CPT_S 484 - Phase I: AS-IS and TO-BE

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Scenario 1

AS-IS:
- Stevie is trying to go to his next classroom. He knows he needs to walk ahead a few steps, and then turn left around the corner.
- However, he is not sure when to turn.
- He took a guess, but turned too early, hit the wall and hurt his head.

TO-BE:
- The THEIA app asks Stevie to give his current location and the destination.
- The app calculates the route from the current location to the destination.
- THEIA tells Stevie to "walk ahead 10 steps, then turn left"

Scenario 2

AS-IS:
- Josh is trying to go from his office at work to the restroom. The restroom is on a different floor of the building, so he needs to use the elevator. He remembers the way to the restroom.
- However, the restrooms were renovated and are now on a different floor entirely.
- Josh is now going to the wrong location for the restroom.

TO-BE:
- The Theia app will ask Josh to give his current location and the destination.
- The app will calculate the route, detect there has been a change to the location , and ask if he needs assistance to the new location.
- Theia will then navigate Josh to the correct location.

Scenario 3

AS-IS:
- Sara is new to her school and needs to find a classroom she has only ever gone to once. She knows how to get to the help desk from where she is currently located.
- She is shy and attempts to asks one of the staff if they could help her find her classroom.
- However, she couldn't build up the courage. Instead, she feels confident in finding the classroom based on previous knowledge.
- She ends up lost and does not know where to find help.

TO-BE:
- Sara will tell the Theia app that she is lost and needs assistance.
- The Theia app will detect if she is close to/in a room, or if she is on the way to a destination.
- If Sara is not close to/in a room, assistance will be sent to her location. Otherwise, if she is, a chat window between her and assistance will be started.

Further Analysis - Scenario 3: Sara is Lost

What-if: What could go wrong in a situation where a user is lost?

- User does not have a designated caretaker to assist them
- The user's phone battery is depleted
- The microphone does not pick up on the user's help request properly due to background noise
- Building layout information is outdated, giving inaccurate location data

Who: Who can provide assistance?

- A designated caretaker
- The Theia app's navigation feature

What-kinds-of: What types of assistance does Theia give in this situation?

- Audio-guided navigation for users to self-navigate using Theia
- Real-time audio chat assistance from a caretaker
- Location services given to caretaker in case of need for physical dispatch

Further Analysis - Scenario 3: Sara is Lost

When: When will Theia send physical assistance?

- User is detected to be out-of-bounds for Theia's navigation to safely plot a route
- User requests physical assistance
- User is on a navigation route and strays too far out-of-bounds

How-to: How does Theia ensure a user's safety if they are lost?

- Contact a caretaker so they can talk with the user
- Provides a safe route from a nearby/in room location to the nearest help desk or to destination
- Immediately provides assistance when the user requests it
- Asks if assistance is required if the user is detected to have strayed from a navigation route
- User is continuously monitored until the situation is resolved and the user confirms they are safe

Why Use Theia Instead?

The Problem:

Traditional tools like canes and dogs only offer reactive navigation, they detect obstacles but don't fully guide users or adapt to indoor layout changes.

Our Solution:

Theia provides voice guided, hands free indoor navigation using IoT beacons, real-time object detection, and AI based rerouting.

Why It's Better:

- Proactive Navigation
- Adaptable
- Accessible
- Affordable & Scalable

The Impact:

Theia empowers visually impaired users to move safely, confidently, and independently anywhere.