NATIONAL ENGINEERING COLLEGE, K.R. NAGAR, KOVILPATTI – 628 503

Department of Computer Science and Engineering

Course: 23CS32E / 23IT32E- UI/UX Design

Semester: Even Semester 2025–2026

Experiential Learning Report

PROJECT TITLE: Transport Management System (A UI/UX Based Digital Canteen Experience)

TEAM MEMBERS	2310009 – kabil K 2310028 - Mohamed Quather Hanif S
SEM/YEAR	VIth SEMESTER – IIIrd Year
DEPARTMENT	MECH
COURSE OUTCOME MAPPED	CO5: Design user-friendly, visually appealing interfaces and provide industry-relevant insights by applying UX design principles. (PDL3) CO6: Demonstrate creativity, diverse and inclusive attitude while practicing project component.

Faculty In-charge

1. ABSTRACT

The proposed project is a Smart College Bus Transport Management System designed to improve the efficiency, safety, and convenience of campus transportation. Students often face issues such as uncertain bus timings, lack of real-time tracking, overcrowding, and poor communication, while the administration struggles with manual record management and inefficient route planning. To address these challenges, the system introduces real-time bus tracking, automated route and schedule management, and notification alerts for delays or changes. Additional features such as student transport records, driver and vehicle monitoring, and optimized route planning help enhance overall performance and safety. The interface is designed using user-centered UI/UX principles to ensure simplicity and accessibility, and the system is prototyped using tools like Figma for an interactive and efficient user experience.

2. PROBLEM STATEMENT

Who faces the problem

The primary users affected are college students who depend on bus transportation for daily travel and the transport management staff responsible for scheduling and operations. Both groups face difficulties due to the lack of an organized and digital transport management system

What is the problem

Students face issues such as uncertain bus timings, lack of real-time tracking, overcrowding, and delays, especially during peak hours. Due to poor communication, they often miss buses or wait for long periods. Meanwhile, the administration manages routes, schedules, and records manually, leading to inefficiencies, errors, and poor coordination.

Why existing solutions fail

The current system lacks digital features such as real-time tracking, automated scheduling, and instant notifications. There is no proper system to manage routes, monitor buses, or communicate updates effectively. As a result, existing methods lead to delays, confusion, inefficient resource usage, and reduced safety and convenience for students..

3. OBJECTIVES

- To maintain a digital record of students using transport services
- To optimize bus routes to reduce travel time and fuel cost
- To send notifications about bus timings, delays, or route changes
- To monitor driver details and vehicle information
- To improve overall transport planning and decision-making
- To ensure better utilization of buses and resources
- To provide easy access to transport details through a user-friendly system
- To reduce paperwork and improve data accuracy
- To enhance coordination between transport staff and college management

4. COMPETITIVE ANALYSIS

The competitive analysis evaluates existing transport systems such as GPS tracking apps, general transport management systems, and manual college bus systems. While these systems provide basic features like tracking and scheduling, they lack student-specific functionalities, real-time communication, and efficient management. The current college bus system is mostly manual, leading to delays and poor coordination. This analysis highlights the need for a smart, integrated system to improve efficiency, safety, and user experience.

Table 1. Competitive Analysis Table

Feature	Competitor 1 (GPS Tracking Apps)	Competitor 2 (General TMS)	Existing College Bus System
Real-Time Tracking	Yes	Yes	No
Route Optimization	Limited	Yes	No
Bus Schedule Management	No	Yes	Manual
Student Management	No	No	Manual
Notification System	Limited	Limited	No
Delay Updates	No	Limited	No
Driver & Vehicle Monitoring	No	Yes	Limited
Communication System	No	Limited	No
Safety Features	Basic	Moderate	Poor
Efficiency	Moderate	High	Low

STRENGTHS & WEAKNESSES

Competitor 1 – GPS Tracking Apps

Strengths:

- Provides real-time vehicle tracking
- Easy to use and accessible
- Helps in basic route monitoring

Weaknesses:

- No student-specific features
- No bus schedule management
- Limited communication features
- Not designed for college transport systems

Competitor 2 – General TMS

Strengths:

- Advanced route optimization
- Efficient transport planning
- Supports vehicle and driver management

Weaknesses:

- Complex and costly to implement
- Not user-friendly for students
- No direct interaction with students
- Not customized for college bus systems

Existing College Bus System

Strengths:

- Simple and easy to operate
- Fixed routes and schedules
- No need for advanced technology

Weaknesses:

- No real-time tracking
- Manual record management
- Poor communication system
- Delays and overcrowding issues
- No safety monitoring features

Gap Identification

- Lack of real-time tracking system for buses
- No automated schedule and route management

- Absence of notification and alert system
- No proper communication between users and management
- No digital record management for students and transport
- Lack of safety and monitoring features

Design Opportunity

Based on the identified gaps, the proposed system introduces:

- Real-time bus tracking to help students know the exact location of buses
- Automated route and schedule management for better planning
- Notification alerts for delays, route changes, and bus arrival timing
- Digital management of student, driver, and vehicle records
- Improved communication between students and transport staff
- A simple and user-friendly UI/UX design focused on accessibility and ease of use

5. USER RESEARCH EXECUTION

Method

The user research was conducted using a combination of interviews and survey methods to gather both qualitative and quantitative data.

- **Interviews:** Direct interaction with students, drivers, and transport staff to understand their daily travel challenges, issues with bus timing, tracking, and communication.
- **Survey:** A structured questionnaire was distributed using an online form to collect responses from students regarding their experience with the current college bus system, including delays, safety concerns, and overall satisfaction.

Key Insights

- Most students face delays and long waiting times due to uncertain bus arrival timings
- A majority of users prefer real-time tracking to know the exact bus location
- Many students experience overcrowding during peak hours
- Transport staff find it difficult to manage routes and schedules manually
- Users showed strong interest in features like notifications, live tracking, and improved safety systems

PERSONA CARDS

Persona 1

Arun Kumar – IIIrd Year ECE (Daily Bus User)

Goals:

- Reach college on time without delays
- Track bus location easily
- Avoid missing the bus

Needs:

- Real-time bus tracking
- Accurate bus timing information
- Notification for bus arrival and delays

Pain Points:

- Uncertain bus timings
- Long waiting during peak hours
- Lack of proper communication about delays

Persona 2

Mr. Ramesh – Transport Coordinator (Admin)

Goals:

- Manage bus routes and schedules efficiently
- Ensure smooth transport operation
- Improve student safety and satisfaction

Needs:

- Centralized system for managing buses and routes
- Real-time monitoring of buses
- Easy communication with drivers and students

Pain Points:

- Difficulty in managing schedules manually
- No real-time tracking of buses
- Handling complaints and delays during rush hours

7. INFORMATION STRUCTURE (SITE MAP)

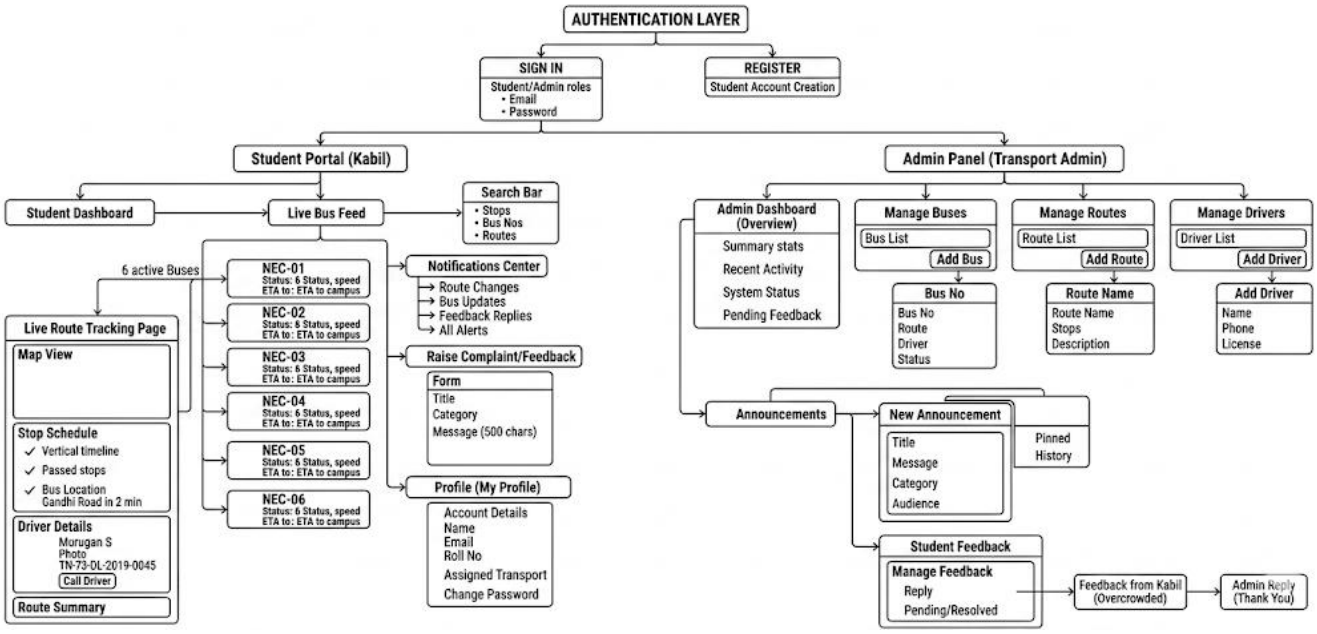


Fig. 1 Sitemap Of Transport Management **System**

Explanation of Navigation Flow

1. Entry Phase (Authentication)

- **Sign-In/Sign-Up:** Users land on a unified gateway.
- **Role Validation:** The system detects whether the user is a student (using @nec.edu.in) or an administrator. This ensures that students cannot access management tools and admins land directly in the control center.

2. Student Navigation Flow

The student's journey is optimized for speed and real-time data:

- **Dashboard (The Hub):** Upon login, students see the **Live Bus Feed**. They can instantly see which buses are active and their current ETAs.
- **Deep Dive (Tracking):** Clicking a specific bus (e.g., NEC-01) takes the student to the **Live Route Tracking Page**. Here, the flow becomes vertical, following the bus's progress through a timeline of stops.
- **Action Loops:** From any screen, a student can navigate to the **Raise Complaint** section to report issues like overcrowding. Once submitted, the flow returns them to the Dashboard.

- **Communication:** The **Notifications** center acts as a secondary landing spot for urgent route changes or replies to their feedback.

3. Admin Navigation Flow

The admin's journey is built around oversight and data entry:

- **Admin Dashboard:** Provides a high-level "System Health" view (active buses, pending feedback, and recent logs).
- **Management Branches:** * **Fleet/Routes:** A linear flow to add or remove buses and update stop timings.
- **Communication:** A dedicated path to draft **Announcements**. Once published, this triggers a notification in the Student Flow.
- **Feedback Loop:** Admins navigate to the **Student Feedback** section to review complaints. Replying to a complaint closes that specific task loop, updating the status from "Pending" to "Resolved."

4. Key Navigation Features

- **Persistent Navigation:** A sidebar or top menu allows users to jump back to the **Dashboard** or **Profile** from any page.
- **Search-Driven Flow:** Students can bypass the grid view by using the **Search Bar** to find a specific stop or route directly.
- **Cross-Role Security:** A "Sign Out" action is available on all screens to ensure account security, especially on shared college terminals.

8. DESIGN IDEATION / APPROACH

Design Planning

The design of the College Bus Transport Management System focuses on creating a simple, efficient, and user-friendly solution to improve transportation management. The approach follows a user-centered design process, identifying key problems such as lack of real-time tracking, poor communication, and manual management. Based on these insights, features like live bus tracking, automated scheduling, and notification alerts are introduced. The system is designed with a clean and intuitive interface to ensure easy access to routes, timings, and updates, while maintaining accessibility and smooth navigation. Prototyping tools like Figma are used to visualize and refine the design, ensuring a balanced system with high usability, functionality, and performance.

Inspiration Sources

The design of the College Bus Transport Management System is inspired by existing transport and navigation applications, user experience principles, and modern digital solutions. Popular GPS tracking and map-based applications influenced the real-time tracking feature, while general transport management systems provided ideas for route and schedule optimization. The interface design is inspired by simple and clean mobile applications that focus on ease of use and quick access to information. Additionally, feedback from students and transport staff played a major role in shaping the features, ensuring the system is practical, efficient, and user-friendly.

Layout Decisions

The layout of the College Bus Transport Management System is designed to be clean, simple, and easy to navigate. A structured layout is used with clear sections for tracking, schedules, notifications, and user profile to ensure quick access to important features. The design follows a top navigation or dashboard-based approach, allowing users to move between functions easily. Important information like bus location and timing is highlighted on the main screen to improve visibility. Consistent spacing, icons, and minimal text are used to enhance readability and user experience, ensuring the interface remains intuitive and user-friendly.

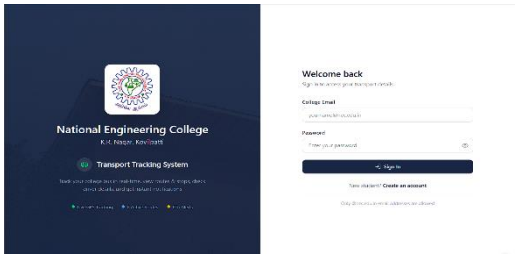
Grid System Justification (12-Column Grid)

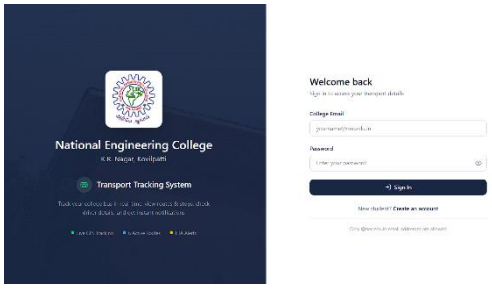
A grid system is used in the design of the College Bus Transport Management System to ensure a clean, consistent, and well-organized layout. The grid helps align all elements such as text, icons, and images properly, making the interface visually balanced and easy to navigate. It improves readability by maintaining equal spacing and structure across all screens. The grid system also supports responsive design, allowing the application to adapt smoothly to different screen sizes like mobile and desktop. Overall, it enhances usability, consistency, and a professional appearance of the system.

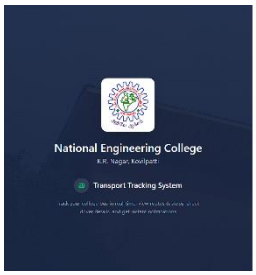
9. HIGH-FIDELITY WIREFRAME

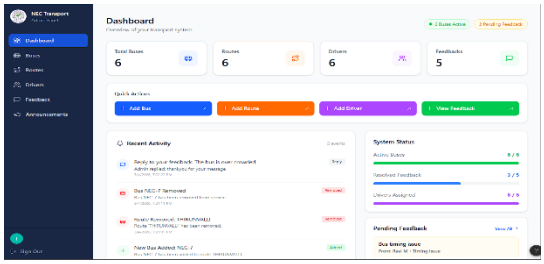
Screenshots

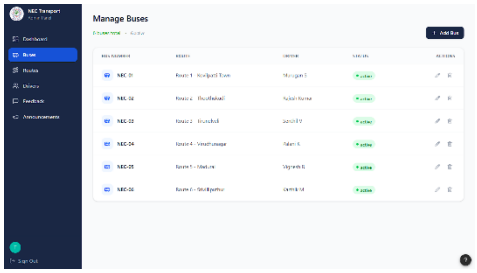
The screenshots represent the final visual interface of the College Bus Transport Management System, showcasing key screens such as the home dashboard, real-time bus tracking page, route and schedule details, notifications panel, and user profile section. These screens highlight the clean layout, intuitive navigation, and user-friendly design of the system. The screenshots are taken from the high-fidelity prototype created using Figma, providing a realistic view of how the application will look and function for both students and transport staff.

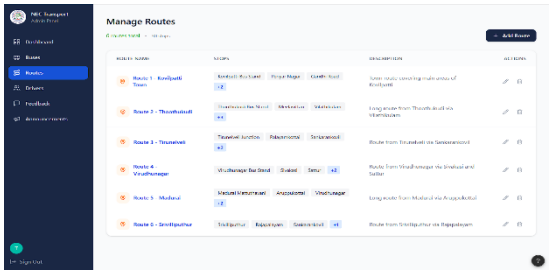


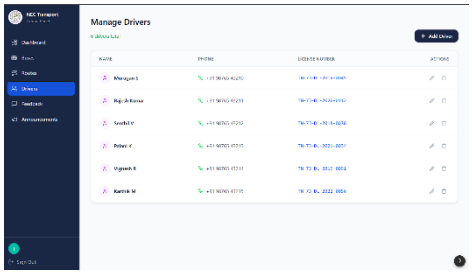


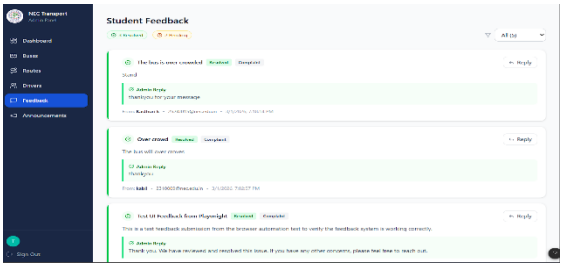


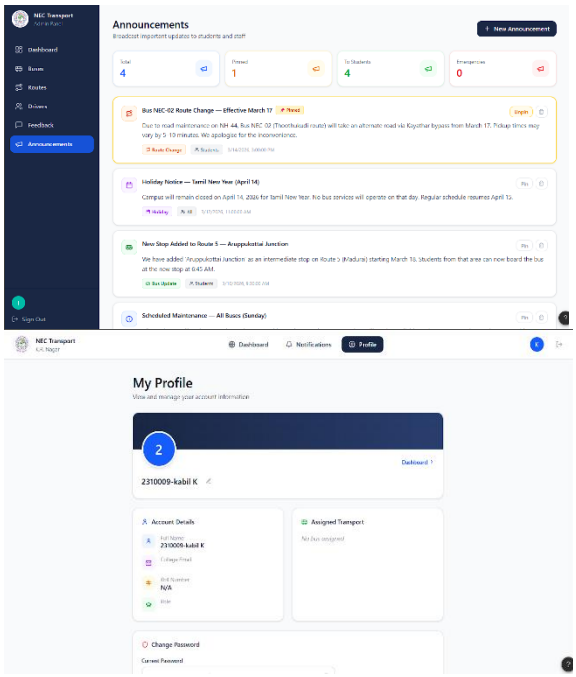


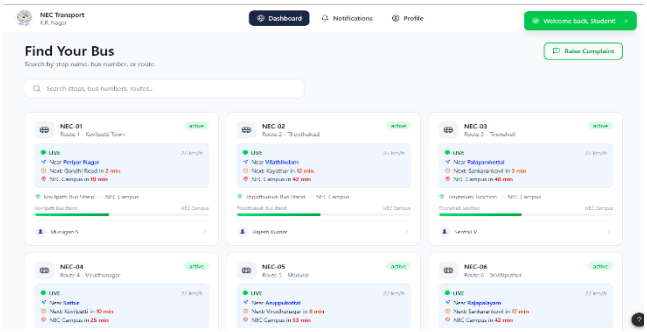


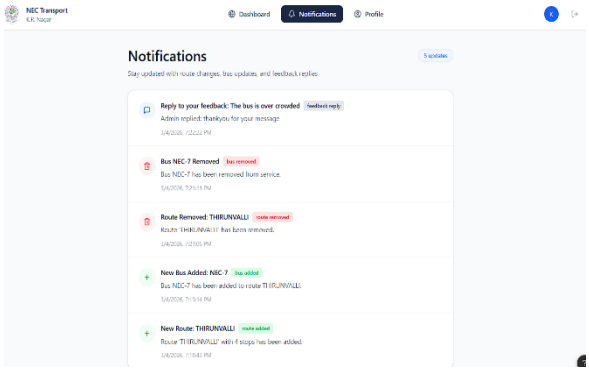












Explanation of Each Screen

Authentication Pages 1

1. Login Page

- Split-screen design with NEC college logo and campus image
- Left: College branding with Transport Tracking System info
- Right: Login form with email/password fields
- Validates credentials and routes to admin or student dashboard
- Demo accounts: Student (2310009@nec.edu.in) and Admin (admin@nec.edu.in)

2. Signup Page (/signup)

- Similar split-screen layout as login
- Validates @nec.edu.in email addresses only
- Real-time feedback: green checkmarks for valid inputs, red for invalid
- Auto-registers and logs in new students
- Password confirmation matching validation

Student Portal

3. Student Dashboard

- Search functionality for buses by stop name, bus number, or route
- Grid of bus cards showing live tracking status
- Each card displays: bus number, route, current location, speed, ETA to stops
- Live badges with pulsing animation for active buses
- Progress bars showing journey completion
- "Raise Complaint" button to submit feedback

4. Bus Detail Page

- Real-time bus tracking with live speed, current location, and ETA
- Interactive route timeline with visual progress indicators
- "Select Your Stop" feature showing personalized ETA
- Current stop highlighted in blue with pulsing animation
- Passed stops in green, upcoming in gray
- Driver contact card with call button
- Route summary with total stops, departure/arrival times

5. Notifications

- Categorized notification feed with color-coded icons
- Shows route changes, bus updates, feedback replies
- Visual distinction between notification types (new, removed, reply)
- Timestamp and category tags for each notification

6. Student Profile

- Banner header with avatar showing first initial
- Editable name field with inline editing
- Account details: full name, email, roll number, role
- Assigned bus/route information with driver details
- "Track My Bus" quick action button
- Password change form with show/hide toggles
- Visual feedback for successful updates

Admin Portal

7. Admin Dashboard

- Summary statistics: total buses, routes, drivers, pending feedback
- Real-time status indicators for active buses
- Quick action buttons for common tasks
- Recent activity feed with categorized events
- System status with progress bars showing:
    - Active buses vs total
    - Resolved feedback vs total
    - Drivers assigned
- Pending feedback preview with quick links

8. Manage Buses

- Responsive table (desktop) and cards (mobile)
- Add/Edit/Delete bus functionality with modals
- Fields: bus number, route assignment, driver assignment, status
- Status badges (active/inactive) with color coding
- Success toast notifications for actions
- Delete confirmation dialog with warnings

9. Manage Routes

- Route list with stop previews (shows first 3 + count)
- Add/Edit/Delete route functionality
- Fields: route name, description, comma-separated stops
- Displays total routes and total stops across all routes
- Visual stop badges with overflow counter
- Mobile-responsive layout

10. Manage Drivers

- Driver directory with contact information
- Fields: name, phone (clickable to call), license number
- Add/Edit/Delete driver profiles
- Phone numbers displayed with call icons
- License numbers in monospace font
- Success notifications and delete confirmations

11. Student Feedback

- Filter by status: All, Resolved, Pending
- Status indicators (green checkmark/amber clock)
- Left color border (green for resolved, amber for pending)
- Reply functionality with modal dialog
- Automatically marks as "Resolved" when reply is sent
- Shows admin replies in green highlighted boxes
- Displays student name, email, and timestamp

12. Announcements

- Create/delete announcements with rich categorization
- Categories: General, Route Change, Bus Update, Holiday, Emergency
- Audience targeting: All, Students Only, Drivers Only
- Pin/unpin important announcements (shown at top)
- Color-coded category badges with icons
- Stats dashboard showing total, pinned, student-targeted, emergencies
- Form validation and success notifications
- Delete confirmation for safety

Key Features Across All Pages

- **Real-Time GPS Tracking:** Visual live-monitoring of the entire bus fleet on a dynamic map.
- **Dynamic ETA Engine:** Automated arrival time calculations for every bus stop and the college campus.
- **Vertical Journey Timeline:** A step-by-step progress tracker showing passed, current, and upcoming stops.
- **Centralized Admin Dashboard:** A single-window control panel for managing buses, routes, and drivers.
- **Domain-Locked Authentication:** Secure access restricted exclusively to @nec.edu.in verified users.
- **Interactive Feedback Loop:** A direct communication channel for students to report overcrowding or timing issues.
- **Smart Announcement Hub:** Instant broadcasting of pinned alerts for route changes, maintenance, or holidays.
- **Direct Driver Connectivity:** Integrated "Call Driver" functionality for immediate student-to-staff coordination.

- **Live Operational Analytics:** Visual data overview of fleet activity, system health, and feedback resolution status.
- **Mobile-First Design:** High-contrast, thumb-optimized user interface designed for outdoor student use.

Summary

The **NEC Transport Tracking System** is a real-time digital solution providing students with live GPS tracking, dynamic ETAs, and instant route alerts to eliminate commute uncertainty. It features a centralized Admin Panel for fleet management and a secure, domain-locked feedback system to ensure a safer, more efficient, and data-driven transit experience.

10. VISUAL DESIGN & UI AESTHETICS

Color Palette (with Reason)

The **NEC Transport Tracking System** uses a professional palette of **Navy Blue** to establish institutional trust and **NEC Green** to provide instant visual confirmation of "Live" bus statuses. This high-contrast scheme is specifically engineered for **outdoor legibility**, ensuring students can easily read ETAs in bright sunlight, while **Safety Amber** and **Emergency Red** are strategically applied to highlight delays and critical alerts. By combining these functional colors with a clean **Cloud White** background, the interface reduces cognitive load, allowing both students and administrators to process complex transit data at a single glance.

Color Name	Hex Code	Role	Reason for Selection
Navy Blue	#1A2B4C	Primary Brand	Represents trust, authority, and the professional identity of National Engineering College.
NEC Green	#00C853	Success / Live	Used for active buses, resolved feedback, and live status; green indicates safety and movement.
Safety Amber	#FFAB00	Warning / Pending	Used for pending feedback, delayed buses, and alerts; attracts attention without causing panic.

Emergency Red	#D32F2F	Alert / Danger	Used for emergency alerts, removed routes, and delete actions; provides high visibility for critical issues.
Cloud White	#FFFFFF	Background	Ensures clarity, readability, and a clean modern interface.
Steel Grey	#F5F7FA	Secondary Background	Used for cards and sections to reduce eye strain and improve content separation.

Typography (with Reason)

- Font Family: Sans-serif (clean and modern font) – chosen for better readability and a simple, professional look in digital interfaces.
- Headings: Bold and larger size – used to highlight important information and create clear visual hierarchy.
- Body Text: Medium weight – ensures comfortable reading without eye strain.
- Buttons: Slightly bold – improves visibility and makes actions easy to identify and click.

UI Components

The application includes consistent and reusable UI components:

- **Buttons (Primary & Secondary):** Used for main actions like tracking, login, and navigation
- **Input Fields (Search, Login):** Allows users to enter details and search for bus routes or information
- **Bus Cards (Route, Timing, Status):** Displays bus number, route details, and current status
- **Live Tracking Panel:** Shows real-time bus location on the map
- **Notification Alerts:** Displays updates for delays, arrivals, and route changes
- **User/Profile Cards:** Shows student or staff information
- **Status Indicators (Active, Delayed):** Visual indicators using colors for quick understanding
- **Navigation Bar:** Helps users move easily between different sections of the app

UI Animations

Table 2. UI Animations Purpose

Interaction	Animation	Purpose
Button Click	Slight scale/press effect	Provides feedback to user action
Page Transition	Smooth slide animation	Improves navigation experience
Loading Screen	Spinner animation	Indicates system processing
Countdown Timer	Dynamic ticking effect	Shows urgency and real-time updates
Status Updates	Progress animation	Displays stages clearly (e.g., tracking status)

Micro-Interactions

Table: Micro-Interactions

Table 3. Micro Interactions

Interaction	Micro-Interaction	Purpose
Button Hover/Click	Color change + slight scale	Gives instant feedback to user action
Form Input	Highlight border on focus	Improves input visibility and usability
Toggle Switch	Smooth sliding effect	Clearly shows ON/OFF state
Notification Alert	Slide-in / fade-in animation	Grabs user attention for important updates
Error Message	Shake or highlight effect	Indicates incorrect input
Success Message	Fade-in with check icon	Confirms successful action
Loading Action	Spinner or skeleton animation	Shows system is processing
Navigation Menu	Expand/collapse animation	Enhances smooth navigation
Status Indicator	Colorchange (green/red/amber)	Shows real-time status updates clearly
Card Selection	Shadow/raise effect	Indicates selected or active item

Summary

The visual design focuses on clarity, consistency, and user engagement. Effective use of colors, typography, and UI components ensures a clean and intuitive interface, while animations and micro-interactions provide feedback and enhance overall usability and user satisfaction

11. PROTOTYPE + FIGMA LINK

Figma Link

The complete high-fidelity prototype of the application has been designed and developed using Figma, covering all major screens and interactive user flows.

Figma Prototype Link:
https://www.figma.com/design/ttqKdwUpCdaVjdsUNX3I7p/NEC-Transport?node-id=190-2&p=f&t=xcf7m45TLW5K64I2-0

Converting Figma designs into code for deployment:

https://nec-transport.figma.site/

User Flow Explanation

The application follows a simple and structured user flow to ensure ease of use and minimal effort:

- The user starts from the login/signup screen and enters the application.
- From the home screen, users can view options like live bus tracking, routes, schedules, and notifications.
- The user selects the tracking option to view the real-time location of the bus.
- Users can also check route details and bus timings from the schedule section.
- Notifications inform users about delays, route changes, or bus arrival updates.
- The user can access their profile to view personal and transport-related details.

Responsive Design

The application is designed using responsive design principles to ensure smooth performance across different screen sizes and devices.

- Layouts are structured using a grid-based system to maintain consistency and alignment.
- UI elements such as buttons, cards, and text adjust dynamically based on screen size.

- Proper spacing and alignment are maintained to ensure readability on mobile devices.
- The design follows a mobile-first approach, as most users access the system through smartphones.

Summary

The prototype provides a complete interactive experience, enabling users to smoothly navigate through all features. The structured user flow combined with responsive design ensures high efficiency, ease of use, and accessibility across devices.

12. TESTING & FEEDBACK

Results table

The usability testing of the application prototype was conducted using a task-based testing approach. Participants were asked to perform key tasks such as tracking a bus, checking routes and schedules, and viewing notifications using the interactive prototype created in Figma**.**

- Most users were able to complete all tasks successfully without guidance
- Average task completion time was low, indicating an easy-to-use interface
- Users found real-time tracking feature very useful and accurate
- Navigation between screens was smooth and understandable
- Majority of users rated the system as user-friendly
- Notifications helped users stay updated about delays and bus timings
- Some users suggested adding more visual indicators for bus status
- Few users requested faster loading time for tracking screen
- Overall satisfaction level was high among participants
- The system reduced confusion and improved user confidence in transport usage

Number of Users

- Total Participants: 30 users
- Students: 20
- Transport Staff: 2

Table 4. Result

Task	Success Rate	Average Time	Observations
Track Bus Location	100%	8 sec	Easy and accurate tracking
Check Route Details	95%	10 sec	Minor confusion in route selection
View Bus Schedule	90%	12 sec	Needs clearer time display
View Notifications	95%	6 sec	Quick and helpful updates
Access Profile Information	85%	9 sec	Not immediately visible to all users

Feedback Summary

- Most users found the system easy to use and well-structured
- The real-time tracking feature was highly appreciated for accuracy and convenience
- Users liked the notification system for timely updates on bus arrival and delays
- Some users suggested improving the visibility of certain features like profile and schedule
- Minor improvements were needed in button clarity and navigation cues
- Overall, users showed high satisfaction and willingness to use the system in real-time scenarios

Conclusion from Testing

The testing results indicate that the system provides a smooth and efficient user experience, with only minor areas requiring improvement. User feedback helped refine features such as navigation clarity, information visibility, and overall usability, making the system more intuitive and effective for real-time use.

13. IMPROVEMENTS

The following improvements were identified during testing and feedback to enhance the overall usability and effectiveness of the application:

Feature Area	Issue	Solution
GPS Accuracy	Location drift in weak signal areas	Snap-to-road+dead reckoning
ETA Prediction	Delays not considered	AI-based ETA prediction
Driver Safety	Driver distraction	Voice alerts (TTS)

Data Usage	High battery and data usage	Adaptive GPS polling
Feedback Verification	Fake overcrowding reports	Geo-fencing validation
Authentication	Password forgetting	Biometric / SSO login
Offline Access	No internet access	Local caching system

Summary

These improvements enhance system usability, accuracy, and user engagement in the smart transport tracking application. They ensure smoother navigation, reliable real-time bus tracking, accurate ETA prediction, and better communication between users and drivers. Overall, the system helps reduce waiting time, improve travel planning, and provide a more efficient and user-friendly transport experience.

14. INNOVATION / UNIQUE FEATURE

- The Smart Transport Tracking System introduces innovative features that improve real-time bus tracking using enhanced GPS accuracy with snap-to-road technology. It also uses AI-based ETA prediction to provide more reliable arrival times based on traffic and route conditions. A geo-fenced feedback system ensures that only genuine passengers can submit bus-related reports, improving data reliability. In addition, adaptive GPS optimization helps reduce battery and data usage by adjusting tracking frequency based on movement.
- The system further enhances user experience by improving transport efficiency and reducing waiting time through smart time slot and crowd management. It also provides voice-enabled alerts for drivers, ensuring safe and distraction-free communication. Offline access allows users to view routes and schedules without internet connectivity. Overall, these features make the system more intelligent, efficient, and user-friendly..
- The system is unique because it combines real-time bus tracking with AI-based ETA prediction for accurate and reliable travel information. It also uses snap-to-road GPS and geo-fencing to ensure location precision and secure user feedback.
- It further stands out by optimizing data usage through adaptive GPS updates, making it battery-efficient and practical for daily use. Features like offline access and voice-enabled alerts enhance accessibility, safety, and overall user experience.

15. FINAL OUTPUT

UI Screenshots

The final output of the **NEC Transport Tracking System** project consists of high-fidelity UI screens designed in Figma, ensuring a seamless experience across both mobile and desktop platforms. These screens represent the complete lifecycle of the application—from secure authentication to real-time fleet management.

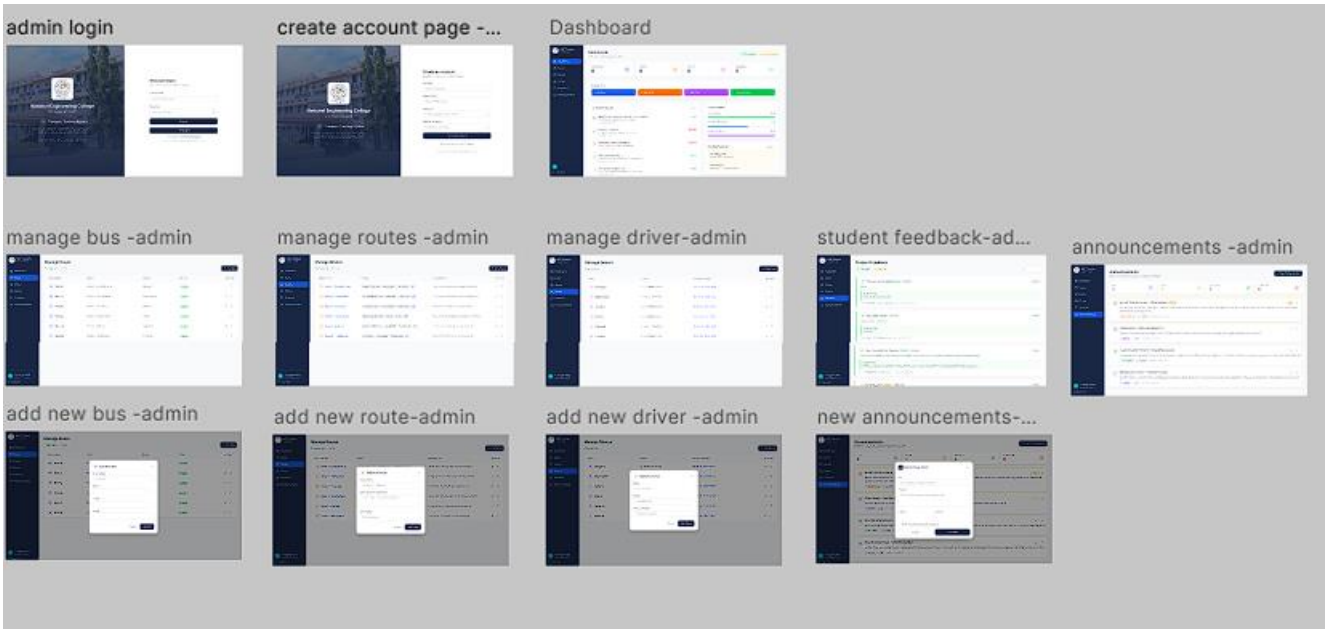


Fig 1 Admin Login

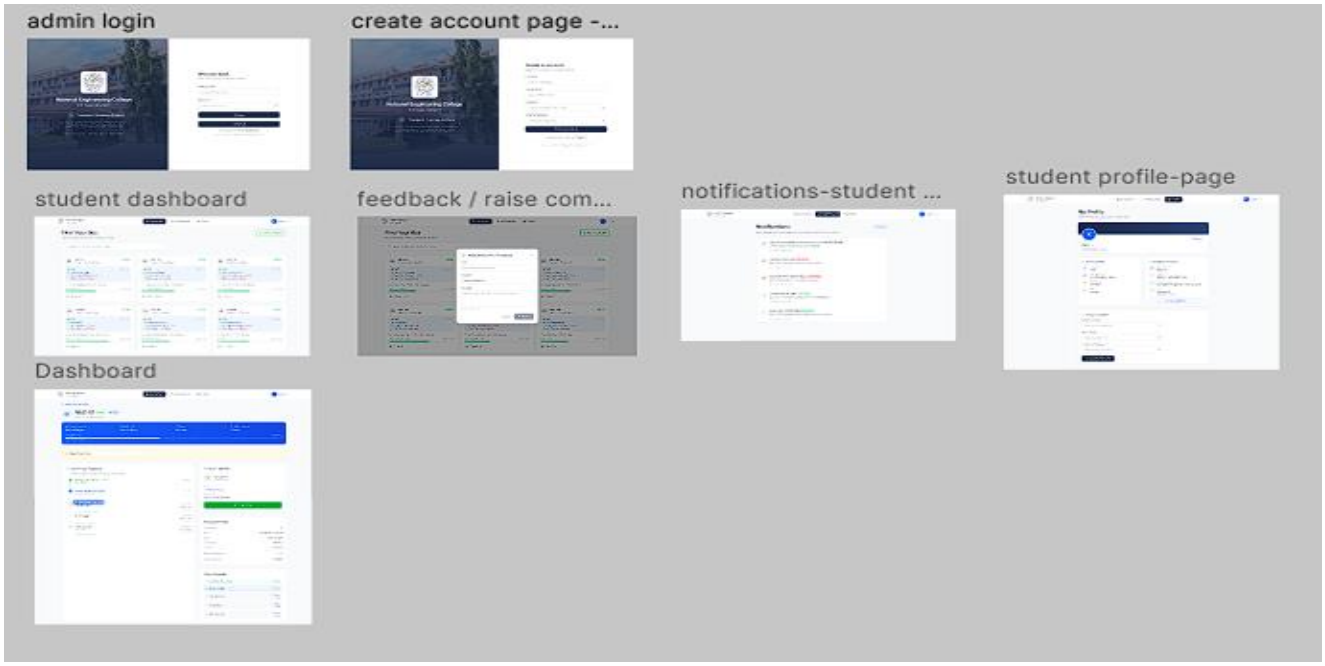


Fig 2 .Student Login

Explanation

Admin Module Screens

- **Admin Login Page**
  Used for secure login of admin using credentials to access the system dashboard.
- **Create Account Page**
  Allows admin to register new accounts for system access and role management.
- **Admin Dashboard**
  Central control panel showing overall system status, buses, routes, drivers, and activities.
- **Manage Bus (Admin)**
  Used to view, update, and delete bus details such as bus number, capacity, and status.
- **Manage Routes (Admin)**
  Allows admin to add, edit, or remove bus routes and assign stops.
- **Manage Driver (Admin)**
  Used to maintain driver details including assignment, contact info, and availability.
- **Student Feedback (Admin View)**
  Displays feedback and complaints submitted by students for review and action.
- **Announcements (Admin)**
  Used to publish important notifications such as schedule changes or alerts.
- **Add New Bus (Admin)**
  Form to register a new bus into the system with required details.
- **Add New Route (Admin)**
  Used to create and configure new travel routes for buses.
- **Add New Driver (Admin)**
  Allows adding new driver details into the system database.
- **New Announcements (Admin)**
  Interface to create and send new notifications to students.

Student Module Screens

- **Student Dashboard**
  Shows live bus status, routes, schedules, and quick access features.
- **Feedback / Raise Complaint**
  Allows students to submit issues, complaints, or suggestions regarding transport.
- **Notifications (Student)**
  Displays alerts, updates, and announcements from the admin side.
- **Student Profile Page**
  Shows personal details, route information, and account settings.

General Dashboard Screen

- **Dashboard Overview**
  Displays summary statistics such as active buses, routes, drivers, and system activity in a graphical format.

Summary

The system consists of separate Admin and Student modules to manage and use the smart transport tracking platform efficiently. The Admin side handles buses, routes, drivers, announcements, and feedback management, while the Student side provides dashboards, notifications, profiles, and complaint features. Overall, the application ensures smooth transport management with clear roles, easy navigation, and improved communication between users and administrators.

16. SKILLS GAINED

- **UI/UX Design Skills:** Learned to design user-friendly and intuitive interfaces focusing on usability and accessibility.
- **Wireframing & Prototyping:** Gained experience in creating low-fidelity and high-fidelity wireframes and interactive prototypes.
- **User Research & Analysis:** Developed skills in conducting surveys and interviews to understand user needs and pain points.
- **Design Thinking Approach:** Applied stages like empathize, define, ideate, prototype, and test to solve real-world problems.
- **Problem-Solving Skills:** Improved ability to identify issues and provide effective design solutions.
- **Information Architecture:** Learned to structure application navigation using sitemap and user flow techniques.
- **Visual Design Skills:** Gained knowledge in color theory, typography, layout design, and visual hierarchy.
- **Usability Testing:** Learned to test designs, collect feedback, and implement improvements for better user experience.
- **Communication Skills:** Enhanced ability to present ideas clearly through reports, documentation, and presentations.

17. TOOLS USED

• **Figma** – Used for designing high-fidelity UI screens and creating interactive prototypes for the application.

• **Balsamiq** – Used for creating low-fidelity wireframes to plan the basic layout and structure of screens.

• **Canva** – Used for preparing presentation slides and creating visually appealing project documentation.

• **Freepik** – Used for sourcing high-quality images, icons, and design assets to enhance UI design.

• **Google Forms** – Used for conducting user surveys and collecting feedback to understand user requirements and improve the system.

18. REAL-WORLD APPLICATION

The proposed Smart Logistics and Food Ordering System has strong real-world applicability in environments such as college canteens, hostels, offices, hospitals, and large food courts where managing high user demand and reducing waiting time is essential. It helps in streamlining the ordering process and improving overall service efficiency in busy environments.

The system supports better demand prediction and order management, which helps reduce food wastage and ensures optimal use of resources. Features like pre-ordering, scheduled time slots, instant ordering, and real-time updates improve service speed and customer satisfaction. The reward and feedback features also encourage continuous user engagement.

From an industry perspective, this application supports digital transformation in the food service sector by introducing automation and smart ordering solutions. It enables data collection and analysis of user behavior, peak usage times, and popular items, which helps in better decision-making. Overall, it provides a scalable, efficient, and user-friendly solution for modern food service management systems.

19. CONCLUSION

This project focused on developing a Smart Logistics and Food Ordering System to solve major issues such as long waiting times, crowd management, and inefficient order handling in food service environments. Through proper requirement analysis, UI/UX design, prototyping, and testing, an efficient and user-friendly application was designed to improve both customer experience and system performance.

The project helped in gaining practical knowledge of user-centered design, system planning, interface development, and usability testing. It also demonstrated how digital solutions can improve operational efficiency and reduce manual effort in real-world food service systems. The overall development process enhanced understanding of designing scalable and effective applications.

For future enhancements, features such as AI-based demand prediction, real-time order tracking, smart queue management, and personalized recommendations can be added. The system can also be extended to multiple canteens or large institutional food services to improve scalability and overall impact.