CPTS 484

Phase 1: THEIA

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Scenario 1

AS-IS:

- ❏ Stevie is trying to go to his next classroom. He knows he needs to walk 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.

FR4,FR6

Scenario 2

AS-IS:

- ❏ Mary was on her way to her classroom and tripped over a charging wire, causing her to sprain her ankle.
- ❏ She was unable to go further, and needed to call for immediate assistance.
- ❏ There was no one around to help and she did not have the means to call for assistance.

TO-BE:

- ❏ The THEIA app detects Mary falling, immediately sending out an alert to her emergency contacts and additional assistance, allowing her to receive aid as soon as possible.

Scenario 3

AS-IS:

- ❏ Bob has back-to-back classes in the same building, and he needs to navigate from one class to the other within 10 minutes through crowded corridors.
- ❏ Bob keeps losing his way or bumping into obstacles, and so he is often late to class.

TO-BE:

- ❏ With the THEIA app, it informs Bob of any detected obstacles and other blockages.
- ❏ THEIA additionally is able to store Bob's schedule to remind him ahead of time of where he should be and where to go based on the travel time.

FR5, FR8

Further Analysis - Scenario 3

➔ *What if?* - What could go wrong if the user is not using THEIA?

- **Bob does not know how to get to class.** Without a proper GPA or navigation app, he is unable to attend his class, or gets lost in the process.
- **Bob forgets he has a class.** Without THEIA reminding Bob his schedule, he is unable to reach his classes on time, or at all.
- **Bob is unable to reach class in time.** Without THEIA telling Bob the most optimal or shortest route to his class, Bob runs into unforeseeable blockages.
- **Bob injures himself while getting to class.** Without a proper emergency alert system, Bob is unable to receive assistance from emergency contacts, paramedics, or other first responders.

➔ *Who?* - Who uses the THEIA app?

- Bob
- Bob's caregiver or guardians (configuring app and acting as emergency contacts)
- Staff members (from access and disability center)
- Police officers, firefighters, paramedics, and other first responders

Further Analysis - Scenario 2

➔ ***What kinds of?*** **- Types of modes, options, or preferences for the user?**

- **In terms of audio features:**
  - Volume of audio
  - Type of voice for audio (accent)
  - Language options for audio
  - Speed of audio (such as the interval of instructions given)
  - Audio description options available (for environment awareness)
  - Easily accessible options for repeated instructions as needed

Further Analysis - Scenario 2

➔ ***When?* - At what times will the app be unavailable or unable to be used?**

- **Lost GPS or navigation signal,** unable to see or locate where the user is
- **Confused GPS or navigation signal**, which would provide the incorrect directions to the user
- **No or lost internet access**, stopping the user from accessing any online features
- **A busy/unreachable emergency contact line**, stopping the user from getting aid when needed.

➔ ***How-to?* - Use the app at times of emergency, unavailability, etc.**

- Ensure the app is available and online at all (or most) times
- When the app is offline, it still must be usable. For example, using stored back-ups prompts or information. Such information may not be up-to-date to fit the user's exact situation or environment, but should still provide general guidance.
- Ensure the app continuously attempts to reach an emergency contact if there are any unexpected failures.

Comparisons for Cane, Dog, Stevie and Theia (user + tools)

	Cane	Dog	Stevie	Theia	Stevie + Cane	Stevie + Dog	Stevie + Cane + Theia	Stevie + Dog + Theia
See	No	Yes	No	Yes	No	Yes	Yes	Yes
Feel	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Hear	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Talk	No	To some extent (Bark)	Yes	Yes	Yes	Yes	Yes	Yes
Think	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Smell	No	Yes	Yes	No	Yes	Yes	Yes	Yes

Advantages :

- Can see what's up ahead.
- Talk
- Low cost
- Can think of your surroundings

Disadvantages:

- App cannot smell any biohazard up ahead.
- Relies on phone battery. If the phone battery dies then your app does not work

So the reason why the app works the best is simply for a blind person is simply because for 1 it doesn't cost too much compared to the guide dog which costs a lot of money that's why a guide dog can’t work. Now as for the cane it can’t interact with other people and also can’t see what is up ahead in your area. That is why the app works the best

Advantages & Disadvantages

- ➔ THEIA is able to **see, hear, talk, and think.** This is unlike a cane, which can only **feel**, and a dog, who only lacks the ability to **completely speak.**
  - ◆ When using both a cane and a dog, the two tools only lack the ability to **completely speak**.
  - ◆ One important feature of THEIA are the verbal, human instructions for directions and navigation. **THEIA has the ability to provide instructions and serve as a communication tool**, helping the user navigate from one place to another, while also being able to reach out to emergency contacts, such as caretakers or first responders.
  - ◆ Being able to hear **clear directions** prevents the user from getting lost, while also being able to take the most optimal route to their destination. Additionally, the customizable features that come with THEIA (such as volume and interval of instructions) assists with providing **the user with an experience that best fits their needs and preferences.**
- ➔ However, THEIA is unable to **feel or smell.**
  - ◆ This is disadvantageous in emergency situations that would otherwise be detected by a cane or guide dog. This can include situations such as indoor fires, where the app would not be able to detect smoke.

Conclusion

➔ While THEIA is unable to **feel or smell**, specific features are designed to compensate for these disadvantages.

- For example, while THEIA would not be able to **smell** smoke, there are other environmental cues that would assist the user in the case of emergency. For example, fire alarms and nearby people can alert the user.
- Additionally, while THEIA is unable to **feel**, its sensors can detect any possible, nearby obstacles that would typically would be identified by a cane or guide dog.
- Using THEIA along with a cane or guide dog would further improve a user's navigation experience. However, THEIA is still able to function effectively as a navigation app without outside tools, while a cane or guide dog cannot provide the same capabilities when used alone.
- Thus, THEIA is the best option for blind and visually impaired people in terms of navigation.

Thank You!