

Human Computer Interaction

BCSE415L

Digital Assignment - 1

Enhancing User Interface: A Redesign of the IRCTC App

Team Members

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PROBLEM STATEMENT:

The **IRCTC app**, serving millions of users daily, is a crucial platform for train ticket bookings, travel planning, and accessing ancillary services like tourism packages and catering. Despite its significance in simplifying railway operations and enhancing user convenience, the app has become a subject of widespread criticism due to its **suboptimal user interface (UI)** and **user experience (UX)** design. These issues cause user dissatisfaction, hinder accessibility, and lead to frequent errors during transactions. This project aims to redesign the app's interface to improve usability, accessibility, and overall satisfaction while adhering to modern HCI principles.

Core Challenges

1. Complex User Interface:

- The current UI layout is cluttered and overwhelming, with excessive information displayed on single screens. This makes navigation unintuitive, especially for new or less tech-savvy users.
- Key functions, such as ticket booking, seat availability checking, and refunds, are buried under multiple layers of menus, leading to unnecessary complexity and also the login feature in which we need to login fresh once the app is closed.

2. Slow Navigation and Performance Issues:

- The app often exhibits slow response times and frequent outages, particularly during peak usage periods like festival seasons or IRCTC ticket booking openings (especially Tatkal) also inability to access certain features, and occasional crashes.
- Transitioning between screens and completing essential actions like payment processing feels sluggish, contributing to user frustration and a lack of clear information from IRCTC during outages, further exacerbating the issue..

3. Outdated Visual Design:

- The app's visual elements lack modern design aesthetics, including consistent colour schemes, typography, and iconography.
- Poor spacing and misaligned interactive elements, such as buttons and input fields, detract from the visual clarity and usability.

4. Error-Prone Transactions:

- Frequent transactional errors, such as failed payments or incomplete bookings, lack clear feedback or recovery mechanisms. This leaves users confused about their next steps and often results in financial losses or repeated attempts.
- The absence of robust error messages and a simplified help section exacerbates the problem.

TARGET USERS:

Primary Users:

- Regular train passengers, including urban and rural populations.
- Senior citizens who may face accessibility issues.
- Occasional travellers who rely on the app for ticket bookings.
- First-time users with minimal technical knowledge.

Stakeholders:

- Indian Railways (service provider).
- Developers maintaining the IRCTC app.
- Businesses offering ancillary services on the platform.

SCOPE OF THE PROJECT:

The primary outcome is a redesigned, intuitive, and accessible user interface for the IRCTC app that addresses usability issues, enhances user satisfaction, and supports seamless ticket booking and travel management. The redesign will include:

- A simplified homepage layout.
- Streamlined ticket booking process.
- Improved navigation structure with intuitive menus.
- Enhanced accessibility features, such as voice commands and high-contrast mode.
- Clear error messages and guidance for smoother user interaction.
- Incorporation of modern UX principles, such as responsive design and clear feedback mechanisms.
- Including a Bot to help users to ask queries and also add customer support details for any other queries also add feedback section to know about users perception of the app and any changes needed to be done for good user experience.

TECHNOLOGICAL FEASIBILITY:

Tools:

- **UI/UX Design:** Figma or Adobe.

Prototyping and Collaboration:

- Prototypes will be built using tools like Figma or Adobe XD, enabling team collaboration and feedback cycles.

Standards and Guidelines:

- **HCI Principles:** Ensure designs align with usability heuristics such as simplicity, feedback, and error prevention.
- **Accessibility Guidelines:** Follow WCAG for inclusive design, catering to differently-abled users.

CHALLENGES:

Identifying Core Issues:

- Challenge: Pinpointing specific pain points for different user demographics.
- Solution: Conduct user surveys and analyse app reviews for insights.

Balancing Modern Design with Familiarity:

- Challenge: Updating the design without alienating existing users.
- Solution: Incorporate incremental changes and maintain key familiar elements.

Ensuring Accessibility:

- Challenge: Designing for users with disabilities or limited digital literacy.
- Solution: Follow WCAG (Web Content Accessibility Guidelines) and test with diverse user groups.

Technological Limitations:

- Challenge: Adhering to the constraints of existing IRCTC backend systems.
- Solution: Develop modular designs that can integrate seamlessly with current systems.

LITERATURE SURVEY:

Source	Objective	Key Findings	Relevance to Interface Design of IRCTC
“IRCTC website Redesign and Development based on Web usability Guidelines”, 2014	Apply usability engineering principles to redesign the IRCTC portal for better user interaction.	- Identified navigation issues, unclear layouts, and cognitive overload. - Emphasized Jakob Nielsen’s usability	Provides foundational usability metrics (learnability, efficiency, error management) to

		heuristics (e.g., consistency, feedback).	guide the HCI-focused redesign.
“Assessing e-Service Quality of IRCTC Portal, an e-Government Project in India”, 2011	Evaluate IRCTC's e-service quality with a focus on user satisfaction and usability.	<ul style="list-style-type: none"> - Highlighted poor accessibility and limited interactivity. - Stressed the need for streamlined navigation and information hierarchy. 	Supports the need for designing a clear, accessible interface catering to diverse demographics.
“Redesigning the IRCTC Rail Connect App” (Medium Case Study)	Improve user experience by addressing major UX/UI pain points in the IRCTC app.	<ul style="list-style-type: none"> - Proposed consistent colour schemes and modernized UI. - Suggested reducing redundant steps in workflows and enhancing responsiveness 	Practical redesign ideas for simplifying complex booking flows and adopting modern UI standards for enhanced usability.