

Low Fidelity prototypes and planning of first usability evaluation

Human-Computer Interaction Project

Team 1

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1 Competing designs

1.1 Introduction to the designs

The main difference between the two developed designs is centred around the interaction style: the main interaction styles that will be used in the two competing designs are menus & forms and direct manipulation respectively.

The first design “NomadNexus” is centred around menus and forms to structure and simplify the data input and decision-making process for digital nomads, corporate workers, freelancers, or students. Users will be presented with their scheduled working sessions, the recently viewed places and recently connected people, along with filters to browse through available people to work or take a break with. The design will also allow users to make requests to work together and suggest suitable places for working, using predefined filters and options to minimize errors. Overall, the design aims to facilitate learning of the system while guiding users towards suitable options and actions.

The second design prototype “WorkWander” is based on the interaction style of direct manipulation. Digital nomads, corporate workers, freelancers, or students will interact with graphical objects to connect, send working requests, or suggest places to work together from. The interaction will be done mainly by swiping and clicking, but also with dragging, holding, and pointing. This design aims to provide fast and direct interactions, making the interface more enjoyable and easier to use for digital nomads on the go. Users will still be able to see scheduled working sessions, recently viewed places, and recently connected people, as well as browse through filters to find people to work or have a break with. The filters will be manipulated by clicking and dragging, as opposed to the first design. As in the first design, users will also be able to make a request to work together and suggest a place that suits both people based on specific filters. Compared to the first design, which is based on menus and forms, the second design offers a more intuitive and visual way of interacting and will encourage exploration, as users can play with different options and objects and see the outcome of their actions in real-time. Additionally, the second design is well-suited for digital nomads who may not have a lot of time to spend on the platform and need to quickly find a suitable place to work.

1.2 First design: NomadNexus

1.2.1 Viewpoint

Problem: Digital nomads who work or study online in various locations often feel isolated and have limited opportunities to interact with like-minded individuals. With the rise of remote working, there are only few opportunities for physical interactions.

Opportunity: There is a huge increase in the EU population working remotely. At the same time, most digital nomads today use their mobile phones to connect with other people through social media and to look for places to work from. Therefore, there is an opportunity for a system that allows digital nomads to connect with each other and suggest public places to work or study together.

Solution: The new system for digital nomads enables users to connect with each other and find new places to work from, matching their preferences. The design features a variety of tools that enable users to see where other people are working from, get in contact with them, organize

working or studying groups, arrange meetings during lunch breaks, and more. The platform also provides information about the popular public places to work from, including reviews and ratings. Additionally, users can define their working areas and choose the type of profession they would like to interact with, thus being able to connect with each other, build relationships, and work together to achieve their goals.

1.2.2 Interaction devices and styles

The interaction device of the design solution is the mobile phone. The specific device was chosen due to its favouritism amongst the users, its increased portability, and its unique interaction characteristics (facilitation of data entry, gesture-based manipulation, fast actions, access to location data).

The main interaction style of the 1st design is menu selection & form filling. The specific interaction style was chosen to structure and simplify the data input and decision process of the users. Users will be always presented with the possible actions and will be able to select (or insert) the suitable option or information, through understandable menus and forms that facilitate learning. Moreover, this interaction style will allow users to look around and explore the different filters and options, while at the same time being “guided” with a predefined set of options so that errors are minimized.

1.2.3 Scenario or storyboard

Carlos is a digital nomad, working in the User Experience Design field. He really likes being a freelancer, because that allows him to have a very flexible schedule, travel to a lot of places while working and organize his work as he prefers. However, he finds it challenging to connect with other like-minded individuals in his field, and he often ends up working alone in public places. Moreover, he is often “on the go” and he always carries his smartphone with him because a work issue might come up at any moment – he usually uses Google Maps to find a work-friendly cafeteria to work from, but he finds the experience disappointing. Also, he is tired of being unable to find a suitable place to work from, that fits all his preferences.

Yesterday, he used Google Maps to find a work-friendly cafeteria to work from but had a disappointing experience working alone with limited amenities. While searching for a cafeteria, he couldn't find information about the utilities, the menu of the places and the available seats. He also couldn't understand from the existing information whether each cafeteria was work-friendly and if he is going to find a comfortable seat to work from, and whether other freelancers with similar job fields enjoy working there. Finally, he found a cafeteria that looked nice from the pictures, and he went to work from there. The place was full of people, and he had to wait for 20 minutes in a very uncomfortable table for a place with access to power sockets to be free. The Wi-Fi was very unstable, resulting in him losing the connection every now and then and wasting valuable time of his work. On his breaks, he wanted to socialize and connect with other people working from there, but it seems that the place didn't have tolerance in people occupying a table while being away for a lot of time. Also, there weren't enough working persons there, as most of the customers were just normal clients going there for a coffee. Finally, he went back home feeling drained, dissatisfied, and lonely, as he couldn't connect and socialize with any other people in his field.

Today, he is in Madrid and looking for a place to work from, as well as an opportunity to meet and work with another freelancer. Also, he has been working alone for many days in a row, so he wants to meet a new person and invite him/her to work together. He comes across “NomadNexus”, which gives him the opportunity to find a person to work with today. He has his GPS activated, so based on his location he sees if there is someone in a 5km radius, that is

working in UI Design and is looking for a partner to work together with today. He finds several people, but he wants to choose someone with at least 6 years of experience. He asks the person to work with him, and he waits for his response. Once he receives the approval, he proceeds to suggest the perfect place to work together from. He wants to find a place that has a table for 2 available, good Wi-Fi connection, power sockets and has reviews from 4 stars and above. Also, he wants to find a place that has beverage offers for digital nomads. He also wants to choose the nearest place for both him and the other person. The place must be open until 22:00, because he wants to work until late. Once he has identified a suitable place, he chooses it, and he suggests his work partner to work from there.

At the end of the day, Carlos is delighted with his experience using Nomad Nexus. He was able to find a work café that met all his needs and discovered a new working partner in the process. Nomad Nexus made it easy for him to connect with like-minded professionals, work, and ultimately enhance his workday. He felt comfortable with how easy it was to learn the system and navigate through the several options in the traditional ways that he is already familiar with.

1.2.4 Low Fidelity prototype (video)

<https://youtu.be/Y4xxw8Yd-bE>

1.3 Second design: WorkWander

1.3.1 Viewpoint

Problem: Digital nomads who work or study online in various locations often feel isolated and have limited opportunities to interact with like-minded individuals. With the rise of remote working, there are only few opportunities for physical interactions.

Opportunity: There is a huge increase in the EU population working remotely. At the same time, most digital nomads today use their mobile phones to connect with other people through social media and to look for places to work from. Therefore, there is an opportunity for a system that allows digital nomads to connect with each other and suggest public places to work or study together.

Solution: The new system for digital nomads enables users to connect with each other and find new places to work from, matching their preferences. The design features a variety of tools that enable users to see where other people are working from, get in contact with them, organize working or studying groups, arrange meetings during lunch breaks, and more. The platform also provides information about the popular public places to work from, including reviews and ratings. Additionally, users can define their working areas and choose the type of profession they would like to interact with, thus being able to connect with each other, build relationships, and work together to achieve their goals.

1.3.2 Interaction devices and styles

The interaction device of the design solution is the mobile phone. The specific device was chosen due to its favouritism amongst the users, its increased portability, and its unique interaction characteristics (facilitation of data entry, gesture-based manipulation, fast actions, access to location data).

The main interaction style of the 2nd design is direct manipulation. The elements that are of interest to the users will be presented to them in the form of graphical objects, and in a way that is taken from the real world. These objects will be manipulated directly, by swiping, dragging, clicking, and pointing. The main reason this interaction style was chosen was because

of the fast and direct interactions that are associated with it. It also will make the interface more enjoyable, by presenting in a visual way the necessary tasks. As the competing design, this design will also encourage exploration, since users will be able to play with the different options and objects (for example by swiping) and directly see the outcome of their actions. Finally, with this interaction style the interface will be easy to learn, as well as easy for digital nomads to interact with while being “on the go”.

1.3.3 Scenario or storyboard

Layla is a digital nomad, working remotely in the User Experience Design field. She really likes working 100% remotely, because that allows her to have a very flexible schedule and travel to a lot of places while working. However, she finds it challenging to connect with other like-minded individuals, and she often ends up working alone in public places. Moreover, she is often “on the go” and she always carries her smartphone with her because a work issue might come up at any moment – she usually uses Google Maps to find a work-friendly cafeteria to work from, but she finds the experience disappointing, slow, and dull. She also misses important information from the results of Google Maps, as she would like to know more about the place she is working from.

Yesterday, she used Google Maps to find a work-friendly cafeteria to work from but had a disappointing experience working alone with limited amenities. While searching for a place, almost immediately she felt frustrated about the lack of efficiency, and the necessity to click through several different menus to see the information that she wants. Also, every time she is in Madrid she gets the same recommendations from Google Maps, whereas she wants to experiment with different and more broad combinations and explore new possibilities. While searching for a cafeteria, she could only find the information that she wanted (utilities, menu, atmosphere) after selecting several elements and going through many different pages of each cafeteria. She also wanted to connect with new people online in a more enjoyable and stimulating way, to finally work together with today. Finally, she found a cafeteria that looked nice from the pictures, and she went to work from there. The place was full of people, and she had to wait for 20 minutes in a very uncomfortable table for a place with access to power sockets to be free. The Wi-Fi was very unstable, resulting in her losing the connection every now and then and wasting valuable time of her work. On her breaks, she wanted to socialize and connect with other people working from there, but it seems that the place didn’t have tolerance in people occupying a table while being away for a lot of time. Also, there weren’t enough working persons there, as most of the customers were just normal clients going there for a coffee. Finally, she went back home feeling drained, dissatisfied, and lonely, as she couldn’t connect and socialize with any other people in her field.

Today, she is in Madrid and looking for a new place to work from, as well as an opportunity to meet and work with another freelancer. Also, she has been working alone for many days in a row, so she wants to meet a new person and invite him/her to work together. She comes across “WorkWander”, which gives her the opportunity to find a person to work with today, the 17th of the month. She has her GPS activated, so based on her location she sees if there is someone in a 5km radius, that is working in UI Design and is looking for a partner to work together with today. She finds several people, but she wants to choose someone with at least 6 years of experience. She asks the person to work with her, and she waits for his response. Once she receives the approval, she proceeds to suggest the perfect place to work together from. She wants to find a place that has a table for 2 available, good Wi-Fi connection, power sockets and has reviews from 4 stars and above. Also, she wants to find a place that has beverage offers for digital nomads. She also wants to choose the nearest place for both him and the other person.

The place must be open until 22:00, because she wants to work until late. Once she has identified a suitable place, she chooses it, and he suggests her work partner to work from there.

At the end of the day, Layla is delighted with her experience using WorkWander. She was able to have a more intuitive and fast experience, and she enjoyed swiping through the several options to connect with people and find a cafeteria that met all her needs. Moreover, she discovered a new working partner in the process, with whom she will keep in touch to work together again. WorkWander made it easy for her to connect with like-minded professionals, work, and ultimately enhance her workday.

1.3.4 Low fidelity prototype (video)

<https://youtu.be/Y4xxw8Yd-bE>

2 Planning of the usability testing

2.1 Evaluation goals

Perform a usability testing of the two low-fidelity prototypes, with special interest in how well each prototype fits the mental models of the participants. The usability testing will be performed using the “thinking-aloud” technique. During the test, we will measure effectiveness, efficiency, and user satisfaction.

2.2 Dates, places, and roles

Test	Date and time	Place	Comments
1	Wednesday 29/03/2023, from 16:00 to 19:00	IMDEA Software Institute, Campus de Montegancedo s/n, 28223 Pozuelo de Alarcón, Madrid	2 corporate workers, 1 student
2	Thursday 30/03/2023, from 10:00 to 14:00	IMDEA Software Institute, Campus de Montegancedo s/n, 28223 Pozuelo de Alarcón, Madrid	4 students
3	Friday 31/03/2023, from 10:00 to 14:00	Starbucks, C. de la Princesa, 40, Madrid	4 freelancers
4	Monday 03/04/2023, from 10:00 to 14:00	Starbucks, C. de la Princesa, 40, Madrid	2 corporate workers, 2 freelancers

Test	“Computer”	Facilitator	Observers
1	Alessandro	Shubankar	Fani, Jessica
2	Fani	Alessandro	Jessica, Shubankar
3	Jessica	Fani	Shubankar, Alessandro
4	Shubankar	Jessica	Alessandro, Fani
5	Alessandro	Shubankar	Fani, Jessica
6	Fani	Alessandro	Jessica, Shubankar
7	Jessica	Fani	Shubankar, Alessandro
8	Shubankar	Jessica	Alessandro, Fani

9	Alessandro	Shubankar	Fani, Jessica
10	Fani	Alessandro	Jessica, Shubankar
11	Jessica	Fani	Shubankar, Alessandro
12	Shubankar	Jessica	Alessandro, Fani
13	Alessandro	Shubankar	Fani, Jessica
14	Fani	Alessandro	Jessica, Shubankar
15	Jessica	Fani	Shubankar, Alessandro

2.3 Participants

Participants	6 freelancers, 5 students, 4 corporate workers
Recruiting	For the usability testing of our low-fi prototype mobile application, we will be using a two-pronged approach to recruit participants. The first approach will involve directly contacting potential participants who are working or studying remotely, and agreeing on meeting at the IMDEA building and conduct the observation. The second approach will involve going to Starbucks cafe and observing people who are using their laptops and appear to be remote workers or students. We will approach them and explain the purpose of our study, and ask if they would be interested in participating. This approach will allow us to target a larger group of potential participants who may not have been initially considered, while also allowing us to observe participants in their natural environment. Our study is designed to be inclusive and accessible to a wide range of participants. However, we acknowledge that English proficiency may be a potential limitation for some participants. As such, we will make efforts to ensure that our study materials are clear and concise, and we will provide assistance with any language-related issues that participants may encounter.

2.4 Sequence

2.4.1 Welcome text

Hello and welcome to our usability testing session for our new software system designed for digital nomads like you who work or study online in various locations of your choosing, such as cafes and public spaces. Our system aims to improve your working/studying life by adding interaction with people who share your common goals.

The purpose of this testing is to discover any problems with our design. We want to ensure that our system is user-friendly and meets your needs. We value your honest feedback and will use it to improve our product.

Our system allows you to interact more while working/studying by providing features such as seeing where others are working/studying from, getting in contact with them, and finding places to meet up. You can also get information about workspaces, read reviews, and see offers from cafes and public spaces. Additionally, you can define your working area and choose to interact or collaborate with other professionals for specific projects.

During this testing, we will ask you to use the think aloud protocol. This means we want you to verbalize your thoughts as you interact with our system. We encourage you to share your impressions, feelings, and questions as they arise. By doing so, we can better understand your thought process and identify any areas where you may have difficulty using our system. This will help us improve our product and ensure that it meets your needs. Don't worry about making

mistakes or having doubts; your feedback is valuable to us, and we appreciate your honest thoughts throughout the testing process.

We appreciate your time and effort in participating in this usability testing, and we hope you enjoy using our software system. Thank you!

2.4.2 Process

1. Say the “welcome text” (2.4.1) to the participant.
2. Gather personal information (2.5).
3. Do the usability testing of one of the prototypes. Ask the participant to perform the tasks (2.6), gather data (2.7) and observations (2.8).
4. After using the prototype, ask the participant to fulfil the user satisfaction questionnaire (2.9) and ask for general impressions (2.10).
5. Repeat 3, 4 for the other prototype.

2.5 Personal information questionnaire

The questionnaire will be prepared as an electronic form for efficient collection and organization of responses. Digital storage and analysis will enable easier identification of trends and patterns.

Personal information questionnaire

 alessandro.cavallotti00@gmail.com (non condiviso)
[Cambia account](#)



*Campo obbligatorio

Participant ID *

La tua risposta

Date of test *

La tua risposta

Time of test *

La tua risposta

Age *

La tua risposta

Gender *

La tua risposta

How much time do you spend per day using personal computers for work or study? *

La tua risposta

How much time do you spend per day using smartphones for work or study? *

La tua risposta

What is your current occupation? *

La tua risposta

Do you work or study remotely? *

La tua risposta

How frequently do you work or study from a public space like a café? *

La tua risposta

2.6 Tasks to be performed by participants

Task	Task 1
Title	Find a work partner using the "Digital Nomads Space" app
Starting situation	You're a freelancer living in Madrid and you're looking for a reliable partner who can help you complete a project you're working on today.
Task instructions	Your goal is to find a potential work partner for today, the 17 th of the month, who lives within a 5km radius, specialises in UI design and has at least 8 years of experience in the field. Once you have identified a suitable candidate, you can send them a work request and wait for their response.

Task	Task 2
Title	Suggest a place to work from to your working partner using the "Digital Nomads Space" app
Starting situation	You have now received confirmation from your working partner that you will collaborate on a project. You are now seeking a suitable location to work from, where you can stay until late to ensure the project is completed on time.
Task instructions	Your objective is to suggest a suitable work location to your colleague that features tables accommodating 2 people, reliable Wi-Fi connectivity, and power outlets for charging electronic devices. Additionally, you aim to identify a work-friendly café with a good reputation, indicated by a rating of four stars or higher that also offers discounts on the menu for digital nomads. The place has to be the closest to both of you and as you have work to complete, it is important that the chosen venue is open until at least 10pm.

2.7 Objective measurements

Measurement	Description
Actions	Number of elemental actions performed (click, tap, ...) to complete one task.
Mistakes	Number of mistakes made during one task.
Success	Yes/no (whether the participant succeeds at completing the task).

2.8 Observation sheet

Task 1

Prototype number

Actions (tick when completed)

- ☐ Go in the connect with people section.
- ☐ Filter the list of working partners for today.
- ☐ Filter the list of working partners who lives within a 5km radius.
- ☐ Filter the list of working partners who are specialist in UI design.
- ☐ Find a working partner with at least 6 years experience in the field.

☐ Send the working partner the request.

Success (record when observed)	Mistakes (record when observed)

Participant Comments:

Positive comments	Negative comments

Relevant observations:

Task 2

Prototype number

Actions (tick when completed)

- ☐ Go in the notification section.
- ☐ Start the flow of suggesting a place to the working partner.
- ☐ Filter the list of cafes by those that have tables for 2 people.
- ☐ Filter the list of cafes by those that have Wi-Fi.
- ☐ Filter the list of cafes by those that have power outlets.
- ☐ Filter the list of cafes by those that have rating of 4 stars or higher.
- ☐ Filter the list of cafes by those that offer discounts on the menu for digital nomads.
- ☐ Sort the list of cafes by the closest to both filters.
- ☐ Find the place that is open until 10pm.
- ☐ Send the suggestion of the place.

Success (record when observed)	Mistakes (record when observed)

Participant Comments:

Positive comments	Negative comments

Relevant observations:

2.9 User satisfaction: SUS questionnaire

Participant ID	
Evaluated prototype	
Date and time	

Reply with your degree of agreement or disagreement to the following ten sentences, where 1 means “I totally disagree with the sentence” and 5 means “I totally agree with the sentence”.

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

2.10 General impressions

Participant ID	
Evaluated prototype	
Date and time	
1. What are the main problems you have found while using this prototype?	
2. What is the part of the prototype that has been more difficult to understand? Why?	
3. Can you describe your overall experience with this prototype?	
4. Which is the prototype that you prefer? Why?	
5. What have you liked the most of each prototype?	