NAVISTAR

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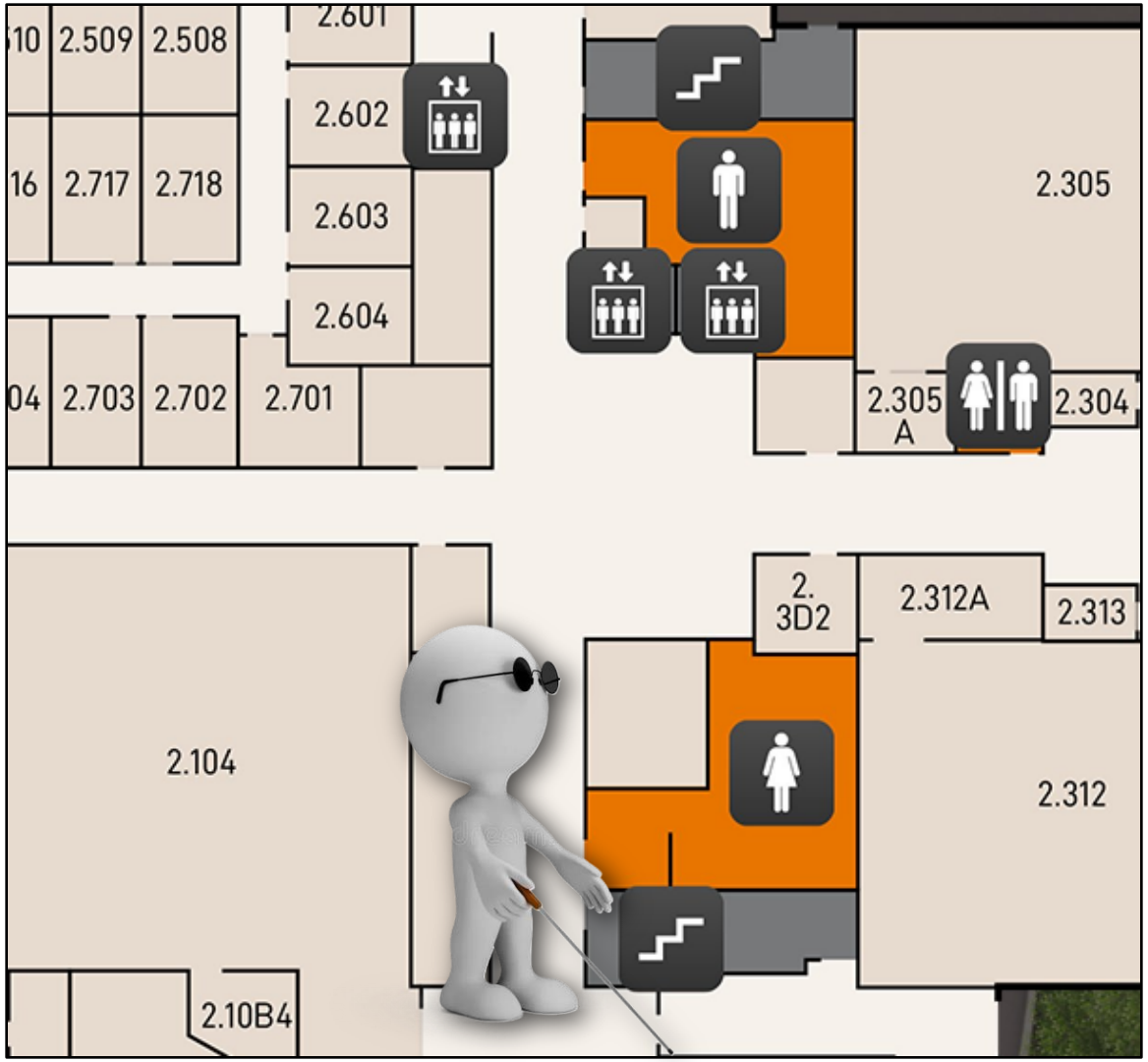
REVISION HISTORY

Revision #	Revisions Made
Revision 1	Requirements edited in WRS and in slides to start with "The system shall" by Nidhi.
Revision 2	Stakeholders edited in WRS and in slides by Nidhi to include of the people, by the people, and for the people and reflect class discussion.
Revision 3	Additional AS-IS and TO-BE scenario added by Alex.

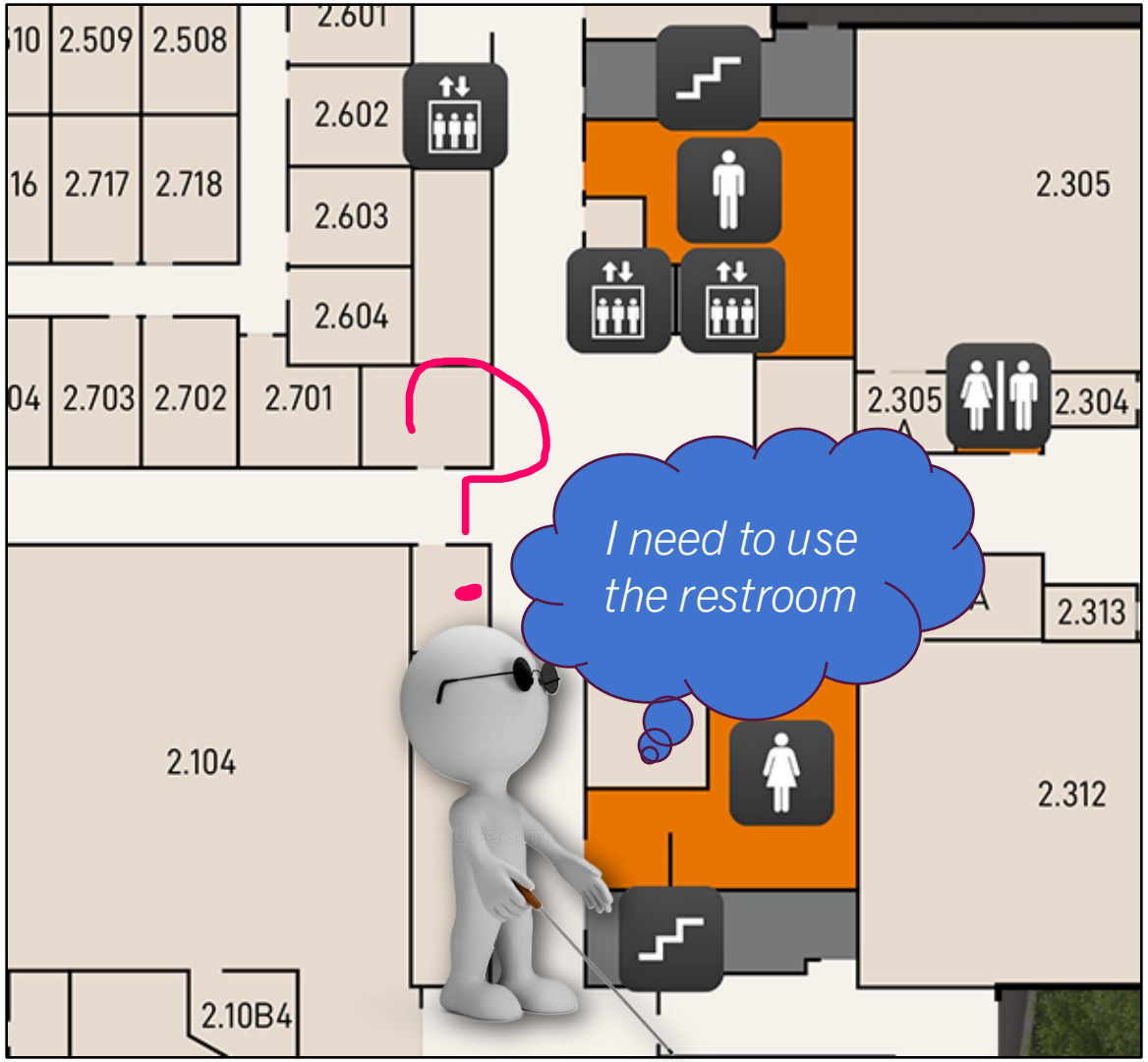
SCENARIO

John Doe is a UTD Student who is visually impaired.
He doesn't have access to service dog to help in his daily life because his insurance wouldn't cover the costs.



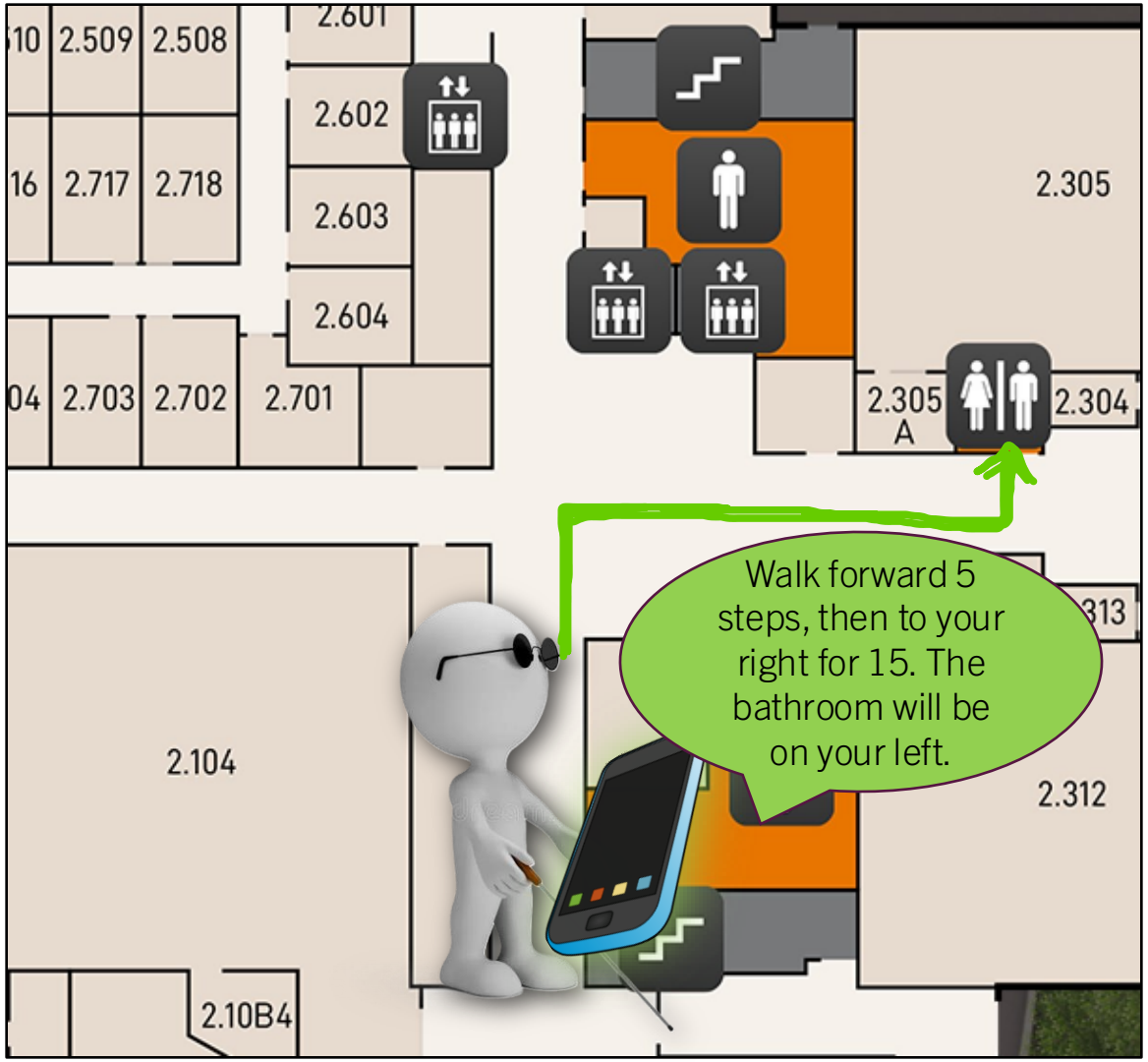
AS-IS

John Doe wants to go to the one-person bathroom between 2.305 A and 2.304, but he has no idea where it is or where he could find it.



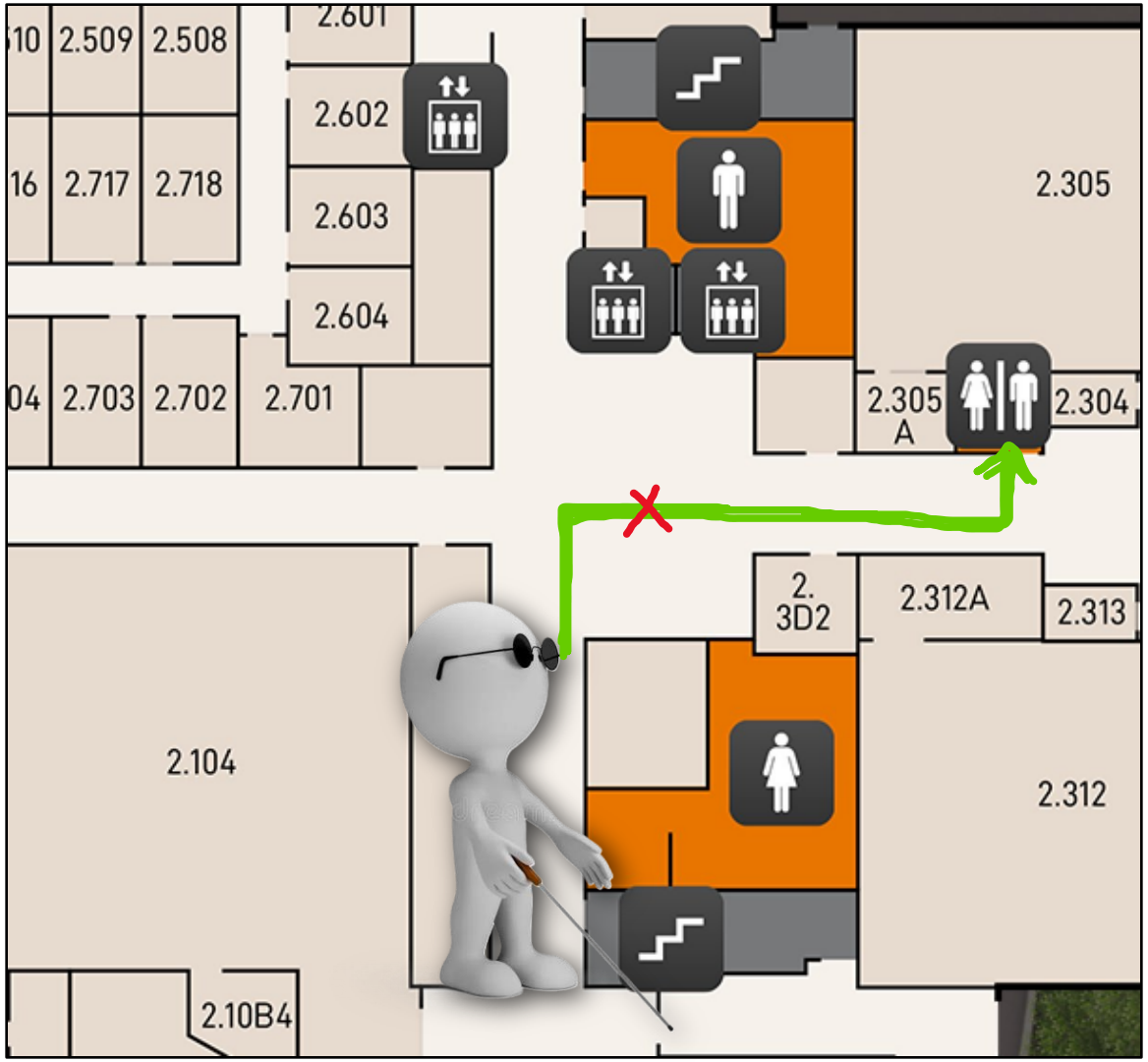
TO-BE

The Navistar would tell the John Doe the route, so that the he now knows the correct route to get to the bathroom.



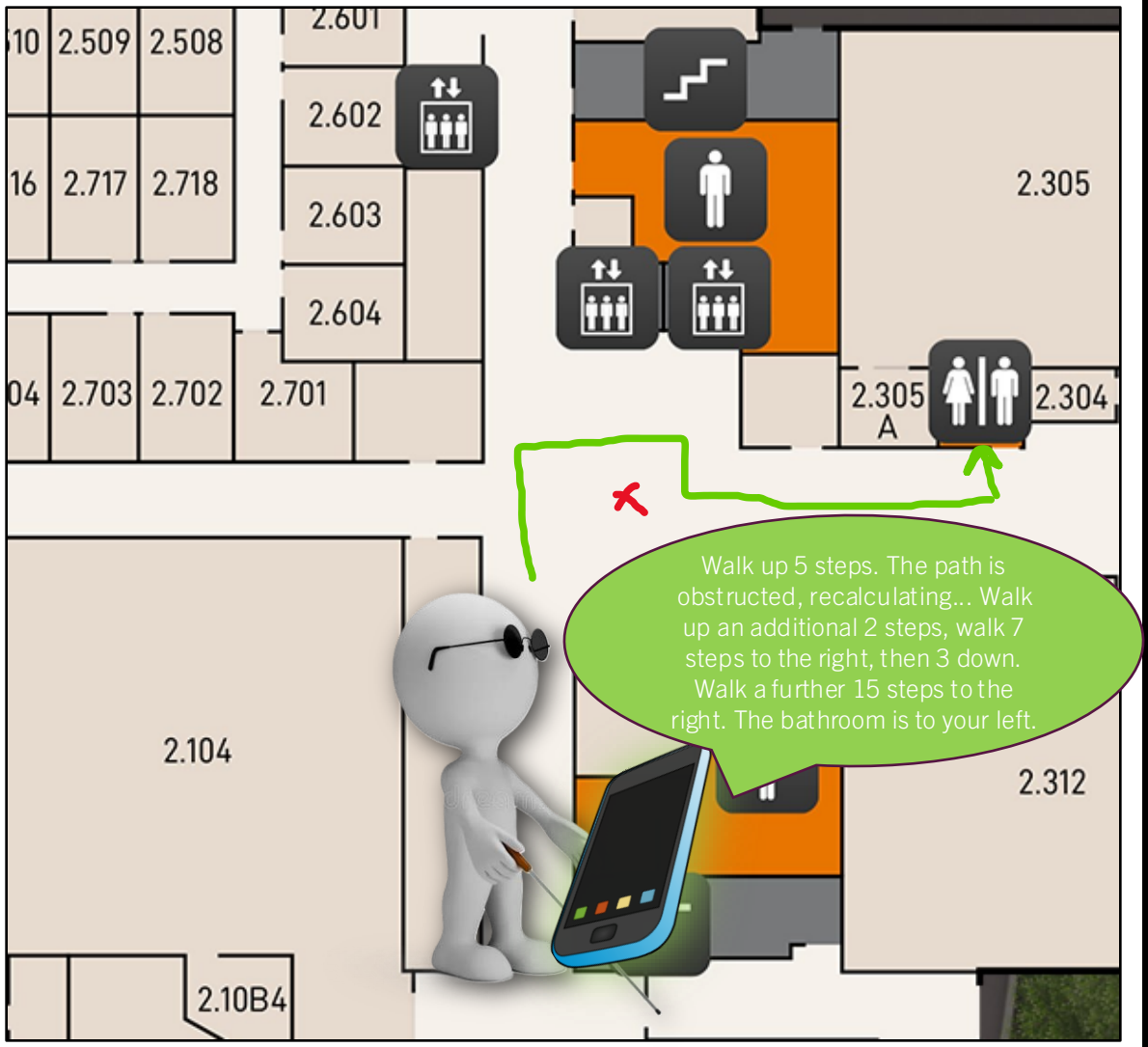
AS-IS

The path to the bathroom is obstructed by some object or person, which may cause John Doe to trip or hurt themselves on their way to the bathroom.

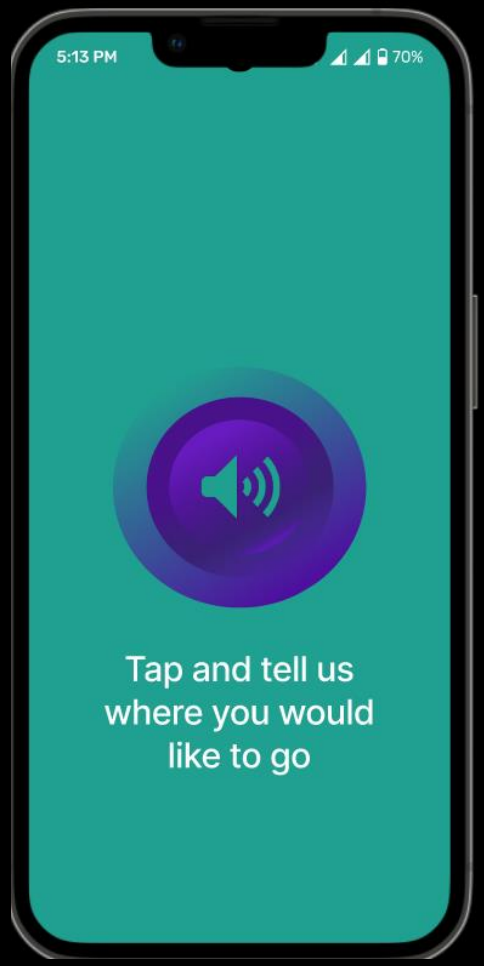


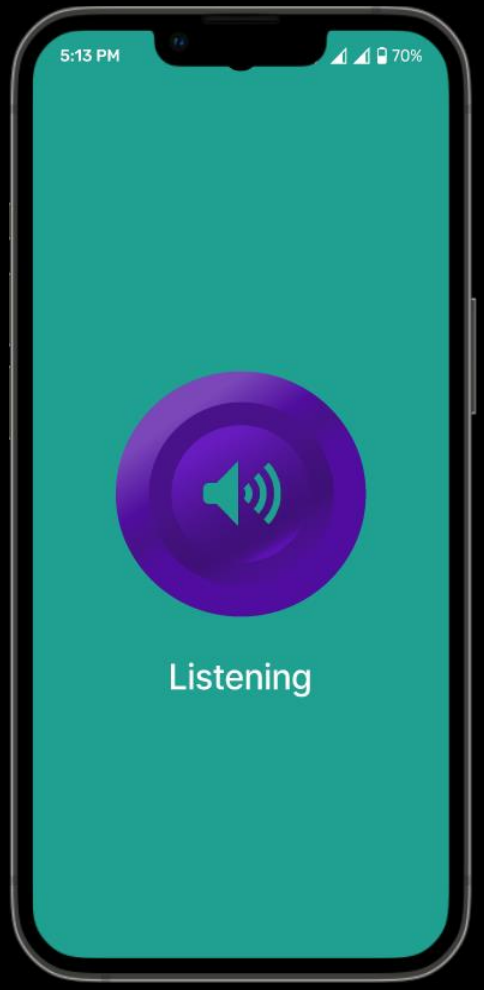
TO-BE

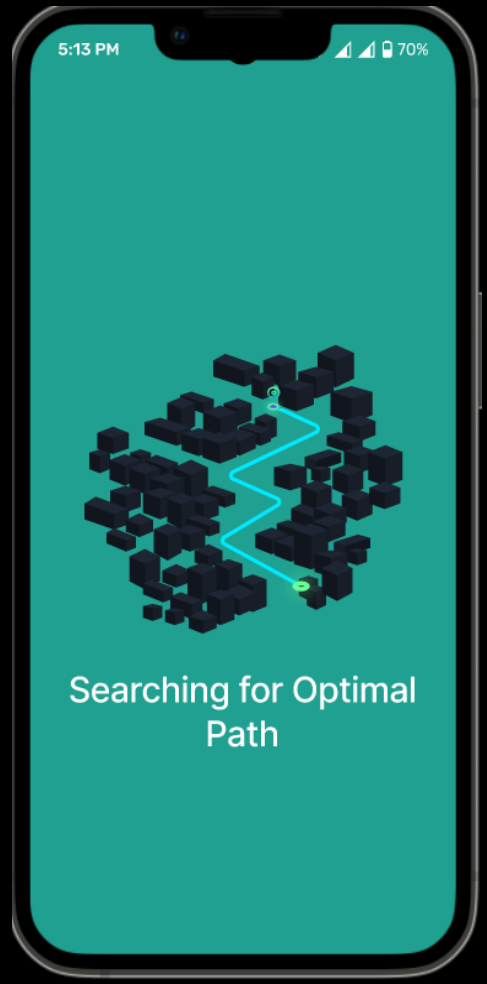
Navistar will scan the route that John Doe is taking to ensure there are no obstructions.
If it finds one, it will alert John and re-route them on a safer path.



FIGMA DESIGNS







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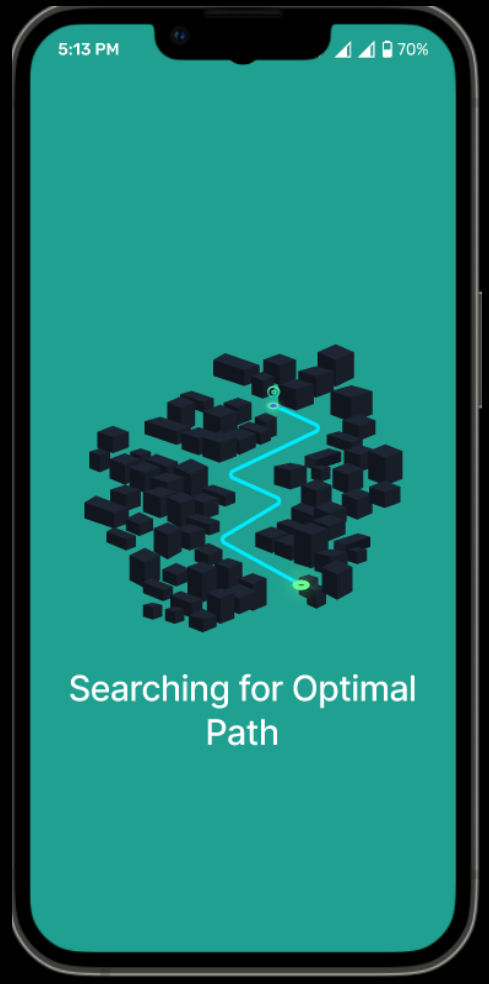
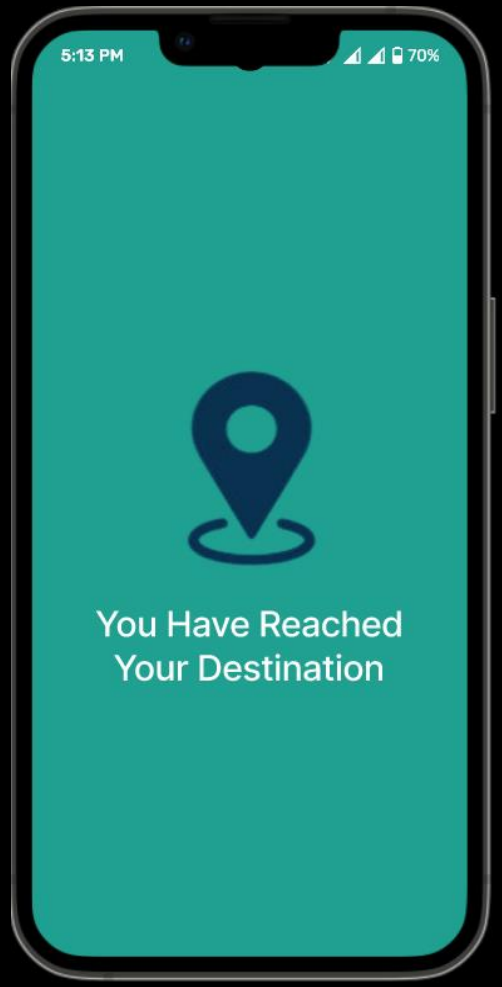
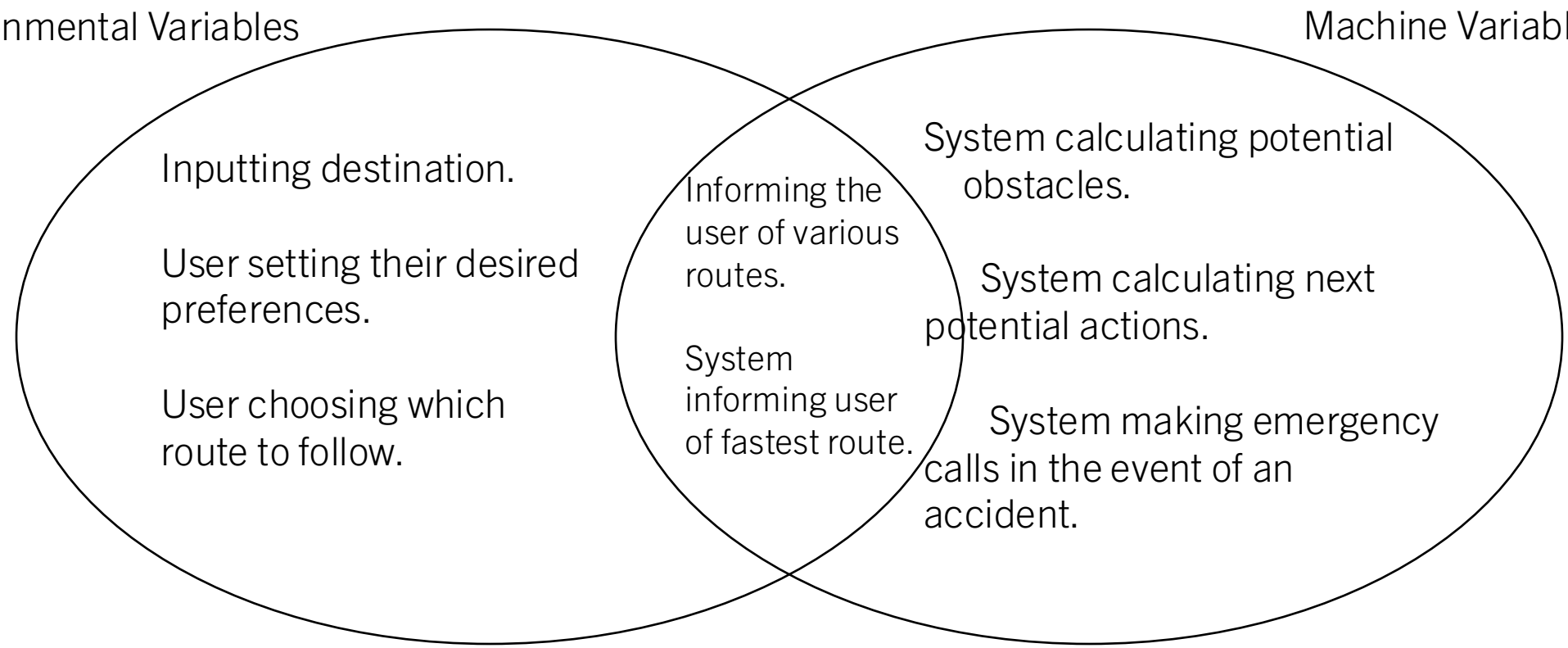




DOMAIN, STAKEHOLDERS, OBJECTIVES

- Domain:
  - Used in indoor settings such homes, offices, or schools.
  - These settings can consist of multiple floors, each floor possibly hosting classrooms, offices, washrooms, lounges, elevators, etc.
- Stakeholders:
  - Of the people: Navistar team
  - By the People: developers, requirements engineers, test engineers, system engineers
  - For the People:
    - Primary – Visually impaired people who need to navigate indoors across multiple floors.
    - Secondary – Caretakers and assistive people to the visually impaired person. Also includes people in the accessibility department and first responders in the event of an emergency.
- Objectives:
  - Functional objectives would include foremost navigating indoors, primarily going from one location to another in the same or different buildings connected to each other.
  - Non-functional objectives would include safe navigation, fast navigation, and comfortable navigation.

REFERENCE MODEL



FUNCTIONAL REQUIREMENTS

- FR1: The system shall use input to determine the destination location to go to. The system may suggest or confirm a possible destination location, utilizing the user's routine schedule or habit.
- FR2: The system shall figure out and tell the user which routes can reach the destination location and accepting the user's preferred route.
- FR3: The system shall tell the user to walk a specific distance (e.g., 2 minutes to reach a turning point, 30 steps to take).
- FR4: The system shall tell the user to stop at the right place to turn.
- FR5: The system shall identify obstacles and tell the user what to do to avoid collision.
- FR6: The system shall make emergency calls and messages after detecting a fall or when the system cannot figure out the current location.
- FR7: The system shall identify what may be the next action(s), based on the user's schedule or habit, and suggesting and accepting the user's choice.

NON-FUNCTIONAL REQUIREMENTS

- NFR1: The system shall provide route suggestions within a maximum delay of 3 seconds, ensuring that the user receives the fastest route promptly.
- NFR2: The system shall ensure consistent and accurate guidance throughout the user's selected route
- NFR3: The system shall possess an intuitive interface, ensuring ease of use for the user
- NFR4: The system shall be customizable to its user (e.g., the volume, the interval at which the system says something, the order whereby different things the system says, etc.).
- NFR5: The system shall be easily extensible to accommodate the following typical variations: variations in interface, language, definitive needs of the user, new features, new sensors and hardware.

QUESTIONNAIRE

1. User Background Information

1.1. How familiar are you with smartphone apps that provide navigation assistance?

- Very Familiar
- Somewhat Familiar
- Not Familiar

1.2. Do you or someone you know live with vision impairment?

- Yes
- No

1.3. Have you ever used any assistive technology for navigation before?

- Yes
- No

If yes, which ones?

1.4. How often do you require assistance navigating indoor spaces?

- Very Often
- Often
- Not Often
- Never

1.5. What type of indoor environments do you find the most difficult to navigate (e.g. crowded areas, tight hallways)?

Link

REQUIREMENTS CREEPING RATE

- The requirements creeping rate for this project is 25%.
- Keep the rate relatively low to have:
  - Well-defined scope
  - Backward and forward traceability

WHY NAVISTAR IS THE BEST

- Our app will use all available features of modern smartphone devices to provide the best service to users.
- This includes utilizing the internal gyroscope, location, Bluetooth, microphone, camera, Wi-Fi access, and vibration motor.
- Put ourselves in the shoes of the visually impaired, caretakers, and first responders to ensure an unrivaled experience for anyone on the app