JK LAKSHMIPAT UNIVERSITY
Institute of Design
NAAC 'A' Grade Accredited

Reimagining the ticketing experience at L&T metro rail Hyderabad.

VOL. 1 of 2

Student : **Yashraj R Aratagi**

Sponsor : **L&T Hyderabad Metro**

Mentor : **Binil Mohan**

Consultant : **S Sundarpandian**

Programme :
Bachelor of Design (B.Des)
Interdisciplinary Design

The Evaluation Jury has recommended **Yashraj R Aratagi**

for graduation from **Institute of Design, JK LAKSHMIPAT UNIVERSITY**

with specialization in **Interdisciplinary Design**

Herewith, for the project titled "**Reimagining the ticketing experience of the L&T Metro Rail Hyderabad"**

on fulfillment of requirements by

Jury Chairman	**Devanuj Kanta Balkrishan**	
Jury Member	**Aastha Gohil**	
Jury Member	**Shaon Sengupta**	

Subsequent remarks regarding fulfillment of requirements

Dean, Institute of Design
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Acknowledgement :

L&T Hyderabad Metro Rail

I would like to express my sincere gratitude to L&T Metro Rail (Hyderabad) Limited for providing me with the opportunity to work on this project. The exposure to real-world challenges and the support from the entire team were invaluable in shaping the outcome of this work.

Mr. Binil Mohan (Academic Mentor)

I am deeply grateful to my mentor, Mr. Binil Mohan, from the university, for his constant guidance, support, and encouragement throughout this journey. His insights and feedback were instrumental in refining my approach and ensuring the quality of the work.

Mr. Sudhir Chiplunkar (Chief operating officer)

I would also like to extend my gratitude to Mr. Sudhir Chiplunkar, Chief Operations Officer, for his valuable time and inputs, which greatly enriched the project. His expertise in operations was crucial in aligning the solutions with the operational realities of the metro system.

JK Lakshmipat University, Jaipur

My heartfelt thanks to JK Laksmipat University for equipping me with the knowledge and skills necessary to undertake this project. The academic environment and resources provided by the university were essential in guiding my research and design process.

Mr.S. Sundarpandian (Asst. Manager of operations)

A special thank you to my mentor at L&T Metro Rail, Mr. S. Sundarpandian, for his mentorship and unwavering support. His practical knowledge and experience in the field provided me with a deeper understanding of the complexities involved in the metro system.

Mr. Murali Vardarajan (Chief strategy officer)

My sincere thanks to Mr. Murali Vardarajan, Chief Strategy Officer, for his strategic insights and guidance, which played a significant role in shaping the direction of the project. His vision and leadership were key in ensuring that the solutions were forward-looking and aligned with the organization’s goals.

Dept. of operations and maintenance

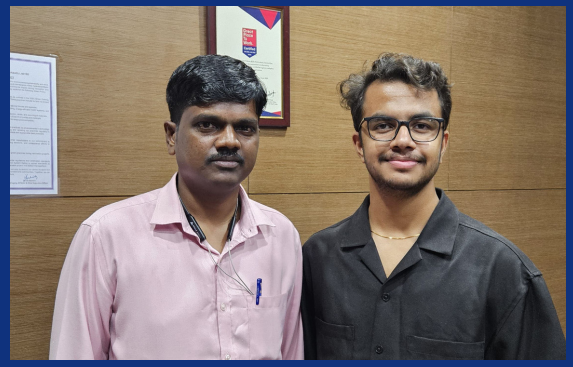
Finally, I would like to thank the entire Operations and Maintenance Department at L&T Metro Rail for their cooperation and support throughout the project. Their willingness to share their knowledge and experiences made a significant impact on the research and helped me gain a comprehensive understanding of the metro's operational dynamics.

My classmates Aparna Rajanala and Taruni Vadlamudi

I would like to extend my sincere appreciation to my classmates Aparna and Taruni, who collaborated with me throughout this journey. Although we focused on different areas of intervention within the organization, our research was closely aligned, and the exchange of ideas and support between us was invaluable.

L&T Hyderabad Metro, Nagole Depot.





Mr. Sundarpandian (Mentor), Asst. Manager Operations & Safety

Classmates Aparna Rajanala, Mentor and the Chief Strategy Officer Mr. Murali Vardarajan



Abstract :

This document represents the culmination of my journey as an interdisciplinary designer, where I have integrated elements from systems design, user experience, and communication design. The project centers on enhancing the ticketing experience at Hyderabad Metro Rail, guiding you through the research, methodologies, analysis, and proposed solutions. It is a blend of practical insights and creative problem-solving, aimed at making the metro experience more seamless and efficient. I hope you find the content as engaging and thought-provoking as it was for me to develop.

Prologue :

This document details the redesign of the ticketing experience for L&T Hyderabad Metro Rail Limited (HMRL). Through user interviews, surveys, and observational insights, the project identifies key inefficiencies and proposes a user-centered solution. The research includes literature reviews and case studies, informing a design process grounded in established theories and iterative testing.

The project aims to enhance passenger satisfaction and operational efficiency, providing critical insights and setting a new standard for urban transportation. Concluding with references, a glossary, and appendices, this work aspires to significantly improve the Hyderabad Metro ticketing system.


CAUTION
CLEARANCE
ONE NEARBY
RESTRICTED
Durgam Cheruvu
LONG LIVE THE THRILL
LONG LIVE THE THRILL
Lift
P2
DURGAM CHERUVU

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A 1353
A 1354
For Display Ads
CONTACT
LEADSPACE
7396001111
leadspace@gmail.com

Introduction

Hyderabad's metro system is a lifeline for many of us, connecting the city in a way that's fast, efficient, and modern. But despite its strengths, there's one part of the experience that often falls short: the ticketing process. We've all been there—standing in long lines, dealing with confusing ticket machines, or just feeling frustrated when things don't work as smoothly as they should.

This project started with a simple idea: what if the ticketing experience could be as seamless as the metro ride itself? To find out, I dove into the details, observing how people interact with the system, talking to fellow commuters, and gathering feedback through surveys. By looking closely at where the problems lie and why they happen, I've been able to pinpoint areas where things could be improved.

My goal is to redesign the ticketing process so it's easier to use, quicker, and more reliable. It's about making sure that every part of the metro journey—starting from getting your ticket—is as smooth and stress-free as possible.

Client

L&T Hyderabad Metro Rail is a landmark public transportation project in India, developed and operated by L&T Metro Rail (Hyderabad) Limited, a subsidiary of Larsen & Toubro. As one of the world's largest metro networks under public-private partnership (PPP), it serves as a vital artery for Hyderabad, offering a modern, efficient, and eco-friendly means of transportation. Spanning across key corridors of the city, the metro is designed to ease urban congestion, reduce travel time, and provide a reliable transit solution for millions of daily commuters. Its state-of-the-art infrastructure and commitment to excellence make it a proud symbol of Hyderabad's growth and innovation.


Begumpet Airport
Google Earth
Image © 2024 Airbus

Partner organisations

THALES

A global leader in advanced technologies, Thales provides the Hyderabad Metro with cutting-edge signaling and communication systems, ensuring safe and efficient operations.

KEOLIS

With expertise in public transport operations, Keolis ensures the metro runs smoothly and reliably, providing excellent service to passengers.

rapido

Rapido enhances last-mile connectivity by offering convenient bike taxi services, bridging the gap between metro stations and passengers' final destinations.

Tenon group

Tenon manages station and train maintenance, upholding high standards of cleanliness and safety to create a secure environment for commuters.

SAMSUNG

Samsung delivers robust automatic fare collection (AFC) systems, making the ticketing process secure for all metro passengers and the organization.

About me :

As an interdisciplinary designer, I have always been captivated by the complexities and potential of systems design, which led me to choose this project for my graduation. Over the past four years, I have developed a holistic, user-centric approach by integrating knowledge and skills from various disciplines, including communication design, interaction design, and user experience.
This project presented my first opportunity to collaborate with a professional organization on a large scale, offering invaluable experience in a nurturing environment where creativity was encouraged, and traditional constraints were minimal.

Navigating the challenges of working independently without constant supervision was a significant part of my growth. Looking ahead, I am eager to continue exploring how interdisciplinary design can contribute to creating more efficient and user-friendly systems.

Working on a project with L&T Hyderabad Metro as an interdisciplinary designer was both an enjoyable and highly educational experience. The collaboration allowed me to engage with diverse teams, blending creativity with technical expertise. This hands-on experience not only enhanced my problem-solving skills but also deepened my understanding of real-world challenges in urban transit systems. The project pushed me to grow professionally, as I navigated complex design requirements and learned to create solutions that balanced functionality with user experience. Overall, it was a rewarding journey that significantly contributed to my development as a designer.



Yashraj Ravindra Aratagi,
2020BDesIDD012.

PROJECT

Project brief :

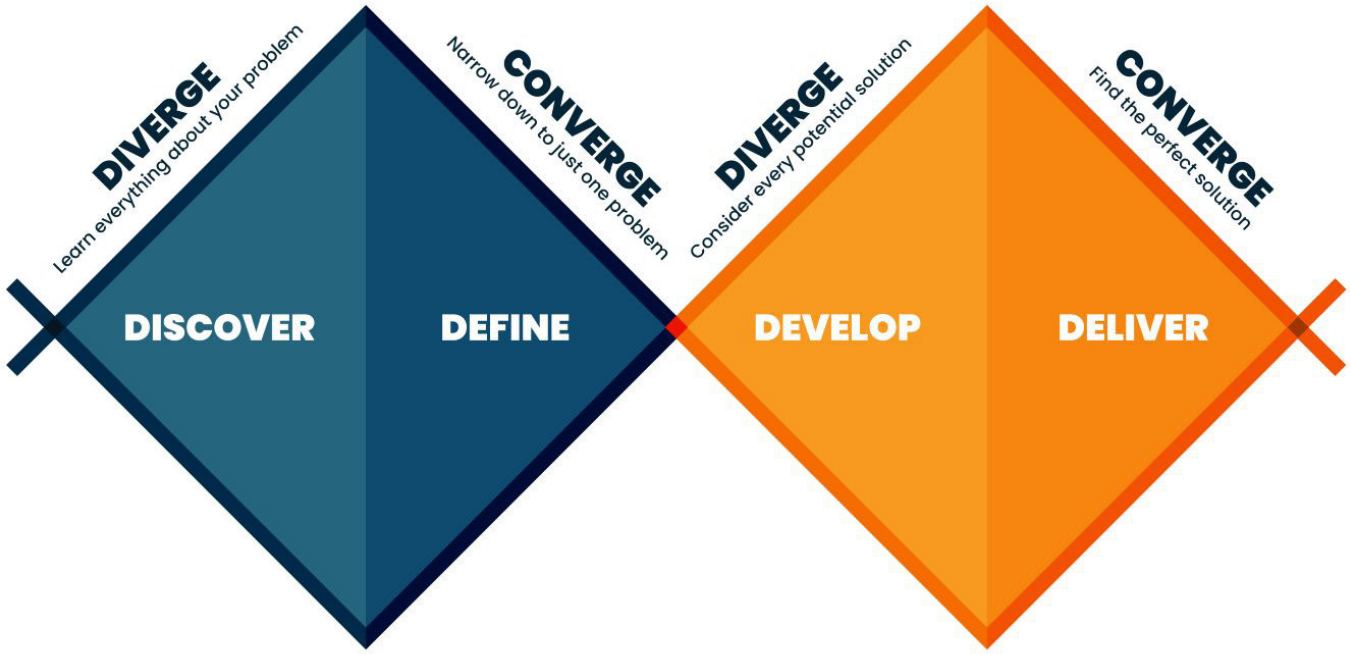
The Hyderabad Metro, operated by L&T, is a cornerstone of urban mobility in the city, connecting thousands of passengers daily. Despite its success, the current ticketing system poses challenges such as long wait times, user confusion, and occasional disruptions. This project seeks to address these issues by redesigning the ticketing experience, making it simpler, quicker, and more accessible for all commuters.




P2
RAIDURG
CAUTION
DO NOT JUMP OR CROSS THE TRACKS
syncrony

Systems thinking :

Systems design is a multidisciplinary approach that focuses on creating and optimizing complex systems by understanding and addressing the interactions among their various components. It involves analyzing the system as a whole, identifying how different elements—such as processes, technologies, and human factors—work together, and designing solutions that enhance overall efficiency and effectiveness. This approach ensures that changes are well-integrated and sustainable, addressing not just immediate issues but also long-term goals and potential impacts on the entire system. By taking a holistic view, systems design aims to create cohesive and resilient systems that meet user needs and organizational objectives.


DIVERGE
Learn everything about your problem
CONVERGE
Narrow down to just one problem
DIVERGE
Consider every potential solution
CONVERGE
Find the perfect solution
DISCOVER
DEFINE
DEVELOP
DELIVER

Overview and Context :

The Hyderabad Metro Rail Limited (HMRL) plays a crucial role in the urban transit landscape of Hyderabad, providing a modern and efficient transportation solution for the city's residents. With a network spanning approximately 72 kilometers, multiple lines, and numerous key stations, the metro system addresses significant transportation needs while incorporating advanced technology and infrastructure. Understanding the technical aspects and key stations of HMRL provides essential context for the project.

Here are the crucial stations of the system :



The Miyapur station is the northern terminus of the Red Line and a major interchange point for passengers traveling to and from northern Hyderabad.



LB Nagar is the southern terminus of the Red Line and serves as a key transit hub for the southern part of the city. It is strategically located to connect with various residential and commercial areas.



Raidurg is an important terminus station on the Blue Line and a major business district hub. It provides connectivity to the IT and financial districts of Hyderabad.



Located on the Green Line, Parade Ground station is a critical point for passengers traveling between the central and northern parts of the city. It provides access to several significant landmarks and commercial areas.



Nagole is the eastern terminus of the Blue Line and an essential station for passengers traveling to the eastern suburbs. It also connects to key residential zones and industrial areas.

Research sprint - 1

Introduction :

The ticketing experience at L&T Hyderabad Metro Rail Limited (HMRL) is a critical touchpoint for passengers, significantly impacting their overall satisfaction and efficiency of the transit system. This project aims to redesign the ticketing process to enhance user experience and operational efficiency.

To achieve this, a comprehensive research approach was undertaken, focusing on understanding the current system's challenges and identifying user needs. The research involved a combination of observational insights, user interviews, and surveys, providing a robust foundation for developing a user-centered design solution.

This section details the research objectives, methodologies, data collection techniques, and key findings, laying the groundwork for the subsequent design and development phases of the project. By addressing the identified inefficiencies and aligning the solution with passenger preferences, this research aspires to set a new benchmark for urban transportation ticketing systems.


Nagole

Objectives :

The primary objective of this research is to enhance the ticketing experience at L&T Hyderabad Metro Rail Limited (HMRL) by identifying and addressing user pain points and operational inefficiencies. Specifically, the research aims to:

- **Identify User Pain Points:** Understand the specific challenges and frustrations passengers face with the current ticketing system at L&T Hyderabad Metro.
- **Gather User Insights:** Collect qualitative and quantitative data from passengers to gain insights into their needs, preferences, and behaviors related to ticketing.
- **Evaluate Operational Efficiency:** Assess the effectiveness and efficiency of the existing ticketing processes and identify areas for improvement.
- **Benchmark Best Practices:** Review and analyze successful ticketing systems in other metro networks globally to identify best practices and innovative solutions.



Methodology :

Field Studies,
Field studies involved immersive, on-site observations at various metro stations. Researchers observed passenger behaviors, interactions with the ticketing system, and overall flow during different times of the day.

In-depth Nuanced Surveys,
Detailed and targeted surveys were administered to a representative sample of passengers. These surveys included a mix of closed-ended and open-ended questions designed to delve deeper into specific aspects of the ticketing experience.

Rudimentary Surveys,
Preliminary surveys were distributed to a broad audience of metro passengers. These surveys contained basic, straightforward questions aimed at gathering initial insights and identifying general trends.

Semi-structured Interviews,
Semi-structured interviews were conducted with a diverse group of stakeholders, including regular passengers, occasional users, and metro staff. These interviews followed a flexible format, allowing for in-depth exploration of topics based on the interviewees' responses.


అత్యవసర మార్గం | Emergency Exit
आपातकालीन निकास
India Cements
VIRAT


GENTS TOILETS
LIC
LIC

Field studies :

Objective of conducting the field studies was to identify observable pain points and operational inefficiencies within the existing ticketing process. Here are some of the insights from the field studies.

Difficulty in Journey Planning and Destination Selection: Passengers sometimes find it difficult to plan their journey or select the correct destination station.

Long Queues for Ticket Purchase: Despite various alternatives, there are still long queues for purchasing tickets.

Proximity Booking at AFC Gates: Passengers tend to book tickets just before reaching the Automated Fare Collection (AFC) gates.

Complex UPI Navigation: Navigating through UPI options, such as PhonePe, Paytm, and WhatsApp, is not easy.

Non-User-Friendly Mobile Interfaces: Mobile ticketing options have interfaces that are not user-friendly.

Issues with Multiple Tickets Display and Download: Problems with displaying multiple tickets on a device and no option to download the ticket.

Recharge Balance Delay: It takes a lot of time for the balance to reflect on the card after a recharge.

Stress from Forgetting to Recharge Card: Forgetting to recharge the card causes stress for passengers.




Crew Office

Visits :

OCC

The operational heart of the metro system, this station oversees the management and coordination of metro services, ensuring smooth and efficient operations across the network.

Parade grounds

A key metro station situated near the historic Parade Grounds, serving as a gateway to various educational institutions and military establishments in Hyderabad. It is also a interchange station at blue and green line.

MGBS

An important transportation hub connecting metro services with long-distance bus routes, facilitating easy transfers for commuters traveling to and from the city's central bus station.

Madhura Nagar

A vibrant residential and commercial area is served by this metro station, providing convenient access to local shopping, dining, and community amenities.

Raidurg

Located in a bustling business district, this station caters to professionals and shoppers, offering easy access to major commercial and retail centers.

Ameerpet

A major interchange station connecting different metro lines, it provides crucial access to the commercial and educational hubs of Ameerpet, known for its shopping and coaching centers.

Nagole

Situated at the eastern end of the metro line, this station serves as a key entry point for residents and businesses in the eastern suburbs of Hyderabad.



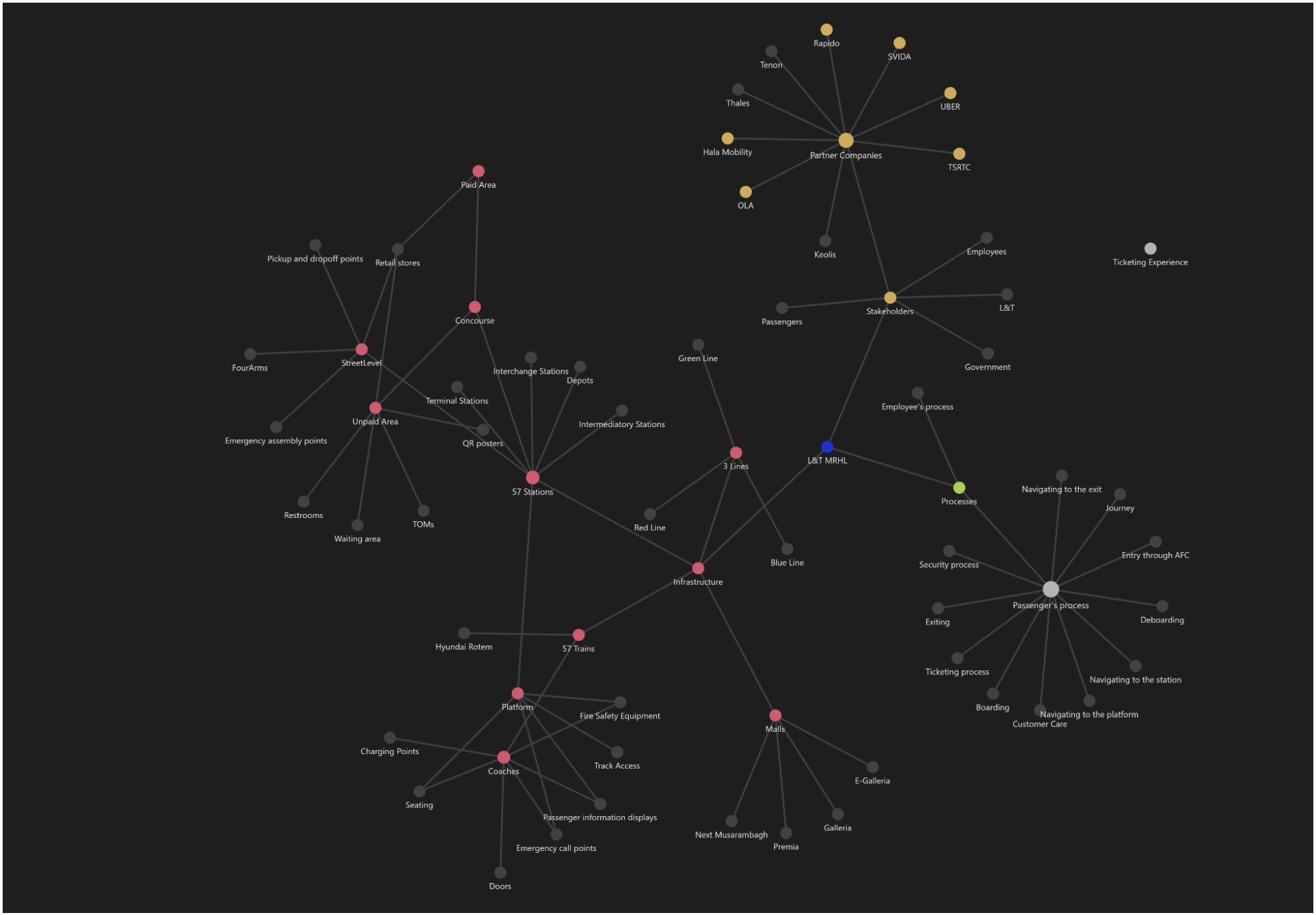



tetrasoft
PERIA DECOR


IKEA

Systems overview map :

The systems overview map for the L&T Hyderabad Metro ticketing experience is segmented into three critical components: processes, infrastructure, and stakeholders. **Processes** encompass the entire ticketing journey, from purchase to issue resolution, highlighting key touchpoints and potential inefficiencies. **Infrastructure** covers the physical and digital frameworks, including ticket vending machines and software systems, essential for smooth operations. **Stakeholders** include passengers, metro staff, management, and third-party providers, each playing a vital role in the system's functionality. This breakdown provides a clear understanding of the system, guiding the identification of leverage points for targeted improvements.


Rapido
SVIDA
Tenon
Thales
UBER
Hala Mobility
Partner Companies
TSRTC
OLA
Keolis
Employees
Ticketing Experience
Passengers
Stakeholders
L&T
Government
Paid Area
Pickup and dropoff points
Retail stores
Concourse
FourArms
StreetLevel
Interchange Stations
Depots
Terminal Stations
Unpaid Area
Intermediatory Stations
Emergency assembly points
QR posters
Restrooms
TOMs
Waiting area
57 Stations
Green Line
Employee's process
3 Lines
L&T MRHL
Red Line
Blue Line
Processes
Navigating to the exit
Journey
Infrastructure
Security process
Entry through AFC
Passenger's process
Exiting
Deboarding
Ticketing process
Navigating to the station
Boarding
Navigating to the platform
Customer Care
Hyundai Rotem
57 Trains
Platform
Fire Safety Equipment
Malls
Charging Points
Track Access
Coaches
E-Galleria
Seating
Passenger information displays
Next Musarambagh
Galleria
Premia
Emergency call points
Doors

Literature review :

Oyster London

The Oyster card is a smart travel card used for convenient and efficient ticketing across London's public transportation system. Issued by Transport for London (TfL), it provides a streamlined method for paying fares on the Tube, buses, trams, the Docklands Light Railway (DLR), London Overground, and even some National Rail services. The card can be preloaded with credit and used by simply tapping in and out at card readers, ensuring a quicker and more seamless journey compared to traditional paper tickets. The Oyster system also offers discounted fares compared to single paper tickets and automatically caps daily spending, ensuring that users pay no more than the cost of a Travelcard for unlimited journeys in a day. This integrated and user-friendly approach helps manage London's extensive transit network efficiently and provides a hassle-free experience for millions of commuters and visitors.





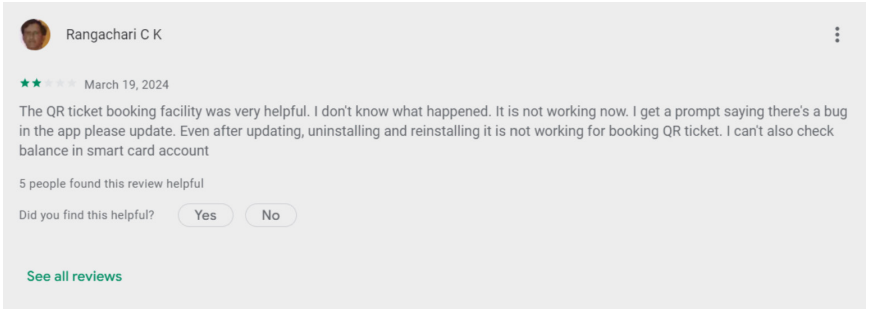
Accessibility is a critical factor influencing customer satisfaction in metro systems. Our study highlights the importance of designing stations and ticketing systems that accommodate diverse passenger needs, including those with disabilities and those using multiple transport modes. Enhanced accessibility can lead to improved satisfaction and increased usage of metro services.
(Smith et al.,2022)

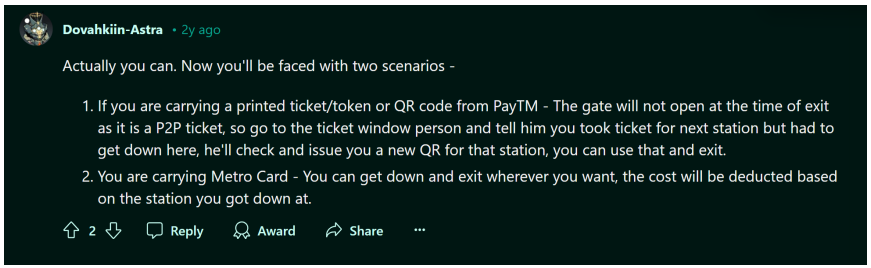
Innovations in metro rail systems often focus on enhancing the passenger experience through technological advancements and service improvements. Best practices include the integration of real-time information systems, user-friendly ticketing interfaces, and personalized service options. These innovations can address common pain points and elevate the overall travel experience for passengers.
(Johnson et al.,2023)

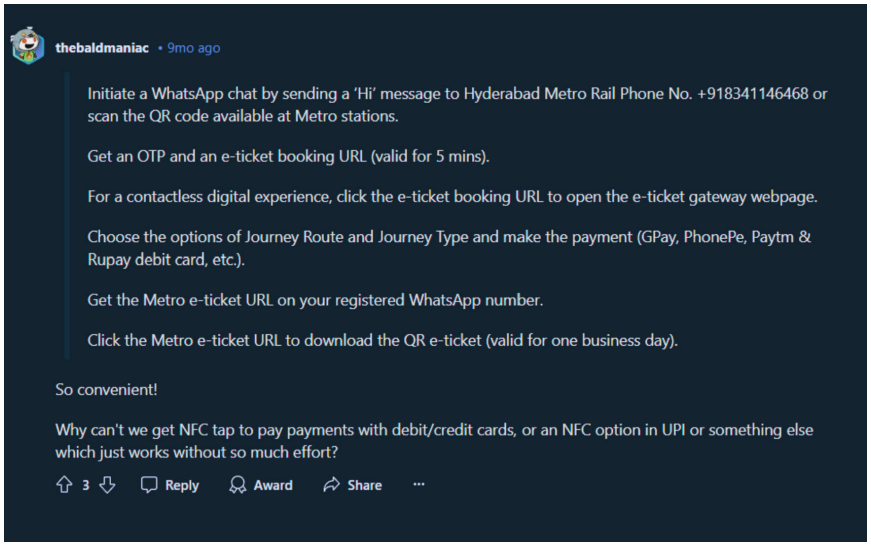
The design of ticketing systems plays a significant role in managing passenger flow in urban rail systems. Effective ticketing solutions can streamline boarding processes, reduce queuing times, and enhance overall efficiency. Our findings suggest that implementing automated and contactless ticketing solutions can significantly improve passenger throughput and satisfaction.
(Wang et al.,2021)

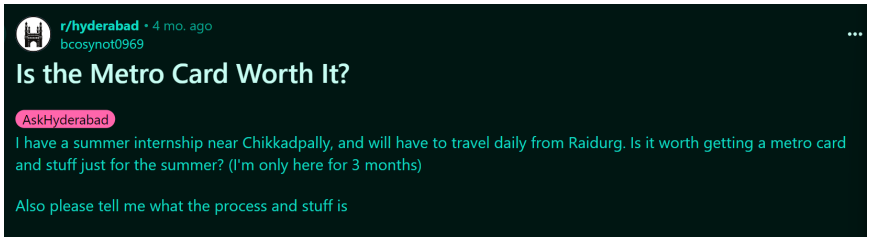
Ensuring equitable ticketing experiences across age, demographic, and personal choice is difficult but a necessary ingredient as we move toward new standards for interoperability and data sharing.
(Roberto Andreoli et al.,2020)

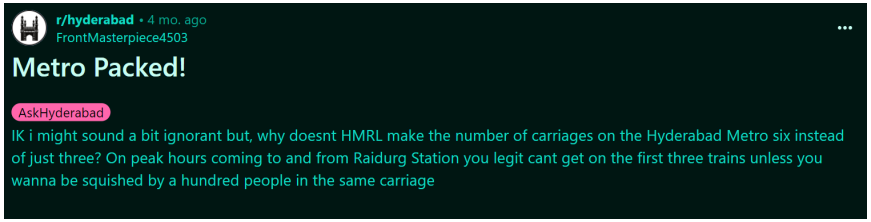
These studies collectively guided my project by emphasizing crucial aspects of metro system optimization. They underscored the importance of designing accessible and efficient ticketing systems, improving passenger flow, and integrating advanced technologies. This overall guidance helped me focus on creating a more inclusive, streamlined, and innovative ticketing experience for metro passengers.

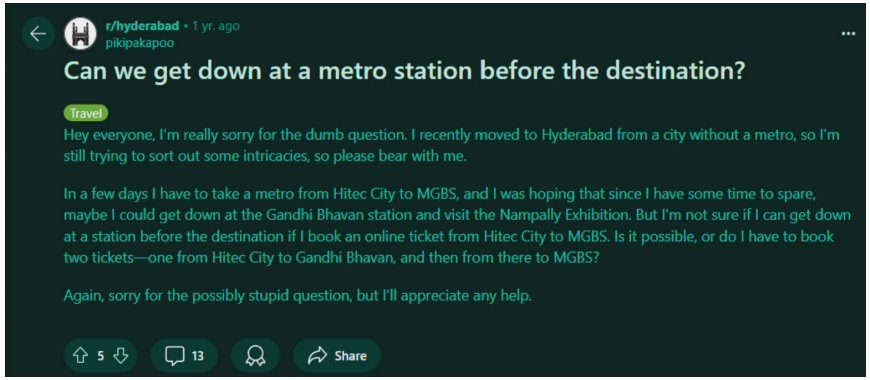

Rangachari C K
March 19, 2024
The QR ticket booking facility was very helpful. I don't know what happened. It is not working now. I get a prompt saying there's a bug in the app please update. Even after updating, uninstalling and reinstalling it is not working for booking QR ticket. I can't also check balance in smart card account
5 people found this review helpful
Did you find this helpful?
Yes
No
See all reviews


Dovahkiin-Astra • 2y ago
Actually you can. Now you'll be faced with two scenarios -
1. If you are carrying a printed ticket/token or QR code from PayTM - The gate will not open at the time of exit as it is a P2P ticket, so go to the ticket window person and tell him you took ticket for next station but had to get down here, he'll check and issue you a new QR for that station, you can use that and exit.
2. You are carrying Metro Card - You can get down and exit wherever you want, the cost will be deducted based on the station you got down at.
2
Reply
Award
Share


thebaldmaniac • 9mo ago
Initiate a WhatsApp chat by sending a 'Hi' message to Hyderabad Metro Rail Phone No. +918341146468 or scan the QR code available at Metro stations.
Get an OTP and an e-ticket booking URL (valid for 5 mins).
For a contactless digital experience, click the e-ticket booking URL to open the e-ticket gateway webpage.
Choose the options of Journey Route and Journey Type and make the payment (GPay, PhonePe, Paytm & Rupay debit card, etc.).
Get the Metro e-ticket URL on your registered WhatsApp number.
Click the Metro e-ticket URL to download the QR e-ticket (valid for one business day).
So convenient!
Why can't we get NFC tap to pay payments with debit/credit cards, or an NFC option in UPI or something else which just works without so much effort?
3
Reply
Award
Share


r/hyderabad • 4 mo. ago
bcosynot0969
Is the Metro Card Worth It?
AskHyderabad
I have a summer internship near Chikkadpally, and will have to travel daily from Raidurg. Is it worth getting a metro card and stuff just for the summer? (I'm only here for 3 months)
Also please tell me what the process and stuff is


r/hyderabad • 4 mo. ago
FrontMasterpiece4503
Metro Packed!
AskHyderabad
IK i might sound a bit ignorant but, why doesnt HMRL make the number of carriages on the Hyderabad Metro six instead of just three? On peak hours coming to and from Raidurg Station you legit cant get on the first three trains unless you wanna be squished by a hundred people in the same carriage


r/hyderabad • 1 yr. ago
pikipakapoo
Can we get down at a metro station before the destination?
Travel
Hey everyone, I'm really sorry for the dumb question. I recently moved to Hyderabad from a city without a metro, so I'm still trying to sort out some intricacies, so please bear with me.
In a few days I have to take a metro from Hitec City to MGBS, and I was hoping that since I have some time to spare, maybe I could get down at the Gandhi Bhavan station and visit the Nampally Exhibition. But I'm not sure if I can get down at a station before the destination if I book an online ticket from Hitec City to MGBS. Is it possible, or do I have to book two tickets—one from Hitec City to Gandhi Bhavan, and then from there to MGBS?
Again, sorry for the possibly stupid question, but I'll appreciate any help.
5
13
Share

Insights from social media :

Secondary research, particularly from user-generated platforms like Reddit, carries considerable importance in comprehensively understanding the intricacies of metro ticketing systems and the user experiences associated with them. Unlike traditional research methods, which may rely on structured interviews or surveys, platforms like Reddit provide a space for users to express their genuine frustrations and opinions freely. These platforms often serve as a repository of real-time, unfiltered feedback that can shed light on recurring issues that might otherwise go unnoticed.

For instance, on various subreddits, users frequently discuss their experiences with metro systems, highlighting common problems such as the unreliability of QR ticketing facilities, where users have reported instances of QR codes not scanning properly or failing to work entirely. Additionally, there is often discourse around the perceived ineffectiveness of metro cards, with many users questioning their value due to limited benefits or cumbersome processes. The overwhelming crowding at metro stations during peak hours is another topic that is frequently brought up, with users expressing their discomfort and the challenges of navigating through packed stations.

Research sprint - 2

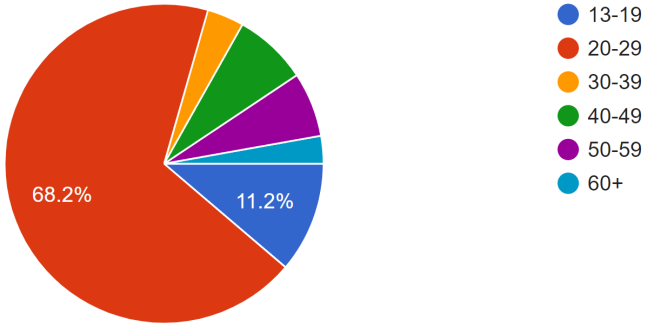
(Primary research)

Survey :

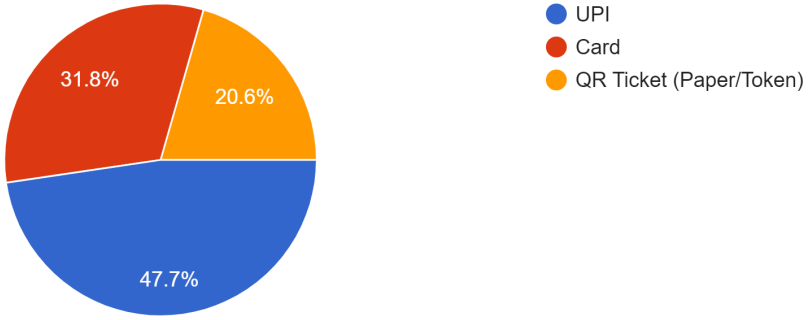
The objective of the survey was to collect baseline data and identify key areas for further investigation and to gain a granular understanding of passenger preferences, challenges, and expectations.

Here is what the questionnaire for the survey looked like,

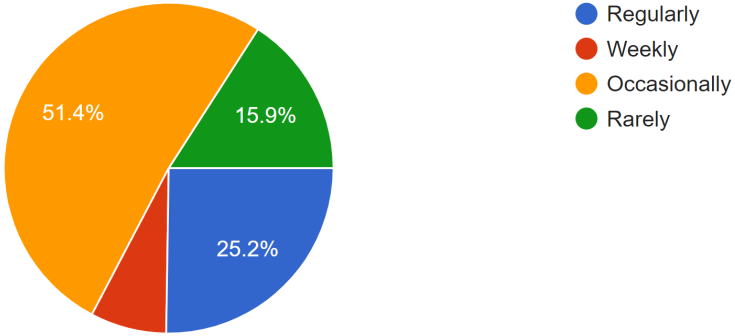
- **What is your preferred means of purchasing a ticket?**
- **On a scale of 1-5 how would you rate the digital ticketing experience?**
- **What do you not like about the ticketing experience?**
- **Where do you usually find disruptions and delays in the ticketing experience?**
- **What are some tips and tricks you would recommend to someone new?**
- **How do you find out which station to go to (Origin/destination)?**
- **How do you plan your last mile connectivity at the end of the journey?**



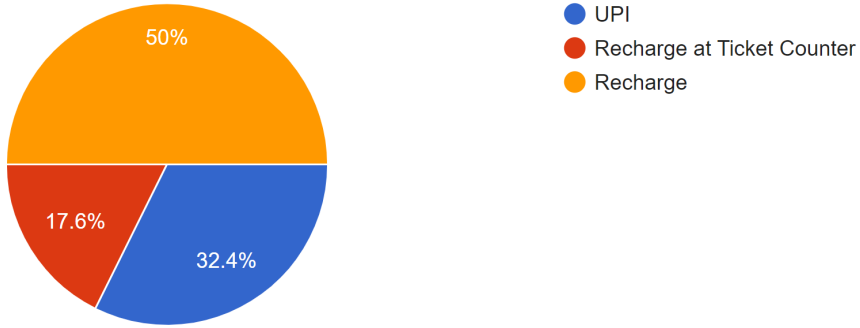
Age group of people who participated in the survey.



Fare media preference of the people that participated in the survey.



Frequency of passengers travelling that participated in the survey.



Passenger's preference to recharge the smart card.


P2

Findings :

Here are some qualitative findings from the responses of the survey.

Difficult/Slow Navigation to Metro Option in UPI App: Passengers experience difficulty and delays when trying to find the metro option within UPI apps.

Time-Consuming Ticket Scanning at AFC: Scanning tickets at the Automated Fare Collection (AFC) gates is a time-consuming process.

Non-Serviceable TVM Machines: Ticket Vending Machines (TVMs) are often out of service, causing inconvenience.

Crowding Throughout the System: There is crowding at every step of the metro system, from ticket purchase to boarding.

Group Travel Congestion: People traveling in groups pass their phones to each other to share tickets, creating congestion.

Time-Consuming Navigation Back to Ticket After Booking: After booking a ticket, navigating back to access it on the app takes a lot of time.

Slow Reflection of Online Card Payments: Payments made via card online take a long time to reflect in the system.

Limit on Number of Tickets Per UPI Account: There is a restriction on the number of tickets that can be purchased per UPI account, limiting convenience.

Semi-structured interviews :

The objective of the interviews is to obtain rich, qualitative data and nuanced perspectives on the ticketing system's strengths and weaknesses. Here is what the questionnaire for the survey looked like,

General Experience
How often do you use the Hyderabad Metro?
How would you describe your experience with the current ticketing system?

Entry Process
How do you find the process of validating your ticket and entering the metro station?
Have you had any problems at the entry gates?

Additional open ended questions
What new features or improvements would you like to see in the ticketing system?

Usability
Do you find the ticketing machines or mobile app easy to use? Why or why not?
Is there anything confusing or difficult about the ticketing system?

Ticket Purchase
What method do you usually use to buy tickets (machine, mobile app, counter)? Why?
Have you had any issues when buying tickets? Please explain.


Raidurg
Lenovo
DO NOT JUM



Findings :

Below are some of the user statements from the semi structured interviews,

“And then after I get the QR code, I take a screenshot of the QR. I don’t know why. But, yeah, even though I can access it, I still prefer taking screenshot.”

“And another reason is that one time, I didn’t take a screenshot. And I was struggling to find it in the app. I mean, I found it, but it took me, like, two to three good minutes.”

“I feel like if I want to get a card, there is, like, a process. And I feel like it will be, I don’t see much use of it because I hardly use the metro.”

“So, like, that is one thing. I try to avoid, like, sling bags, bags, anything as much as possible. So, like that, it could be one reason.”

“And also, but right now, I think there are some issues because of the Paytm and that’s why the ticket purchasing has become a little problematic.”

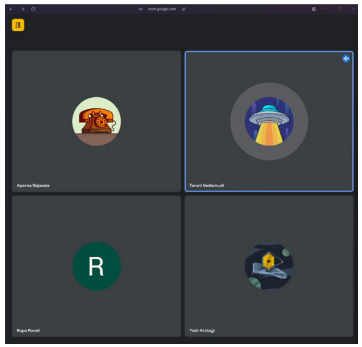
“I think, like you said, during peak hours, if I have to go take my ticket and go tap the ticket and then go through the gate, that is really, really tedious. And there was this once when I was going through like that, I lost my ticket. Somebody snatched it from me.”

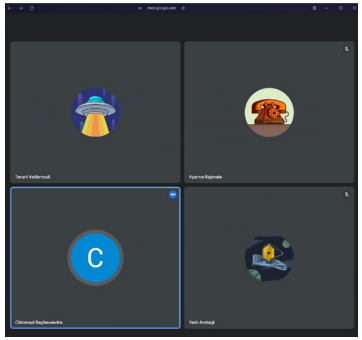
“Dude, even though I am experienced, I still manage to mess up scanning the QR ticket”

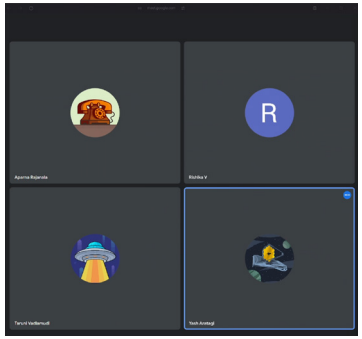
Focus Groups :

Focus groups and group interviews are qualitative research methods that involve gathering multiple participants to discuss and provide insights on specific topics. These methods are useful for understanding diverse perspectives, exploring collective experiences, and generating in-depth feedback.









Questionnaire/topics to discuss

General Experience
How often do you use the Hyderabad Metro?
Can you describe your experience with the current ticketing system?

Ticket Purchase Process
Which method do you usually use to buy tickets (machine, mobile app, counter)? Why?
Have you faced any problems while buying a ticket? Can you explain?

Usability and Accessibility
Do you find the ticketing machines or mobile app easy to use? Why or why not?
Is there anything about the ticketing system that you find confusing or difficult?

Validation and Entry Process
How is your experience with validating your ticket and entering the metro station?
Have you encountered any issues at the entry gates?

Pain Points and Improvements
What is the biggest challenge you face with the current ticketing system?
If you could change one thing about the ticketing experience, what would it be?

Implications of the data :

The findings from the user feedback and observations directly relate to the research objectives of redesigning the ticketing experience for Hyderabad Metro Rail Limited. The identified issues, such as difficulties with ticket purchase methods, usability challenges, and problems at validation and entry points, highlight the specific pain points passengers face. These insights are crucial for meeting the project's objective of optimizing the ticketing process to enhance passenger satisfaction and streamline operations. By addressing these challenges, the project aims to fulfill the hypothesis that improving the ticketing system will reduce operational disruptions and create a more seamless experience for passengers.

The implications of this data for the project are,
The insights reveal critical areas for improvement, such as simplifying ticket purchase methods, enhancing usability of the ticketing machines and mobile app, and addressing issues at entry gates. Implementing changes based on these findings can lead to a more efficient and user-friendly ticketing system, aligning with the project's goal of redesigning the ticketing experience.

Analysis

Introduction

The research conducted for improving the ticketing experience at L&T Hyderabad Metro Rail Limited (HMRL) employed a robust methodological framework to ensure comprehensive and actionable insights. The process began with the generation of broad insights through extensive data collection and analysis, which identified key areas of concern within the current ticketing system. This was followed by a detailed root cause analysis, aimed at uncovering the fundamental issues contributing to the identified challenges.By integrating these root causes, the research identified strategic leverage points and formulated targeted problem statements.

These statements framed the core issues in a way that drives innovative problem-solving and solution development. The identified pain points were systematically backed by both quantitative and qualitative data, ensuring that the proposed solutions are grounded in empirical evidence. This methodical approach provided a solid foundation for designing a more effective and user-centered ticketing system, ultimately aiming to enhance passenger satisfaction and operational efficiency.

Methodology :

Insight Generation

Data Collection: Field observations were conducted to capture real-time passenger interactions with the ticketing system. Preliminary surveys were distributed to gather broad insights, and interviews with passengers and metro staff were carried out to gain in-depth understanding.
Analysis: Initial data was reviewed to identify recurring themes and patterns. These insights were documented and categorized to inform the next steps.

Root Cause Analysis

Identification: Key issues identified from the insights were subjected to root cause analysis. For each issue, iterative questioning and Fishbone diagrams were used to drill down to the root causes.
Documentation: The root causes were documented, showing the pathways from surface symptoms to underlying problems.

Integration of Root Causes

Mapping: Root causes were mapped to visualize their interactions and interdependencies. This step involved creating causal loop diagrams to highlight the dynamic relationships.
Synthesis: The integrated map was analyzed to identify leverage points—areas where targeted interventions could yield substantial improvements.

Formulation of “How Might We” Statements

Development: Leveraging the insights from the integrated root causes, HMW statements were crafted. These statements focused on addressing the core challenges in a way that encouraged innovative solutions.
Validation: The HMW statements were reviewed and refined to ensure they were clear, actionable, and aligned with the research objectives.

Identification of Pain Points with Data Backing

Correlation: Quantitative data from surveys was analyzed using statistical methods to identify significant trends and correlations. Qualitative data from interviews and observations was coded thematically to uncover deeper insights.
Validation: The pain points identified were cross-verified with both quantitative and qualitative data to ensure they were robust and reflective of the actual passenger experience.

Preparing the data :

Before proceeding with the analysis, the data underwent a thorough cleaning process to ensure its accuracy and consistency. This involved identifying and removing any duplicate entries that could skew results, addressing missing values through appropriate imputation techniques, and standardizing data to correct inconsistencies. Quantitative data was carefully examined for outliers, with extreme values either validated or appropriately handled to prevent distortion of the analysis. Simultaneously, qualitative data was meticulously reviewed to ensure clarity and completeness, ensuring that all insights were accurately captured and ready for in-depth interpretation.

This comprehensive preparation laid a solid foundation for the subsequent analysis, ensuring the reliability and validity of the findings.

A lot of passengers have to go to the CC

Yash

QR Code not getting scanned by the machine while I awkwardly try 10 times & My phone screen getting switched off

Yash

Forgetting to recharge the card

It is difficult to plan journey or pick the destination station sometimes.

I get confused between exit gates and entry gates often

Yash

Don't know which exit to take

Yash

Survey

Observations

Interviews

Insight Generation:

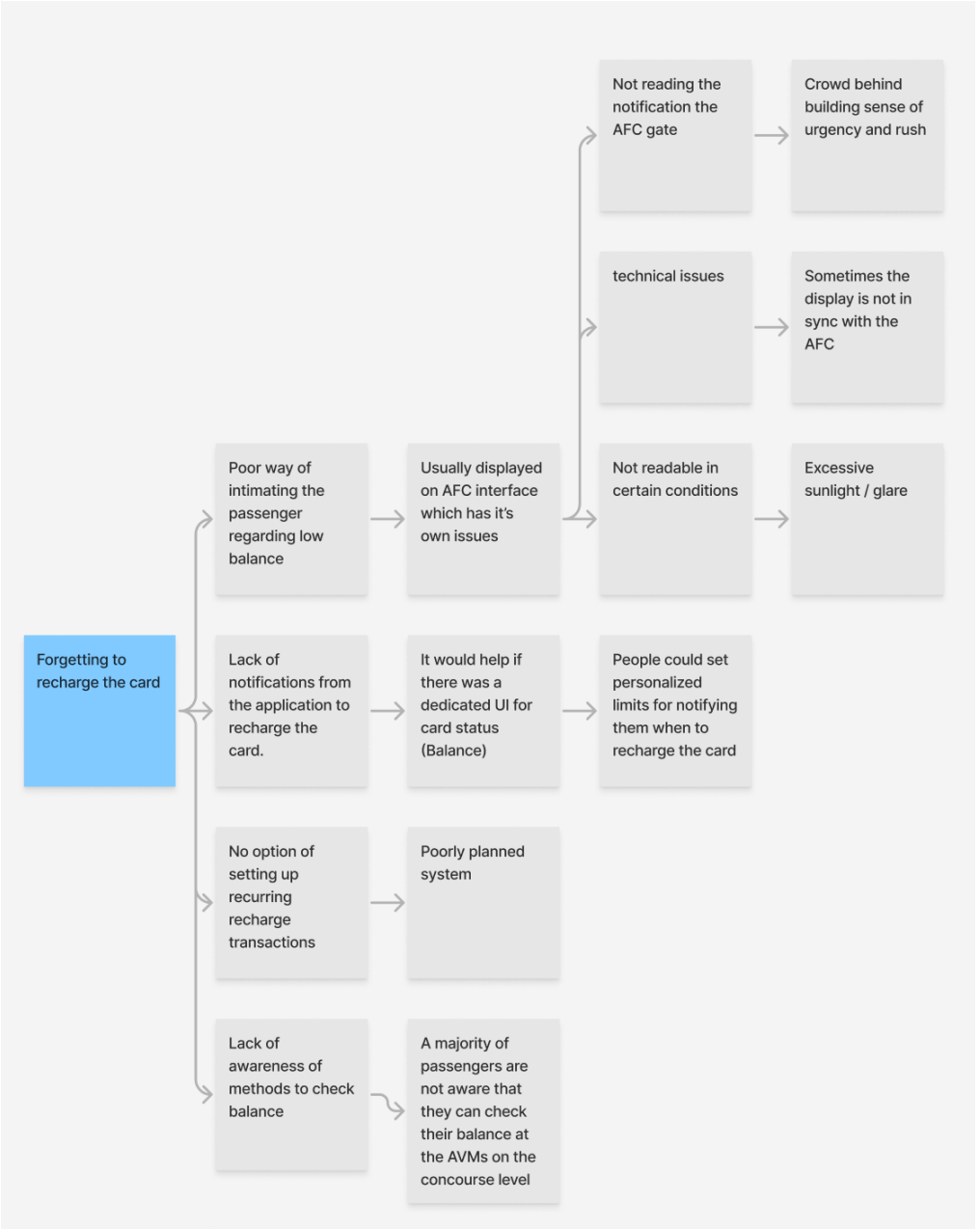
Insight generation is a pivotal phase in the research process, essential for gaining a deep and nuanced understanding of the ticketing experience. This stage is characterized by the use of diverse methodologies to collect and analyze data, ensuring a comprehensive view of the current system and its user interactions. The goal of insight generation is to uncover meaningful patterns, trends, and underlying issues that may not be immediately apparent. This involves both quantitative and qualitative approaches, each contributing distinct perspectives and enriching the overall analysis.

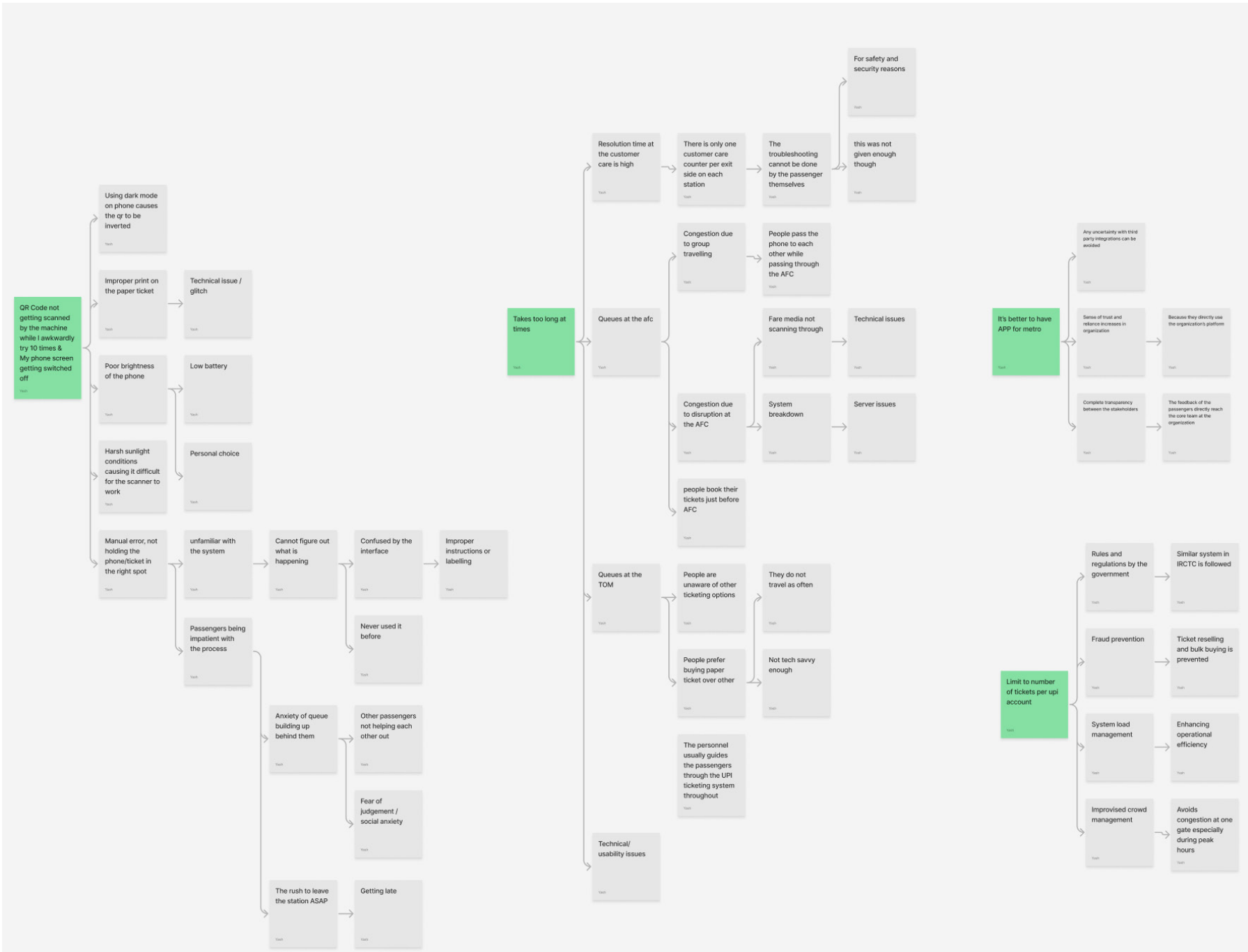

బయటకు దారి EXIT
निकास
HYDERABAD METRO RAIL

Root cause analysis :

Root cause analysis (RCA) is a systematic approach used to identify the underlying causes of problems or issues within a system. It goes beyond addressing surface-level symptoms and seeks to uncover the fundamental factors contributing to the problem. This methodology is essential for developing effective solutions and preventing recurrence.

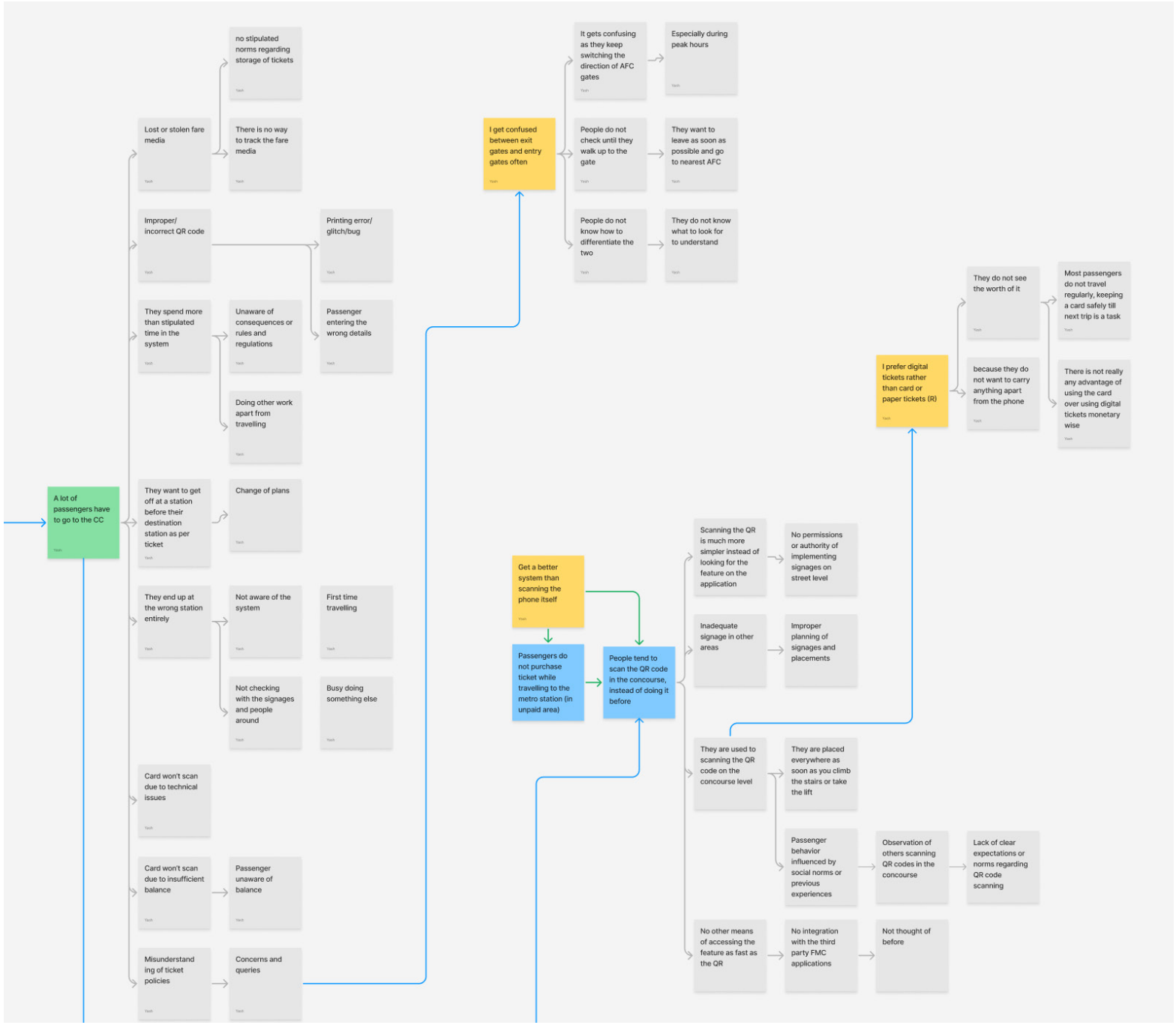
The primary objective of root cause analysis is to determine the core reasons behind observed issues or failures. By understanding these root causes, organizations can implement targeted interventions that address the problem at its source rather than merely alleviating its symptoms.




QR Code not getting scanned by the machine while I awkwardly try 10 times & My phone screen getting switched off
Using dark mode on phone causes the qr to be inverted
Improper print on the paper ticket
Technical issue / glitch
Poor brightness of the phone
Low battery
Harsh sunlight conditions causing it difficult for the scanner to work
Personal choice
Manual error, not holding the phone/ticket in the right spot
unfamiliar with the system
Cannot figure out what is happening
Confused by the interface
Improper instructions or labelling
Never used it before
Passengers being impatient with the process
Anxiety of queue building up behind them
Other passengers not helping each other out
Fear of judgement / social anxiety
The rush to leave the station ASAP
Getting late
Takes too long at times
Resolution time at the customer care is high
There is only one customer care counter per exit side on each station
The troubleshooting cannot be done by the passenger themselves
For safety and security reasons
this was not given enough though
Queues at the afc
Congestion due to group travelling
People pass the phone to each other while passing through the AFC
Congestion due to disruption at the AFC
Fare media not scanning through
Technical issues
System breakdown
Server issues
people book their tickets just before AFC
Queues at the TOM
People are unaware of other ticketing options
They do not travel as often
People prefer buying paper ticket over other
Not tech savvy enough
The personnel usually guides the passengers through the UPI ticketing system throughout
Technical/ usability issues
It's better to have APP for metro
Any uncertainty with third party integrations can be avoided
Sense of trust and reliance increases in organization
Because they directly use the organization's platform
Complete transparency between the stakeholders
The feedback of the passengers directly reach the core team at the organization
Limit to number of tickets per upi account
Rules and regulations by the government
Similar system in IRCTC is followed
Fraud prevention
Ticket reselling and bulk buying is prevented
System load management
Enhancing operational efficiency
Improvised crowd management
Avoids congestion at one gate especially during peak hours

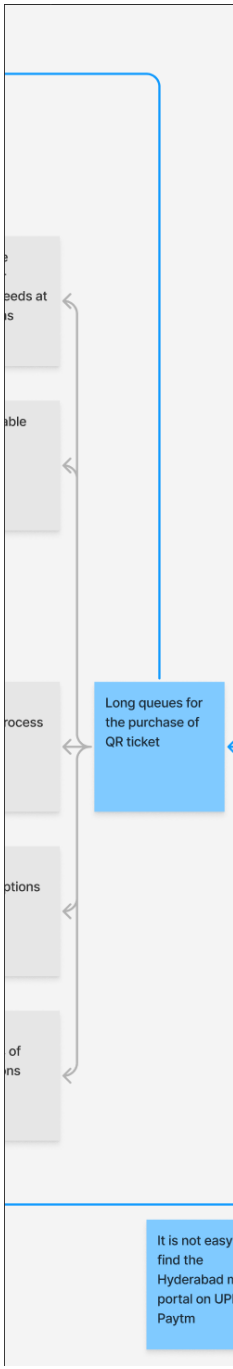
Intergration of root cause analysis :

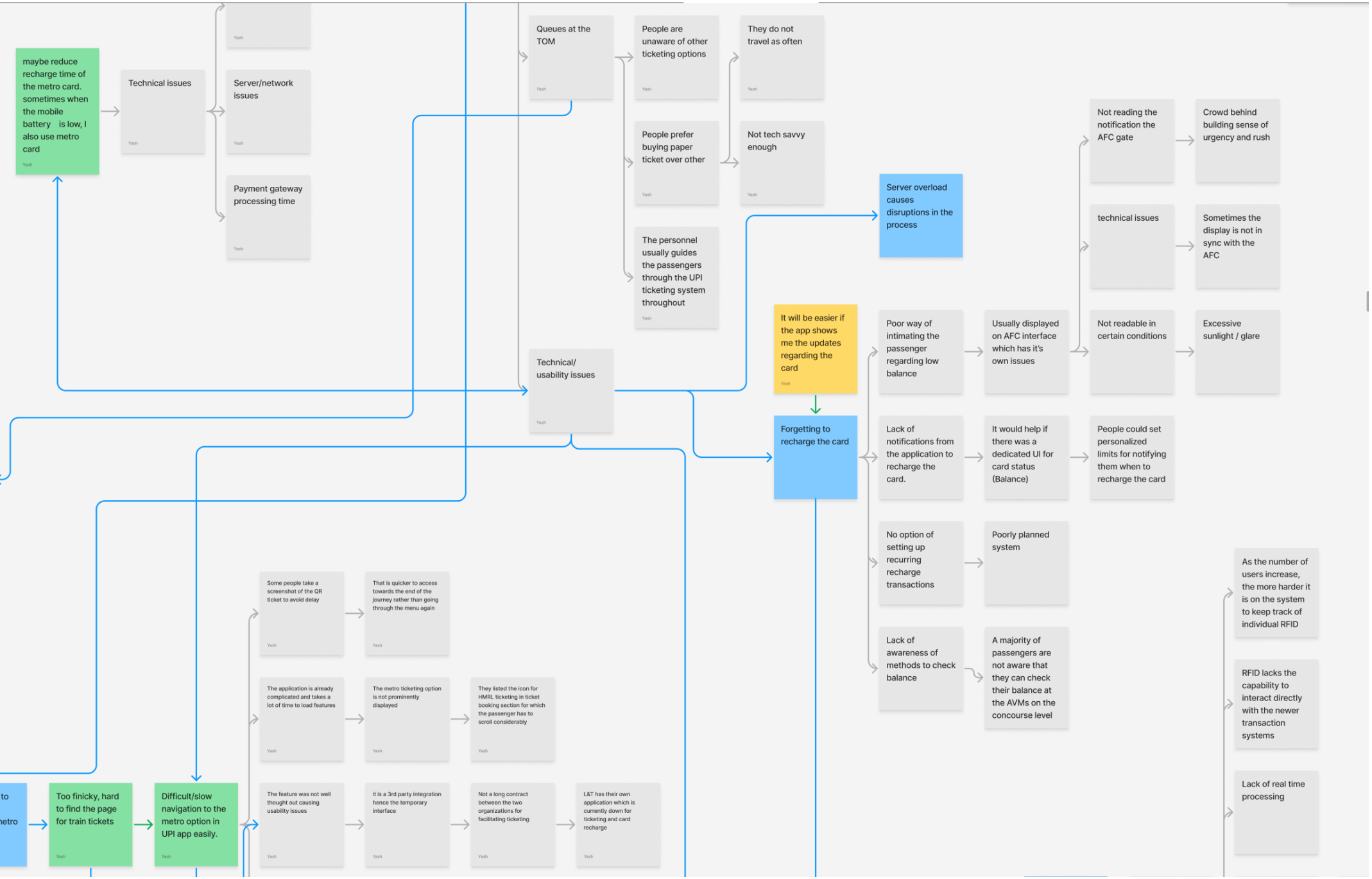
The integration of root causes is a pivotal stage in the research process, where the identified root causes are synthesized and analyzed to understand their interactions, dependencies, and collective impact on the ticketing experience at L&T Hyderabad Metro Rail Limited (HMRL). This phase is crucial for uncovering leverage points where targeted interventions can be most effective. The following sections detail the steps and techniques used to integrate these root causes, ensuring a comprehensive and strategic approach to problem-solving.


A lot of passengers have to go to the CC
Lost or stolen fare media
no stipulated norms regarding storage of tickets
There is no way to track the fare media
Improper/ incorrect QR code
Printing error/ glitch/bug
They spend more than stipulated time in the system
Unaware of consequences or rules and regulations
Passenger entering the wrong details
Doing other work apart from travelling
They want to get off at a station before their destination station as per ticket
Change of plans
They end up at the wrong station entirely
Not aware of the system
First time travelling
Not checking with the signages and people around
Busy doing something else
Card won't scan due to technical issues
Card won't scan due to insufficient balance
Passenger unaware of balance
Misunderstanding of ticket policies
Concerns and queries
I get confused between exit gates and entry gates often
It gets confusing as they keep switching the direction of AFC gates
Especially during peak hours
People do not check until they walk up to the gate
They want to leave as soon as possible and go to nearest AFC
People do not know how to differentiate the two
They do not know what to look for to understand
Get a better system than scanning the phone itself
Passengers do not purchase ticket while travelling to the metro station (in unpaid area)
People tend to scan the QR code in the concourse, instead of doing it before
Scanning the QR is much more simpler instead of looking for the feature on the application
No permissions or authority of implementing signages on street level
Inadequate signage in other areas
Improper planning of signages and placements
They are used to scanning the QR code on the concourse level
They are placed everywhere as soon as you climb the stairs or take the lift
Passenger behavior influenced by social norms or previous experiences
Observation of others scanning QR codes in the concourse
Lack of clear expectations or norms regarding QR code scanning
No other means of accessing the feature as fast as the QR
No integration with the third party FMC applications
Not thought of before
I prefer digital tickets rather than card or paper tickets (R)
They do not see the worth of it
Most passengers do not travel regularly, keeping a card safely till next trip is a task
because they do not want to carry anything apart from the phone
There is not really any advantage of using the card over using digital tickets monetary wise

Identifying leverage points :

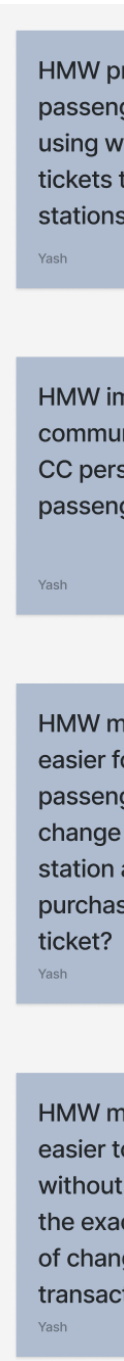
After conducting a thorough root cause analysis, identifying leverage points becomes essential in developing impactful solutions. These leverage points are specific areas within the system where targeted interventions can lead to substantial improvements. By integrating the insights gained from the analysis, we can map out where issues and opportunities intersect most densely. These areas of heavy concentration indicate where the system is most sensitive to change and where strategic actions can yield the greatest benefits. Focusing on these leverage points allows us to optimize resources and efforts, ensuring that small, well-placed interventions result in significant, positive shifts across the entire system. This approach not only addresses immediate concerns but also enhances the overall efficiency and effectiveness of the ticketing experience.




maybe reduce recharge time of the metro card. sometimes when the mobile battery is low, I also use metro card
Technical issues
Server/network issues
Payment gateway processing time
Queues at the TOM
People are unaware of other ticketing options
They do not travel as often
People prefer buying paper ticket over other
Not tech savvy enough
The personnel usually guides the passengers through the UPI ticketing system throughout
Server overload causes disruptions in the process
Technical/ usability issues
It will be easier if the app shows me the updates regarding the card
Forgetting to recharge the card
Poor way of intimating the passenger regarding low balance
Usually displayed on AFC interface which has it's own issues
Not reading the notification the AFC gate
Crowd behind building sense of urgency and rush
technical issues
Sometimes the display is not in sync with the AFC
Not readable in certain conditions
Excessive sunlight / glare
Lack of notifications from the application to recharge the card.
It would help if there was a dedicated UI for card status (Balance)
People could set personalized limits for notifying them when to recharge the card
No option of setting up recurring recharge transactions
Poorly planned system
Lack of awareness of methods to check balance
A majority of passengers are not aware that they can check their balance at the AVMs on the concourse level
As the number of users increase, the more harder it is on the system to keep track of individual RFID
RFID lacks the capability to interact directly with the newer transaction systems
Lack of real time processing
Some people take a screenshot of the QR ticket to avoid delay
That is quicker to access towards the end of the journey rather than going through the menu again
The application is already complicated and takes a lot of time to load features
The metro ticketing option is not prominently displayed
They listed the icon for HMRL ticketing in ticket booking section for which the passenger has to scroll considerably
The feature was not well thought out causing usability issues
It is a 3rd party integration hence the temporary interface
Not a long contract between the two organizations for facilitating ticketing
L&T has their own application which is currently down for ticketing and card recharge
Too finicky, hard to find the page for train tickets
Difficult/slow navigation to the metro option in UPI app easily.

How might we statements :

The formulation of “How Might We” (HMW) statements is a key step in translating the insights gained from the root cause analysis into actionable design challenges. These statements are an integral part of the design thinking process, as they help frame the problems in a way that encourages creativity and innovation. By asking “How might we?”, the research team opens the door to multiple potential solutions, rather than limiting the focus to a single path.



revent
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?

HMW make people mindful about what is on their ticket?

Yash

HMW figure out a way for passengers to dispose their tickets after use?

Yash

HMW make it easier for passenger to plan journey and OD stations?

Yash

HMW make the map more useful and easier to understand?

Yash

HMW make passengers aware of surroundings of stations?

Yash

HMW educate passengers regarding ticketing options?

Yash

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HMW enable passengers to troubleshoot their ticket disruptions?

Yash

HMW figure out a way for passengers to store their ticket?

Yash

HMW improve passenger support during peak hours?

Yash

HMW make fare media more safer and secure to carry?

Yash

HMW prevent passengers from losing fare media?

Yash

HMW ensure the right ticket is generated for the passenger?

Yash

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destination
after
sing the

HMW communicate the rules and regulations regarding ticketing effectively with passengers?

Yash

HMW help passengers differentiate between exit gates and entry gates?

Yash

HMW get rid of fare media as it is an added responsibility?

Yash

HMW improve the digital ticketing experience of a passenger?

Yash

HMW encourage people to book their tickets prior to reaching the station to avoid disruptions?

Yash

HMW make it quicker to access the ticketing portal for passengers?

Yash

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HMW make people aware about the exact amount they have to pay before purchasing the ticket?

Yash

HMW introduce a system ensuring the availability of change at CC?

Yash

HMW make it easier to enter through the afc?

Yash

HMW tackle anxiety among passengers regarding the queue buildup behind them?

Yash

HMW make the entry and exit process more efficient?

Yash

HMW tackle the sense of urgency to leave the station among passengers?

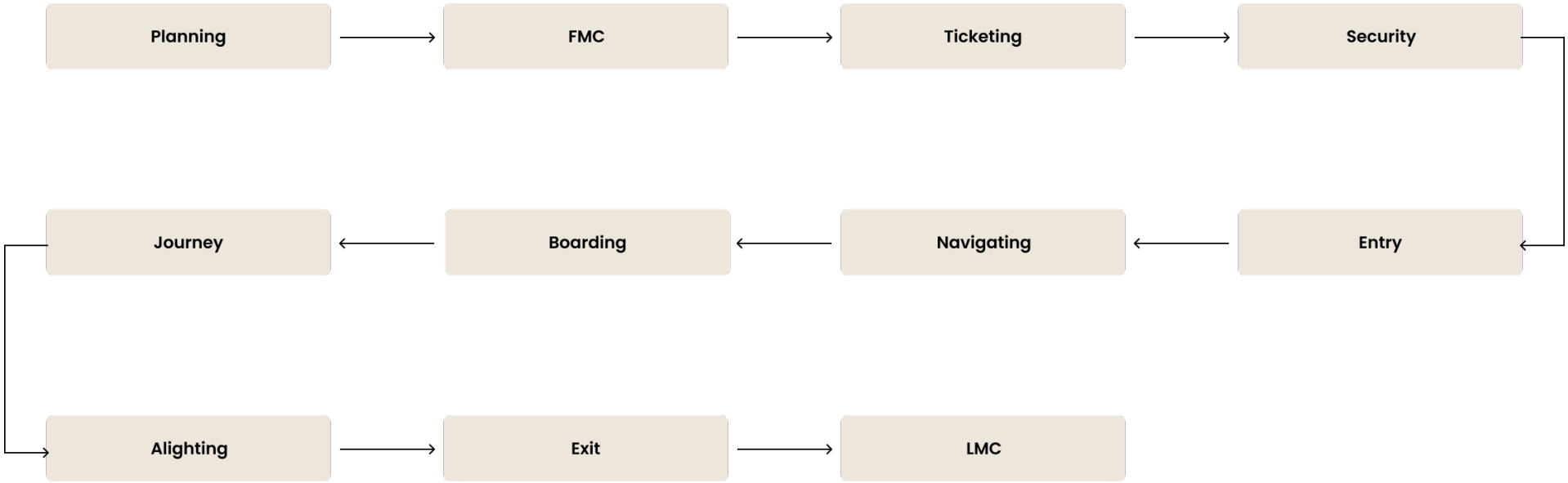
Yash

User Journey :

The user journey diagram outlines the key stages a passenger goes through when using the metro system, from planning their trip to exiting the station. It begins with Planning, where the passenger decides on their route and timing. First-Mile Connectivity (FMC) follows, covering how they reach the metro station. The Ticketing stage is crucial, involving the purchase of tickets through various methods, which directly impacts the passenger experience.

After ticketing, passengers pass through Security and proceed to the Entry stage, where they access the station using their tickets. Navigating the station comes next, guiding them to the correct platform, followed by Boarding the train. The Journey is the core travel experience, leading to Alighting at the destination station.

Finally, passengers Exit the station and use Last-Mile Connectivity (LMC) to reach their final destination. Each stage is interconnected, with the effectiveness of one affecting the next, highlighting the importance of a seamless and user-friendly metro experience.


Planning
FMC
Ticketing
Security
Entry
Navigating
Boarding
Journey
Alighting
Exit
LMC

User Persona :

A user persona is a semi-fictional representation of an ideal user based on real data and insights. It is created by gathering information about users' behaviors, goals, challenges, and motivations. User personas help designers and developers to empathize with the end-users, ensuring that the solutions they create are user-centric. By understanding the specific needs and pain points of different user groups, teams can tailor their designs and make informed decisions that resonate with the target audience, ultimately enhancing the overall user experience.

These personas are crucial in the context of redesigning the metro ticketing experience. By understanding the unique needs, behaviors, and frustrations of different types of passengers, we can design a system that addresses their specific concerns. For regular commuters like Archetype 1, the focus might be on improving efficiency and reducing bottlenecks. For occasional users like Archetype 2, the emphasis could be on enhancing safety measures and ensuring a smooth, stress-free journey. Incorporating these insights into the design process helps ensure that the solutions are not only functional but also deeply aligned with the needs of diverse user groups.

Archetype 1 (40,M)



Frequency : Regular commuter
Preferred method of ticketing : Card
Reason for travel : Work

"It gets quite difficult to pass through the AFC gates as there is a lot of chaos around. People travelling in group pass phone to each other, people new to the system cannot get to scan their fare media for validation.....
Resolution time at the customer service point is slow and makes me irritated."

Archetype 2 (21,F)



Frequency : Weekly once
Preferred method of ticketing : UPI ticketing
Reason for travel : Visiting grandmother

"I travel in the metro only on the weekends as it is less crowded and I have better chances of getting a seat.....
Once someone snatched the ticket from my hand and even though I tried to alert the security, the guy managed to escape with my ticket."

Ideation and brainstorming

Ideation :

Ideation is a critical phase in the design process, where the focus shifts from understanding the problem to generating a range of possible solutions. For a project like redesigning the ticketing experience at Hyderabad Metro Rail Limited, employing diverse ideation methods ensures that solutions are innovative, user-centric, and comprehensive. Some of the methods used are,

Mindmapping

Mind mapping is a visual technique that involves creating a diagram to represent words, ideas, tasks, or other concepts linked around a central theme. I used mind mapping to organize the insights and data gathered during the research phase, allowing for a clearer visualization of the connections between different pain points and potential solutions.

This method was particularly effective in identifying relationships between different elements of the metro ticketing system and in structuring the ideation process around these connections.

SCAMPER

SCAMPER is an acronym that stands for Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, and Reverse. It is a creative thinking technique that helps in examining an existing problem or solution from different perspectives. I applied the SCAMPER technique to the current ticketing system, questioning each component and exploring alternative ways it could function. This method led to innovative ideas, such as adapting digital payment systems or modifying the flow of passenger movement at critical touchpoints.

Crazy 8s

Crazy 8s is a rapid ideation method where participants sketch eight different ideas in eight minutes. This technique forces quick thinking and encourages creativity by pushing participants to generate a variety of concepts in a short time. I used Crazy 8s during the ideation phase to explore multiple design solutions for key aspects of the ticketing process, such as interface design for ticket vending machines and the layout of station entrances. The time constraint helped in breaking free from conventional thinking and resulted in some novel ideas that were further refined.

HMW prevent passengers from using wrong tickets to exit stations?

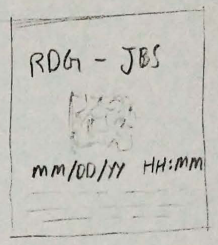
Putting multiple points to crosscheck their tickets.



- Placing it near the ticket counter.
- Before Security
- In the train?

- Could save time to check what is wrong if there is a qy at CC.

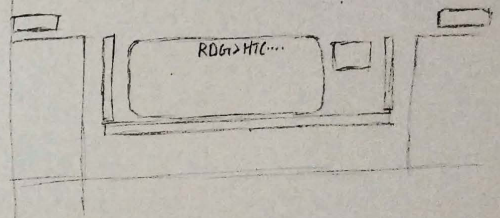
Making the important information more prominent.



- Helps to quickly check and confirm OD, time and date to avoid mistakes and disruptions

Avoiding exiting at the wrong station.

- Clear signages
- Clear announcements



- LED window display screens

Using your phone to verify your journey





- Scanning through phone
- Could be used to give out discounts
- Gamification

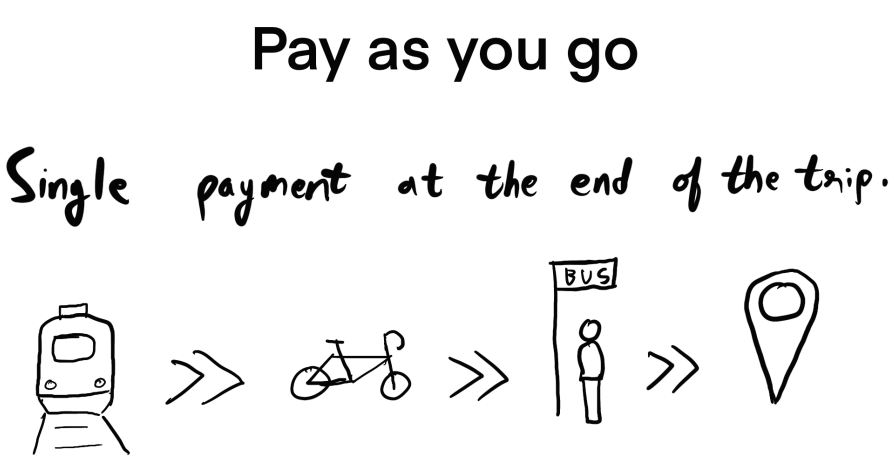
- Avoiding mistakes
- Making sure you have the right ticket

Possible reasons
- Old tickets
- Ticket swap
- Error while purchase

Radicle Ideas

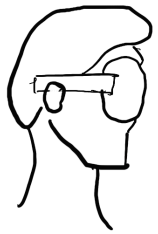
Radical ideas are essential in design and innovation because they push the boundaries of conventional thinking, leading to breakthroughs that incremental changes often can't achieve. By challenging the status quo and reimagining systems from the ground up, radical ideas encourage creativity and open up new possibilities. They force us to question existing assumptions and consider entirely new approaches, which can result in transformative solutions that significantly improve user experiences or solve complex problems in ways that were previously unimaginable.

The Pay-As-You-Go model, when integrated across all forms of transport and services, offers a seamless and flexible payment experience, allowing users to pay only for what they use. This unified system enables effortless transitions between buses, trains, metros, and even ride-sharing services, simplifying travel and making urban mobility more efficient. By reducing the need for multiple tickets or passes, this model enhances convenience and accessibility, providing a more user-friendly and cohesive transportation experience.



Navigation

Having a navigation tool for the city.

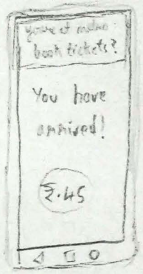


- Using MR technology
- Integrating with entire city

A second radical idea is the development of a navigation tool that leverages Mixed Reality (MR) technology, using comprehensive city-wide data to provide users with immersive, real-time insights and information about their surroundings. This tool would enhance the way people navigate urban environments by overlaying digital information onto the physical world, offering details about nearby places, services, and points of interest. Whether guiding users to a destination, highlighting historical landmarks, or providing updates on local events, this MR-based navigation system would create a more interactive and informed urban experience, transforming how people engage with their city.

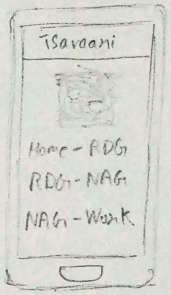
HMW encourage passengers to book ticket prior to entering the station?

Real time information and reminders: Sending pop up to book ticket from FMC provider / app.



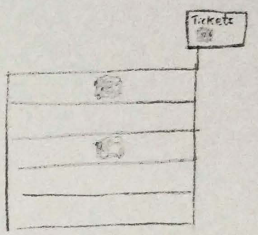
- 3rd party LMC provider partnered with HMRL.
- Could also be used to promote use of the 3rd party LMC application (offers).

FMC can include the metro fare + also looks for LMC as the destination approaches.

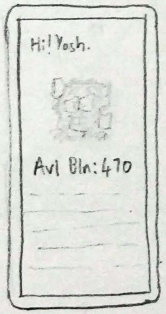


- Single QR code for the journey.

Placing QR scanners in the lift & on the staircase.



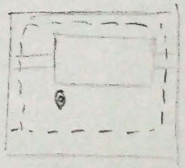
Having a single QR code per individual.

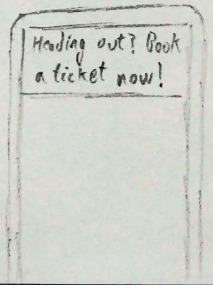


- Monthly pass
- Recharge model
- Cultivates the behavior for efficiency

Location based prompts for passengers approaching the station

- Book a ticket while on the go





Booking tickets immediately when planned, part of the bigger system.



Conclusion

The ideation phase of the project was a dynamic and iterative process that involved the use of multiple techniques to generate, evaluate, and refine ideas. By employing a diverse set of ideation methods, I was able to explore a wide range of solutions, ensuring that the final designs were not only innovative but also grounded in user needs and system requirements. These methods provided a robust framework for creative problem-solving, leading to the development of solutions that aim to significantly enhance the ticketing experience for Hyderabad Metro Rail Limited.

Validation Criteria :

The Venn diagram represents the three critical criteria for validating the effectiveness of the solutions proposed for improving the metro ticketing experience: Feasibility, Viability, and Desirability. The intersection of these three factors, marked as the “Innovation Sweet Spot,” is where successful and impactful solutions are likely to emerge.

The “Innovation Sweet Spot” is the area where all three criteria—Feasibility, Viability, and Desirability—overlap. Solutions that fall into this sweet spot are likely to be successfully implemented, financially sustainable, and widely accepted by users. This balanced approach ensures that the proposed solutions are not only innovative but also practical, economically sound, and aligned with the users’ needs, leading to a significant improvement in the overall metro ticketing experience.

Feasibility :

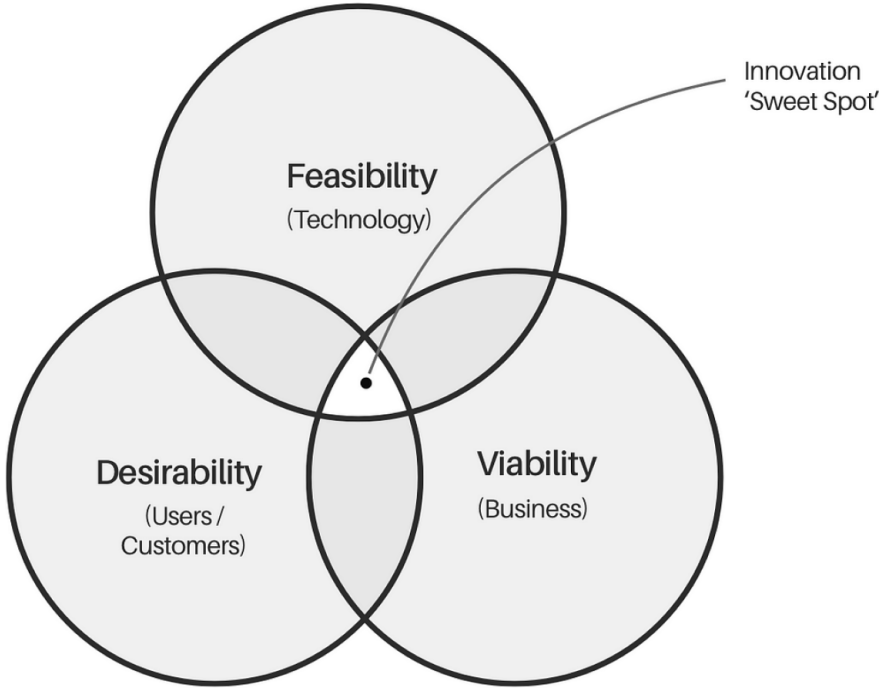
Assesses whether the solution can be practically implemented using current technology and resources. If a solution, like an improved QR ticketing system, isn't technically feasible, it can't be realized effectively.

Feasibility :

Evaluates if the solution is economically sustainable and aligns with the metro's business goals. Even if technically possible, a solution must offer a return on investment to be viable.

Feasibility :

Ensures the solution meets passenger needs and enhances their experience. A desirable solution is one that users will adopt and find beneficial, such as integrating UPI ticketing if digital payments are preferred.



Validation of ideas :

Given the range of challenges across different parts of the metro system, it's essential to develop a unified strategy to ensure that the solutions work well together. To achieve this, you would integrate the validated solutions directly into the user journey, aligning each improvement with specific stages of passenger interaction.

You would carefully map out the entire user journey, from entry to exit, to identify key touchpoints where the interventions could have the most impact. By embedding the solutions at these points, you aim to address not just individual issues but also contribute to a more seamless experience for metro users.

This approach helps create a system where each improvement supports the overall journey, making the metro experience more intuitive, efficient, and user-friendly. The goal is to ensure that the solutions work together to provide a consistent and positive experience for all passengers









Feasibility	👍	👍	👍	👍	👍	👍	👍
Viability	👍	👎	❓	👍	❓	👍	👍
Desirability	👍	👍	👍	👍	👍	👍	👍
Remarks			Doable but on application and have to rethink the swapping thing		Usecase is specific, maybe adding an option to change destination is more helpful. (Think through the technology)	It is doable.	
	⭐		⭐	⭐	⭐	⭐	⭐

Integration with user journey :

Given that the proposed solutions were developed in response to various challenges within different parts of the metro system, it was essential to create a unified approach to ensure consistency and effectiveness. The decision was made to integrate these validated solutions directly with the user journey, thereby aligning each improvement with the specific stages of passenger interaction.

This approach involved meticulously mapping out the user journey, identifying key touchpoints where interventions could have the most impact, and then strategically embedding the solutions at those points. By doing so, we ensured that the enhancements were not only addressing isolated issues but also contributing to a more cohesive and streamlined overall experience.

Please continue to volume 2