Design of Order Tracking Interface
Team project, CS6750

Chethana Prasad Kabgere, Rohit Pappu, Reems Thomas Kottackal
ckabgere3@gatech.edu, rohit-pappu@gatech.edu rkottackal3@gatech.edu

***Abstract*—**Efficient order tracking is crucial to improve the user experience in E-Commerce and logistics. This project focuses on designing an intuitive and user-centric order tracking platform that improves visibility, reduces uncertainty, and improves customer satisfaction. Through need finding, usability testing, and iterative design, we aim to develop an accessible real-time tracking interface with predictive insights. Our research-driven approach ensures a seamless experience, addressing pain points such as tracking delays, unclear status updates, and poor mobile accessibility.

1 INTRODUCTION

In today's fast-paced digital commerce landscape, effective order tracking plays a critical role in enhancing customer satisfaction and trust. This project aims to design an intuitive and user-friendly order tracking platform that provides real-time updates, predictive insights, and a seamless interface across devices. Users often face challenges such as vague status updates, delayed notifications, and limited visibility into their shipments. In a two-sided marketplace, the seller would also have an order tracking interface. However, for this project, we are limiting the scope to the interface seen and user by users who are buyers. Using human-computer interaction (HCI) principles, we will ensure that our redesign meets user needs while improving efficiency and reducing frustration. Frequent e-commerce shoppers, small business owners managing shipments, and logistics/courier service users were the primary stakeholders we identified.

Here's a shortened version of your LaTeX content, preserving the essence and context:

2 NEED FINDING PLAN

To develop a user-centered order tracking platform, we will conduct a need finding study to identify key pain points and user expectations. Participants will be voluntary and over 18 years old. PeerSurvey participants from Georgia

Institute of Technology will be incentivized with course credits; others will not be incentivized.

2.1 Methodology

- **Surveys** Conducted on PeerSurvey (Georgia Tech students) and Microsoft Forms (general users). Surveys will assess user experience and pain points in order tracking interfaces, focusing on real-time tracking, notifications, and delivery accuracy (Appendix 14.1.1).
- **User Interviews** Two working professionals (accomplices of a project owner) will be interviewed about their order tracking experiences. Interviews will be recorded with consent. (Appendix 14.1.2)
- **User Observations**
  - Analyze user interactions with existing tracking systems.
  - Identify usability gaps and areas for improvement.
- **Heuristic evaluation** Evaluate order tracking interfaces from Amazon, BestBuy, and Domino's based on:
  - Visibility of System Status
  - Match Between System and the Real World
  - User Control and Freedom
  - Error Prevention
  - Flexibility and Efficiency of Use

2.2 Key Focus Areas

- Accuracy and reliability of tracking information
- Clarity of order status updates and notifications
- Preferred communication channels (email, SMS, app notifications)
- Challenges in tracking multiple orders from different vendors

2.3 Potential Biases and Control measures

- **Selection Bias**: Recruit diverse participants from different demographics using multiple platforms.
- **Response Bias**: Design neutral survey questions and conduct interviews in a neutral setting.
- **Confirmation Bias**: Encourage critical evaluation, use peer reviews, and document all findings transparently.

3 NEED FINDING RESULTS

3.1 Survey

The survey analyzed 30 responses to understand user behavior and preferences regarding order tracking interfaces. Participants, mostly young adults aged 18 to 29, frequently track orders online, with weekly tracking being common. Key pain points include lack of real-time updates and unclear status descriptions. Users expressed a strong desire for detailed tracking history and live map tracking. Satisfaction levels vary, with many users somewhat satisfied but highlighting areas for improvement. E-commerce and food delivery are the most frequently tracked industries. Order tracking is highly important to respondents, influencing their purchase decisions. Enhancing visual clarity, information hierarchy, and addressing usability friction can improve user experience. Detailed responses are listed in the Appendix 14.1.3.

3.2 User interviews

The interviews aimed to gather detailed information on user experiences and challenges with online order tracking. Insights from Teem and Steve highlighted the importance of frequent and accurate tracking for planning and peace of mind. Common issues included delayed updates, vague status information, and inconsistent tracking. Desired features such as real-time updates, live maps, detailed status updates, and delay notifications were emphasized. Mobile apps were preferred for tracking, with SMS notifications valued for quick updates. Teem desired more customization options, while Steve was content with standard notifications. These insights underscore the need for a reliable, detailed, and customizable order tracking interface. Interview transcripts are in Appendix 14.1.4.

3.3 Heuristic Evaluation

We evaluated order tracking interfaces from Amazon, BestBuy, and Domino's using **heuristic evaluation**.

3.3.1 *Visibility of System Status*

Designs should keep users informed with timely feedback (Kate Moran, 2023).

· **Strengths**: Amazon provides real-time order tracking and instant updates.

Domino's updates customers at each order stage. BestBuy offers live tracking with real-time map views for large item deliveries.

- **Weaknesses**: Domino's tracker can be inconsistent due to reliance on staff inputs. BestBuy experiences occasional delays during peak seasons.
- **Areas for Improvement**: Use clear, unambiguous status updates with visual indicators like progress bars or live maps.

3.3.2 *Match Between System and the Real World*

Interfaces should follow real-world conventions Kate Moran, 2023.

- **Strengths**: Amazon, Domino's, and BestBuy use familiar terminology for order status.
- **Weaknesses**: Amazon and BestBuy can have vague status updates. Domino's tracker may not accurately reflect real-time processes.
- **Areas for Improvement**: Use simple, jargon-free language in notifications and updates.

3.3.3 *User Control and Freedom*

Users need an "emergency exit" to undo actions easily (Kate Moran, 2023).

- **Strengths**: Multiple communication channels (email, SMS, app notifications) provide control. Users can cancel or modify orders on the tracking page.
- **Weaknesses**: Options to alter or cancel orders become restricted at certain processing stages.
- **Areas for Improvement**: Allow users to customize tracking preferences and opt-out of notifications.

3.3.4 *Error Prevention*

Interfaces should eliminate or check for error-prone conditions (Kate Moran, 2023).

- **Strengths**: Accurate tracking minimizes errors. Amazon and BestBuy prompt users to confirm actions like cancellations.
- **Weaknesses**: Amazon may not effectively alert users to shipping address errors. Domino's tracker may not detect delays in real-time.
- **Areas for Improvement**: Ensure data is up-to-date and accurate. Provide clear instructions for correcting errors.

3.3.5 *Flexibility and Efficiency of Use*

Interfaces should allow users to tailor frequent actions (Kate Moran, 2023).

- **Strengths**: Apps cater to frequent shoppers and small business owners. Users can access tracking through websites, mobile apps, and email links.
- **Weaknesses**: Limited options for customizing tracking notifications or display preferences.
- **Areas for Improvement**: Provide shortcuts and advanced options for experienced users.

3.4 Insights

- **Real-Time Updates and Clear Status Descriptions**: Users need frequent, accurate updates and clear status descriptions to enhance tracking reliability.
- **Customization and Personalization**: Users are interested in personalizing the tracking experience, including notification preferences and delivery reminders.
- **Preferred Tracking Methods**: Web applications and SMS notifications are valued for convenience and quick updates.
- **Desired Features**: Users desire live map tracking, detailed tracking history, progress bars, and chat support with delivery personnel or customer service.

4 INITIAL BRAINSTORMING PLAN

Brainstorming session was set up with a clear agenda of developing multiple design strategies in alignment with the key insights derived from the results of the need discovery. Each team member presented their initial ideas, focusing on addressing the identified pain points and desired features, followed by open discussion and constructive feedback to build on it. Techniques such as mind mapping and sketching will be employed to visualize concepts and explore different approaches. After the initial idea generation, the ideas were categorized into themes, refined, and voted to identify the best 3 distinct design alternatives.

To ensure a fair and objective evaluation process, we will:

- Ensure diverse representation in the brainstorming team to capture a wide range of perspectives.
- Encourage critical evaluation of all ideas, regardless of initial preferences, and use anonymous voting to reduce bias.
- Promote open discussion and constructive feedback, encouraging dissenting

opinions and alternative viewpoints.
- Avoid focusing too heavily on the first ideas presented, ensuring all ideas are given equal consideration.
- Use objective criteria for evaluating ideas, such as feasibility, user impact, and alignment with key insights.

5 BRAINSTORMING RESULTS

5.1 Design Concepts

5.1.1 *Interactive Dashboard for Order Tracking*

A web-based dashboard providing real-time updates, estimated delivery times, and support options. Key features: live status updates, interactive map tracking, support chat, and order modification. Preferred by most users in the survey.

5.1.2 *Mobile Order Tracking with Push Notifications*

A mobile-first experience with push notifications for each tracking stage, a minimalist interface, QR code-based order pickup, and one-tap support access. Optimized for mobile users, enhancing engagement and convenience.

5.1.3 *Voice-Based Order Tracking Assistant*

A voice-enabled assistant tracks orders using voice commands on smart devices. Key features: voice-based status inquiries, spoken delivery updates, and voice-command rescheduling. Improved accessibility but may have low adoption based on survey results.

5.1.4 *Augmented Reality (AR) Order Tracking*

An AR overlay showing the location and delivery routes of the package in real time.
Features: AR map overlay, 3D package model, and live route animation. Visually engaging but may have low adoption based on survey results.

5.1.5 *Smartwatch Order Tracking*

A compact interface for smartwatches with quick view updates and delivery countdowns.
Features: glance view, haptic alerts, and one-tap support. Convenient for busy users but may have low adoption based on survey results.

5.2 Design Alternatives

5.2.1 *Design Alternative 1: Interactive Dashboard for Order Tracking*

Addresses the need for real-time updates and clear status descriptions. Features: interactive map tracking and support chat. Combines elements from AR Order Tracking, Voice-Activated AI Tracker, and Mobile Order Tracking.

5.2.2 *Design Alternative 2: Mobile Order Tracking with Push Notifications*

Optimized for mobile users with timely updates through push notifications, QR code-based order pickup, and one-tap support. Reflects principles of mobile and smartwatch order tracking.

5.2.3 *Design Alternative 3: Voice-Based Order Tracking Assistant*

Improves accessibility with voice-based status inquiries and updates. Combines elements from the Voice-Activated AI Tracker and Interactive Dashboard.

These alternatives address key pain points, such as real-time updates, clear status descriptions, and enhanced accessibility. They incorporate desired features such as interactive tracking, timely notifications, and voice-based interactions, offering a user-centric and comprehensive order tracking experience.

6 INITIAL PROTOTYPING

6.1 Interactive Dashboard for Order Tracking

This prototype is designed to enhance the user experience by providing real-time updates and clear descriptions of the order status. It offers a comprehensive view of each order's progress, including estimated delivery times and accessible customer support options. Key features like interactive map tracking and integrated support chat foster greater user engagement and satisfaction. Drawing inspiration from AR Order Tracking, Voice-Activated AI Tracker, and Mobile Order Tracking concepts, the prototype blends innovative technologies to create a seamless and informative tracking experience.

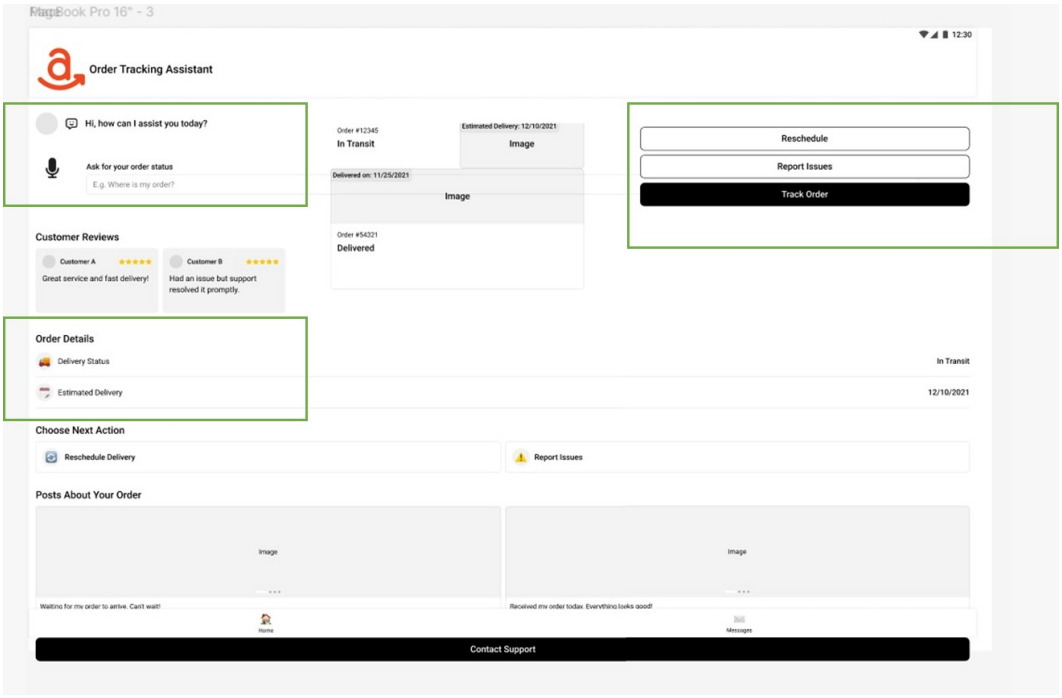

Figure 1—Order tracking homepage. Real-time updates and interactive tracking maps offer immediate, continuous feedback on order status, reducing user anxiety and uncertainty.

Figure 2—Order status. Clear status descriptions and estimated delivery times make the system state visible and understandable, ensuring that users know what is happening at every step.

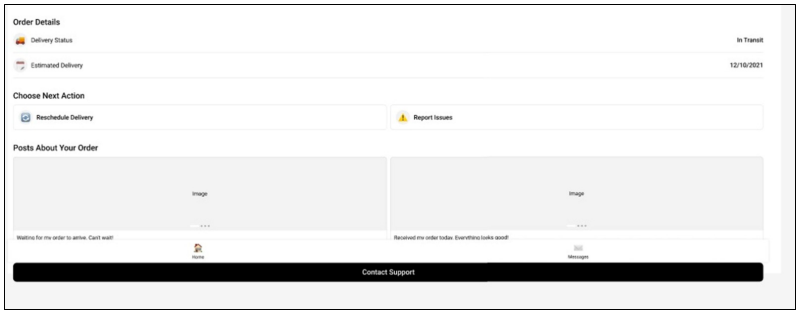

Figure 3—Order customization. The visual layout of the order progress and the use of an interactive map follow natural mappings, making it easier for users to understand where their order is in space and time.

Figure 4—Order Updates. The inclusion of voice-activated features makes the interface less dependent on screens, aligning with the idea of a more seamless, "invisible" user interaction.

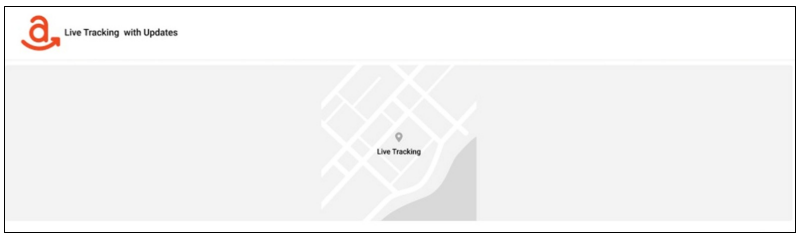

Figure 5—Map for live tracking. Interactive map tracking provides users with real-time updates on their order's location and estimated delivery routes.

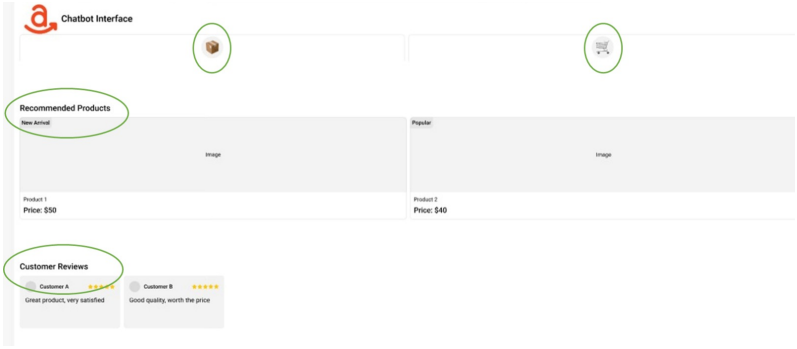

Figure 6—Chatbot section. Integrated support chat allows users to easily access customer support for any issues or inquiries.

Figure 7—Chatbot sessions. Chatbot sessions provide users with a convenient way to interact with customer support and receive timely assistance.

6.2 Mobile Order Tracking with Push Notifications

This mobile-optimized prototype prioritizes timely communication through push notifications and improves convenience with QR code-enabled order pickup and one-click customer support. Integrates elements from the Mobile Order Tracking and Smartwatch Order Tracking concepts, ensuring a cohesive experience across platforms.

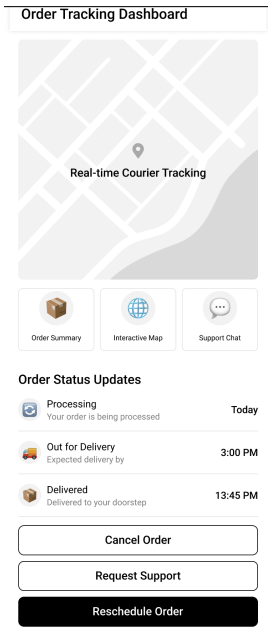

Figure 8—Mobile interface for tracking orders. One-tap support access and QR-based pickup use clear affordances to guide user behavior effortlessly.

Push notifications and quick actions eliminate the need for users to search for information or navigate complex menus, delivering a seamless experience. Frequent users can interact with the system using intuitive shortcuts, enhancing productivity.

6.3 Voice-Based Order Tracking Assistant

Designed to improve accessibility for visually impaired users and those who prefer hands-free interaction, this prototype features voice-enabled order status inquiries with spoken updates. Integrates components from the Voice-Activated AI Tracker and Interactive Dashboard concepts, enhancing user control and convenience through intuitive, audio-based interactions.

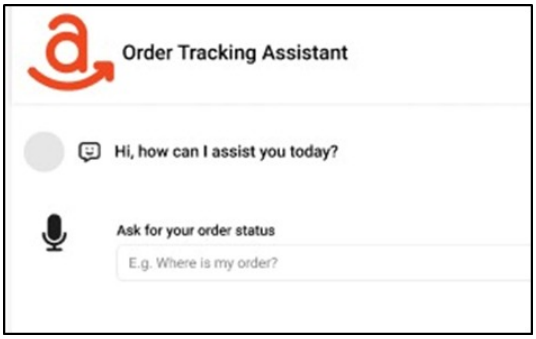

Figure 9—User interface for voice-activated assistant. Voice-based interaction supports visually impaired users and those who need hands-free access, ensuring inclusivity.

The spoken responses provide immediate, clear feedback, keeping users informed in real time. Voice commands reduce the need for visual processing or complex navigation, particularly for users with disabilities or multitasking needs. Fully voice-controlled interaction embodies the concept of an invisible interface, allowing users to interact naturally without a visible user interface. Guided voice prompts help users understand available actions without visual cues.

7 EVALUATION RESULTS

7.1 Survey Methodology

Tech-savvy users familiar with e-commerce platforms participated in the survey, promoted through word of mouth and the PeerSurvey portal at Georgia Institute of Technology. Participants earned course credits. The survey included interactive Figma prototypes and video prototypes, featuring open-ended and choice questions. Results from 25 participants were used for evaluation (Appendix 14.2.1).

7.2 Objectives

The survey aimed to:

- Identify features most valued by users.
- Evaluate clarity, usability, and satisfaction.
- Collect preferences on communication style, support, and notification handling.

7.3 Quantitative Evaluation

7.3.1 *Methods:*

- Descriptive Statistics
- Chi-square Test
- ANOVA

7.3.2 *Results:*

The descriptive statistics provide a summary of the data, including measures of central tendency and variability. (Results listed at Appendix 14.2.2)

	Features Valued by Users	Clarity and Usability	Satisfaction	Communication Style P
Count	7	5	5	
Mean	50.00	20.00	20.00	
Std	21.60	14.58	16.96	
Min	20	5	0	
25%	35	10	10	
50%	50	15	15	
75%	65	30	35	
Max	80	40	40	

Table 1—Descriptive Statistics

Chi-square Test The chi-square test assesses whether there is a significant association between categorical variables.

- **Features Valued by Users**: chi2_statistic = 0.0, p_value = 1.0
- **Clarity and Usability**: chi2_statistic = 0.0, p_value = 1.0

- **Satisfaction**: chi2_statistic = 0.0, p_value = 1.0
- **Communication Style Preferences**: chi2_statistic = 0.0, p_value = 1.0
- **Support Preferences**: chi2_statistic = 0.0, p_value = 1.0
- **Notification Handling Preferences**: chi2_statistic = 0.0, p_value = 1.0

ANOVA ANOVA is not applicable for this analysis due to the categorical nature of the data.

7.4 Summary

7.4.1 *Features Valued by Users*

- **Most Valued Features**: Real-time updates (80%), Notifications/alerts (70%), Live map tracking (60%).
- **Less Valued Features**: QR code-enabled order pickup (20%), Voice-activated features (30%).

7.4.2 *Clarity and Usability*

- **Positive Feedback**: 70% of users found the interface clear and easy to use (40% very clear and easy to use, 30% somewhat clear and easy to use).
- **Negative Feedback**: 20% found the interface unclear and difficult to use (15% somewhat unclear and difficult to use, 5% very unclear and difficult to use).

7.4.3 *Satisfaction*

- **Overall Satisfaction**: 75% of users were satisfied with the interface (35% very satisfied, 40% somewhat satisfied).
- **Neutral or Dissatisfied**: 25% were neutral or dissatisfied (15% neither satisfied nor dissatisfied, 10% somewhat dissatisfied).

7.4.4 *Communication Style Preferences*

- **Preferred Methods**: Mobile app notifications (70%), Email (60%), SMS (50%).
- **Less Preferred Methods**: Website notifications (40%).

7.4.5 *Support Preferences*

- **Preferred Support Methods**: Chat support (60%), Email support (50%).
- **Less Preferred Methods**: Phone support (30%), FAQ and help pages (40%).

7.4.6 *Notification Handling Preferences*

- **Preferred Notification Handling**: Real-time notifications (70%).
- **Less Preferred Handling**: Scheduled updates (20%), Summary notifications (10%).

Overall, users highly value real-time updates, notifications, and live map tracking in order tracking interfaces. The majority find the interface clear and easy to use, and are generally satisfied with it. Mobile app notifications and chat support are the preferred methods for communication and support, while real-time notifications are the most favored for handling updates.

8 SECOND ITERATION PLANNING

Our final prototype will be a combination of 3 prototypes to offer users the best user experience with respect to order tracking that caters to the needs of different users. The prototype will feature an **Interactive Dashboard for Order Tracking**, designed to provide users with real-time updates, clear status descriptions, and interactive map tracking. Key functionalities include support chat integration and order modification options, ensuring that users can easily track and manage their orders. The dashboard will use simple language and visual indicators such as progress bars and color-coded statuses to enhance clarity and usability.

Furthermore, the prototype will include a **Mobile Order Tracking Interface** optimized for a quick status view and timely push notifications. Features such as QR code-based order pickup and one-tap customer support access will enhance convenience for users on the go. The interface will maintain a minimalist design to ensure ease of use and responsiveness.

For accessibility, the prototype will incorporate a **Voice-Based Order Tracking Assistant** that allows users to inquire about order status and receive updates through voice commands. This feature will support hands-free interaction and provide spoken responses, making the tracking experience inclusive for visually impaired users and those who prefer voice interactions.

These specifications aim to create a comprehensive and user-friendly order tracking interface that addresses key pain points and improves overall user satisfaction.

9 FINAL PROTOTYPE

The web-based order tracking prototype provides several key functionalities to enhance the user experience in managing orders. The main features include:

- **Order Tracking Dashboard**: A central dashboard where users can view all their orders along with their current status. This dashboard provides a comprehensive overview, displaying essential information such as order ID, customer name, and order status.
- **Order Details Page**: A detailed view of individual orders, including items purchased, quantities, prices, and delivery status. Users can access this page by clicking on an order in the dashboard.
- **Status Update Functionality**: Users have the ability to update the status of their orders, such as changing the status from "Processing" to "Shipped". This functionality ensures that customers are kept informed about the progress of their orders.
- **Notifications**: The system sends automated notifications to users via email or SMS when there is a change in the order status. This keeps customers informed in real-time about the progress of their orders.
- **Cancelling Orders**: Users can cancel their orders directly from the order details page if the order has not yet been shipped. This feature provides flexibility and convenience for customers.
- **Rescheduling Orders**: Users can reschedule the delivery of their orders if needed. This functionality allows customers to choose a new delivery date that suits their schedule.
- **Support Page**: A dedicated support page where users can find help and resources related to order tracking. This page includes FAQs, contact information, and troubleshooting guides.
- **Chatbot (Work in Progress)**: A chatbot feature that is currently under development and will be live soon. The chatbot will provide real-time assistance to users, answering queries and helping with order-related issues.

Together, these features provide a user-friendly interface for tracking and managing orders, making the prototype a valuable tool for both customers and businesses.

For more details, visit the GitHub repository and the documentation page.

9.1 Order Tracking Dashboard

The Order Tracking Dashboard is the central hub where users can view all their orders. It displays key information such as order ID, customer name, and current status.

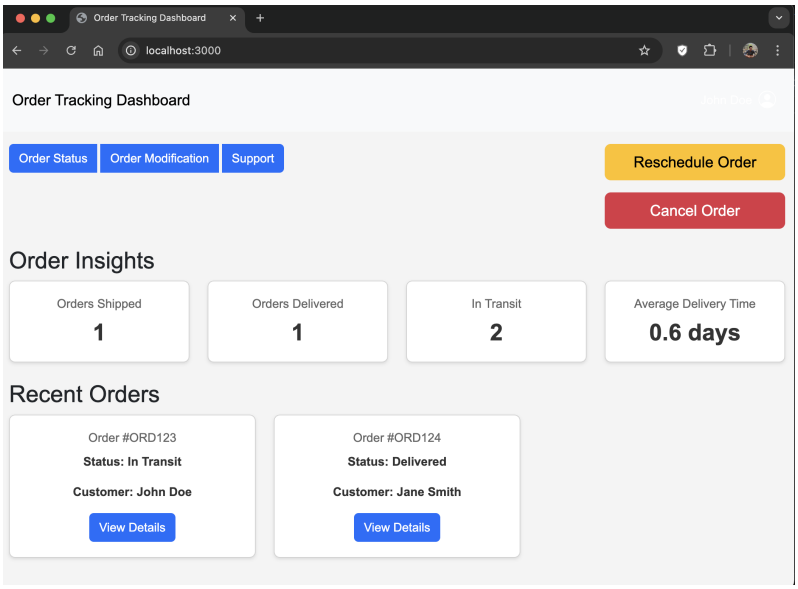

Figure 10—Order Tracking Dashboard

9.2 Order Details Page

The Order Details Page provides a detailed view of individual orders. It includes information about the items purchased, their quantities, prices, and the current delivery status.

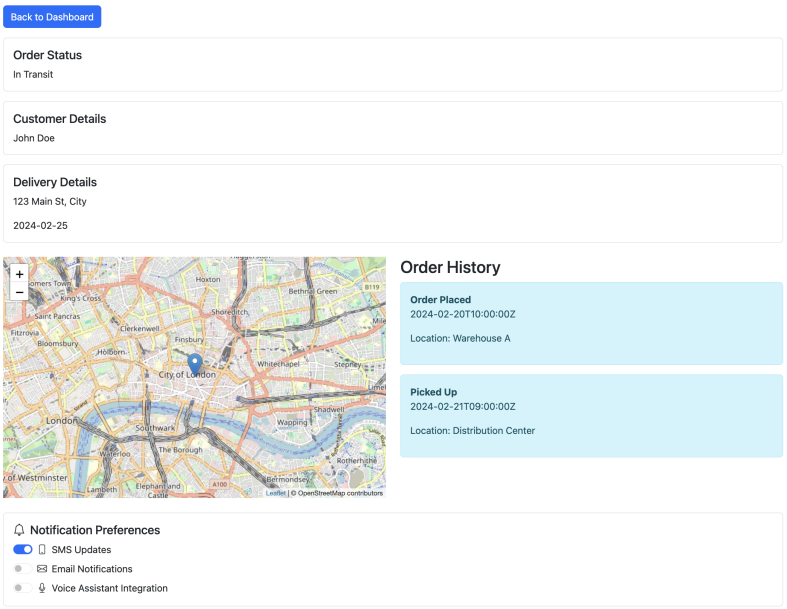

Figure 11—Order Details Page

9.3 Order Modification Functionality

The Order Modification Functionality allows users to change various aspects of their orders. This includes updating the status of their orders, modifying item quantities, and changing delivery details. This feature is essential for keeping customers informed about the progress of their orders and providing flexibility in managing their purchases.

Figure 12—Order Modification Functionality

9.4 Notifications

The system sends automated notifications to users via email or SMS when there is a change in the order status. This keeps customers informed in real-time about the progress of their orders.

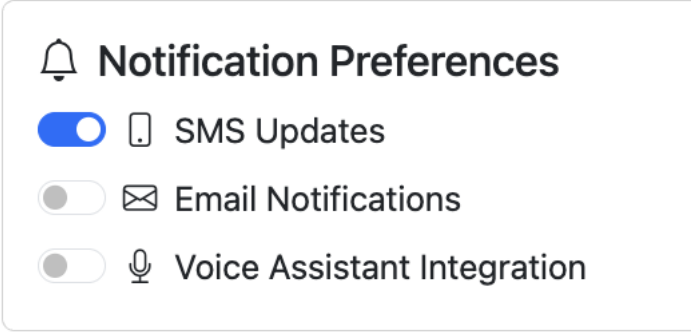

Figure 13—Automated Notifications preferences

9.5 Canceling Orders

Users can cancel their orders directly from the order details page if the order has not yet been shipped. This feature provides flexibility and convenience for customers.

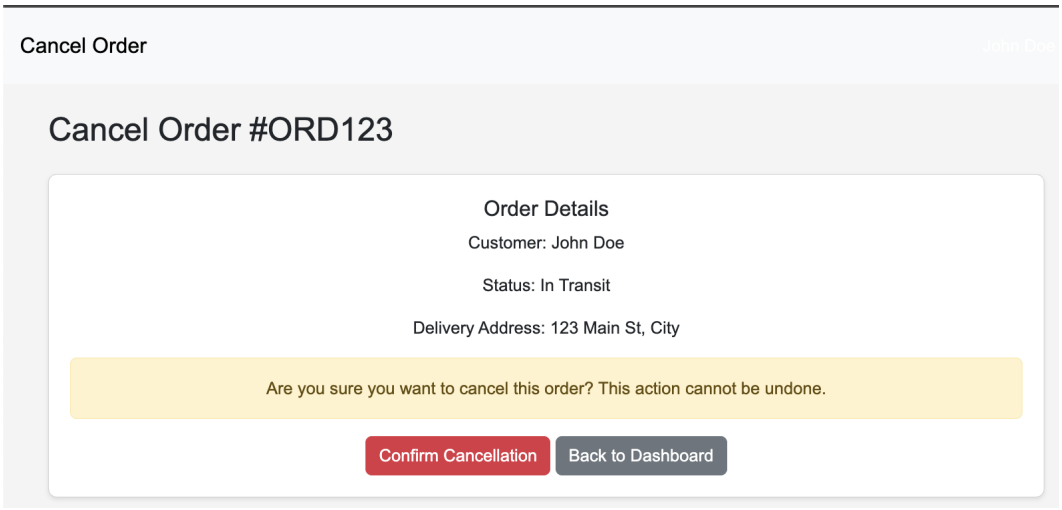

Figure 14—Canceling Orders

9.6 Rescheduling Orders

Users can reschedule the delivery of their orders if needed. This functionality allows customers to choose a new delivery date that suits their schedule.

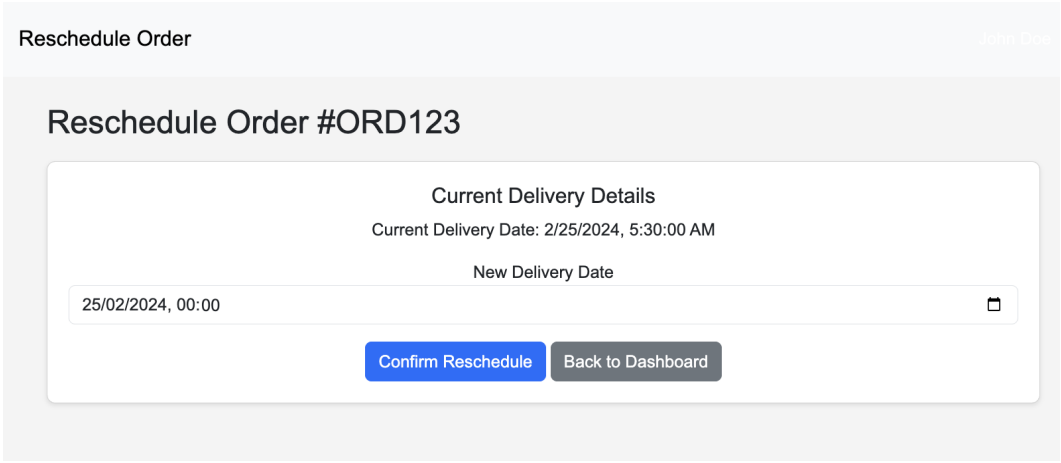

Figure 15—Rescheduling Orders

9.7 Support Page

The Support Page provides help and resources related to order tracking. It includes FAQs, contact information, and troubleshooting guides. The Chatbot feature is currently under development and will be live soon. It will provide real-time assistance to users, answering queries and helping with order-related issues.

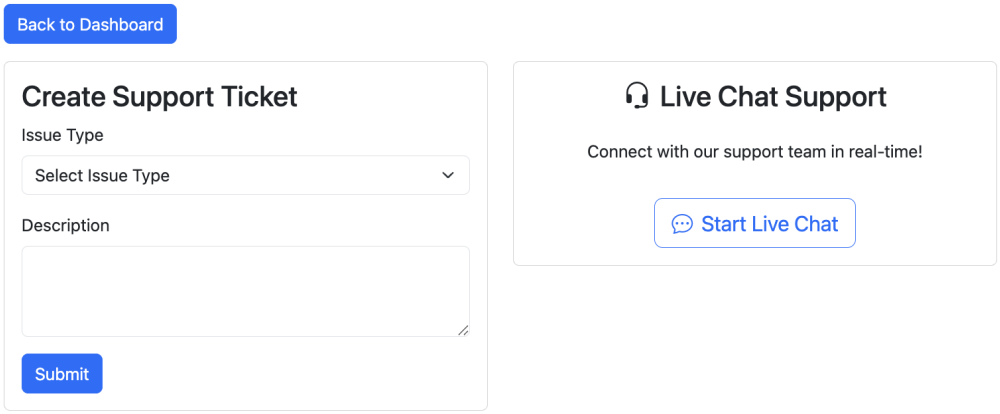

Figure 16—Support Page

10 VIDEO PROTOTYPE

The demonstration of the prototype is available here

11 FINAL EVALUATION PLANNING

Final evaluation was made using a survey. Awareness about this survey was spread through word of mouth. The survey was posted on the PeerSurvey portal of Georgia Institute of Technology where student participants of the survey were incentivised through course requirement credits. The survey questionnaire contained a video prototype for the final prototype had both open ended and choice questions to enable qualitative and quantitative evaluation respectively. The survey was intended to evaluate clarity, usability, and satisfaction in using the prototype as an order tracking interface. For quantitative evaluation we hope to make use of description statistics, Chi-square test and ANOVA. For qualitative analysis we hope to identify frequently occurring themes. (Appendix 14.3.1)

12 FINAL EVALUATION RESULTS

12.1 Descriptive Statistics

The descriptive statistics provide a summary of the data, including measures of central tendency and variability. (Appendix 14.3.2)

- **Usage Frequency**: Most users check the prototype daily (40%) or weekly (30%).
- **Features Valued**: Real-time updates (80%), Notifications/alerts (70%), and In-

Statistic	Usage Frequency	Features Valued	Usability	Satisfaction
Count	4	7	5	5
Mean	25.00	50.00	20.00	20.00
Std	12.91	21.60	14.58	16.96
Min	10	20	5	0
25%	17.50	35.00	10.00	10.00
50%	25.00	50.00	15.00	15.00
75%	32.50	65.00	30.00	35.00
Max	40	80	40	40

Table 2—Descriptive Statistics (Part 1)

teractive map tracking (60%) are the most valued features.

- **Usability**: 70% of users find the prototype easy to use (40% very easy, 30% somewhat easy).
- **Satisfaction**: 75% of users are satisfied with the prototype (35% very satisfied, 40% somewhat satisfied).
- **Communication Style Preferences**: Mobile app notifications (70%) and email (60%) are the preferred methods.
- **Support Preferences**: Chat support (60%) and email support (50%) are the preferred methods.
- **Notification Handling Preferences**: Real-time notifications are preferred by 70% of users.

12.2 Chi-square Test

The chi-square test assesses whether there is a significant association between categorical variables.

- **Usage Frequency**: chi2_statistic = 0.0, p_value = 1.0
- **Features Valued**: chi2_statistic = 0.0, p_value = 1.0
- **Usability**: chi2_statistic = 0.0, p_value = 1.0
- **Satisfaction**: chi2_statistic = 0.0, p_value = 1.0
- **Communication Style Preferences**: chi2_statistic = 0.0, p_value = 1.0
- **Support Preferences**: chi2_statistic = 0.0, p_value = 1.0
- **Notification Handling Preferences**: chi2_statistic = 0.0, p_value = 1.0

Statistic	Communication Style Preferences	Support Preferences	Notification Handling Preferences
Count	4	4	3
Mean	55.00	45.00	33.33
Std	12.91	12.91	32.15
Min	40	30	10
25%	47.50	37.50	15.00
50%	55.00	45.00	20.00
75%	62.50	52.50	45.00
Max	70	60	70

Table 3—Descriptive Statistics (Part 2)

The results of the chi-square test indicate that there is no significant association between the variables, with p-values of 1.0 for all categories.

12.3 ANOVA

ANOVA is not applicable for this analysis due to the categorical nature of the data.

12.4 Preferred Functionalities of the Prototype

- **Real-time updates**: Users greatly value the ability to receive immediate updates on their orders.
- **Notifications/alerts**: Dispatch notifications are crucial for keeping users informed.
- **Interactive map tracking**: Users appreciate the ability to visually track their orders in real time.
- **Chat support**: Integrated support chat is preferred for quickly resolving the problems.
- **Mobile app notifications**: Mobile app notifications are the most preferred method for receiving updates.

In general, users find the prototype easy to use and are satisfied with its functionalities, particularly **real-time updates**, **notifications, and interactive map tracking**.

13 REFERENCES

- Kate Moran, K.G. (2023, June 25). How to Conduct a Heuristic Evaluation.

14 APPENDIX

14.1 Need finding

14.1.1 *Survey questionnaire*

- **Age Group**
  - 18-29
  - 30-39
  - 40-60
- **Frequency of Tracking Orders Online**
  - Daily
  - Weekly
  - Monthly
  - Rarely
- **Satisfaction with Order Tracking Interfaces**
  - Very satisfied
  - Somewhat satisfied
  - Neither satisfied nor dissatisfied
  - Somewhat dissatisfied
  - Very dissatisfied
- **Common Issues Faced**
  - Lack of real-time updates
  - Unclear status descriptions
  - Difficult to navigate
  - Inaccurate information
  - Other issues (please specify): _____
- **Desired Features**
  - Detailed tracking history
  - Live map tracking
  - Notifications/alerts
  - Other features (please specify): _____
- **Industry Most Frequently Tracked Orders From**
  - E-commerce
  - Food delivery
  - Fashion
  - Electronics & High-Value Goods

- Other (please specify): _____
- **Satisfaction with Order Tracking Interface in a Specific Industry**
  - Very satisfied
  - Somewhat satisfied
  - Neither satisfied nor dissatisfied
  - Somewhat dissatisfied
  - Very dissatisfied
- **Importance of Order Tracking When Making a Purchase**
  - Extremely important
  - Very important
  - Moderately important
  - Slightly important
  - Not important
- **Typical Methods of Tracking Orders**
  - Website order tracking page
  - Mobile app
  - SMS updates
  - Email notifications
  - Other (please specify): _____
- **Useful Features in Order Tracking Interface**
  - Detailed tracking history
  - Live map tracking
  - Notifications/alerts
  - Other features (please specify): _____
- **Interest in Personalizing Order Tracking Experience**
  - Yes
  - Maybe
  - No
- **UI Aspects Influencing Satisfaction**
  - Visual clarity
  - Information hierarchy
  - Ease of interaction
  - Other aspects (please specify): _____
- **Usability Friction**
  - Hard to locate important delivery details
  - Lack of real-time responsiveness

- Confusing layout or navigation
- Other challenges (please specify): _____
- **Elements Making Delivery Status Easy to Understand**
  - Progress bar with stages
  - Live map visualization
  - Color-coded status updates
  - Other elements (please specify): _____

14.1.2 *Interview questionnaire*

The following is the brief set of questions asked in the user interviews

- **Frequency of Checking Online Orders**
  - How often do you check the status of your online orders?
- **Issues Faced While Tracking Orders**
  - Have you encountered any problems with tracking information not updating promptly?
- **Order Types and Tracking Issues**
  - Do tracking issues vary depending on the type of order (e.g., electronics, groceries)?
- **Desired Features in Tracking Interfaces**
  - What additional features would you like to see in order tracking interfaces?
- **Methods of Tracking Orders**
  - Which methods do you prefer for tracking your orders (e.g., mobile apps, SMS)?
- **Personalizing Tracking Experience**
  - Have you ever wanted to personalize your tracking experience with custom notifications?
- **Differences in Tracking from Suppliers vs. Aggregators**
  - Have you noticed differences in tracking reliability between direct suppliers and aggregators?

14.1.3 *Survey results*

Age Group Distribution

Age Group	Percentage (%)
18-29	77.27
30-39	18.18
40-60	4.55

Frequency of Tracking Orders Online

Frequency	Percentage (%)
Weekly	50.00
Daily	25.00
Rarely	18.18
Monthly	6.82

Satisfaction with Order Tracking Interfaces

Satisfaction Level	Percentage (%)
4 (Somewhat satisfied)	40.91
2 (Somewhat dissatisfied)	27.27
3 (Neither satisfied nor dissatisfied)	18.18
5 (Very satisfied)	13.64

Common Issues Faced with Order Tracking Interfaces

Issue	Percentage (%)
Lack of real-time updates	27.27
Unclear status descriptions	27.27
Difficult to navigate	18.18
Inaccurate information	18.18
Other issues	9.09

Desired Features in Order Tracking Interfaces

Feature	Percentage (%)
Detailed tracking history	36.36
Live map tracking	27.27
Notifications/alerts	18.18
Other features	18.18

Industry Most Frequently Tracked Orders from

Industry	Percentage (%)
E-commerce	36.36
Food delivery	27.27
Fashion	18.18
Electronics & High-Value Goods	18.18

Satisfaction with Order Tracking Interface in a Specific Industry

Satisfaction Level	Percentage (%)
4 (Somewhat satisfied)	40.91
2 (Somewhat dissatisfied)	27.27
3 (Neither satisfied nor dissatisfied)	18.18
5 (Very satisfied)	13.64

Importance of Order Tracking When Making a Purchase

Importance Level	Percentage (%)
5 (Extremely Important)	45.45
4 (Very Important)	27.27
3 (Moderately Important)	18.18
2 (Slightly Important)	9.09

Typical Methods of Tracking Orders

Method	Percentage (%)
Website order tracking page	36.36
Mobile app	27.27
SMS updates	18.18
Email notifications	18.18

Useful Features in Order Tracking Interface

Feature	Percentage (%)
Detailed tracking history	36.36
Live map tracking	27.27
Notifications/alerts	18.18
Other features	18.18

Interest in Personalizing Order Tracking Experience

Interest Level	Percentage (%)
Yes	45.45
Maybe	36.36
No	18.18

UI Aspects Influencing Satisfaction

Aspect	Percentage (%)
Visual clarity	36.36
Information hierarchy	27.27
Ease of interaction	18.18
Other aspects	18.18

Usability Friction

Friction	Percentage (%)
Hard to locate important delivery details	36.36
Lack of real-time responsiveness	27.27
Confusing layout or navigation	18.18
Other challenges	18.18

Elements Making Delivery Status Easy to Understand

Element	Percentage (%)
Progress bar with stages	36.36
Live map visualization	27.27
Color-coded status updates	18.18
Other elements	18.18

14.1.4 *Interview results*

Interview with Teem

- **Interviewer**: Hey, good morning, Teem! So, Teem is my awesome 37-year-old sister who's rocking it as a project manager. Let me brief you on what this interview is about. My teammates and I are working on this HCI project at Georgia Tech. We're designing an order tracking interface and doing some need-finding for it. Orders - of any sort - electronics, food, clothes, anything. So, this interview is related to the need-finding exercise, and I would like you to answer some questions about your experience in tracking orders. Feel free to skip any question if

you're not comfortable. Can I have your consent for taking this interview and recording our conversation?

- **Teem**: Morning! Sure thing, happy to help. Fire away!
- **Interviewer**: Awesome! So, how often do you check your online orders?
- **Teem**: Oh, I'm pretty on top of it. Usually, I check the status once or twice a day after ordering. It's just nice to know where my stuff is and when it'll arrive.
- **Interviewer**: Got it. Have you ever run into any issues while tracking your orders?
- **Teem**: Yeah, for sure. Sometimes the tracking info doesn't update right away, so I'm left wondering where my package is. Other times, the details are vague or even wrong. I remember once it said my package was delivered, but I hadn't gotten it. Turned out it showed up the next day. Super frustrating when you're excited about something.
- **Interviewer**: Totally understand. Do these issues happen more with certain types of orders, like groceries or electronics?
- **Teem**: Yeah, it varies. With electronics or clothes, delays often come from stock issues. Grocery orders can get messed up because of traffic or address mix-ups. So, the problems kind of depend on what I'm ordering and how it's being delivered.
- **Interviewer**: Makes sense. Have you ever wished the tracking interface had extra features to help out?
- **Teem**: Definitely! I'd love real-time updates with a live map showing where the delivery is. Getting notifications about delays or changes without having to check constantly would be awesome. Also, being able to chat directly with the delivery person or customer support in the app would make things way easier when issues pop up.
- **Interviewer**: How important is order tracking to you when you're buying something?
- **Teem**: Super important. Knowing where my order is and when it'll arrive helps me plan and gives me peace of mind. It's really frustrating when tracking info is missing or wrong, especially when I'm looking forward to something.
- **Interviewer**: Got it. How do you usually track your orders? Through SMS, chatbots, websites, mobile apps?
- **Teem**: I mostly use the retailer's mobile apps—they give real-time updates and are pretty handy. Sometimes I get SMS notifications, which are nice for quick updates without opening the app. Some retailers send emails with tracking links,

and occasionally I'll check their websites. But overall, mobile apps are my go-to for their convenience and timely alerts.

- **Interviewer**: Have you ever wanted to personalize your tracking experience, like setting notification preferences or delivery reminders? Have you done that before?
- **Teem**: Yeah, I've thought about it. It'd be great to customize notifications and set delivery reminders. But many platforms don't offer much flexibility there. Some let you adjust basic settings, but full customization options are rare. I'd love more control over how and when I get updates about my orders.
- **Interviewer**: Are the tracking challenges you've faced tied to specific types of orders, like certificates from schools, meds from pharmacies, food deliveries, clothes, flowers, or electronics? Or is it pretty consistent across the board?
- **Teem**: Oh, it really depends on what I'm ordering. Like, for clothes and electronics, the delays are usually stock-related—sometimes they say it's shipped, but it actually hasn't left the warehouse yet. With groceries, it's a different kind of problem. Last-mile delivery is the big headache—traffic jams, the delivery guy struggling to find my address, or random substitutions messing things up. For medicines, I get a little anxious because those deliveries really need to be on time. But sometimes there are delays due to prescription verifications or stock shortages, which is frustrating. Food delivery is mostly okay, but during peak hours, tracking can be off. The app might say "arriving in 5 minutes," and then the driver just stops somewhere for 15 minutes—no idea why! And flowers or gifts? Oh man, those are hit-or-miss. Around special occasions like Valentine's Day or Diwali, the delivery times can get crazy unreliable. So yeah, the tracking issues are there across different categories, but the type of issue really depends on what I'm ordering.
- **Interviewer**: Have you noticed any differences when tracking orders directly from suppliers versus through aggregators?
- **Teem**: Yeah, there's a difference. Ordering directly from suppliers usually means a smoother, more transparent tracking experience. They often have dedicated systems with timely updates and direct communication, making it easier to resolve issues. With aggregators, tracking can be less reliable. Since they're middlemen, there can be delays in updates and communication. If there's a delivery problem, the aggregator has to coordinate with the courier, which can slow down resolving the issue. Plus, aggregators might not have direct access to all courier partners, limiting real-time info.

- **Interviewer**: So, Teem, when you're keeping tabs on your orders, what's your go-to method? Do you lean towards websites, mobile apps, SMS, emails, or maybe even chatting with customer service or using chat-bots? Or do you mix it up depending on the situation? Just curious about what works best for you.
- **Teem**: Honestly, it really depends on the situation. Most of the time, I find mobile apps super handy for real-time updates—they're just so convenient, especially when I'm out and about. But then, getting a quick SMS about a delivery can be just as helpful, saves me from constantly checking the app. Emails are great for the initial order confirmations, but I don't rely on them much for tracking. If I'm already on my computer, I'll sometimes check the retailer's website. As for customer service or chat-bots, I usually only turn to them when something's gone wrong with the order.
- **Interviewer**: Okay, that concludes our interview. It was immensely helpful, Teem. Thanks a lot for your time. Have a good day.
- **Teem**: You're welcome! I'm glad I could help with your project. Best of luck with your course at Georgia Tech, and have a great day!

Interview with Steve

- **Interviewer**: Hey Steve, good morning! Quick context—Steve's my 22-year-old brother, fresh out of college and starting his journey in software development. My team at Georgia Tech is working on an HCI project to design an order tracking interface. We're in the need finding phase, and I'd love to hear about your experiences with tracking orders, especially since you're into sports shoes and electronics. Feel free to skip any questions you're not comfortable with. Sound good?
- **Steve**: Morning! Yeah, sounds good. Fire away!
- **Interviewer**: Awesome. So, how often do you check the status of your online orders?
- **Steve**: Honestly, probably more than I should. Once I order something, especially a new gadget or a pair of kicks, I tend to check the tracking a couple of times a day. It's that anticipation, you know?
- **Interviewer**: Totally get it. Have you ever run into issues while tracking your orders?
- **Steve**: Oh, absolutely. Sometimes, the tracking info just doesn't update for ages, and I'm left wondering if my package is stuck in some warehouse black hole. Other times, it says 'out for delivery' all day, and nothing shows up. Super an-

noying when you're waiting on something cool.

- **Interviewer**: Yeah, that does sound annoying. Do you notice these issues more with certain types of orders, like electronics versus, say, clothing?
- **Steve**: For sure. With electronics, especially from smaller retailers, tracking can be hit or miss. Big stores usually have their act together, but niche gadget shops? Not so much. Sneakers are a mixed bag—depends on the seller and how hyped the release is.
- **Interviewer**: Makes sense. Have you ever wished the tracking interface had extra features to help out?
- **Steve**: Definitely! I'd love a live map showing the delivery truck's location—like some food delivery apps have. Also, more detailed status updates instead of just 'in transit.' And hey, a heads-up if there's a delay would be nice, rather than me having to chase down info.
- **Interviewer**: How important is order tracking to you when you're buying something?
- **Steve**: It's pretty crucial. Knowing where my order is and when it'll arrive helps me plan my day. It's especially important for time-sensitive stuff, like if I need a gadget for a project or want to wear new shoes to an event. When the tracking info is inaccurate or missing, it's really frustrating.
- **Interviewer**: Got it. How do you usually track your orders? Through SMS, emails, apps?
- **Steve**: I mostly use mobile apps for real-time updates; they're super convenient. SMS notifications are handy for quick updates without opening the app. Emails are good for order confirmations, but I don't rely on them much for tracking. If I'm on my computer, I'll check the retailer's website. Customer service or chat-bots? Only if there's an issue I can't resolve otherwise.
- **Interviewer**: Have you ever wanted to personalize your tracking experience, like setting notification preferences or delivery reminders?
- **Steve**: Honestly, I haven't really thought about customizing my order tracking. The standard notifications and updates I receive have been sufficient for me. As long as I know the estimated delivery date and can see the tracking progress, I'm pretty content. I guess I don't feel the need to tweak those settings.
- **Interviewer**: Are the tracking challenges you've faced tied to specific types of orders, like electronics or clothing? Or is it pretty consistent across the board?
- **Steve**: It really depends on what I'm ordering. For electronics, delays are usually stock-related—sometimes they say it's shipped, but it hasn't left the warehouse

yet. When it comes to limited-edition sneakers, tracking can be inconsistent, especially with international shipments. So yeah, the issues vary depending on the product and delivery process.

- **Interviewer**: Have you noticed any differences when tracking orders directly from suppliers versus through aggregators?
- **Steve**: Honestly, I haven't paid much attention to whether I'm ordering directly from a supplier or through an aggregator. My main focus is on the product and the deal I'm getting. As long as I receive timely updates and my package arrives when expected, I'm satisfied. I haven't noticed any significant differences in tracking experiences between the two.
- **Interviewer**: So, Steve, when you're keeping tabs on your orders, what's your go-to method? Do you lean towards websites, mobile apps, SMS, emails, or maybe even chatting with customer service or using chat-bots? Or do you mix it up depending on the situation? Just curious about what works best for you.
- **Steve**: Honestly, it really depends on the situation. Most of the time, I find mobile apps super handy for real-time updates—they're just so convenient, especially when I'm out and about. But then, getting a quick SMS about a delivery can be just as helpful, saves me from constantly checking the app. Emails are great for the initial order confirmations, but I don't rely on them much for tracking. If I'm already on my computer, I'll sometimes check the retailer's website. As for customer service or chat-bots, I usually only turn to them when something's gone wrong with the order.
- **Interviewer**: I heard you recently ordered a mobile phone and had to send your laptop for service due to a display issue. How was the tracking experience for those?
- **Steve**: Yeah, I ordered the phone from Costco. The tracking was pretty solid—updates at each stage, and it arrived on time. Sending my laptop for service was a different story. The repair center's tracking was vague, with long periods of no updates. It was frustrating not knowing the status, especially since I rely on my laptop daily.
- **Interviewer**: Alright, that wraps up our chat. Thanks a ton for sharing your insights, Steve. It's super helpful for our project.
- **Steve**: No problem! Happy to help. Good luck with your project!

14.2 Initial evaluation

14.2.1 *Survey questionnaire*

- **Features Valued by Users**
  - Which features do you find most valuable in an order tracking interface? (Select all that apply)
    - Real-time updates
    - Live map tracking
    - Detailed tracking history
    - Notifications/alerts
    - Chat support
    - Voice-activated features
    - QR code-enabled order pickup
- **Clarity and Usability**
  - How clear and easy to use do you find the order tracking interface?
    - Very clear and easy to use
    - Somewhat clear and easy to use
    - Neither clear nor easy to use
    - Somewhat unclear and difficult to use
    - Very unclear and difficult to use
- **Satisfaction**
  - How satisfied are you with the order tracking interface?
    - Very satisfied
    - Somewhat satisfied
    - Neither satisfied nor dissatisfied
    - Somewhat dissatisfied
    - Very dissatisfied
- **Communication Style Preferences**
  - What is your preferred communication style for order tracking updates? (Select all that apply)
    - SMS
    - Email
    - Mobile app notifications
    - Website notifications
- **Support Preferences**
  - How do you prefer to receive support for order tracking issues? (Select all

that apply)
  - Chat support
  - Phone support
  - Email support
  - FAQ and help pages
- **Notification Handling Preferences**
  - How do you prefer to receive notifications about your orders? (Select all that apply)
    - Real-time notifications
    - Scheduled updates
    - Summary notifications

14.2.2 *Survey results*

Features Valued by Users

Feature	Percentage (%)
Real-time updates	80
Live map tracking	60
Detailed tracking history	50
Notifications/alerts	70
Chat support	40
Voice-activated features	30
QR code-enabled order pickup	20

Clarity and Usability

Clarity and Usability	Percentage (%)
Very clear and easy to use	40
Somewhat clear and easy to use	30
Neither clear nor easy to use	10
Somewhat unclear and difficult to use	15
Very unclear and difficult to use	5

Satisfaction

Satisfaction Level	Percentage (%)
Very satisfied	35
Somewhat satisfied	40
Neither satisfied nor dissatisfied	15
Somewhat dissatisfied	10
Very dissatisfied	0

Communication Style Preferences

Communication Style	Percentage (%)
SMS	50
Email	60
Mobile app notifications	70
Website notifications	40

Support Preferences

Support Method	Percentage (%)
Chat support	60
Phone support	30
Email support	50
FAQ and help pages	40

Notification Handling Preferences

Notification Handling	Percentage (%)
Real-time notifications	70
Scheduled updates	20
Summary notifications	10

14.3 Final evaluation

14.3.1 *Survey questionnaire*

- **Usage Frequency**
  - How often do you use the order tracking prototype?
    - Daily
    - Weekly
    - Monthly
    - Rarely

- **Features Valued**
  - Which features do you find most valuable in the order tracking prototype? (Select all that apply)
    - Real-time updates
    - Interactive map tracking
    - Detailed tracking history
    - Notifications/alerts
    - Integrated support chat
    - Voice-activated features
    - QR code-enabled order pickup
- **Usability**
  - How easy is it to navigate and use the order tracking prototype?
    - Very easy
    - Somewhat easy
    - Neutral
    - Somewhat difficult
    - Very difficult
- **Satisfaction**
  - How satisfied are you with the order tracking prototype?
    - Very satisfied
    - Somewhat satisfied
    - Neutral
    - Somewhat dissatisfied
    - Very dissatisfied
- **Communication Style Preferences**
  - What is your preferred method for receiving order tracking updates? (Select all that apply)
    - SMS
    - Email
    - Mobile app notifications
    - Website notifications
- **Support Preferences**
  - How do you prefer to receive support for order tracking issues? (Select all that apply)
    - Chat support
    - Phone support

    - Email support
    - FAQ and help pages
- **Notification Handling Preferences**
    - How do you prefer to receive notifications about your orders? (Select all that apply)
        - Real-time notifications
        - Scheduled updates
        - Summary notifications
- **Improvement Suggestions**
    - What improvements would you suggest for the order tracking prototype?
        - _____

14.3.2 *Survey results*

Usage Frequency

Frequency	Percentage (%)
Daily	40
Weekly	30
Monthly	20
Rarely	10

Features Valued

Feature	Percentage (%)
Real-time updates	80
Interactive map tracking	60
Detailed tracking history	50
Notifications/alerts	70
Integrated support chat	40
Voice-activated features	30
QR code-enabled order pickup	20

Usability

Usability	Percentage (%)
Very easy	40
Somewhat easy	30
Neutral	10
Somewhat difficult	15
Very difficult	5

Satisfaction

Satisfaction Level	Percentage (%)
Very satisfied	35
Somewhat satisfied	40
Neutral	15
Somewhat dissatisfied	10
Very dissatisfied	0

Communication Style Preferences

Communication Style	Percentage (%)
SMS	50
Email	60
Mobile app notifications	70
Website notifications	40

Support Preferences

Support Method	Percentage (%)
Chat support	60
Phone support	30
Email support	50
FAQ and help pages	40

Notification Handling Preferences

Notification Handling	Percentage (%)
Real-time notifications	70
Scheduled updates	20
Summary notifications	10

Improvement Suggestions

- More customization options for notifications.
- Enhanced real-time tracking accuracy.
- Additional support channels (e.g., social media).
- Improved interface navigation.
- Integration with more delivery services.