

Reports Of Many Alerts

An app for reporting episodes of urban decay

Human-Computer Interaction Project
A.Y. 2020/21

Giovanni Pecorelli
Jacopo Rossi
Giacomo Venneri



SUMMARY

Introduction

App features

Questionnaire

User profile

User analysis –
Personas and Scenarios

Competitor analysis

R.O.M.A.
functionalities

First prototype

HTA - STN

Heuristic evaluation

Second prototype

Third prototype

Think aloud

Controlled experiment

ANOVA

LIVE DEMO



Introduction

R.O.M.A. is an Android app for reporting episodes of urban decay to the competent authorities.

The development of this software is based on a User Centered Design.

The idea for this app comes from the fact that currently in Italy the procedure for reporting urban problems is quite inconvenient: after finding out which is the responsible entity (municipality, province, region, private companies...) the most used mean of communication is a registered letter with return receipt, or PEC, or a simple email.

Our idea is to simplify this process with the development of R.O.M.A., which aims to reduce waiting times and distances between citizens and competent authorities.

App features

R.O.M.A. is an app for improving the quality of life in the capital

- 01 | Register and login
- 02 | Report urban problems such as garbage, road potholes, acts of vandalism and much more
- 03 | Monitor progress of the resolutions of your reports
- 04 | Explore problems shared by the community
- 05 | Enjoy your city!





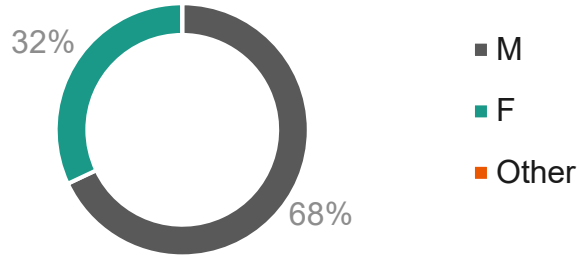
Questionnaire

We created a survey in Google Modules. The questions and the answer were in Italian. Some of the questions are yes-or-no questions, while others ask for single or multiple selections.

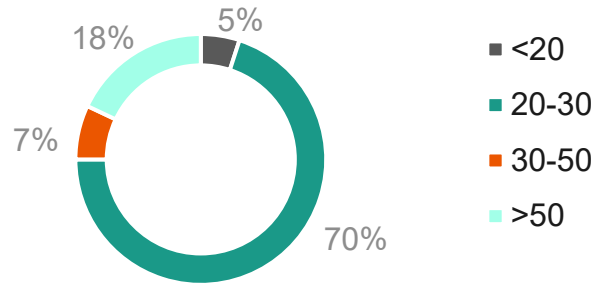
The survey was shared in most of our University group chats and with our familiars and people close to us.

We collected 49 answers in total.

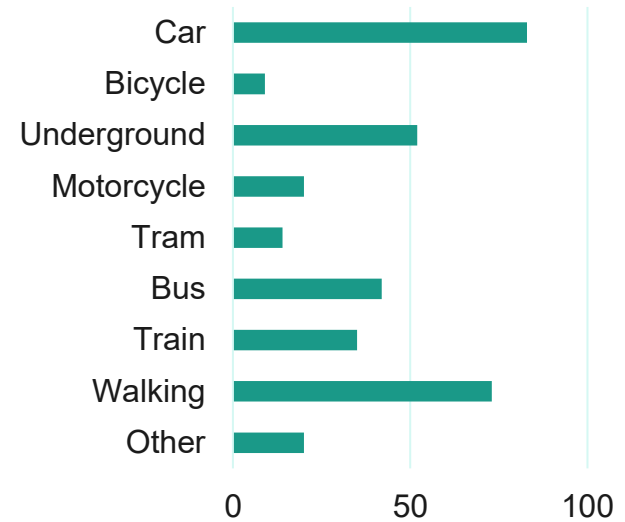
Gender



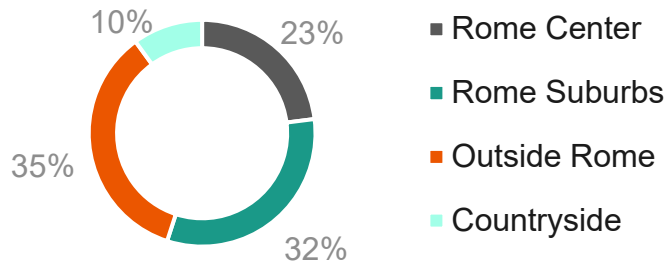
Age



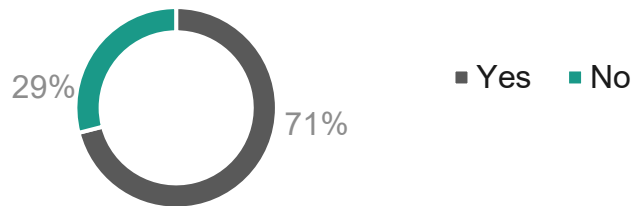
Which of these means of transport do you use on a typical day?



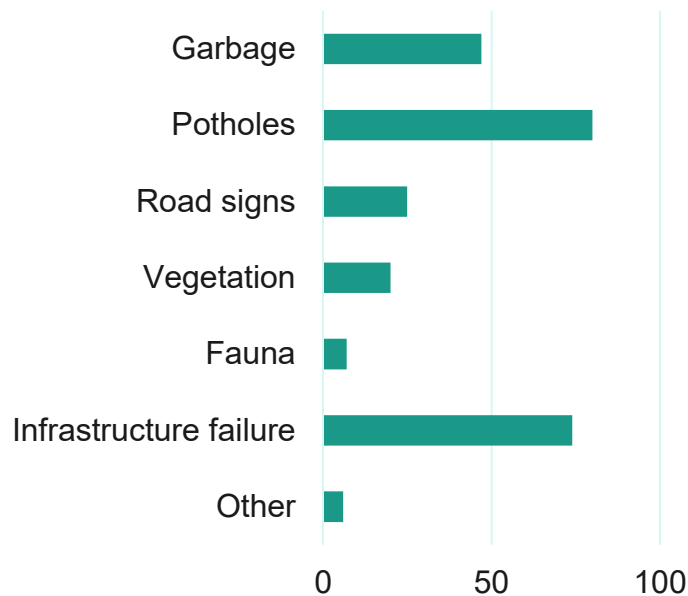
Where do you live?



If you live outside Rome, would you still use the app?



Which of these problems regards you the most?

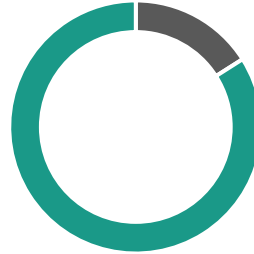


Would you allow GPS localization permissions to the app?



- No
- Yes

Would you use the feature of urgent reports?



- No
- Yes

Do you agree with the possibility of sending anonymous reports?



- No
- Yes



User profile

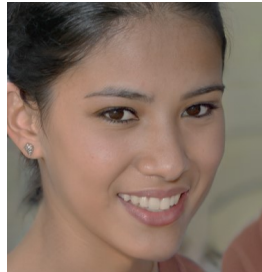
Age	18-100
Gender	Any
Job Titles	Any
Education	Any
Location	The app allows reports only in the territory of the City of Rome, but the reports can be added from anywhere
Technology	Some experience with using Android apps
Passions	A desire to improve the city of Rome



User analysis

Let's introduce a selection of possible users of R.O.M.A.

In the next slides we will examine more closely their personas and when they would use R.O.M.A. in a real-life scenario.



Caterina

Age: 23

Gender: Female

Job title: Medical student

Location: Piazza Bologna

Family: Single

Income: 0€/year



Gabriele

Age: 45

Gender: Male

Job title: Civil engineer

Location: Parioli

Family: Married w/children

Income: 40000€/year



Franco

Age: 71

Gender: Male

Job title: Retired

Location: Ostia

Family: Married

Income: 12000€/year



Caterina

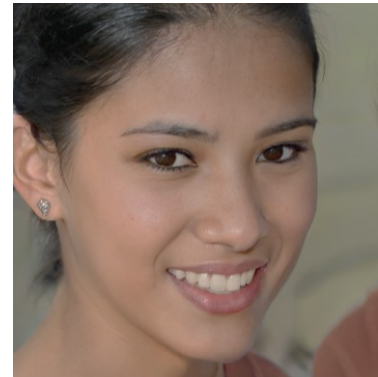
Persona

Caterina is a medical student in Sapienza. She is currently at the fourth year, and wants to specialize in dentistry in the future. She transferred from her hometown in Tuscany and rented a student home in San Lorenzo, near a metro station that takes her the University campus. She doesn't have a job yet so she tries to keep her expenses low, taking public transportation or walking when she can. She usually uses a mobile 4G internet connection to browse internet and use social apps on her phone.

Scenario

Caterina takes the metro to her University every morning. One day, she is late for the first lesson of the morning. Unfortunately she can't exit quickly from the metro station because there is a crowd on the stairs on the way out. The reason for this is that the escalators are broken, once again.

Caterina, disappointed by this setback, decides to take action and searches for a way to report this problem. She then finds out about R.O.M.A.





Gabriele

Persona

Gabriele is a civil engineer. He is happily married, has two lovely children, but the true passion of his life are cars. He changes them frequently to experience new feelings on the road. He is always up to date with computer and smartphone technologies.

Scenario

After a hard day of work Gabriele, tired, is ready to go home. Today he didn't park his car in the company parking, but in another farther spot. When he gets to his car, he finds an unpleasant surprise on his windscreen: a fine. Apparently he parked in an unsigaled no parking area. The reason for this mistake was that the road sign forbidding the parking was almost entirely covered by the vegetation. Irritated, he reports the problem to R.O.M.A.





Franco

Persona

Franco is retired. He has lived in Ostia all his life. He loves the city and know all of its places. Even if he is not very interested in technology, he has a smartphone and he is able to use all its basic functionalities (downloading and using simple app). Anyway, he has a niece who helps him when he has problems with it.

Scenario

Every day during the last months, Franco is annoyed by the presence of a deep pothole right in front of his garage. Each time he wants to get in or out of it, he has to maneuver to avoid it. One day, his niece comes to visit him, and hearing his complaints about the pothole, she helps him reporting this problem with R.O.M.A.





Competitor analysis

In the past years there has been some attempts to create similar applications.

After a research on the Play Store, we found some possible competitors of R.O.M.A.:

- *WeDU! Decoro Urbano*
- *Bucapp*
- *ROMA Al tuo Fianco*
- *+Firenze*

Here we briefly analyze each of them, listing their features and their limits.



WeDU! Decoro Urbano

Pros:

- Free
- Login with Facebook
- App and website
- GPS

Cons:

- Not functioning since 2019
- Few categories
- No urgent reports



Bucapp

Pros:

- Free
- More than one photo per report

Cons:

- Only about potholes
- No GPS



ROMA Al tuo Fianco

Pros:

- Free
- Official
- GPS

Cons:

- No user profiles
- No details or description about reports
- Only 4 categories



+Firenze

Pros:

- Free
- GPS

Cons:

- No user profiles
- Reports are not public



R.O.M.A. functionalities

- R.O.M.A. will offers the functionalities of registration and login, with email and password or with Google and Facebook.
- After the login, the user can see all of the reports made in the area of Rome by the other users. They are represented as colored markers on a map. There is a GPS button to quickly find your position. Furthermore, the map in the homepage is also the place where new reports are created.
- The reports can be explored visually on the map in the homepage or browsed in the Explore page, where they are shown with full details.
- If the user is interested in seeing all of the reports made by a single user, he has the possibility to view their profile, where he can found information about the user and a list of all the reports he made.
- Of course, a user can also access and see his own profile. Here the Setting page can be found. He can manage his profile by changing his username or deleting reports.



First prototype

Our first prototype was realized through mock-up made in Balsamiq, a free program that allows to quickly build low-fidelity user interfaces.

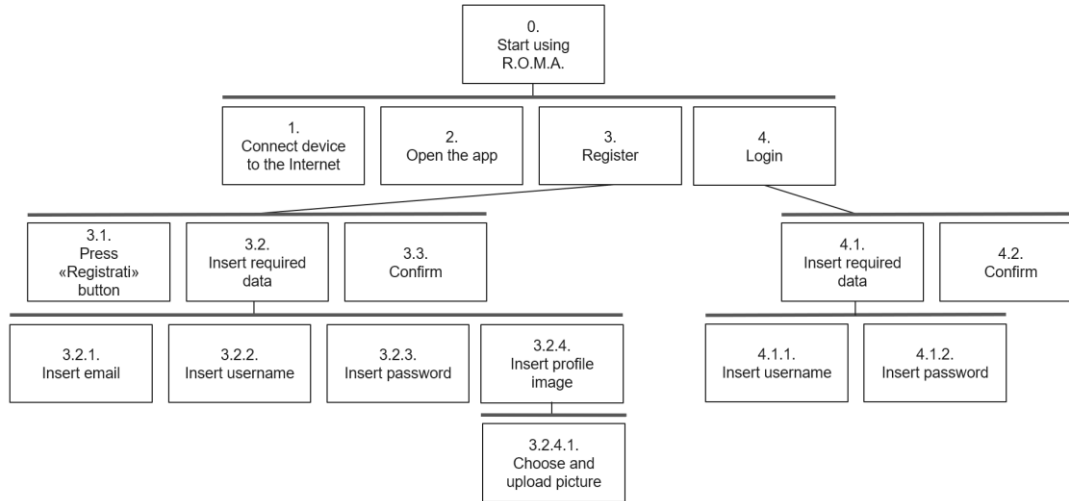
We designed it using standard Google material and Android components, such as the bottom navigation bar and the expandable cards to contain the reports information.

Prototype functionalities:

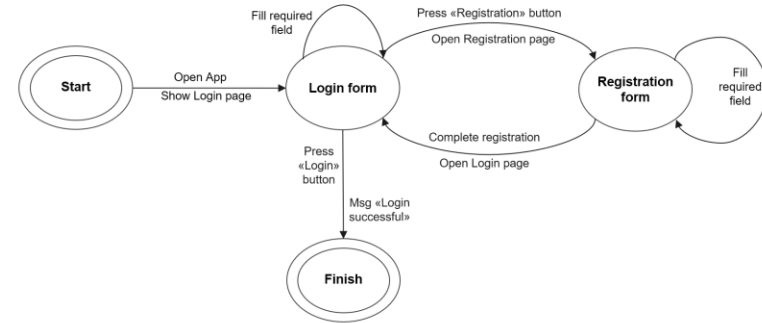
- Register and login with email, username and password
- View reports of other users in the Map and in the Explore sections
- View Your Profile page and your reports history
- View other users' Profile pages, and the reports they made
- Add a new report

Start using R.O.M.A.

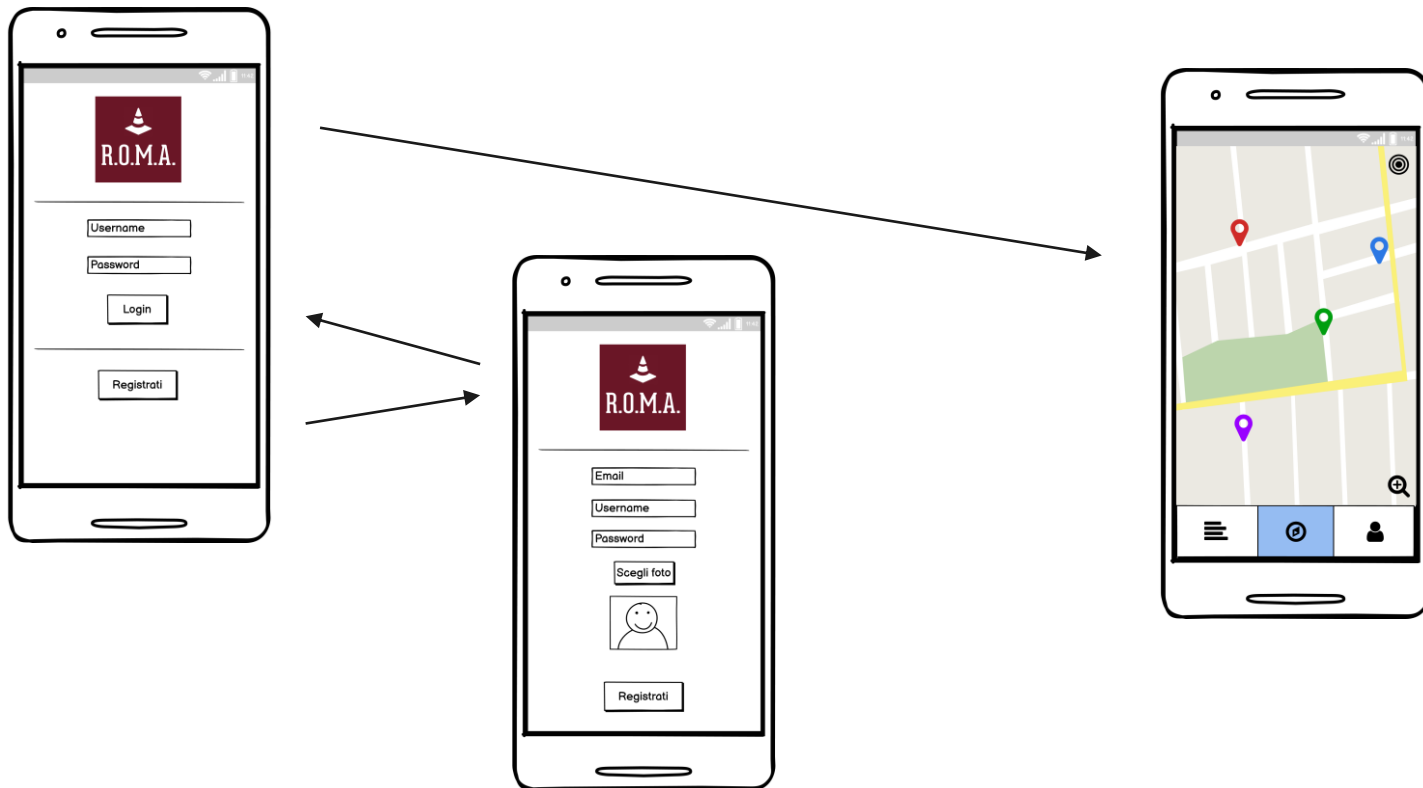
HTA



STN

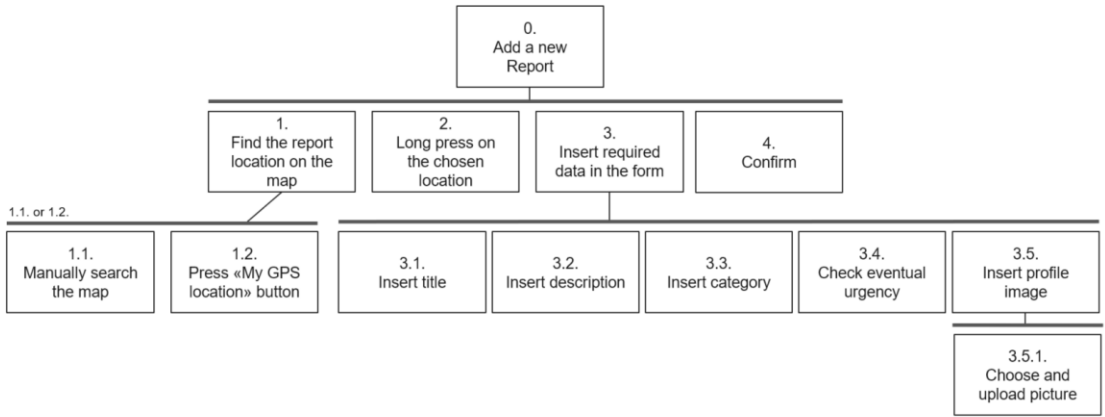


Start using R.O.M.A.

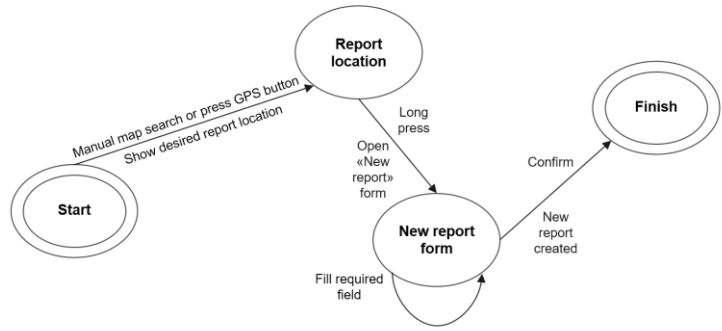


Add a new report

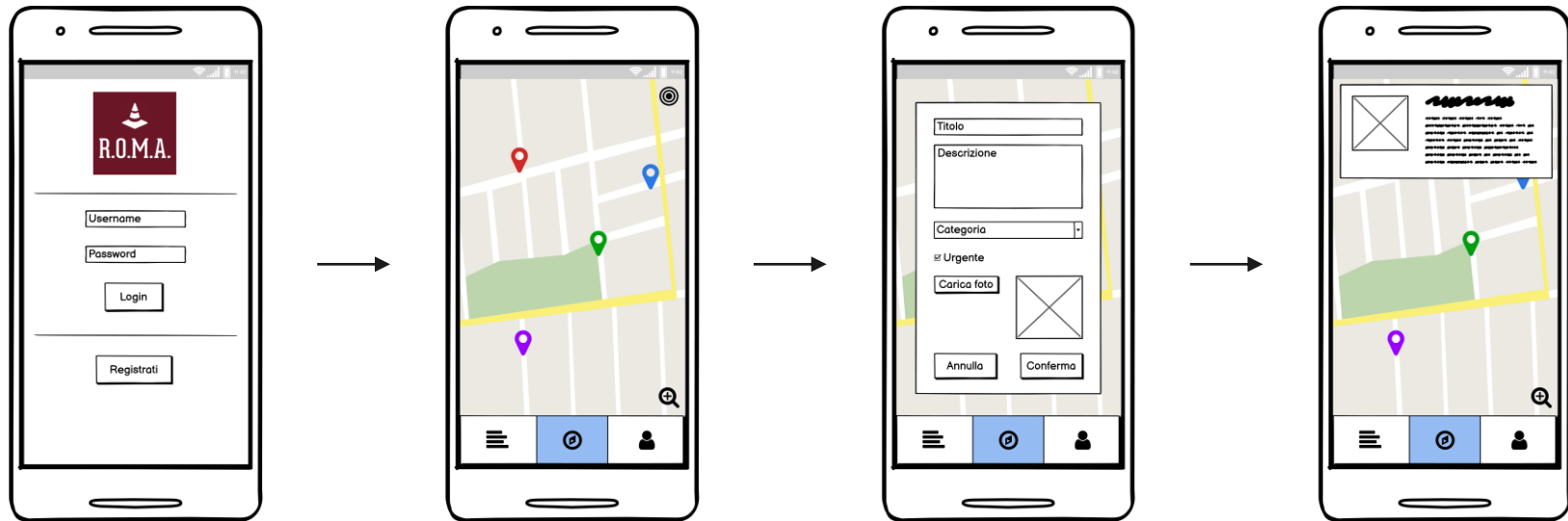
HTA



STN

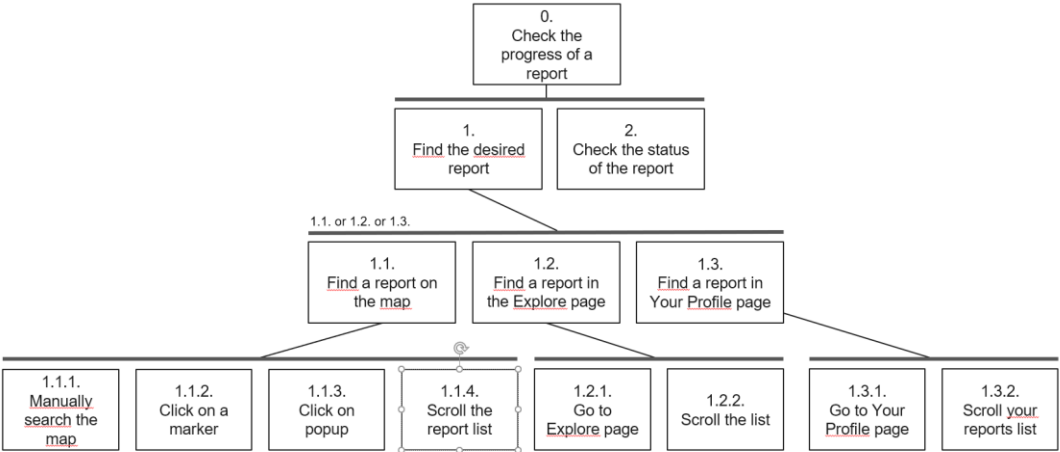


Add a new report

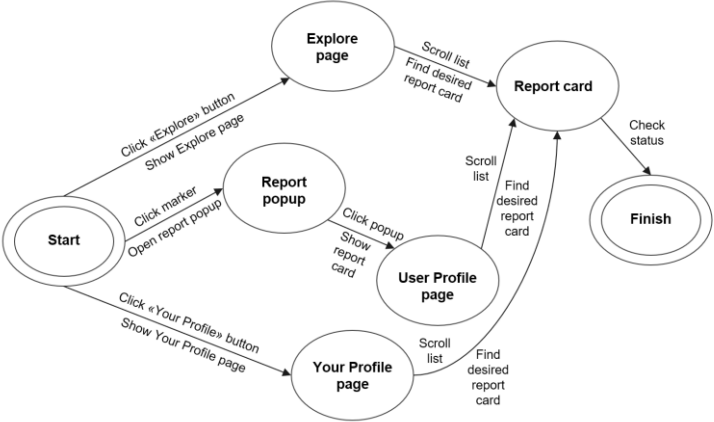


Check the progress of a report

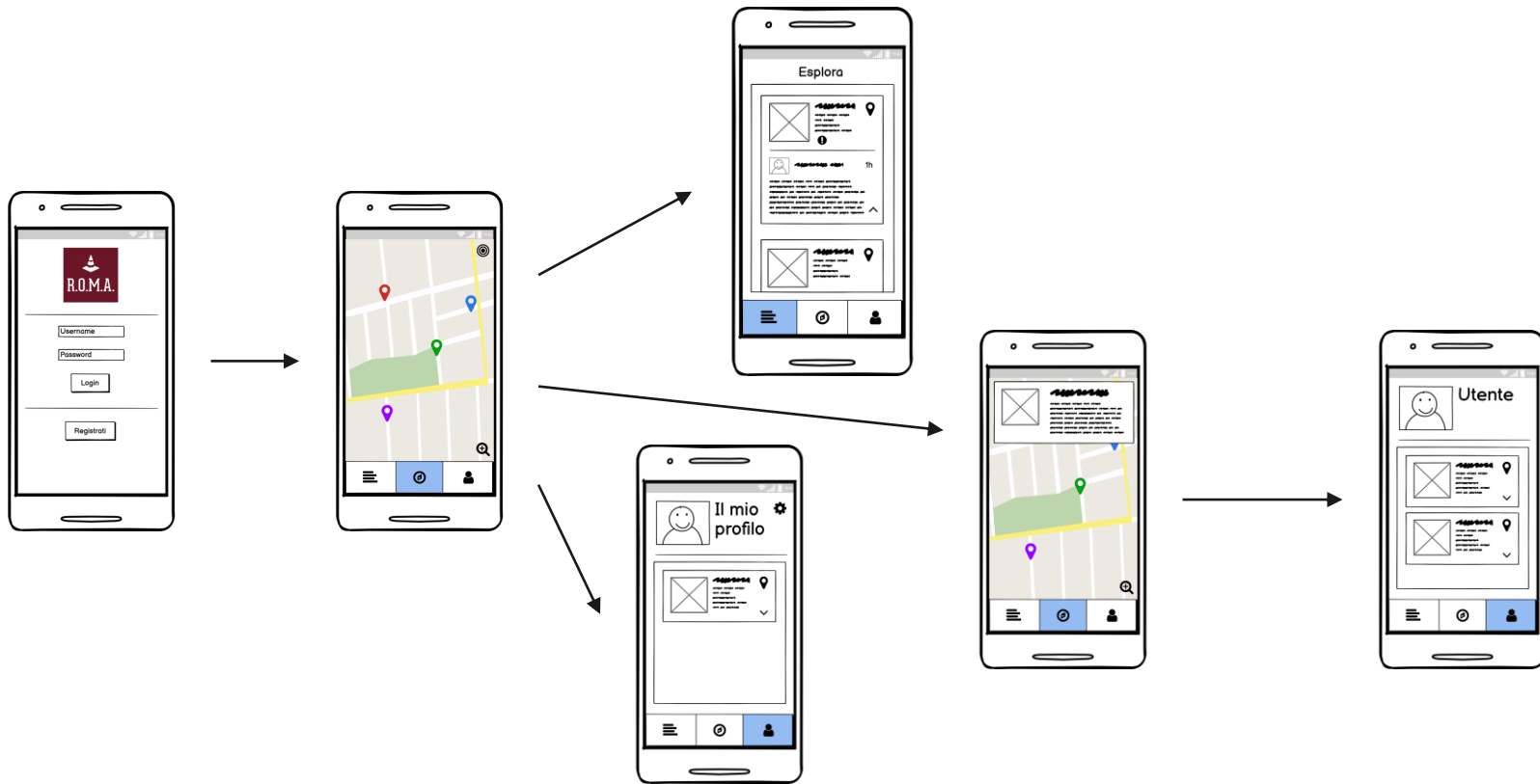
HTA



STN



Check the progress of a report





Heuristic evaluation

A heuristic evaluation is a usability inspection methodology for computer software that helps to debug design, highlighting the problems we should solve to achieve better results in the user interface. It is one of the most popular informal methods of usability inspection in the field of human computer interaction.

The list of criteria, that is adopted, is well defined and standardized.



Nielsen's heuristics for usability



Visibility of
System Status

1



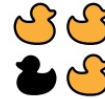
Match Between
System & Real World

2



User Control
And Freedom

3



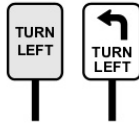
Consistency
And Standards

4



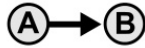
Error
Prevention

5



Recognition
Rather Than Recall

6



Flexibility And
Efficiency of Use

7



Aesthetic And
Minimalistic Design

8



Help Users
With Errors

9



Help And
Documentation

10



Heuristics evaluation of our project

Expert evaluation was made by Valeria Mirabella.

Frame	Heuristic violated	Severity	Description / Comment
Login page	Help users recognize, diagnose, and recover from errors	4	Include a Forgot password? link
Registrati	Error prevention	4	In case of accidental mistyping consider asking the new password twice entering it in the "Confirm password" box and/or provide function to show password in clear text
Home page	Recognition rather than recall	2	Consider the possibility to provide a brief description of the app at least on the first login
All (esplora)	User Control and Freedom	3	Allow users to go back a step

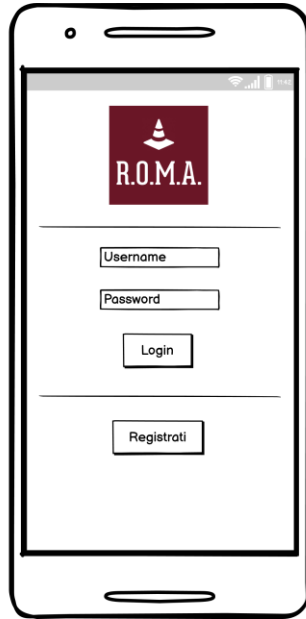


Second prototype

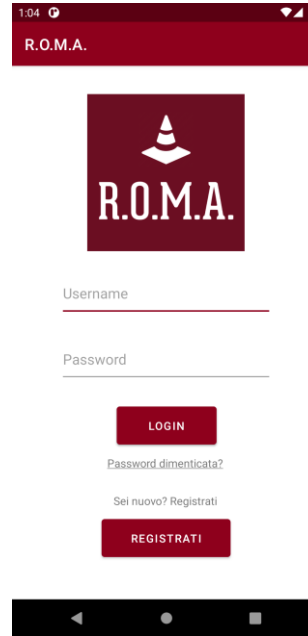
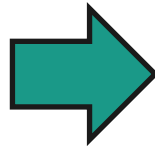
The second prototype is realized using Android Studio.

In the following slides we describe the changes we adopted to solve the heuristics problems

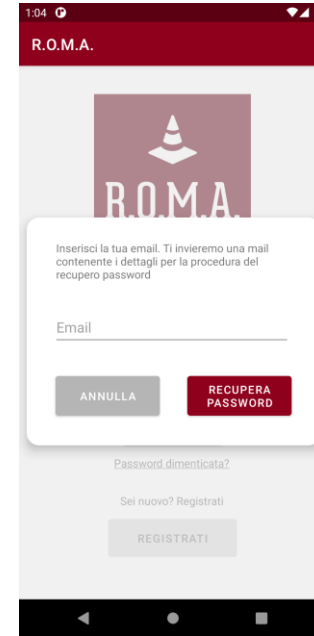
- We add a "Forgotten password?" link to initiate the procedure for obtaining a new password.



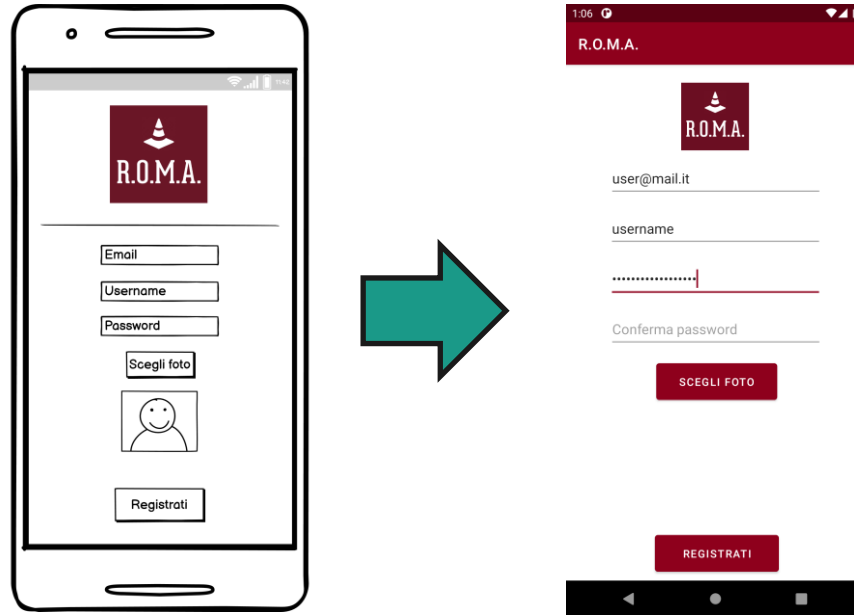
Login page in the first prototype with Balsamiq, with violated heuristic



Login page in Android corrected with the "Password dimenticata" link and relative popup



- We decide to ask the user to input his password twice. In this way the user has a way of knowing that he entered the password he intended to.



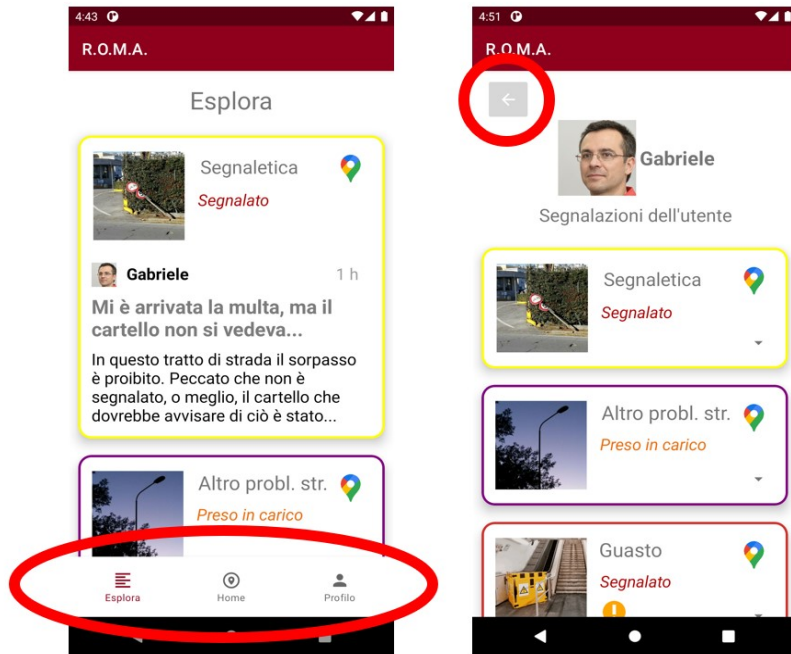
Registration page: before and after

- We add an Info page into the app



Info page

- We allow the user to move from a section to another of the app leaving the unwanted state without any problem.



UI elements that allow to go back a step



Third prototype

User-based evaluation technique – think aloud

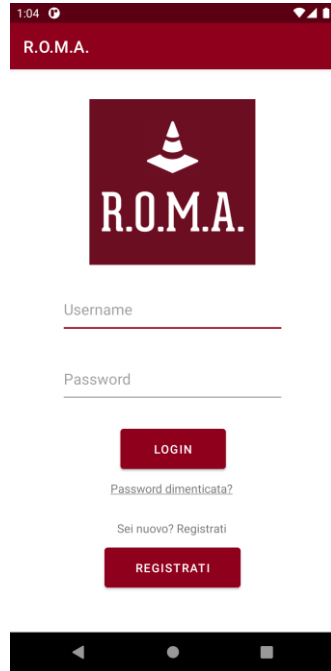
The think aloud is a kind of evaluation based on some simple rules.

In particular, the user is asked to perform a determined number of task and he has to voice his thoughts about what he is doing and what he thinks is happening.

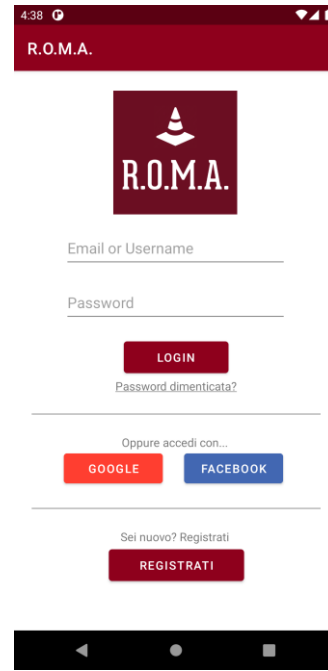
Generally, in this phase, evaluators records all the user's actions and problem.

After the think aloud evaluation, we have decided to modify our application and to add some features. In the following slides we will show the changes.

- We add a login feature using external social media accounts

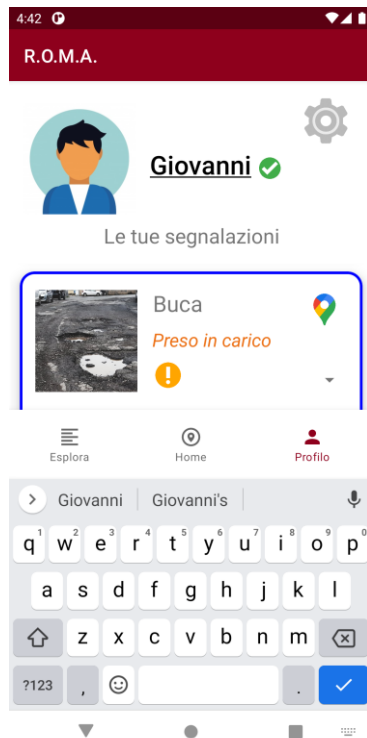


Login page: before

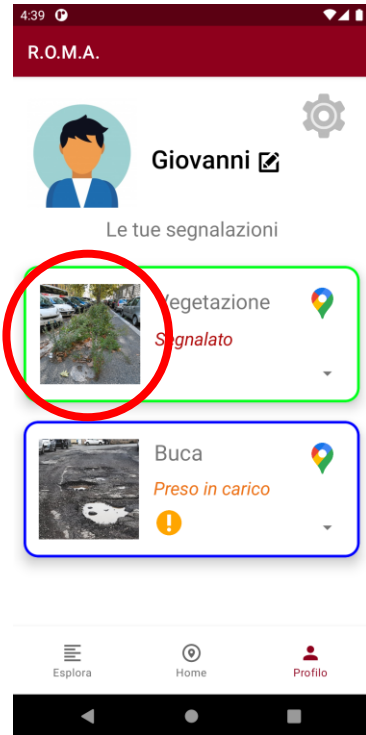


Login page: after

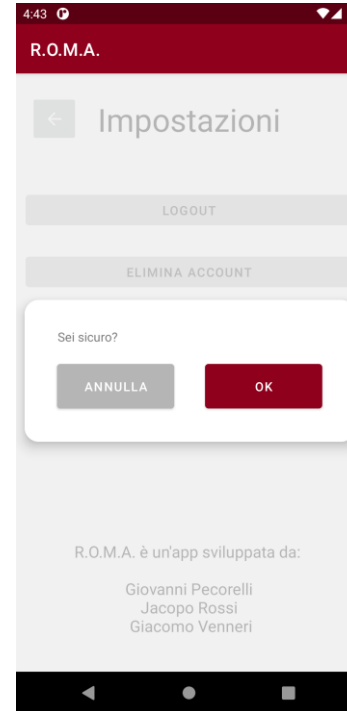
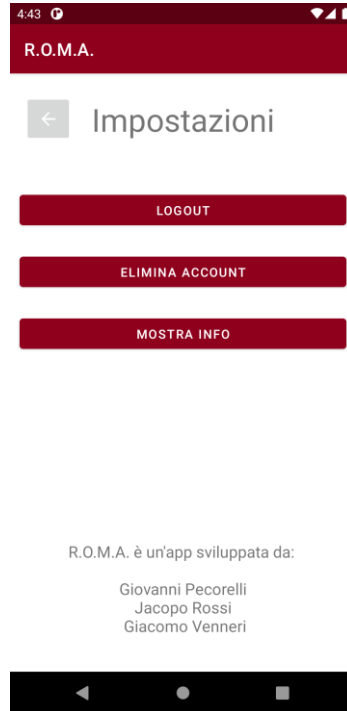
- We add the possibility to change the username



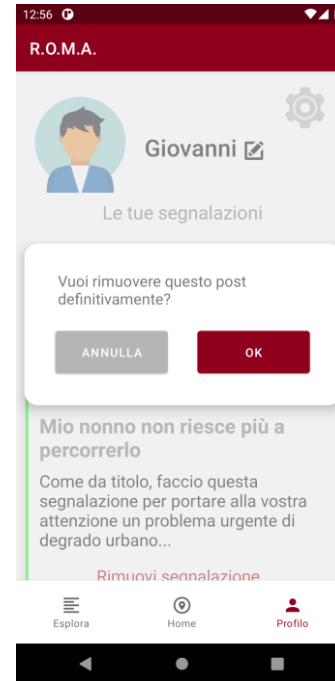
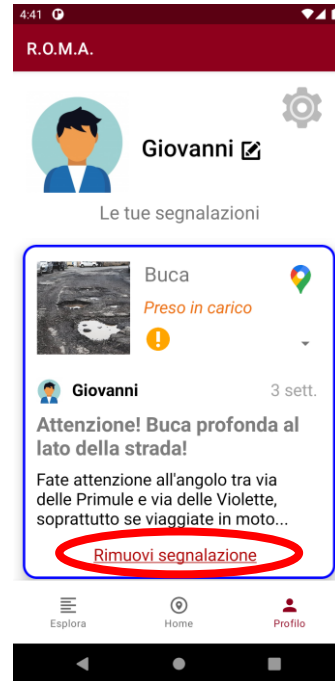
- We add the possibility to view images in full size



- We add a Settings page containing buttons to logout, delete your account and read again the Info page



- We add the possibility to delete a report, removing the relative card from the app, and its relative marker from the map

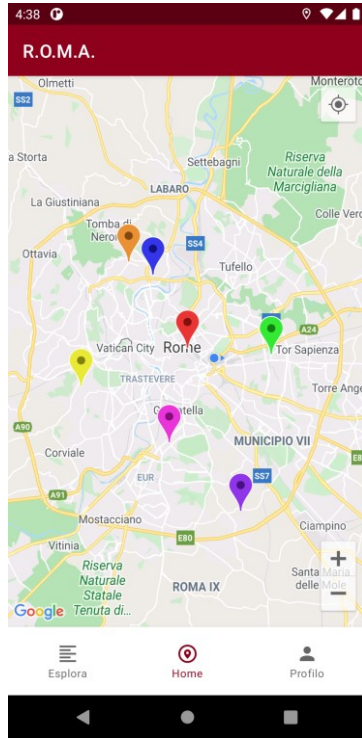




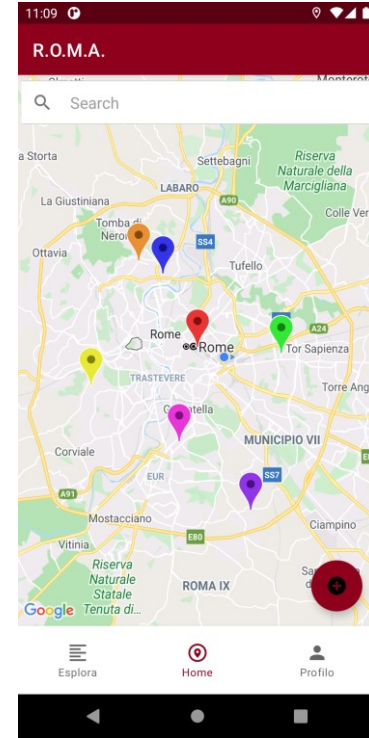
User-based evaluation technique – controlled experiment

A controlled experiment is when an observer tests a hypothesis by looking for changes brought on by alterations to a variable.

In our case the hypothesis was if the first prototype interface of the Homepage is better than the alternative second interface.



Homepage: Interface 1



Homepage: Interface 2



ANOVA

- **Problem:** “Having implemented two distinct interface styles which differ in the way users perform the same task, which of them is easier to use?”
- **Who?** 12 people (in a range of age between 18-60 years old according to user profiles)
- **Variables:**
 - *independent:* the two interfaces
 - *dependent:* the time in seconds to execute the task
- **Hypothesis:**
 - *null:* there are no differences between the two interfaces
 - *our:* users will complete the task in less time using Interface 1 rather than Interface 2
- **Experiment:**
 - *task:* "Add a new report"
 - *assumptions:* User is already logged in, on the homepage, and has to create a report given its attributes (title, description, image...)

ANOVA results

Interface 1 ▾	Interface 2 ▾
71	91
65	117
49	81
98	111
101	130
55	72
39	65
98	107
59	75
52	85
62	88
46	78

ANOVA experiment results
measured in seconds

ANOVA

RIEPILOGO

Gruppi	Conteggio	Somma	Media	Varianza
Interface 1	12	794,5	66,20833333	464,1572
Interface 2	12	1099,5	91,625	403,23295

ANALISI VARIANZA

Origine della variazione	SQ	gdl	MQ	F	Valore di significatività	F crit
Tra gruppi	3876,0417	1	3876,041667	8,9372508	0,006756612	4,3009495
In gruppi	9541,2917	22	433,6950758			
Totale	13417,333	23				

LIVE DEMO!