Human-Computer Interaction (SECV2113)
2024/2025 Semester 1
Phase 1: Project Proposal

Group 1: TOO

Student ID(s)

Name	Matric No.:
Lee Jian Ai	A23CS0234
Sou Cheng Jie	A23CS0271
Liew Choon Pang	A23CS0238

Table of content

Problem

As the technology of the world is evolving swiftly, society and the cities are getting busier and busier day by day. This situation can be observed by the increased amount of vehicles that were on the road, despite public transportation being provided in nearly every single corner of the city. The never-ending stream of vehicles has made the congestion problem hard to resolve, since most people prefer using their own to ride the prepared public transportation, thus causing traffic on the road to worsen. On the other hand, unnecessary energy consumption has also become a major issue when citizens are too absorbed with their lives, and the outdated automation system of lampposts and other public infrastructures that were built for better neighborhoods has gone unnoticed. The efficiency of the resources will be unfortunately reduced and the electricity costs are increasing silently, which is not a good sign for the SDGs we had chosen, which are sustainable cities and communities, as well as responsible consumption and production.

Therefore, our group came up with an idea to figure out the solution for the stated challenges by creating a mobile application where several features that can assist the daily life of the targeted audience are combined into one platform. The utilization of cutting-edge technologies, such as artificial intelligence and real-time in-app communication, will help it perform and operate more efficiently.

Let's examine all the issues that can be faced by the citizens:

1. The provided infrastructures, such as public transportation, might be in poor condition and the facilities not meet their supposed accessibility standards. For example, the seats and handles can be broken or dirty, while reporting them seems like a solution, most of the time it just goes unnoticed. This will make the users, especially the groups with special needs, face difficulties while using some crucial infrastructure that has malfunctioned, such as a ramp for wheelchair users to get on the bus.

Figure 1.1 Example of a damaged seat

Most of the time, the reporting system is quite an issue too, as there was not a centralized application for it. As an example, the transportation provided by MyRapid can be reported through their WhatsApp account or their other social media accounts, which will frustrate the users.
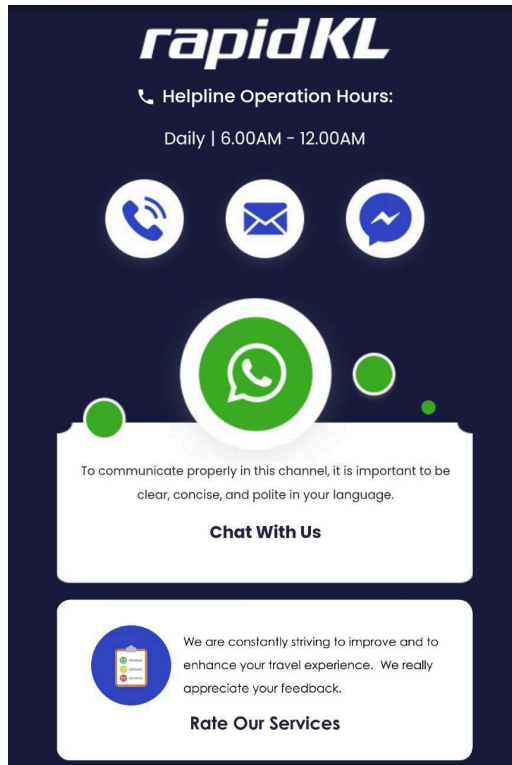

Figure 1.2 Example of confusing ways to report issues

2. Real-time updates on public transportations is lacking, even though there are many application that has this function available, most of them are still not accurate enough. For example, Lugo, has their bus tracking system, however sometimes it will lose track of the bus; another example is from Moovit, where the tracking function is locked behind a paywall. Not only there were issues on the tracking function, the existing systems does not provide the real-time report on the traffic, causing the estimated time of arrival (ETA) to be off. All of the listed problems will caused the users to become anxious while waiting for the public transportations as the uncertainty was not planned in their journey. The inconvenience might result to them spending unplanned money on e-hailing services, which is expensive when the traffic or condition is terrible, also due to the travel distance.
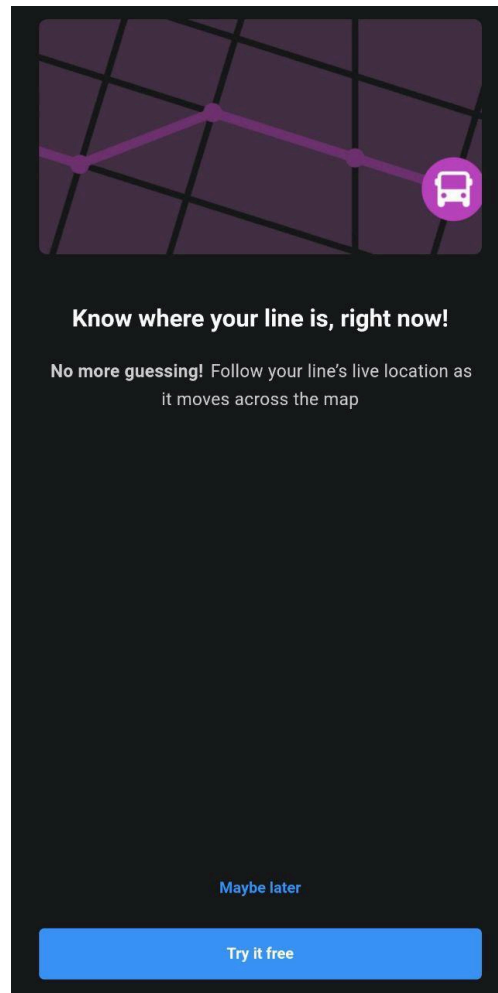
Figure 2.1 Example of tracking system locked behind paywall (Moovit)

3. Energy consumption has been a topic since long time ago, as it is the easiest way to preserve the energy on the earth. However, there were some infrastructures that were still on even when it is not in their suitable use. For example, the lampposts remained switch on during the bright and sunny daytime, when the supposed automation system should have made it turned off. Due to the poorly maintained system, a lot of energy was wasted unnecessarily, resulting the costs of electricity to increase and the resource efficiency reduced. Some citizen who still care about their surroundings will find this issue frustrating, as it may be perceived as the infrastructures being lowly maintained. When they want to report the issues, they might have a fuss of searching the reporting application or service online, which will lead to more annoyance.

Figure 3.1 Example of lamppost still on during daytime

By figuring out all the problems that were regularly faced by the citizen, we are able to gain more conception on the solutions that can be made based on them.

Proposed Solutions

Smart Community Assistant (SCA) will be the name of the application that we decided to create. Below are the features that will be included:

1. Multilingual Voice Assistant
   An AI voice assistant that is multilingual will be included into the application to supply voice-based navigation for those with special needs. Assisting features such as the presice directions and steps can be ask through the assistant, which can help to reduce any the happening of any unwanted accidents.

2. Real-Time Public Transportation Tracking
   The tracking system will be integrated into the app through tracking the GPS position of the transportation. The system will provide the live updates on the public transportations, the live location of them, and the estimated time of arrival (ETA) in order to make a trip planning easier.

3. Community Reporting Platform
   The issues that are related to the public transportation and public infrastructure can be reported through the provided platform. Make sure to give a clear description of the problem, the specific location, and upload the photo evidence. The app will review and notify the relevant departments to fix the given case as soon as possible.

4. AI Chatbot
   An exclusive AI chatbot will be a featured function to help the users solve their in-app problems that was faced by them by giving a fast and accurate answer.

Target User

1. University Students
   ● Most of the university students does not have their own transportation, hence they will often rely on public transportation. They will benefit from the real-time tracking system as planning a trip beforehand is important for them.
   ● Any broken or malfunction public facilities can be reported right away as they tend to care and notice more about them, and any small inconvenience can be noticed easily.

2. Office Workers
   ● Some office worker will prefer to use public transportation to avoid on road congestion, or they just couldn't afford a car yet. Real-time update on public transportation is important for them as they would not want to be late for their work, therefore a trip planning and ETA is a crucial function.

3. Personnel with Special Needs
   ● The easy navigation that was given on hand, whether by asking the AI Chatbot for instructions or real-time updates, can be really beneficial for them as they might have difficulties asking the others for the informations.
   ● Voice-guided assistant is important for those who are visually impaired as they can get precise guidance to get through the public transports easily.
   ● Reporting function will be used if some of the facility prepared specifically for them (e.g. ramp, wheelchair seatbelt) is broken or malfunctioned.

4. Administrator of the company that provides the public transportation and public facilities
   ● Any report from the community will be sent to them directly in order that they can send their relevant workers to solve the problem as soon as possible.