We developed an accessible public transportation app focused on assisting individuals with disabilities in navigating urban transport systems. The app aims to improve accessibility through real-time updates, simplified trip planning, and accessibility filters (e.g., wheelchair-friendly stations). Our intended users are persons with mobility impairments, elderly users, and other commuters who need accessible transport features.

Key requirements for our system include:

- Real-time information on accessible transit routes.
- Customizable filters for disability needs (e.g., visual or mobility impairments).
- Step-by-step guidance from origin to destination.
- Integration of emergency alerts and contact options.
- Easy-to-use UI with large buttons, screen reader support, and color contrast compliance.

We used a **moderated usability study** with 5 participants (including 2 wheelchair users and 3 elderly individuals) to test basic app functions. Benchmark tasks included:

1. Planning a trip using the accessibility filter.
2. Locating the nearest accessible station.
3. Reporting a broken elevator.
4. Using the emergency contact feature.

Rationale: These tasks reflect core user needs and allow us to observe key interactions with the system, particularly accessibility-centered workflows.

25% Data Presentation:

- 4 out of 5 users successfully completed all benchmark tasks.
- Task completion times ranged from 15 to 45 seconds.
- 2 users had difficulty finding the emergency contact button.
- 1 user suggested larger icons for older users.

25% Data Analysis:

- Overall usability was rated 4.2/5 via a post-study System Usability Scale.
- High satisfaction with route customization.
- Users praised clarity of step-by-step navigation but noted that emergency options needed clearer placement.
- Main usability pain point: icon visibility for older users.

50% Design Implications:

- **Successes:** Route planning, map clarity, and accessibility filters worked smoothly.
- **Areas for improvement:**
  - Make emergency contact more prominent.
  - Increase icon sizes and adjust contrast.
  - Add audio prompts for visually impaired users (planned for future).
- **Design Flaws:** We discovered that one flow required two taps instead of one—slowing the user in urgent situations.

Advantages:

- We validated core functionalities with real users from our target demographic.
- Feedback was specific and actionable, highlighting where small tweaks can improve experience.

Disadvantages:

- Limited number of test users.
- Did not test with screen reader users—missed a key user group.
- Time constraints limited additional iterations.

What we'd do differently:

- Recruit a more diverse set of users including visually impaired participants.
- Test under real commuting conditions.
- Refine emergency workflow earlier in the process.
- **Why these tasks?** They reflect critical, real-world use cases for our users.
- **Conclusions from study?** Core functionality is effective, but visibility and emergency flows need enhancement.
- **What worked?** Route planning, accessibility filters.
- **What failed?** Emergency UI and icon readability.
- **What would we change?** Improve visual hierarchy, test under pressure, and add voice navigation support.