GREEN FOCUS ITALIA

For the 'Fondo Ambiente Italiano'

Project Design and Management for Data Science

University of Pisa

A.Y. 2023/2024

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Date:	January 6, 2024

Contents

Introduction

This report aims to analyze the whole process of ideate a solution for a specific user's need. The methodology used to provide a solution is the Design Thinking.[1] This focuses on solving complex problems through a user-centered, creative and iterative approach. This process guides teams through different phases involving observation, empathic understanding, ideation, prototyping and testing. This paper delineate two phases: *Desirability* and *Feasibility*. For the *Desirability part*, it is important to get a better understanding of the desirability concept that will be explained by giving answers to questions such as:

- What makes sense to people and for people?
- Is there any unsolved need?
- Is there any need that can be solved in a more efficient and effective way?
- How important is the need for the person?
- Is there any quantitative evidence?

This phase focuses on understanding the emotional and psychological needs of users. During this phase, innovators try to understand who are users and what they want, value, and find meaningful. The Desirability Chapter is presenting methods to find users and needs, formulate need hypotheses, test them, make need statements and assess them in a sort of iterative way. The sequence starts with creating choices and finishes with making choices: moving from divergent thinking to convergent thinking. For the *Feasibility part*, the goal is to identified and discuss solutions that not only meet functional needs, but also resonate with users' emotions and values. The Feasibility Chapter underline methods for solution generation, description and evaluation and their respective results. In these way solutions to user needs will be identified, discussed and evaluated.
In particular, the project involves **Fondo Ambiente Italiano** [2], the National Trust of Italy. This organization was established in 1975 and it is a private non-profit organization. Its purposes are to protect elements of Italy's physical heritage which might otherwise be lost and to raise people's awareness of environmental issues. Design thinking can help in the challenging investigation of new users for *Fondo Ambiente Italiano*, moving away from the obvious.

[1] https://designthinking.ideo.com/
[2] https://fondoambiente.it/

Desirability

In this first phase of the report, we are going to present User Needs by showing the methods and tools to define users and their needs. The main goal that we are going to reach is to identify users in the field of the *Fondo Ambiente Italiano* and explore their needs relevant to our topics. To build our users and needs in an efficient and effective way, we need to go through some steps:

- First, we define the methods and tools that are preferable for the group to identify our users.
- Second, we search users' needs and we use other methods to find relevant needs of our users.
- Finally, we will show and describe the outcomes of what we have reached in this Desirability phase.

1. Methods

1.1 Methods to discover Users and Needs

In this Section, we underline the methods we apply to identify our users and their needs. To enhance decision-making in user identification and needs assessment, it is deemed appropriate to utilize various methods.

Brainstorming

This method is very common for finding new ideas and it is based on spontaneity and unfiltered creativity. This allows the group to be able to set limits to the process of generating ideas. Infact, all brainstorming methods aim to collect raw ideas in a quick fashion, whereby the group is asked to simply express their ideas out loud. In this discussion phase the group members broadened their vision by listening to ideas and giving constructive opinions. To ensure the productivity of the process and the emergence of creative ideas, certain rules for organizing brainstorming were followed:

- The objective was clearly defined for everyone
- The presence of different perspectives was ensured
- A collaborative environment was created
- Criticism of ideas was prohibited during the generation phase

- The time of the brainstorming sessions was limited to 10 minutes each

The results of the various brainstorming sessions were collected and feedback regarding the brainstorming process itself was also asked to each member of the group. In the case of negative feedback, the brainstorming process has been improved. After that, each proposal is voted on by the team, in order to eliminate those users and their respective needs that did not pass the vote. The voting method used is that of an absolute majority.

Role Storming

Rolestorming is a brainstorming technique where participants pretend they are other people when sharing their thoughts and ideas. [3] This technique encourages participants to embrace different roles or personas, fostering the generation of creative ideas and solutions. It represents a departure from conventional brainstorming, aiming to overcome inhibitions, instill fresh perspectives, and ignite innovative thinking. In the realm of Rolestorming, individuals temporarily inhabit the identities of others, be they fictional characters, historical figures, or professionals from diverse fields. This immersive experience enables an exploration of problems or topics from a myriad of viewpoints. By breaking free from traditional thinking patterns, this approach often leads to the emergence of novel and unexpected ideas. As a first step, each member of the group chose a role to take on. Being a group of 4 members, four distinct roles have been assumed. The first is the *Conservator of Heritage*, an expert in Italian heritage dedicated to preserving and enhancing historical and cultural sites. The second is an *Eco-Innovator*, proficient in sustainable innovations to reduce environmental impact. The third is a *Digital Transformation Enthusiast*, aiming to leverage digitization for more efficient goal attainment. The fourth is a *Community Engagement Specialist*, actively involving people in the projects and initiatives of the Italian Environmental Fund. As a second step, participants speak and generate ideas from the perspective of the role they have assumed, allowing them to think beyond their usual limitations. With the specified roles it was possible to think of more particular ideas, such as the *Orchestra* or the *Fashion Entrepreneur*. These two users were designed with the aim of promoting the territories and actively involving people. This technique allowed the group to have a broader and more diverse perspective.

Five Whys

Introduced by Sakichi Toyoda, founder of Toyota Industries, the 5 why technique is used to identify the root cause behind a complex problem or defect. It consists of an iterative ”drill down” approach in which cause and effect relationships are identified by answering a simple question: WHY? [4] In our context, we can apply the ”Five Whys” method to examine whether users with their respective needs can be interesting for the FAI organization. Below is an example of how this approach works to understand if the Elderly Tourist and the related issue are intriguing for our case study.

- ***Why is the elderly user with a need for increased accessibility interesting for the Italian Environmental Fund?*** *Because accessibility is a primary concern for the Italian*

[3] https://fourweekmba.com/rolestorming/
[4] https://meetheskilled.com/tecnica-5-whys/

Environmental Fund to ensure that historical and cultural sites are accessible to everyone.

- ***Why is it important for historical and cultural sites to be accessible to everyone?*** *Because this promotes inclusivity and allows a broader audience, including the elderly, to enjoy the Italian heritage.*
- ***Why is it important to involve the elderly in Italian heritage?*** *Because the elderly often possess rich knowledge and appreciation for history and culture, contributing to the preservation and dissemination of these values.*
- ***Why should the Italian Environmental Fund focus on preserving and disseminating historical and cultural values?****Because this contributes to awareness and appreciation of Italian history and culture, supporting the fundamental goals of the Fund.*
- ***Why is it important for the Italian Environmental Fund to achieve its goals?*** *Because success in pursuing the Fund's objectives contributes to the maintenance and enhancement of the Italian heritage, ensuring that current and future generations can benefit from it.*

Although the 5 Whys are an important tool for engineers and technically inclined individuals, it has been criticized by Teruyuki Minoura [5] for being too elementary to analyze problems at a level useful for resolution. [6] Criticisms include: the problem solver's tendency to stop at symptoms instead of delving deeper to find the root cause, inability to go beyond the problem solver's current knowledge, lack of supporting aids to help the problem solver ask the right "whys", and non-reproducible results (different individuals using the 5 Whys might arrive at different causes for the same problem). These can be significant issues when the method is applied solely through deduction. To avoid or minimize the risk of error, it is recommended to verify the answer immediately before proceeding to the next "why". [7] For this reason, during the application of this tool, it was decided to perform the answer verification after each "why" question and proceed only if it was validated.

Reviews only for Needs

Reviews were introduced to research and "confirm" the needs since all the methods used previously are qualitative and more subjective. This way, with the introduction of reviews, it was possible to employ a quantitative method with a more objective and impartial perspective. Customer ratings were gathered from various sites such as *TripAdvisor* [8] and social platforms like *Facebook* [9]. In particular, on TripAdvisor, opinions present on the pages of eight different FAI locations were consulted, while on Facebook, the reviews were generic and not specific to a single site. These reviews have confirmed some needs, particularly expressing concerns regarding accessibility and communication. In addition to this issue, problems have been reported regarding poor event organization, a lack of communication (information not available on the website,

[5] former global purchasing director at Toyota

[6] https://web.archive.org/web/20070314205252/http://www.toyotageorgetown.com/tps.asp

[7] https://it.wikipedia.org/wiki/Cinque_Perch%C3%A9

[8] One of the 8 places: https://www.tripadvisor.it/Attraction_Review-g608904-d12671597-Reviews-or20-FAI_Saline_Conti_Vecchi-Assemini_Province_of_Cagliari_Sardinia.html

[9] https://www.facebook.com/fondoambiente/reviews

such as schedules, prices, and other deemed useful details), and the presence of guides with little experience and willingness. [10]

1.2 Methods to evaluate Users and Needs

In this Section, we describe the methods we apply to evaluate users and their needs. For the evaluation, we use different types of techniques, both subjective and objective. We employ objective techniques to obtain a more realistic view of our results and derive a final outcome based on concrete data. This approach ensures that the results are less susceptible to bias [11].

Swot Analysis

SWOT analysis is a planning tool used to assess Strengths, Weaknesses, Opportunities, and Threats related to an organization, project, or specific situation. This model gives a complete overview of internal and external factors that can impact the goal or subject of the analysis.[12] The four principal components are showed in the Figure 1.

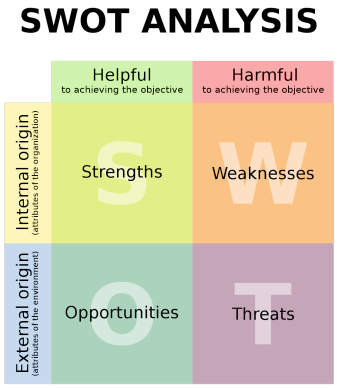

Figure 1: Swot Analysis

- *Strengths*: These are positive attributes and internal resources that provide competitive advantages.
- *Weaknesses*: These represent internal aspects that can pose a challenge or obstacle to achieving goals.
- *Opportunities*: These indicate external elements that can be leveraged for the benefit of the organization or project.
- *Threats*: These represent external factors that can pose risks or challenges.

In our case study, we used the SWOT analysis in collaboration with ChatGPT. Specifically, we employed the following ***prompt***:

[10] https://www.miriconosci.it/fai-cerca-volontari-ma-riceve-insulti/
[11] they are distortions that people implement in evaluations
[12] https://asana.com/it/resources/swot-analysis

- *"I have 5 potential users of the Fondo Ambiente Italiano: an ELDERLY TOURIST with a need for greater accessibility, a FOREIGN TOURIST in need of medical and financial assistance, a MUSIC ORCHESTRA in need of spaces with good acoustics, a FASHION ENTREPRENEUR needing to advertise their fashion brand, and finally, a TRAVEL AGENCY needing to offer sustainable trips. On these 5 users, can you perform a SWOT analysis to understand which user and corresponding need have more threats, opportunities, weaknesses, and strengths? Lastly, could you assign scores* [13] *to determine which user appears to be the most advantageous customer for the Italian Environmental Fund? Assign scores considering that the Italian Environmental Fund sponsors Italian natural and artistic sites for visitation and raises awareness about environmental issues. When assigning scores, give a higher negative weight to threats and a higher positive weight to opportunities."*

Before using ChatGPT, the analysis was performed manually with comparison sessions between the various members of the group and was finally refined using generative AI with the prompt defined above.

Maslow's pyramid

Maslow's pyramid is a theory that describes human needs by grouping them into five different levels. We start from the base of the pyramid, formed by the indispensable and mandatory needs for every human being, without which it would not be possible to live, up to the highest levels, at the apex of the pyramid, which are represented by progressively more refined and complex needs. [14] These needs (depicted in Figure 2) must be satisfied according to their importance. For example, physical needs such as water and food must be met before emotional needs such as love and affection.

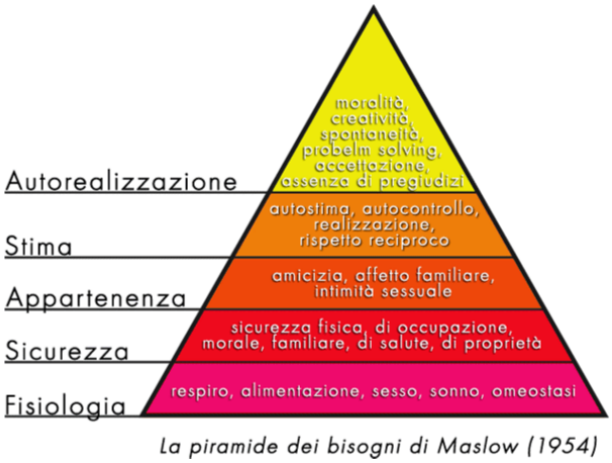

Figure 2: Maslow's Pyramid

To use this technique for evaluation, we mainly matched the needs of various users with the levels of the pyramid. This helped us figure out which needs align with Maslow's hierarchy. To carry out this assignment, in addition to comparing personal ideas among group members, it was

[13] between -5 and 5

[14] https://psiche.santagostino.it/piramide-dei-bisogni-maslow/

decided to seek the opinion of the generative AI. In particular, for this task, we used the following two ***prompts***:

- *"Interpret the role of a Design and Psychology expert. Your task is to evaluate needs related to specific users. To assess the needs, you will use Maslow's pyramid, divided into 5 parts: physiological needs will have a score of 5 as they are at the base of the pyramid, safety needs will score 4, belongingness needs will score 3, esteem needs will score 2, and self-actualization needs will score 1. For the evaluation, you will be given the user and the connected need, and you have to assess and relate it to Maslow's pyramid, providing the reasoning for your choice. Additionally, you will present the content in a table, considering that the output will be used by the user in a scientific paper. If you understand your task, before starting, provide me with a summary of what you need to do and how. Then, let me know when you're ready to receive users and needs as input."*

- *"**user**: elderly tourist **need**: need for greater accessibility and independence.*
  ***user**: Foreign tourist **need**: need for medical and economic insurance.*
  ***user**: Orchestra **need**: need to find suitable spaces with better acoustics.*
  ***user**: Travel Agency **need**: offer sustainable travel.*
  ***user**: Fashion Entrepreneur **need**: advertise the brand.*
  For this analysis, also consider that the users and proposed needs refer to potential users of the Fondo Ambiente Italiano (FAI)."

As can be observed from the prompts, the decision on how to assign scores was made by the group based on studies conducted on Maslow's hierarchy. The five-level version of the pyramid was chosen because, with the previous methods, users and their needs had already been filtered, resulting in a total of 5. Using ChatGPT has allowed us to confirm that the need of the elderly is crucial for ensuring well-being and contributes to safety and belonging needs. Foreign tourists also fall within this category. The need of the travel agency falls under self-fulfillment, the highest tier; whereas the fashion entrepreneur's need is placed under esteem needs. Lastly, the need of the travel agency aligns with belonging needs.

Focus Group

A focus group, originated in the United States in the 1940s by two sociologists, K. Lewin and R. K. Merton, is a qualitative technique used in human and social sciences research. In this approach, a group of people is invited to talk, discuss, and share their perspectives on a specific topic. The focus group was organized online for logistical reasons and to reach a larger number of participants. Online groups are typically limited to six or eight participants, and in our case, we managed to form a group of eight people with an average age of 25/26. Since the Fondo Ambiente Italiano operates on a national scale, it was considered important to gather individuals from different parts of the country, as attitudes toward a new project may vary based on geographical considerations. For this reason as well, the online version of this technique was preferred. The duration of the online meeting was approximately an hour and a half, and around 15 minutes were allocated for each proposed topic. The focus group was structured so that, in addition to external participants, group members could also participate as observers. Only one member was tasked with taking on the role of the moderator. The moderator guided the group

discussion to probe attitudes regarding the proposed services. The discussion format adopted was non-structured (or mildly structured), and the moderator encouraged the free flow of ideas. Initially, the themes of the Italian Environmental Fund were introduced during this session to assess participants' awareness of the organization and its purpose. Subsequently, five topics (related to various users and needs) were proposed as inputs to generate discussions, including the need hypotheses developed by our group. Through this technique, both users with their respective needs and the need hypotheses were evaluated. The latter, in particular, served as the primary source for generating new ideas and fostering discussions among participants. Finally, a majority vote was conducted to understand the most significant problem according to our participants.

Surveys

The survey serves as a measurement instrument employed to gather information about the targeted phenomenon, ensuring that the acquired data is comparable. For optimal effectiveness, a questionnaire should be concise, featuring clear and easily understandable questions. This design allows all respondents to navigate the survey swiftly and respond accurately. The questionnaire devised for this particular case consists of 9 questions, including 2 open-ended questions. The initial query in the questionnaire seeks the user's age to grasp the average age of the voters and incorporate this data into our conclusions. The next 5 multiple-choice questions are about the imagined users and their needs. Voters are asked to choose the most important need for the considered user according to their thoughts. Finally, there are three open-ended questions: the first one asks to write down the most important need among all listed (regardless of the user), the second is for specifying whether the voter identifies with a specific user or need, and the last one asks to specify that user or need. In total, for this survey, 110 responses were collected from users aged between 20 and 65 years old. The majority of respondents are around 25 years old. The decision was made to distribute the questionnaire to individuals of different generations and ages to understand whether the responses given by these individuals are influenced solely by personal needs or by a collective mindset based on contemporary culture and society.

SDGs

The abbreviation SDGs stands for *Sustainable Development Goals*, which means goals for making the world better. These goals were created by the United Nations to tackle big global challenges like poverty, hunger, health, education, gender equality, clean water, hygiene, sustainable energy, economic growth, jobs, innovation, reducing inequalities, justice, peace, and environmental sustainability by the year 2030. There are a total of 17 goals, depicted in Figure 3, and they are part of the 2030 Agenda for Sustainable Development. [15]

[15] https://www.esg360.it/environmental/agenda-2030-e-i-17-obiettivi-di-sviluppo-sostenibile-il-vademecum-completo/

Figure 3: Sustainable Development Goals - Agenda 2030

This method is one of the approaches used to make our study and results more objective, by utilizing concrete data derived from them. The goals of the European 2030 agenda were checked to see if users and their needs are part of these goals, making them essential for the European Parliament. This helps us confirm or deny the importance of these needs. For the evaluation phase, the five most relevant goals, one related to each of our topics, were selected. Scores were assigned to these goals based on their position in the list, considering that the 17 goals are arranged in order of priority in the 2030 Agenda. The assignment was done as follows:

- ***Goal 3: Good Health and Well-being*** = Foreign Tourists - get medical and economic insurance
- ***Goal 4: Quality Education***= Orchestra - find suitable spaces with better acoustics
- ***Goal 9: Industry Innovation and Infrastructure*** = Fashion Entrepreneur - advertise the brand
- ***Goal 10: Reduced Inequalities*** = Elderly Tourists - need for greater accessibility and independence
- ***Goal 13: Climate Action*** = Travel Agency - offer sustainable travel

Since there are 5 goals, the score assigned to each one ranges from 0.1 to 0.5, where 0.5 is assigned to the need corresponding to the goal that appears first in the list of 17 objectives.

ASVIS Tables

This technique is the second approach used to make our analyses and findings more realistic, basing them on concrete problems verified by institutions. For this reason, it was decided to consult the **GUIDA al Rapporto Annuale ASviS 2023** [16]. To apply this tool, the structure of the ASviS

[16]https://asvis.it/public/asvis2/files/Rapporto_ASviS/Rapporto_ASViS_2023/guida_al_rapporto_asvis_2023.pdf

tables [17] was initially studied to understand the meaning of each attribute. The attributes include: *Target, Methodology, Quantitative Objective, Source of the Objective*, and *Indicator*. Subsequently, each quantitative objective from all available tables was consulted to understand if our needs fit into these tables. The quantitative objectives, each of which is classified based on the Goals and Targets of the ONU 2030 Agenda, are defined according to the following hierarchy:

- **A**. values defined by institutional levels (ONU, European Union, Italian Government, etc.);
- **B**. In the absence of a defined value as in point A), the objective definition relied on the judgment of experts from the ASviS working groups;
- **C**. In the absence of a defined value at the institutional level and expert judgment, the objective was identified through comparison with the three European countries most similar to Italy (France, Germany, Spain), taking the best performer among these countries in the last year for which data is available;
- **D**. If none of the above criteria allows defining the objective, the Eurostat methodology is used to assess the trend of indicators without a target, using an annual increase of 1% compared to the base year 2010 (for example, target for 2030 +/-20% compared to 2010).

This hierarchy forms the basis of our evaluation system. Indeed, after understanding which quantitative objectives correspond to our needs, the evaluative approach was defined by assigning scores ranging from 0.0 to 0.4. A score of 0.0 indicates that no corresponding data was found within the tables on our topic. Scores between 0.1 to 0.4 indicate that data relevant to our needs has been found, with 0.4 indicating more certain data (defined according to methodology A), whereas a score of 0.1 signals that the data is more approximate and inaccurate (defined with methodology D). Below, we provide an example of ASviS tables, through Figures 4, 5, 6 e 7.

Tabella 7 - Obiettivi quantitativi prioritari

Target	Metodologia	Obiettivo quantitativo	Fonte dell'obiettivo	Indicatore
1.2	A	Entro il 2030 ridurre del 16% il numero di persone a rischio di povertà o esclusione sociale rispetto al 2020[17]	Pilastro europeo dei diritti sociali[38]	EUROSTAT

Figure 4: Quantitative goal associated with the user "Elderly Tourists" and the need for greater accessibility and independence

4.3	A	Entro il 2030 raggiungere almeno l'80% delle persone tra i 16 e i 74 anni con competenze digitali di base	Pilastro europeo dei diritti sociali[52]	ISTAT

Figure 5: Quantitative goal associated with the user "Elderly Tourists" and the need for greater accessibility of information and technological independence

[17] https://asvis.it/public/asvis2/files/Pubblicazioni/RapportoLdbPnrr/LdB_PNRR_2023.pdf

GOAL A PREVALENTE DIMENSIONE AMBIENTALE

Tabella 1 - Obiettivi quantitativi prioritari

Target	Metodologia	Obiettivo quantitativo	Fonte dell'obiettivo	Indicatore
2.4	A	Entro il 2030 ridurre del 20% l'utilizzo di fertilizzanti distribuiti in agricoltura rispetto al 2020	Strategia europea dal produttore al consumatore[1]	ISTAT
2.4	A	Entro il 2030 raggiungere il 25% della superficie agricola investita in coltivazioni biologiche	Strategia europea dal produttore al consumatore[2]	ISTAT
6.3	A	Entro il 2027 garantire lo stato di qualità ecologica elevata o buona per tutti i corpi idrici superficiali	Direttiva UE quadro sulle acque recepita con il DLGS n. 152 del 2006, Parte Terza[3]	ISPRA
6.4	B	Entro il 2030 raggiungere quota 90% nell'efficienza delle reti di distribuzione dell'acqua potabile	Esperti gruppi di lavoro di ASviS	ISTAT
7.2	A	Entro il 2030 raggiungere almeno la quota del 45% di energia da fonti rinnovabili	Piano REPowerEU[4]	ISTAT
7.2	A	Entro il 2030 aumentare la capacità installata di energie rinnovabili ad almeno 130 GW	Piano per la Transizione ecologica[5]	GSE
7.3	A	Entro il 2030 ridurre di almeno il 20% i consumi finali di energia rispetto al 2020	Piano REPowerEU[6]	Enerdata
11.2	D	Entro il 2030 aumentare del 26% rispetto al 2004 il numero di posti-km per abitante	Incremento dell'1% annuo rispetto all'anno base 2010	ISTAT
11.6	A	Entro il 2030 ridurre i superamenti del limite di PM10 a 3 giorni all'anno	Linee guida per la qualità dell'aria OMS[7]	ISTAT
13.2	A	Entro il 2030 ridurre le emissioni di CO2 e di altri gas climalteranti del 55% rispetto al 1990	Green deal Ue[8]	ISTAT

Figure 6: Quantitative goal associated with the user "Travel Agency" and the need to offer sustainable trips

Tabella 6 - Altri obiettivi quantitativi

Target	Metodologia	Obiettivo quantitativo	Fonte dell'obiettivo	Indicatore
16.6	A	Entro il 2030 messa a disposizione online del 100% dei servizi chiave della pubblica amministrazione	Bussola UE per il digitale 2030[34]	Non disponibile
16.6	A	Entro il 2030 il 100% dei cittadini avranno accesso ai dati medicali in formato elettronico	Bussola UE per il digitale 2030[35]	Non disponibile
16.6	A	Entro il 2030 l'80% dei cittadini utilizzeranno soluzioni con identità digitale	Bussola UE per il digitale 2030[36]	Non disponibile

Figure 7: Quantitative goal associated with the user "Foreign Tourists" and the need to get medical insurance

As highlighted by these tables, data associated with methodology A (thus with high priority and validity of information) has been found for three of our users and their needs. However, for the other 2 topics, there are no similarities within this tool, and for this reason, a score of 0.0 will likely be assigned.

1.3 Needs Hypothesis

The methods used to research need hypotheses are **Brainstorming** and **Focus Group**. *Brainstorming* was employed to generate various need hypotheses for each selected user and need,

using the same system and rules as previously discussed. From the brainstorming session, five main need hypotheses were derived through a majority vote among group members. These five need hypotheses were then presented in the *focus group* (conducted as outlined earlier) for verification. Based on external feedback obtained from this second approach, the need hypotheses were refined and evaluated in terms of importance.

1.4 Needs Statements and Assessments

To reach the need statements (more specific and articulated statements describing a particular need), the results obtained from the analyses conducted with the previously described methods to identify and assess users and needs were examined. Specifically, existing data, such as feedback suggesting common needs, was analyzed. Group sessions were organized to facilitate discussion and gather detailed information based on shared opinions and experiences. Finally, the questionnaire was used, focusing especially on open-ended questions that allowed users to express their needs in detail. Regarding the need assessment, it is the process of systematic evaluation and analysis of needs and therefore it helps classify and prioritize needs to make informed decisions on how to address them. For this purpose, the methods described in Section 1.2 have been utilized.

2. Results

This Section aims to show the outputs of the previously described methods.

2.1 Users and Needs

Users and needs are identified by adopting the method shown in Section 1.1. After the first phase in which ideas are generated, they are filtered and shaped according to the business of the Fondo Ambiente Italiano. In the Figure 8, there is the table that summarises the output of the identification process:

Users	Needs
Elderly Tourists	need for greater accessibility and independence
Foreign Tourists	get medical and economic insurance
Orchestra	find suitable spaces with better acoustics
Travel Agency	offer sustainable travel
Fashion Entrepreneur	advertise the brand

Figure 8: User and Needs

2.2 Needs Hypothesis

Need hypotheses are retrieved using brainstorming and focus groups, as described in the previous Paragraph 1.3. This kind of method showed that there are only five validated hypotheses needed; the remaining failed when the experiments were carried out. The Figure 9 shows the five main need hypotheses.

N.1 - We believe that if we implement easily accessible technology solutions with clearer navigation, then this will lead to a growth in the number of tourists (including elderly people).
N. 2 - We believe that if we offer more medical assistance services and insurance coverage, then this will increase confidence among foreign travelers.
N. 3 - We believe that if we incorporate eco-friendly travel options and promote carbon-neutral initiatives, then this will attract agencies towards sustainable travel and long-term partnership.
N. 4 - We believe that if we promote launches highlighting unique brand offering, then this will get the attention of entrepreneurs, leading to brand recognition and acquisition within this place.
N. 5 - We believe that if we provide more specialized transportation with acoustically optimized spaces, then this will appeal to orchestras therefore have positive testimonials due to the suitable environment.

Figure 9: Need Hypothesis

In the Figure 10, there is the table that represents the five need hypotheses turned into need statements with their related goals.

USER	NEED	GOAL
Elderly Tourist	need for greater accessibility and independence	To have access to more possible places without any difficulties
Foreign Tourist	get medical and economic insurance	To travel peacefully without financial losses and without putting your life at risk
Orchestra	find suitable spaces with better acoustics	To ensure better performance and not encounter problems that could damage the image
Travel Agency	offer sustainable travel	To be in line with environmental guidelines, in order to attract people sensitive to this issue
Fashion Entrepreneur	advertise the brand	To ensure survival in the market and to convey the sustainability message to the right audience

Figure 10: Need Statement

2.3 Needs Statements and Assessments

In this Paragraph, the results obtained from the evaluations carried out with the methods present in Section 1.2 are shown. In addition, to reach a single user with the relevant need, an expression was considered for the calculation of the final final values. The formula, represented in Figure 11, is defined as the product of the number of users, importance and confidence.

Figure 11: Expression for the final values

The main measures are calculated in the following way:

- **Number of users**: it has been decided to use secondary type data to estimate it. In particular, we have consulted data found through ISTAT, government reports, and other general papers. [18] [19] [20] [21] [22]
- **Importance**: it is calculated by giving an evaluation from 1 to 5, and then all the evaluations about each need are summed up.
- **Confidence**: it is calculated giving priority to the measure methods that are verified at the national level. The confidence range is an interval from 0 to 1.

Values and computations obtained can be viewed with the tables in Figures 12 e 13.

Users	Swot Analysis	Maslow Pyramid	Focus group	Surveys	Total
Elderly Tourists	2	4	3	5	14
Foreign Tourists	4	4	2	4	14
Orchestra	4	1	1	1	7
Travel Agency	5	3	5	2	15
Fashion Entrepreneur	4	2	3	3	12

Figure 12: Computation of Importance

[18] https://italiaindati.com/turismo-in-italia/

[19] https://centrostudituristicifirenze.it/blog/silver-tourism-nel-2030-in-europa-previsti-140-mln-di-turisti-over-60/

[20] https://businessweekly.it/notizie/approfondimenti/fashion-dati-imprese-italiane-settore-moda/

[21] https://centrostudituristicifirenze.it/blog/agenzie-di-viaggio-e-incoming-in-italia-1-8-mld-di-euro-di-fatturato/

[22] https://www.musicalchairs.info/it/italy/orchestras

Users	Asvis Tables	UE Goals	Team Evaluation	Total
Elderly Tourists	0.4	0.2	0.1	0.7
Foreign Tourists	0.4	0.5	0.1	1
Orchestra	0.0 (no data)	0.4	0.05	0.45
Travel Agency	0.4	0.1	0.1	0.6
Fashion Entrepreneur	0.0 (no data)	0.3	0.075	0.375

Figure 13: Computation of Confidence

In order to fill the confidence table, we adopted the following strategy: we gave 40% of importance to the ASviS table because we based ourselves on the four criteria used in the tables to define the four categories (A,B,C,D). in which category A is the one with the most certainty of data. Then we gave 50% of importance to the EU Goals because we took five goals, one relating to each user/need and we gave the score based on their position in the list of goals. Finally we wanted to leave 10% of impact to the team's vote. This part has a lower percentage since for obvious reasons it is subjective and therefore more subject to distortions. Each outcome for each of the three variables is displayed in the table 14 below. The column *"total"* is computed as the product of the three variables, and the winner highlighted was selected based on the highest score.

Users	Number of Users	Importance	Confidence	Total
Elderly Tourists	30.000.000	14	0.7	294.000.000
Foreign Tourists	16.000.000	14	1	224.000.000
Orchestra	4500	7	0.45	14.175
Travel Agency	13.651	15	0.6	122.859
Fashion Entrepreneur	82.000	12	0.375	369.000

Figure 14: User and Need assessment final table

3. Final User and Need

Through the work carried out in the Desirability phase, we came to the conclusion that the most attractive user and need for our case study is:

- ***The Elderly Tourists with the need of greater accessibility and independence***.

In the following phases of the project, we are concerned with reaching an optimal solution both for the user and for the organization considered (i.e. the FAI), in order to try to solve the problem considered.

Feasibility

In the second part of the report, we present the Feasibility Phase. In this part, starting from the user and the need identified in the Desirability Section, and through the use of various methodologies, we first generated multiple solutions to our problem. Subsequently, following an initial screening of the resulting solutions, we conducted an evaluation that led us to our final solution.

4. Methods

Regarding the methods employed, we have methods for solution generation and methods for solution evaluation. In our selection of methodologies, we included various ones, as we needed different perspectives to be taken into account while simultaneously attempting to reduce biases acquired during the project's development itself.

4.1 Methods for Solution Generation

In this Section we are going to underline the methods that we are going to apply to generate our solutions.

Fishbone Diagram

A Fishbone Diagram is a visual tool used to categorize potential causes of a problem, aiding in the identification of its root causes. Primarily employed for root cause analysis, this diagram combines brainstorming with a mind map template. It proves effective as a test case technique to establish cause and effect[23]. In our scenario, this method was utilized in conjunction with a usability test to better pinpoint the cause of our need. This, in turn, allowed us to generate solutions more closely aligned with the problem. Considering that our initial need pertained to accessibility, delving deeper into the issue revealed that the causes were related to informational deficiencies.

Usability Test

A Usability Test is a method of evaluation used to assess and identify issues related to a website or application. During the test creation phase, tasks, users, and the maximum duration of the test are established (according to eGLU protocol [24]). Tasks can vary in complexity and should

[23]https://www.investopedia.com/terms/i/ishikawa-diagram.asp

[24]https://docs.italia.it/italia/designers-italia/design-linee-guida-docs/it/stabile/doc/user-research/usabilita.html

not involve the use of search bars within the site. Subsequently, the test is conducted with the chosen user demographic, who are then required to complete one or more questionnaires (in our case, the ***System Usability Scale or SUS***). The collected data is then analyzed to gain an overall understanding of both usability and identified issues. Usability tests are crucial for obtaining feedback from real users and significantly enhancing the browsing experience of the website.[25] In our specific case, the usability test was conducted with six participants. They were tasked with completing the following tasks without using the search bar and with a time limit of five minutes for each task:

- Starting from the homepage, try to book a ticket.
- Starting from the homepage, find information regarding the accessibility of a specific location.
- Starting from the homepage, find the annual report of FAI.
- Starting from the homepage, find the partnerships and collaborations of FAI.

Both from the obtained results and direct observation of the participants, greater difficulty was found in tasks number 2 and number 3. These difficulties are related to information dispersion within the site and its overall complexity, partly caused by labeling in some sections that can be misleading. For instance, the annual report is located in the ”transparency” section, which, while initially making sense, complicates keyword-based searches. One last aspect to consider is related to the recent implementation of Accessyway[26] to improve the website's accessibility for people with various disabilities. It is a very useful tool within the site that, to work optimally, will require a revision of labels and, more broadly, sections and subsections of the site to allow for smoother user interaction.

Brainstorming

As described in the first part, Brainstorming is a very common method for finding and exploring new ideas. In this specific case, when applied in conjunction with other methodologies used in solution generation, which helped narrow down the field of possibilities, it allowed us to generate several solutions.

Consequence Scanning

Consequence Scanning is a technique that helps analyze in-depth the potential advantages and disadvantages that the implementation of a solution may bring. It also allows reflection on unintended consequences, those unintended or unintentional outcomes that may occur even long after implementation[27]. The Figure 15 shows the approach schematically.

[25] https://www.nngroup.com/articles/qual-usability-testing-study-guide/
[26] https://www.accessiway.com/it/home
[27] https://designnotes.blog.gov.uk/2023/09/04/consequence-scanning-how-to-mitigate-risks-in-your-service/

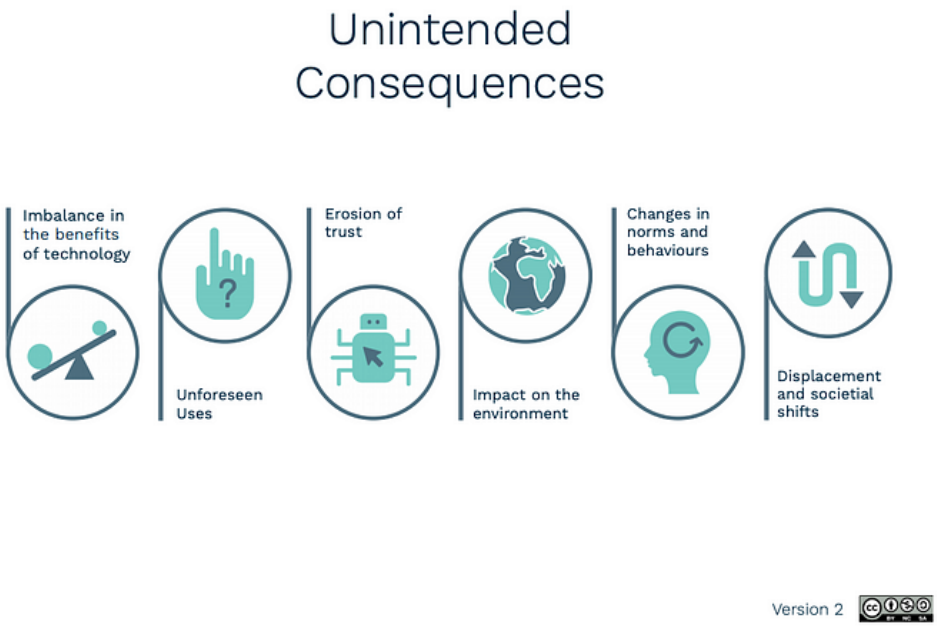

Figure 15: Uninteded Consequences

In our case, this method proved particularly useful because it enabled us to delve deeper into what we already had, exploring the potential positive and negative effects of the solutions. Moreover, due to the type of reasoning it elicited, it allowed us to generate additional solutions that we had not initially considered.

How Now Wow Ciao Matrix

The How Now Wow Matrix is a method that helps identify and provide an initial assessment of solutions by placing them within the matrix as follows:

1. **"How"**: ideas that are innovative, yet feasible.
2. **"Now"**: easy to do and are pretty common ideas.
3. **"Wow"**: ideas that are easy to implement and stand out as unique features which will add value to the user experience.
4. **"Ciao"**: ideas that are uninteresting and hard to implement.

We used this strategy to gain an initial overview of all the solutions, placing each of them within the matrix. Subsequently, we utilized this methodology to discard solutions that, according to our analysis, belonged to the "Ciao" category[28].

[28]https://medium.com/@joellewhagen/how-now-wow-ciao-2241cf6d6314

4.2 Methods for Solution Evaluation

In this Section we are going to underline the methods that we are going to apply to evaluate our solutions and find our final solution.

Pick Analysis

The Pick Analysis is a method that aids in evaluating proposed solutions by positioning them within a matrix that divides solutions into four quadrants:

- HIGH and LOW impact on the x-axis
- EASY and HARD to do on the y-axis

This provides an initial understanding of which solutions are indeed easier to implement and have a greater impact[29]. In our case, to conduct the analysis, we considered various factors related to our user, which made certain solutions more or less plausible than others. For example, in the case of the solution based on the *"recommendation system within the website"*, it was categorized as easy to implement but with low impact. This is because, for it to work well, users would need to visit the site frequently, which is unpredictable and restrictive considering the inherent nature of the website.

PESTEL Analysis

The PESTEL analysis is a methodology that helps consider external factors to the company, i.e., the environment in which it operates. It provides an overview of political, economic, social, technological, environmental, and legal factors acting outside the company, which can either undermine or support it[30]. In our case, to evaluate our solutions, it was necessary to research official regulations such as WCAG or those proposed by AGID related to accessibility and how Italy and Europe are moving in this regard. Long-term estimates and forecasts were made for each of the external factors considered. Subsequently, after gathering information, each team member used ChatGPT or Bard to create a prompt to identify the best solution among those proposed, taking into account the conducted research. In the end, the four obtained outputs were analyzed together and evaluated, selecting the one that appeared to be the best and most accurate in response.

PICTURE

PICTURE is an experimental method that we developed during this project. The method itself helps obtain an overview, a picture, of each proposed solution by reflecting on seven issues considered essential for the implementation of a solution:

- **Privacy** (issues related to user privacy)
- **Implementability** (issues related to implementation difficulties)

[29] https://birdviewpsa.com/blog/project-management-101-pick-chart/
[30] https://www.questionpro.com/blog/pestel-analysis/

- **Cost** (issues related to excessive costs)
- **Technologies** (issues related to the development of new, ad-hoc technologies)
- **Users** (issues related to the actual usage of the solution by users)
- **Reusability** (issues related to the reusability within the company)
- **Ecologic** (issues related to the ecological aspects of the solution)

Each of these factors was used to provide a "*low*," "*medium*," or "*high*" estimation of the issues that a particular solution may entail, aiming to select solutions with fewer identified problems. In our case, we created a table with seven dimensions, and for each of them, we estimated the various issues related to each proposed solution. This approach allowed us to observe which of the proposed solutions might be more sensible to pursue.

5. Results

This Section aims to show the outputs of the previously described methods in the Paragraph 4.1 and 4.2, in order to obtain an appropriate solution.

5.1 Solution Generation

After using the methods described in Section 4.1 and filtering, it came down to this solutions:

- Telegram Bot
- QR code
- Recommender system with a focus on FAI's website
- Live-streams
- Notification system
- Podcast
- WhatsApp Broadcast

5.2 Solution Evaluation

This Section will comprehensively evaluate the solution by employing the methodologies explained in Section 4.2. Starting with Pick Analysis, it gave the outcome in the Figure 16.

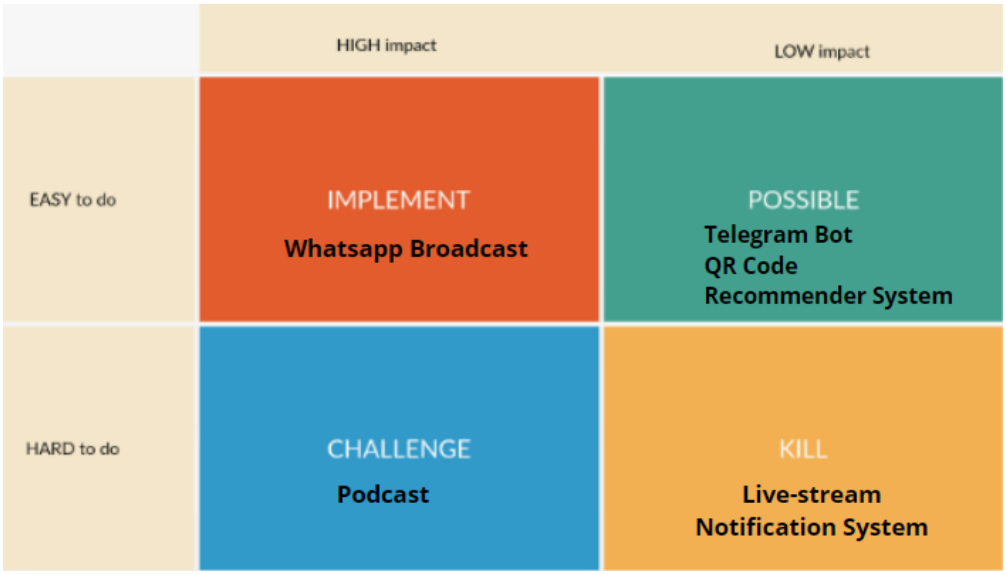

Figure 16: Solution Evaluation with Pick Analysis

From the table it is shown that the implemented solution should be *WhatsApp Broadcast* since it is easy to create and it has a high impact, meaning that it is likely to reach our goal of information accessability for Eldery Tourists. Moving to the results given by PESTEL Analysis, for this method we used a Prompt given to ChatGPT shown below in the Figure 17.

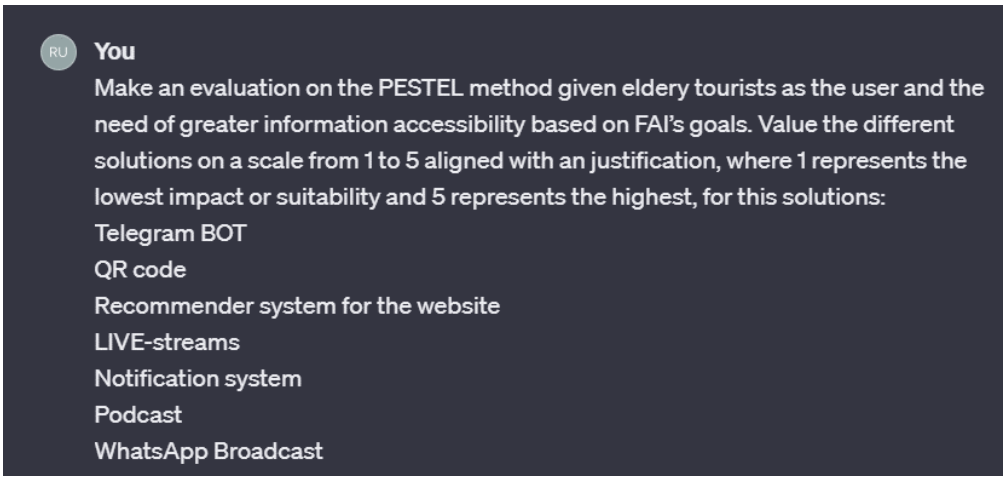

Figure 17: PESTEL prompt

- **Telegram Bot**

Political (4/5): Moderately influenced by political stability, needed for sustained use.

Economic (3/5): Relatively low cost but might not suit all economic conditions.

Social (4/5): Might face barriers due to tech familiarity among elderly tourists.

Technological (3/5): Moderately reliant on tech, might pose adoption barriers.

Environmental (2/5): Minimal impact on environmental concerns.

Legal (3/5): Compliance might be moderate, depending on accessibility standards.

- **QR code**

Political (3/5): Moderately influenced by political stability for implementation.

Economic (3/5): Low-cost, but might not suit all preferences or tech familiarity.

Social (4/5): Social Simplicity might make it more universally accepted among the elderly.

Technological (3/5): Less reliant on tech, yet might pose adoption barriers.

Environmental (1/5): Minimal impact on environmental concerns.

Legal (3/5): Compliance might be somewhat challenging.

- **Recommender System**

Political (4/5): Benefits from political stability but not entirely reliant.

Economic (3/5)): Moderate to high cost, potentially feasible in stable economic conditions.

Social (3/5)): Might not directly cater to elderly tourists' preferences or tech familiarity.

Technological (4/5): Moderately reliant on advanced tech, posing adoption challenges.

Environmental (2/5): Limited impact on environmental concerns.

Legal (4/5): Might face challenges in compliance but potentially adaptable.

- **LIVE-streams**

Political (3/5): Moderately influenced by political stability, needed for consistent use.

Economic (2/5)): Higher production costs might restrict feasibility.

Social (3/5)): May not be the preferred medium for all elderly tourists.

Technological (4/5): Highly reliant on technology, might pose significant adoption barriers.

Environmental (1/5): Minimal impact on environmental concerns.

Legal (3/5): Compliance might face challenges due to tech requirements.

- **Notification System**

Political (4/5): Moderately influenced by political stability, required for consistent notifications.

Economic (4/5)): Relatively feasible in various economic conditions, depending on platform.

Social (4/5)): Effective for reaching a broad audience but might not cover all preferences.

Technological (4/5): Moderately reliant on technology, potential adoption barriers for certain demographics.

Environmental (2/5): Minimal impact on environmental concerns.

Legal (4/5): Moderately feasible in terms of compliance with accessibility standards.

- **Podcast**

Political (2/5): Less influenced by political stability; podcast production remains relatively unaffected.

Economic (3/5)): Moderate production costs might be feasible in stable economic conditions.

Social (3/5)): May not be the preferred medium for all elderly tourists.

Technological (3/5)): Moderately reliant on tech, posing potential adoption barriers.

Environmental (1/5)): Minimal impact on environmental concerns.

Legal (3/5)): Compliance might be somewhat challenging due to accessibility limitations and evolving legal standards, but it's reasonably feasible.

- **WhatsApp Broadcast**

Political (4/5): Potentially benefits from political stability but not highly dependent.

Economic (4/5): Relatively feasible in various economic conditions, leveraging a widely used platform.

Social (5/5): Aligns well with the widespread use of WhatsApp among various demographics, ensuring high social impact.

Technological (5/5): Directly utilizes familiar technology, likely more easily adopted.

Environmental (2/5): Limited impact on environmental concerns.

Legal (4/5): Feasible in terms of compliance with accessibility standards.

After the evaluation of each solution from six point of views, a table was created summing up all the values to get to the highest score. The results obtained from this type of evaluation are shown in Figure 18.

Solution	Political	Economic	Social	Technological	Environmental	Legal	Total
Telegram BOT	4	3	4	3	2	3	19
QR code	3	3	4	3	1	3	17
Recommender System	4	3	3	4	2	4	20
LIVE-streams	3	2	3	4	1	3	16
Notification System	4	4	4	4	2	4	22
Podcast	2	3	3	3	1	3	15
WhatsApp Broadcast	4	4	5	5	2	4	24

Figure 18: PESTEL evaluation table

As a result, the highest score was given from *WhatsApp Broadcast*. Finally, we used the PICTURE analysis for a a better view of the solutions, to then arrive to the final one. The solutions were viewed on six prespectives, then ranked as explained in Section 4.2 respectively. The outlook is shown on the table in the Figure 19 below:

Dimension	Reccomender	BOT telegram	Codice QR	Broadcast	LIVE-stream	Podcast	Notification system
Privacy	medium	medium	low	low	low	low	medium
Implementability	medium	low	medium	low	medium	medium	medium
Costs	medium	low	low	low	medium	low	medium
Technologies	medium	low	low	low	low	low	Medium
Users	medium	high	medium	medium	high	medium	low
Reusability	low	low	low	low	medium	medium	low
Ecology	medium	low	low	low	low	low	medium

Figure 19: PICTURE evaluation table

Upon observation, it is evident that the results derived from PICTURE analysis also highlight *WhatsApp Broadcast* as the best solution.

6. Final Solution

In this section, we will present four flowcharts illustrating the functionality of our solution, ***WhatsApp Broadcast***. This adaptable solution caters to users seeking greater accessibility to

information, leveraging the widespread usage of WhatsApp. These flowcharts outline how our solution operates and can be customized for various user needs.

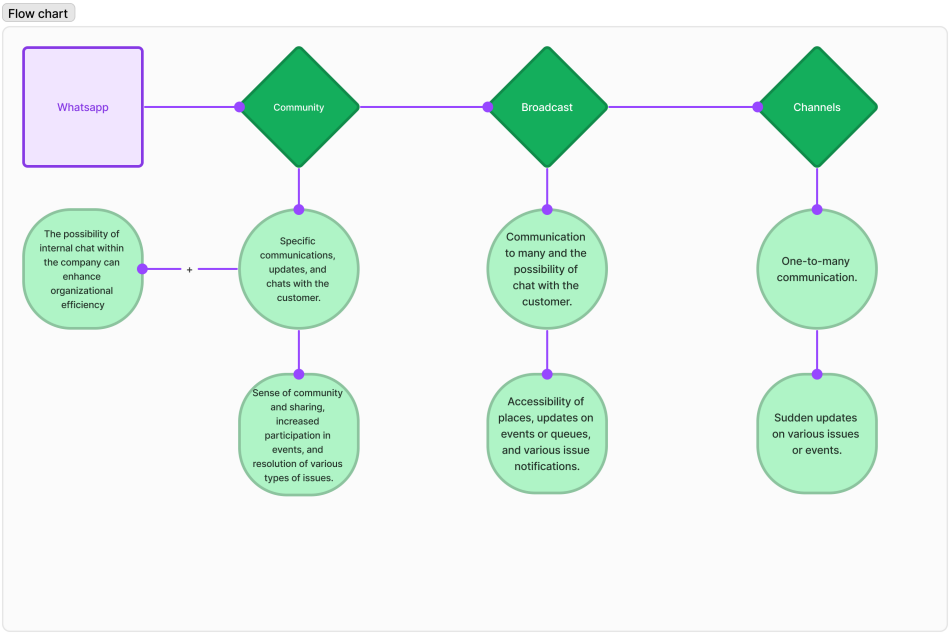

Figure 20: Flow Chart whatsapp

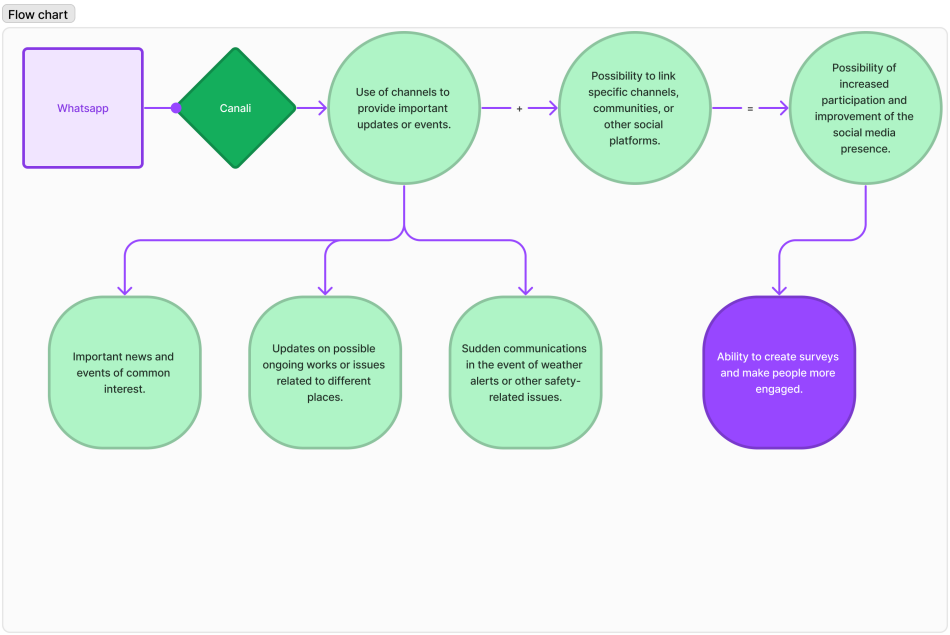

Figure 21: Flow Chart: Channels

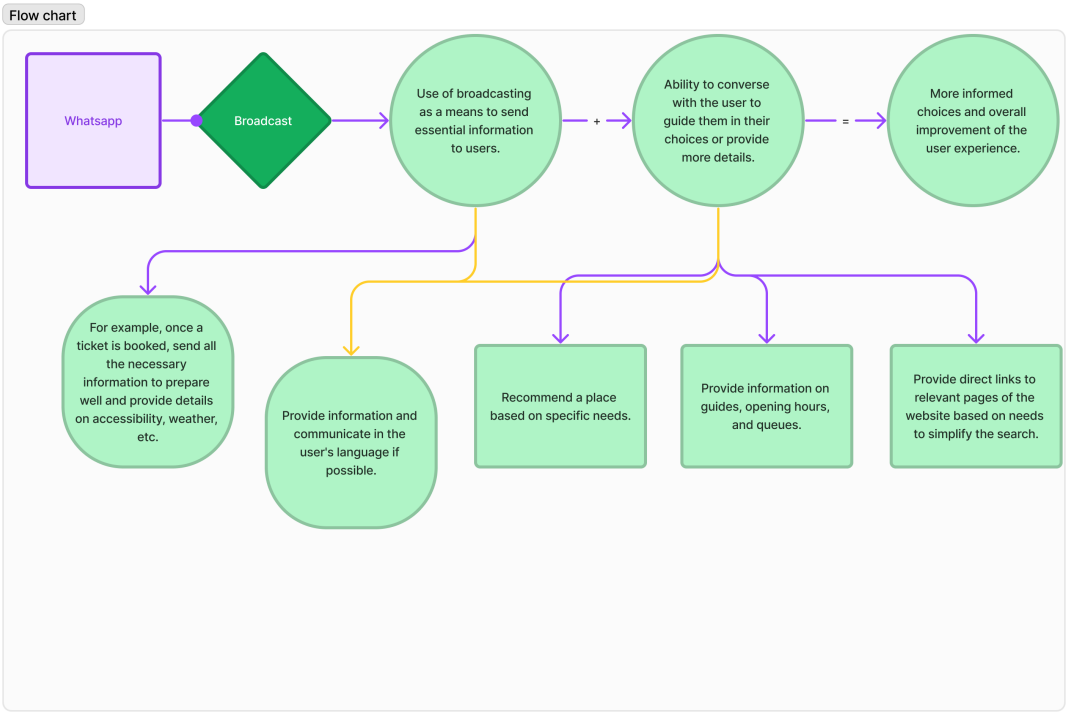

Figure 22: Flow Chart: Broadcast

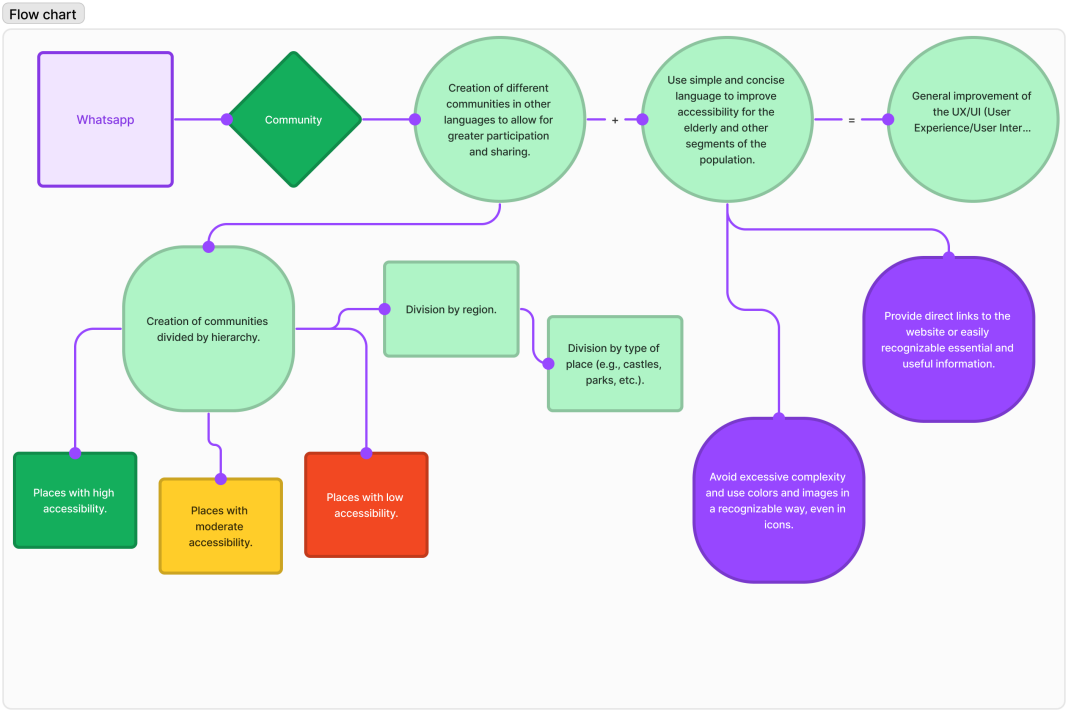

Figure 23: Flow Chart: Community

7. Conclusions

In conclusion, after meticulous evaluation and analysis of diverse solutions aimed at addressing the imperative need for greater information accessibility tailored to elderly tourists, **WhatsApp Broadcast** stands out as the optimal choice. The comprehensive assessment, particularly considering the user-friendliness and broad accessibility inherent to WhatsApp Broadcast, underscores its pivotal role in catering to the specific requirements of this demographic. Its intuitive interface and widespread usage among the elderly community position it as an ideal platform for disseminating comprehensive information, thereby seamlessly aligning with the overarching objective of enhancing accessibility to vital information for elderly tourists. The robust suitability and familiarity associated with WhatsApp Broadcast uniquely address the nuanced needs of this user group, making it the most prudent and effective solution in ensuring a seamless and inclusive experience for elderly tourists seeking enhanced information accessibility.

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