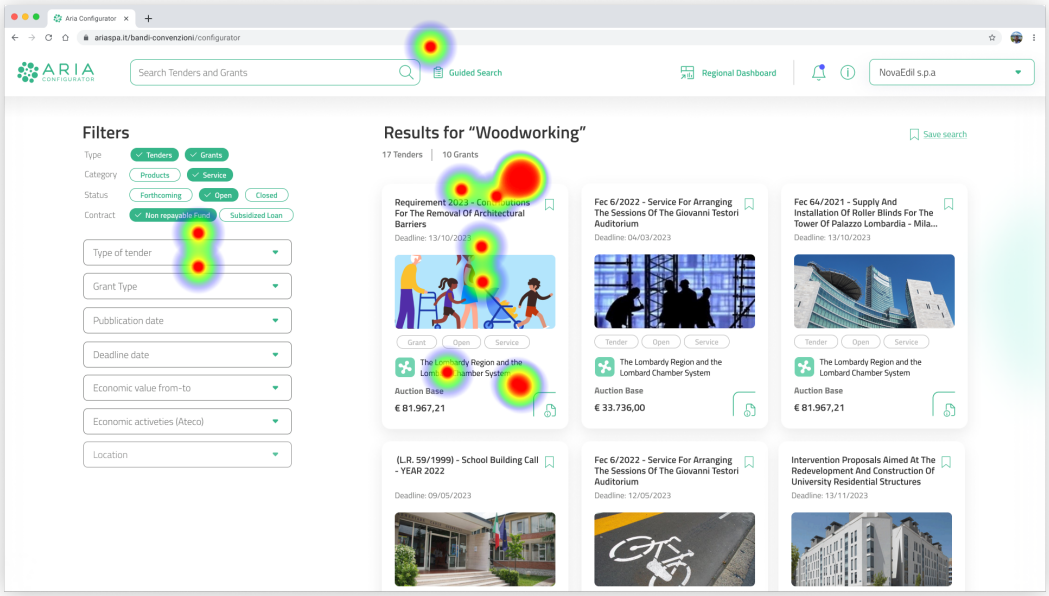
The diagram below compares the results of the usability test with the Aria Configurator to the results of the usability test with an existing website at a high level. The full results are reported in the appendix of the report but this overviews testifies to the superior usability of the proposed digital solution, the Aria Configurator.

ARIA Configurator	Lombardy Portal
Users Users that successfully completed all tasks 10/10	**Users** Users that successfully completed all tasks 3/5
Time Overall average time for 11 tasks 8 min 13s	**Time** Overall average time for 5 tasks 3 min 13s
SUS Score Average of 10 Expert Users 89	**SUS Score** Average of 5 Expert Users 78

Final Interpretations

- The lower misclick rate of the final prototype (22%) and the heatmaps attached below prove that the changes made to the user interface were successful in conveying improved affordances to users.
- Participants of the usability testing with the existing website took longer and clicked more to perform the same tasks that participants of the usability testing with the final prototype developed.
- The final average SUS score of the prototype testifies that the methodology adopted for this study led to website with high levels of usability.
- It should be acknowledged that the results of the usability test conducted with the existing portal were not that poor, however the higher average SUS score (89 opposed to 78), lower time and number of clicks and all the additional functionalities offered indicate that the designed Aria Configurator would improve the process of public procurement in the region of Lombardy.

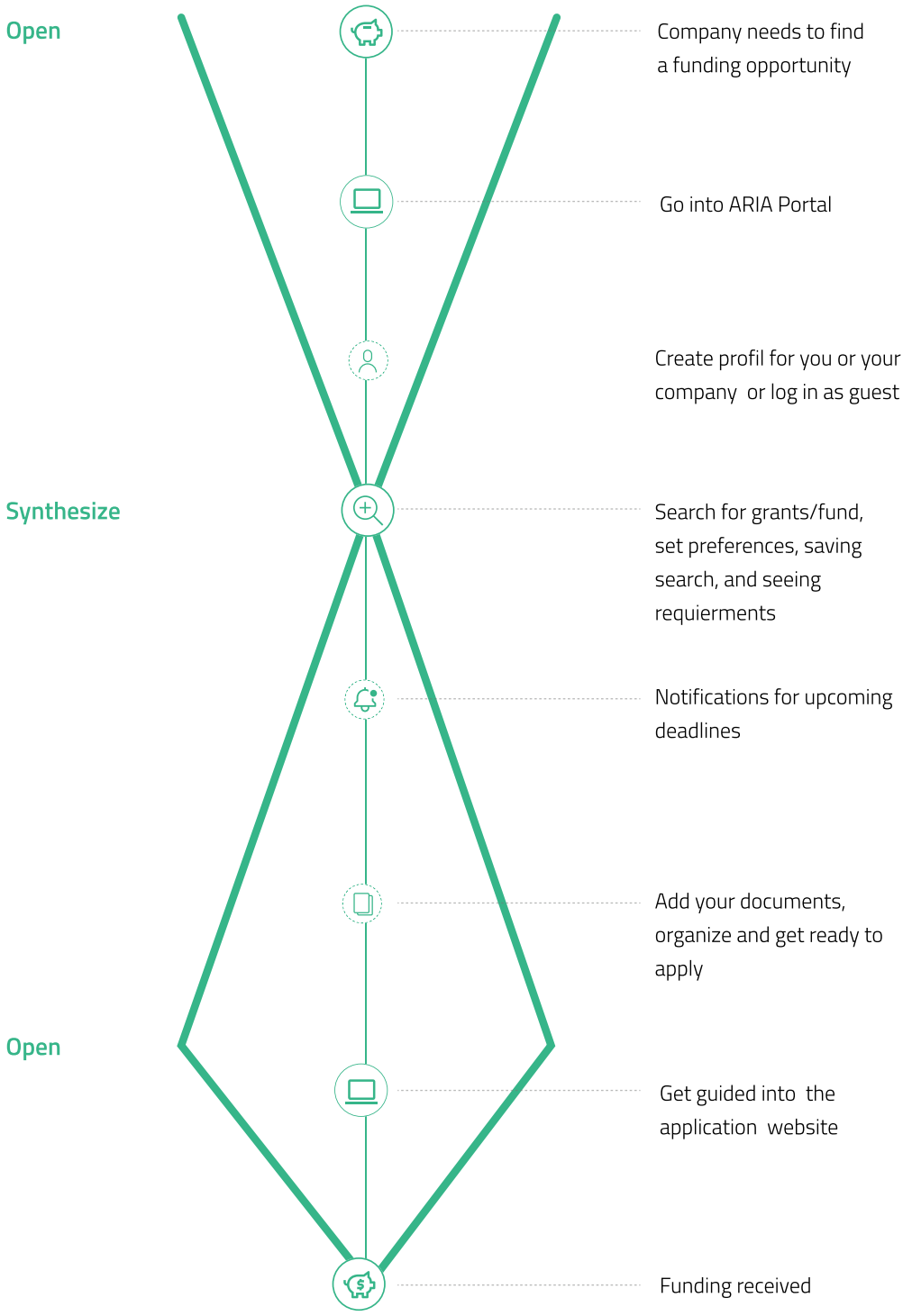




Strategic Service Design

Strategy behind the Service

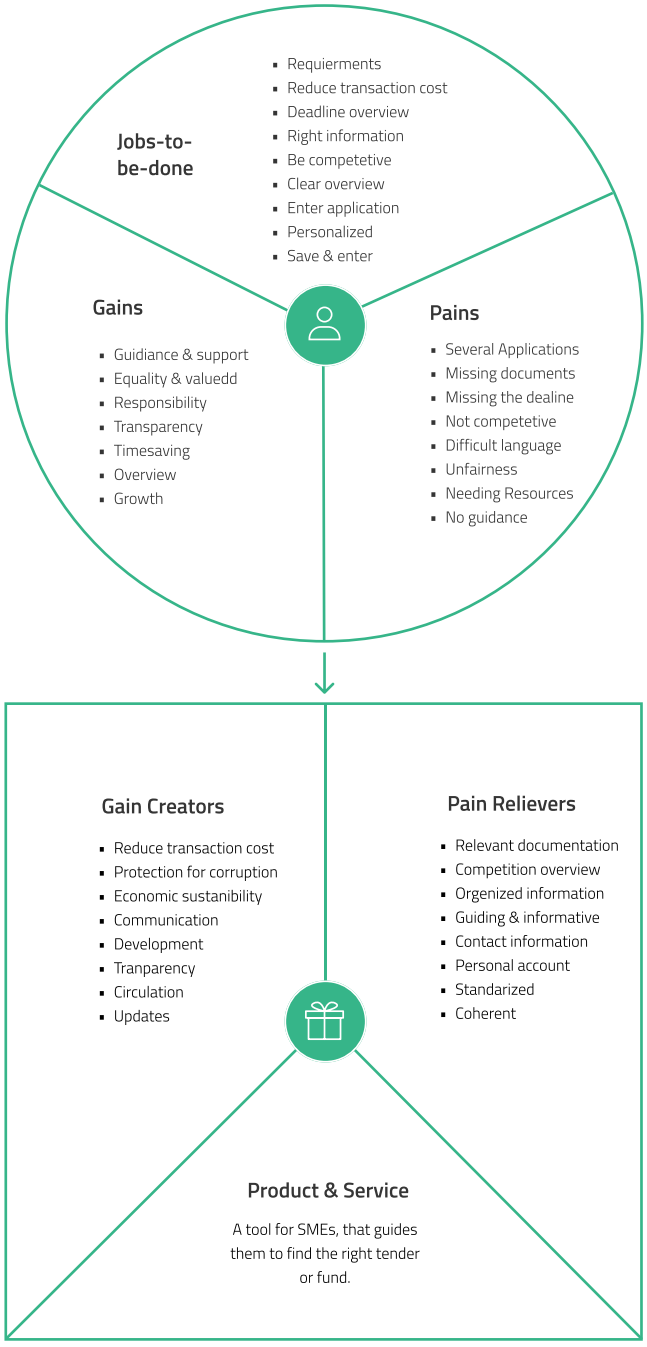
The section will inculde the strategy and planning for building the overall service of the Aria Configurator.
The main objective of the Aria Configurator is to improve the processes of public procurement in Italy for SME employees that are responsible for acquiring tenders and grants for the companies they work for.
The main goal is to create an access point for SMEs to a platform that emphasizes a transparent flow of information and encourages healthy competition between different enterprises, leading to an overall enhanced process of public procurement.



Addressing User Needs

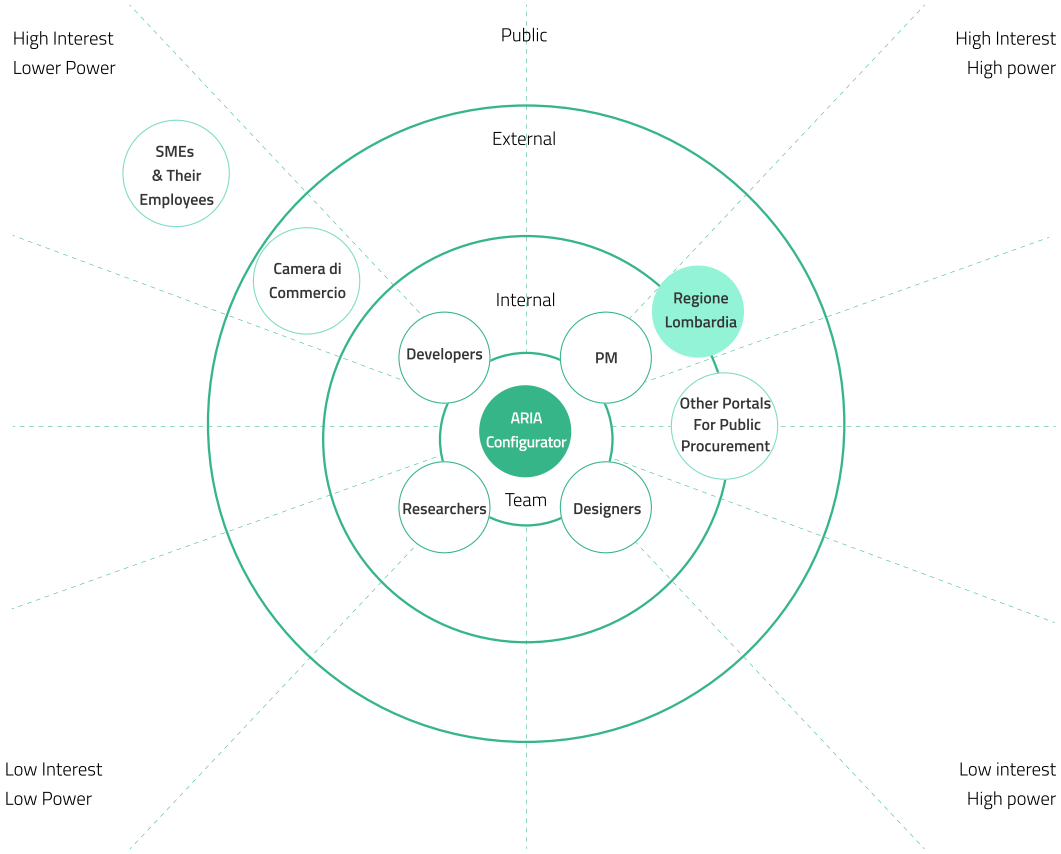
The research conducted highlighted that all the complexities that arise from legal structures and corrupt behaviors trigger a spectrum of negative emotions in people searching to participate in the public procurement process in the region of Lombardy.

The value proposition canvas illustrated below lists the values and needs of SME employees that factor in the process of searching and applying for tenders and grants, and how the Aria Configurator addresses these considerations.



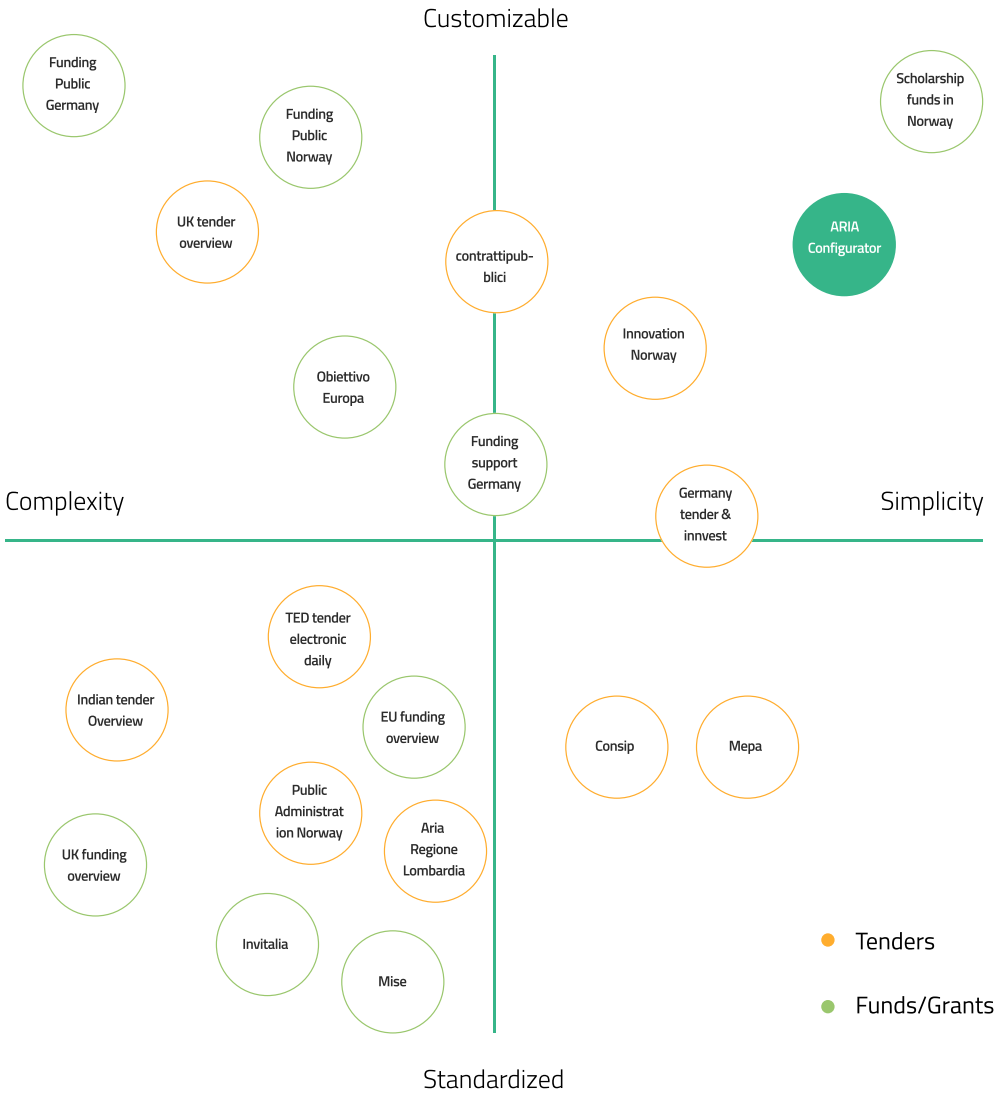
Stakeholder Canvas

Analyzing the behaviors and needs of the stakeholders that participate in and affect the public procurement process in Lombardy delineated the functionalities of the Aria Configurator. The Stakehodler canvas below shows the positioning of the stakeholders surrounding the Aria Configurator in terms if Interest and Power. Understanding the potential level of involvment and influence of these various stakeholders is key to evaluate all the opportunities and obstacles that will impact the operations of the Aria Configurator in the region of Lombardy.



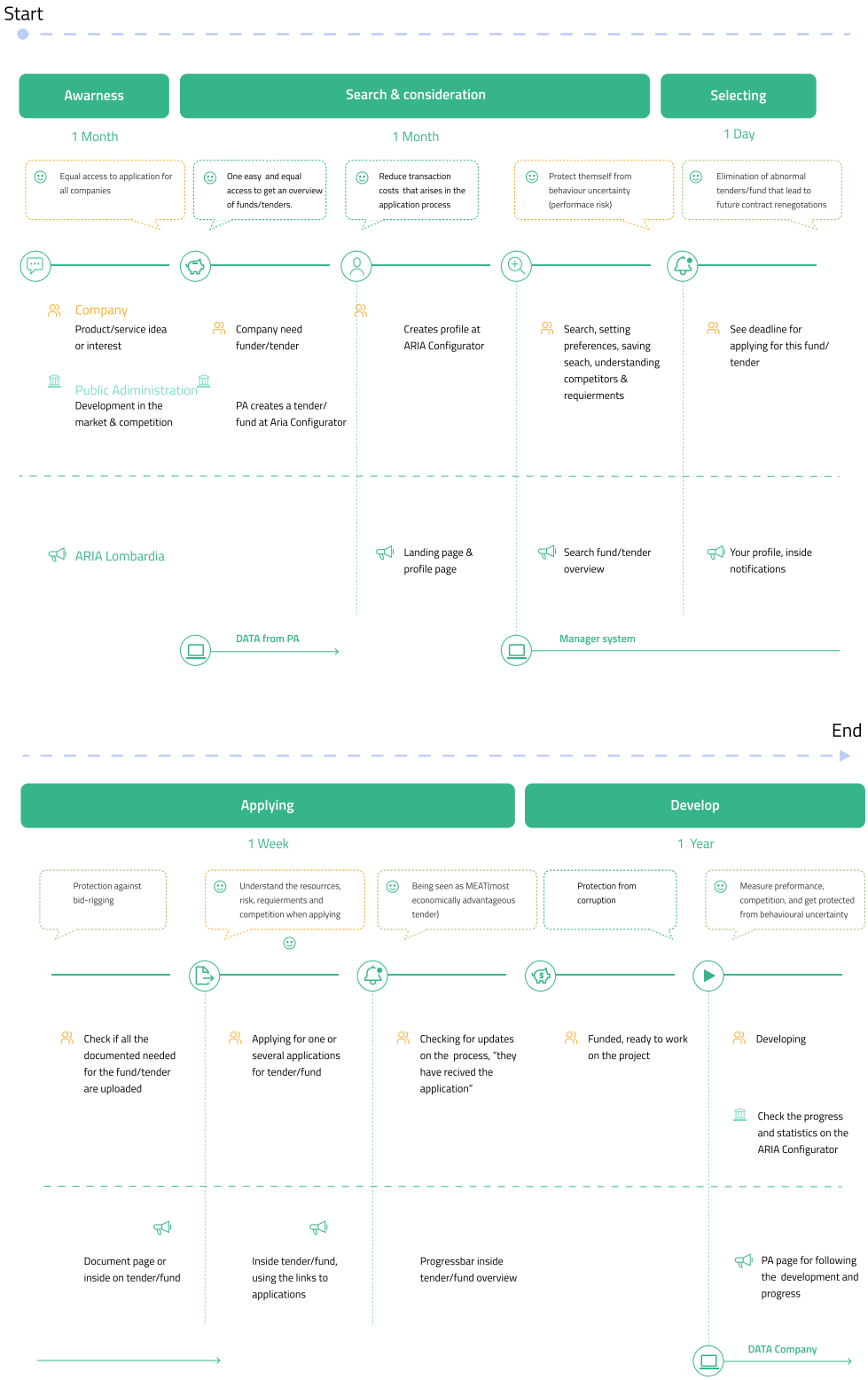
Position In The Market

Positioning the Aria Configurator in an already saturated market was essential to define what values it is adding. Since the market affecting public procurement in the region of Lombardy transcends the boudaries of the region itself, the digital solutions included in the diagram below originate from both the Republic of Italy and the European Union (as a conglomerate and also from individual countries that belong to the Union). The matrix classifies the digital solutions based on the levels of customization and simplicity in usage.



Service Blueprint

The Service Blueprint illustrated below visualizes the relationship between the various components of the service of the Aria Configurator and how they relate to the touchpoints that a users will interact with while participating in the public procurement process in the region of Lombardy.



Conclusion

As previously mentioned, the relatively limited number of users that participated in the testing prevents an accurate numeric percentage of the Delta (Δ) of the usability of the interfaces of the designed website (ARIA Configurator) and existing website most frequently used in Lombardy. However, the results of the heuristics evaluation and several rounds of usability testing indicate an improvment in the usability of the interface of the proposed website compared to that of the existing public procurement website used in Lobardy. The methodology adopted for the design process followed a User-Centered Approach from beginning to end. Various people with different levels of digital literacy were included throughout all the steps of the study 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 procedure testify to the practicality of the functionalities of the website, improvement of the interface and to the overall efficiency of the methodology followed. The structure of the information architecture was developed keeping in mind that it had to reflect the transparency and interoperability of an enterprise data platform that would optimize the management of public funds. The utilization of Artificial Intelligence in the process of public procurement had to be extremely simplified in the way it was delivered to the end user as it could have been seen as intimidating to some people with limited digital literacy. The rounds of testing conducted validate that users were able to utilize the website and benefit from the functionalities without being impeded by the complexity of the technology driving the system.
The results of the final usability test also indicate that participants did not face any issues related to understanding whether or not they were suitale to apply for specific funding opportunuties (in terms of documents and restrictions). Features that emphasized the transparency of the public procurement mechanisms in Italy (such as the publication of the results of tenders/grants that should legally be availble to the public in one unified platform - instead of users having to search for them on the internet and ask around) were also extremely appreciated by users. These aspects were crucial to validate as they were some of the main painpoints to were highlighted during the research process.

The end results suggest that the methodology adopted within the scope of intervention was succesfull in delivery an enterprise data platform that supports SMEs employees in their aquisitions of public funds while simultaneously allowing them access publicly available information that clarifies how the Public Administration is managing those public funds.

Bibliography

Listed below are the references that were used to guide the design process of this study:

- Don't Make Me Think, Steve Krug
- Universal Methods of Design, Bella Martin & Bruce Hanington
- Eight Principles of Information Architecture, Dan Brown - https://asistdl.onlinelibrary.wiley.com/doi/epdf/10.1002/bult.2010.1720360609
- 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/

Listed below are the main references that were used for the desk research:

- https://europa.eu/youreurope/business/selling-in-eu/public-contracts/public-tendering-rules/index_en.htm
- https://ec.europa.eu/regional_policy/sources/policy/how/improving-investment/public-procurement/study/country_profile/it.pdf
- A transaction cost approach for public procurement, Aksel I. Rokkan and Sven A. Haugland
- https://www.anticorruzione.it/-/l-importanza-della-trasparenza-amministrativa-nella-prevenzione-e-nel-contrasto-alla-corruzione
- https://web.archive.org/web/20150112163003/https://www.acquistinretepa.it/opencms/opencms/sistemaarete/centrali_committenza.html?reg=lo#lr
- https://www.consip.it/bandi-di-gara/glossario
- Using Artificial Intelligence to Automate the Bid Management Process, Daniel Fallmann - https://coruzant.com/ai/using-artificial-intelligence-to-automate-the-bid-management-process/
- https://iclg.com/practice-areas/public-procurement-laws-and-regulations/italy
- https://www.consip.it/media/approfondimenti/focus-sugli-strumenti-di-negoziazione
- The anti-disturbance system in public tenders: a critical and methodological analysis, Rachele Grosso, Francesco Prizzon, Manuela Rebaudengo
- Quality of Public Administration A Toolbox for Practitioners, Publication from the European Comimission
- Corruption red flags in public procurement: new evidence from Italian calls for tenders, Francesco Decarolis, Cristina Giorgiantonio
- Cross-border distribution of investment funds, European Securities and Markets Authority
- Guidelines for AI procurement, Publication from the British Office for Artificial Intelligence

Listed below are the main references that were used for the benchmarking:

- https://www.gtai.de/en/invest
- https://www.contractsfinder.service.gov.uk/Search/Results
- https://www.innovasjonnorge.no/en/start-pag
- https://www.lanekassen.no/
- https://stipendportalen.no/
- https://www.kooperation-international.de/en/calls/
- https://www.consip.it/bandi-di-gara/gare-e-avvisi-
- https://www.acquistinretepa.it/opencms/opencms/vetrina_iniziative.html?filter=ME
- https://www.sintel.regione.lombardia.it/eprocdata/sintelSearch.xhtml
- https://www.bandi.regione.lombardia.it/procedimenti/new/bandi/home
- https://contrattipubblici.org/
- https://www.invitalia.it/eng
- https://www.obiettivoeuropa.com/
- https://www.posteprocurement.it
- https://autostrade.bravosolution.com/

Appendix

Usability Test Protocol

After the preliminary testing the group developed a framework that they followed to administer the usability test repetitevely with all the evolving versions of the prototypes synthesized in this study.
The test is divided into the following five parts

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: scenario completion, a post-test survey, and the system usability scale completion.

Part Two

1. Tell participants that in this part of the test they are asked to complete the 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. Ask participants to complete the list of scenarios (these will change depending on the dimensions of fidelity of the prototype that is used for the usability testing).

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?

Part Three

Ask the following questions:

Did you find the terminology and lables clear? If no, what did you find confusing?
Which features did you like of this website and which did you not? Features you would like to add?
Do you think this solution would facilitate your search for tenders and grants? How?
What do you think of the look and feel of the website? (reserved for the third test onwards)

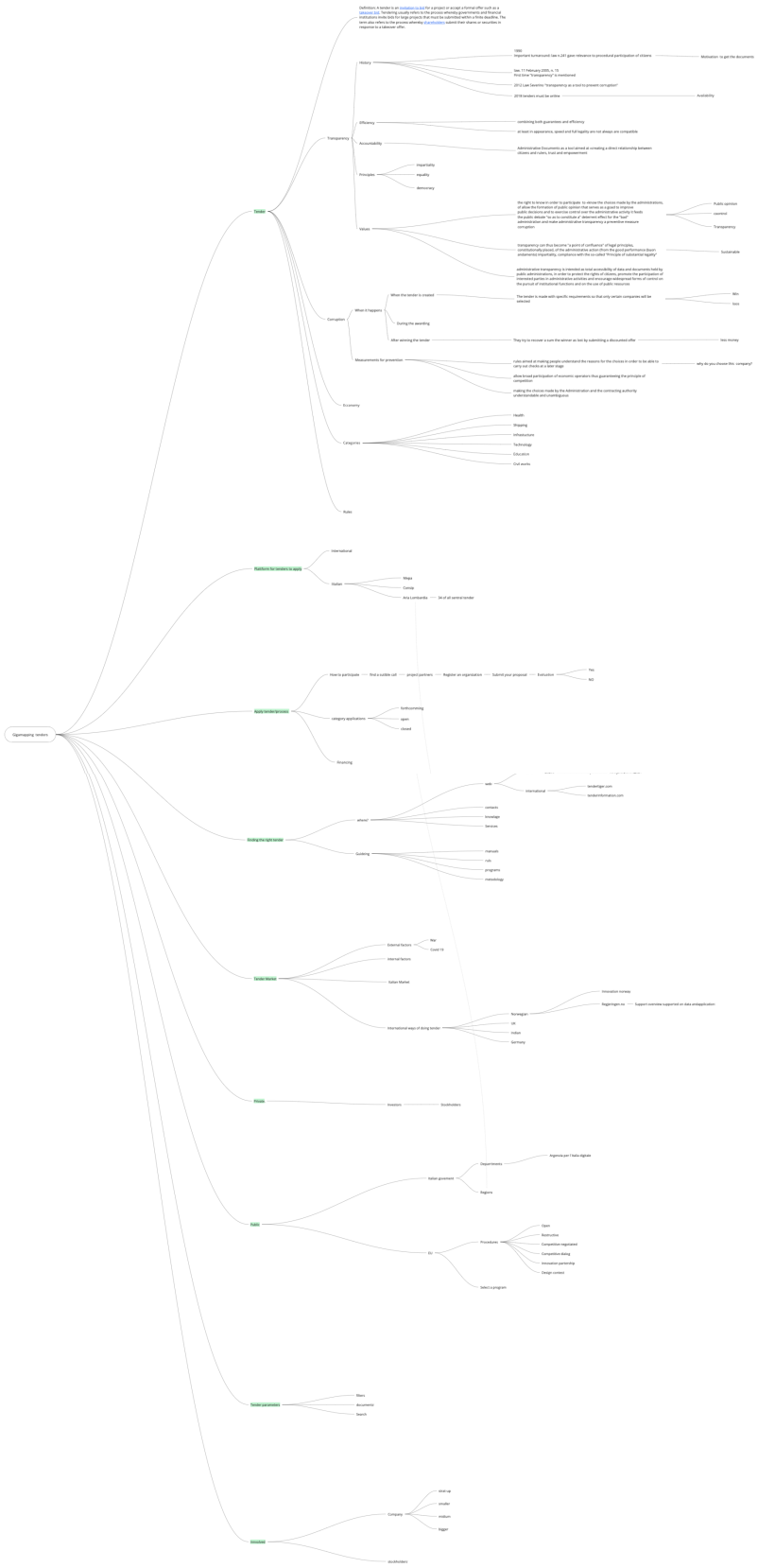
Usability Test Protocol

Part Four

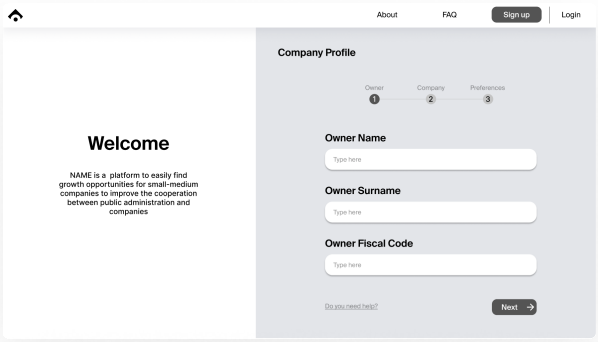
Ask participants to fill out the System Usability Scale:

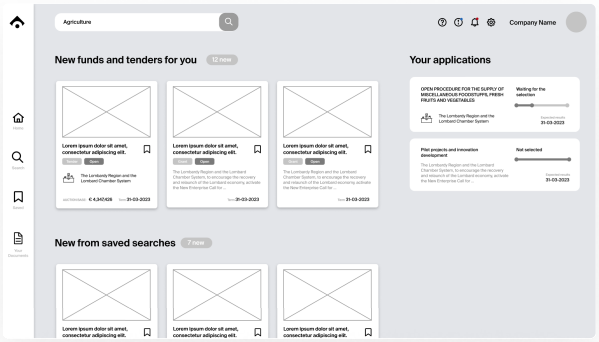
	Strongly Disagree				Strongly Agree
1. I think that I would like to use this product frequently.					
2. I found the product unnecessarily complex.					
3. I thought the product was easy to use.					
4. I think that I would need the support of a technical person to be able to use this product.					
5. I found the various functions in this product were well integrated.					
6. I thought there was too much inconsistency in this product.					
7. I imagine that most people would learn to use this product very quickly.					
8. I found the product very cumbersome to use.					
9. I felt very confident using the product.					
10. I needed to learn a lot of things before I could get going with this product.					

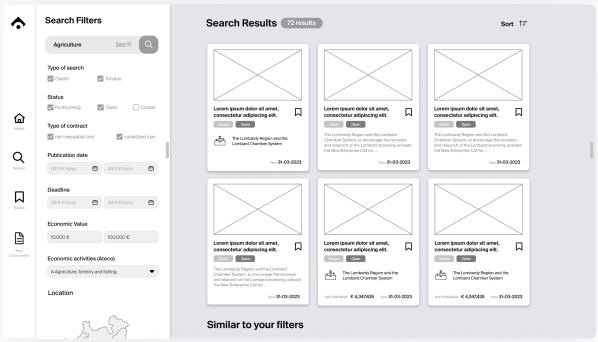
Gigamap

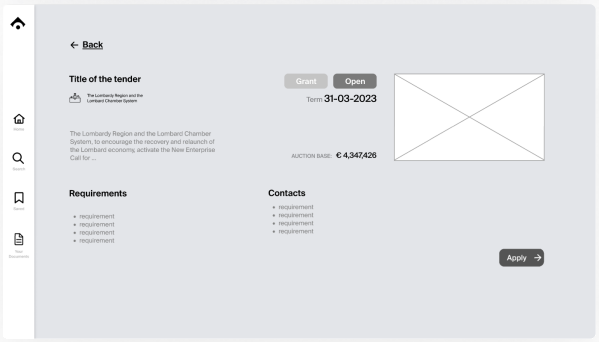

Gigamapping tenders
Tender
Definition: A tender is an invitation to bid for a project or accept a formal offer such as a takeover bid. Tendering usually refers to the process whereby governments and financial institutions invite bids for large projects that must be submitted within a finite deadline. The term also refers to the process whereby shareholders submit their shares or securities in response to a takeover offer.
History
1990
Important turnaround: law n.241 given relevance to procedural participation of citizens
Motivation: to get the documents
law, 11 February 2005, n. 15
first time "transparency" is mentioned
2012 Law Severino "transparency as a tool to prevent corruption"
2018 tenders must be online
Availability
Transparency
Efficiency
combining both guarantees and efficiency
at least in appearence, speed and full legality are not always are compatible
Accountability
Administrative Documents as a tool aimed at «creating a direct relationship between citizens and rulers, trust and empowerment»
Principles
impartiality
equality
democracy
Values
the right to know in order to participate to «know the choices made by the administrations, of allow the formation of public opinion that serves as a goal to improve public discourse and to exercise control over the administrative activity it feeds the phenomenon of widespread corruption, improve the quality of administration and make administrative transparency a preventive measure corruption»
Public opinion
countrol
Transparency
transparency can thus become "a point of confluence" of legal principles, constitutionally placed, of the administrative action (from the good performance (buon andamento) impartiality, compliance with the so-called "Principle of substantial legality"
Sustainable
administrative transparency is intended as total accessibility of data and documents held by public administrations, in order to protect the rights of citizens, promote the participation of interested parties in administrative activities and encourage widespread forms of control on the pursuit of institutional functions and on the use of public resources
Corruption
When it happens
When the tender is created
The tender is made with specific requirements so that only certain companies will be selected
Min
less
During the awarding
After winning the tender
They try to recover a sum the winner as lost by submitting a discounted offer
less money
Measurements for prevention
rules aimed at making people understand the reasons for the choices in order to be able to carry out checks at a later stage
why do you choose this company?
allow broad participation of economic operators thus guaranteeing the principle of competition
making the choices made by the Administration and the contracting authority understandable and unambiguous
Economy
Categories
Health
Shipping
Infrastructure
Technology
Education
Civil works
Rules
Platforms for tenders to apply
International
Italian
Mepa
Consip
Aria Lombardia
3k of all central tender
Apply tender/process
How to participate
find a subtle call
project partners
Register an organization
Submit your proposal
Evaluation
Yes
NO
category applications
forthcomming
open
closed
Financing
Finding the right tender
wheel
web
International
tendertiger.com
tenderinformation.com
contacts
knowlage
Services
Guiding
manuals
rule
programs
metodology
Tender Market
External factors
War
Covid-19
Internal factors
Italian Market
International ways of doing tender
Innovation Norway
Regjeringen.no
Support overview supported on data.enlapplication
Norwegian
UK
Indian
Germany
Private
Investors
Stockholders
Public
Italian goverment
Dequartments
Agenzia per l'Italia digitale
Regioni
EU
Procedures
Open
Restrictive
Competitive negotiated
Competitive dialog
Innovation partnership
Design contest
Select a program
Tender parameters
filters
documenti
Search
Involved
Company
start-up
smaller
medium
bigger
stockholders

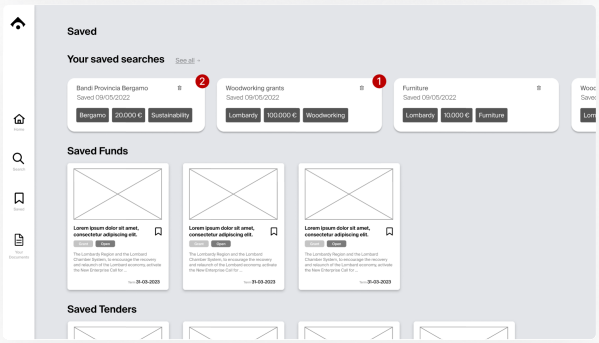
Iterative Design Round I - Wireframe Screens



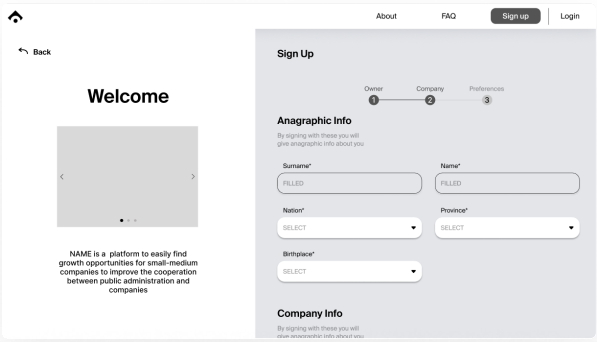


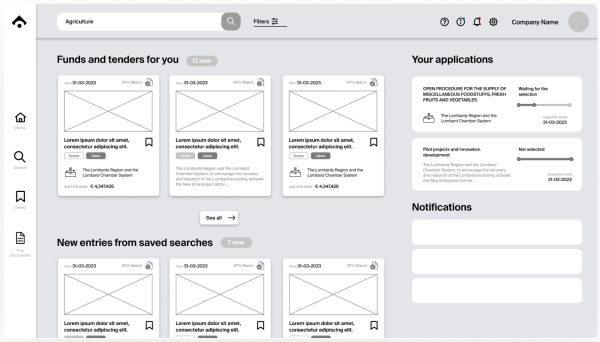


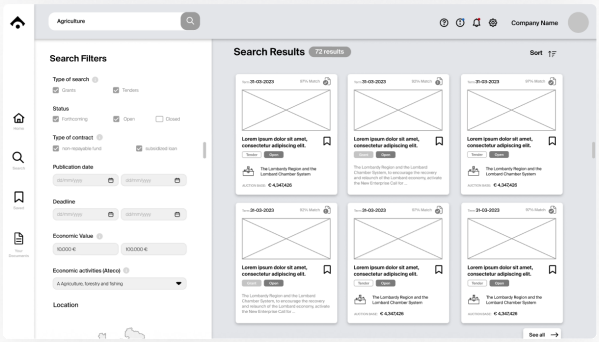


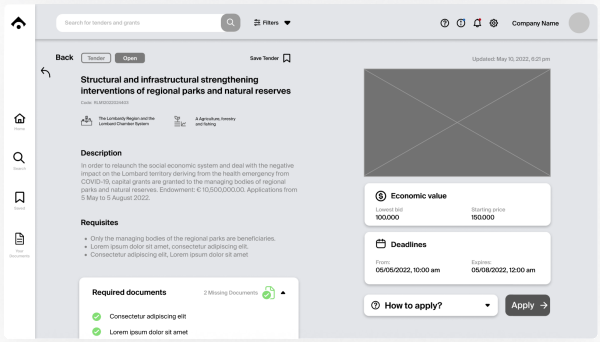


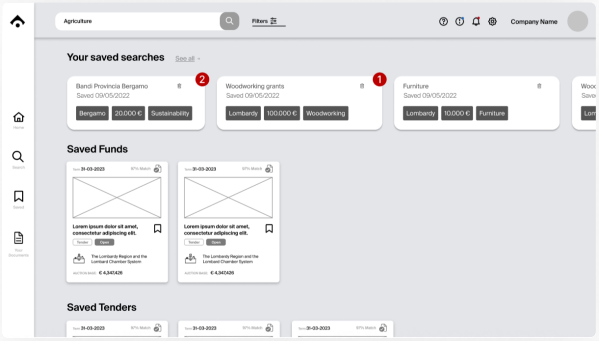
Iterative Design Round II - Wireframe Screens

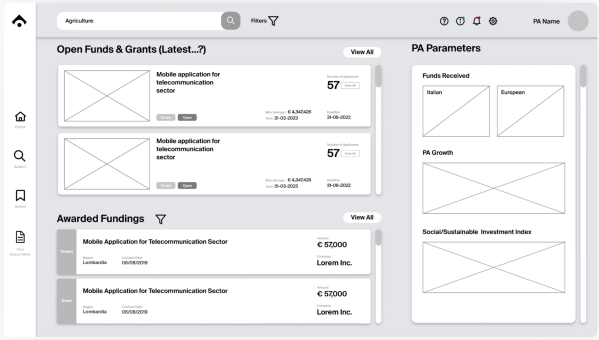


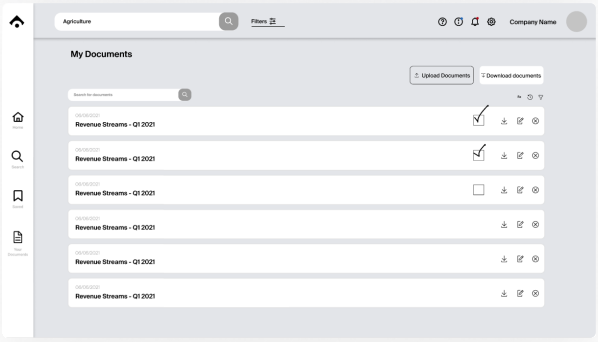


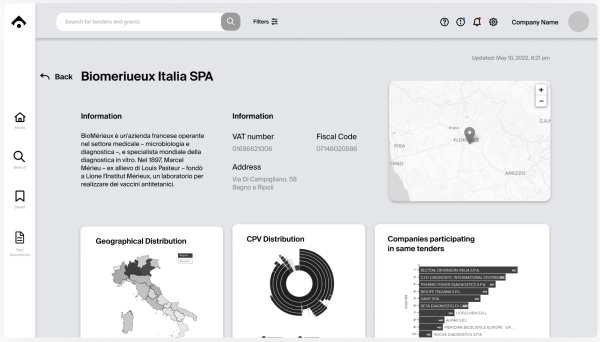












Iterative Design Round II - Usability Testing Results (Five Expert And Five Non-Expert Users)

Task n	Task	Success Rate	AVG Time	AVG Clicks
TASK 1	Sign up for the configurator as a company.	100%	1m52s	8.7
TASK 2	Perform a search using the "guided search" feature.	70%	1m21s	17.6
TASK 3	Browse the list of tenders and grants and apply to one of your choice.	100%	43.3s	5.5
TASK 4	Search for woodworking tenders, and then save one of your choice.	100%	1m32s	17.8
TASK 5	Check for updates from your saved searches.	80%	47.6	8.4
TASK 6	Upload a new company document.	100%	1m24s	17.3
TASK 7	Check the overview of one of your competitors.	90%	1m5s	13.1
TASK 8	Check the fundings suggested to you and save your favorite one.	100%	32.2s	9.7
TASK 9	Perform a search for woodworking, the modify the filters with parameters of your choice.	100%	1m16s	19.7
TASK 10	Check how compatible your company is for applying for any tender or grant of your choice.	70%	27.6s	5.9

Main Qualitative Data From Survey - Some Of Which Is Translated From Italian:

"clear division of the functions offered"

"the positioning of the filters was confusing I did not find them at first"

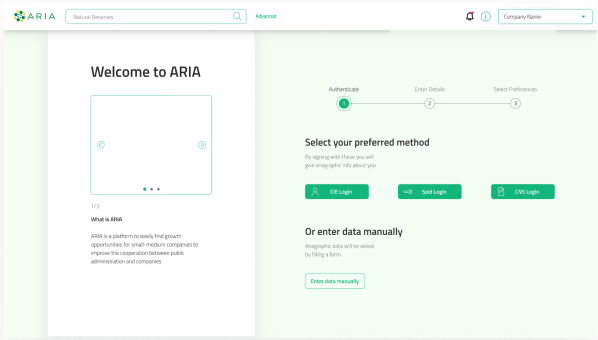
"I need to know details about the documents I have uploaded, the name is not enough"

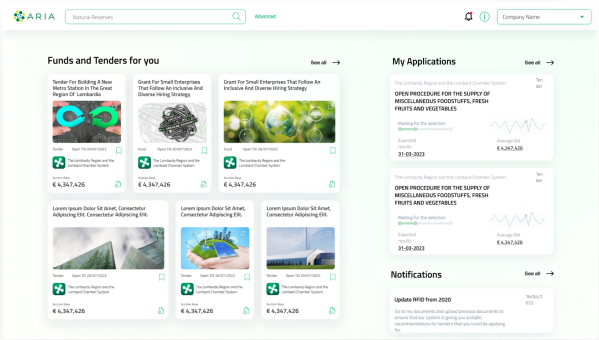
"I liked it because it was easy to understand which were the tenders that are recommended for me"

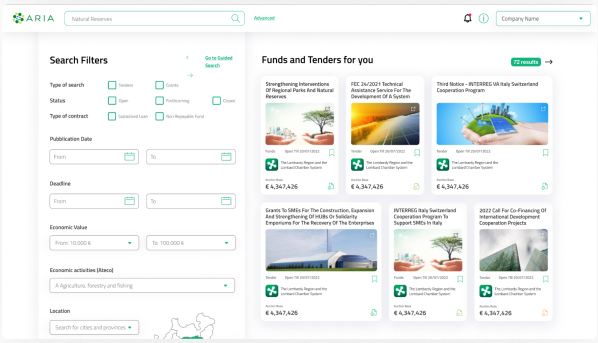
"Can I give names to my saved searches and organize them like I want? That would be really helpful"

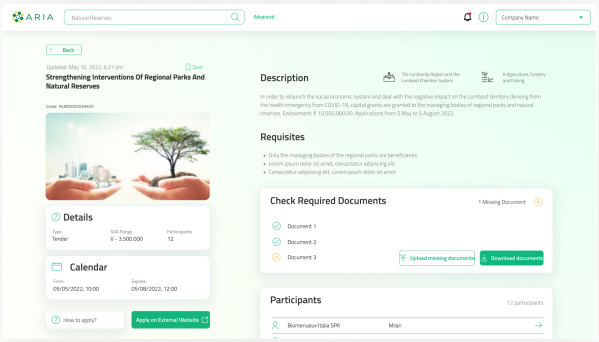
"the guided search feature is really helpful some people need this kind of help "

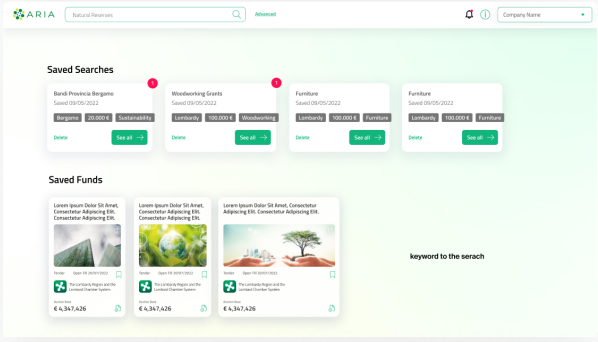
Iterative Design Round III - Prototype Screens

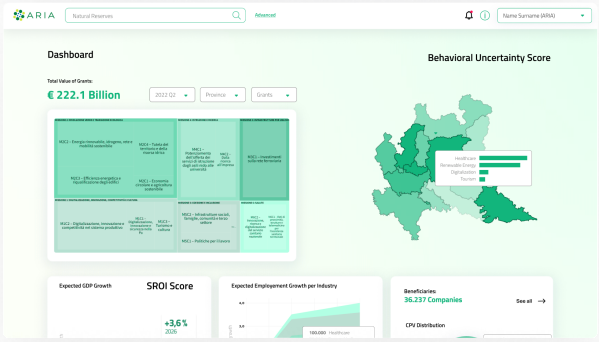


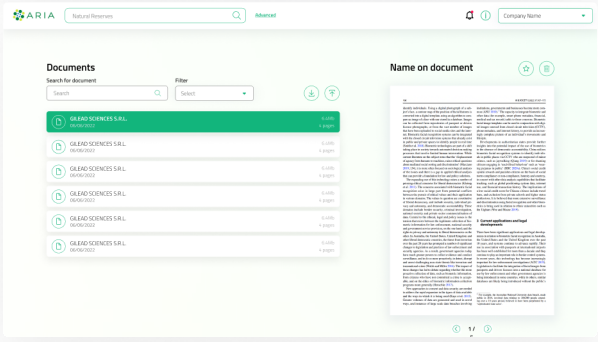


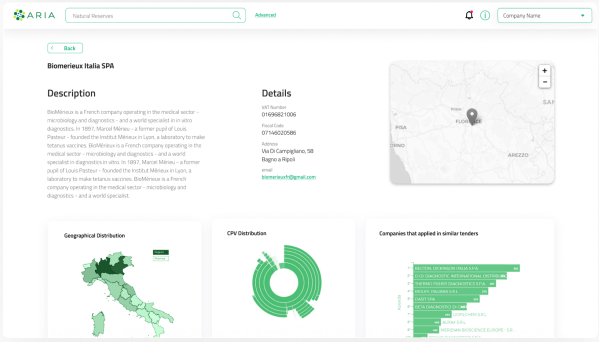


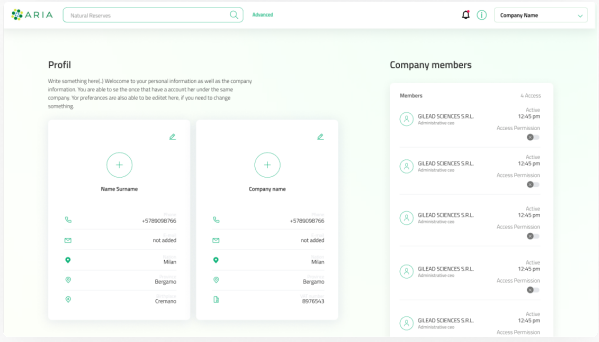












Iterative Design Round III - Usability Testing Results (Seven Expert And Three Non-Expert Users)

Task n	Task	Success Rate	AVG Time	AVG Clicks
TASK 1	Sign up for the configurator as a company.	100%	3m5s	36.7
TASK 2	Search for tenders that have May 16th as a starting date.	100%	31.1s	10.4
TASK 3	Apply to "Grant for small enterprises that follow an inclusive and diverse hiring strategy".	100%	40.5s	8.1
TASK 4	Navigate to "Saved Elements" and open one tender or grant.	100%	30.8s	7.5
TASK 5	Ask a question in the "Q&A section" of one tender or grant.	100%	45.2s	12.4
TASK 6	Check for updates in your saved search "Woodworking Grants".	100	34.2	6.8
TASK 7	Check the overview of one of your competitors.	80%	50.3s	9.8
TASK 8	Check the fundings suggested to you and save your favorite one.	100%	24.7s	7.6
TASK 9	Perform a search for woodworking, the modify the filters with parameters of your choice.	100%	52.7s	14.3
TASK 10	Check how compatible your company is for applying for any tender or grant of your choice.	90%	12.3s	3.6

Main Qualitative Data From Survey - Some Of Which Is Translated From Italian:

"I think it helps as it brings to you the tenders you have searched for, as opposed to having to browse lists of tenders on the public administration website.

"The terminology is very clear and well defined. no confusion created"

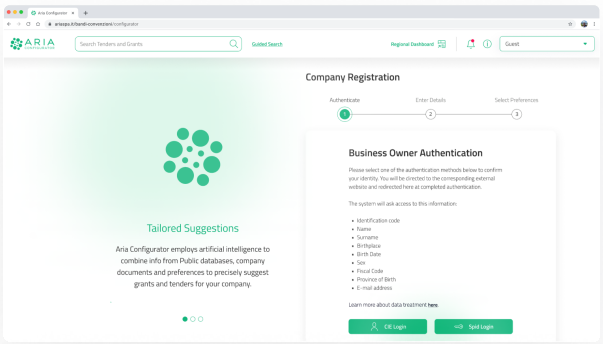
"clear division of the functions offered"

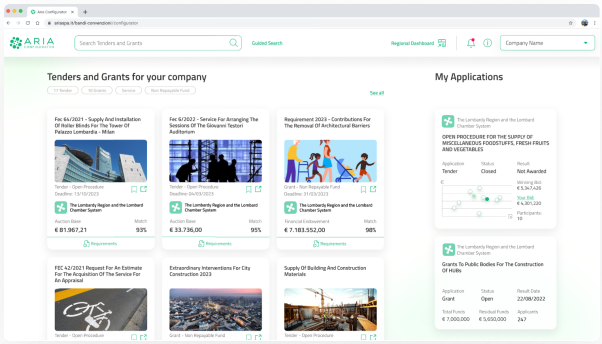
"I like the search feature the most, I think it's a very well designed and helpful tool"

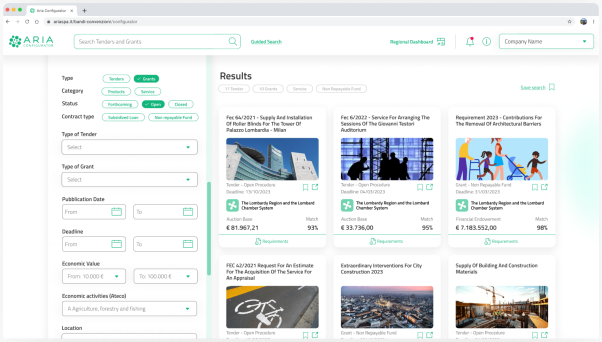
"I think it feels professional, yet at the same time there are quite a lot of elements which mostly consist in writings"

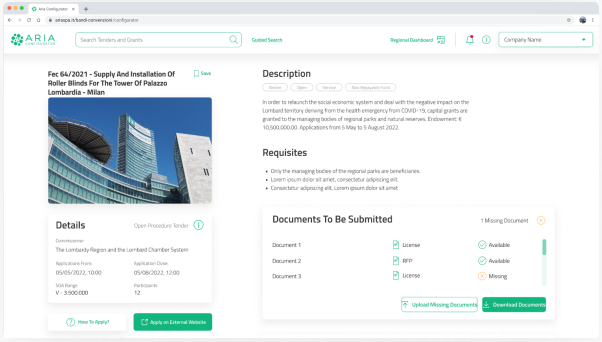
"I like the possibility of quickly asking questions on specific elements simply from their main screen. I don't remember any feature that I perceived negatively.

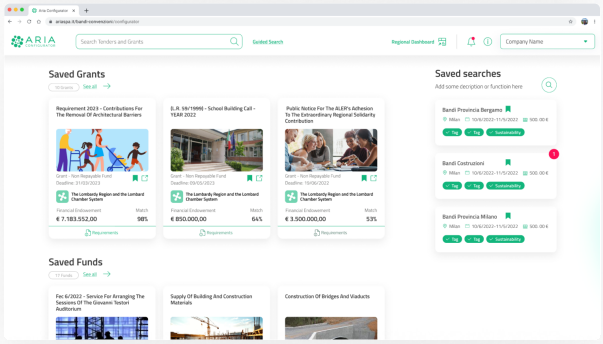
Iterative Design Round IV - Prototype Screens

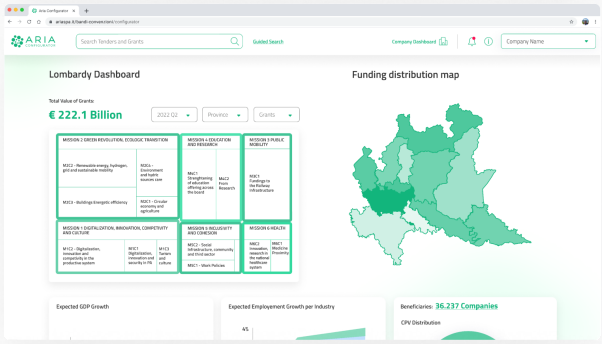


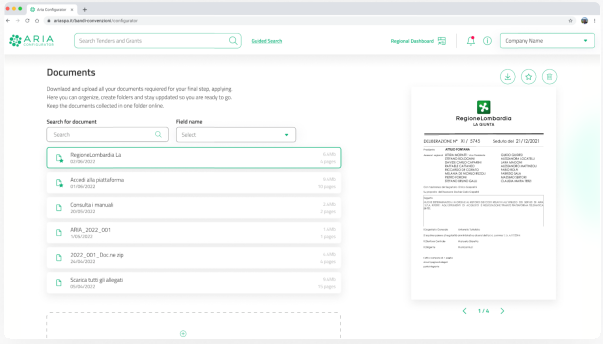


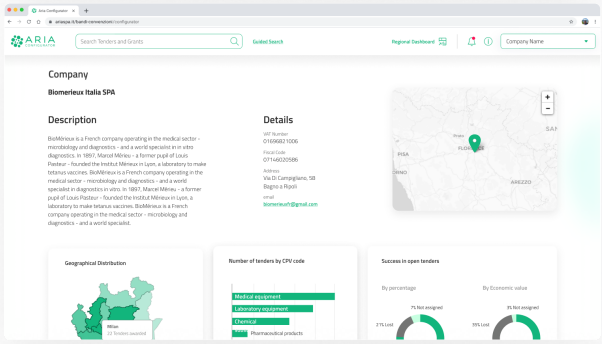


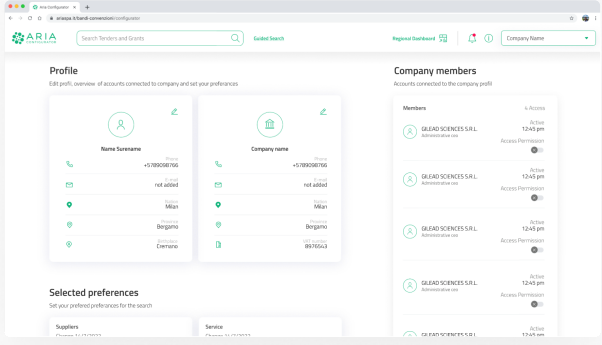












Iterative Design Round IV - Usability Testing Results (Four Usability Experts)

Task n	Task	Success Rate	AVG Time	AVG Clicks
TASK 1	Sign up for the configurator as a company.	100%	2m 47s	27.5
TASK 2	Perform a search using the "guided search" feature.	100%	32s	11.5
TASK 3	Browse the list of tenders and grants and apply to one of your choice.	100%	24.8s	6.2
TASK 4	Search for woodworking tenders, and then save one of your choice.	100%	18s	5.1
TASK 5	Check for updates from your saved searches.	100%	13.4	2.7
TASK 6	Upload a new company document.	100%	57s	10.8
TASK 7	Check the overview of one of your competitors.	100%	34.1s	6.1
TASK 8	Check the fundings suggested to you and save your favorite one.	100%	18.4	4.2
TASK 9	Perform a search for woodworking, the modify the filters with parameters of your choice.	100%	37.2s	9.3
TASK 10	Check how compatible your company is for applying for any tender or grant of your choice.	100%	8.7s	1.8
TASK 11	Check the expected employment growth by industry for 2024 for all of the region of Lombardy.	100%	27.8s	5.7
TASK 12	Check the distribution of expendatures in the region of Lombardy for the 2nd quarter of 2022	100%	22.1	3.8

Main Qualitative Data From Survey:

"I really liked being able to see which are the documents missing and also the graph about contract duration behavioural uncertainty"

"I really liked the Saved searches function and the requirements hover on tenders. Another cool thing is the QA section!"

" I think the experience with this platform would be much better than any platform currently on the market. "

" it helps in creating preferences and input parameters, thanks to the gudied search and the configurator"

Iterative Design Round IV - Usability Testing Results (Ten Expert Users)

Task n	Task	Success Rate	AVG Time	AVG Clicks
TASK 1	Sign up for the configurator as a company.	100%	3m 14s	31
TASK 2	Perform a search using the "guided search" feature.	100%	39.1s	13.4
TASK 3	Browse the list of tenders and grants and apply to one of your choice.	100%	28.4s	7.2
TASK 4	Search for woodworking tenders, and then save one of your choice.	100%	22.2s	6.8
TASK 5	Check for updates from your saved searches.	100%	15.2	3.4
TASK 6	Upload a new company document.	100%	1m32s	12.7
TASK 7	Check the overview of one of your competitors.	100%	42.3s	7.9
TASK 8	Check the fundings suggested to you and save your favorite one.	100%	24.7s	4.7
TASK 9	Perform a search for woodworking, the modify the filters with parameters of your choice.	100%	45.6s	10.4
TASK 10	Check how compatible your company is for applying for any tender or grant of your choice.	100%	11.7s	2.1
TASK 11	Check the expected employment growth by industry for 2024 for all of the region of Lombardy.	100%	30.7s	6.4
TASK 12	Check the distribution of expendatures in the region of Lombardy for the 2nd quarter of 2022	100%	247	5.7

Main Qualitative Data From Survey - Translated From Italian:

"having access to the data at the regional level is really useful and would save me a lot of research time since its all in one place "

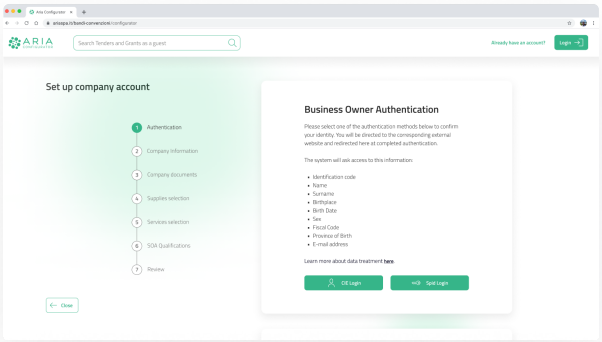
"some employees are not that good with computers and the guided search would help them a lot"

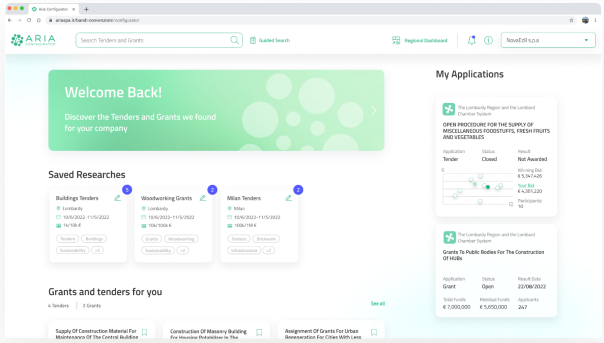
"Knowing which documents are missing before starting the application is a great idea"

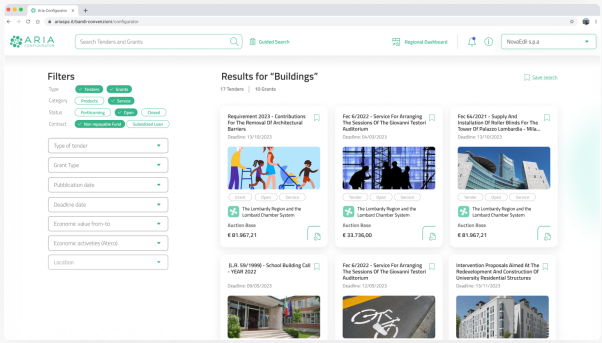
"The regional dashboard shows great info"

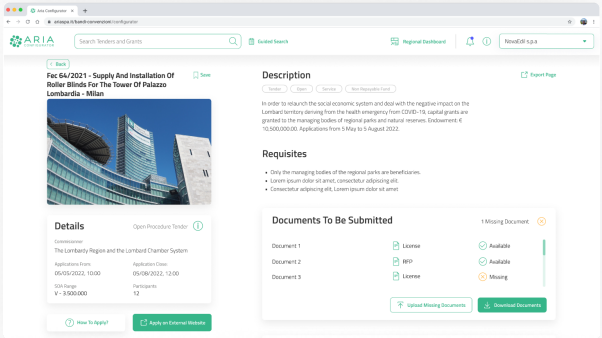
"The website looks really fresh and modern for something that is official"

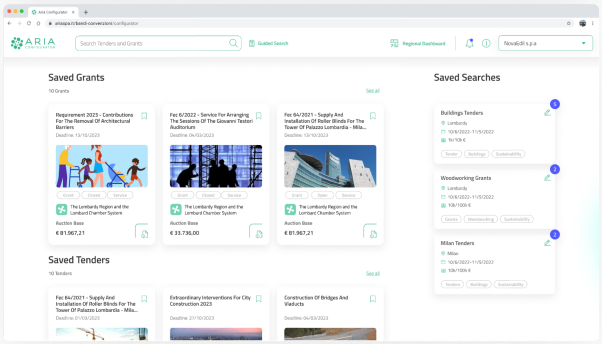
High Fidelity Prototype - Prototype Screens

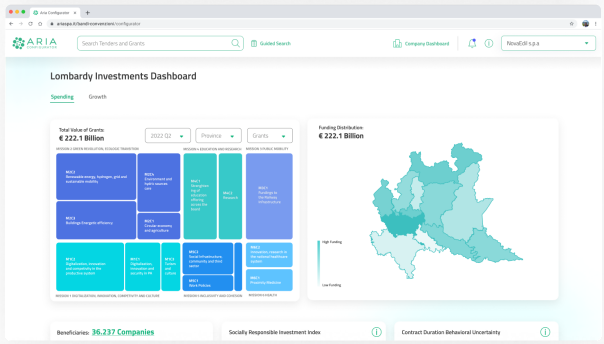


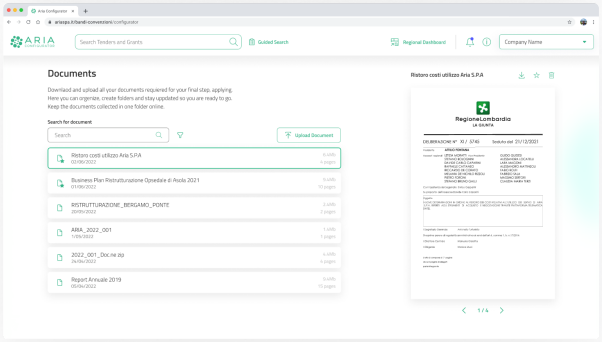


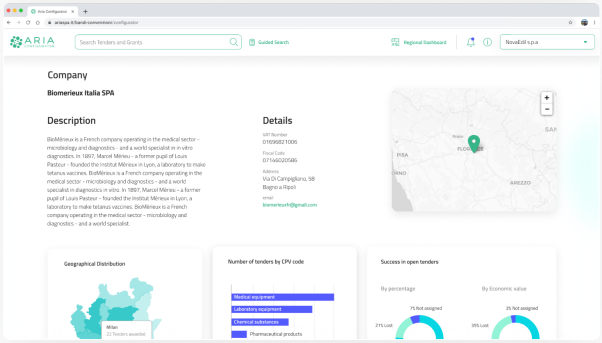


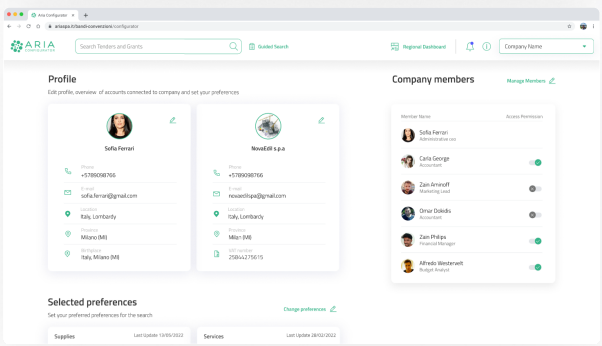












High Fidelity Prototype - Usability Testing Results (Ten Expert Users)

Task n	Task	Success Rate	AVG Time	AVG Clicks
TASK 1	Sign up for the configurator as a company.	100%	2m 48s	26.9
TASK 2	Use the search bar to search for "Woodworking" Tenders and Grants	100%	17.3s	5.3
TASK 3	On this page save the first grant (Requirement 2023...)	100%	16.7s	3.1
TASK 4	Find the Tender "Supply Of Construction Material", and apply for it on the external website.	100%	26.8s	2.7
TASK 5	Check for updates on the Saved search: "Buildings Tenders"	100%	9.2s	1.7
TASK 6	Upload a new company document	100%	57.6s	8
TASK 7	Perform a search using the "guided search" feature	100%	18.3s	10.4
TASK 8	Check the expected employement growth by industry for 2024, in the regional dashboard	100%	25.9s	4.1
TASK 9	Change your company profile selected preferences	100%	19.9s	5.5
TASK 10	You received a notification related to the new "Rules and policies of Aria" find it and open the website	100%	20.7s	4.8
TASK 11	Logout from the Aria configurator	100%	11.1s	5

Main Qualitative Data From Survey - Translated From Italian:

"I really like that it can tell me the match percentage with a tender or grant"

"The guided search is great I would use it a lot"

"The recommended tenders and grants feature is really helpful I hope it really happens soon"

"the moving colors in the background makes me think that the website is continuously updating to show results I like it very much "

"The concept of this website is clever it would be helpful to know which tenders and grants I can apply to based on the documents I have"

Existing Lombardy Portal - Usability Testing Results (Five Expert Users)

Task n	Task	Success Rate	AVG Time	AVG Clicks
TASK 1	Use the search bar to search for "Woodworking" Tenders and Grants	100%	24.3s	6.3
TASK 2	Save a funding opportunity of your choice	80%	32.4s	4.9
TASK 3	Find the Tender "Piano Lombardia 2 - interventi per il servizio idrico integrato" and apply for it	100%	42.6s	7.3
TASK 4	Find the Tender "BANDO EFFICIENZA ENERGETICA COMMERCIO E SERVIZI" and ask a question regarding the application process	80%	51.3s	17.6
TASK 5	Logout from the website	100%	13.2s	6.2

Main Qualitative Data From Survey- Translated From Italian:

"The page has a lot of content and it was a bit annoying for me to read everything before I knew what I had to click on"

"I have used this website several times and I never knew this button allowed me to save tenders for later"

"It took me a long time to find the search bar"

"The documents needed should be listed at the beginning of the page"

"Why are the contact information for the publishers so hard to find"

Design System

Display

Section Title

Tender/Grant Title

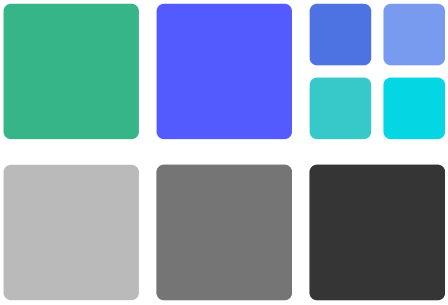
Subsection Title

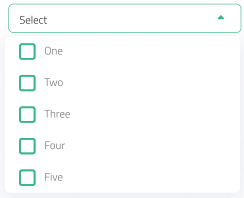
Not interactive text

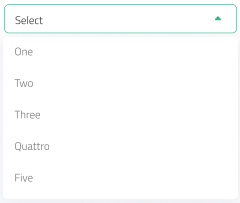
Interactive text

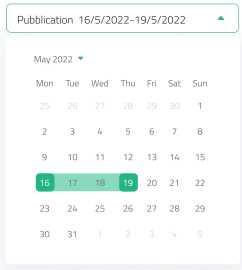
Icon Label

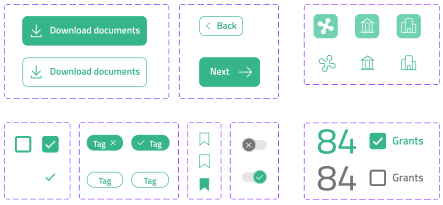
Detail Text

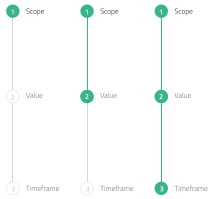


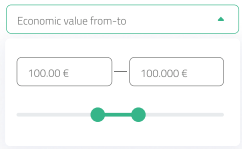


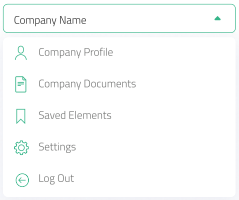


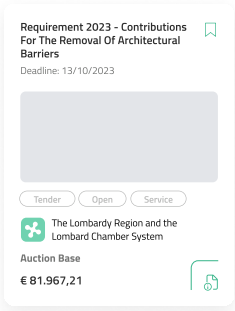


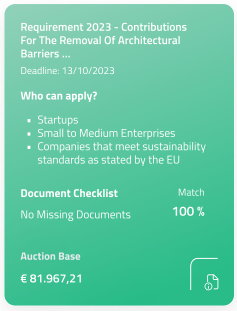


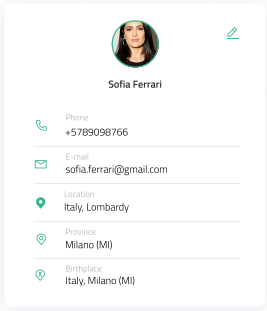


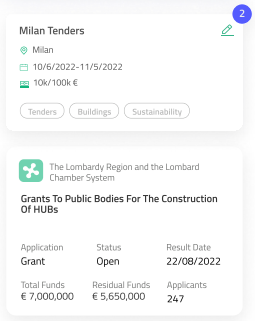


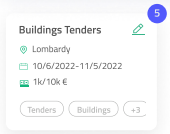


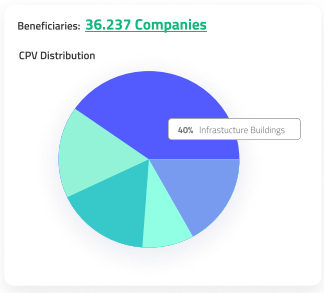


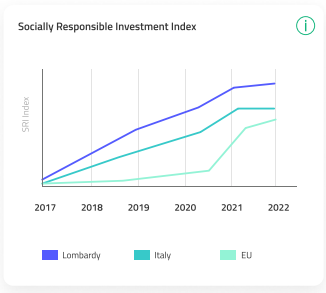


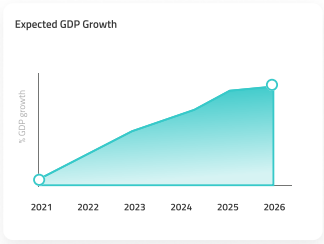


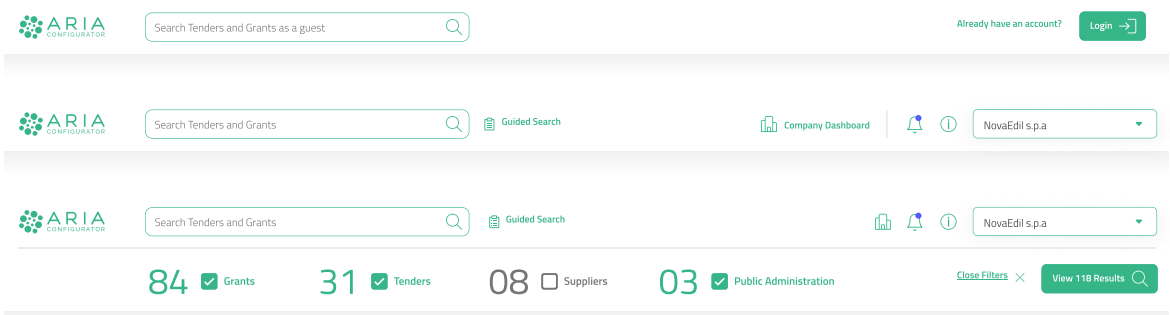












High-Fidelity Prototype Link

https://figma.fun/9IgCnX

Full URL:
https://www.figma.com/proto/IHnOgneijiqk0eKwO4bNv5/Enterprise-Data-Platform-Prototype?node-id=1489%3A148577&scaling=contain&page-id=1489%3A146414&starting-point-node-id=1489%3A148577&hotspot-hints=0