



# WORKSHOP 02: PAIN POINTS



FlushFinder

Team Number

G03

Group Name

GEE-OH-THREE

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# 1.0 Team Details

**Team Number / Name:** Gee-Oh-Three (G03)

**Tute day / time:** Tuesday 11am

**Project / Name:** Where's the cleanest public loo near me? **Tutor:** Dr Shreya Ghosh

| Student | Name                 | Student Number | Role                         |
|---------|----------------------|----------------|------------------------------|
| 1       | Hans Wong            | 20968560       | Researcher                   |
| 2       | Harry Walters        | 19166700       | Project Manager              |
| 3       | Kuldeepsinh Talatia  | 20872043       | User Researcher/Data Analyst |
| 4       | Navinda Jayawardhana | 20537054       | Usability Engineer           |
| 5       | Ola Malek            | 19756512       | Graphic Designer             |

## 2.0 What we have done:

This week, after submitting our project proposal document, we met with Dr Ivana Ivanova. Dr. Ivanova is an expert in GIS and interpreting geospatial data. The team learned that our toilet project started off as an undergraduate student's efforts to find suitable bathrooms, after a trip to Cape Town. We also learned that Dr. Ivananova found a high quality, current database of toilets and their accessibility types in the City of Perth. (<https://catalogue.data.wa.gov.au/dataset/perth-toilet-accessibility>)

We discussed our expectations for the application and some initial desired functionality - such as setting user profiles, letting the user prioritise "closeness or cleanliness" and making the target user action as simple as possible - such as employing a singular large "GO" button to commence navigation.

One of Team Gee-Oh-Three's members, Ola, suggested a 'plan my pee' section, where users can schedule when and where they'll be and find a suitable bathroom before arriving.

While we all understand that the results of our work would be a prototype, Dr. Ivanova is open to making a real-world product from the project. This means that any ideas or suggestions should be grounded in reality. The same goes for the GIS data we'd use - if it doesn't exist, we shouldn't make a feature based off of nonexistent data.

Hans reiterated the importance of privacy - that if we were to work with location data and build user profiles, folks would like the reassurance that their experience was a safe and private one.

## 3.0 Design Thinking

### 3.1 Collecting Data

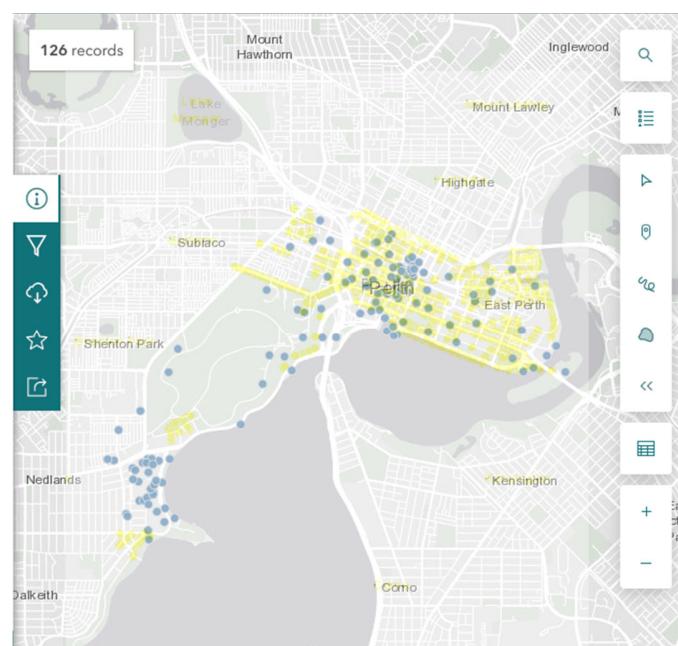
The functionality of our project depends on the quantity and quality of available GIS data. For example, it would be infeasible for our application to filter for baby changing rooms, if that data isn't available to begin with.

#### Sources

- Nearest! - Database on public toilets covers a worldwide scope of available bathrooms, but limits information to geographical coordinates and (occasionally) the name of the bathroom.
- Data WA - Western Australian public sector data (including from 7 local councils).  
<https://www.data.wa.gov.au/> data.gov.au - <https://data.gov.au/data/>
- National Public Toilet Map <https://data.gov.au/dataset/ds-dga-553b3049-2b8b-46a2-95e6-640d7986a8c1/details> <https://data.gov.au/data/dataset/national-public-toilet-map>

Unfortunately, no one dataset fits all. Even with the large amount of quality data in the National Toilet Map database, certain proposed functionality requires data from other sources.

For example, one idea for bathroom navigation would be to prioritise well-lit paths to the destination. Streetlight information is stored and maintained at a council level, rather than national, so features from local databases could merge with national databases. Unfortunately, not all councils don't provide publically available streetlight data.



City of Perth Streetlights (yellow) superimposed over public toilets (blue). If a user prioritises a safe journey, the app might modify toilet navigation to a longer, well-lit path.

The National Public Toilet map database provides information on 22730 toilets, Australia wide. (2624 of those in WA)

Interesting notes:

- 10581 are open 24/7
  - 67 of those require key access
- 4256 have notes on the toilet (such as wheelchair difficulty, doorway width, door opening direction, floor space size, toilet seat height)
- 1736 contain notes on how to access (e.g. 'up a driveway on the left hand side')
- 1550 contain notes on parking availability (e.g. 'Parking is locked at night time')
  
- 1667 have showers
- 4771 Unisex Bathrooms
- 150 All Gender Bathrooms
- 5620 contain sanitary disposal units.
  - 74 of which are all gender bathrooms
  - 5 bathrooms feature sanitary bins in men's bathrooms only (such as near women's rest centres, in town halls, etc.)
  
- 195 non accessible bathrooms require a key
- 268 accessible bathrooms require a special key.
- 895 can be opened with a universal MLA key - 54 of those are non-accessible.

## 3.2 User Studies

In the Figjam, we collaborated to produce the following questions. They help answer some general demographic information, as well as some preliminary perceptions on using bathrooms in Perth.

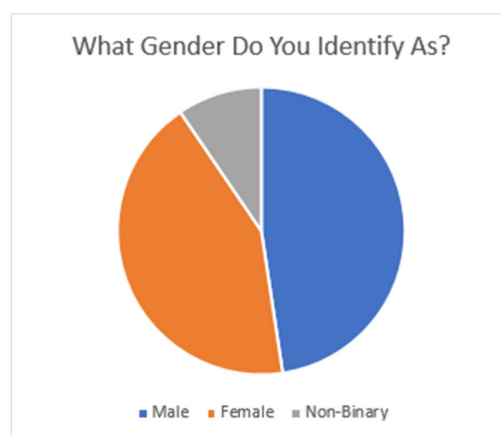
### User Survey questions:

- What does a clean bathroom mean to you?
- Other than relieving yourself (and washing your hands afterward!) Do you do anything else in the bathroom?
- How many steps do you recommend an app should have before it guide you to nearest toilet?
- What do you prefer clean toilet even if it's far from your current location or the one which is near.
- How often do you find yourself struggling to find washroom when you are in public ?
- Do you read feedback and reviews before using the any apps?
- What do you think about data security?
- Do you read IT policy of an app?

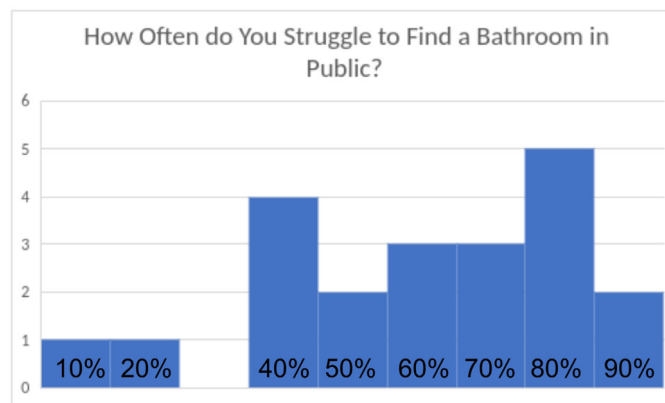
### User Survey Demographic questions:

- How old are you?
- What gender were you assigned at birth?
- What gender do you identify as?
- (Approximately) how many times a month do you come into the City of Perth? (pictured, right)
- Do you have an Apple mobile device?

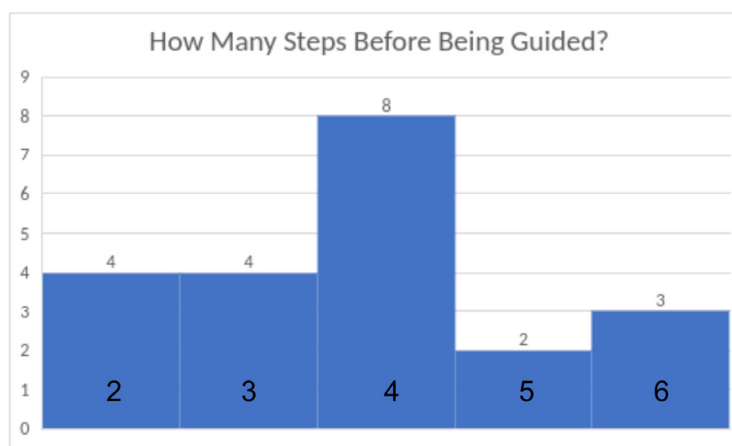
Kuldeep commenced the user studies, by collecting 21 participant's responses to the questions above. Kuldeep then summarized their opinions into pain points and abridged problem statements.



Kuldeep interviewed folks from a wide variety of age groups (18-51) and genders. A benefit of Kuldeep's distribution of gendered responses, is that the data is useful for a wide variety of demographics.



We were interested in the user response to finding bathrooms in public. Two-thirds of users reported regularly (70%) struggling to find a bathroom in public. It's reassuring to have numerical evidence regarding the demand of a toilet-located service.

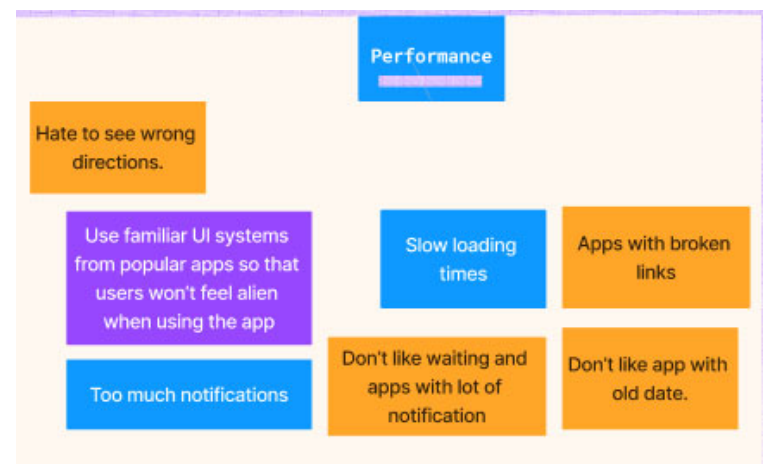
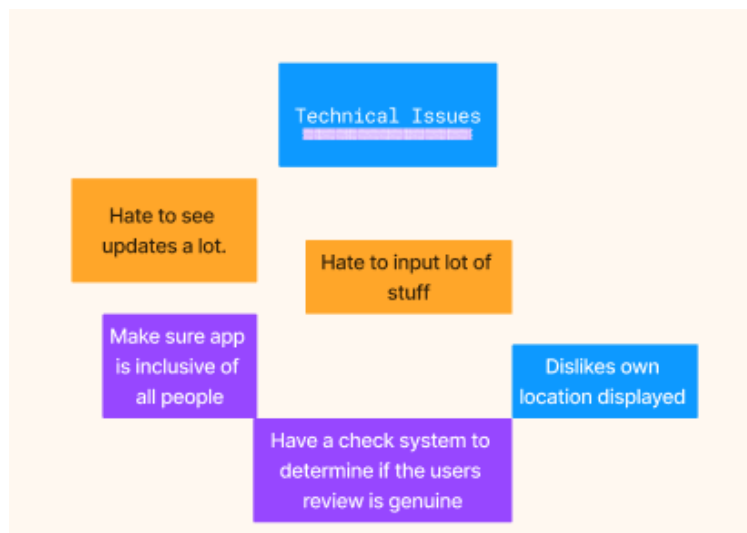
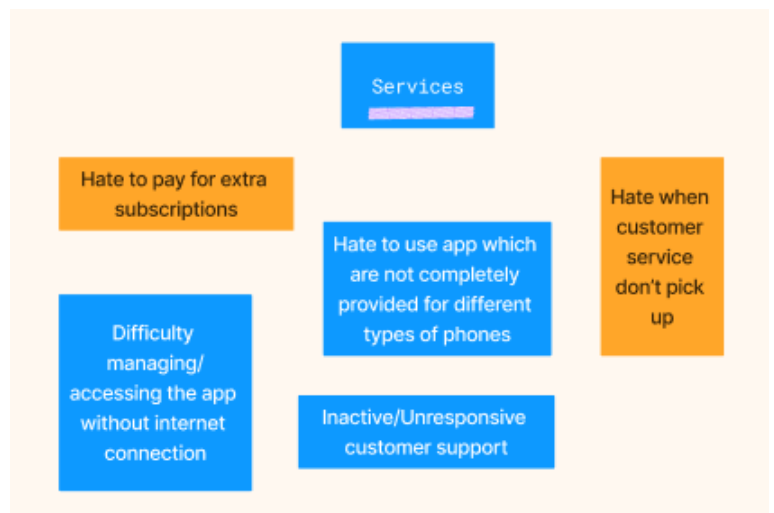
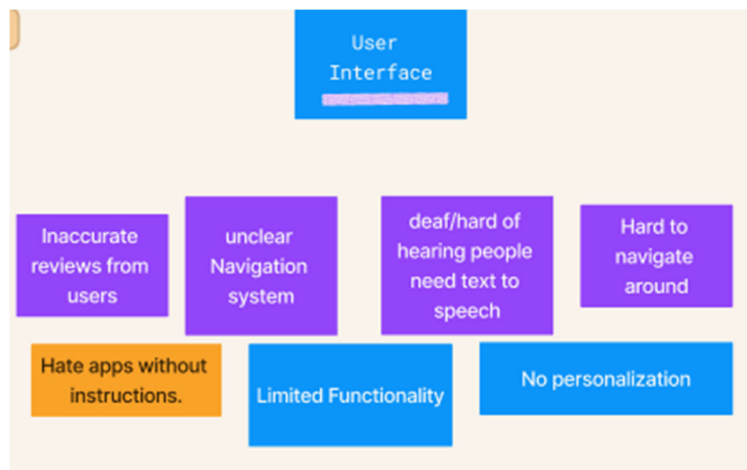


When asked how many sections an application should have before locating a bathroom, most users were happy with a maximum of four. This surprised as, as our focus has always been to minimise the number of operations a user needs to input. We'll be keeping an eye on this question in particular, to see if external factors affect user response.



### 3.3 Pain Points

After interviewing dozens of people and meeting back with the group, we organized pain points into two primary sections - team member's points of view and interviewee's points of view. We further grouped these sections into an affinity mapping of 4 clusters.



## 3.4 Problem Statements

| Problem Statements   |  |   |  |
|--|--|---|--|
| Who is affected  | What is the problem  | Why does the problem occur<br>Why is the problem important  | Where and when does this problem occur                               |
| Users who are unfamiliar with the area and urgently needs restroom.                                  | Time consuming for finding especially in large areas or cities | No centralized database or any easy-to-locate bathrooms   | Finding restrooms at anytime, business hours, holidays, weekends etc |
| People with specific needs, parents with children, pregnant woman, or people with medical conditions | Restrooms not open to public, difficult to locate              | Causing inconvenience, frustration, health issues and discomfort for people urgently trying to find one | Places like airports, malls, uni, parks, etc                         |

## 3.5 “How might we...” Statements

1. How might we create an app that has precise accuracy in locating nearby public restrooms and provides up-to-date availability and cleanliness?
2. How might we integrate the app with business owners, making the app able to locate bathrooms within participating establishments?
3. How might we make the app accessible to people with disabilities?
4. How might we integrate the app with public transportation systems, to enable users to locate bathrooms near train stations, bus stops, taxi stands, or other transit hubs?
5. How might we use machine learning to almost-accurately predict restroom availability and usage patterns, providing users the information to help find bathrooms quicker and more efficiently?
6. How might we have user-generated content, their inputs such as ratings and review, to improve the accuracy and reliability of the app?

## 3.6 Solutions

After reformatting problem statements into 'how might we...?' questions, the team addressed each component, producing multiple solutions for each.



Link to the figjam: <https://www.figma.com/file/jv6GQ0GEef4layZkMEXkZy/Workshop-2%3A-User-Personas-and-Pain-Points?node-id=0%3A1&t=r9KuHawiTXqNLAW7-1>

## 4.0 Design Process

Below is a table showing the work breakdown structure of assignment 1 final report template. This shows all the deliverables that need to be completed with expected duration and dependencies.

| WBS No.  | Activity/Task                            | Duration | Dependencies | Allocation |
|----------|--|----------|--------------|------------|
| <b>1</b> | <b>Written Report</b>                    |          |              |            |
| 1.1      | Executive Summary                        | 3 Days   | 1.3 - 1.17   |            |
| 1.2      | Introduction                             | 1 Day    |              |            |
| 1.3      | Background                               | 1 Day    |              |            |
| 1.4      | Team                                     | 1 Day    |              |            |
| 1.5      | Software Engineering Lifecycle and Tools | 1 Day    |              |            |
| 1.6      | Design Thinking                          | 2 Weeks  |              |            |
| 1.7      | Requirement Specification                | 1 Week   | 1.6          |            |
| 1.8      | UI/UX Goals                              | 1 Day    | 1.6          |            |
| 1.9      | UI/UX Design Principles                  | 1 Week   | 1.7          |            |
| 1.10     | Usability Heuristics                     | 3 Days   | 1.7          |            |
| 1.11     | Wireframing                              | 1 Day    | 1.8,1.9,1.10 |            |
| 1.12     | Low-Fidelity Prototype                   | 1 Week   | 1.11         |            |
| 1.13     | Expert Review                            | 1 Week   | 1.12         |            |
| 1.14     | High-Fidelity Prototype                  | 1 Week   | 1.13         |            |
| 1.15     | Project Management                       | 7 Weeks  |              |            |
| 1.16     | Development                              | 1 Week   | 1.14         |            |
| 1.17     | Conclusion                               | 1 Day    | 1.14         |            |
| <b>2</b> | <b>Five-minute Video</b>                 |          | 1            |            |
| <b>3</b> | <b>Individual Peer review</b>            |          | 2            |            |

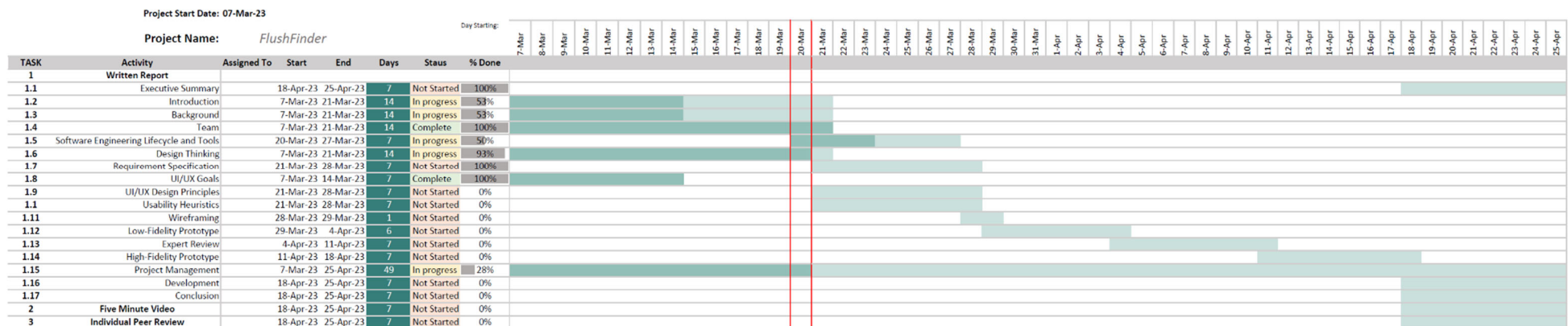
## 4.1 Gantt Chart

While we have been following some of the hallmarks of the Agile project management structure (rapid prototyping, recording stakeholder feedback, weekly scrums), we're considering a software-based tool to supplement the Agile workflow (such as Trello).

One tool to assess the overall team's success is the Gantt Chart. Ola created the one you see below, to help manage and check the progress of each of Assignment 1's tasks.

Because we allocate tasks to members on the day of the meeting, the included activities feature all members - no per-person breakdown (yet!)

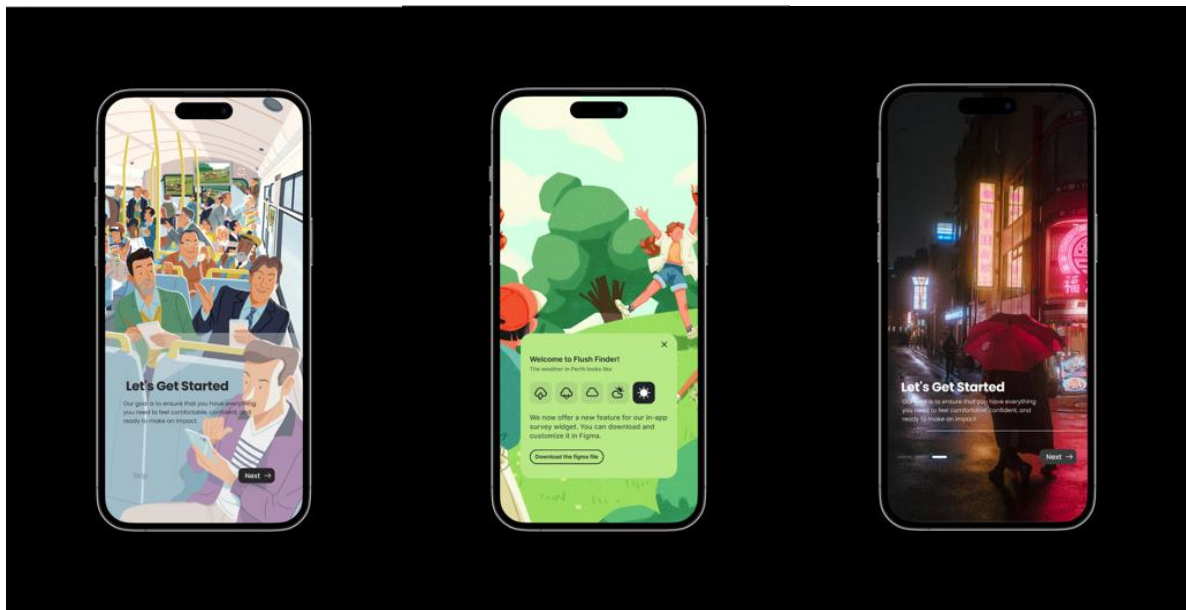
Due to the reasons stated above, we have created 'soft milestones' - subcategorizing our goals into bite-sized chunks. Obvious milestones are included (like the weekly workshop submissions and Assignment 1's due date) but we're also including important weekly goals (meeting with Dr. Ivanova, interviewing users, creating Figma prototypes).



## 5.0 Figma

Kuldeep decided to try their hand at Figma prototyping this week. The following considers an iOS application running on an iPhone 14 Pro device. While we understand the design component will be officially addressed later, it's in everyone's interest to build up our Figma skills.

<https://www.figma.com/file/zW5d5vdKydPW3xcLfHqT7G/Untitled?node-id=0%3A1&t=wJ6FIRV1Zk4jnufC-1>



## 6.0 UI/UX Glossary and weblinks

1. (UX) User Flow - Visual representation of steps a user will take to complete a task on an app or a website. <https://www.justinmind.com/blog/user-flow/>
2. (UX) Persona - A character that represents a user, created based on data to help designers understand user needs and behavior. <https://www.interaction-design.org/literature/article/personas-why-and-how-you-should-use-them>
3. (UI) User Design - Process of designing the visuals of the product with the typography, colors, graphics, etc. <https://coolurs.co/>

## 7.0 Conclusion

In conclusion, our report focused on interviewing users to gather insights about what they would want to see from a toilet locator app and identifying their pain points to generate problem statements and possible solutions for this issue.

Through our user interviews and our discussion with Dr. Ivanova, we found lots of useful public data and feedback that users want a toilet locator app that is easy to use, has accurate and up-to-date information, and provides details about the cleanliness and availability of toilets. They also expressed frustration with the lack of public toilets and the inconvenience of having to search for one when they need it urgently.

Based on these insights, we generated several problem statements and how might we... questions, including the need for a reliable and accurate toilet locator app, how might we make the app accessible to people with disabilities, and how might we have user generated accurate and reliable reviews. We then proposed possible solutions such as making the app free to download so that everyone has access, using text to speech, and using familiar UI so that the app is easier to navigate.

Overall, our findings highlight the importance of addressing the user pain points associated with public toilets and providing a convenient and reliable solution through a well-designed toilet locator app. By implementing these proposed solutions, we can make a positive impact on the lives of many people who struggle with finding clean and accessible public toilets.

## 8.0 Evidence

### 8.1 Meeting Minutes

|                   |                              |
|-------------------|------------------------------|
| <b>GROUP NAME</b> | GEE-OH-THREE                 |
| <b>DATE</b>       | 20/03/23                     |
| <b>TIME</b>       | 2pm-4pm                      |
| <b>LOCATION</b>   | Curtin Library Study Pod 562 |

**PRESENT:**

Ola Malek, Hans Wong, Kuldeep Talatia (Online)

**APOLOGIES:**

Harry Walters (in Sydney)

**ABSENT:**

Navinda

**DISCUSSION:**

**Tasks that have been done:**

- Harry has populated the Figjam with user survey questions, created graphics with Kuldeep and wrote the report with Ola.
- Kuldeep has added survey questions, started interviewing users, collected data and created insightful graphics.
- Ola created this week's project management tools, wrote the report, and organised our documents into one neat pile.
- Hans has filled in "How might we..." statements, and provided screenshots of affinity mappings in FigJam.

**Tasks to do:**

- Kuldeep will share the data he has collected in the google docs in workshop 2 surveys folder.

| <b>TASK</b>  | <b>WHO</b>           | <b>DUE</b> | <b>COMPLETE</b> |
|--|----------------------|------------|-----------------|
| 1.0 Design thinking  | Kuldeep, Hans        | 21/03/23   |                 |
| 1.1 Brainstorm User Pain points <ul style="list-style-type: none"><li>- Affinity map</li></ul> | Kuldeep, Hans, Harry | 21/03/23   |                 |
| 1.2 Define Problem Statements <ul style="list-style-type: none"><li>- Affinity map</li></ul>   | Kuldeep, Hans        | 21/03/23   |                 |



|  |               |          |  |
|--|---------------|----------|--|
| 1.3 Define How might we questions      | Kuldeep, Hans | 21/03/23 |  |
| 1.4 Ideate Solutions<br>- Affinity map | Kuldeep       | 21/03/23 |  |
| 2.0 Design Process                     | Ola           | 21/03/23 |  |
| 2.1 Gantt Chart                        | Ola           | 21/03/23 |  |
| 3.0 Figma                              | Harry         | 21/03/23 |  |
| 4.0 UI/UX glossary                     | Hans          | 21/03/23 |  |
| 5.0 Evidence                           | Ola           | 21/03/23 |  |