**Human-Computer Interaction**

Challenge 2– CA2

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**Outline and competencies C2**

### Graded assignment

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

### Have you ever thought about measuring whether an interface works well or not? In this practical challenge, we will learn to use some tools to obtain qualitative and quantitative data in order to evaluate the current state of an interface

### Related competencies and Learning outcomes

| **Related competencies** | **Learning outcomes** |
| --- | --- |
| **Transmit information, ideas, problems and solutions to both a specialized and non-specialized audience;** | * Explain the different user profiles participating in the project * List the different elements to improve |
| **Summarize, interpret, present and critically contrast the results obtained using the most appropriate analysis and visualization tools.** | * Identify different platforms or systems similar to the one presented. * Reflect on the operation of systems similar to the given case study. * Summarize the strengths and weaknesses in different platforms, systems or services. |
| **Analyze, conceptualize, design and evaluate interaction processes and their interfaces in the field of HCI.** | * Analyze how the fundamental concepts are applied to the case study |

**Table of Contents**

[1️⃣ Flowchart 9](#_Toc193242489)

[2️⃣ User Testing 14](#_Toc193242491)

[3️⃣ Universal Design Principles 16](#_Toc193242492)

[4️⃣ First Version of the Prototype 24](#_Toc193242493)

## **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](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](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](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 C2**

📍 DEFINITION

#### After completing the **research**stage in our User-Centered Design (UCD) methodology, it's time to move on to the second challenge, where our focus will be on **defining the proposal for the interface**. In this stage, we will apply key methods to ensure that our design is both functional and intuitive. First, we will use **flowcharts** to understand the user journey. Then, we will conduct tests with users who meet the profiles we have previously defined. These 2 methods allow us to obtain direct feedback and understand how users interact with the applications in our [**case study**](https://aula.uoc.edu/courses/50236/pages/case-study).

#### In addition, we will incorporate the **principles of universal design**, aiming to create an interface that is accessible and usable for the widest possible range of users, regardless of their abilities or limitations. And finally, this stage will culminate with the creation of the**first version of our prototype**, where we begin to bring to life the ideas and findings obtained so far, all these pieces will come together to form an initial design solution that will then be refined.

**1. Flowchart**

[**Flowchart**](http://human-computer-interaction.aula.uoc.edu/flowchart/)in Human-Computer Interaction (HCI) are crucial visual tools that represent the sequence of steps and decisions in a user's interaction with a system or application. These diagrams provide a clear and structured view of how users navigate and perform tasks, helping to identify potential friction points or inefficiencies. By visualizing the flow of the user experience, the interface can be optimized for more intuitive and efficient navigation, which is essential for creating digital products that are easy to use and meet users' needs and expectations.

💡Consult the [**Flowchart Guide**](https://human-computer-interaction.aula.uoc.edu/guia/flowchart/)**.**

💡Example of [**Flowchart**](https://aula.uoc.edu/courses/50236/files/6247736?wrap=1)

**2. User Testing**

[**User testing**](https://human-computer-interaction.aula.uoc.edu/user-testing/) is essential in the design and development of products, as it provides an understanding of the user's needs and behaviors. Through this evaluation, usability problems that are not evident to designers are identified, allowing for adjustments that significantly improve the user experience. This process validates design assumptions, reduces long-term development costs, and increases user satisfaction and loyalty, ensuring that the final product is not only functional but also intuitive and appealing to the user.

💡Consult the [**User testing Guide**](https://human-computer-interaction.aula.uoc.edu/guia/user-testing-guide/)**.**

💡Example of [**User Testing**](https://aula.uoc.edu/courses/50236/files/6247734?wrap=1)

**3. Universal Design Principles**

[**Universal design**](https://human-computer-interaction.aula.uoc.edu/accessibility/) is an inclusive approach in creating products and environments that aim to be accessible and usable by all people, without the need for adaptations or specialized designs. It focuses on creating solutions that cater to the widest possible range of abilities, ages, and other user characteristics, ensuring equality of access and user experience. This approach not only improves accessibility for people with disabilities but also benefits the general population, promoting the creation of more functional and versatile products. Nowadays, universal design is particularly relevant for the development of technologies and web applications that are inclusive and accessible to everyone.

💡Ckeck in W3C [AccessibilityLinks to an external site.](https://www.w3.org/WAI/fundamentals/accessibility-intro/)

💡Universal Design [example](https://aula.uoc.edu/courses/50236/files/6247726?wrap=1).

**4. First Version of the Prototype**

This first version of the [**prototype**](https://human-computer-interaction.aula.uoc.edu/prototyping/) provides a tangible validation of the initial ideas and concepts. Put the first ideas of your prototype into practice by integrating the results you have obtained by applying the different techniques from challenges 1 and 2. The objective is for you to start representing with generic components the elements of the interface of your proposed solution.

💡Consult the [**Prototyping Guide**](https://human-computer-interaction.aula.uoc.edu/guia/prototyping/)

💡Prototype[**example**](https://aula.uoc.edu/courses/50236/files/6247730?wrap=1)

## **Instructions for the assignment C2**

📍 DEFINITION

In this **Definition**stage: Synthesis of the Proposal of our User-Centered Design (UCD) process, it is now time to focus on how our ideas begin to take shape, concentrating on shaping the interface of our **prototype**. To do this, we will use four key methods: the creation of **flowcharts**to map the user path, **tests**with real **users**to obtain direct feedback, the application of **universal design principles** to ensure accessibility and inclusion, and finally, we will develop the **first version of our prototype.**

**1. Flowchart**

👉 Create flowcharts for **two (2) of the**[**case study**](https://aula.uoc.edu/courses/50236/pages/case-study)**requirements** that you find most interesting.

⚠️ For each [**flowchart**](http://human-computer-interaction.aula.uoc.edu/flowchart/):

* Define all steps textually.
* Appropriately use each figure of the diagram: diamonds, squares, and circles.
* Connect the steps with arrows.

⚠️ Once you have the diagrams, analyze them and answer the following questions for each one:

* How many steps do you have to take to complete each diagram and how much time do you invest?
* Is there only one way to complete the task?
* What points are the most problematic in your opinion?
* What points are the clearest in your opinion?

**2. User Testing**

👉 Apply the [**User testing**](https://human-computer-interaction.aula.uoc.edu/user-testing/) technique:

* Select **one (1) reference application**from the [**case study**](https://aula.uoc.edu/courses/50236/pages/case-study).
* Contact **two (2) users** interested in the theme of our case study who match the characteristics of the user profiles defined in Challenge 1 (they can be friends, family, colleagues, etc.).
* Choose **two (2) requirements from the**[**case study**](https://aula.uoc.edu/courses/50236/pages/case-study) and define 3 tasks for each.

⚠️ In the report, you must include:

* Description of the users (at least **two (2) users** = **one (1) from each profile**)
* Script of the session (**three (3) tasks** for each of the **two (2) requirements**)
* Results of the interview
* Analysis and reflection on the interviews
* Proposal for improvements

#### **3. Universal Design Principles**

👉 Analyze the applicability of the **seven (7)**[**design for all**](https://human-computer-interaction.aula.uoc.edu/accessibility/)**principles**to evaluate the applications of the case study. For this, exemplify each of the principles by adding a screenshot and justify their applicability. (**It is not necessary for all 7 principles to apply to a single application**. If you prefer, you can use examples from other apps or websites you use for this type of service).

#### **4. First Version of the Prototype**

👉 Propose the solution for **dos (2) requirements** of the [**case study**](https://aula.uoc.edu/courses/50236/pages/case-study), for this, distribute the information in the user interfaces you need to resolve the requirement.

👉 Considering the principles of universal design, explain and draw how it is possible to **incorporate in your solution proposal** the **criteria of equal use and error tolerance**.

### **5. Reflections**

👉 To conclude the **definition phase**, it is essential to reflect on the **lessons learned** and how the activities carried out in this stage helped shape your proposal and prepare you for the next steps. Select **one (1)** of the reflection questions below and record a **video of up to 3 minutes** with your response.

### How did creating flowcharts influence your understanding of user navigation?

### What observation during user testing surprised you the most, and how did it impact your design?

### When applying universal design principles, which one do you consider has the greatest impact on the application's accessibility?

### What challenges did you face when developing the first version of your prototype, and how did you solve them?

### If you were to repeat this stage, how could you improve the clarity of the flows or the quality of the initial prototype?

### **Deliverables**

To complete the submission of this activity, please attach the final document to the **Delivery activity C2**. 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 2 rubric.**](https://aula.uoc.edu/courses/50236/assignments/585930)

**IMPORTANT**

In this activity, only limited use of artificial intelligence tools is permitted. Specifically, in a UX design project, AI tools, both textual and visual, can be used to generate and sketch ideas, contextualize concepts, propose prototypes, or combine elements in an innovative or alternative way. 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** that have been 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?](https://openaccess.uoc.edu/bitstream/10609/148823/1/U2_17_GuiaCitarIA_CAT.pdf) Information on what is considered irregular conduct and its consequences can be found in the teaching plan and on the [UOC's website about academic integrity and plagiarism](https://campus.uoc.edu/estudiant/microsites/plagi/en/index.html). Remember that when using generative AI tools, personal, confidential, or intellectually protected information must not be provided.

Bear in mind 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 C2**

## 1️⃣ Flowchart

## 1️⃣. 1️⃣ Requirement Chosen I

**“Accessible Route Planning:** Implement filters that prioritize routes with accessible features, such as functional elevators and ramps, while avoiding paths that include stairs.”

For this requirement, I will propose the following process:

* **Start**: The user opens the app
* **Open the route planning interface:** The user navigates to the route planning section (usually the homepage by default). The app shows the page for planning a route.
* **Enter origin and destination points**: The user enters the name of the place they want to go from and to. *Example: from “Terrassa Rambla” to “Plaza de Catalunya”*
* **Configure accessibility filters**: In this step the user will select the filters to apply in the search. *Example: “no stairs”, “elevator”, etc.*
* **Search Routes:** The user clicks the “Search” button to find routes.
* **Accessible routes found?** The app checks if exists any routes that meet the selected criteria:
  + If **not**, the user decides whether to Exit the app and end the flow or try different options and return to Configure accessibility filters Example: unchecking “no stairs”, etc.
  + If **yes**, the user proceeds to **View Route Options** and check the details of each route found.
* **Suitable route found?** After checking details, the user decides if any option works for them.
  + If **not,** the user decides whether to **Exit the app** and end the flowor **try different options** and return to **Configure accessibility filters** *Example: unchecking “no stairs”, etc.*
  + If **yes**, the user proceeds to **Choose the best route** by selecting their preferred option. *Example: Selecting the second option with less transfers.*
* **Start Navigation?** The user decides whether **to being the guided navigation** ending the flow or continue viewing options for planning the route.

**Start**

Enter Origin and Destination points

Open the route planning interface

Configure accessibility filters

Search routes

**Accessible**

**routes found?**

**Yes**

**No**

Exit the app

**Suitable**

**route found?**

**Yes**

**No**

Choose best route

**Start**

**Navigation?**

Check detailed route information

**No**

**End**

**Try different options?**

**Yes**

**No**

**End**

Begin guided navigation

**Yes**

There are around 10 steps to complete the diagram, depending on the chosen flow. If everything goes well, it will take around 1 or 2 minutes to complete, but how clear the user is on what they want will of course influence the total time.

There are several ways to complete the task:

* Find a suitable route in the first try.
* Try different accessibility options and combinations until find a suitable route.
* Check the route details and go back to try different accessibility filter combination options.
* Exit the application without finding any route that satisfies the user’s needs.

The most problematic points are:

* **Accessibility routes found** because if no routes exist the user may feel frustrated.
* The **Configure accessibility filters** because users may not know exactly what filters they need.
* **Suitable route found** because reading the route details can be difficult for some people.

The clearest points are:

* **Enter origin and Destination points** because most users will understand this point easily.
* **Choosing the best route** is also easy when the information displayed is clear.
* Finally, **Start Navigation** and **Exit the app** will be very straightforward options for most of the users.

## 1️⃣. 2️⃣ Requirement Chosen II

**“****Configurable Alerts:** Offer customizable notifications to alert users about route changes, out-of-service access points, and other relevant incidents tailored to individual preferences.”

For this requirement, I will propose the following process:

* **Start**: The user opens the app
* **Open Alert Settings interface:** The user navigates to the Alert Settings view.
* **Check current alert configuration:** The user checks the already configured alert types and preferences.
* **Modify alerts configuration?** User decides if the current alert configuration is ok or if any modification is needed.
  + If **not,** the alerts configuration remains ending the flow.
  + If **yes**, the user continues the flow to configure the alerts configuration.
* **Set Alert Types categories**: The user select which types of alerts to receive. *Example: “Route Changes”, “Service Disruptions”, etc.*
* **Set Notification Method preferences:** The user selects how to receive these alerts. *Example: “Visual”, “Audio”, “Alert Frequency”, etc.*
* Test alert settings? User decides whether to test the notification configuration:
  + If **not**, it moves to **save the alerts configuration preferences**.
  + If **yes**, the user continues to test the notification.
* **Send test notification**: The user clicks the button to send a sample alert.
* **Verify test alert**: The user checks the test alert behavior. *Example: Check if the alert sounds as expected, etc.*
* **Test alert result works?** The user decides if the alert works as expected.
  + If **not,** the user returns to **adjust the alerts settings.**
  + **If yes,** the user proceeds to **save the alerts settings.**
* **Save alert configuration?** The user decides whether to save the configured alerts settings.
  + If **not**, the user will **Discard all changes** and end the flow.
  + If **yes**, proceed to **Confirm and activate**, setting the alerts preferences and ending the flow.

**`**

Set Alert Types categories

Open Alert Settings interface

**Start**

Set Notification Method preferences

**Save alert configuration?**

**Yes**

**No**

**Test alert settings?**

**Yes**

**No**

Verify test alert

Send test notification

**Test alert result works?**

**Yes**

**No**

**End**

Confirm and activate alerts

Discard all changes

**End**

Check current alert configuration

**Modify alerts configuration?**

**Yes**

**No**

**End**

Keep current alerts configuration

There are around 11 steps in the flowchart, depending on the chosen flow. It will take around 3 to 5 minutes to complete the process, especially if the user tests the alerts.

There are several ways to complete the task:

* + - A quick path if the user checks the current settings, no changes needed and the flow ends.
    - A basic path where the user checks the current settings, modifies and saves.
    - A complete path where the user checks the current settings, sets the preferences, tests the notification, verify and save.

The most problematic points are:

* + - The **Set alert types categories** may be difficult if there are many options.
    - The **Set notification method preferences,** because the user may struggle to set the right method.
    - The **Verify the test results,** because the user might not know what to look for when verifying.

The clearest points are:

* + - The **Open alert settings interface,** because it is a simple entry point to the notification settings.
    - The **Check the current alert configuration,** part, because it is easy to understand what is already set.
    - The **Save alert configuration,** because it is a simple yes/no decision.

## 2️⃣ User Testing

2️⃣.1️⃣ TBD

## 3️⃣ Universal Design Principles

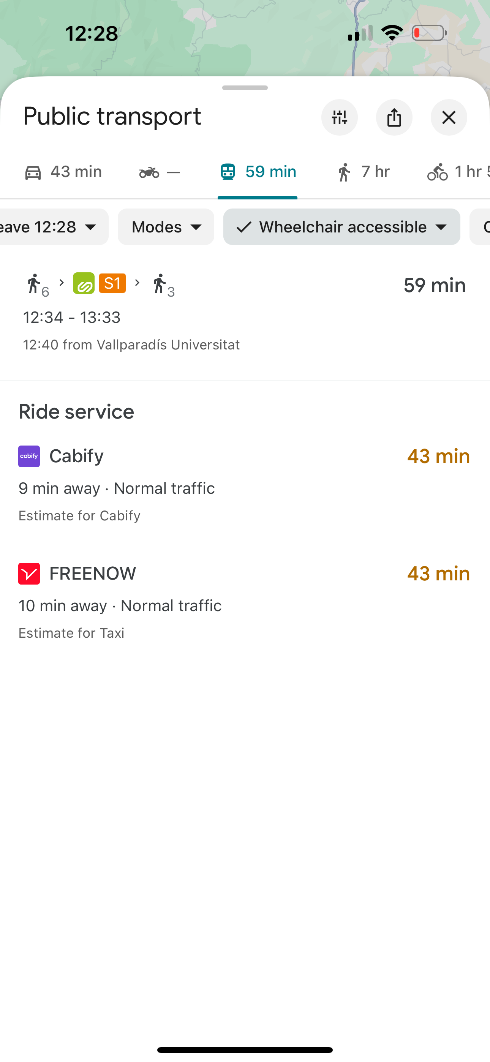
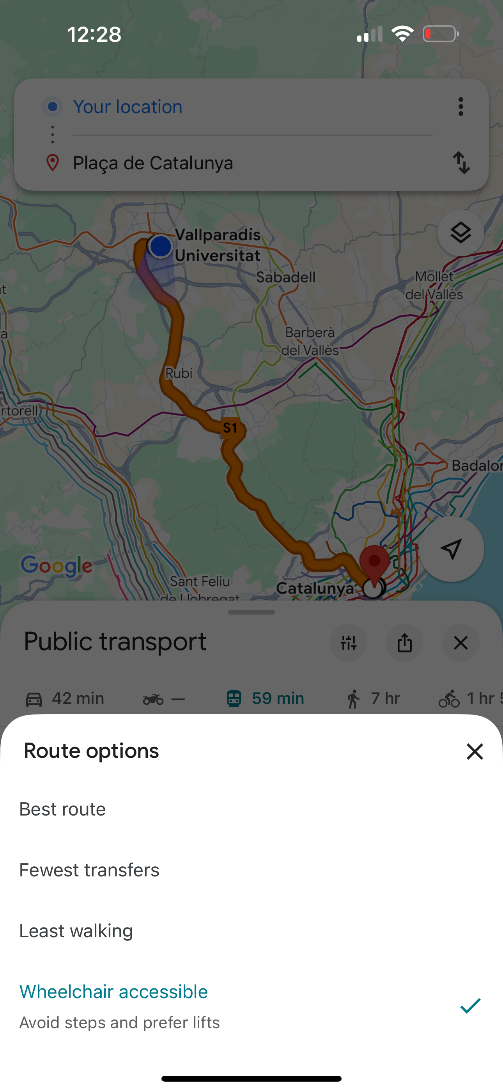
3️⃣.1️⃣ Equitable use

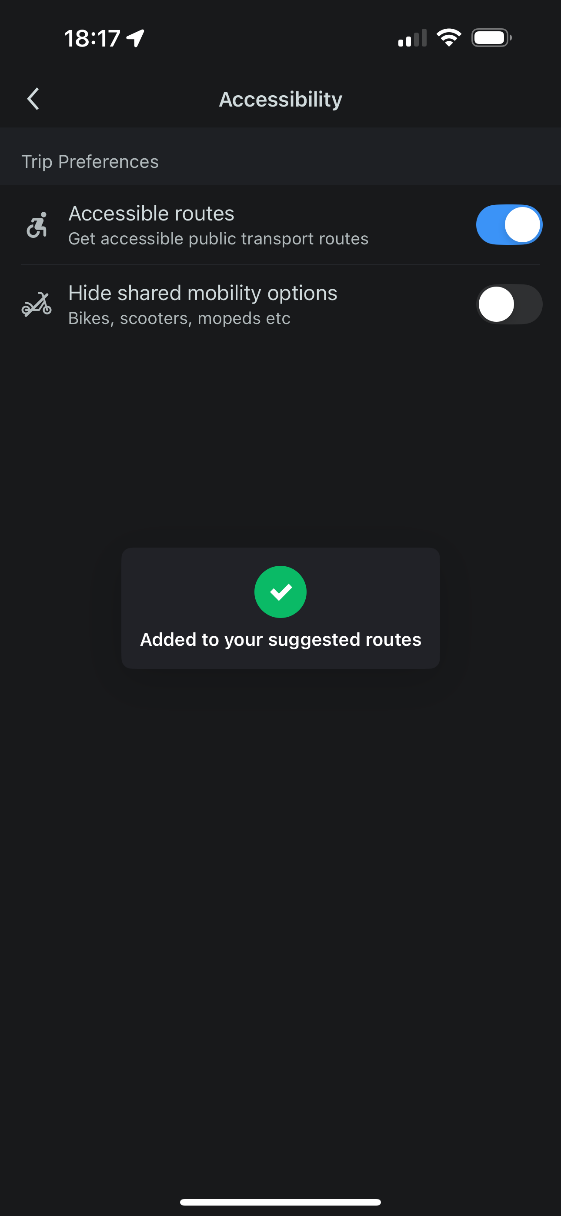
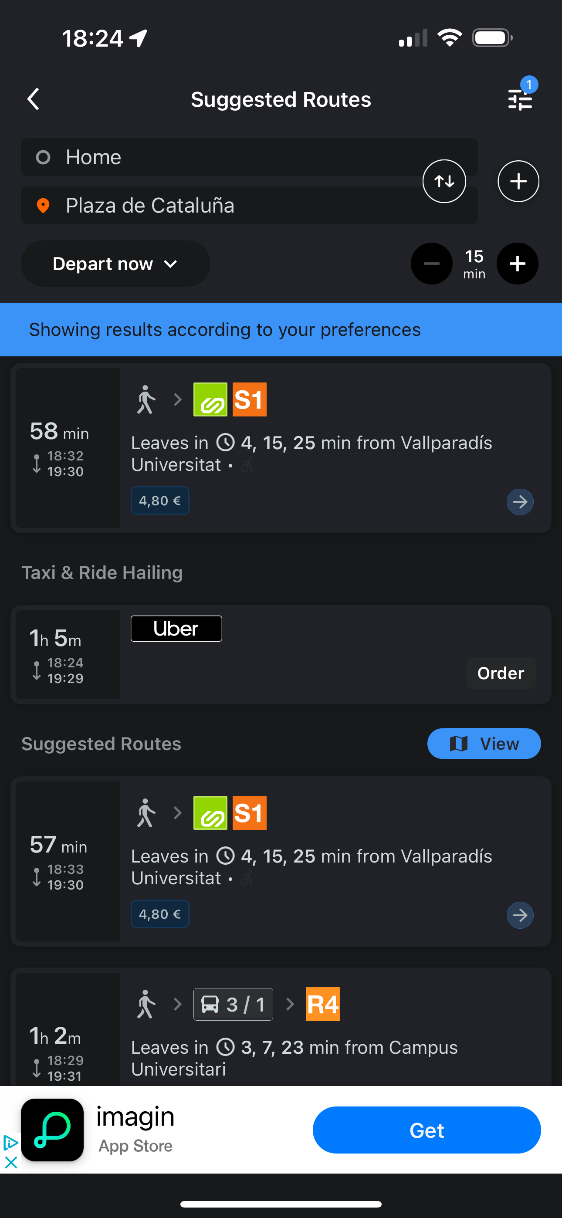
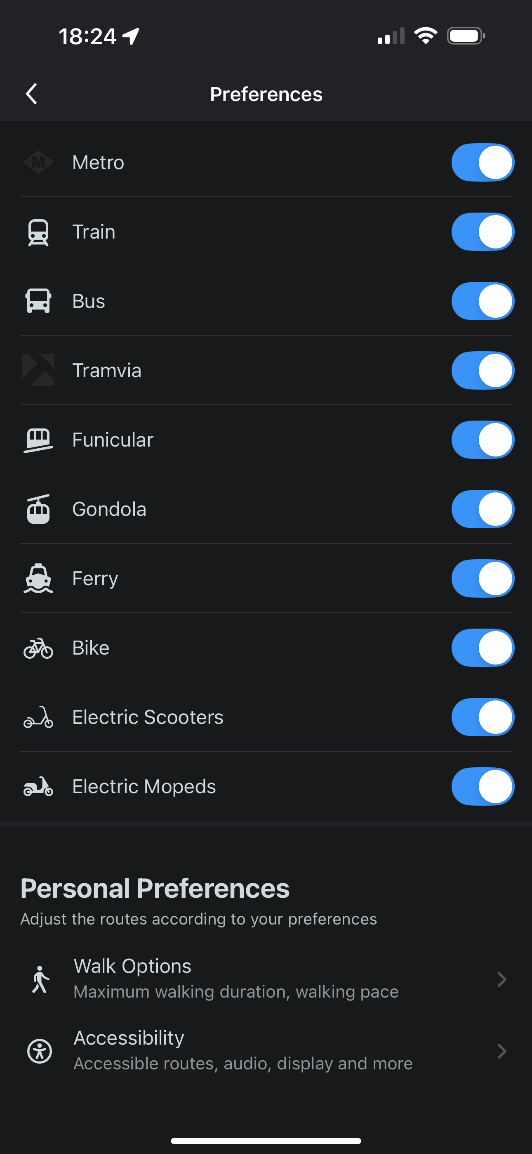
In this case I have selected the example of **Google Maps which offers a “wheelchair accessible” option for routes**. This means that when this filter is selected, the app will show results of routes that only include stations or vehicles with ramps and elevators (no stairs).

Similarly, we can find the same **filter for accessibility routes in the Moovit app**, allowing for getting results of accessible public transportation routes.

This feature makes the app **equitable** because people with mobility disabilities can plan their route like any other user.

*Google Maps:*



*Moovit:*

3️⃣.2️⃣ Flexibility in use

For this principle, I have also chosen the **Google Maps app and its Multiple Input Methods that allow users to search for a destination in different ways.** You can type an address, place the name, you can use voice search by clicking the microphone icon and speaking the request.

**This shows flexibility in use because the app adapts to the different users and situation**s. For example, one user may prefer typing, another regarding physical condition or just preference, might need to use the voice so **Google Maps supports different methods offering multiple ways to perform the same task**.

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AI-generated content may be incorrect.A screenshot of a phone

AI-generated content may be incorrect.

3️⃣.3️⃣ Simple and intuitive use

To illustrate this principle, I have **chosen Citymapper since it has a very user-friendly and intuitive interface**​. The app uses very clear icons and simple labels for transport options. It also has a simple click "Get Me Home" button to quickly plan a trip to our saved home address. Important information (route options, travel time, cost) is displayed in a clear way, so the user can see the basics immediately.

**All of these make the app simple and intuitive, being easy for users to get directions without needing any help.**

A screenshot of a phone

AI-generated content may be incorrect.

A screenshot of a phone

AI-generated content may be incorrect.

3️⃣.4️⃣ Perceptible information

For this principle, I have chosen the **Citymapper app since it offers the possibility to be used not only by touch but also with voice commands**. So, a user can start the journey by simply asking the voice assistant or clicking on the app. This offers flexibility in how to use the app because if someone finds it easier to speak or cannot use their hands at that moment, they can still get directions.

By providing the information through text, color and sound the Citymapper app ensures that all users can perceive the information in some way or another.

A screenshot of a phone

AI-generated content may be incorrect.A screenshot of a phone

AI-generated content may be incorrect.

3️⃣.5️⃣ Tolerance for error

For this principle I have chosen also the **Citymapper “GO” alerts**. This feature provides the possibility to notify users when their stop is approaching, reducing the likelihood of missing the destination.

**So, by alerting the users before the stop, these app prevents the common error of missing a destination demonstrating a design considering the tolerance for error.**

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AI-generated content may be incorrect.

3️⃣.6️⃣ Low physical effort

For this principle I will highlight the **Citymapper “Saved Places” directions accessible trough a simple click**. This feature allows users to save their favorite destinations like Home or Work so later, they can get directions to these places with just one click.

Also, **Moovit offers a similar feature that also recognizes commonly input address** and offers the possibility to save it for future usages.

This feature reduces effort, time and the number of steps that a user needs to use the app allowing fewer steps and easy shortcuts to common addresses **which significantly reduces physical effort while using the app.**

*Citymapper:*

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AI-generated content may be incorrect.

A screenshot of a phone

AI-generated content may be incorrect.

*Moovit:*

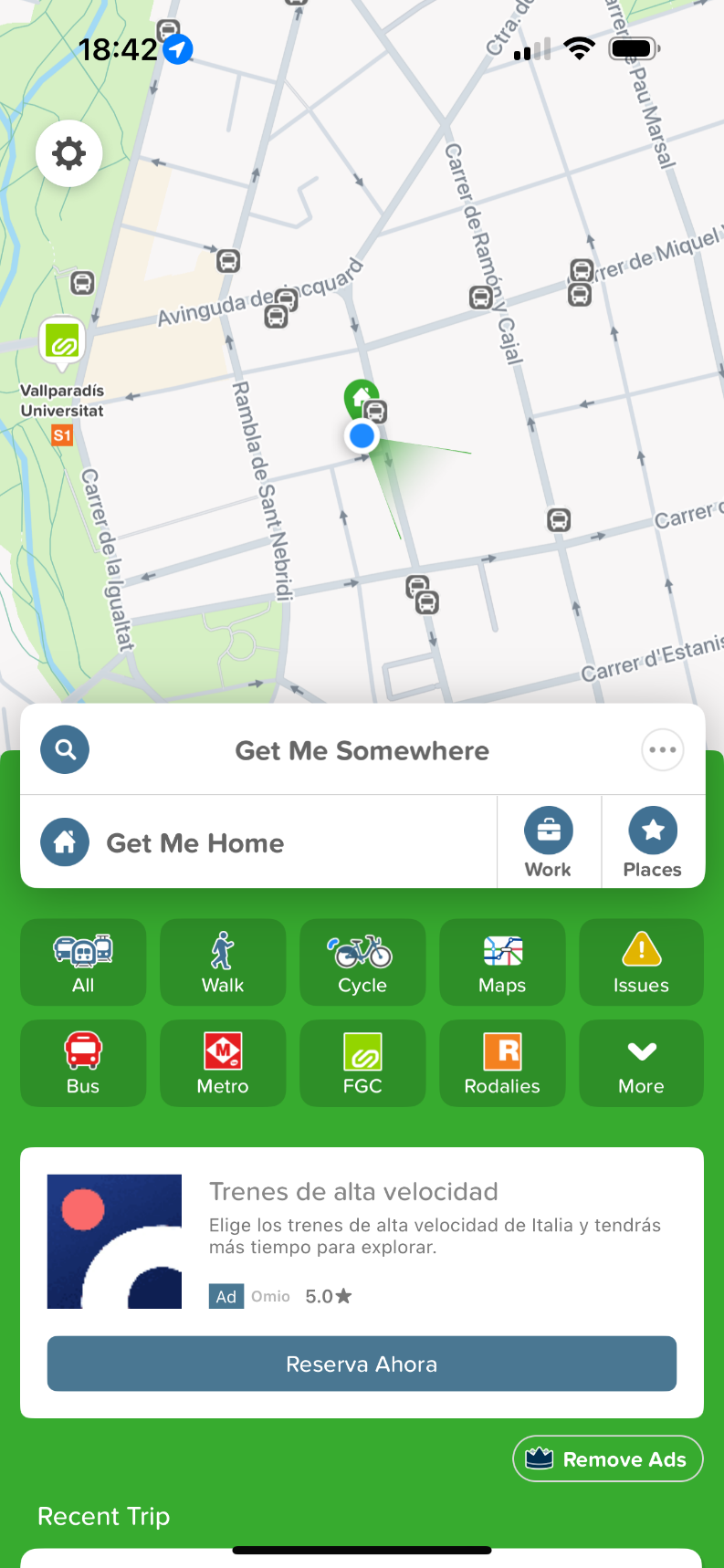
A screenshot of a phone

AI-generated content may be incorrect.

3️⃣.7️⃣ Size and space for approach and use

For this principle, I have selected the example of **the Citymapper interface where we can see Large Icons and Touch Areas on the home screen**. We can see that this app shows big icons with clear labels for transport options like Bus, Metro, FGC, etc. These large touch areas are also called hit targets and in this app are particularly easy to press. We can also observe enough space between the buttons to avoid mistakes and the search options located in a central place in the Home Screen based on the primary usage of the app.

This example shows **the application of the principle of size and space for approach and use because users don´t need to be precise**, the big buttons are easier to press correctly helping people with reduced hand control, tremors and large fingers.



## 4️⃣ First Version of the Prototype

4️⃣.1️⃣ Requirement Chosen I: “**Accessible Route Planning”**

1. **Configure Filters**

**2**

1. **Start Screen**

**1**

**Start Current Location**

**End Let’s go! Where to?**

**Accessibility Filters**

**Find Routes**

**3**

**Preferences**

**Alert Settings**

**Return Home**

Wheelchair Accessible

**Accessibility Filters**

Customize your route based on your needs**!**

Avoid Stairs

Elevator Required

Limited Mobility

Quiet Routes

Restroom Accessible

Avoid Crowded Areas

**Apply Filters**

**End**

Submit Accessibility Issue report

**Report Accessibility Issue**

**6**

**Submit**

**Cancel**

E.g. The elevator at Plaza Catalunya was …

Describe the issue:

**Report Accessibility Issue**

Help improve accessibility for everyone!

Begin guided navigation

**End**

**Ready to Roll?**

We’ll handle directions from here!

**Not Yet**

**Let’s Go!**

**Navigation Confirmation**

**5**

**Route Details**

**4**

**No Routes Found**

**3b**

**Routes Found**

**3a**

**4**

**2**

**Report Accessibility Issue**

**Your Journey**

Accessible Features:

* No stairs

Accessible Features:

* Low-floor train

Accessible Features:

* Ramp Available

**3a**

**Train S1 to Plaza Catalunya**

**Walk to Destination**

**Walk to Train Station**

**32 min**

2.6 km

**S1**

**Let’s Roll!**

**S1**

**Back to Routes**

**Take a look**

**Take a look**

**R2**

**28 min**

2.1 km

**32 min**

2.6 km

**Adjust Accessibility Filters**

**Hmm, we couldn’t find a match**

Let’s try adjusting your filters to find the best path for you!

TODO1: Considering the principles of universal design, explain and draw how it is possible to incorporate in your solution proposal the criteria of equal use and error tolerance.

4️⃣.2️⃣ Requirement Chosen II: “**Configurable Alerts”**

1. **Current Alerts Configuration**

**2**

**Start Current Location**

**End Let’s go! Where to?**

**Accessibility Filters**

**Find Routes**

**Alert Settings**

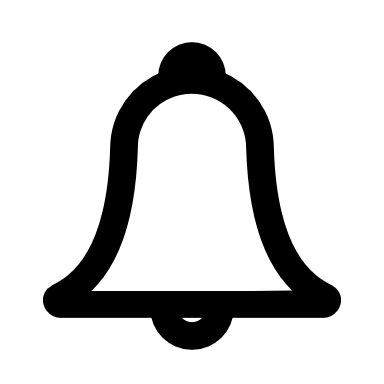
**Preferences**

1. **Start Screen**

**1**

**3**

**Send Test Alert**



**Alert Types**

Which types of alerts you want to receive?

Weather Alerts

Accessibility Issues

Service Disruptions

Route Changes

Visual Alerts

Audio Alerts

Haptic Feedback

Advance Notice (min)

**Notification Preferences**

How do you want to receive alerts?

**15**

**Apply Configuration**

**Discard changes**

**4**

**5**

**2**

**Test Alert Settings**

**3-1**

**Send Test Notification**

**3-2**

**Sending Test Alert**

A test notification is being sent to your device, please wait …

**Test Alert Settings**

Would you like to send a test notification to verify your settings?

**Yes!**

**Cancel**

**Example Test Alert**

**3-3**

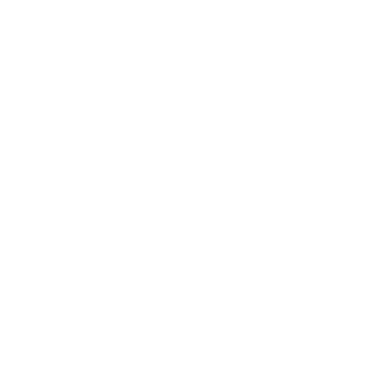
**Service Disruption**

This is a test alert to verify your alerts notification settings.

**Close**

**2**

**⚠️ Service Alert**



Confirm and activate alerts

**Discard All changes**

**5**

**Configured Alerts Activated**

**4-2**

**Settings Saved**

Your alerts preferences have been successfully saved and activated.

**Save Alert Configuration**

**4-1**

**End**

Discard all changes

**End**

You’ll lose all your current changes.

Still want to reset?

**❌ Clear All Changes?**

**Discard Changes**

**Cancel**

**Save Alerts Configuration**

Would you to save and apply your new alert settings?

**Yes!**

**Not yet**

**2**

TODO2: Considering the principles of universal design, explain and draw how it is possible to incorporate in your solution proposal the criteria of equal use and error tolerance.