1. Background

Briefly describe the context of your project and the opportunity(s) you have identified. Describe which opportunity(s) you have chosen to explore, and explain why you have chosen to focus on these opportunity(s).

Our project looks to design an interface for a public transit system - placing focus on the relationship between mobile applications and public facing kiosks. Our projects' primary objective is to bridge the gap between personal devices and public transport terminals, creating consistent, user-friendly interfaces for both platforms. In doing so, we aim to provide individuals with reliable access to journey planning, ticketing, and real-time updates, ensuring users can interact with these services smoothly across multiple touchpoints.

The key inspiration for this project comes from Baldauf & Tomitsch's quantitative study[1], which highlights the current underutilisation of public transport interfaces and their lagging development compared to mobile applications. The relationship between mobile applications and public terminals is particularly interesting because, while mobile apps are continually being updated to enhance the user experience - kiosks often remain outdated and difficult to navigate. This inconsistency leads to user frustration, especially in busy transit environments where quick and accurate access to information is critical.

Our HCI research and user testing confirms this issue[2] - with both daily commuters and occasional travelers suggesting they experience difficulties when transitioning between mobile devices and public kiosks. Colley, et al.[3] reinforces our findings, suggesting these frustrations are particularly noticeable in users who face technological barriers, such as those without smartphones or with limited tech experience. These pain points revealed an opportunity to improve public transport interfaces, redesigning them to ensure inclusivity, accessibility, and ease of use for all users.

Our user testing[4] also highlighted several other shortcomings within existing transit systems. Many of our participants suggested existing solutions are not optimised to provide simple and user-friendly experiences. While the relationship between mobile applications and public facing kiosks is a driving factor, there were several other areas of improvement that emerged from our findings. Another key opportunity that arose was the integration of personalised screens that can

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[1] Baldauf, M., & Tomitsch, M. (2020). Pervasive Displays for Public Transport – An Overview of Ubiquitous Interactive Passenger Services. In Proceedings of the 9th ACM International Symposium on Pervasive Displays (pp. 1-10). Association for Computing Machinery. https://doi.org/10.1145/3393712.3395335

[2] Group 19, Assignment 3 (2024). Appendix B, Item 2 & 3

[3] Colley, A.., Virtanen, L., Värynen, J., & Häkkilä, J. (2015). Physically Guiding Touch Screen Interaction with Public Displays. In *PerDis '15: Proceedings of the 4th International Symposium on Pervasive Displays* (pp. 255-256). University of Oulu, Finland & University of Lapland, Finland. https://doi.org/10.1145/2757710.2776809

[4] Group 19, Assignment 3 (2024). Appendix C, Item 4

learn from user behavior and location data to provide contextually relevant information. These adaptive interfaces have the potential to revolutionise the way users interact with public transport systems, offering tailored recommendations based on travel habits, preferences, and real-time needs. By leveraging data from user behavior, such interfaces could help streamline the journey planning process, ultimately delivering a more intuitive and satisfying experience for a wide range of individuals. As such, we decided on integrating these technologies (alongside several other QoL features) into our project to create a truly responsive and user-centered public transport experience.

Contextually, the Canberra public transport system serves as our focus area, due to our familiarity with the network and its specific challenges. As locals, we have a good understanding of pain points within the existing system, allowing us to make more informed design decisions. However, the opportunities identified extend beyond Canberra, with our solution addressing common issues in public transport systems globally.

All this said - we do understand that fully redeveloping a transit network is not an overnight task, and requires thousands of complex considerations. Nevertheless, we believe our project stands as a valuable proof of concept. By addressing the current gaps in usability and accessibility, our project not only proposes practical improvements for Canberra's transit network but lays the groundwork for future innovations in public transport technologies. Our approach demonstrates how seamless integration between mobile devices and public transport terminals can enhance both user satisfaction and system efficiency - ultimately aiming to make public transport more convenient, reliable, and appealing to everyone.

2. Ideation

Describe the method you have chosen for your ideation process and explain why you have chosen this method.

Within our ideation process, we combined iterative brainstorming with the 'derivative ideas' approach[5] to explore effective ways of showcasing our prototype. Brainstorming allowed us quickly to generate a wide range of creative ideas to visually and physically represent our interfaces. It provided us with a space to think freely about different ways to simulate the kiosk and app experience - and consider what functionalities were important to highlight and demonstrate.

In parallel, we also utilised the 'derivative ideas' approach to build upon the concepts and ideas that emerged during our A3 codesigning session[6]. This method allowed us to break down and critically evaluate the designs created in our user studies, helping define key concepts and how to best communicate them through a low-fidelity prototype. We also used this ideation approach to derive

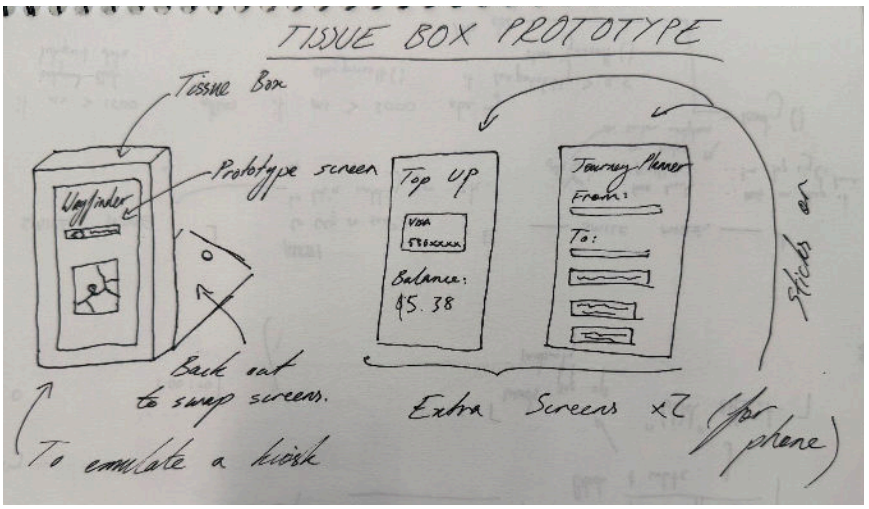
[5] Spacey, J. (2021). 17 Examples of Ideation. Simplicable. https://simplicable.com/en/ideation

[6] Group 19, Assignment 3 (2024). Appendix A, Item 1

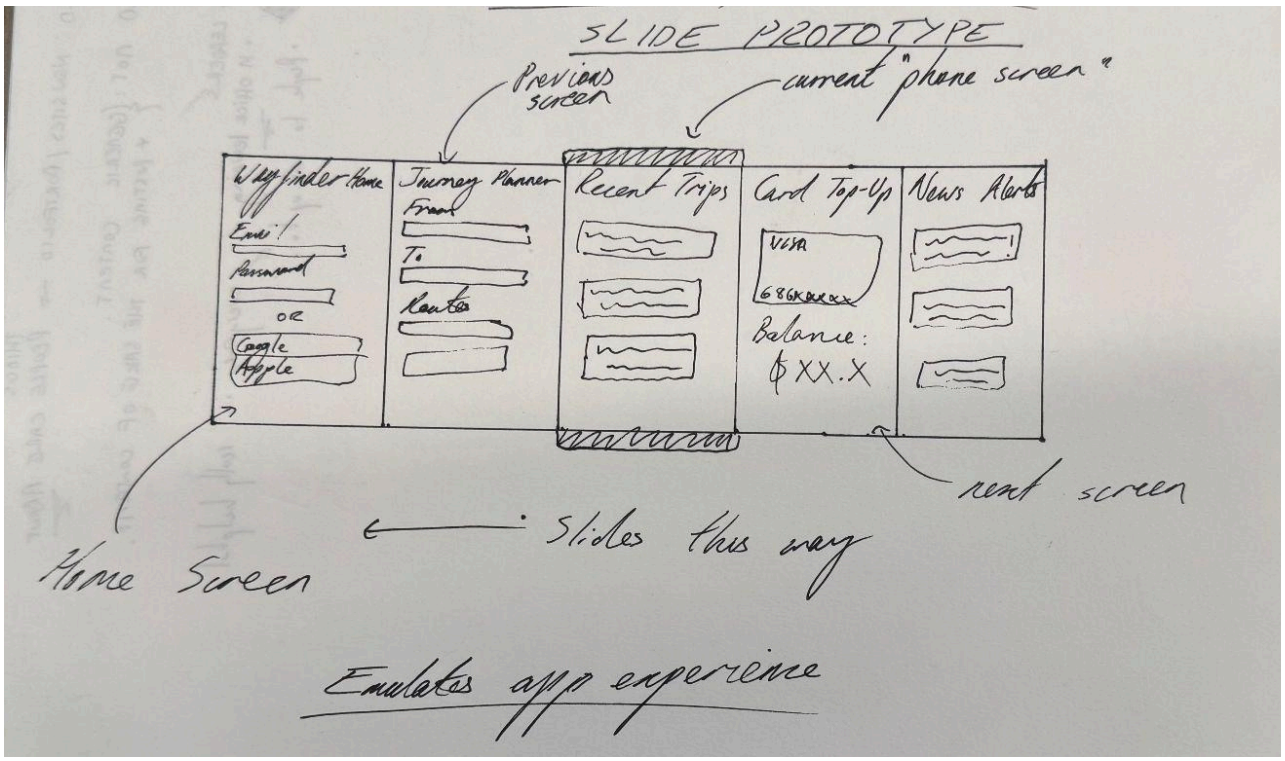
off existing prototyping methods, drawing inspiration from proven techniques to inform our designs. Evidently, by employing both of these methodologies in tandem, we were able to ensure that our prototype ideas were not only creative and innovative, but also highly relevant to the project's overall goals.

Describe a few of your initial ideas (3-5 ideas), including sketches of the ideas and how each of them will address the opportunity(s) you have chosen. Remember to label all your figures. *Approx. 200 words*

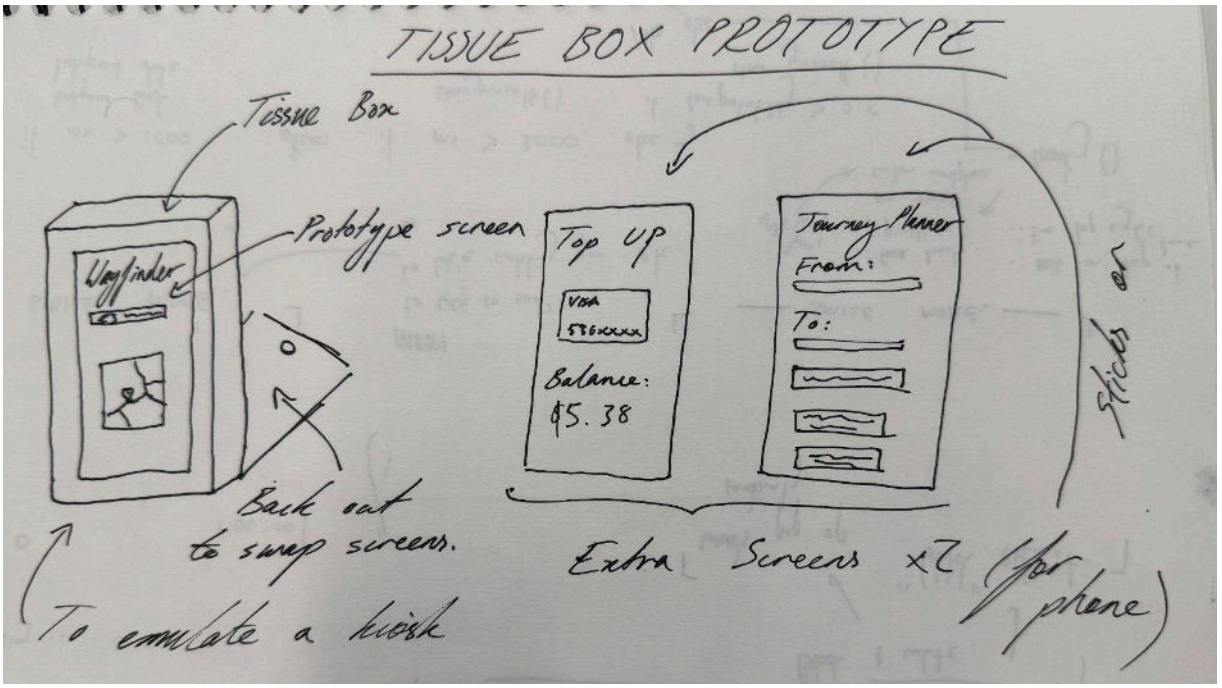
Using an Existing Canberra Kiosk with Paper Overlays : One of our early ideas was to utilise an existing kiosk in Canberra as the base for our prototype. We would draw up our wireframes and stick them over the top of the kiosk's screen and buttons, to help simulate the interface we designed. This approach would allow us to test our prototype in a real-world context, giving users a familiar setting while interacting with the new interface.



Kiosk and Phone with Sliding Interaction Panels : Another approach revolved around storyboarding the user journey and mapping these to relevant wireframes. Here, a long strip of paper containing each screen would be used, allowing users to physically slide the paper left and right to show the progression of the app and kiosk interfaces. This sliding interaction would simulate the user flow, moving between different screens and providing users with a tangible way to explore the interface.



Tissue Box Kiosk and Cutout Phone Screens : Finally, we also considered creating a smaller-scale kiosk using a tissue box, with slotted screens that could be inserted and removed to simulate different kiosk states. The phone would work similarly, with paper cutouts that could be stuck onto a real phone, each representing a different screen of the app interface. This would allow users to experience *both* devices as tangible prototypes - exploring how they interact with one another in a flexible, low cost manner.



3. Low-fidelity Prototype

Choose your best idea that will be the basis of your low-fidelity prototype. Provide a thorough discussion of why this is the best idea and why you have decided not to proceed with the other ideas.

In the end, we chose to utilise idea three - the tissue box and cutout phone screens - as the basis for our low-fidelity prototype. This idea stood out for its simplicity, flexibility, and cost-effectiveness in simulating both the public transport kiosk and phone interfaces. While more complex options were available, this approach best met our needs at this stage, balancing functionality with ease of execution.

The tissue box concept allowed us to represent the kiosk at a manageable size, providing a low-tech, portable solution that could be easily presented in class. Its simplicity allowed us to focus on testing core interactions between the kiosk and mobile app without the technical or logistical difficulties posed by other ideas. The slotted screens allowed us to easily insert and remove wireframes to show different states of the kiosk interface, making it straightforward to demonstrate features like ticket purchasing and journey planning.

Similarly, paper cutouts attached to a real mobile device worked similarly - allowing us to demonstrate the various mobile app screens, and how they relate to the kiosk. More importantly, however, this approach allowed us to avoid a linear progression - instead allowing us to demonstrate various journeys and user flows, and the interfaces' ability to handle these types of interactions.

Crucially, this approach also allowed us to showcase the interaction between the kiosk and mobile phone interfaces. Users could experience how they might begin a transaction on the kiosk and continue it on their phone, or vice versa. As this interaction between devices is central to our concept, it was important we chose a prototyping method that allowed us to highlight this functionality well.

Reasons for Not Choosing Other Ideas

Using an Existing Canberra Kiosk: This idea initially seemed appealing because it offered the chance to prototype within a real-world setting, making the interaction feel authentic to users. However, this idea was ultimately deemed too impractical for several reasons. First, using an existing kiosk presented logistical challenges, particularly for the required in-class testing, as transporting the kiosk wasn't feasible. Additionally, taping over public kiosks with paper wireframes posed ethical concerns. As these kiosks are still in use by the public, doing so would disrupt their functionality, and interfere with people trying to access essential services. Ultimately, while the real-world context was valuable, the limitations in practicality and usability led us to explore other options.

Kiosk and Phone with Sliding Interaction Panels : Idea two offered another interesting way to explore the interface - using sliding panels that could be moved in different directions to reveal

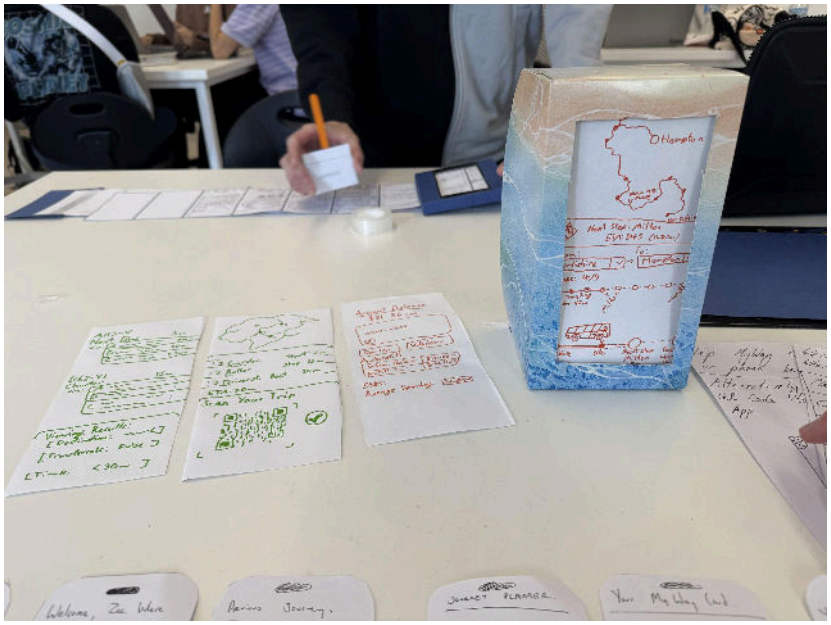
screens of the prototype. However, while this idea was practical, it had a significant limitation - it imposed a linear flow on the user experience.

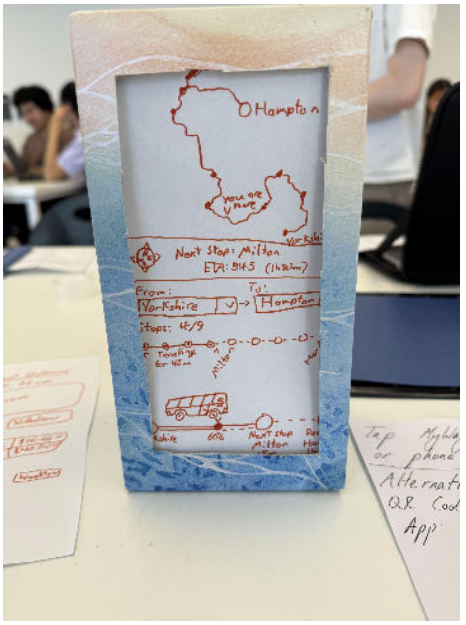
As touched upon earlier, our prototype is non-linear. We wanted to guide users through various journeys to demonstrate the system's ability to handle a wide range of interactions without being locked into a predetermined progression. The sliding panel system, being inherently linear, restricted our ability to simulate the dynamic and adaptive nature of our design effectively, imposing constraints on our ability to showcase the relationship between the kiosk and app. As a result, we deemed this approach too restrictive and went with option three.

Describe your low-fidelity prototype in detail, including the design and images of the prototype, and how your potential users will interact with the prototype. *Approx. 200 words*

As outlined, our low-fidelity prototype is designed to showcase early wireframes and key features of both the kiosk and mobile app interfaces. The kiosk is represented by a simple tissue box cutout, allowing users to slide in different screens that display essential features such as real-time transport updates, ticket purchasing, and route planning. For the mobile app, paper wireframes were drawn, cut out and stuck to a real phone using Blu-Tack to provide a more tangible sense of the app's look and feel.

During the demonstration of our low-fidelity prototype, participants will be guided through several user flows. For instance, one scenario might involve a user commuting to work or university. They would begin by planning their trip on their mobile phone and later use the kiosk interface to receive updates and finalise their ticket purchase. As we guide users through this journey, we will swap screens as necessary to show the progression of the interfaces. Simultaneously we will verbally provide sound effects and feedback, such as app notifications, to simulate the system's response. We will also ask participants to imagine their own transport scenarios to help them fully engage with how the system adapts to different user needs and journeys, allowing us to gain insights into potential points of friction and opportunities for improvement in the design.


OHampton
Next Stop: Milton
ETA: 9:45 (1432m)
From:
Yorkshire
To:
Hampton
Stops: 4/9
Tap or phone
App


OHampton
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Yorkshire
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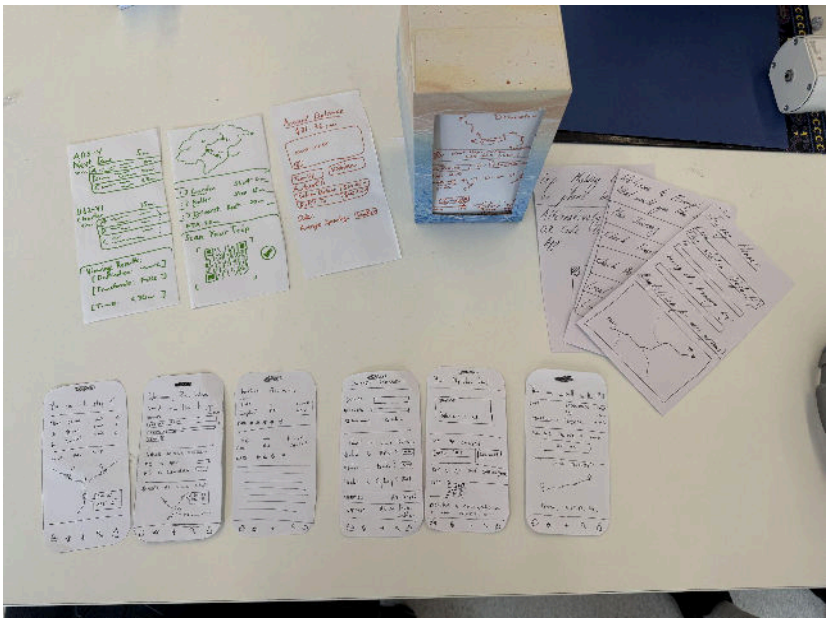

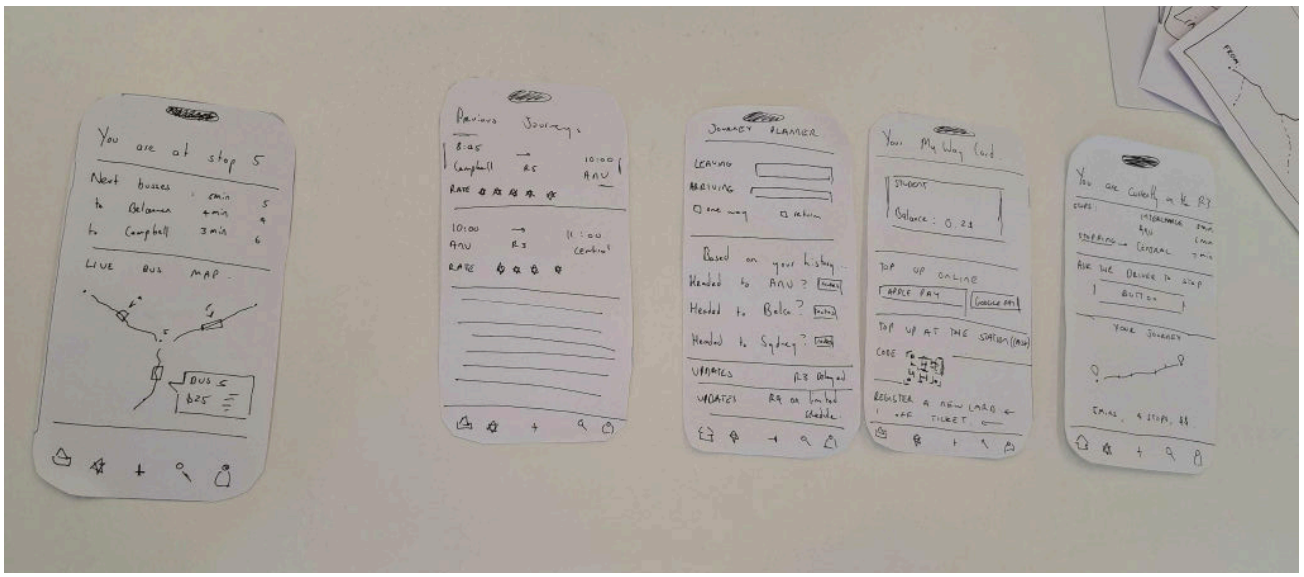

4. Reflections

Reflect on the design of your low-fidelity prototype. What worked? What did not? Is there anything you would change about your design? Is there anything you would do differently in the future?

Overall, we were satisfied with the design of our low-fidelity prototype. We believe it successfully communicated the concept of our project, and provided users with a clear understanding of how the system would function in a real world context.

Specifically, we were extremely happy with how well the prototype was able to communicate the relationship between mobile devices and public kiosks - and our goal to make these work in

tandem. This was especially important to us, as users had struggled to grasp this concept during our co-designing sessions. The physical representation of the kiosk and phone also worked well. Swapping out screens to demonstrate different features and user journeys proved effective, allowing us to showcase a wide variety of different interactions. Participants appreciated the flexibility of being guided through multiple scenarios, and the audio cues we provided were generally well-received.

However, the prototype was not without its challenges. Some users struggled to create their own transport scenarios, partly because many were unfamiliar with Canberra's transport system, limiting their engagement with the prototype. Additionally, we had intended for users to walk around with the phone to simulate real world use, but they remained stationary during testing - restricting our ability to showcase the app's adaptive functionalities. Swapping out physical screens also disrupted immersion at times, as participants had to wait before they could continue their journey. In future iterations, we would aim to make these transitions smoother to maintain engagement.

Additionally, we realised during testing that some of our screens lacked sufficient detail, leading to confusion about what certain screens represented. While we initially thought the screens would be self-explanatory, in hindsight, a more fleshed out and consistent design may have improved user understanding.

The complexity of the design challenge also became apparent here. Public transit networks involve many moving parts, and it was difficult to simulate features like real time updates or dynamic changes in a low-fidelity prototype. Evidently, our paper based model served more as a proof of concept rather than a comprehensive system representation. While we could simulate basic interactions, the prototype fell short in demonstrating more intricate aspects, such as handling real time data.

Based on this, in future iterations we would aim to incorporate more interactive elements. Adding flip cards, sliders, or layered screens that could simulate real time changes and offer a more hands on experience. This would allow users to actively engage with dynamic data, such as ticket availability or route updates, providing a more accurate representation of how the system adapts to changes in real time.

Despite these limitations, we believe our low-fidelity prototype effectively conveyed the foundations of our project - providing valuable insights into the development process and where to go next. While incorporating more dynamic and interactive features would enhance user understanding of the system's intricacies, we believe that our mid-fidelity prototype will address many of these issues, helping us further bridge the gap between concept and execution.