UNIVERSIDAD
POLITÉCNICA
DE MADRID

Escuela Técnica Superior de Ingenieros Informáticos

T6. Low-fi Prototype Submission

Course: Design Methods for Human-Computer Interaction
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1. Project Description

Wrapping up on the conclusions of our previous research, we can summarize the results regarding the user/task/environment analysis, as well as the description and problem statement of our project. Specifically, we found that our potential users or groups are foreign students that are coming to Madrid and are in search of an accommodation. The ultimate task which has to be solved is finding accommodation in Madrid. Below, we describe the current (AS-IS) process of foreign students finding accommodation in Madrid, as well as the future (TO-BE) process that is based on our project. In parallel, we define the different barriers and problems that shape our final project:

Current (AS-IS Process): In the present, most of the users are looking for accommodation online, using websites like Idealista, Spotahome or Milanuncios. So, the first step they do is enter on Google and search "find accommodation in Madrid". The most important preferences and needs that the users have are the following: good public transport connections near the accommodation, good connections with university, existence of a supermarket or grocery store in the neighborhood, natural and quiet surroundings, reasonable price, furnished and electronically-equipped accommodations. Therefore, they select the facilities they need and look for apartments or rooms using the map provided by the site. The next step is clicking on an announcement, checking the photos, the requirements and the description. The problems that can be encountered in this step is not understanding the description if an English version is not provided and not having Spanish documents if required. As a result, the options available are considerably lower and usually more expensive. Further constraints and difficulties exist, such as language difficulties when communicating with the landlords: Whatsapp did not prove to be successful in all the cases, so phone calls were needed in order for the landlords to reply. Ultimately, half of the people ended up finding an accommodation using an agency as the process could go smoother and the language did not represent a barrier.

During the process, further aspects and barriers of the environment are taken into account:

a) Social Environment: The costs involved and the language can influence the usability of the system. As our users are foreign students, language represents a barrier in communicating with the landlord if English or Spanish is not known. Moreover, the costs are a subjective point which depends on the economic status of each individual and has a great impact on the whole process.

b) Technological environment: Finding accommodation can be done using the phone or PC or laptop. For the PC or laptop, websites can be used like Idealista, Milanuncios or Spotahome with the representative applications. c) Physical environment: The location does not necessarily influence the process of finding an accommodation, as it can be done online from where the user feels more comfortable (e.g. home). However, if there are distractions, some influences might occur, so the process should be done in a suitable environment. Also, finding accommodation can be performed in agency offices, with the help of agents who provide different apartments according to the user's needs.

Project Description (TO-BE Process): Based on the results of our research and analysis, the proposed project is an application that can be used by foreign students that are coming to Madrid and want to search for accommodation. The application will focus on 3 main functionalities:

a) Search for accommodation based on the university location - the user will input their university name and the app will produce a map with all the suggested accommodations and the respective distances, means of travel to the university. The main focus of this functionality

was the unique visual representation of the routes and the continuously redefined suggestions as the user navigates in the map.

b) Virtual visit of the accommodations - when the user is viewing the details of an accommodation, they will have the possibility to experience the layout, spaces and all aspects of it through Virtual 360 degrees technology.

c) Contact with the host and the previous tenants of the accommodation - the user will be able to contact not only the host, but also the previous tenants of the accommodation. When contacting the host, a form will be available, in which an automatic translation function for the messages is incorporated, so that language barriers can be reduced. The aforementioned functionalities, as well as our project's user interactions in the application are further described in the following units.

2. User Tasks implemented in the Prototypes

2.1. Task 1: Virtual Visit of the Accommodation

The 1st task that we chose to implement is the Virtual Visit of the Accommodation. The task begins with the selection of the university by the user. Then, the user is able to set the possible move-in, move-out dates and the filters, in order for the app to produce the desired results. As a next step, the user can view either in the form of a list or as a map the available accommodations together with the images, type and price of it (in the case of a list) or together with the respective distances and public transport options to the university (in the case of the map). In case the user selects an accommodation from the map, a highlighted route will be displayed, which will be showing the route from the accommodation to the university. Following that (or in case an accommodation is selected directly from the list), the user is presented with all the available information for the specific accommodation, that is characteristics, description, reviews, contact host option, images. Apart from that, the user is able to use the 360 functionality, in order to virtually visit the apartment and have a close-to-real-life experience of how the apartment feels and of its layout and its components.

2.2. Task 2: Contact Host and Previous Tenants

The 2nd task that we chose to implement is the Contact of the Host and of the Previous Tenants. The task begins when the user logins and proceeds to view their saved (added to favorites) accommodations. In case there are no favorites yet, the user will be prompted to go back to search. From the saved accommodations screen, the user can select a specific accommodation and then view the details page, which entails all the relevant details for it. Apart from the details, there is a Contact Host option on the screen. When the user selects it, they are redirected to a Contact Host Form, which includes: the contact details of the landlord (name, profile photo, review score etc.), an input field where the message for the host can be added, and an automatic translation functionality which can be used to change the language of the text (it can be used both for the sent messages and for the incoming messages from the host). After sending the form, the user has the possibility to enter a direct chat functionality, or contact the previous tenants of the accommodation. Using the latter, the user is redirected to a screen that shows the profile and the contact details of the previous tenants that are registered on the app. From there, the user can choose to contact the tenants either via email, or via phone.

3. Scenario-Script followed in the Prototype

Task 1:

Context of the task:

Iris is from the Netherlands and has been accepted to the Technical University of Madrid as a Master student. Before finally moving to Madrid, she wants to have secured her accommodation so that she doesn't have to worry about where she is going to stay. She has already started looking at some accommodation websites, but she encounters numerous problems. One of the main problems is that she does not know the city when she will move from the Netherlands. She has no idea in which neighborhood it is best to live. Also, she does not know exactly how the University relates to the city center, concerning distance and public transport. She would like to live not too far from the University as she will have to be there every day, but has no knowledge on what a good location could be. Existing housing platforms do not provide extra information about the connection from University and her house, but she heard this app will provide her with this information.

Steps performed by the user in the prototypes:

- Iris will start looking for accommodation in the area of Campus Sur of UPM.
- She will add the convenient dates for her, and all the facilities she wants.
- She will view the accommodation next to the campus in a map, and as a list.
- She will select one accommodation for which she wants to see the public transport connection to university and the details.
- She clicked the Details into detail page. She will view the characteristics of the accommodation and the reviews from previous tenants.
- She will virtually visit the accommodation, using the 360 functionality.

Detailed steps:

- Iris opens "MadridHousingHub".
- Iris clicks on the drop-down button in the menu.
- She sees a list with all UPM campuses.
- She selects UPM Campus Sur from the list.
- In the map, UPM Campus Sur will be highlighted.
- She taps the “Next” button to go to the next page.
- She clicks on the start date, the calendar widget appears and she inputs the start date from 19th of December.
- She clicks on the end date, the calendar widget appears and she inputs the end date on 30th of June 2023.
- She sets the minimum price to 250 euros and the maximum price to 550 euros.
- She selects 3 rooms.
- She checkboxes pet-allowance, furnished and heating.
- She clicks on “Search” to view all the accommodations.
- She enters the default page “map” .
- She clicks “list” to check out the list.
- She clicks “map” to go back to the map view.
- She sees the pop-up page with public transportation & distance to university.
- She clicks on the “View accommodation” button to see the details of the accommodation.
- She scrolls through the detailed information.
- She clicks on the 360 view under the images.

- She scrolls through the 360 view.

Benefit obtained:

By the end of the task, the user has virtually visited the accommodation, using the 360 view functionality, and this helped her visualize the accommodation better.

Task 2:

Context of the task:

She encounters numerous problems while looking for accommodation. One main issue is the communication with the landlords. Most landlords only speak Spanish, whereas Iris only speaks English besides her mother tongue - the majority of the accommodations that she finds online only provide a Spanish phone number as a way of contacting the landlords. Apart from that, even in the rare cases that the landlords can speak fluent English, she has trouble understanding whether the accommodation is real, and not a scam. Also, she really wishes that she would be able to contact the previous tenants of the accommodation, in order to receive a well-experienced feedback. That is when she hears about "MadridHousingHub", a new app for searching for accommodation.

Steps performed by the user in the prototypes:

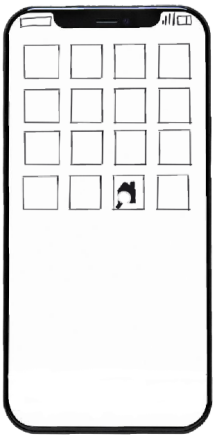
- Iris opens MadridHousingHub, logs in and views her saved accommodations from previous searches.
- When viewing her saved accommodations, she selects one to contact the landlord using the automatic translation.
- After sending the message, she has the possibility to contact the previous tenants. She sends an email to one of them.
-
- *Detailed steps:*
- Iris opens "MadridHousingHub".
- She inserts the Username "irisdewit" and the Password "12345" and then presses the Login button.
- She views her saved searches and she selects the first accommodation from the saved ones.
- She views all the details of the accommodation, specifically all the Characteristics and the Reviews.
- She presses the button “Contact host” because she wants to directly contact the host. The screen Contact host form will open.
- She types the message "Hello, my name is Iris and I would like to ask what would be the possible move-in date".
- She uses the automatic translation tool in order to send the message in the host’s language Spanish.
- She presses the “Send” icon.
- She views the previous tenants and, for the first one, she clicks on the email icon in order to send her an email.
- She fills in the message "Hello, my name is Iris and I am contacting you for the accommodation at Gran Via 233. Can I ask you some questions regarding your experience?".
- She sends the email and goes back to the “Saved Searches” / Favorites screen.

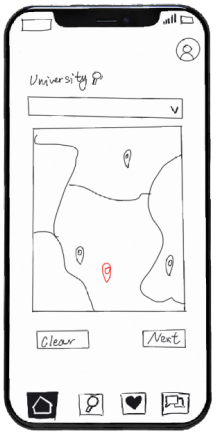
Benefit obtained:

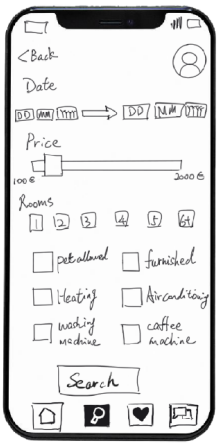
The user managed to contact the landlord and the previous tenants successfully, receiving feedback and information about the accommodation.

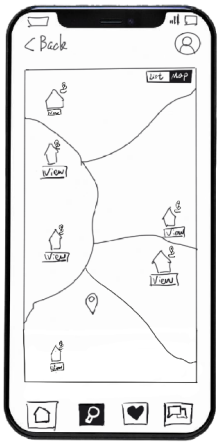
4. Pictures of all screens of each of the Prototypes

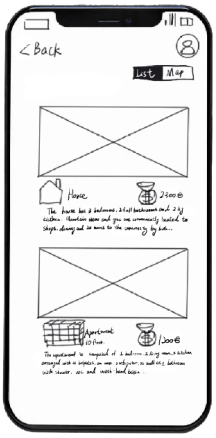
4.1. Task 1: Virtual Visit of the Accommodation

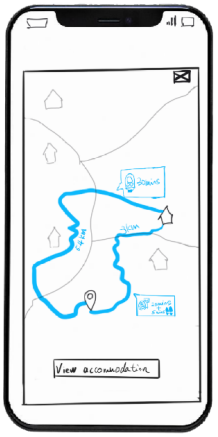


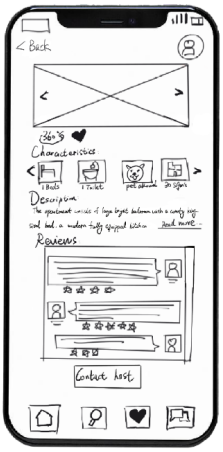






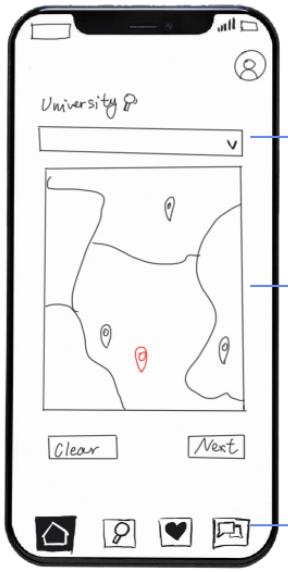






Detailed Explanations:

Select university

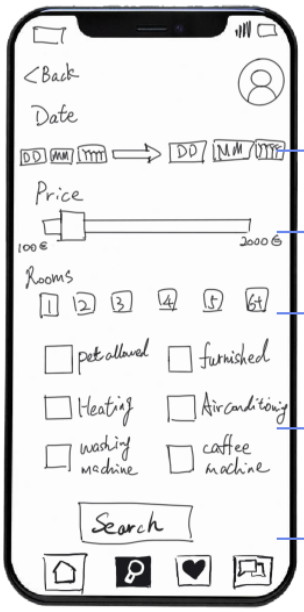


The user can type the university in dropdown menu. When typing the first letter, all universities starting with that letter will pop up.

The map shows the locations of universities and highlights the selected one. Also, the user can select the university by clicking on the map instead of using the dropdown menu

The navigation bar shows:
1. Home → sends user to the previous accomodation list/ map.
2. Search → sends user to the filter page
3. Favorite list (enabled when logged in)
4. Chatbox with hosts/ previous tenants (enabled when logged in)

Set filters and dates



The user selects the months of renting the accommodation

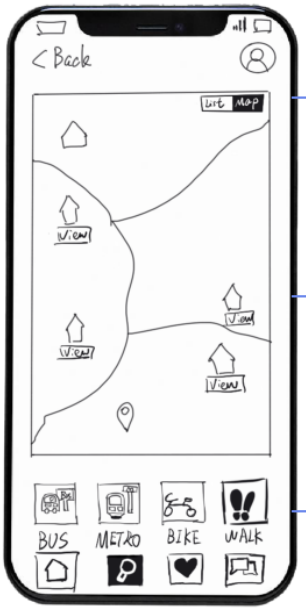
A slide bar is used to select the budget

The number of rooms can be selected with selecting one of the boxes

The search results will be filtered: by furniture, facilities, pet-allowance etc.

The button Search will bring the user to the next screen

View accommodations on map

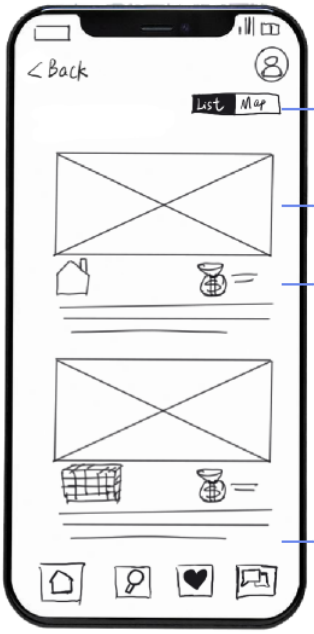


The user can choose between showing results in map or a list

The map shows accommodations near selected university

The user can select how to show the routes from the accommodation to university

View accommodations as list



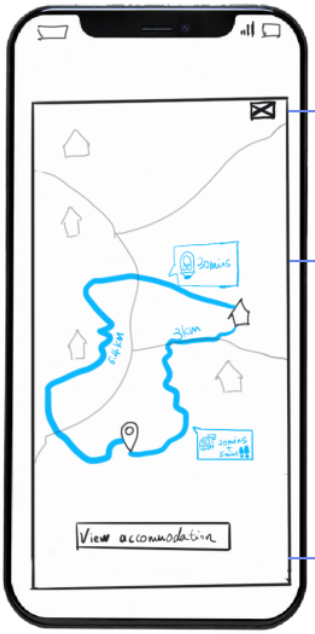
The user can choose between showing results in map or a list

The images of the accommodation are shown

The type of accommodation and price are displayed

More details: surface, number of people, number of rooms

Selected accommodation pop-up

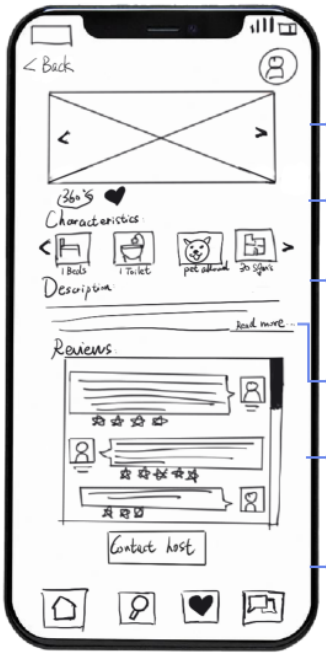


The user can exit the pop-up page by clicking the cross

The blue route shows the route from the selected accommodation to the selected unversity.

This button sends the user to the selected accommodation

Accommodation details



The images of the accommodation are shown

The accommodation can be shown in 360 view, and can be added to the favorite list

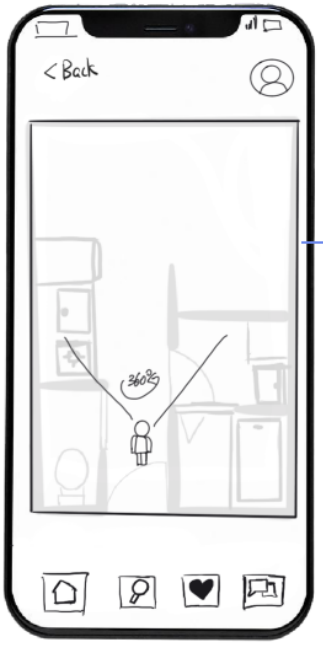
Characteristics of the house displayed in icons, starting with the filtered ones as they are thought to be most important to the user

Details are shown, and more can be displayed by clicking "Read more"

Reviews of previous tenants

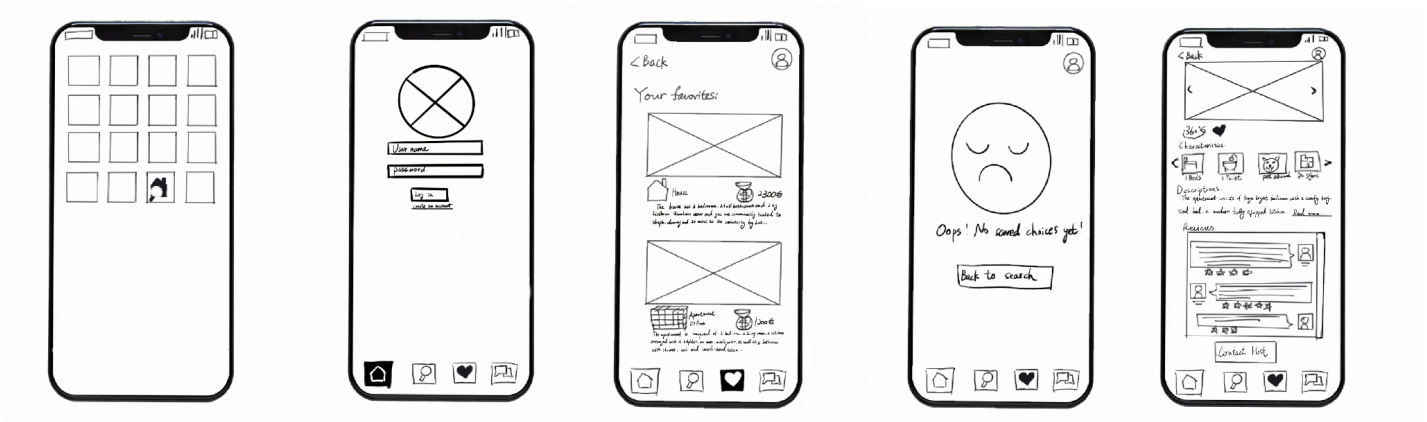
Host can be contacted, which leads the user to the chat page

Virtual experience accommodation

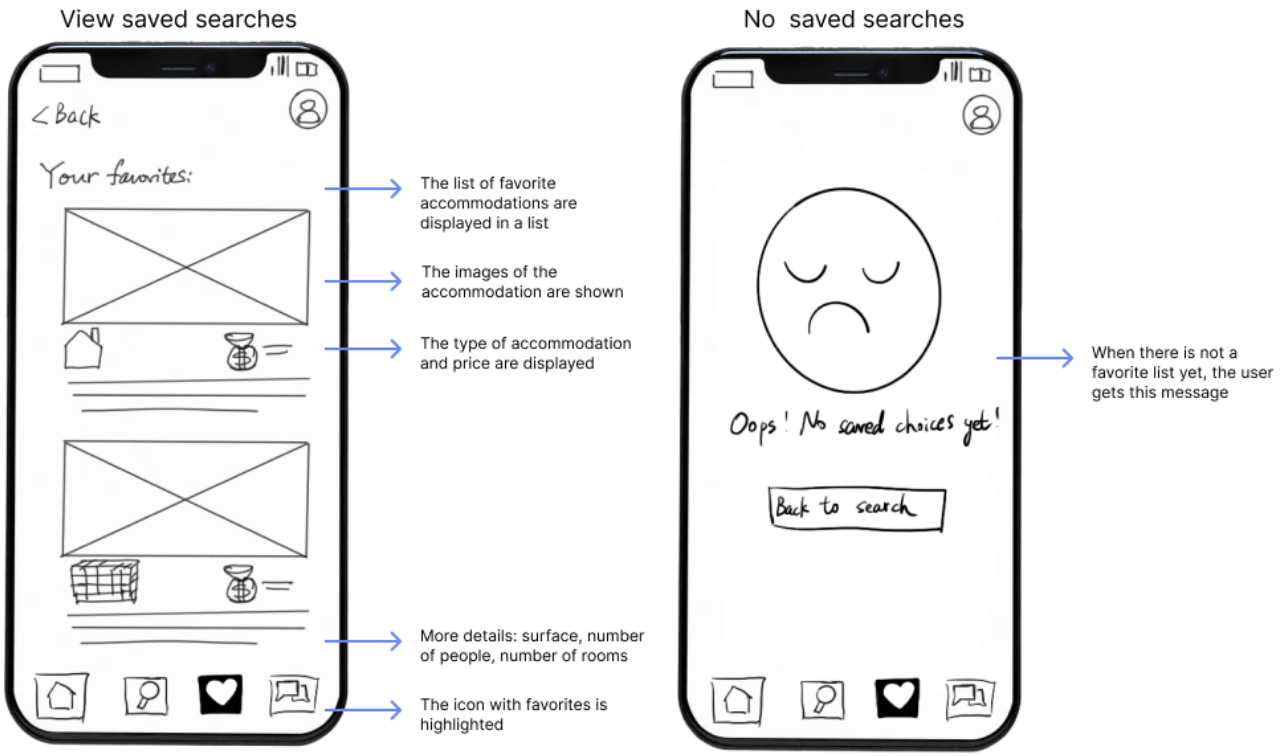


360 view can be done to experience the accommodation better

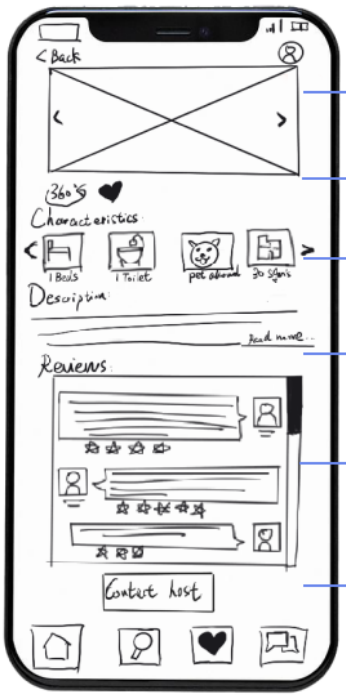
4.2. Task 2: Contact Host and Previous Tenants



Detailed Explanations:



Accommodation details



The images of the accommodation are shown

The accommodation can be shown in 360 view, and can be added to the favorite list

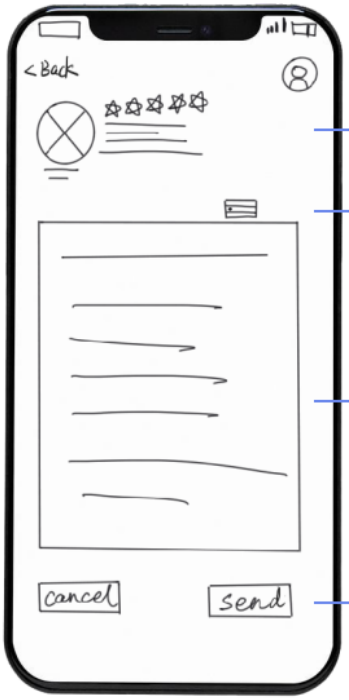
Characteristics of the house displayed in icons, starting with the filtered ones as they are thought to be most important to the user

Details are shown, and more can be displayed by clicking “Read more”

Reviews of previous tenants

Host can be contacted, which leads the user to the chat page

Contact host form



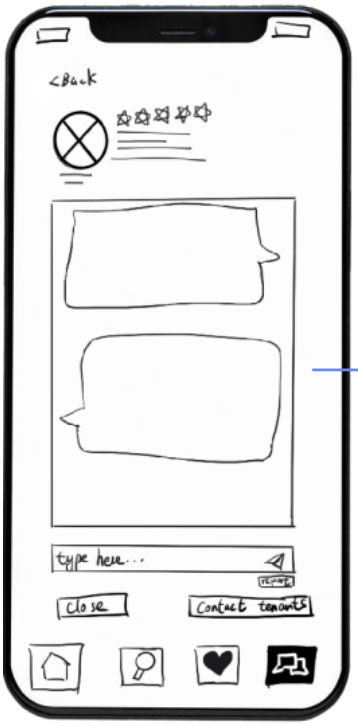
Profile of landlord or previous tenants is shown with review score (stars)

The flag icon can be used to change the language of the text

Contact details of user are filled in and message can be sent from the app

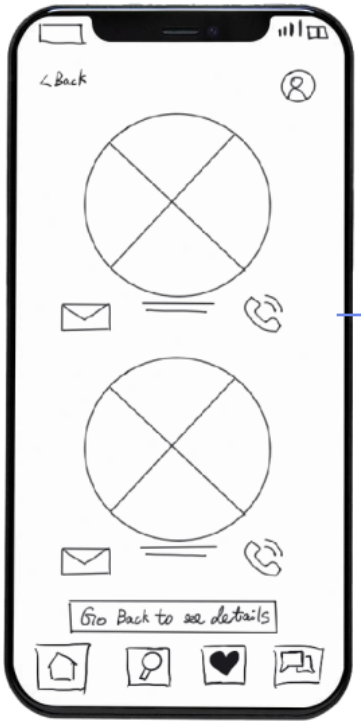
The message can be sent or canceled

Chat



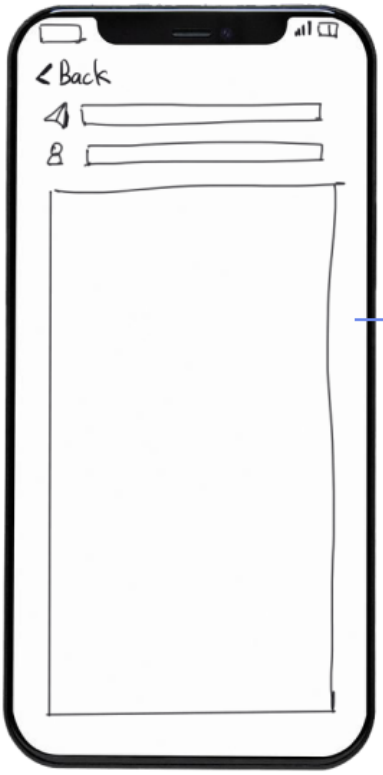
The chat can be accessed

View previous tenants



Previous tenants can decide to keep their contact details in the app to answer new tenants' questions

Send email



New tenants can send an email to previous tenants. This is different from chatting with the landlord, because old tenants probably will not have the app on their phone yet and are less attentive than the landlord

5. Links to Video Prototypes

- The video of paper low-fi prototype: https://youtu.be/BhRfxW1JDrc
- The video of balsamiq low-fi prototype: https://youtu.be/4vTKcpFf6zM

6. Links to Balsamiq Files

- Link for task 1: https://drive.google.com/file/d/1Qbnse8cbZNrIlkw83lVVFw9gggtimSb0/view?usp=sharing
- Link for task 2: https://drive.google.com/file/d/1PWU6xKeuJGp0j7CKFuHIbvQCA6wkN4sB/view?usp=sharing

7. Explanations of the Design Decisions

To begin with, during the design we focused on the learnability and efficiency usability attributes. The application is intended to be used frequently, but apart from that it is really important that the users can learn and accomplish the aforementioned tasks with ease, from the very first time they encounter the interface. Focusing on efficiency, we also tried to optimize the speed with which users can do tasks after they have learned the interface. For a student that is searching for accommodation, MadridHousingHub is an application that may be used several times, as the search process is highly iterative: If students are progressing and getting better at using the system, they will be motivated to stick with it in comparison with similar systems. At the same time, using the design with ease from the first try is one of the main goals, since a student might be able to find what they are looking for from the very first try.

Apart from focusing on the above attributes, we collected and analyzed the results from our qualitative analysis. Based on the user - task - environment analysis, we came up with the following conclusions:

1. The users were ignorant about the actual distances and transport connection aspects between the university, the city center, and the possible neighborhoods to live in.
2. The language (and the overall communication with the landlords) was one of the main constraints for our users.
3. For the majority of the users, the search process with websites moved really slow and they eventually chose an agency so that things could move smoother.
4. For the majority, the most important factor was having good public transport connections, both to the university and the city center.
5. For the majority, it was difficult to understand the layout and the “feeling” of the apartment from the images and videos.
6. Price was one of the most important factors.
7. Most users had clear requirements about the facilities they wanted the accommodation to include.
8. Understanding the surroundings and facilities around the neighborhood was important.

For the above - mentioned reasons, we decided to define quick and easy actions for almost all the tasks. We minimized text and unnecessary information on the interface and we focused on visual cues and icons that can be automatically recognized by the user. In detail:

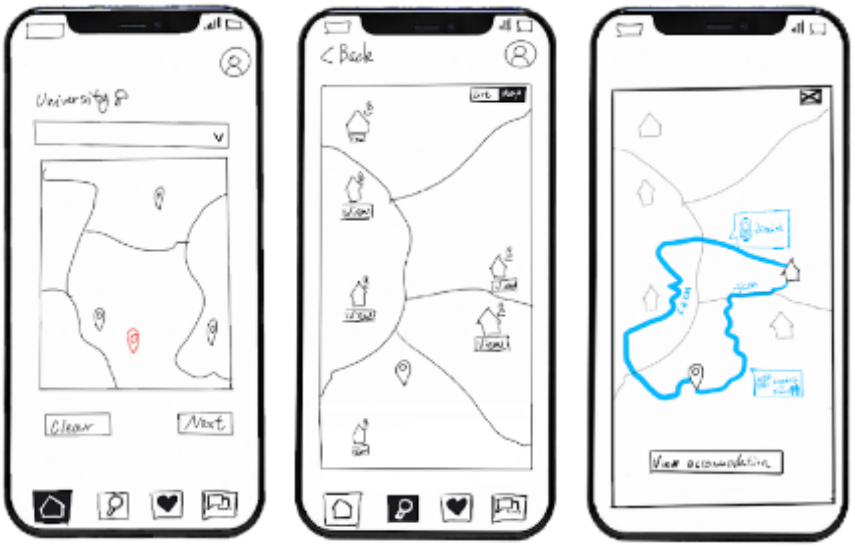
Task 1

Use of map functionalities:

According to the (1), (4) conclusions, we decided to implement a map functionality for all parts where users need to view locations and distances.

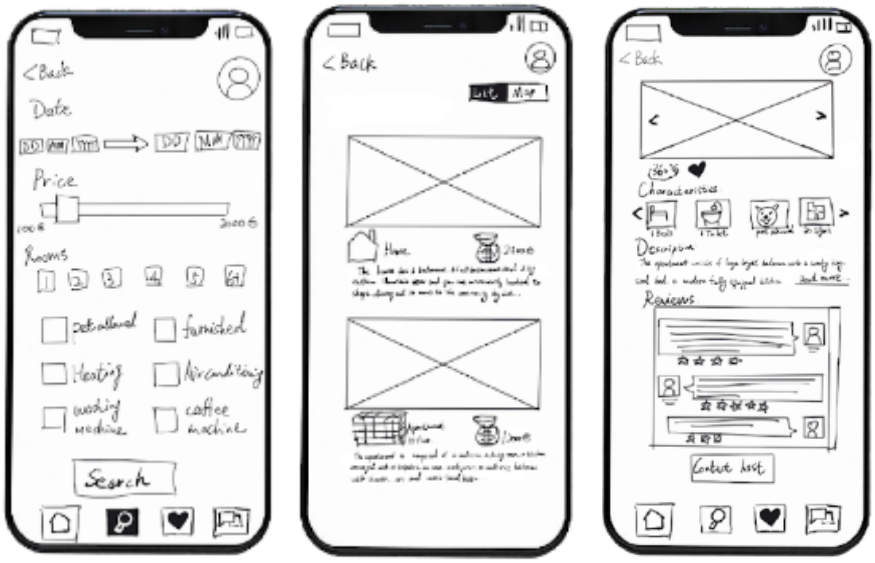
The initial action for the user is to select their university. This can be done either by choosing it from the dropdown (and in that way the location of it is depicted on the map) or choosing it directly from the map. The location of other universities are also shown on the map, and the selected university gets highlighted.

As a next step, the user can view all the recommended accommodations (based on the location and public connections of the university) on a map. Once an accommodation is selected, all the available routes, distances and connections are highlighted for the user.



Minimization of unnecessary information, use of icons and buttons, prioritization of important information, use of easily learnable and used visual components

As mentioned before, the learnability and efficiency of the system were 2 attributes that we focused on. That, combined with the clearly-defined requirements and facilities that all our users needed for the accommodation *(7)*, made us minimize input requirements by the users and instead use: calendar widgets, sliders, checkboxes, icons for the characteristics and common details of all accommodations (type, price). For the reviews, we also included the profile icons of the users, and only a minimum amount of text, including only the important summary of the review.



Use of app-authenticated reviews.

Almost all users had concerns about the validity of the accommodations they viewed online, as scams are really common. That is why we decided to include reviews of the accommodation and host, that will be validated, in terms of their authenticity, through the app.

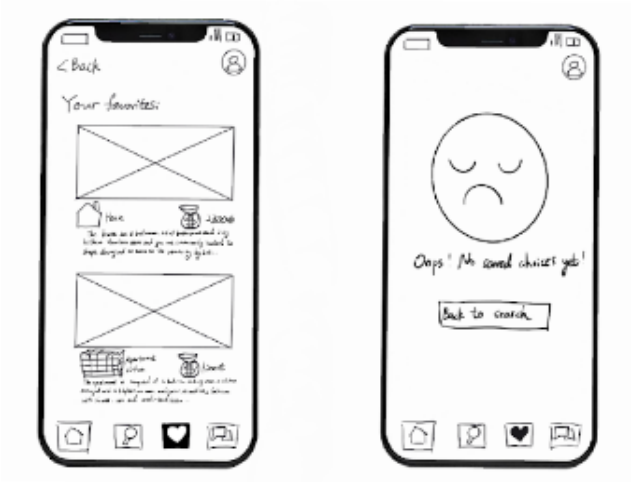
Use of 360 view functionality

All our users had trouble understanding the layout, components and the overall feeling of the accommodations *(5)*. Most users weren't able to visit the accommodation in real life before booking it, and even though they used facetime, they still highlighted the importance of experiencing the accommodation.

Task 2

Minimization of unnecessary information, use of icons and buttons, prioritization of important information, use of easily learnable and used visual components

Same as in Task 1, we tried to focus on minimizing the required input from the user, showing only the important information and using visual components that are easy to recognize and learn. Specifically, the initial action of the user for this task is viewing their saved searches, with the important information, or (in case they don't have any saved searches yet), being able to go back to search with the click of a button.



Apart from that, in the 'Contact Host Form', 'Chat' and 'View Previous Tenants' screens, we focused on using simple interface components (form, profile info, chat, email/phone buttons) that indicate the relevant action that is to be made by the user.

Use of automatic translation functionality

One of the most important issues highlighted by all users was the language and communication barriers *(2)*. Our users mentioned that many accommodation listings had details in Spanish. Also, when they tried to communicate with landlords, most of them only spoke Spanish, or didn't speak English on a good level and confusion was experienced. This is why we decided to design an automatic translation functionality for the Contact Host Form. The users can input their message and translate it in Spanish, but also they are able to translate the incoming response that they receive from landlords.

Contact previous tenants functionality

As previously mentioned, users had concerns about the validity of the accommodations they viewed online, as scams are really common. They also could not understand, simply from a phone call with the landlords, whether the accommodation was of good quality and if they should proceed with the booking of it. For that reason, we decided to incorporate a 'Contact Previous Tenants' functionality on the app. Tenants, in communication with the host, can register on the app and provide their profile and communication details so that they can help users and give them the information they need. Users, through the app, are able to view the profiles of the previous tenants and have 2 options to contact them: 1) with email, 2) with phone.