

FINAL REPORT - CALL4NEEDS

1. Introduction

Project name: SheShield

Value proposition: Her Safety, Her Strength!

Team members' names: Gizem Irmak (314140), Benyamin Zarei (308324), Giacomo Perlo (317981), Fabrizio Sanino (317541)

Group name: CALL4NEEDS

2. Problem/solution overview

Problem: Ensuring the safety and well-being of individuals moving alone in public spaces, covering aspects like secure transportation, emotional comfort, and awareness of potential issues.

Solution: Establish dedicated safety communities that allow users to report safety concerns, share information, and receive support, thereby contributing to awareness and real-time response efforts.

3. Needfinding

- Domain of interest:** The mental health of young women and their sense of safety when they are alone in public places.

Why we have chosen this domain: This topic was selected due to its critical role in helping women overcome fears and abuses, which can significantly impact their overall mental well-being. It aims to empower young women, prevent potential long-term psychological effects, and contribute to creating safer and more inclusive communities.

- Interviews**

- Methodology and Procedure**

- Participants**

- *Immediate Users:* Three young women between 18 and 30.
 - Interviewee 1: 20 Years old student living in Turin born in Turkey
 - Interviewee 2: 22 Years old accountant living in Bra born in Italy
 - Interviewee 3: 30 Years old university employee living in Turin born in Italy

Why were they chosen/Why were they appropriate: In addition to being young women, they share a concern for raising awareness about the mental health and safety of their peers.

How they were recruited: By sending them a message containing the theme and the domain of interest chosen, asking them if they could have been interested in helping us.

- *Lead User:* An anonymous girl who suffered psychological and physical abuse while walking alone at night.

➤ Survey 1: 19 years old born in Italy

Why were they chosen/Why were they appropriate: She eagerly wanted to anonymously take part in the project giving her point of view by answering a written survey. We think that giving voice to those who suffered these kinds of violence on themselves it's really important.

How they were recruited: She heard, from one member of the group, we were conducting an interview and wanted to participate.

- *Domain expert:* 27-year-old psychologist living in Sommariva del Bosco born in Italy.

Why were they chosen/Why were they appropriate: These experts can offer a deep understanding of the psychological impact of feeling unsafe and strategies for coping and healing.

How they were recruited: Giacomo Perlo's sister.

- **Where were the interviews conducted and Team member roles**

- Interview 1: at home. Gizem interviewing, Benyamin taking notes.
- Interview 2: at home. Benyamin interviewing, Gizem taking notes
- Interview 3: at home. Fabrizio interviewing, Giacomo taking notes
- Psychologist's interview: at home. Giacomo interviewing, Fabrizio taking notes.
- Anonymous Lead User: through the submission of a survey ([Google Form](#))

- **Material we used:** Voice Recorder (phone app), Laptop to take notes, Phone to take photos

- **List of questions (Immediate Users):**

- During your solo walks, if you engage in any activities that you find enjoyable or comforting, how do these activities make you feel?

- List 3 things that you do in order to enhance your sense of safety during solo walks.
- Can you describe any solo walk concerns/fears and certainties you or your peers have regarding personal safety or well-being as young women in our community?
- Can you share any specific situations or environments where you feel particularly vulnerable or unsafe as a young woman?
- Tell me some improvements or changes in infrastructure you believe would enhance safety for young women walking alone?
- How do you perceive the role of your community, including friends, family, and neighbors, in ensuring your safety and well-being when walking alone?
- How do you currently navigate situations where you feel unsafe or face potential risks, even if they don't escalate to violence?
- Tell me two specific cultural practices or customs that influence how you navigate public spaces?
- Do you have a preference for walking alone during the daytime or nighttime? Could you share 2 feelings about each?
- Have you ever received advice or tips from friends or acquaintances on how to stay safe?
- Have you ever encountered situations where existing solutions (if you know at least one) or resources were not effective or accessible in addressing safety concerns related to solo walks? If so, could you provide an example?
- Can you think of any educational or awareness programs that could be beneficial for young women to better understand and address issues related to solo walking violence?
- Tell me three places you prefer not to go through in your solo walk at night.
- Tell me about your last solo walk. The path, people who you met, ..
- From 1 to 5, how important is it to you to have lights in the city at night?
- From 1 to 5, how important is it to you to have your phone with you during your solo walks? Can you explain why?

- **List of questions (Lead User - in addition to some Immediate user's one):**

- Have you noticed any coping mechanisms or strategies you developed from your past experiences that help you feel more secure when you need to go out alone?

- Would you be comfortable sharing any specific concerns or needs you have when it comes to feeling safe while walking alone?
- Tell me three sensations that you feel when you are walking alone at night.
- What did you do in the past that you no longer do?
- Can you discuss any support or resources that have been helpful to you in dealing with the aftermath of harassment?

- **List of questions (Domain expert user):**

- Have you worked with individuals, particularly young women, who have experienced feelings of insecurity or unsafe in public spaces?
- How do you approach helping young women who express feelings of insecurity or unsafety in public spaces?
- Are there specific coping mechanisms or strategies that you find particularly effective for young women dealing with these feelings?
- For young women who have experienced trauma or ongoing feelings of unsafety, what therapeutic approaches can support their long-term healing and growth?
- Can you share experiences where psychological intervention made a difference in the life of a woman facing a risky situation while walking alone?
- When dealing with the mental health of women in risk situations, what psychological aspects do you think are often overlooked or underestimated
- How can experiences of feeling unsafe in public spaces potentially lead to or exacerbate anxiety or trauma for young women? What are common psychological responses in these situations?
- How can communities play a role in supporting the mental health and safety of young women walking alone? Are there community-based resources that you recommend?
- Can you describe an intervention or strategy you've found particularly effective in supporting survivors of violence against women? How did it contribute to their well-being?
- From your perspective, how can building a strong sense of community among young women contribute to their overall sense of safety and well-being? Are there any new community-building strategies you suggest?

ii. Results:

- **Pictures:**



- **Key quotes (Lead User):**

- I would certainly try to pass only and exclusively through streets in the city center, or in any case where many people pass through, and that are very well lit, avoiding darker and less frequented.
- In the evening I often feel scared, anxious and agitated. I try to get home as soon as possible, almost running, so I can feel safe as soon as possible.
- When I notice that I am being watched, I call someone I know, a friend, my boyfriend or someone from my family, to keep myself busy and show the other person that someone is in direct contact with me and whatever happens will be heard.
- I received only one simple piece of advice, which is to always try to take the primary streets, in the center of the city, the most illuminated ones and with the most comings and goings.
- It's difficult to talk to people about what happened to me. Also because people often don't have the skills. In hindsight, it would have been much easier to get over that bad moment by talking to a psychologist, even just by text, but I didn't know how to do it.

- **Key quotes (Domain expert):**

- I encourage women to discuss more about their fears and feelings without any kind of shame. I think that it could be useful to have this discussion normalized between both women and men.

- What we can do is find some skills to better navigate public spaces safely, for example starting from the educational approach in the schools for women and men as well.
- Send new messages to the children in order to create a new emotional background which should be taught from the very first years, allowing us to behave in a polite and smart way to each other

- **Key quotes (Immediate user 1):**

- It is important that your close ones check on you, ask you where you are, or give you instructions on keeping the call until you go back to the destination safely.
- If I feel unsafe about a person I try to stay more in the crowds.
- We often tell each other that this road is safer than the other. It is more lit-up and more people are walking in it so we can take that road.
- I think we should also be focusing on educating men as much as we do women so we don't get into situations like that.

- **Key quotes (Immediate user 2):**

- I feel quite unsafe when I find myself on streets crowded with men, especially at night, and particularly so when there are no other women nearby.
- I experience a rapid heartbeat, sweating, and a sense of confusion in my legs. I'm often not fully aware of what's happening, overall it feels like a state of panic.
- However, when I walk at night, I often feel afraid and uneasy, if that accurately conveys the feeling.
- I want to be able to trust people and my community, so I choose not to resort to such measures.
- I believe it would be more beneficial to learn how not to be afraid in specific situations to become more self-aware of yourself and your surroundings. Therefore, I think a psychological approach or psychological courses focused on these aspects would be a valuable program.

- **Key quotes (Immediate user 3):**

- To feel safer I try to stay in crowded places where maybe there are also other girls, where there is light and I always have my phone at hand so that if I feel in danger I can call someone
- An improvement which could be made would be to better illuminate the darkest areas of the city, do more police checks, and have someone close at hand to ask for help.
- I avoid dark places, streets without lighting. While the places I prefer to go are crowded places, for example the city center, or the places next to my house, where there are mainly people I know. In a big city I would never go walking alone, whether day or night, I only do it if strictly necessary.

c. Synthesis

i. List of brainstormed user needs

- **Brainstormed needs**

- ❖ Users need to move from one place to another safely (12 links to answers)
- ❖ Users need a way to feel mentally and emotionally secure while alone in public spaces (9 links to answers)
- ❖ Users need to be able to talk about their past violence (3 links to answers)
- ❖ Users need to be aware of potential problems which could happen while alone in public spaces (6 links to answers)
- ❖ Users need to be checked on them from their close when moving around alone (3 links to answers)

- **Connection between needs and answers**

[Miro link](#)

ii. Deep needs:

- Users need to move from one place to another safely, this need was chosen because all the interviewees reported a feeling of fear and anxiety while moving around alone. In our opinion, this need must be solved as soon as possible since it definitely restricts the sense of freedom of a young woman and I find it shameful.
- Users need a way to feel mentally and emotionally secure while alone in public spaces, this need was chosen because it turns out to be a shared feeling not to feel safe while alone in public spaces for young women. The interviewees reported that they, sometimes,

get into a state of panic due to unsafe/risky situations, and this is definitely dangerous.

- Users need to be aware of potential problems that could happen while alone in public spaces, this need was chosen because the interviewees think that it's important to educate people on both how to act toward women and how to help women when they are in danger.

d. Solutions

i. Five solutions for each deep user needs

• Solutions for deep user need 1

- *Enhanced Public Transportation Services*: Improve the frequency, availability, and accessibility of public transportation options, especially during nighttime hours.
- *Mobile Safety Apps Integration*: Promote the use of mobile safety apps that offer features like real-time tracking and emergency alerts, and encourage their integration with local transportation services.
- *Safe Routes and Infrastructure*: Well-lit and well-maintained pedestrian and cycling paths, ensuring they are safe for use at night.
- *Community Safe Walk Programs*: Establish organized community programs where volunteers or community members accompany individuals on their walks, especially during vulnerable times like nighttime.
- *Enhanced Street Lighting*: Improve street lighting in areas with safety concerns, making it safer for people to move about at night.
- *Safety Beacon Devices*: Develop small wearable safety devices that users can carry or wear discreetly. These devices can be activated in case of emergency, alerting nearby community members, authorities, or designated contacts to the user's location and situation
- *Safe Routes and Infrastructure*: Develop and maintain well-lit, clearly marked, and secure pathways for girls to travel safely.
- *Technology for Safety*: Introduce or enhance technologies like mobile apps, emergency call services, and real-time tracking for safer travel experiences.
- *Public Engagement and Feedback Channels*: Create avenues for the public to provide feedback and report safety concerns, facilitating continuous improvement.

- *Safe Maps*: Girls can find places on a map where it's safe to walk (like the brighter, more crowded ones,...)
- *Continuous monitoring*: Girls can be monitored in real time by a police station
- *Enhanced Public transportation*: Improve public transportation at night

- **Solutions for deep user need 2**

- *Fast call*: A way to immediately call someone (like police, ...)
- *Walking groups*: Girls shouldn't walk alone. They have to found another girl(s) to walk with
- *Enhanced video surveillance*: Improve the video surveillance system of cities
- *Community Support Networks*: Foster communities where individuals can connect, support one another, and collectively contribute to a sense of safety.
- *Mental Health and Well-being Resources*: Provide resources like counseling, therapy, and workshops to address the psychological aspects of feeling safe.
- *Access to Information and Communication*: Offer reliable channels for individuals to receive timely information about their surroundings and communicate with authorities or trusted contacts.
- *Self-Defense Workshops*: Offer self-defense classes to empower individuals with skills and confidence to protect themselves in potentially risky situations.
- *Public Awareness Campaigns*: Launch public campaigns that educate people about personal safety measures, promoting awareness and action to reduce risks.
- *Safe Zone Designation*: Designate certain public areas or zones as "safe or unsafe zones" so that individuals can expect a higher level of security in the unsafe ones through increased policing or surveillance.
- *Accessible Help Points*: Install easily accessible emergency help points or call boxes in public areas to provide immediate assistance if needed.
- *Community Watch Programs*: Establish community watch programs where residents collaborate to monitor and report any suspicious activities.

- *Mental Health First Aid Training*: Offer mental health first aid training to community members, equipping them with the skills to provide initial support to those experiencing mental health crises.

- **Solutions for deep user need 3**

- *Social Media Activism*: Utilize social media platforms to share informative content, personal stories, and resources related to women's safety, encouraging a wider audience to get involved.
- *Online Forums and Discussion Groups*: Create virtual spaces for community members to engage in discussions, share resources, and support one another in advocating for women's safety.
- *Virtual Reality (VR) Experiences*: Create virtual reality experiences that simulate scenarios related to women's safety, providing a unique and immersive educational tool.
- *Social Media*: Encourage individuals to share their experiences and safety tips on social media platforms, leveraging personal stories to raise awareness about safety concerns.
- *Community Safety Workshops*: Organize community workshops and seminars to educate and engage the public in discussions about safety, sharing knowledge and strategies.
- *Safety Hotlines*: Establish dedicated safety hotlines or apps that allow users to report safety concerns, share information, and receive support, thereby contributing to awareness and real-time response efforts.
- *Collaboration with Influencers and Experts*: Partner with influencers, thought leaders, and subject matter experts who can help amplify the message and reach new audiences.
- *Storytelling and Testimonial Campaigns*: Encourage users to share personal stories, testimonials, or experiences related to the issue, providing a powerful and relatable way to raise awareness.
- *Peer-to-Peer Networks*: Foster online communities or forums where users can exchange ideas, resources, and success stories in their efforts to raise awareness.
- *Online chat*: Real time chat with other people who are interested in those arguments
- *Talk's group*: Dedicated channel (online groups, instagram pages) in which people can exchange information and opinions.

How we created them: To address each deep user need, our team adopted a collaborative approach by utilizing a shared Google document. This platform

allowed every team member to contribute and modify content seamlessly. Each team member actively engaged in brainstorming sessions, generating three potential solutions for every identified deep user need.

ii. Top solution

- **Safety Communities:** Establish dedicated safety communities that allow users to report safety concerns, share information, and receive support, thereby contributing to awareness and real-time response efforts. This solution is connected to all the three deep user needs found.
- **Why?:** It aligns with the core objectives of our project addressing the mental health and safety concerns of young women in public spaces. This solution not only provides a direct and accessible means for individuals to report safety concerns and seek support but also contributes to raising awareness about these issues within the community. By establishing dedicated safety hotlines or apps, we aim to create a vital lifeline that empowers young women to share their experiences, access real-time assistance, and contribute to a broader awareness campaign, ultimately fostering a safer and more supportive environment for all.

We decided to use this solution after a voting procedure.

4. Task and Storyboard

a. Tasks:

- **Simple Task:** Identify the most recommended streets while moving alone from one place to another.
Why: It addresses the need for safe travel by providing information on secure routes enhancing both physical safety and a sense of freedom
Importance: It empowers women to make informed decisions during solo travel positively impacting mental well-being
- **Moderate Task:** Report safety concerns in public places.
Why: it corresponds to the need for emotional security by allowing women to share experiences, promoting collective awareness and contributing to community safety.

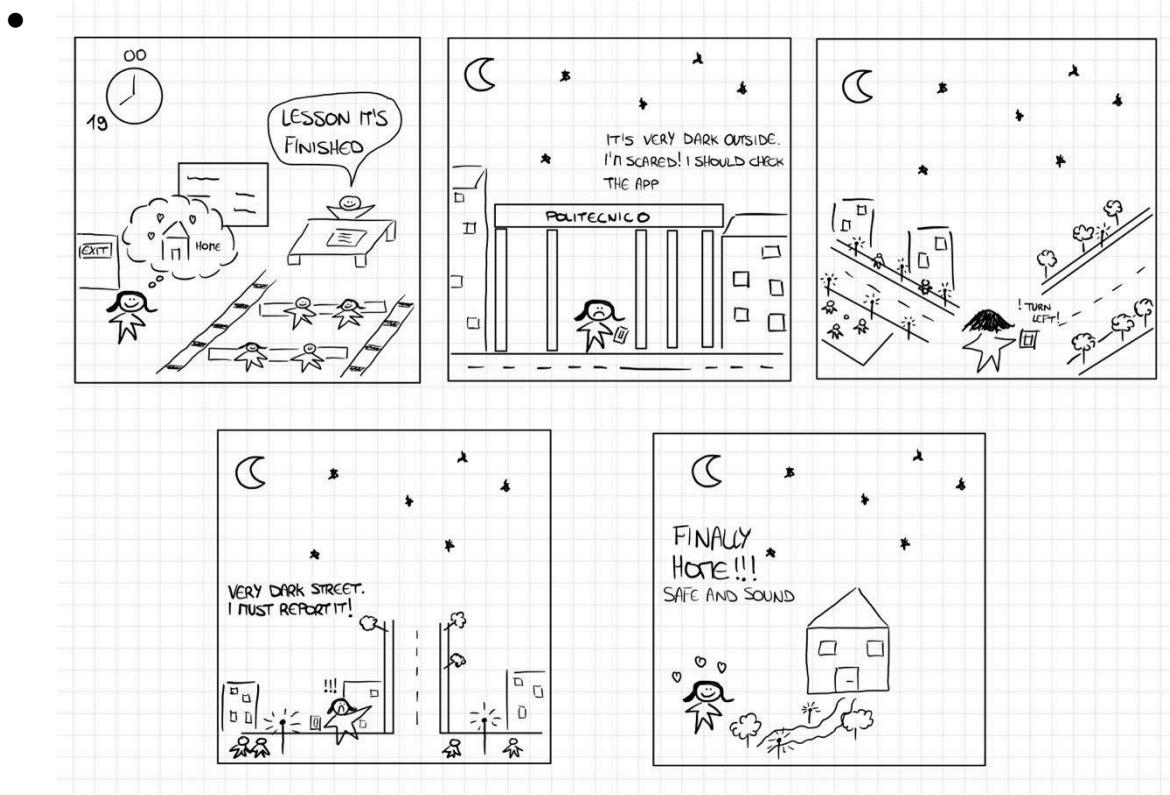
Importance: It encourages a culture of shared responsibility addressing the reported feelings of panic and insecurity.

- **Complex Task:** Ask for help from a psychologist to overcome bad experiences the user went through.

Why: It directly addresses the need for awareness of potential problems, emphasizing mental well-being

Importance: It acknowledges the emotional toll of unsafe situations providing a supportive space for users to overcome challenges and build resilience

b. Storyboard:



- **Why? Strengths and Weaknesses:** We chose it because it depicts a daily scenario in which the chosen solution could be effective. The main strength is that this is a scenario that young women can easily encounter after school/work. This storyboard covers these needs:
 - Users need to move from one place to another safely
 - Users need a way to feel mentally and emotionally secure while alone in public spaces

Its weakness is, due to the limited space we were not able to specify that the application shows the directions on the screen.

5. Low-fidelity Prototypes

a. Modalities exploration

- Alternatives

- Mobile application

- **Pros:** Widely accessible, as smartphones are prevalent. Provides a rich, interactive user interface. Can leverage various device features such as GPS and camera.
 - **Cons:** Limited screen real estate, potential compatibility issues across different mobile platforms.

- Desktop application

- **Pros:** Offers a larger display, enabling more complex and detailed interfaces.
 - **Cons:** Less portable than mobile solutions. Requires users to be at their desktops.

- Smartwatch application:

- **Pros:** Provides quick and convenient access to information on the go.
 - **Cons:** Limited screen space may restrict the complexity of interactions. May not be suitable for tasks that require extensive user input.

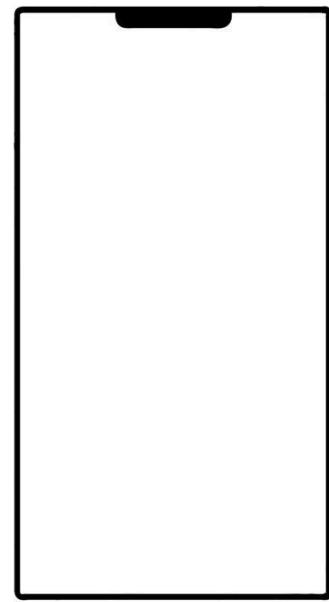
- Selected alternatives

- **Mobile application:** it has been chosen since it covers the most frequent case of usage in which a young woman is alone in public places and the most practical way to use such a solution is her smartphone.
 - **Desktop application:** is selected for its extended accessibility beyond the mobile-centric use case, aligning with our complex task of seeking help from a psychologist by offering a more formal setting for users to address complex emotional and mental health issues, additionally, a desktop version benefits psychologists by providing a platform with enhanced functionality for more immersive and effective user support.

b. Paper prototypes:

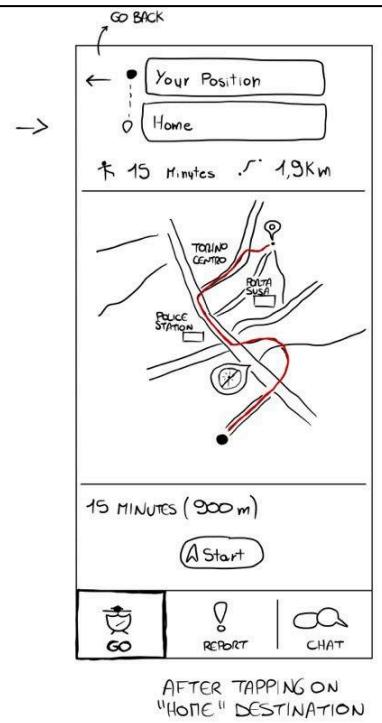
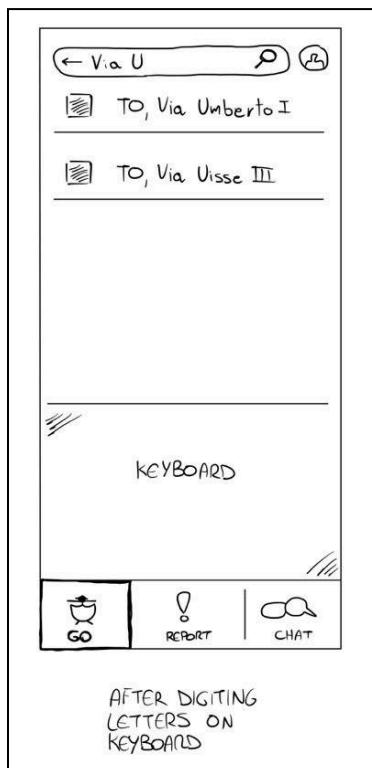
i. Realized prototypes:

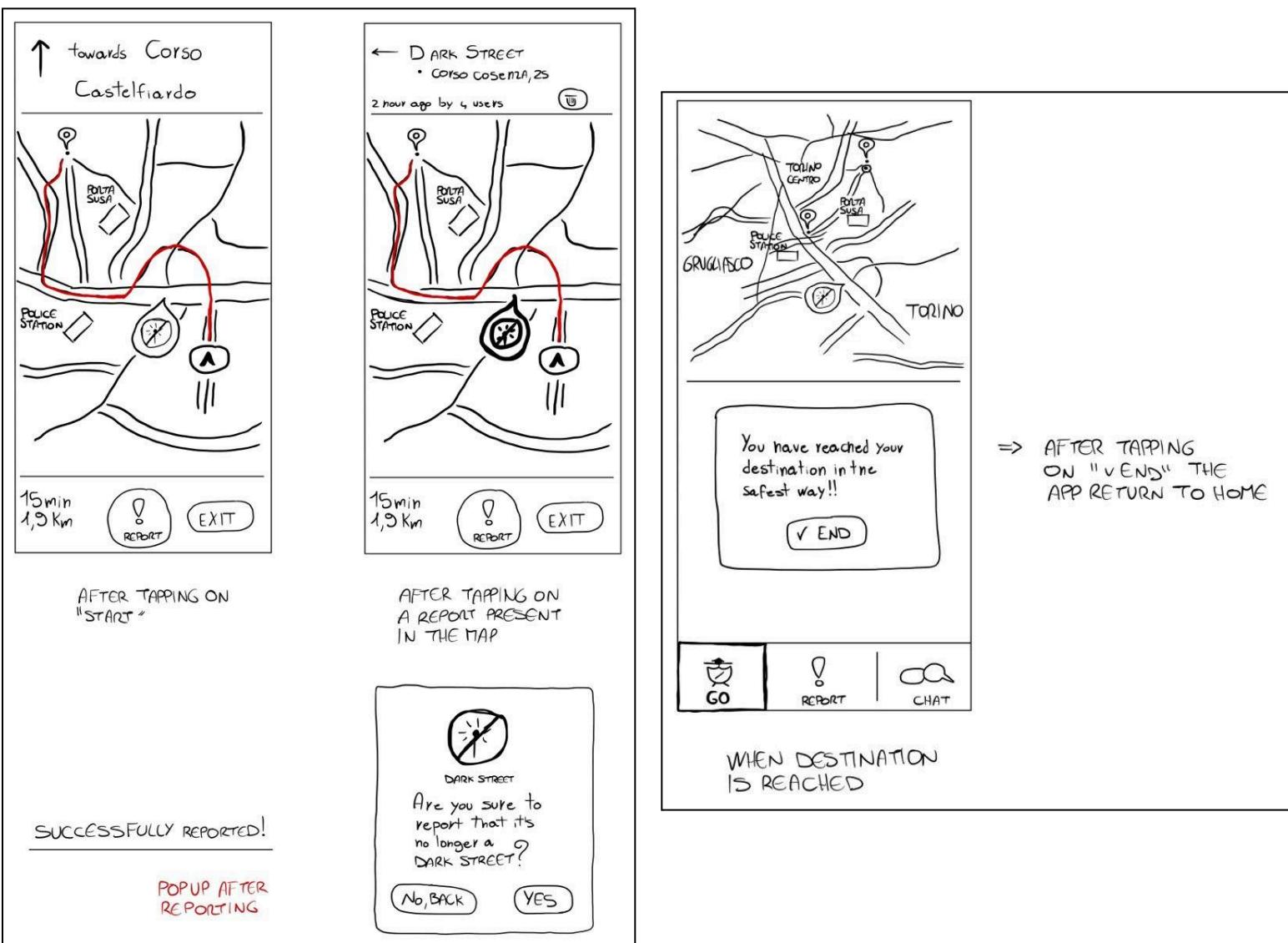
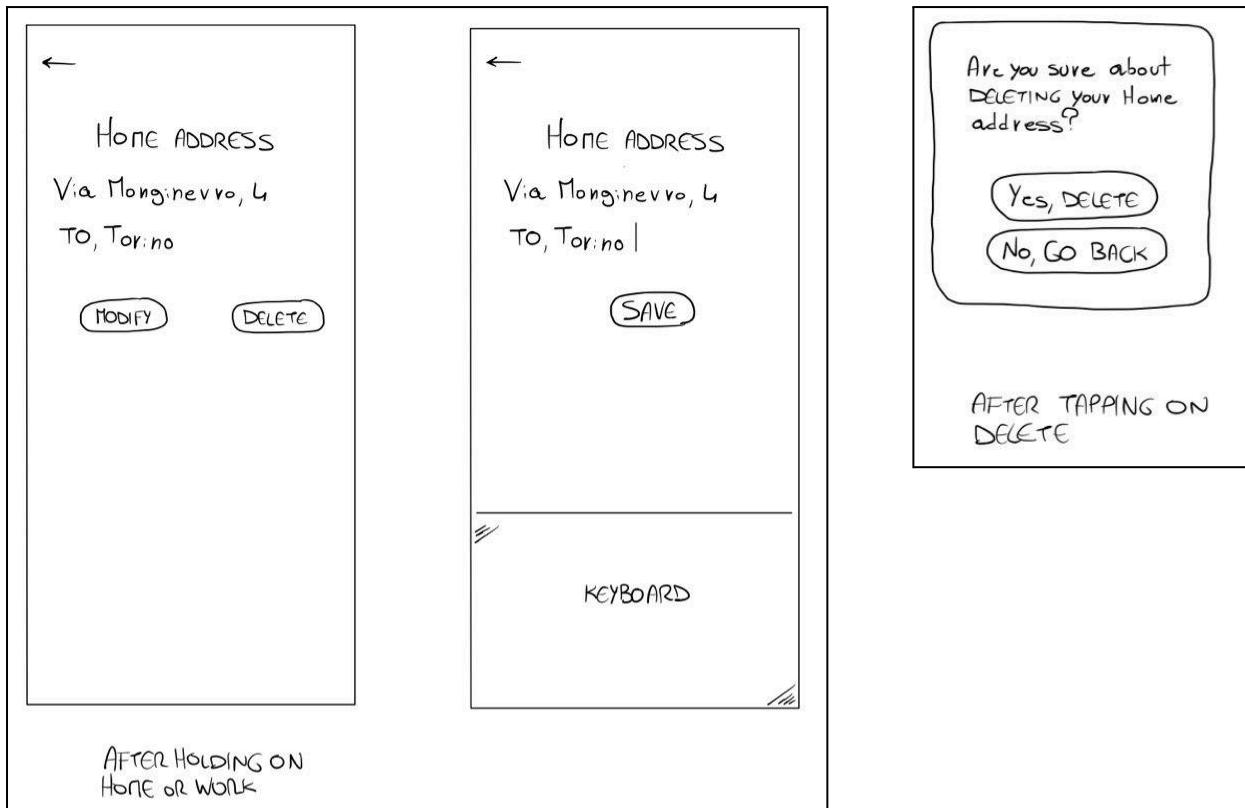
- Mobile application prototype:

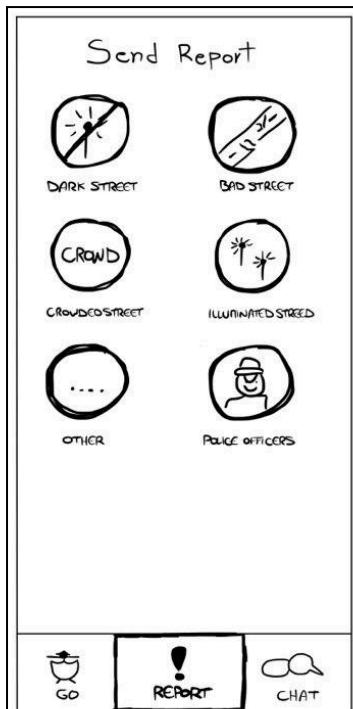


SCROLL DOWN
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- SUPERMARKET CRAI TO, CORSO BRA 5
- UNIVERSITÀ DI TORINO TO, CORSO SVIZZERA, 12
- VIA PIAVE, 55 TO
- CORSO COSENZA, 40 TO
- PUB BUN DABUN TO, CORSO PIACENZA 15



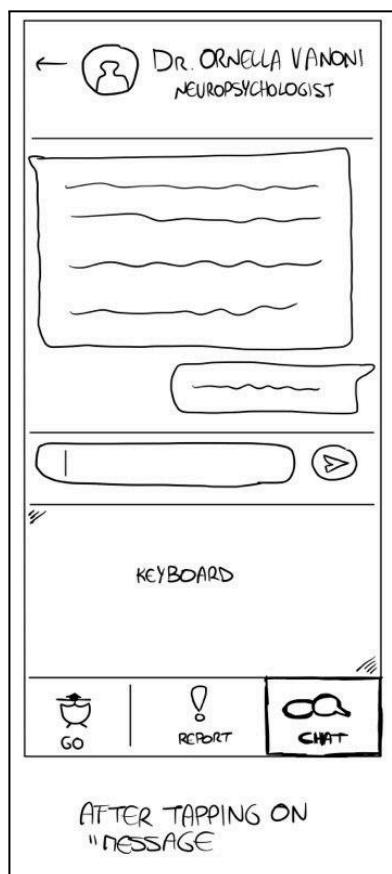
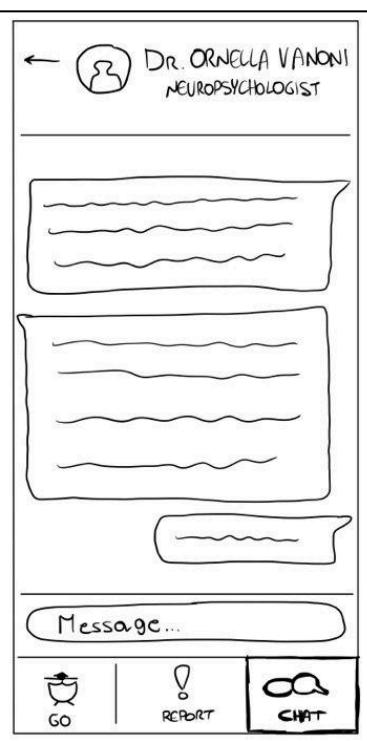
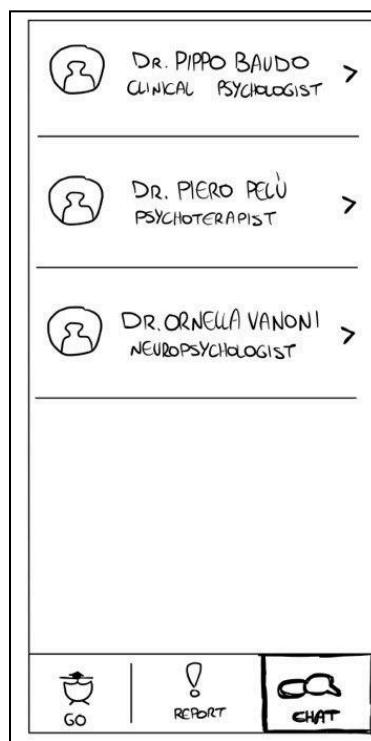


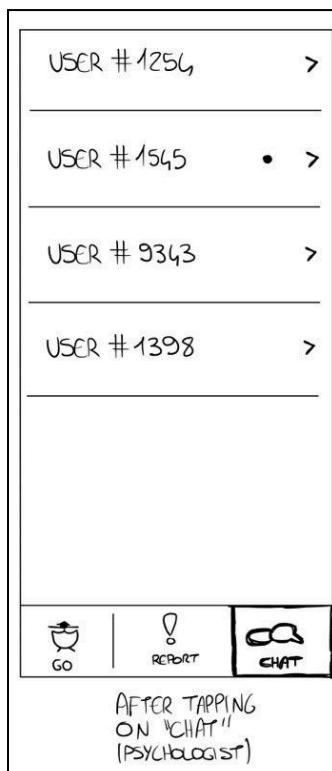


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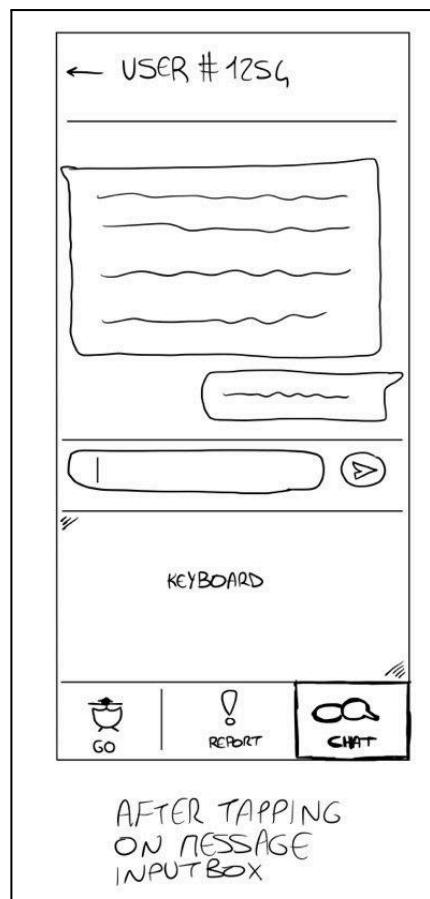
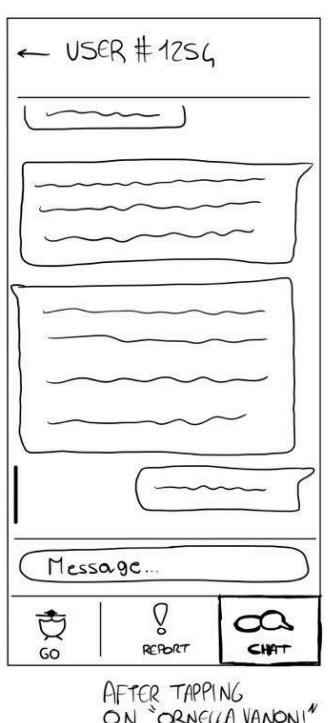


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REPORT

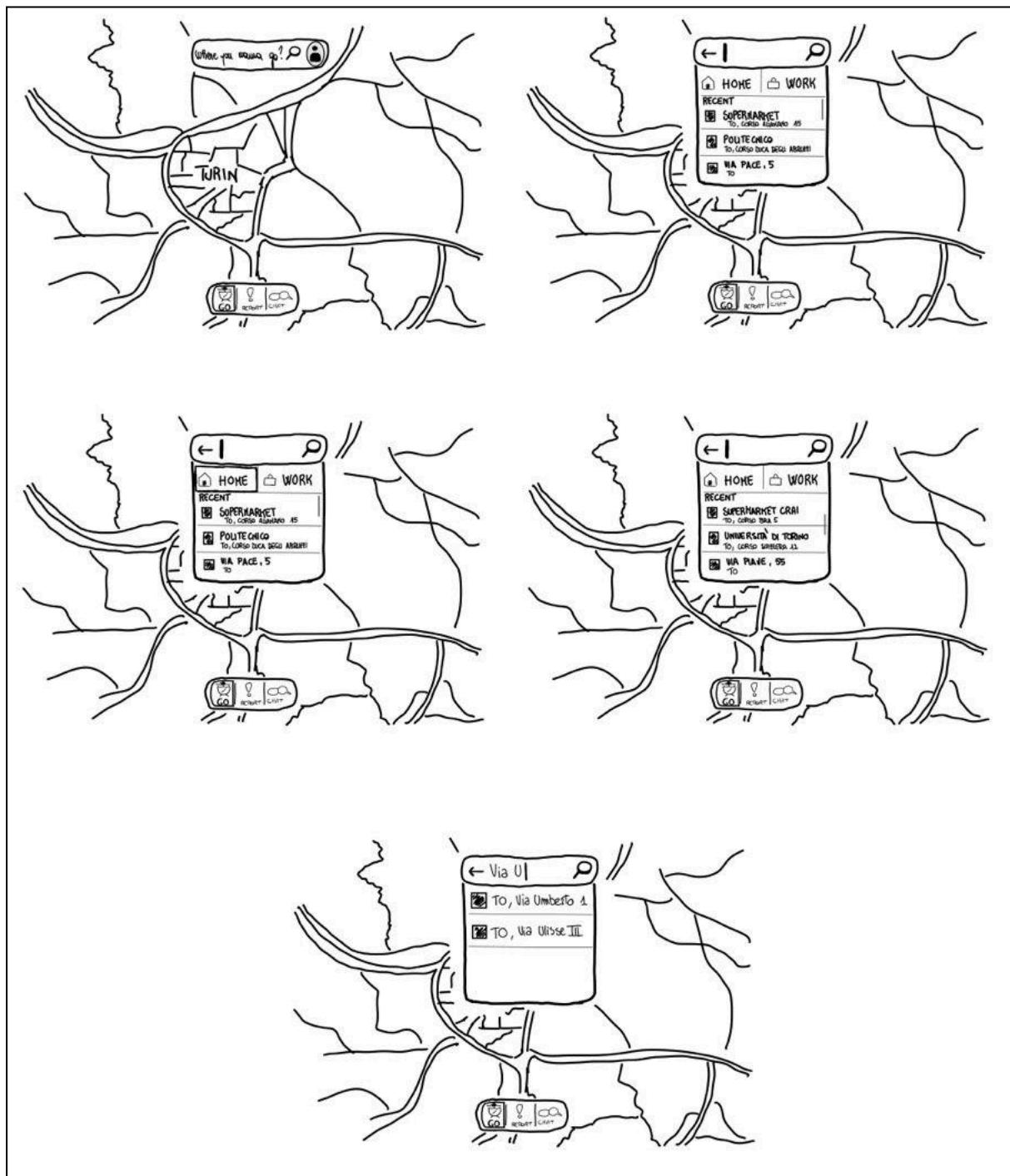


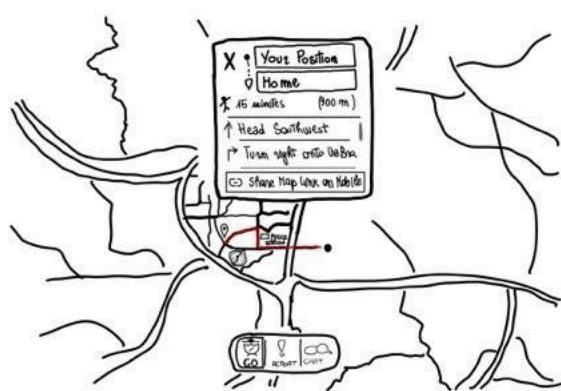
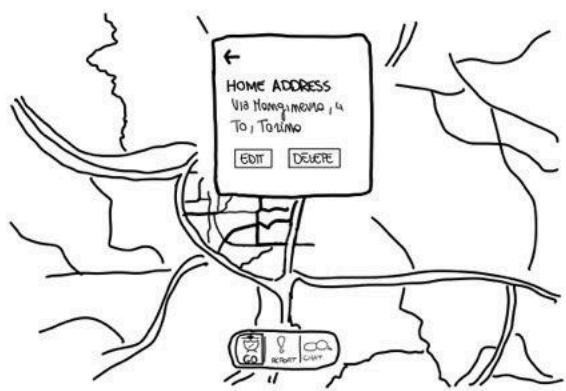
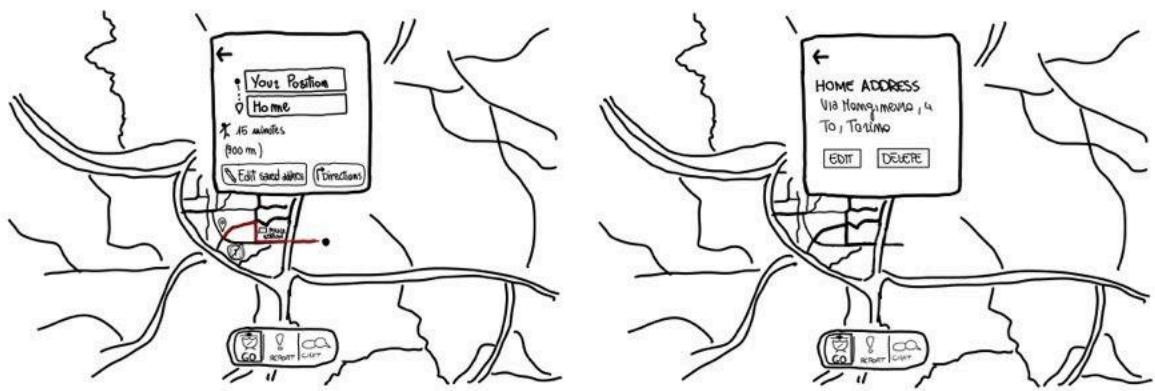


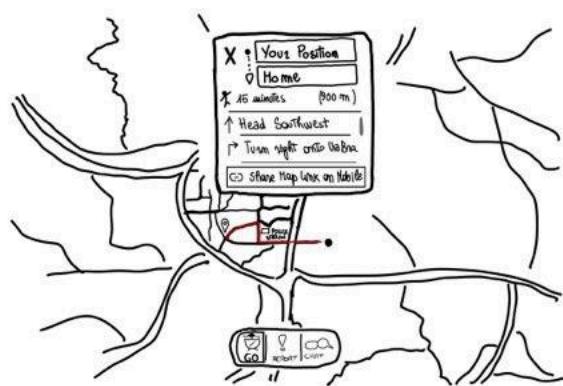
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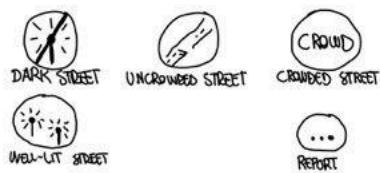
- Desktop application prototype:







SEND REPORT



SEND REPORT



Are you sure you want to report a crowded street in your current location?



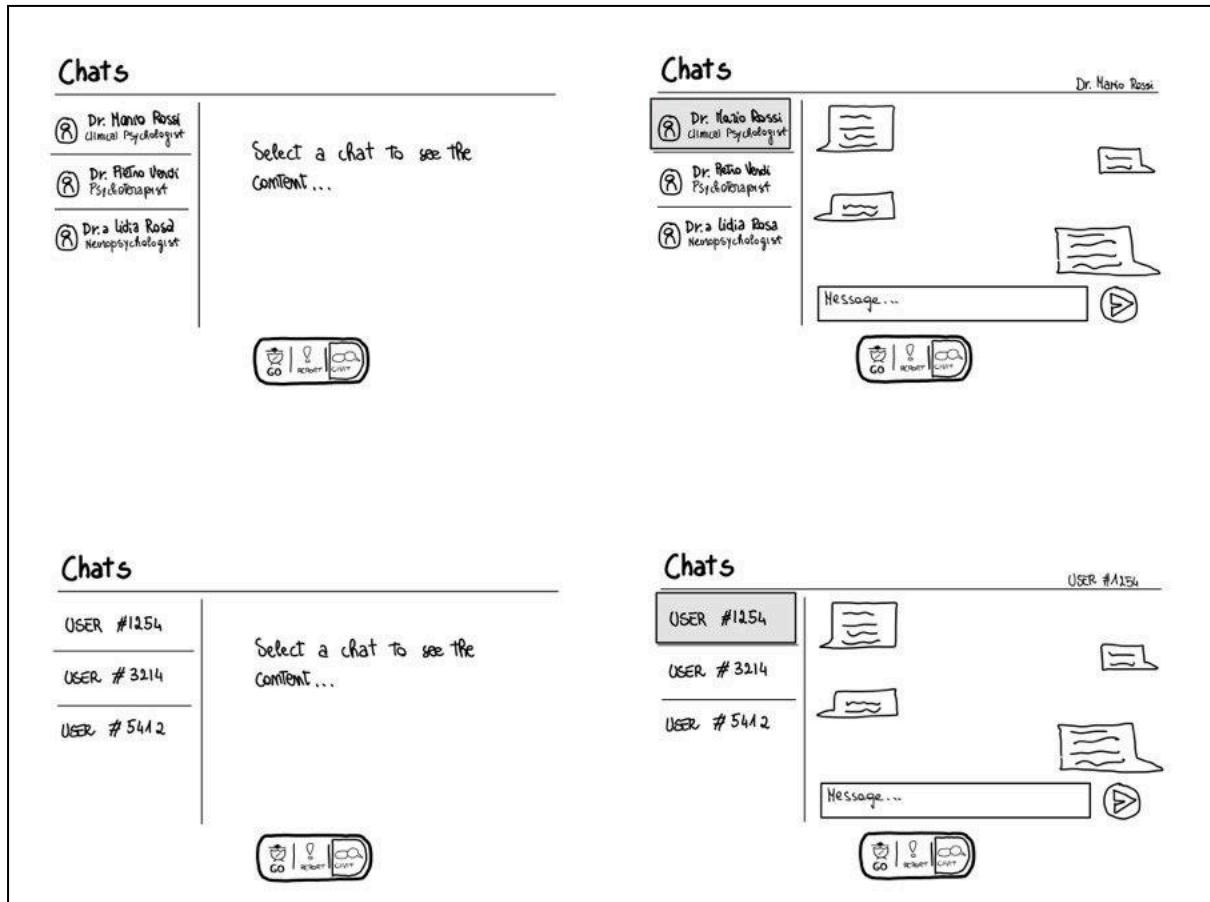
SEND REPORT



OTHER

Are you sure you want to report?





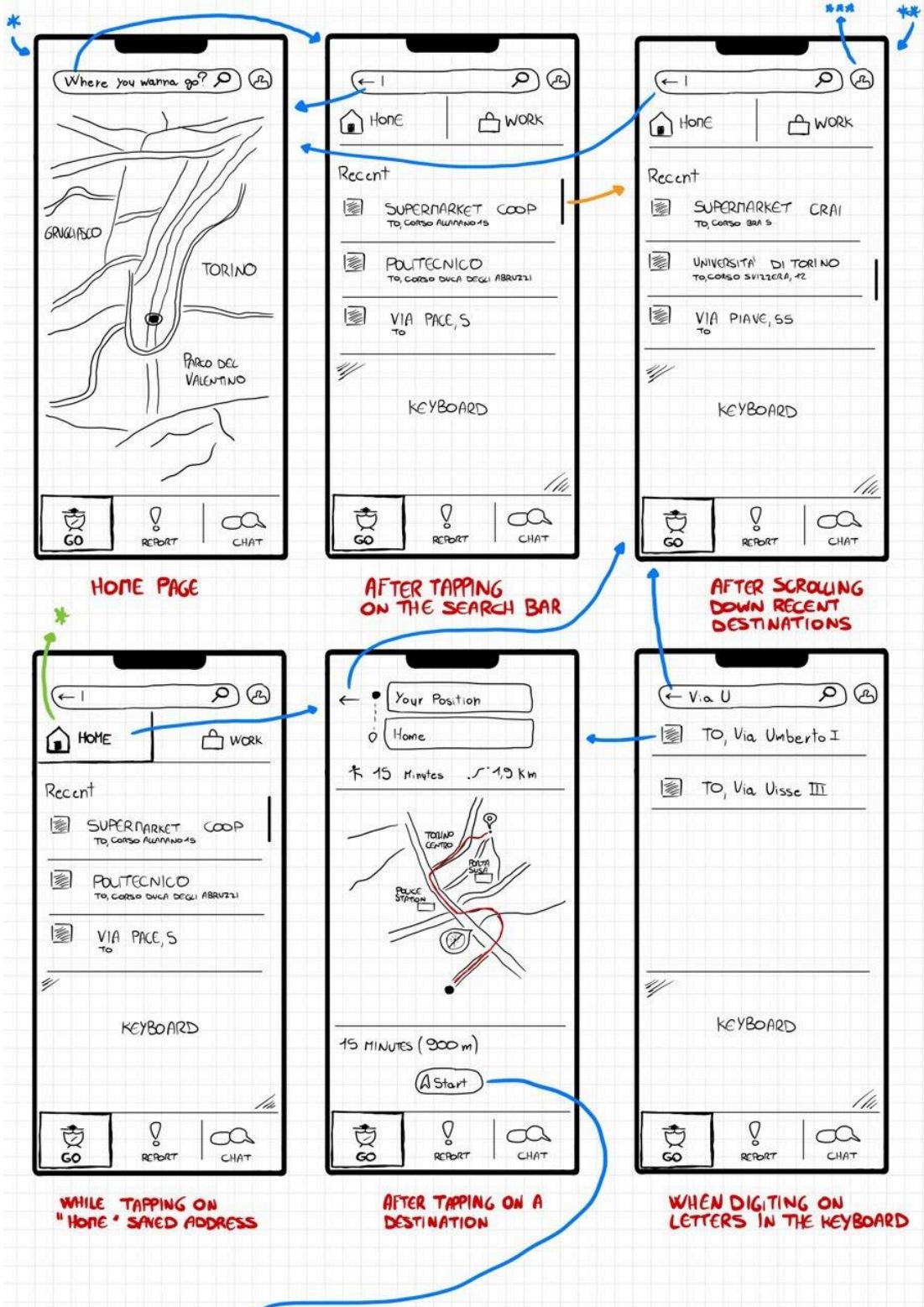
ii. Connection between storyboard and tasks:

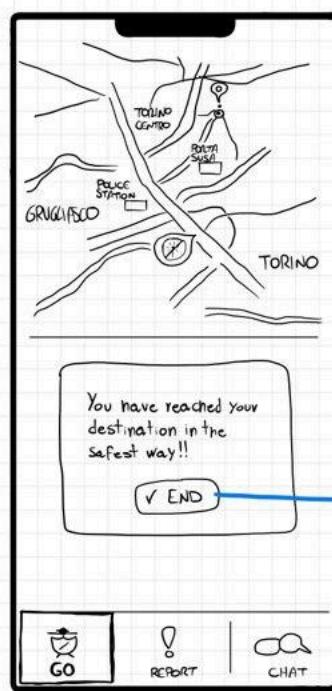
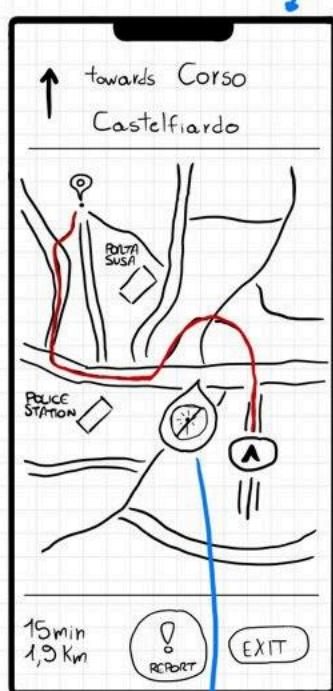
- **Mobile application prototype:** This prototype is connected to the storyboard since it represents exactly what the girl is doing inside the storyboard (i.e. following directions to reach home and reporting safety concerns while she's walking). It is connected with all three tasks since it allows the user to obtain the safest directions toward a desired destination (task 1); it allows to report safety concerns while solo walking (for instance: a poorly lit street) (task 2); and, in the end, it allows the user to keep in touch at any time, using a chat, with a psychologist (task 3).
- **Desktop application prototype:** This prototype connects to the storyboard by addressing the possibility of a scenario in which a user is at home and decides to explore the best alternatives for reaching a certain destination. It is also well connected with the second and third tasks since it allows the user to chat with a psychologist in a safe and relaxed environment (task 3) also to

explore and report the best streets to reach a certain destination and the most critical ones (task 2), from home or generally in a safe place.

iii. High-level flow

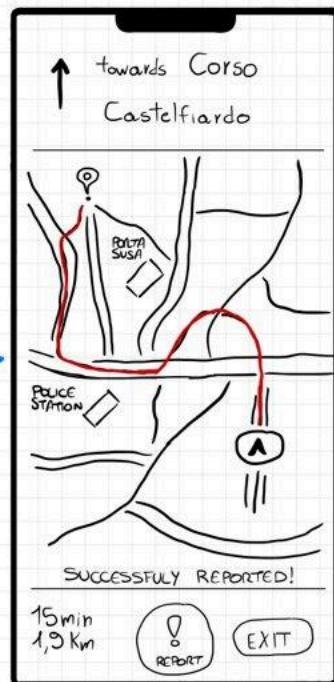
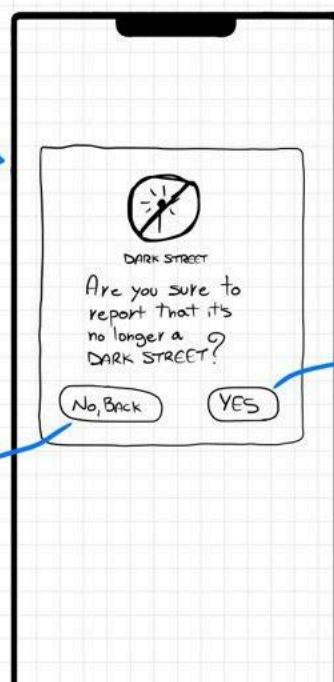
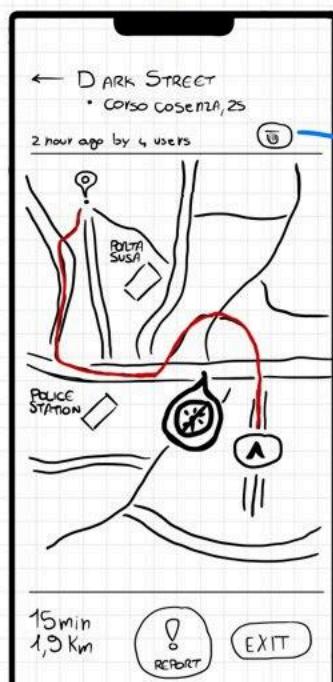
- Mobile application prototype:



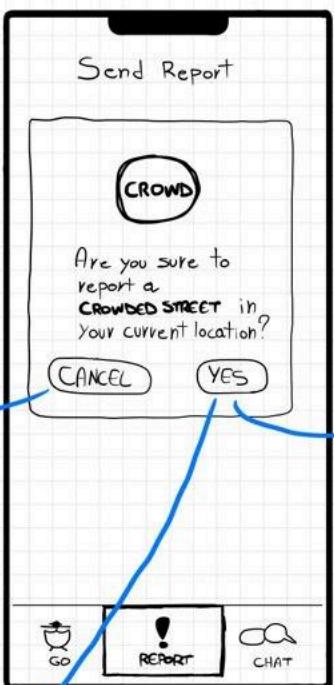
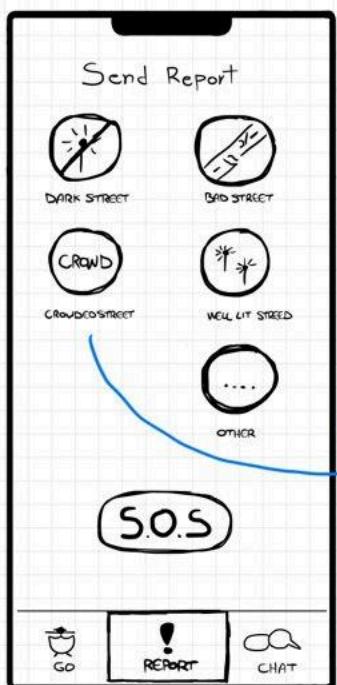


HOME SCREEN

WHEN DESTINATION IS REACHED



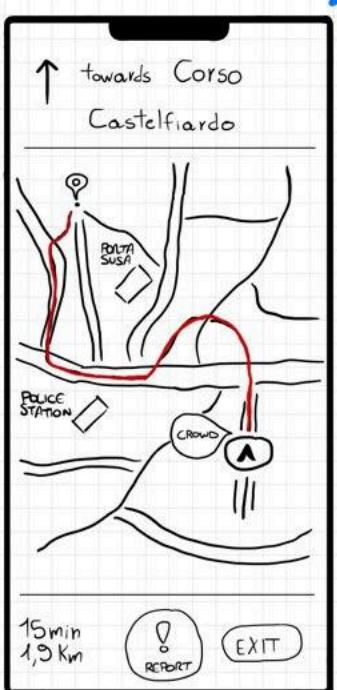
HELPER FOR THE REPORT

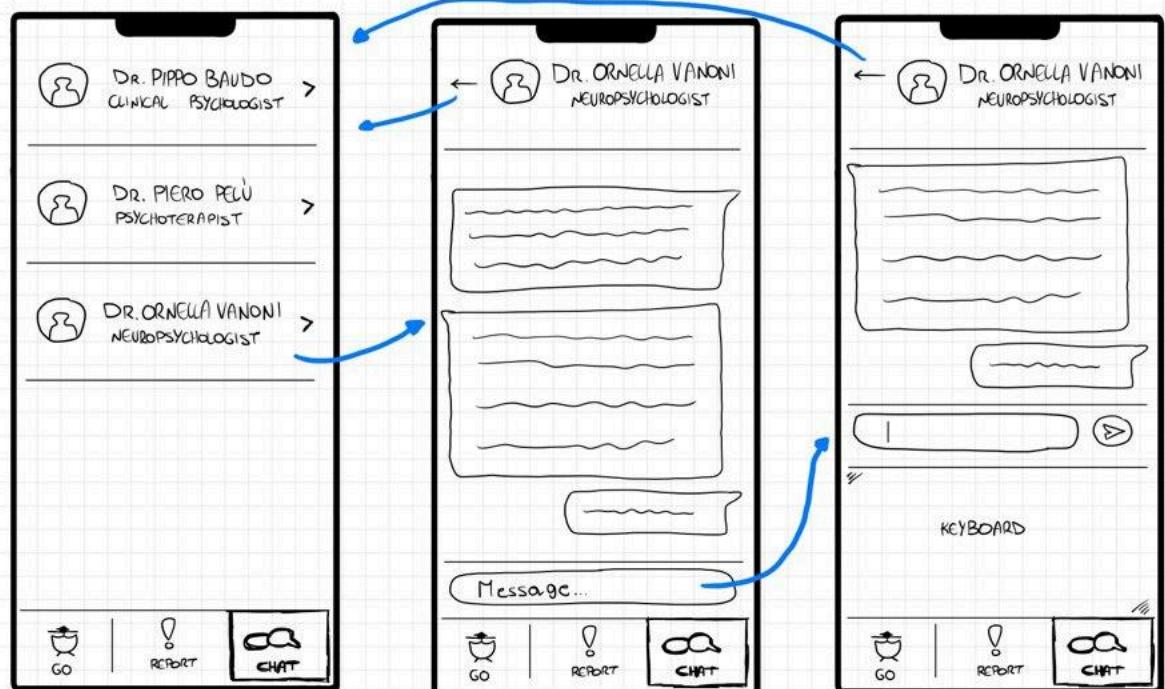


AFTER CLICKING
ON THE REPORT
BUTTON

WHEN NAVIGATION
IS RUNNING

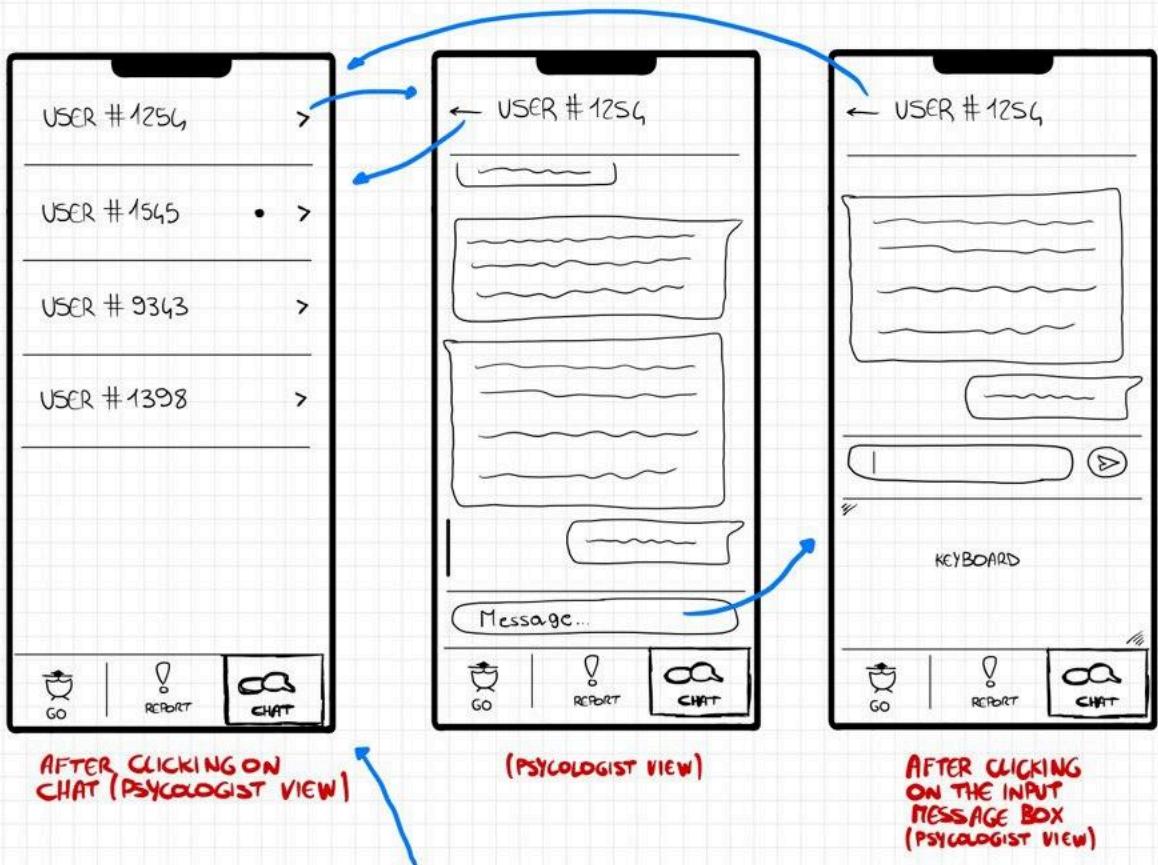
WHEN NO NAVIGATION IS
RUNNING





AFTER CLICKING
ON CHAT BUTTON

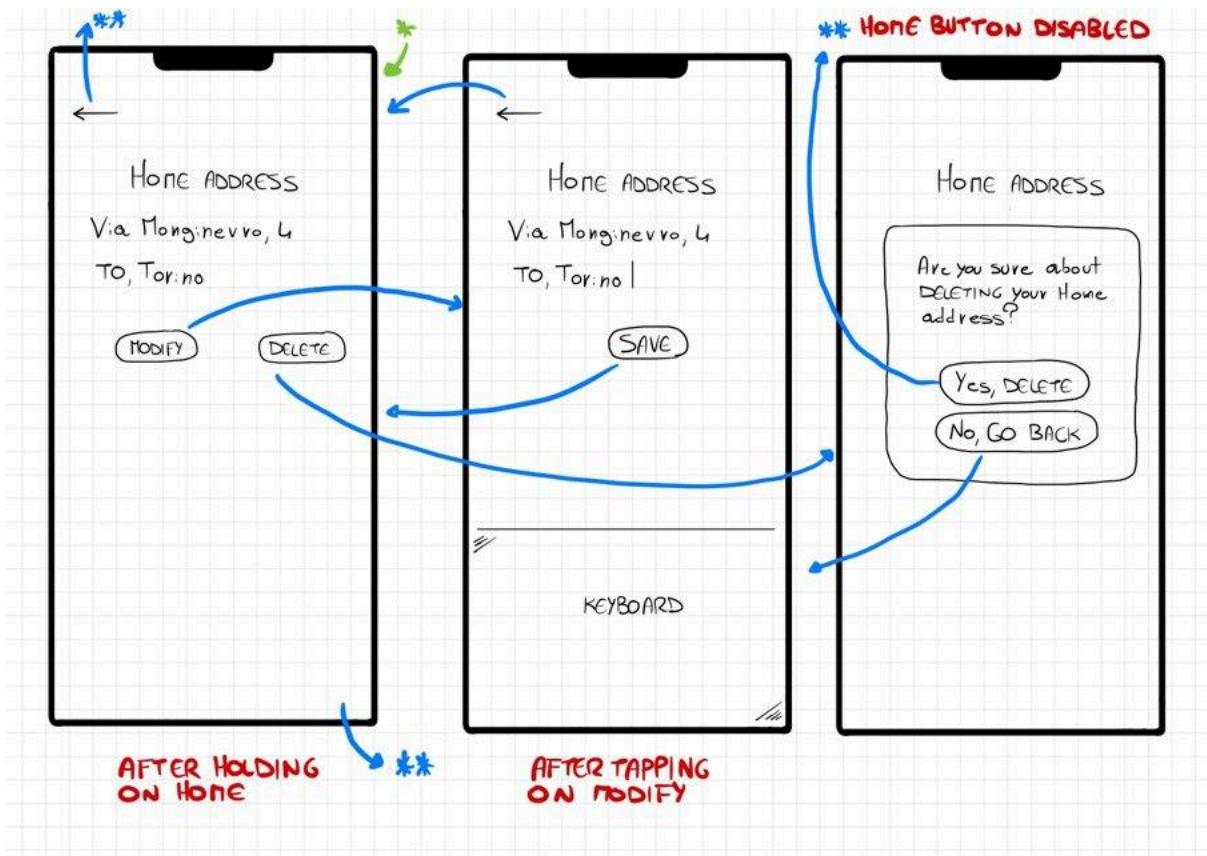
AFTER CLICKING
ON THE INPUT
MESSAGE BOX



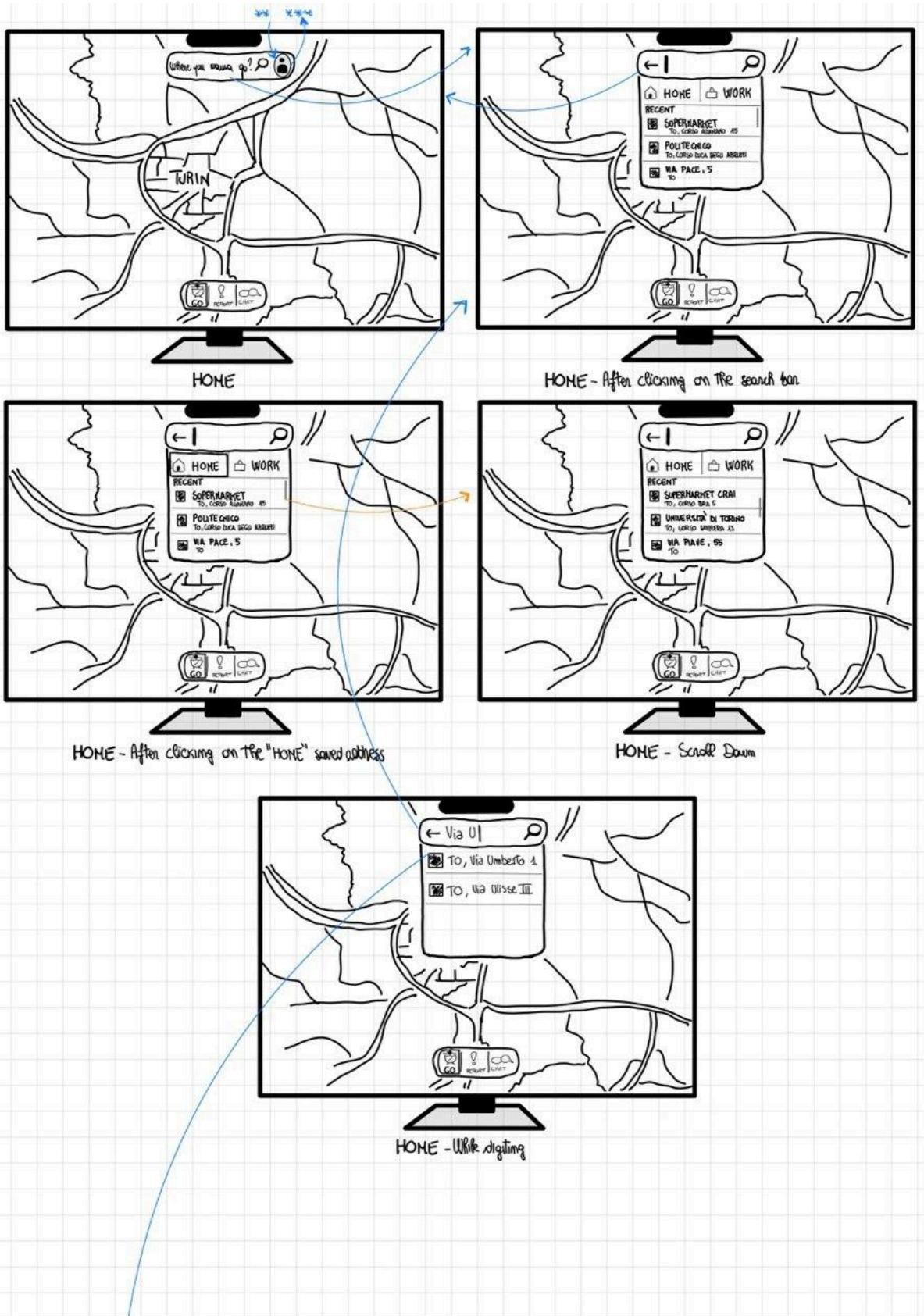
AFTER CLICKING ON
CHAT (PSYCHOLOGIST VIEW)

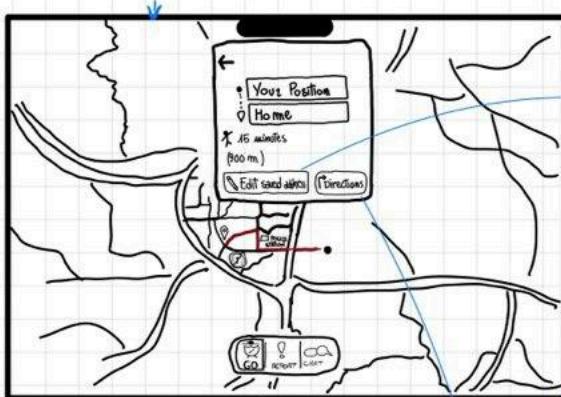
(PSYCHOLOGIST VIEW)

AFTER CLICKING
ON THE INPUT
MESSAGE BOX
(PSYCHOLOGIST VIEW)

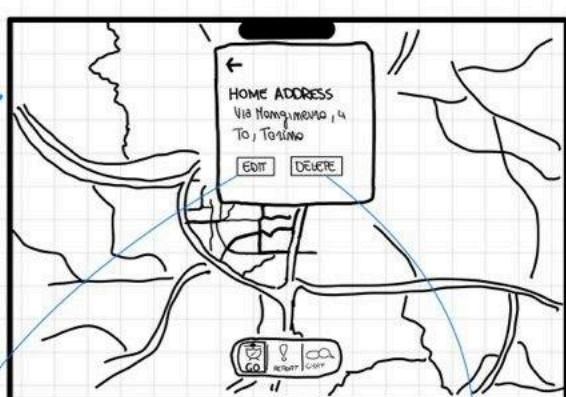


- Desktop application prototype:

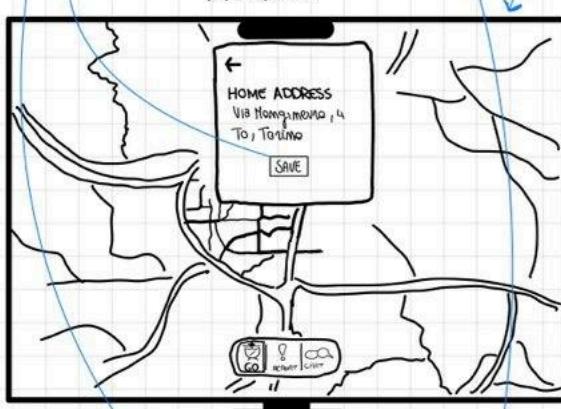




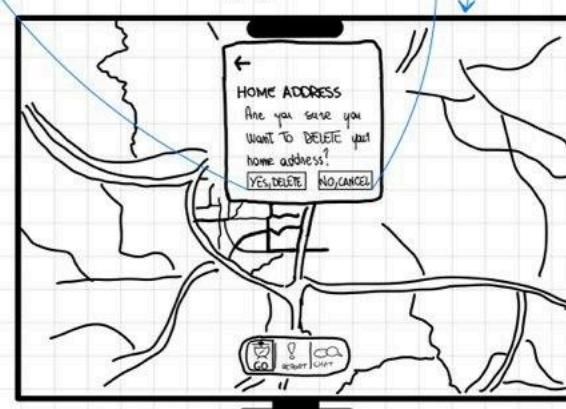
HOME - After clicking on a saved address as destination



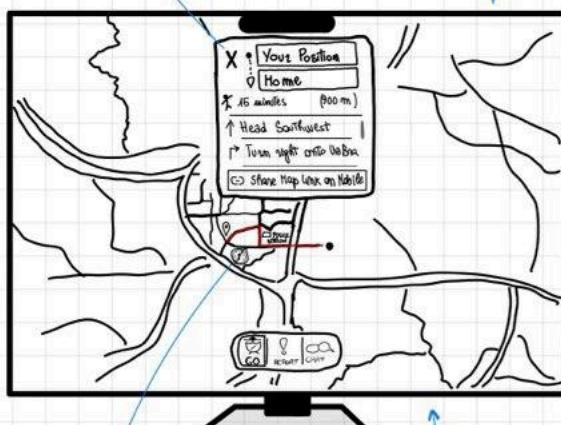
HOME - Editing of a saved address



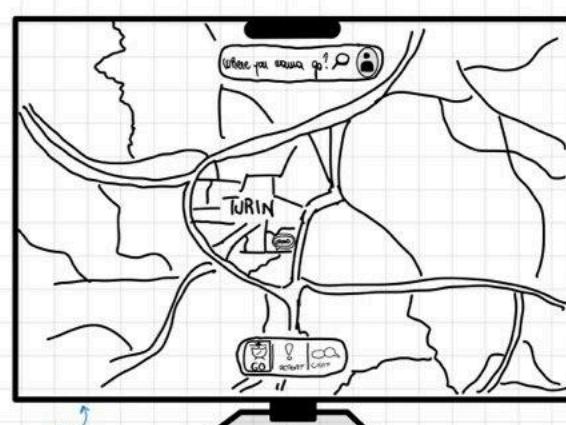
HOME - After clicking on "Modify"



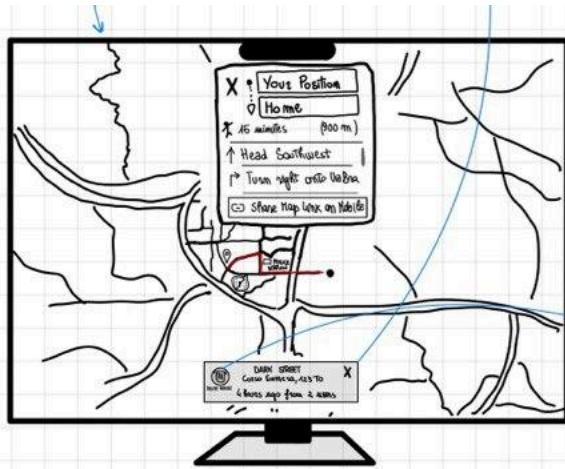
HOME - After clicking on "Delete"



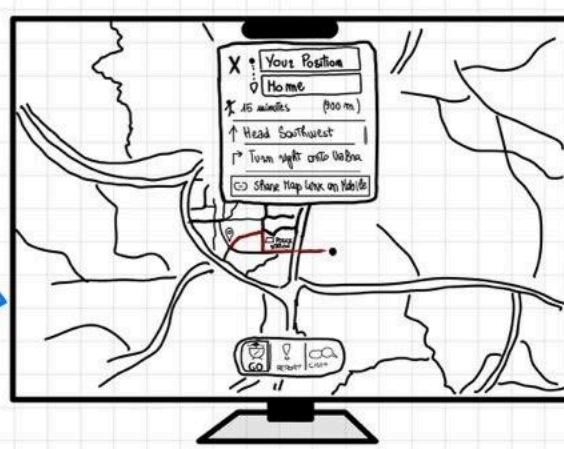
HOME - After clicking on a saved address as destination



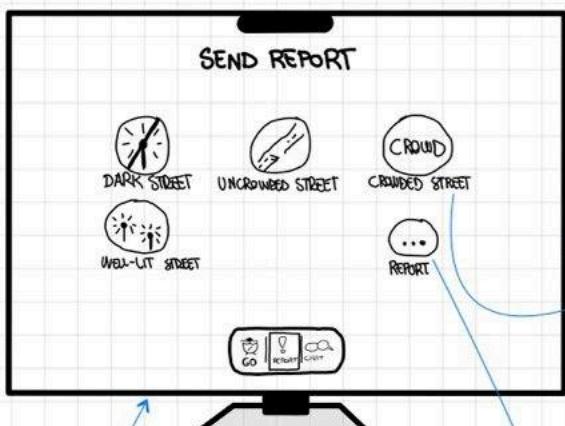
Home page when a report is sent



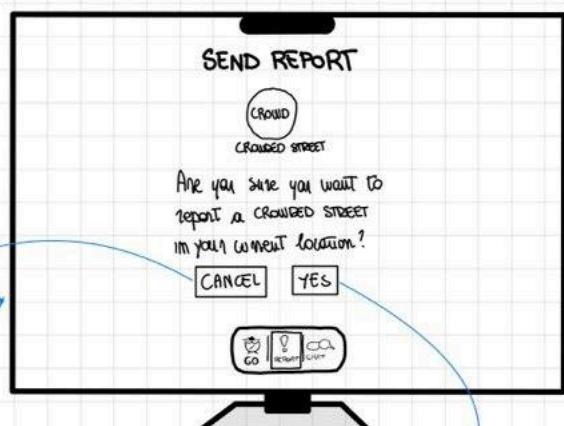
HOME - After clicking on a report on the map



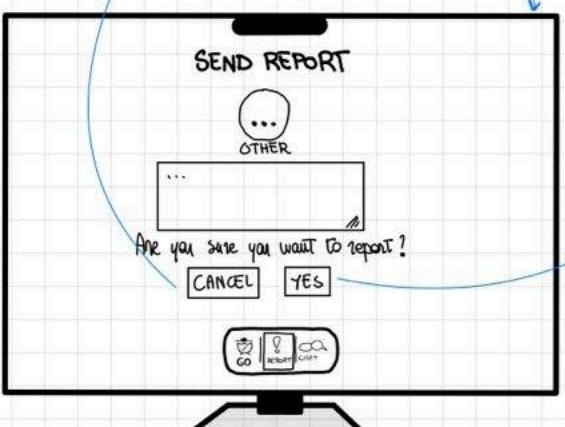
HOME - After deleting a report on the map while navigating



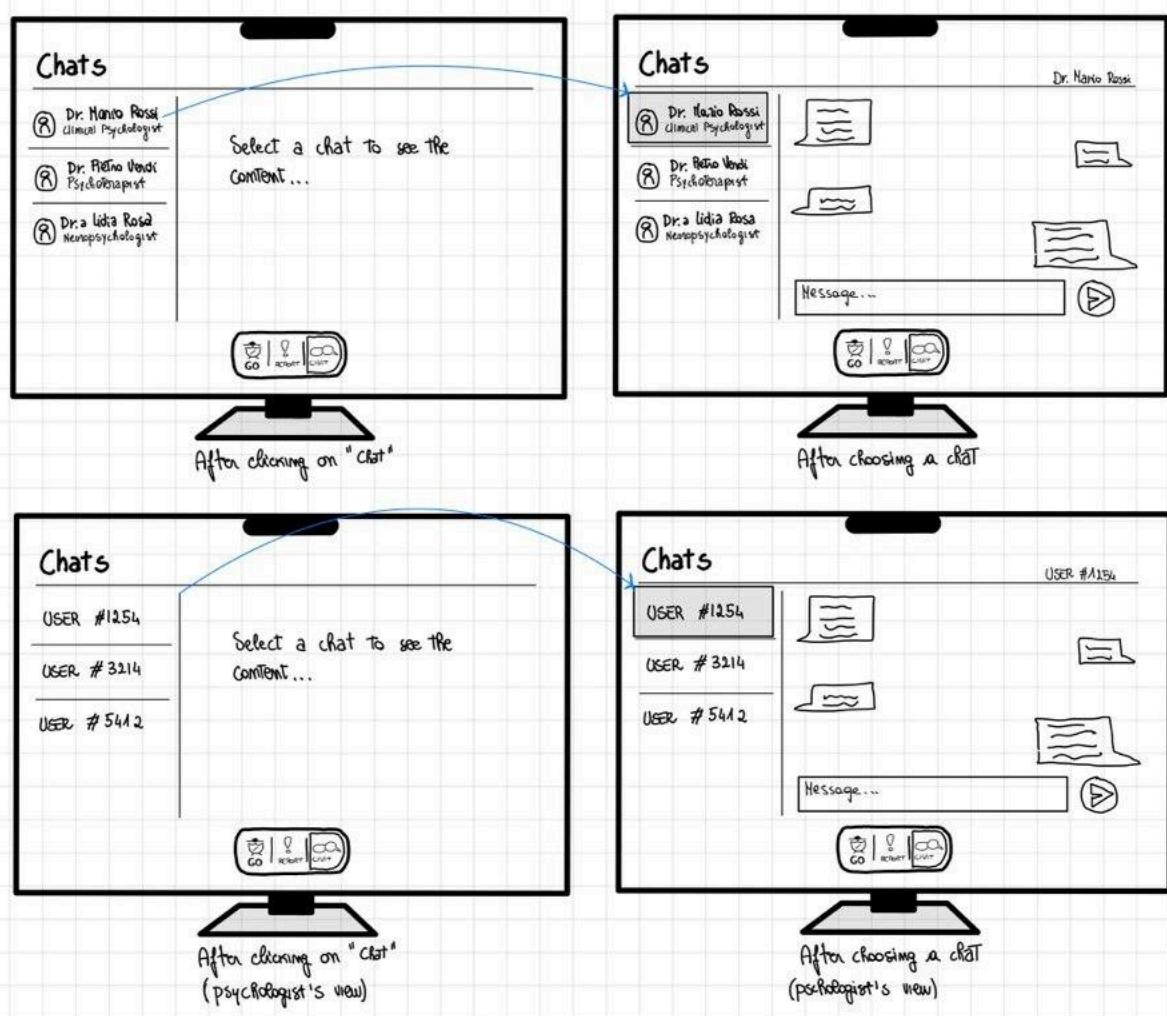
After clicking on "Report"



After clicking on "Annoying Person"



After clicking on "Other"



c. Heuristic Evaluations:

i. Description of the evaluations:

- **Description:** We conducted heuristic evaluations, with two evaluations focused on the mobile prototype and two on the desktop prototype, bringing the total to four evaluations. For the desktop prototype, the most commonly recurring violation pertained to the 'visibility of system status' indicating areas where users may not receive clear feedback on the system's state. In contrast, the mobile prototype saw 'Consistency and standards' as the most frequently noted violation. This implies areas where the mobile interface may lack uniformity or adherence to established design conventions, potentially leading to user confusion. Despite the identified violations, evaluators reported no significant issues in completing tasks. However, concerns were raised about the report mechanism in the mobile version, suggesting potential

challenges or user confusion in that aspect. Similarly, the chat mechanism in the desktop version garnered attention for improvement.

In summary, the heuristic evaluations provided valuable insights into areas needing refinement. The adjustments made based on team discussions reduced the number of violations on the mobile prototype, and the highlighted concerns about report and chat mechanisms will be addressed to enhance the overall user experience.

- **Result of evaluation 1 (Mobile prototype):** “The idea of the project excites me, I think the final model will be well done and especially useful. The low fidelity prototype is well done, I find the simplicity of the interface its strong point. I advise the team to focus first on those violations with a higher severity and then to refine the details. As the team can see, I did not find any violation that can be ranked as a "usability catastrophe" but I find that there is a serious logical problem: by clicking on the trash icon on the warning about a security issue, even if there are several reports about that specific security issue, you can delete the warning. Each user makes his own considerations and has his own conception of "danger". It would be better to collect more "end of danger" reports before removing the signal from the maps. Anyway, the general flow is good. Users can perform all the tasks but I find that the chosen graphic elements (e.g icons) can be misunderstood slowing down the normal development of these. In addition, to facilitate the development of the complex task I propose the team to re-evaluate the interface and usability of the "chat" section. In conclusion, I think the team has done a great job and that in a few days will be able to arrange small details to make the project a successful idea. “
- **Result of evaluation 2 (Mobile prototype):** “Overall, the prototype is well constructed and is also very intuitive because it is based on standard applications that the user is familiar with. However, the mechanism for making a report has minor flaws, such as: a user can delete a report even if they are not in that specific location, but they cannot add it. There may be situations where users want/need to add a report but cannot do so because they are not in that location (e.g., reporting a problem after

noticing it because it was dangerous to report it immediately because they were in a crowded place and feared a robbery). Moreover, the chat mechanism and anonymity both have some flaws. In my opinion, the chat system in such an application is quite useless because it is a real-time application and an immediate user needs a quick response, so a long-term chat with a specialist (e.g., a psychotherapist or a clinical psychologist) does not correspond to the goal of responsiveness of the application, and therefore the chat does not seem to be integrated into the application. In addition, the SOS button should be of greater importance than other report and even than the chat itself, because in a dangerous situation an immediate user needs to contact the police quickly rather than talk to a psychologist. Finally, because users are anonymous, a malicious user can smoothly delete the report made by other users and can, in a certain way, redirect an immediate user to it. This could lead into security problems, which must be avoided in such an application. “

- **Result of evaluation 3 (Desktop prototype):** “The prototype doesn't show serious shortcomings, and tasks can be completed easily and intuitively. I believe the interface has been implemented well. The bottom bar on the page is fast and intuitive, allowing seamless navigation between website sections. However, one drawback is the search bar, which becomes intrusive once actual navigation begins. It would be convenient if it could disappear or be moved, or even enlarged in some way. Moreover, the different types of reports are not sufficient in number, risking an abundance of “other” markers on the map. Regarding the help chat, I would make it more engaging and not let the user freely choose the psychologist or professional figure to consult. Instead, I would create an appealing interface where you leave a message and then you have been contacted by a psychologist who decides to respond. It was difficult to find heuristic violation due to the good design of the project. It's also true that the report and chat section are really simple so it's difficult to find something wrong. Overall, though, I think the idea is good, and tasks can be completed without any issue. “

- **Result of evaluation 4 (Desktop prototype):** “Overall the interface design is good. It is minimal and simple to use, but often you do not have feedback on what happened after completing a certain operation. My advice is to add messages certifying that the operation was successful. It is also recommended to standardize the positions of similar buttons on different pages. There were no particular problems in completing the tasks, just some inconsistencies that make certain functions less clear. I recommend changing the label of the "report" button on the "send report" pages, improving the help message in the chat section to better understand if all psychologists are visible or only those with whom you have already started a chat and adding some help messages for clarify how to work some operations. I didn't really understand the usefulness of chats with psychologists, in my opinion it's not very useful in this type of website, a way to report a problem to the police would be more useful. However, the system is usable, there are no problems that make it unusable.”

ii. Violations list merged

- **Mobile application:**

1. H1 Visibility of system status

Where: Modify the save Home Address – Simple Task

What: The app doesn't display a confirmation message after correctly deleting or modifying an address. If the user does some changes in the address she/he can go back without save the current status.

Why: The user may not know if the address has been correctly modified or deleted. If the user goes back without any feedback of the system status, there is no way to know if the changes are saved or not.

Severity: 3

2. H2 Match between system and the real world

Where: Report/Go tab – Moderate task

What: The icons used for reporting (e.g., dark street)

Why: They are unfamiliar with user experience, the user may not recognize what to click in the report page or understand what the harm is in the Go tab and underestimate the danger along the

way

Severity: 4

3. H4 Consistency and standards

Where: Home address deleting confirmation

What: Throughout the app the confirmation buttons are all aligned horizontally, but here they are aligned vertically.

Why: It is a consistency issue, because the user may expect the layout to be the same throughout the application

Severity: 2

4. H4 Consistency and standard

Where: While deleting a default address – Simple task.

What: Yes and No buttons are in top and down positions.

Why: In the entire application when there are two buttons one to confirm an action and one to not confirm, the choices are placed in "right" or "left" positions. In this case there is an inconsistency.

Severity: 2

5. H4 Consistency and standards

Where: Adding or deleting a report – Moderate Task

What: Button labels are different in deleting a report and adding a report (i.e., "No, Back - Yes" in the first one and "Cancel – Yes" in the second one). The buttons for deleting a report have different labels with respect to the labels in the buttons for adding a report

Why: The user may be confused about their work. Use different labels for buttons that serve the same procedure (confirm an action) turns out to be an inconsistency.

Severity: 2

6. HN Non-heuristic issue

Where: Before starting the navigation – Simple Task

What: The information about trip repeated two times are different from each other

Why: The user may not understand what the correct information is

Severity: 1

7. H4 Consistency and standards

Where: In the lower tab where there are the main icons

What: Selected icons are sometimes filled in black other times just in bold

Why: The user may wonder if there are differences between the same icon, but in two different ways

Severity: 1

8. H4 Consistency and standards

Where: In the tab where there are the main icons

What: Selected icons are highlighted by a square, while throughout the app all the buttons and other figures are rounded

Why: The user expects the layout to be consistent

Severity: 1

9.

- **A) H10 Help and Documentation** **Where:** Home/Work in search field – Simple Task

What: Press and hold the home button to modify the saved location.

Why: Although it should be a shortcut for expert users, there is no “longer way” for an immediate user to modify the address and there is no help for doing so. The user may not be able to change the saved location.

Severity: 3

- **B) H10 help and Documentation**

Where: While searching for the destination – Simple Task.

What: If the user wants to change the address associated to the default destinations there are no instruction.

Why: The procedure is not intuitive and there is not any kind of help.

Severity: 2

10. H1 Visibility of system status

Where: Throughout all the app

What: The position is implicitly assumed to be the current position

Why: The immediate user may be not understanding that the report it is providing is referring to the current location. It may wonder where the report will be added

Severity: 2

11.

- **A) H2 Match between system and the real world**

Where: Report mechanism – Moderate Task

What: The user cannot add a report unless the user is physically in that exact position

Why: There may be situation where users want/need to add some report, but they cannot do so because they are not in that location (e.g., reporting an issue after spotted it because was dangerous to report it instantly because they were in a crowded

space, and feared robbery)

Severity: 4

- **B) H7 Flexibility and Efficiency of use**

Where: Reporting safety concerns – Moderate Task.

What: Both in navigation and in home visualization mode, it is possible to report a safety concern only related to the current position.

Why: In a dangerous situation the user may not want to waste time and she/he should be able to report the problem in a second moment (e.g. when the destination is reached).

- **Severity:** 2

- **C) H2 Match between system and the real world**

Where: Report deleting mechanism – Moderate Task

What: The user can delete the report displayed at a particular location even if it is not physically at that exact location

Why: Because users are anonymous, a malicious user can smoothly delete the report made by other users and can, in a certain way, redirect an immediate user to it

Severity: 4

- **D) H4 Consistency and standards**

Where: Report adding and deleting mechanism – Moderate Task

What: Deleting a report can be done even if the user is not physically at that location, but adding cannot be done in this way

Why: The user expects to be able to perform activities related to the same topic in a consistently

Severity: 3

12.

- **A) H2 Match between system and real world**

Where: While clicking on the trash icon on the warning about a safety concern – Simple Task.

What: the trash icon could be misunderstood.

Why: The user may think that is just a way to remove the warning in her/his visualization.

Severity: 3

- **B) H8 Aesthetic and minimalist design**

Where: In the report tab when you want to delete a report – Moderate Task

What: The trash bin icon is accurate, but the position and the size do not make it easy to see that is related to the report.

Severity: 1

13. H1 Visibility of system status

Where: In Go tab – Moderate Task

What: After a report is deleted, the text “Successfully Reported!” will appear
Why: The sentence “Are you sure to report that it's no longer a DARK STREET” and the subsequent “Successfully reported!” pop-up can be misleading because the user does not immediately understand what is happening. The two sentences do not coincide together and do not provide any further information about the deletion and so the user may does not understand what is changed.

Severity: 2

14. H4 Consistency and standards

Where: In Go tab during a navigation, after deleting a report

What: The path should update after a deletion of a report

Why: The path must be responsive to the report update by the community and it must change according to it to reach the place in a safe and quick way.

Severity: 3

15. H6 Recognition rather than recall

Where: In the specialist chat – Complex Task

What: Because the app is anonymous, specialists do not know who the users they are talking to are

Why: Specialists may mistakenly confuse users if they have many or it may be difficult to quickly remember the context.

Severity: 2

16. H1 Visibility of system status

Where: In the Go tab – Simple Task

What: The users don't know if there are any saved address

Why: The users may forget if they had a saved address

Severity: 2

17. H7 Flexibility and Efficiency of use

Where: Searching for the destination to reach – Simple Task.

What: The interface presents only two default destinations.

Why: Despite “home” and “work” could be the most popular destinations in everyday life, the user should have the possibility to change its frequent destination, or he/she should have the possibility to add a new personal common destination. The interface should support personalization.

Severity: 1

18. H4 Consistency and standards

Where: In the navigation section – Simple Task

What: There is no way to see the full direction, only the current one

Why: The user may want to know the full directions of his trip to plan or know what the roads are called.

Severity: 2

19. H8 Aesthetic and minimalist design

Where: In the modification home/work address page – Simple Task

What: The form in which the user writes the new address

Why: It is basic without any recognizable layout to help the user to understand what kind of page it is. The user may not immediately recognize the page.

Severity: 1

20.

- **A) H10 Help and Documentation**

Where: While modifying a default address – Moderate Task.

What: You can write whatever you want.

Why: There is no way to know which is the address format that is valid for the system.

Severity: 3

- **B) H5 Error prevention**

Where: While modifying a default address – Simple Task.

What: You can write whatever you want.

Why: If the interface allows users to use a simple textbox instead of a fixed fields form, he/she will be able to skip important information and run into errors.

Severity: 3

- **C) H6 Recognition rather than recall**

Where: In the modification home/work address page – Simple Task

What: There is no help of the last address or the auto-complete address

Why: Writing the full address may lead to mistakes or may be difficult to quickly remember the correct name

Severity: 2

- **D) H5 Error prevention**

Where: In the modification home/work address page – Simple Task

What: There is no auto-completion for filling in the address
Why: The user may not remember the exact name the address or the correct order for the street information (e.g., street number before or after the street name, capital letter not recognize, etc.)

Severity: 2

21. H3 User control and freedom

Where: In the modification home/work address page – Simple Task

What: There is no button to undo the manual change of address (e.g., the user deletes the house number and writes a new one, but then realizes it was correct)

Why: The user may want to restore the last address entered

Severity: 2

22. H3 User control and freedom

Where: Navigation tab – Simple Task

What: There is no confirmation page after tapping the exit button during navigation

Why: The user may mistakenly tap on that button and terminate the navigation without be able to undo the action

Severity: 2

23. H7 Flexibility and efficiency of use

Where: The report page – Moderate Task

What: The S.O.S. button is difficult to reach if the user is in a dangerous situation

Why: The user must tap the report icon and then tap S.O.S., which may take a long time or be difficult to reproduce in a dangerous situation.

Severity: 4

24. H5 Error prevention

Where: Search bar to input the destination – Simple Task.

What: The user can click on the search button-icon by writing whatever he/she wants in the search bar.

Why: The search could be disabled while typing the destination.

Severity: 2

25. H9 Help users recognize, diagnose, and recover from errors.

Where: Search bar for input the destination – Simple Task.

What: It is possible to search an unknow destination without any kind of error or warning.

Why: Users may not know/easily understand what the problem is

if the navigation does not start.

Severity: 3

26. H1 Visibility of the system status Where: While modifying a default address – Simple Task.

What: If the user does some changes in the address she/he can go back without save the current status.

Why: If the user goes back without any feedback of the system status, there is no way to know if the changes are saved or not.

Severity: 3

27. H2 Match between system and real world

Where: While choosing the safety concern to report – Moderate Task.

What: It is not clear what “other” means.

Why: The interface should match the user expectations. Is it a general warning report? Is it a functionality to add a custom report?

Severity: 2

28. H10 Help and Documentation

Where: While choosing the psychologist to chat with – Complex Task.

What: The psychologists list itself.

Why: From what the interface shows there is no way to know if the names that appear represent all the available psychologists or those with whom you have already started a conversation.

Severity: 2

29. H4 Consistency and standards

Where: Chat section from the psychologist point of view.

What: The small, coloured dot could be associated to several things: user online, chat still “open” while the others are closed/terminated, new message from that chat.

Why: The user may be confused by the meaning of the symbol. The interface should follow a standard by which chats are implemented in other social/app. For example, a number or counter can be displayed next to the specific chat to indicate how many messages remain unread.

Severity: 2

30. H2 Match between system and the real world

Where: While chatting with someone from the psychologist point of view.

What: The scrollbar appears on the left.

Why: Standard conventions include the scroll bar on the right. In any case in the other sections when you need to have a scroll bar, this appears on the right so in the opposite position where it appears in the chat screen with a user.

Severity: 2

31. H4 Consistency and standard

Where: in the “go” visualization while there is not an ongoing navigation

What: It’s not clear what the profile icon on the top right corner refers to

Why: The user may think that he can access a personal account while from what emerged from the evaluation, users are anonymous from the point of view of psychochologues, so they can not have a personal profile. The user should not wonder whether the profile icon brings it back to a section designed for her/him or not.

Severity: 2

- **Desktop application:**

1. H1. Visibility of system status

Where: After the click on the button “Share Map Link on Mobile”, during the simple task.

What: There isn’t a feedback to signal that the map has been shared.

Why: The system doesn’t inform the user that the operation was successful.

Severity: 3

2. H8. Aesthetic and minimalist design.

Where: In the “go” section. Simple task.

What: There is no option to make the dropdown disappear during the display of the pathway.

Why: The user is not free to close the dropdown if he wants to see better the map.

Severity: 2

3. H8. Aesthetic and minimalist design.

Where: In the “go” section. Simple task.

What: There is no option to expand the dropdown for directions. It might appear narrow.

Why: The user is not free to expand the dropdown to see better

directions.

Severity: 1

4. H8. Aesthetic and minimalist design.

Where: In the “go” section. Simple task.

What: There is no option to zoom in and out freely on the map.

Why: The user cannot see things in more detail.

Severity: 3

5. HN. Non-heuristic issue.

Where: In the “go” section. Moderate task.

What: Add more categories of reports.

Why: Avoid having too many “Other” markers on the map.

Severity: 2

6. H1. Visibility of system status.

Where: During the task to report an issue. Moderate task.

What: After the report of an issue there isn’t a feedback to signal that the operation was successful.

Why: The system doesn’t inform the user that the operation was successful.

Severity: 3

7. H1. Visibility of system status.

Where: In the “report” section and also in the “go” section. Moderate task.

What: Related to the previous violation, the system should display my new report on the map, perhaps by indicating “new” on the just created icon.

Why: The user does not visually perceive the command they issued, and they do not recognize their newly created report on the map.

Severity: 3

8. H10: Help and documentation

Where: When deleting a report.

What: It’s not clear if the report is deleted only for the single user or for all users of the system.

Why: There isn’t a help message to clarify this doubt.

Severity: 2

9. H1. Visibility of system status

Where: After deleting a report.

What: There isn’t a feedback to signal that the report has been deleted.

Why: The system doesn’t inform the user that the operation was

successful.

Severity: 3

10. HN: Non-heuristic issue

Where: After sending a report if the navigation is started.

What: The system return on the initial page with the navigation not active

Why: The navigation ended for no reason.

Severity: 3

11. H2. Match between system and the real world

Where: During the task to report an issue, on the “send report” page.

What: A button is called report but it is used to report other problems different from those already present.

Why: It's not clear the function of this button, it's not used a real-world convention for the name of this button.

Severity: 3

12. H4. Consistency and standards

Where: During the task to report an issue, on the “send report” page and on the page that appears after clicking the "report" button.

What: On the “send report” page this function is called “Report” then on the next page it is called “Other”.

Why: It is an inconsistent terminology for the same function in the application, which can create confusion.

Severity: 2

13. H4. Consistency and standards

Where: on the “send report” pages and on the “delete address” page.

What: On the “delete address” page, “yes” button is to the left and “cancel” button is to the right meanwhile on the “send report” pages these two buttons are on the contrary.

Why: It is an inconsistent position of the same buttons, which can create confusion.

Severity: 2

14.

- A) H5. Error prevention.

Where: In the “go” section. Not related to a task.

What: It's not clear whether I can delete reports made by other users while I am in navigation mode.

Why: Having the ability to delete reports made by others is quite

risky because a user could maliciously remove them.

Severity: 4

- **B) H10: Help and documentation**

Where: When deleting a report.

What: It is not clear if the user can delete only reports sent by him or reports sent by any user.

Why: There isn't a help message to clarify this doubt.

Severity: 3

15. HN. Non-heuristic issue.

Where: In the “chat” section.

What: The option to choose a neuropsychiatrist or other professional figures instead of a psychologist doesn't make much sense.

Why: Why does a user want to contact a different professional figure? A psychologist is sufficient, user doesn't require a medical prescription for medications, for example, on this platform.

Severity: 3

16. H3. User control and freedom.

Where: In the “go” section.

What: The delete button might seem like it erases the home address from memory; however, it is actually used to go back.

Why: The user is confused by the terminology used and might end up taking an action they didn't intend to.

Severity: 3

17. HN: Non-heuristic issue

Where: After deleting a saved address.

What: The system return on the page of the navigation between your position and the saved address.

Why: If you deleted the saved address it's incongruent continue the navigation to this address.

Severity: 3

18. H1. Help users recognize, diagnose, and recover from errors.

Where: In the “go” section.

What: If a report is delete, there is no confirmation message.

Why: The user does not receive confirmation feedback.

Severity: 2

19.

- **A) H1. Visibility of system status**

Where: After saving a new address.

What: There isn't a feedback to signal that the address has been saved.

Why: The system doesn't inform the user that the operation was successful.

Severity: 3

- **B) H1. Help users recognize, diagnose, and recover from errors.**

Where: in the "go" section. Where I change home address. Not related to a task.

What: If I press on the confirmation button there is no message of success or a visible result.

Why: The user does not receive confirmation feedback.

Severity: 2

20. H5. Error prevention

Where: When saving a new address.

What: There isn't a confirmation page before saving the address.

Why: The user may click the "Save" button by mistake and the operation cannot be undone except by changing the address again.

Severity: 2

21. H1. Visibility of system status

Where: After deleting a saved address.

What: There isn't a feedback to signal that the address has been deleted.

Why: The system doesn't inform the user that the operation was successful.

Severity: 3

22. H7: Flexibility and efficiency of use

Where: In the modify saved address form.

What: There is no autocomplete when writing an address.

Why: Autocompletion may speed up the process.

Severity: 1

23. H4. Consistency and standards.

Where: in the "go" section. The search bar.

What: In the search bar there is a logo of a person, but there is no authentication.

Why: Potentially a misleading, you can press there but this logo does not should be there.

Severity: 1

24. H4. Consistency and standards.

Where: in the “chat” section.

What: The page is already loaded with various professional figures. But what is the layout when there is no conversation in progress?

Why: It's not clear how can I contact a specialist at the very beginning.

Severity: 3

25. H10: Help and documentation

Where: During the complex task.

What: It's not clear if on the left bar there are only the psychologists you started a chat with or all the psychologists you can chat with.

Why: There is a help message but it does not help to clarify this doubt.

Severity: 2

26. H10: Help and documentation

Where: During the complex task and In chat section from psychologist's view.

What: It's not clear if there are new messages.

Why: There isn't an icon or a notification for new messages.

Severity: 2

d. Selection

i. Selected prototype and features moved

- **Selected prototype:** The chosen prototype is the Mobile one.

Why? This prototype has a higher potential rather than the Desktop one, as suggested by the evaluators as well. Indeed, it presents a lower number of violations rated between 3 and 4.

- Desktop prototype: x15 severity 3 and 4 violations

- Mobile prototype: x13 severity 3 and 4 violations (where our group disagrees with 4 violations over the 13 found, lowering the number of violations down to 9)

- **Moved features:** The feature present in the Desktop prototype that allows to insert reports of type "Other", allowing the user to add a description to the "other" type reports will be embedded in the Mobile prototype as well since it allows to expand the number

of reports, without narrowing the users possibilities to the ones already present in the "Report" page

6. Medium to High-Fidelity Prototype

- a. **Tool to create two screens of medium-fidelity prototype/ Why those screens are the most significant ones:** We utilized Figma to create the two screens of the medium-fidelity prototype: the home page and the report page. These screens were deemed the most significant due to their relevance to both simple and moderate tasks. Additionally, each evaluator highlighted concerns about location violations in the reporting mechanism. To address this, we focused on these screens to demonstrate how users can now choose either their current location or any other spot when sending a report. And, after reporting, user will see those reports on the map (home page). It's a way for users to see how they're making an impact on the app.

- b. **Link to Figma:** [figma link](#)

- c. **Plan for the Hi-Fi prototype**

The sentences highlighted in green are the chosen solutions for the violation, instead the sentences in yellow explain why we disagreed with the evaluators. The number before each element represents the violation.

- **Severity 4 Violations**

Number 2. **The most self-explanatory icons will be chosen in the Report page.** As suggested in the theoretical lectures about "Visual Design" the icons are (already) related by their textual description for trying to minimize the users' cognitive load.

Number 23. **To maximize the reachability of the SOS button and, at the same time, avoid erroneous tap of it the SOS button will be maintained as is and, in addition, will be enabled the possibility to reach it with a continued pressure over the Report icon in the bottom menu.**

- **Severity 3 Violations:**

Number 1. **The edit(update and delete) of saved addresses will be notified to the user.**

Number 9/A. After clicking on a saved address a button for "edit" it will be displayed.

Number 12. The trash icon for deleting an existing report on the map will be maintained, the confirmation message about the actual willing to delete the report will clarify that the chosen report will be deleted for ALL the users (not only for you, as the violation complains, which actually does not even make sense since the application is thought to be a community where my reports help other and vice versa).

Number 14. The navigation calculation will change accordingly to real-time reports (including new ones and deleted ones).

Note: actually deleting or adding a report in "my position" during the navigation won't affect the navigation at all.

Number 20/A. The auto-completion while writing the address will be for sure enabled while modifying the saved addresses in order to make this action easier.

Number 20/B. Actually, the insertion of an address to be saved follows the same identical pattern as for searching an address where to navigate to. If no troubles were found during that phase, we don't understand why such critical problems should be present in this phase. Furthermore, the most famous navigation applications follow the same pattern for the insertion of an address as well.

Number 25. As explained for the 20.b violation, our selected pattern for address insertion is the same used by the most famous navigation applications (recalling its usage knowledge, furthermore). If the address just inserted does not exist, the "Start" button won't be enabled, while the suggested addresses will be displayed underneath the search bar to help the user recover from their error.

Number 26. While in the page for editing a saved address, if the "<->" button is tapped a pop-up asking the user if is sure to go back will be displayed.

- **Severity 2 Violations:**

Number 3. In the "Delete saved address" page the buttons will be aligned horizontally as in all the other pages.

Number 4. Solved in the 3. solution.

Number 5. Both buttons to Add and to Delete a Report will display the options "No, Go Back" and "Yes".

Number 9/B. Solved in the 9.A. solution.

Number 10. Solved in the 11.A. solution

Number 13. Once a report will be deleted a message will tell the user "the report has been successfully deleted".

Number 15. Not knowing who you are talking to (from a specialist point of view) could be a drawback but it goes in favor of anonymity which, in our opinion, it's a fundamental aspect due to the context this application is thought to be used in.

Number 16. If no address has been saved so far from the first start of the application, once tapped, the system will alert the user that no saved address is available.

Number 18. We decided to give more emphasis to the environment surrounding the user, giving them only the next street name and direction instead of listing them all resulting in a loss of focus from the surrounding environment while trying to figure out how the navigation will take place/evolve.

Number 20/C. Solved in the 20.A solution

Number 20/D. Solved in the 20.A solution

Number 21. While deleting a saved address the user is explicitly asked whether to delete the address or not, for ensuring this action is made consciously. A trade-off about the error recovery must be found, otherwise the application would end up becoming cumbersome.

Number 22. As the most famous navigation applications do, if the navigation is exited, then the user is brought back to the page for starting the navigation with the latest addresses inserted, allowing them to simply restart the navigation by tapping "Start".

Number 24. Solved in the 25. solution.

Number 27. The "Other" item in the Report page could be renamed as "Custom Report" to be more self-explanatory.

Number 28. This doubt should be clear the first time a user enters the "Chat" section (this screen was not present in the paper prototype, so the violation is lawful), where no chat has already started, displaying all the available specialists from whom to choose and start chatting.

Number 29. Whenever new messages arrive, the number of them will be displayed beside the chat name.

Number 30. The scrollbar in the chats from the specialist point of view will be displayed on the right as well.

Number 31. The icon will be substituted with a more clear one.

- **Severity 1 Violations:**

Number 6. It's a typo in the prototype

Number 7. The selected menu item will always have its background of the opposite color respect to all the other items, without "filling" any shape of the icon itself.

Number 8. Cannot get the problem since buttons and menu items are two distinct elements, not breaking any consistency between each other. In the end, the problem is anyway solved in the 7. solution.

Number 12/B. The bar which is displayed once a user taps on a report icon will be highlighted in a better way so that it will be more clear that the description and trash bin icon which appear in this bar are related to the just tapped report.

Number 17/A. "More" button beside the "Home" and "Work" ones will be displayed allowing the user to insert a new saved address inserting the address and giving it a custom name to recognize it.

Number 19. The aim of that page is to edit a saved address, as the minimalist design suggests, only the needed things must be displayed in a page avoiding to increase the cognitive load of the user. In this case, a string of text must be edited, so a form to modify it should include what this string of text stays for, the value of this string of text and a button to perform the action related to this form.

7. High-fidelity Prototype

a. Tool, Framework, ... used

- **Libraries:** React JS, Google Maps API, React-Bootstrap
- **Frameworks:** Bootstrap, Express
- **Middleware:** CORS, Morgan
- **Database:** SQLite3
- **RunTime Environment:** Node.js
- **Editor:** Visual studio code
- **Why are they chosen?** We have decided to use these tools because they are well integrated between each other and especially because they were used last year from the Web Application I course which was followed by the majority of our group. In addition to those tools we have used the Google Maps API to be able to display in our application a map with all the features of a real map (marker, routes, ...)

b. GitHub Repository Link: [GitHub link](#)

c. Describe the most significant screens of the prototype / Why : The high-fidelity prototype has three main tab:

- **Go:** In this tab, that is also the primary tab (i.e. Home page), the user can see the reports present nearby her location, can search and navigate for a destination. In addition to that the user can save addresses in order to reach them in an easiest way.
- **Report:** This tab is the most important one because it allows the users to report something that she noticed/see while walking (i.e Dark street).
- **Chat:** This tab is also very important because it allows the user to get in touch with a series of different psychologists at any time for whatever reason.

d. Hard-coded part, the pre-stored data, and any limitations of the prototype:

- **Hard-coded part:**

We discovered that the Google Maps APIs do not allow to simulate navigation (as the google maps app itself does), but only to get the list of directions from one location to another. Hence, once our user starts browsing, we put screenshots of Google Maps app live navigation which simulate the navigation itself (while all the other buttons related to live navigation are, instead, really implemented; for example: the possibility to exit the navigation, or the possibility to insert a report).

In particular we enforce the simulation by putting 4 screenshots per route (which advance with a timer); this would resolve the aforementioned problem and an ulterior one: the calculation of the routes provided by the API does not allow to avoid certain roads, but only to pass through certain roads. This wouldn't have allowed us to avoid certain streets with Reports which advise to avoid that street (for instance: Dark Street, Bad Street).

- **Pre-stored data:** Firstly, In order to be able to show that the paths created by our app don't cross roads that have "bad report", as mentioned before, we've added some fixed "bad reports" into the database.

Secondly, in order to show the functionality of the chat we have added predefined chat messages with some psychologists. The user can send new messages though.

Finally, in order to have the possibility to have multiple users (i.e. test user and one psychologist) we have introduced two users into the database.

- **"Limitation":** Due to the fact that it is only a prototype, for allowing the user to get answers from the psychologists, we used

the “Wizard-of-Oz” strategy. It means that there is a human that answers to the user, like in the real app, but in this case it is one person in our group instead of a real psychologist.

8. Usability testing

a. Preparation and run

i. Description of the evaluation

- **Participants (Information gathered by pre-test questionnaire)**
 - 21 years old, student, 4 solo walks during a week (3 of them during the nighttime). Quite expert both in using live navigation and chat apps.
 - 27 years old, employee, 15 solo walks during a week (2 of them during the nighttime). Novice in using live navigation apps but expert in using chat apps.
 - 22 years old, student, 5 to 10 solo walks during a week (2 to 3 during the nighttime). Expert both in using live navigation and chat apps.
 - 30 years old, employee, 10 solo walks during a week (6 during the nighttime). Expert both in using live navigation and chat apps.
- **Roles of the team members**
 - Giacomo Perlo: facilitator
 - Fabrizio Sanino: observer
 - Gizem Irmak: take copious notes
 - Benyamin Zarei: audio record the participants
- **Where the evaluation was conducted:** the usability test took place at home of the group components, at turn. We decided to do that to have the possibility to perform different usability tests separately to gather as much information as we can.
- **Refined Tasks**
 - **Task 1:** Use the SheShield app to save your home address for further usages (which is supposed to be: “Via Antonio Pigafetta, 24, 10129 Torino TO”).
 - **Task 2:** Use the SheShield app to obtain the travel time to get back home.

- **Task 3:** Use the SheShield app to reach home.
- **Task 4:** Use the SheShield app to signal the street in which you currently are to other people.
- **Task 5:** Use the SheShield app to gather information about the condition of a street of your choice.
- **Task 6:** use the SheShield app to contact the psychologist Luigi Verdi telling him about your feelings
- **Task 7:** Use the SheShield app to make an emergency call.

ii. Usability test protocol: [PDF link](#)

b. Results

i. Summarizing the results

- **Participant 1**

SUS Score: 95 Points

Overall Success Rate: 670/700

Average task time (task 3, 5, 6 and 7): 17 seconds

Critical/Non-critical Error: Non-critical error in Task 1, where the user performed a disconnected action (touching on the user icon), decreasing the success rate by 30 units.

General Impression/Errors:

- Misleading user icon for account settings (Task 1).
- It's difficult for a user knowing that there are possible shortcuts (i.e. S.O.S button in the Go page).
- Task 5 received a lower mark, possibly due to user unfamiliarity with similar navigation apps.
- The average time on task, that is not so bad, could be reduced by a better knowledge of the app.

- **Participant 2**

SUS Score: 85 Points

Overall Success Rate: 670/700

Average task time (task 3, 5, 6 and 7): 14 seconds

Critical/Non-critical Error: Non-critical error in Task 1, where the user initially associated the user icon with account settings but successfully completed the task after understanding its purpose.

General Impression/Errors:

- First task caused the most problems, suggesting a guided overview at the first start.
- Positive feedback on the S.O.S. button.

- **Participant 3**

SUS Score: 78 Points

Overall Success Rate: 670/700

Average task time (task 3, 5, 6 and 7): 20 seconds

Critical/Non-critical Error: Non-critical error in Task 1, where the user initially attempted to save the home address incorrectly but successfully completed the task after overcoming the challenge.

General Impression/Errors:

- Recommendation to display saved addresses on the home page.
- Task 5 took longer than expected; suggests visual cues for report categories.
- Initial challenge finding the SOS button but deemed acceptable.

- **Participant 4**

SUS Score: 97.5 Points

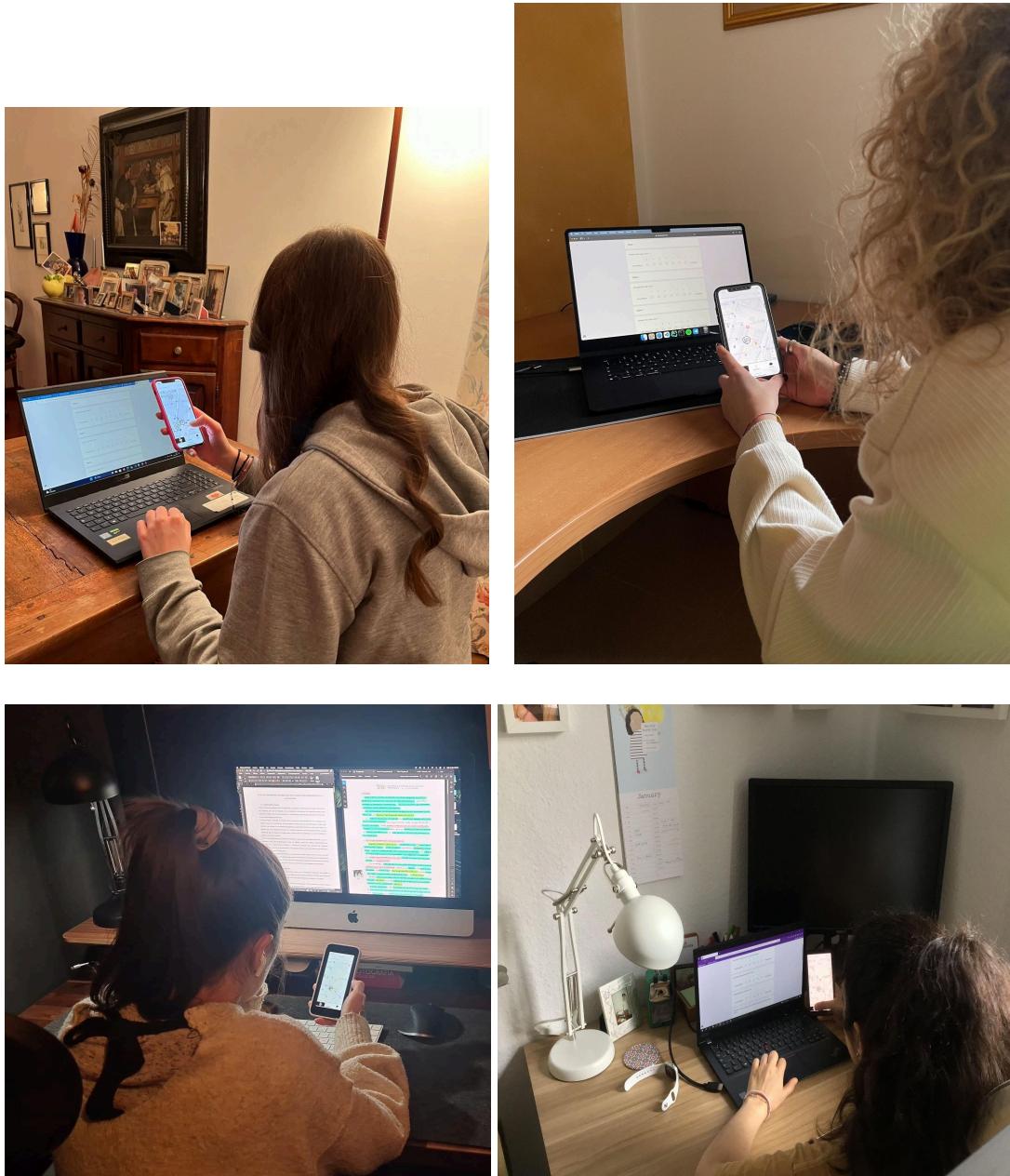
Overall Success Rate: 640/700

Average task time (task 3, 5, 6 and 7): 16 seconds

Critical/Non-critical Errors: Non-critical errors in Tasks 1 and 7, where the user had initial confusion but eventually understood the correct way to complete the tasks.

General Impression/Errors:

- Misleading user icon at the top initially.
- Positive feedback on application effectiveness and task simplicity.
- Suggested incorporating an SOS button in the home section.



ii. What we have discovered and learned

- **User Icon Misconception:** A consistent issue across participants was the initial confusion related to the user icon located at the top of the application. Users associated it with account settings or attempted to use it for specific actions like saving home addresses. The repeated occurrence of non-critical errors in task 1 across multiple participants suggests a common pain point that could be addressed to enhance the experience.
- **Onboarding and Explanation of Functionalities:** Participants expressed a desire for a guided overview or initial explanation of the application's functionalities, especially shortcuts. Providing

users with clear instructions or a brief tutorial during the first use could help users navigate the app more efficiently and understand its features.

- **Task Completion and Overall Success:** Despite some initial challenges, all participants were able to successfully complete their assigned tasks. This indicates that, once users acclimated to the application, they found it effective and were able to navigate it successfully.
- **Individual User Recommendations:** Participants provided specific recommendations based on their experiences, such as hiding the user icon on top for non-psychologist users and incorporating an SOS button in the home section.
- **Tasks 5 & 7 Difficulty for Some Users:** Tasks 5 and 7 received mixed feedback, with some participants struggling with them, potentially due to unfamiliarity with similar navigation apps.

iii. List of potential changes

- **Clarify User Icon Purpose(Task1)**
 - Feedback: Participants across usability tests expressed confusion regarding the user icon's purpose.
 - Change: First of all, the issues related to this icon were born because it is probably misleading but necessary to have a way to rapidly switch between user and psychologist since no login is provided in the high fidelity prototype. Once in production this mis-behavior would disappear (since the icon would be used to login the psychologists).
- **Implement Onboarding Tutorial:**
 - Feedback: Participants highlighted the need for an initial guide or tutorial to explain application functionalities and shortcuts.
 - Change: Introduce an onboarding tutorial upon the first app use, guiding users through key features to enhance understanding.
- **Integrate Visual Cues for Task 5:**
 - Feedback: Task 5 received mixed feedback, with one participant facing difficulties, possibly due to unfamiliarity with similar navigation apps.

- Change: Enhance Task 5 by integrating visual cues or prompts, making it more intuitive for users with varying levels of experience with navigation apps.
- **Address Task 7 Challenges:**
 - Feedback: Task 7 posed challenges for participants, leading to non-critical errors.
 - Change: The S.O.S button is also present in the home screen (long press on the report button). In order for the user to know this shortcut, we need to use an initial guide as mentioned before.
- **Improve Address Management:**
 - Feedback: Participants suggested improvements related to managing saved addresses.
 - Change: Explore options to display saved addresses on the home page beneath the search location text box, enhancing accessibility and visibility for users.

9. Conclusion

- a. Between the main learnings from this semester we definitely have:
 - i. gained a solid grasp of concepts related to usability and user experience
 - ii. developed the ability to critically evaluate and analyze our and others work following different interactions with other groups and the professor
 - iii. understood the weight (and the consequent potential) that people give to the “wellbeing” and how information technology can help in this sense if conveyed in the correct way
 - iv. understood the difficulties which the pipeline of building an application/prototype could hide behind itself; and last but not least the essential importance of receiving feedback to improve your work
- b. We tried our best to split the work within the group as equally as we could, accordingly with each member's workload due to personal and scholastic engagements. It was not easy at all, also because we had deadlines to respect but, eventually, we made it so far!

The most valuable aspect of this course was working (and of course, firstly meeting) as a group with people who do not know each other; coordinating the group with perfect synergy, mixing ideas, ways of thinking and working: it was an invaluable experience.

As slightly aforementioned, the most difficult problem (even if we would not call it “problem”, but more likely an opportunity) was definitely to merge all the ideas without leaving anyone behind, and so coordinate the work in general. This is a good lesson of living, furthermore for the future: coordinating people is not about studying but experience.