

## SPP5: Low-Fi Prototyping & Pilot Usability Test

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& Teryn Guzman



# Introduction

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## Value Proposition

“Share a ride, save the hassle”

## Mission Statement

Our mission is to make commuting to the University of Belize safer, affordable, and stress-free by connecting students who drive with those who need rides. The UB Carpool App fosters a sense of community, reduces overcrowding on public buses, and helps students save time and money while ensuring safety through verified university-only profiles.

## Problem/Solution Overview

For many UB students, commuting to Belmopan has become increasingly frustrating. Overcrowded buses, unreliable schedules, and long travel times make daily travel stressful and inefficient. Meanwhile, many students who drive to campus travel alone, spending large amounts on gas despite having empty seats in their vehicles.

Our solution, the UB Carpool App, creates a UB-student-only carpooling platform that allows drivers to offer rides and passengers to find available seats. Through verified profiles, built-in chat, and a simple map-based booking system, the app helps students share rides, save on fuel, and reduce the hassle of commuting while promoting safety and community.

## Sketches

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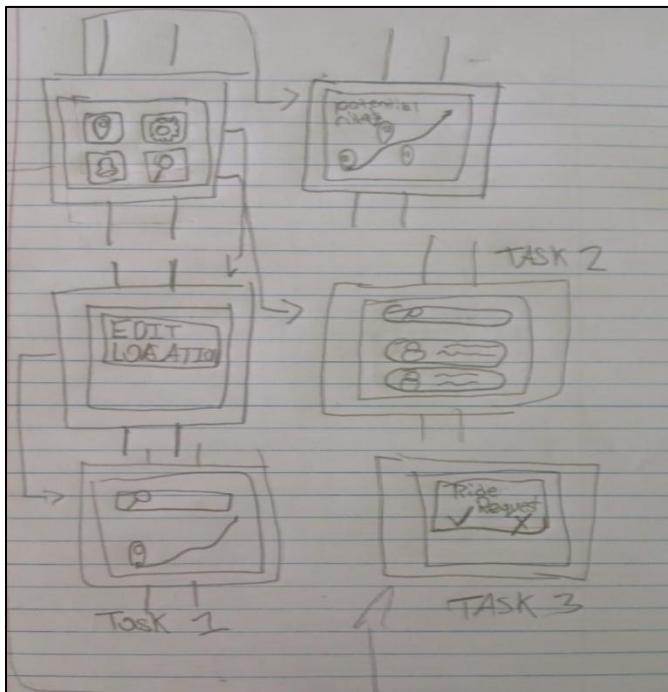


Figure 1 Smart Watch Approach

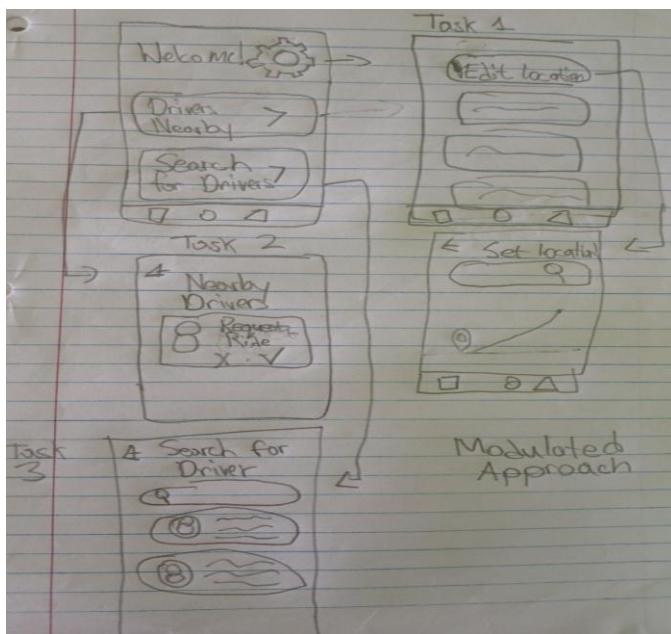


Figure 2 Modulated Approach

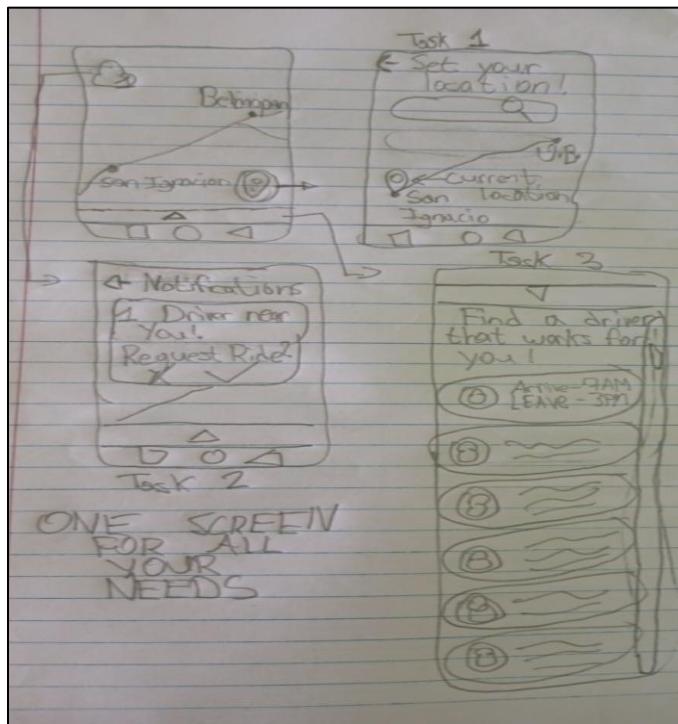


Figure 3 One Screen Approach

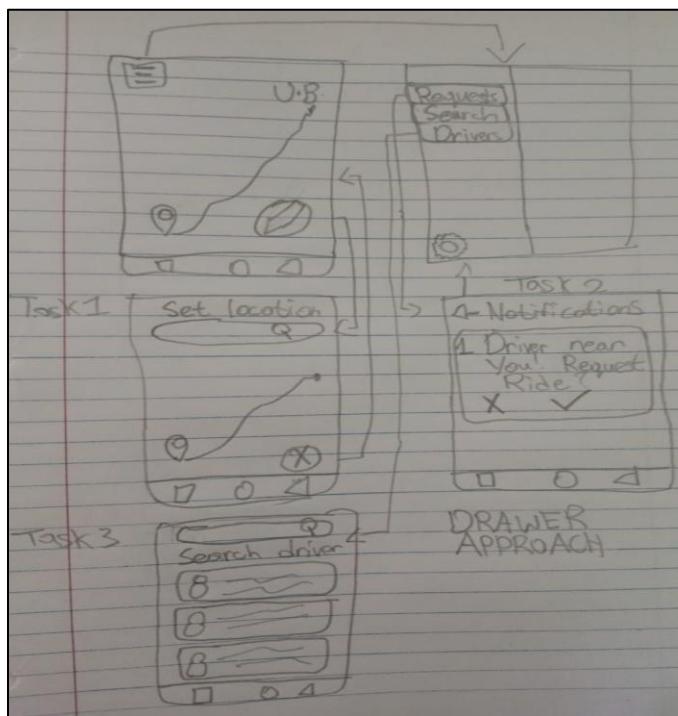


Figure 4 Drawer Approach

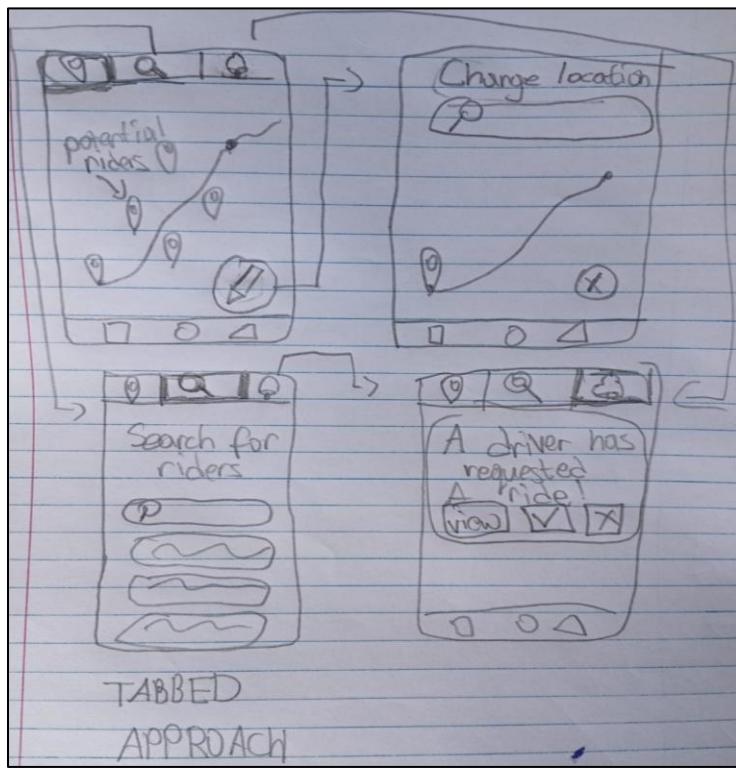


Figure 5 Tabbed Approach

## Top Two Designs

### Mobile App – Design A

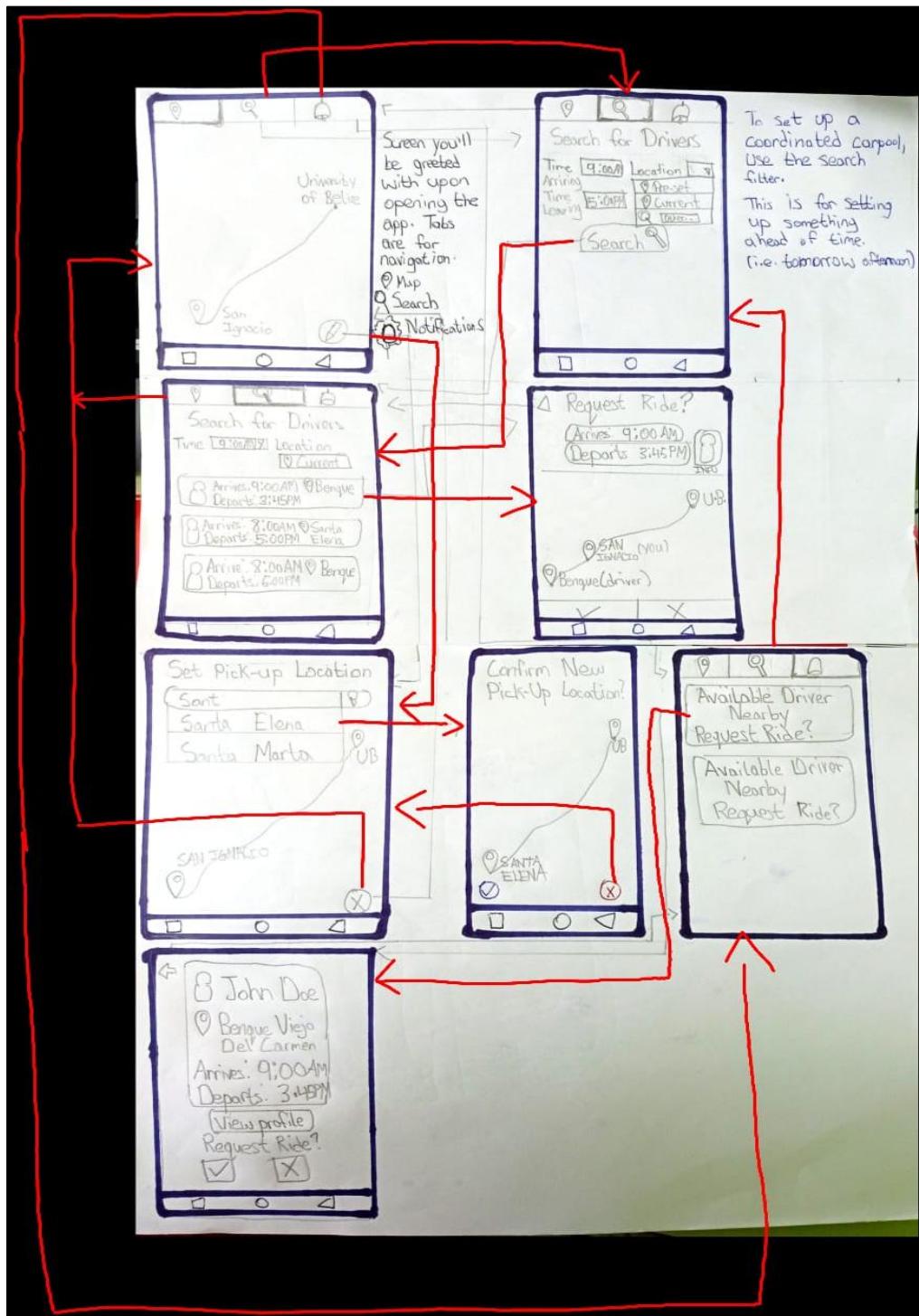


Figure 6 Storyboard for selected mobile app (Design A)

## Mobile App – Design B

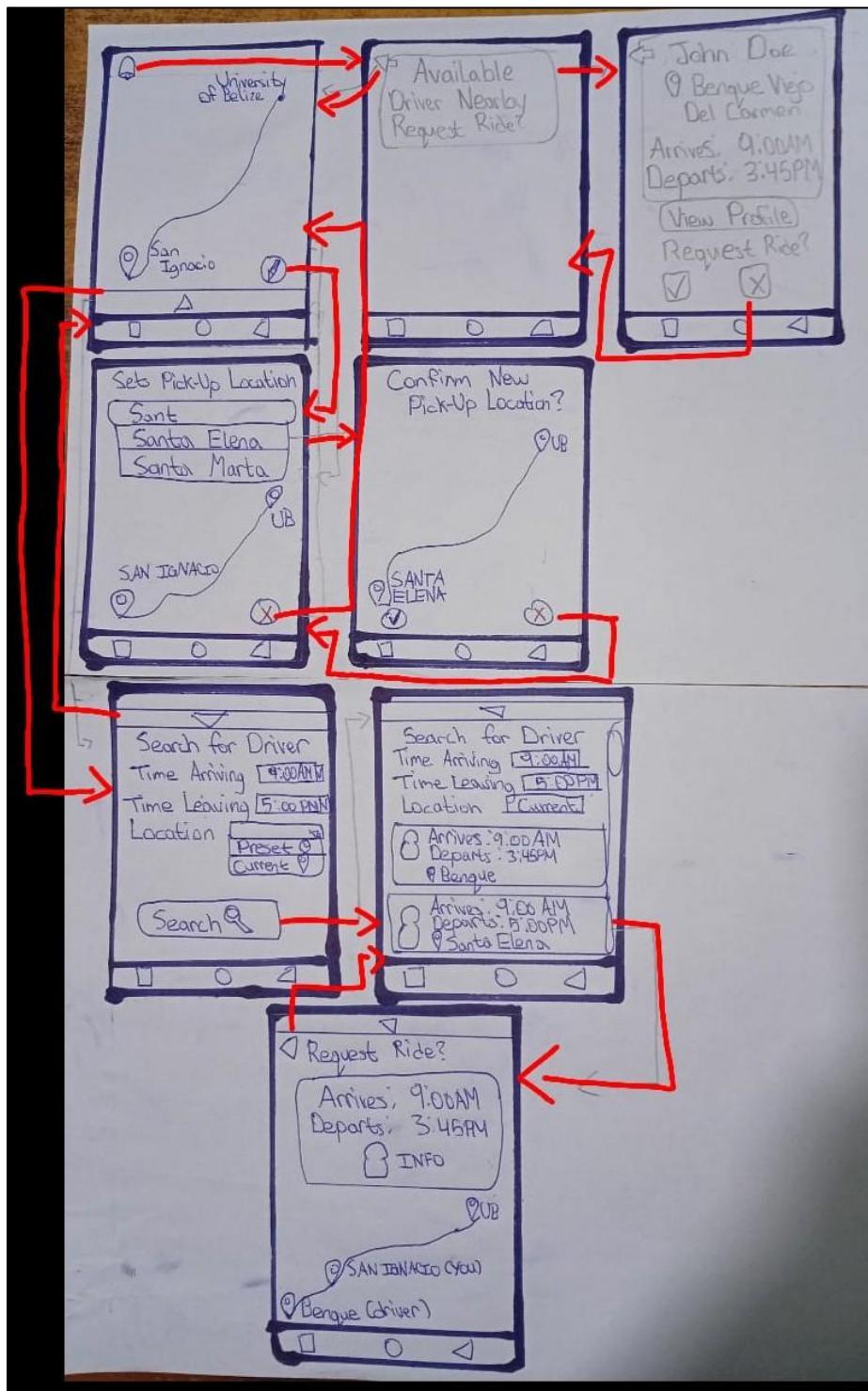


Figure 7 Storyboard for selected mobile app (Design B)

## Selected Interface Design

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After careful consideration and review, we have selected Design A (Figure 6) for our low-fidelity prototype.

### Reasoning for Selection

Our need-finding in Phase 2 revealed that students are often stressed and short on time, making simplicity and ease of use the most critical factors for adoption. Design A (Figure 6) excels in this area. Presenting the primary task, finding a ride, immediately on the home screen removes unnecessary steps and reduces cognitive load. The flow is intuitive for anyone who has used a modern navigation or ride-hailing app.

While Design B (Figure 7) offers better scalability for future features, it introduces an extra step (the hub screen) that complicates the core user journey. For our initial prototype, focusing on a seamless and fast experience for the most common task is the top priority.

Design A	Design B
<b>Pros:</b> Fast & Intuitive: The most direct path to booking a ride. Low Cognitive Load: Fewer initial choices for the user to make. Familiar UI: Leverages common design patterns from popular map apps.	<b>Pros:</b> Scalable: The hub is a good place to add more features later. Organized: Clearly separates different functions of the app.
<b>Cons:</b> Less Scalable: Adding major new features might clutter the main screen. Rider-Focused: Less obvious how a driver would initiate offering a ride.	<b>Cons:</b> Less Direct: Adds an extra, potentially unnecessary, step to the core task. Slightly Higher Learning Curve: User must first understand the hub's options.

# Prototype

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## Prototype Description

Our prototype is a low-fidelity, paper-based interface designed to simulate the main user interactions within the application. It demonstrates the complete flow from launching the app to searching for, requesting, and confirming rides. The system was built using hand-drawn wireframes representing each screen, with arrows indicating transitions between states and pop-up interactions.

The interface supports three main tasks:

- **Searching for Drivers:** Users can input their departure time and location, then browse a list of available drivers (top left sequence).
- **Requesting a Ride:** Selecting a driver opens a confirmation screen and a pop-up indicating request success (top center and right sequence).
- **Managing Pickups and Navigation:** Users can view pickup locations, confirm new pickup points, and track accepted rides (bottom right sequence).

Each screen was crafted to emphasize clarity, icon-driven navigation, and minimal text, making the system intuitive and easy to learn. Tabs at the bottom of the interface provide access to the Home, Search, and Notifications sections, ensuring users can easily move between major functions.

Pop-up screens were incorporated to provide real-time feedback, such as confirmation messages when a ride is successfully requested or accepted. The final “New Home Screen” reflects UI improvements based on user feedback, including a cleaner map display and simplified navigation icons.

The prototype was tested using touch input simulation, where users tapped on drawn icons and buttons as if interacting with a mobile app. While this version is static, it effectively demonstrates the planned interactions and guided users through realistic ride-sharing scenarios during usability testing.

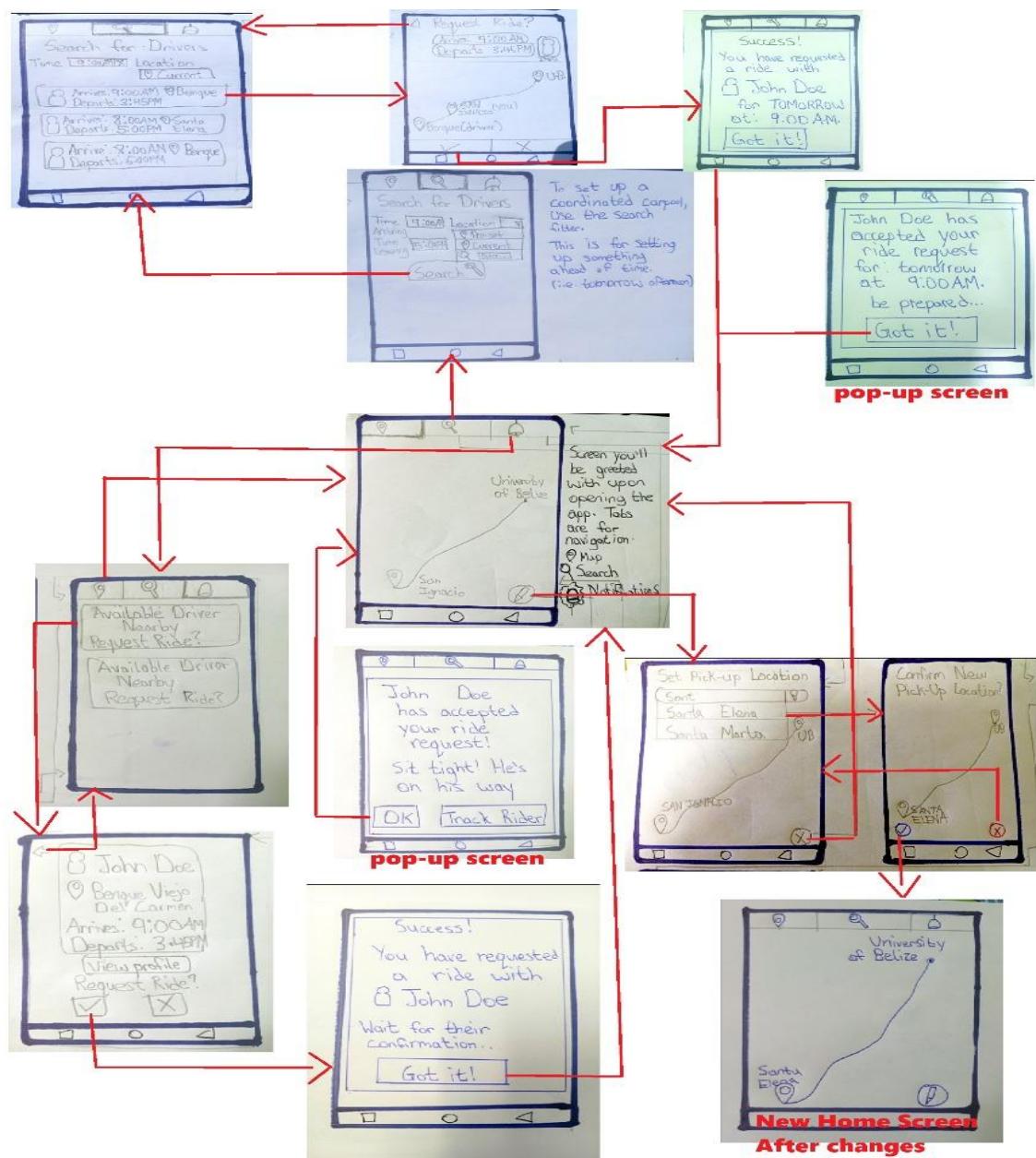


Figure 8 Entire System Prototype

## Storyboard for Tasks

### Task 1 – Edit your pick-up location

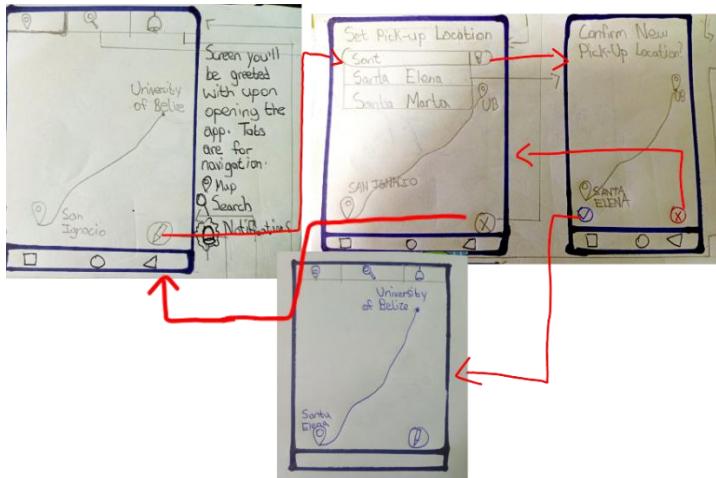


Figure 9 Task 1 Storyboard

### Task 2: Quick-Booking A Ride

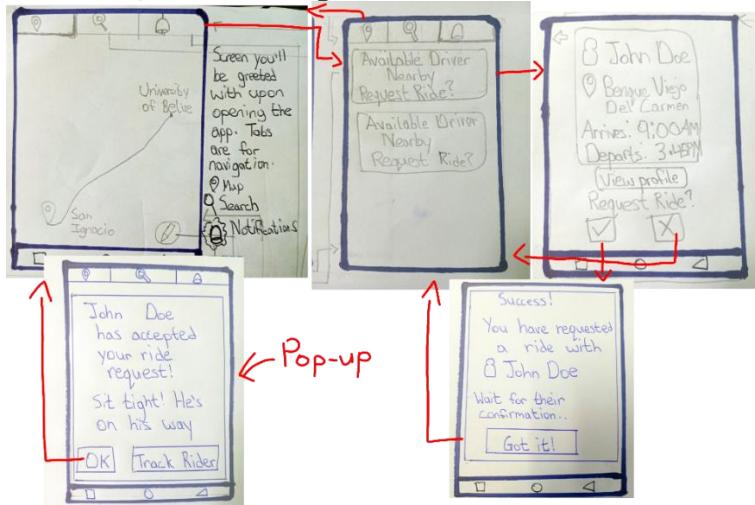


Figure 10 Task 2 Storyboard

### Task 3: Finding a carpool partner and sending a ride request

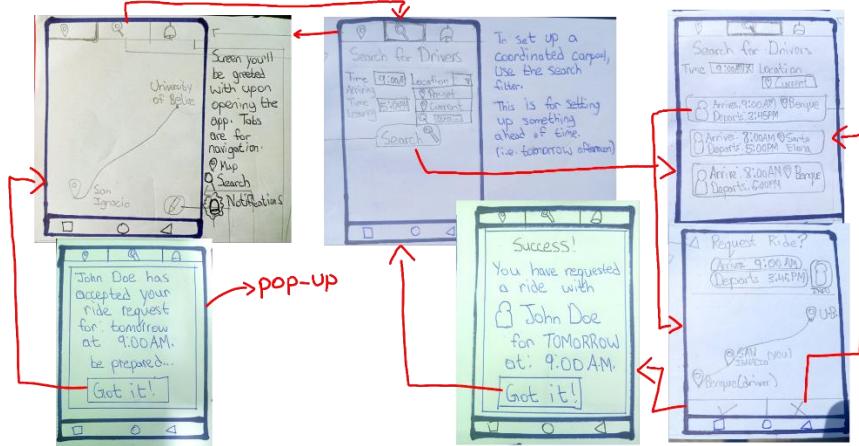


Figure 11 Task 3 Storyboard

## Method

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### Participants

Three participants were recruited from the University of Belize student population. All participants were university students familiar with using mobile applications. No compensation was provided for participation.

- Participant 1: UB student — tested in the library
- Participant 2: UB student — tested in the library
- Participant 3: UB student — tested at the gazebo near the cafeteria

### Environment

Testing took place in quiet campus environments with minimal distractions. Two sessions were held in the library and one at the outdoor gazebo by the cafeteria. Each session was conducted using the low-fidelity prototype on a mobile device, and a facilitator guided the participant through the process while a note-taker recorded observations.

## Tasks

Participants were asked to complete three main tasks representing core app functionality:

- Task 1: Edit their ride information.
- Task 2: Navigate through the app to offer or find a ride.
- Task 3: Filter rides to find specific options.

## Procedure

Participants were first introduced to the purpose of the test and given a brief demo of the prototype. Each participant was asked to think aloud while performing the three main tasks. The facilitator observed how easily users could navigate and interpret icons, while the note-taker recorded usability issues and comments. After completion, participants provided informal feedback about what they liked and what could be improved.

## Test Measures

The evaluation focused on process data (how users completed each task, errors made, and visible signs of confusion) and outcome data (task completion success, ease of navigation, and interface clarity). Key metrics included:

- Task completion success (yes/no)
- Navigation errors
- User-reported ease of use and clarity

## Team Member Roles

- Ian Burns- Facilitator: Introduced the test, guided participants, and ensured smooth flow of sessions.
- Teryn Guzman- Note-taker: Recorded user comments, observed issues, and tracked completion time and success.
- Asael Tobar- Prototype designer: Set up and demonstrated the interface screens used for each task.

## Results

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### Task 1 – Editing Ride Information

- All participants successfully completed this task without errors. Users immediately recognized the edit icon and understood its purpose. Navigation between steps was smooth and intuitive.

### Task 2 – Offering/Finding a Ride

- Two users completed the task with no issues. One user accidentally navigated to the wrong screen but was able to recover independently, demonstrating the effectiveness of having clear tabs for navigation.

### Task 3 – Filtering Rides

- All users easily understood how to perform this task and found the filter feature intuitive. One participant noted the absence of a date filter, which was valuable feedback for refining the design.

## Suggested UI Changes

- Reword “Arrival” and “Departure” to clearer, more user-friendly terms.
- Add color accents to improve visual appeal and hierarchy.
- Include a date option when searching for drivers.
- Add a “Cancel Request” feature for greater flexibility.

## Discussion

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The usability test of our UB Carpool App prototype revealed substantial evidence that the design successfully supports its primary goal, making the commuting experience for UB students simpler, faster, and more intuitive. Across all three participants, the interface proved highly learnable, with minimal confusion and consistent task success. Users appreciated the clarity of the icons, the logical layout of screens, and the overall simplicity of the app’s structure.

Overall, Design A demonstrated excellent learnability and efficiency, confirming our decision to prioritize this layout for the prototype. Users intuitively recognized

common interface elements such as the edit and confirmation icons without verbal instruction. The successful completion of all tasks, including when one participant recovered from an accidental navigation error, suggested that the tab-based navigation and imagery effectively supported self-correction and exploration.

One of the most valuable outcomes of the test was the user-driven discovery of improvements. Participants provided insightful feedback, noting that terms like “Arrival” and “Departure” could be simplified to make them more straightforward for first-time users. Similarly, the suggestion to add a date filter helped us recognize a missing function necessary for planning future rides.

The results confirmed that users experienced smooth navigation across all major workflows, editing ride details, booking rides, and filtering available carpools. Importantly, participants found the app’s flow intuitive enough that even unexpected missteps did not lead to frustration or confusion. This suggests that the app’s layout, affordances, and feedback mechanisms align well with users’ mental models of modern transportation apps.

## Appendix

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### Consent Form

The Data Insight Hub application is being produced as part of the coursework for Information Technology course CMPS3141 – Human Computer Interaction at the University of Belize. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of Data Insight Hub. Data will be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers Teryn Guzman, Asael Tobar, Ian Burns or with Lecturer Manuel Medina Jr., the instructor of CMPS3141:

Manuel A. Medina Jr.  
MPIT Department  
University of Belize  
822-1000 ext.305  
mmedina@ub.edu.bz

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their lecturer.

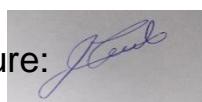
I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behaviour and opinions in relation to the Data Insight Hub experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time.

Name: Jevon Teul

Participant Number: 1

Date: October 15, 2025

Signature:



Witness name \_\_\_\_\_ Teryn Guzman \_\_\_\_\_

Witness signature \_\_\_\_\_ A rectangular gray box containing a handwritten signature in black ink that appears to read "T. Guzman".

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Name: Dylan Castellanos

Participant Number: 2

Date: 10/15/2025

Signature: Dylan Castellanos

Witness name \_\_\_\_\_ Teryn Guzman \_\_\_\_\_

Witness signature \_\_\_\_\_ T. Guzman \_\_\_\_\_

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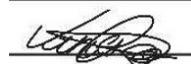
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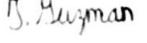
Name: Vance Petillo

Participant Number: 3

Date: 10/16/2025

Signature: 

Witness name \_\_\_\_\_ Teryn Guzman \_\_\_\_\_

Witness signature  \_\_\_\_\_