High Fidelity Prototype

Video Prototype:
https://drive.google.com/file/d/1H1emBEEujZIo3zcuG0VupPXhO4n0ffil/view?usp=sharing

Figma File (High Fidelity Tab):
https://www.figma.com/file/ZmipR7x4AYmK9Q5wHMBdGb/DECO2014-A3-Draft?type=design&node-id=194%3A960&t=QLyjathY9WJ1Shh9-1

Prototype All Features

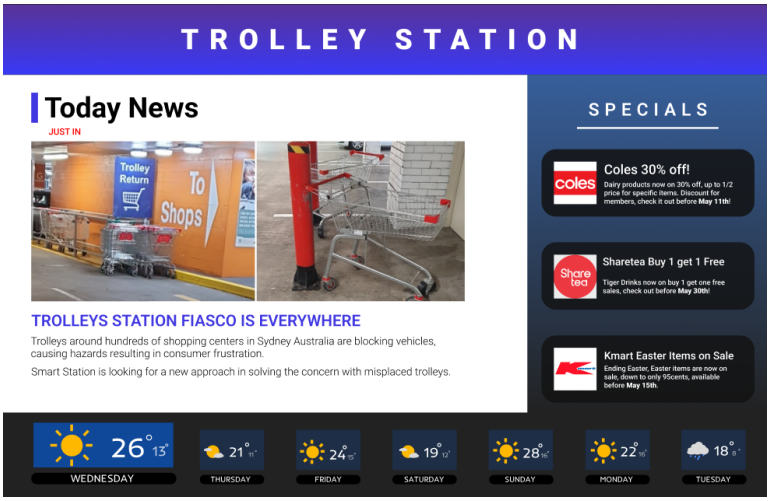
Smart Station is an interactive trolley station redesign that aims to tackle the issue of misplaced trolleys in carpark by providing extra clarity and elevating user motivation to engage in the trolley returning process, thus prompt a communal positive feedback loop.

Main Display

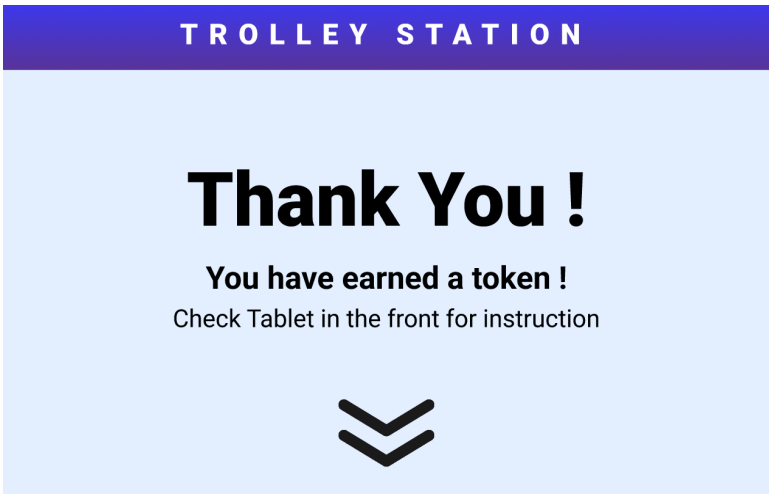
The large main display is the biggest seller of the Smart Station concept as it captivates bypassers' attention and establishes an impression of the location of the trolley station through its large and bright presence and display of useful information to the general customers of the shopping center. The components of the default page layout include:

- Animated Banner
- Today's News Section
- Specials (Sales information of stores in the shopping center)
- Weather of the day and the week

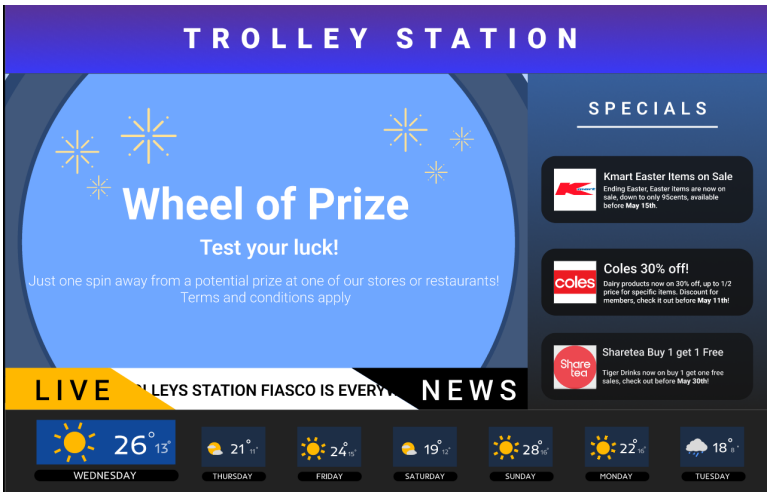
Through user testing, the layout and the information displayed is tested to be useful and worthwhile for a glance from the user's perspective. The content displayed on the main screen will be constantly updated by itself, in which the users have no control over the contents in consideration of complicating the system when multiple people are at site trying to access different part of the information.



Once the system senses the user has pushed in/returned a trolley properly, a thank you page would pop up over the entire screen. This makes the pop up message not just notify the user that is currently interacting with the system, but also catch bypasser's attention at the same time, sending a message of "there will be something happening if you return your trolley here," as they could see a visible change of the main screen layout even from far away. The Thank You page would then direct the user to focus on the interactive tablet in front of them as it would be the control point to interact with the element on the main display.



The main interaction element of the Smart Station is the Wheel of Prize section. As the system informs the user that they have earned a virtual token, they can use the token to spin the wheel and potentially earn discount vouchers or other benefits in the shopping center from the wheel of prize. The interaction is limited to the section that only replaces the daily news section as the daily news collapses down to a news ticker format to keep all the information that is originally displayed still accessible to any bypasser that is not part of the current interaction.



User Interactive Tablet

The User Tablet is the main interacting point the user would have contact with. The information displayed on the tablet will be linked to the interaction that is ongoing on the large main display. Users would use the tablet to interact with the wheel of prize feature

process and read information such as instruction from the tablet just in case the distance between the tablet and the main display is too far for some users' eyesight capabilities.

Once the user had won a voucher from the wheel of prize, the real voucher QR code would be presented on the tablet for the user to scan with their phone.

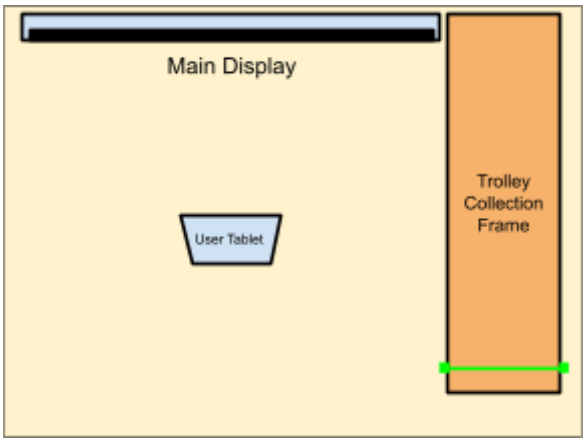
Trolley Sensing Frame

In our video prototype, the sensor of the trolley collection frame is only presented through visual and sound effects. Ideally, the design of the sensor should be made so each trolley

has individually labeled code that is implemented through potentially a chip that can be sensed by the collection frame. This design of the system would be beneficial when dealing with trolleys of different dimensions that come from different stores in the shopping center. The user would then have to return the trolley to its allocated station to trigger the system reaction if they want to have a chance with the wheel of prize. There would also be a timer on each trolley after returning until it can trigger the system reaction again. In that case, user cannot return the same trolley multiple times just to get multiple chances to spin the wheel of prize.

Context of the Station

The station should be placed in a designated area so that safety is not a concern while interacting. In out videos prototype, the set up of the spatial layout is illustrated below:



However, depending on the structure of each carpark, this structural layout does not need to be standardized. The key points to ensure the effectiveness of the layout structure are: 1) The main display should be positioned so that it can be easily spotted even from far away and ideally from any angle in the carpark 2) The distance between the User Tablet and the Main display should be standardized to ensure the interaction experience remains the same 3) The trolley collection frame should be positioned so that the user can identify a reaction from the main display right after they pushed in the trolley.

Mid to High Fidelity

From the mid-fidelity user testing, we've received the following feedbacks:

1. Users like the layout of the main page and feel like it would be even more effective once colors and information are displayed.
2. Users have concerns on the execution of the banner indication effect, as it might cause discomfort to certain users with eyes conditions
3. Users feel like the spinning wheel itself is significantly more effective than the minigame, while the wheel of prize offers a quick interaction process and a stronger motivation despite the possibilities being extremely low. This made the minigame redundant as the users do not perceive it as a long term motivation since the process is rather excessive and the interest for the games could wear off after time.
4. Users would like to have more control over the elements on the display and error cancelation
5. Users have concerns over potential congestion at the station site

With these feedbacks in mind, we made improvement decisions on the mid-fidelity prototypes based on justifying whether the feedback is more of a general opinion or more crucial drawback to our concept design.

Banner Highlight Execution

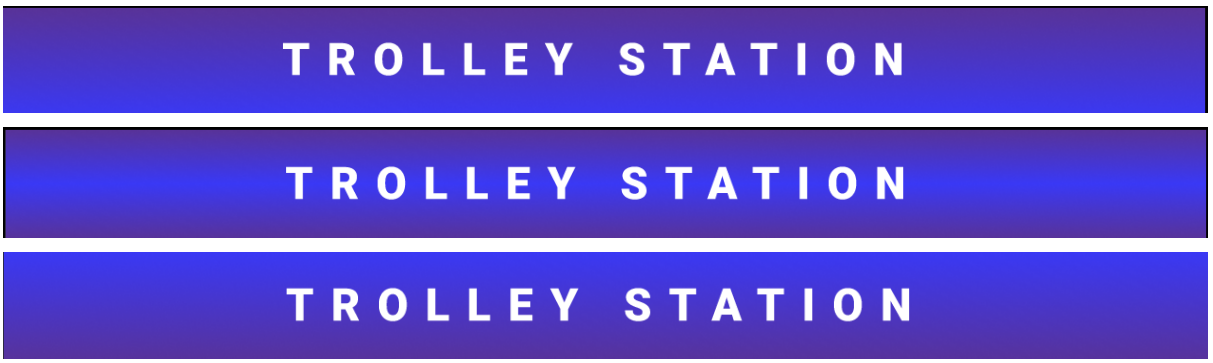
The fundamental purpose of the banner design of the large display is to signify the whole system is a trolley station, stating its location and purpose. In our mid-fidelity prototype, due to its mid-fidelity nature, we only made the banner so it flickers between dark and bright tone as a visual effect. However, even though some of the participants in user testing like that the design grabs a lot of attention through its warning sign-like effect, the concerns over it causing potential eye discomfort is also brought up in which it could bring down the inclusiveness of our design.

Mid-Fidelity Design:

(Flickering effect could cause potential eye discomfort)

In our high-fidelity prototype, we changed the flickering effect into a rolling gradient animation, so the animation change in the banner is more gentle while still capturing attention to serve its purpose.

High-Fidelity Design:



(Rolling gradient effect to create a more gentle attention grabber)

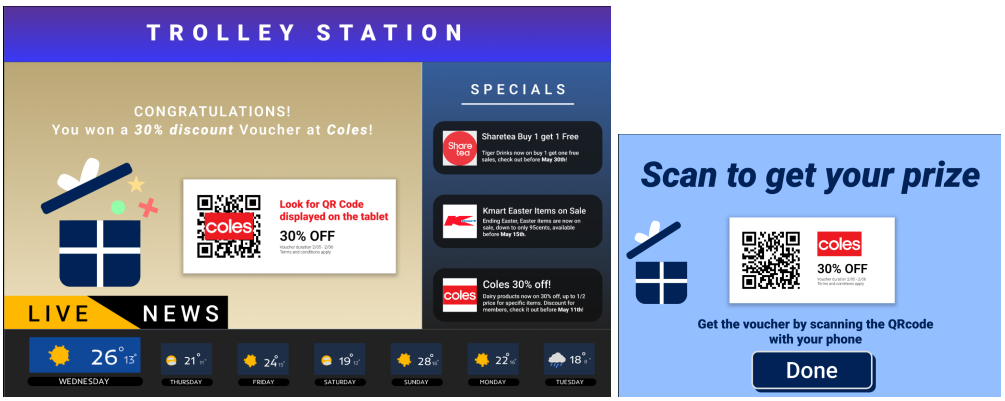
QR Code Display

In our mid-fidelity prototype, once the user has won from the wheel of prize, the QR code for the user to scan for their prize would be presented on the main large display. However, during the user testing, the matter of privacy and bypassers scanning for the current user's prize was brought up. Therefore, in the high-fidelity prototype, we made the scannable QR code being presented on the user tablet which is where the user would be able to scan more closely and more secured from bypassers with intentions. An indicative mock up of the voucher and QR code would still be presented on the main display along with an highlighted indication informing users to look for the actual QR code to scan on the user tablet.

Mid-Fidelity Design:

(QR Code directly displayed on main screen raise privacy concerns)

High-Fidelity Design:

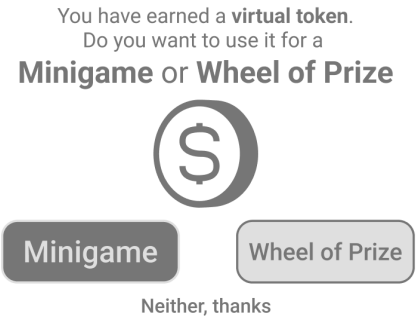


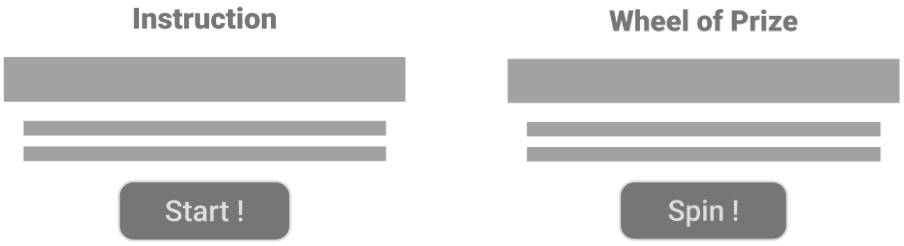
(Scannable QR Code move to the user tablet to secure user's prize)

System feature (Minigame) cut off

To tackle the fundamental issue of redundancy over the options of minigame and wheel of prize, we decided on cutting off the minigame feature entirely. Originally, the purpose of implementing both minigame and wheel of prize is to spark interest of different demographic customers. For instance, minigames could attract young kids to teenagers, and the wheel of prize could attract adult consumers and the demography above. However, after evaluating the feedbacks received, we realized that by removing the minigame feature, the entire interaction process becomes way more straightforward without additional decision points. Without the unnecessary decisions waiting to be made, not only the user experience through the system becomes more seamless, but also error cancellation of the decisions becomes less necessary as the progression steps all have a single option interaction point. This improvement also indirectly resolves the concern of potential congestion at the trolley station. Since the minigame feature used to be the most excessive part of the design, alongside the reduced amount of decision point, the time the interactive station is being occupied by each customer would be significantly reduced compared to the original design.

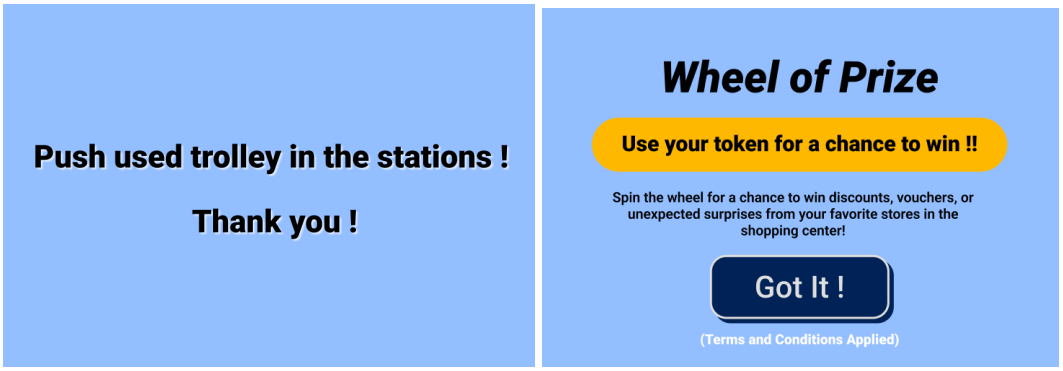
Mid-Fidelity Design:





(Excessive decision points that leads to more steps to be completed by the user)

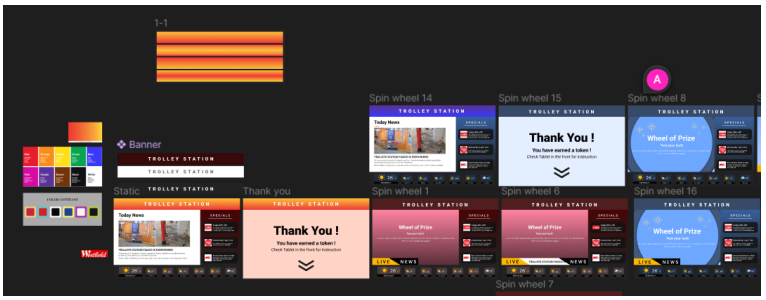
High-Fidelity Design:



(Single option process reduces time consumption and mental workload)

Color Tryouts

For this round of iteration, other than the improved features mentioned, we did not change much about the system layout. We mainly tested out the color choice and its aesthetics alongside the animations.



References

Video Prototype Sound effects:

Koishi Komeiji The YouTuber 2023.(2020, August 8).PSX - Press Button Sound Effects (Download Sound) [Audio].YouTube.https://www.youtube.com/watch?v=9wiI5iio-fc

BackGround Sound Effects.(2022,November 25).Shopping Cart Sound Effect [Audio].YouTube.https://www.youtube.com/watch?v=KU8-qvzo04I

Everyday Cinematic Sounds.(2021,August 2).Parking Lot Ambience | HQ Sound Effect[Audio].YouTube.https://www.youtube.com/watch?v=iGq0bHu7QxU

Sound Diary - Free Sound Effects.(2021,April 11).Roulette Wheel | Sound Effect (Copyright Free)[Audio].YouTube.https://www.youtube.com/watch?v=o2QnNhPzwmk

Free Gaming Sound Effects.(2021,November 7).Select Button Sound Effect[Audio].YouTube.https://www.youtube.com/watch?v=KsDg-ggEOvk