Human-Computer Interaction
Challenge 3 – CA3

Nicolas D'Alessandro Calderon

Outline and competencies C3

Graded assignment

Start	Deadline	Grade	Time
18/03/25	14/04/25	28/04/25	43h

Have you ever thought about how to propose your own interface? This Challenge teaches you methods to design and implement your interface proposal.

Related competencies and Learning outcomes

Related competencies	Learning outcomes
Use and application of ICT in the academic and professional field.	- Carry out the design of happy paths with the relevant ICT tools. - Develop a functional prototype through the use of ICT tools.
Work collaboratively in multidisciplinary teams to develop projects in a specific thematic area (health, education, agriculture, industry 4.0, etc.).	- Develop an interface proposal that allows improving the presentation of information in specific areas. - Reflect on design principles and their use in a multidisciplinary proposal.
Analyze, conceptualize, design and evaluate interaction processes and their interfaces in the field of HCI.	- Analyze the information obtained and adapt it to the scope of application. - Design a prototype within the scope of HCI. - Reflect on the interaction with the platform.

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Case Study

🔲 🚌 Accessible Public Transport Apps 🌍 ♿

Nowadays, mobile public transport applications are key tools for planning routes, checking schedules, and ensuring efficient mobility. Examples like **Moovit, Citymapper, and Google Maps** allow millions of users to find real-time transport options. However, for people with **visual or motor disabilities**, these applications present challenges regarding **accessibility, usability, and customization**.

Some of the most common difficulties include the **lack of customizable options in the interface, unclear information about accessible routes, and intrusive notifications**. These barriers limit user confidence and experience when interacting with these applications, reducing their effectiveness and accessibility.

How can we optimize the user experience in public transport applications to make them more inclusive, accessible, and valuable for people with visual or motor disabilities?

To address the challenges posed throughout the semester, you must use the provided application examples, as they are specifically designed for this type of service. **You must work only with the examples from this case study, as PECs based on other examples or cases will not be accepted.** Below are examples of public transport applications:

- **Moovit**: A platform that allows users to plan public transport routes.
  URL: https://moovitapp.com
  Free version: It includes essential features such as route planning and real-time schedules.

- **Citymapper**: Provides detailed multimodal route information with advanced options for public transport, cycling, and walking.
  URL: https://citymapper.com
  Free version: Yes, it includes interactive maps and basic planning options.

- **Google Maps**: A tool with public transport information, directions, and interactive maps.
  URL: https://maps.google.com
  Free version: It includes access to all main features.

Project Development

Throughout the semester, the mentioned applications will be analyzed, and you will develop your **inclusive public transport application prototype**, applying **Human-Computer Interaction (HCI), User-Centered Design (UCD), and Universal Design (UD) principles**. To effectively achieve this, consider the following **five requirements**:

1. **Interface Customization**: Allow accessibility adjustments such as **high-contrast mode, screen reader support, and text size adjustments** to enhance the experience for low-vision users.
2. **Accessible Route Planning**: Implement filters that prioritize **routes with accessible features**, such as **functional elevators and ramps**, while avoiding **paths that include stairs**.
3. **Interactive Navigation**: Provide **step-by-step navigation with multimodal options (visual, auditory, and haptic)** adapted to each user's capabilities.

4. **Configurable Alerts**: Offer **customizable notifications** to alert users about **route changes, out-of-service access points, and other relevant incidents** tailored to individual preferences.
5. **User Feedback**: Include a feature that allows users to **evaluate route accessibility and generate reports** that can be shared with authorities or developers for future improvements.

With these requirements in mind, your **accessible public transport application prototype** aims to **overcome the most common barriers** faced by users, particularly those with **accessibility needs**, when interacting with these platforms. By applying **Human-Computer Interaction (HCI) principles**, the goal is to create an **optimized user experience** that ensures an **intuitive, efficient, and inclusive** design, facilitating **mobility and autonomy** for all users.

Introduction for the assignment C3

📍 DEFINITION

We are currently in the **Generation** stage of our User-Centered Design (UCD) methodology. This challenge invites us to employ the **User Journey** technique, a key tool that will provide us with deep and detailed insights about the experiences and expectations of our users. These insights will be essential for enriching and refining our **low-fidelity prototype**.

During this process, we will not only rely on the ideas we conceptualized earlier, but also expand upon them. We will integrate and apply the new perceptions acquired to evolve our design. This approach allows us to build on what has already been established, ensuring that each improvement and adjustment is informed and aligned with the real needs and desires of the users.

1. User Journey

The **User Journey** technique describes two levels of interaction: on the one hand, it shows the sequence of actions carried out by the user from the starting point to the end point; on the other hand (and in parallel), at each of the points, empathy work is developed to show the user's expectations, behavior, emotions, satisfaction level, etc., at each moment.

💡 Consult the **User Journey Guide**.
💡 Example of **UJ1** **UJ2**

2. Prototyping

A **low-fidelity prototype** is a fundamental concept in the field of User-Centered Design (UCD), acting as an essential tool in the early stages of the design process. These prototypes are simplified representations of a product or an interface, created with the goal of exploring ideas and concepts quickly and at a low cost. Characteristically, they are made with simple digital mockups, allowing designers and users to focus on functionality and the overall layout of elements, rather than on aesthetic or technical details. This simplicity facilitates rapid iteration and early feedback, key elements for validating and refining ideas before investing in higher fidelity and more complex developments. **Low-fidelity prototyping** is, therefore, a valuable tool for identifying and solving usability issues from the earliest stages of design.

⚠️ **Usability** is defined as the ability of a system, product, or service to be used effectively, efficiently, and satisfactorily by users. It is an essential aspect that determines the ease of use and the intuitive experience of an interface, encompassing design clarity, ease of navigation, and the speed with which users can complete tasks.

💡 Check **Prototyping Guide**, and access the Prototyping Laboratory resource, where you can find documentation on different tools for prototyping.

3. Fundamental Concepts of Interaction

Upon reaching this phase, the generation of your low-fidelity prototype, it is essential to validate how basic HCI (Human-Computer Interaction) concepts have been incorporated, such as: **metaphor**, **affordance**, **visibility**, **feedback**, **constraint** and **mental model**. This stage is not only important to ensure that these principles have been correctly applied, but also to understand their impact on the user experience. The proper integration of these elements is crucial for creating an intuitive and easy-to-use interface, which in turn can significantly improve **usability** and **user satisfaction**. Reviewing your prototype with these considerations will allow you to identify areas of success and aspects that may require refinement.

💡 Check out the **Human-Computer Interaction** material.

Instructions for the assignment C3

📍 GENERATION

In the Generation stage of our User-Centered Design (UCD) process, we will focus on applying the **User Journey** technique to gather insights about the experiences and expectations of users. This valuable information will be key to improving and refining the **low-fidelity prototype**, expanding existing ideas with new findings. Additionally, we will evaluate how basic **Human-Computer Interaction (HCI) concepts** are applied in the prototype, ensuring that the final design is not only functional but also tailored to the needs of users, thereby optimizing **usability** and **user experience**.

1. User Journey

To carry out the **User Journey**, consider the results and experiences identified in the User Testing, in which you analyzed **two (2) requirements from the case study** for one (1) of the applications in the **case study**.

👉 Create a User Journey **Happy Path** for each of the **two (2) requirements**, taking into account the following points:

1. Goal and its phases
2. Characteristics: Touchpoints, Actions, and Emotions.
3. Opportunities and solutions for the detected Pain Points

⚠️ A **Happy Path** in User Journeys refers to the ideal scenario or the most optimal flow of interaction a user can experience when using a product or service. This path represents a series of steps or actions where everything works perfectly, without errors or complications, and the user achieves their goal efficiently and satisfactorily.

2. Prototyping

👉 Considering the Happy Paths and your initial ideas, now is the time to continue evolving your low-fidelity prototype.

*   **Prototype** the functionalities necessary to satisfy the **two (2) requirements** you have worked on, considering the interaction and navigability between their interfaces. We recommend using **Figma** as the main tool to develop your prototype, as it is the most suitable option. Additionally, you can rely on the resources available in the Prototyping Laboratory to improve your design and interaction.
*   **Describe** in your report the prototype you created, explaining its main functionalities, the tools used for its design, and the justification for your choice.
*   **Present the most notable functionalities** of your prototype's **two (2) requirements** in a video of a **maximum of three (3) minutes** and publish it on Present your prototype discussion forum. Add the link to your prototype in the video description or a comment.
*   **Participate and comment** on the prototype of at least one classmate on Present your prototype discussion forum, indicating which of the functionalities you found to be the best implemented and justify the reason.

⚠ Consider the results obtained in the previously applied techniques, both in challenge 1 (flowchart and user testing) and in the results of the User Journey, focusing on the definition of the flow and the interactions performed by the users. **It is highly recommended that the prototype be as interactive as possible**, as we will use it in the next challenge to perform a new user test.

⚠ Indicate in the **delivery** document and on Present your prototype discussion forum the link to your prototype; **it must be in the cloud and public.** Check that it can be accessed without any registration or login. A good way to do this is by verifying that you can access it without problem from an incognito window in your browser.

3. Fundamental Concepts of Interaction

👉 With this version of your prototype, it's a good time to analyze how you apply these concepts: **metaphor, affordance, visibility, feedback, constraint** and **mental model**.

4. Reflections

👉 To conclude the **generation phase**, reflecting on the **lessons learned** and how the activities carried out in this stage, such as the **User Journey, prototype refinement, and HCI concept analysis**, contributed to improving your design is essential. Select one (1) of the reflection questions below and record a video of up to 3 minutes with your response.

- How did the User Journey help you identify critical points in the user experience?
- What changes did you make to your prototype based on the findings from the User Journey?
- When applying HCI concepts, which was the most difficult to implement in your prototype and why?
- What important lesson did you learn from creating interactive navigation within the prototype?
- If you had to design another interactive interface, what would you do differently based on this experience?

Deliverables

To complete the submission of this activity, attach the final document to the **Delivery Activity C3** section. The format of your document must be **PDF and** uncompressed, and the video must be in **.mp4** format. This will ensure that the content remains **accessible** and maintains its **original format**, making it easier to review.

⚠️ Remember to verify that all elements of your work are included and displayed correctly in the document before uploading it.

Assessment and evaluation criteria

The evaluation will take into account the presentation of the document, as well as its structure (cover, index of contents, development of the answers), legibility (adequate font for reading and body size of 12 points) and organization (numbered pages, heading with the name of the student and the degree course). Writing, clarity, expression, and spelling will be valued.

✏️ As for the evaluation criteria for each of the tasks, they are described in the **Challenge 3 rubric.**

IMPORTANT

In this activity, only limited use of artificial intelligence tools is permitted. Specifically, in a UX design project, both textual and visual AI tools can be used to generate and sketch ideas, contextualize concepts, propose prototypes, or combine elements innovatively or alternatively. If these tools are used, **it is necessary to explicitly and correctly cite the use of AI tools** in the work's development. This includes: indicating in the submission which **tools** have been used in each section of the activity, the **objectives**, the **prompts** used, the **response** obtained, and the process followed to review and edit the output. To do this correctly, consult the guide How should we cite AI in our works? Information on what is considered irregular conduct and its consequences can be found in the teaching plan and the

[UOC's website about academic integrity and plagiarism](#). Remember that personal, confidential, or intellectually protected information must not be provided using generative AI tools.

Remember that improper use of generative AI, such as not reviewing the obtained response or failing to cite the used tools, will be considered irregular conduct in the assessment. In case of doubt, consult with the teaching staff.

Answers for the assignment C3

1 User Journey

1. **1** TODO

TODO

2 Prototyping

2.1 TODO

TODO

https://www.figma.com/design/0wsxDYbZGmxKfQCwQD0gmC/Accesible-Route-Planning---Checkpoint?m=auto&t=7ijcBxLGBpJOASmO-1

3 Fundamental Concepts of Interaction

3.1 TODO

TODO