HYDERABAD METRO:
REIMAGINING COMMUTE EXPERIENCE

Elevating Everyday Travel

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

Hyderabad Metro:
Reimagining Transit Experience

VOL. 1 of 2

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Hyderabad Metro: Reimagining Commute Experience

Elevating Everyday Travel

Aparna Rajanala
Hyderabad | 2024

Note to the Readers

I appreciate your interest in this thesis, which represents the culmination of five months of dedicated research, collaboration, and analysis focused on enhancing the commuter experience within the Hyderabad Metro system.

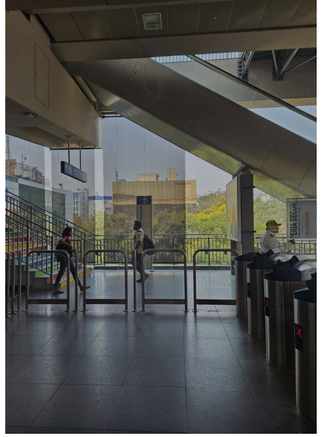
This project was conducted in close consultation with experts in the fields of public transportation, urban development, and design. Their insights and guidance were invaluable in shaping the direction and depth of this research. The work presented here reflects not only my academic efforts but also the collective wisdom and expertise of those who contributed to this endeavor.

As you read through this thesis, I encourage you to consider the broader implications of the research findings and how they may be applied or adapted to similar contexts. Public transportation is a vital component of urban infrastructure, and its improvement has the potential to significantly enhance the quality of life for countless individuals.

I welcome any feedback, thoughts, or further discussions on the topics covered here. Your perspectives are valuable and can contribute to the continuous improvement of this field.

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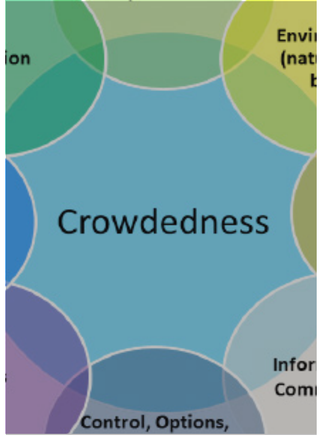
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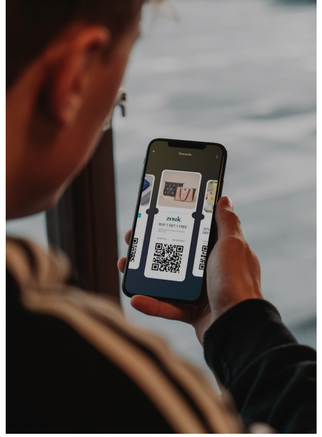
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Introduction

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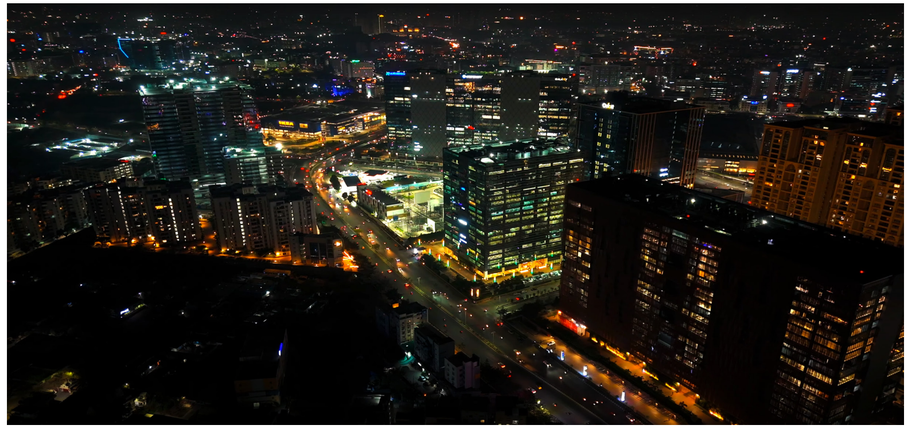


Photo by Flying Frames

Summary

The Hyderabad Metro project is dedicated to enhancing the commuting experience by implementing a range of innovative design interventions and using a comprehensive research methodology to ensure their effectiveness. The project aims to increase ridership and make the metro system more efficient and user-friendly. Key interventions include improving connectivity through partnerships with service providers like Rapido, offering rewards and incentives to frequent users, and introducing dynamic content and games to engage passengers. Additionally, the project focuses on enhancing the versatility of metro travel by allowing passengers to make stops on a single ticket, reducing reliance on personal vehicles, and promoting a more integrated and accessible urban transit network.

To develop these interventions, a thorough research process was conducted, including ethnographic studies at various metro stations, passenger surveys, and user interviews. The project also involved creating 'How Might We' questions to explore different perspectives and generate creative ideas. The methods used were both qualitative and quantitative, ensuring a deep understanding of commuter needs and behaviors. Through these efforts, the project aims to create a more sustainable, enjoyable, and widely-used metro system, contributing to urban development and community building in Hyderabad.



Motivation

This project is driven by the need to address and mitigate crowding issues within the Hyderabad Metro system through thoughtful design interventions. As urban transit systems like the Hyderabad Metro experience growing passenger volumes, effective management of crowding becomes critical for maintaining a positive commuter experience.

This research focuses on developing and evaluating design solutions that can alleviate congestion and enhance the overall efficiency of the metro system.

Viewing these design interventions through systemic lenses allows for a comprehensive approach to understanding and addressing the complexities of crowding. By examining how various elements of the transit system interact and influence passenger flow, this project aims to propose integrated solutions that not only tackle immediate crowding issues but also improve the overall functionality and user experience of the metro system. The goal is to create a more streamlined and enjoyable transit environment, contributing to the long-term sustainability and effectiveness of the Hyderabad Metro.

“A developed country is not a place where the poor have cars. It’s where the rich use public transportation.”
- Gustavo Petro

Context

Hyderabad: The City of Pearls

Situated in the central region of Telangana state, Hyderabad is the capital city which is one the fastest growing metropolitan cities of India. It is stretched over 650 sq.km, with the population of 1.1 crore approximately. The topography of Hyderabad is rocky and hilly. It possesses clusters of hills in and around the city which are obliterated for urbanization. Around 2000s, the city dynamics have shifted from southern and eastern parts to the north-western part due to initiation of IT sector and pharma hub.

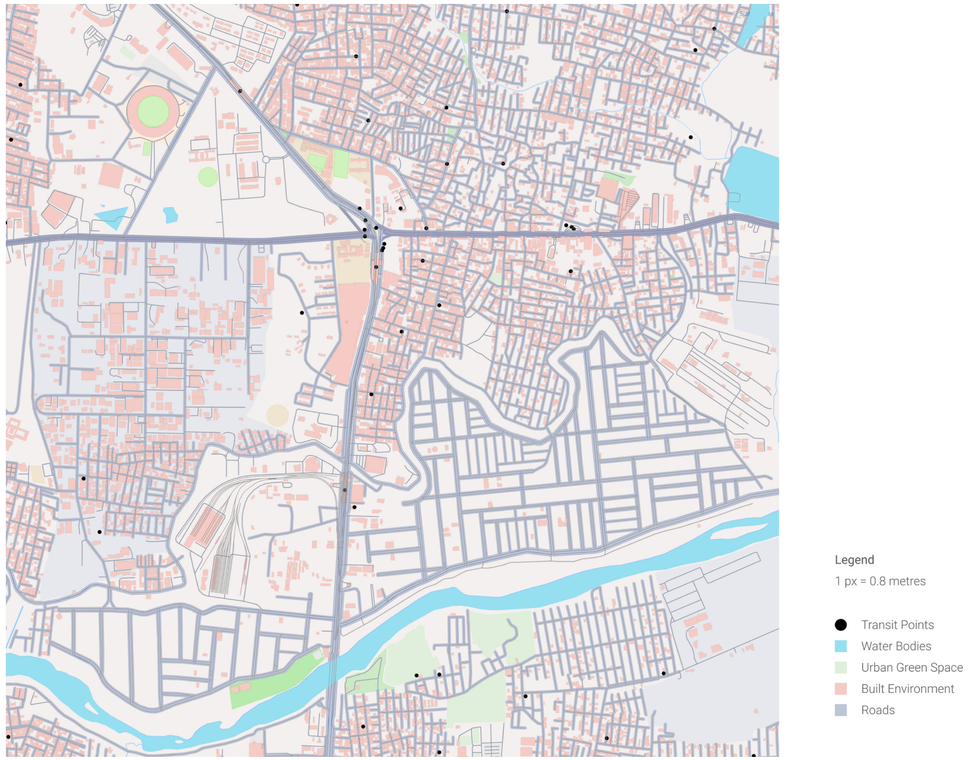
Since the commercialization, the population of Hyderabad is growing drastically in search of employment opportunities. This has led to increase of need to improve the resources to cater to the high population density, especially at and around the commercial zones.



Urban Structure and Transit Systems in Hyderabad

Hyderabad's urban structure is characterized by a complex blend of multiple spatial models rather than a single or dual, cohesive frameworks like other cities around the world. The city's layout incorporates elements from various structural methods, including decentralized development zones and mixed-use areas. Key features include the historic core around the Old City, expanding IT and business districts like Hi-Tech City and Gachibowli, and mixed-use developments in areas such as Banjara Hills. This diverse urban design contributes to an uneven distribution of transit points, affecting the efficiency and reach of the public transportation system.

Areas with sparse transit coverage face accessibility challenges, resulting in longer commutes and higher dependence on personal vehicles. The fragmentation in transit infrastructure exacerbates congestion in well-served regions and hampers equitable access across the city, making it difficult to create a unified and effective transit network that serves all residents efficiently.



Client Organization

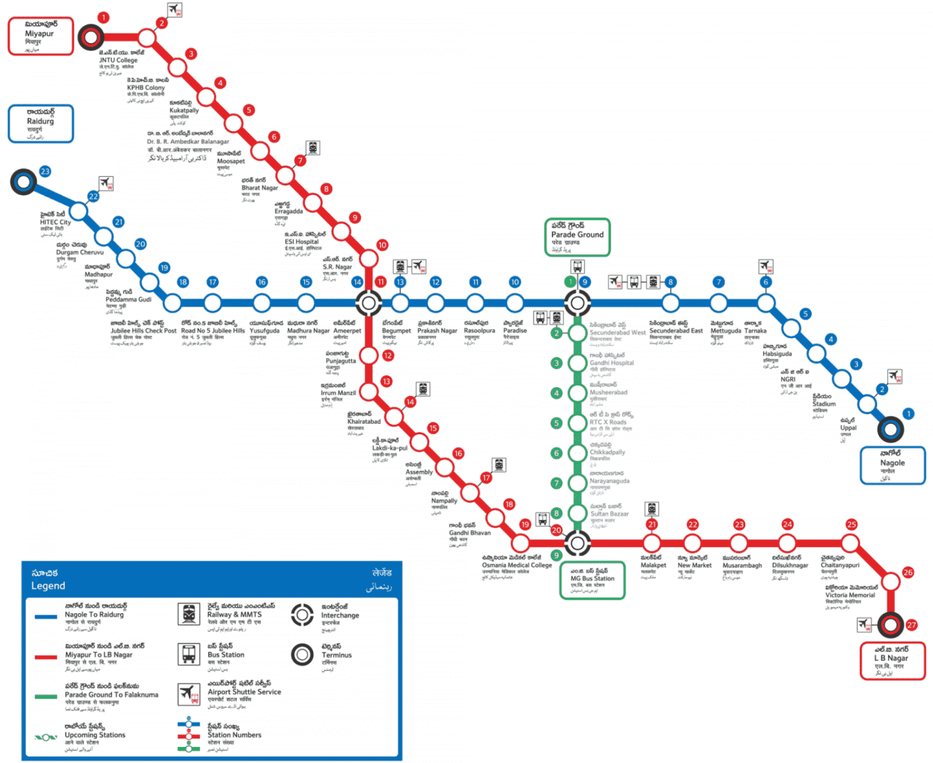
Larsen and Toubro Limited was granted the Hyderabad Metro Rail Project by the Government of Andhra Pradesh at that time. To carry out the project, L&T established a Special Purpose Vehicle (SPV) called L&T Metro Rail (Hyderabad) Limited on a Design, Build, Finance, Operate, and Transfer (DBFOT) basis. The Company entered into a Concession Agreement with the Government of Andhra Pradesh on September 4, 2010, and achieved financial closure for the project on March 1, 2011, within an impressive six months.

A consortium of 10 banks, led by the State Bank of India, approved the entire debt funding required for the project. This represents the largest financial arrangement for a non-power infrastructure Public Private Partnership (PPP) project in India.

In order to operate and maintain the metro, L&T has partnered with companies such as Keolis, Thales, Samsung, Hyundai Rotem and other such companies.

Hyderabad Metro

The Phase-1 of Hyderabad Metro covering a distance of 69.2 km and comprising Corridor 1 (Red Line) with 27 stations (29-kilometre), Corridor 2 (Green Line) with 15 stations (9-kilometre), and Corridor 3 (Blue Line) with 23 stations (27-kilometre), has a total of 57 stations across all three corridors. The 30-kilometer stretch from Miyapur to Nagole was inaugurated on November 28, 2017. The Phase-1 of the Hyderabad metro was completely in use by 07 February, 2020. The three corridors are constructed in the form of a triangle with three intersection stations – Ameerpet, MGBS and JBS Parade grounds and terminal stations Raidurg, Nagole, LB Nagar, Miyapur.



Mobility Patterns

Mobility patterns are quite dynamic in Hyderabad, as it is a city with a diverse social fabric. It is deeply influenced by its historical division between the Old City and the New City, reflecting the contrast between traditional and modern lifestyles.

The Old City, with its narrow streets and historic charm, relies more on traditional modes like auto-rickshaws, while the New City, characterized by its IT hubs and modern infrastructure, sees a higher use of private vehicles and public transport. The Hyderabad Metro Rail, launched in 2017, symbolizes the city's rapid urbanization and is favored by the younger, tech-savvy population.

However, many residents still rely on private vehicles, particularly in the middle and upper-middle classes, where car ownership is seen as a status symbol. Public buses serve a large portion of the working class, though they are often less reliable due to traffic congestion and delays.

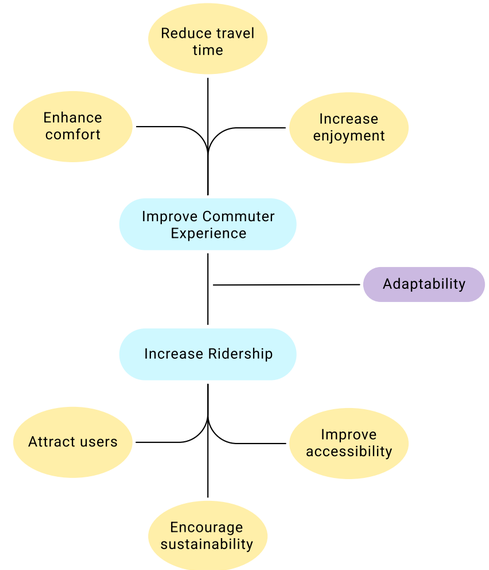
As Hyderabad continues to grow, the challenges of traffic congestion and socioeconomic disparities in transportation choices highlight the need for improved public transport and infrastructure.





Objectives

The Hyderabad Metro project aims to achieve several key objectives. First, it seeks to improve the overall experience of commuters by implementing design interventions and strategies that enhance comfort, reduce travel time, and make the journey more enjoyable. Second, the project is focused on increasing metro ridership by making the metro a more attractive and convenient option for a broader segment of the population, thereby encouraging a shift away from personal vehicles. Lastly, the initiative aims to develop design solutions that address current challenges while also being adaptable to other transit systems or urban mobility scenarios, ensuring that the benefits extend beyond just the Hyderabad Metro.



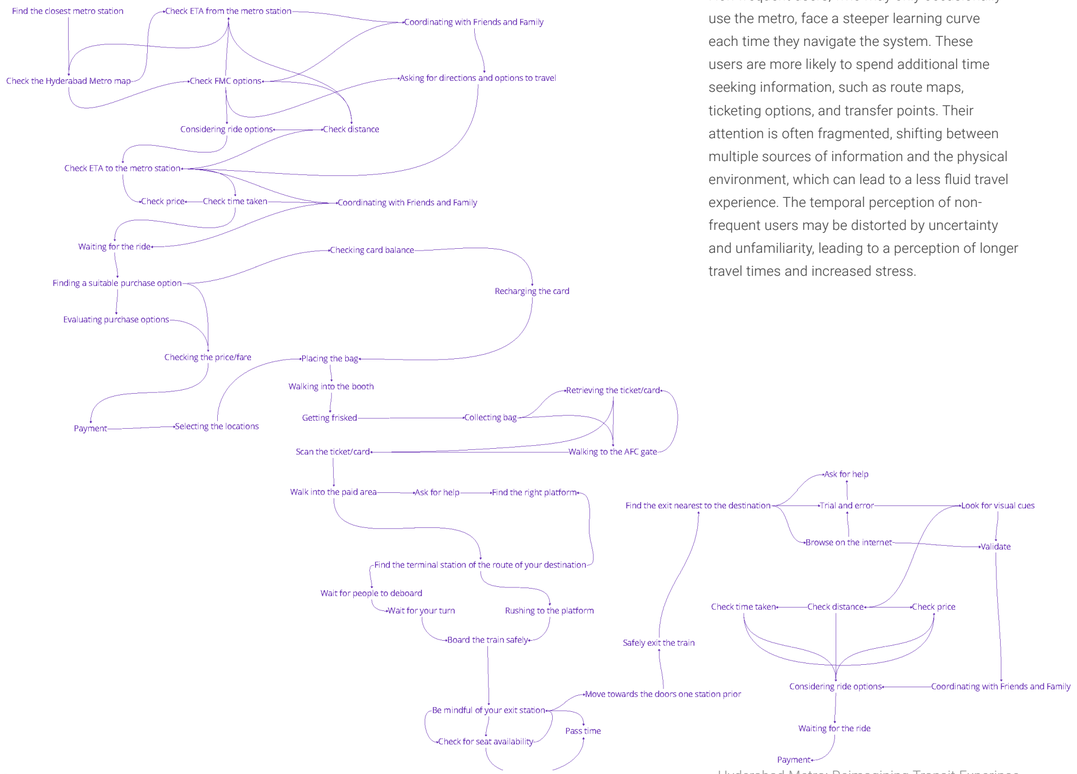
Hypothesis

Urban transportation systems, particularly metro networks, play a critical role in shaping the daily routines of city dwellers. These systems cater to a diverse range of users, each with distinct behaviors and preferences. Among them, frequent commuters and non-frequent users represent two broad categories whose interactions with the metro system differ significantly.

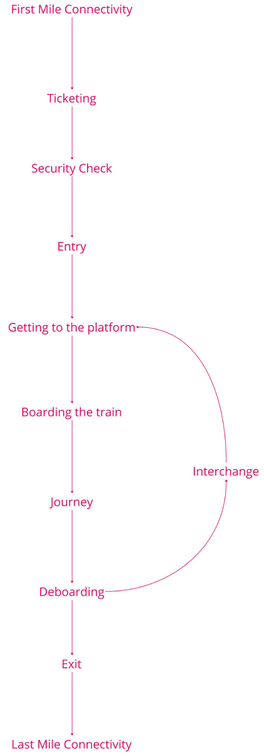
> ***Commuters have different user flows compared to non-frequent users, particularly in their attention, temporal perception, information relay, and use of time.***

The differences in user flows between these two groups—how they move through the metro system and use their time—are shaped by their distinct levels of familiarity and confidence. Frequent commuters develop routines that minimize the need for active decision-making, while non-frequent users engage in a more exploratory and often more time-consuming process. This divergence highlights the need for metro systems to cater to these varying user experiences, ensuring that both frequent and non-frequent users can navigate the system efficiently and comfortably.

Understanding these differences is crucial for optimizing metro operations and enhancing passenger satisfaction. By analyzing how attention, temporal perception, information relay, and use of time vary between frequent and non-frequent users, transportation planners can design interventions that improve the overall commuter experience, making metro travel more accessible and user-friendly for all passengers.



Non-frequent users, who may only occasionally use the metro, face a steeper learning curve each time they navigate the system. These users are more likely to spend additional time seeking information, such as route maps, ticketing options, and transfer points. Their attention is often fragmented, shifting between multiple sources of information and the physical environment, which can lead to a less fluid travel experience. The temporal perception of non-frequent users may be distorted by uncertainty and unfamiliarity, leading to a perception of longer travel times and increased stress.



In contrast, commuters, who use the metro as part of their daily routine, have typically optimized their journeys over time. They are familiar with station layouts, train schedules, and the nuances of navigating crowds. This familiarity allows them to streamline their travel experience, reducing cognitive load and enabling them to focus on other activities, such as work or leisure, during their commute. Their temporal perception—how they experience and manage time—is often aligned with the metro's operational rhythms, leading to a more predictable and efficient use of time.

2

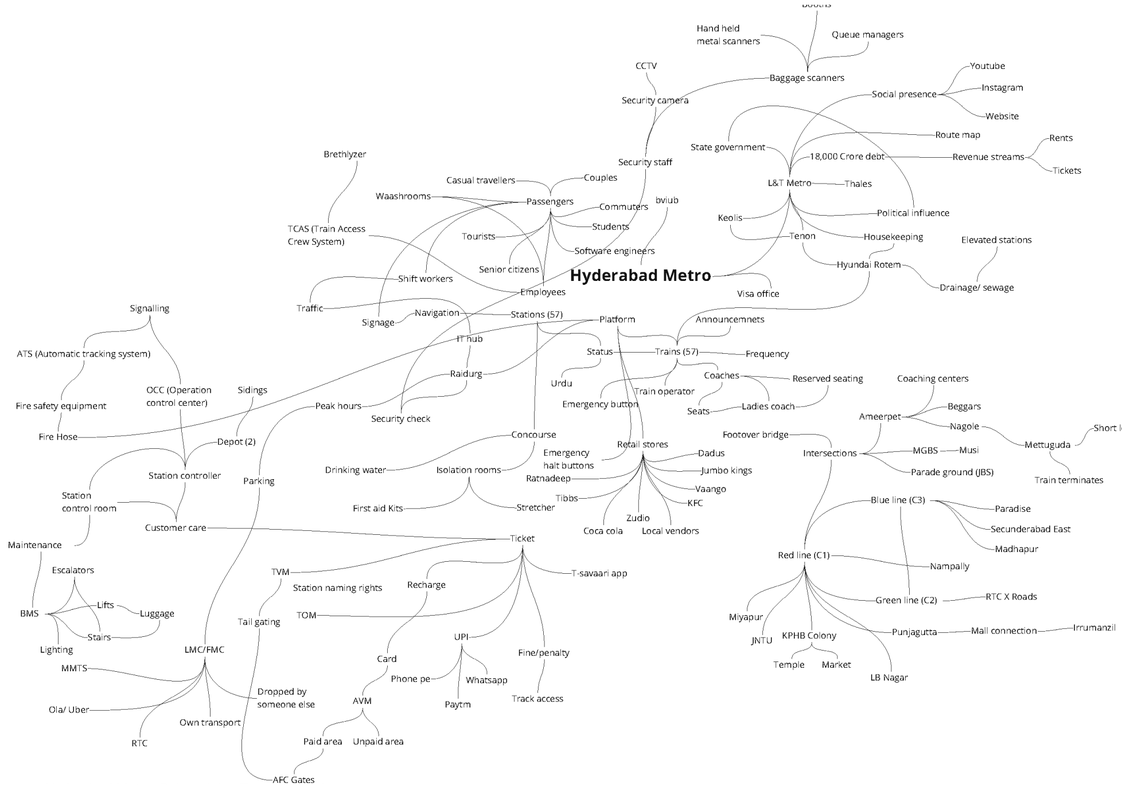
Research

Systems Map
Method
Research Cycle 1
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Systems Map

The giga map developed for this project consists of various systemic entities and key stakeholders within the Hyderabad Metro system, illustrating their interconnectedness and interactions. By depicting these relationships, the map simplifies the understanding of the complex dynamics at play within the metro system, making it easier to identify and address underlying issues.

This interconnected view allows for a more comprehensive approach to problem-solving, ensuring that interventions are not only targeted but also effective in tackling the multiple challenges faced by the metro system. The systems map thus becomes an essential tool in guiding the design and implementation of solutions that improve the overall commuter experience.



Methods

For the Hyderabad metro design project, employing a diverse set of research methods is essential to gaining a comprehensive understanding of user experiences and identifying areas for improvement.

Ethnographic Research

Ethnographic research offers a valuable approach by immersing researchers in the metro environment. This method allows for the observation of real-world interactions, capturing the cultural and contextual factors that influence how frequent and non-frequent users engage with the system. By understanding users' behaviors and challenges in their natural setting, researchers can identify nuanced issues that might not be apparent through other methods.

User Interviews

User interviews complement this by providing detailed insights into individual experiences. Through one-on-one conversations, researchers can explore users' specific needs, preferences, and pain points. This method helps uncover personal stories and subjective experiences that are crucial for understanding the diverse needs of metro passengers. It also allows for a deep dive into how users perceive and interact with different aspects of the metro system.

Focus Group Discussions

Focus group discussions further enhance the understanding of user experiences by bringing together small groups of participants to discuss their opinions and experiences. This interactive method encourages the exchange of ideas and feedback, revealing common themes and divergent views among users. Focus groups are particularly useful for exploring collective attitudes toward proposed design changes and for generating ideas based on group consensus.

Contextual Inquiry

Contextual inquiry combines observation with interviews in the users' actual environment, providing a real-time view of how users interact with the metro system. This method captures the immediate challenges and decision-making processes of users, offering actionable insights into their journey. By witnessing users in the context of their commutes, specific pain points and opportunities are identified for design improvements that are relevant to users' needs.

Journey Mapping

Journey mapping visualizes the user experience across different stages of interaction with the metro system. This method highlights critical touchpoints, emotional highs and lows, and areas where users encounter difficulties. Journey mapping helps to map out the entire user experience, from entering the metro system to exiting, and identifies key moments where design changes could enhance overall satisfaction and efficiency.

Focus Group Discussions

Competitive analysis involves studying similar metro systems in other cities to identify best practices and successful design elements. By benchmarking against other systems, insights are derived into innovative solutions and operational strategies that could be adapted for Hyderabad metro.

Research Cycle 1

In the first round of research for the Hyderabad Metro project, the focus was on gathering observational and conversational data to gain a foundational understanding of commuter behaviors, attitudes, and experiences. This initial cycle was designed to be exploratory, allowing for a broad capture of insights that would inform subsequent research phases.

Enthnographic Research

To thoroughly understand the complexities of crowd dynamics and commuter behavior within the Hyderabad Metro system, an intensive two-week ethnographic study was conducted across several key stations: Raidurg, Ameerpet, Punjagutta, Parade Ground, MGBS, Nampally, Nagole, Madhura Nagar, Hitech City, Miyapur, and Jubilee Check Post. This research involved immersion in these environments during both peak and non-peak hours, allowing for a comprehensive observation of the variations in commuter behavior, crowd patterns, and overall attitudes across different times of day.

Throughout this period, a range of documentation methods were employed to capture the nuances of the commuter experience. Detailed field notes were taken to record real-time observations, documenting the flow of people, interactions, and the challenges faced during congestion. Additionally, audio-visual data was collected to document the spatial configurations, movement patterns, and the atmosphere of each station, providing a rich, multidimensional perspective on the factors influencing crowd behavior.









This extensive dataset was then carefully analyzed, with the observations being broken down into specific themes and patterns.

The analysis revealed critical insights into how different factors, such as time of day, station layout, and passenger demographics, impact crowding and commuter satisfaction.

These insights have directly informed the design interventions proposed in this research process that was consucted for 2 weeks. comfort of the Hyderabad Metro system.

These interventions are aimed at addressing the identified challenges and improving the overall efficiency, safety, and comfort of the Hyderabad Metro system.

User Survey

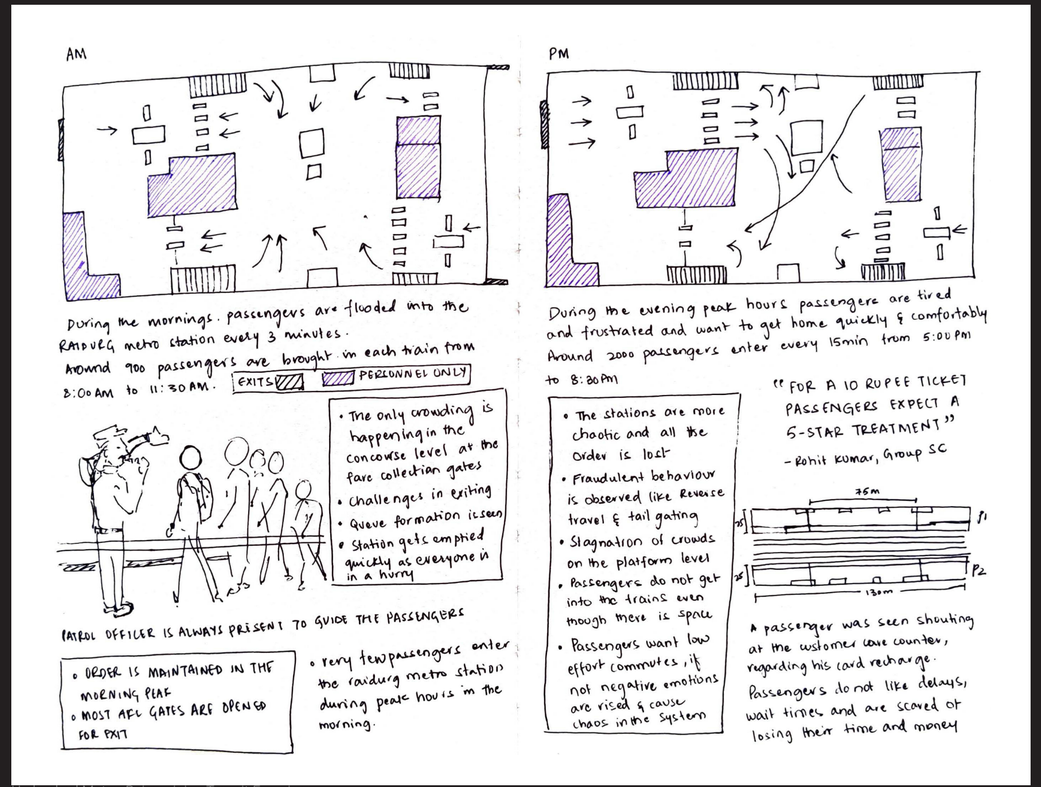
In conjunction with the ethnographic research, a user survey was conducted by approaching passengers at the metro stations. During this period, pamphlets containing a QR code linking to an online survey were distributed to participants. This approach yielded 200 responses, providing valuable quantitative data to complement the qualitative insights gained from the observations. The survey responses offered additional perspectives on commuter experiences, preferences, and challenges, further informing the design interventions proposed in this research.

The survey aimed to gain a detailed understanding of passengers' decision-making processes and overall experience within the Hyderabad Metro. To achieve this, the survey design included a mix of 70% multiple-choice questions and 30% open-ended questions, allowing for both quantitative and qualitative insights. The sampling method was random, with the survey specifically targeting passengers at the Raidurg and Ameerpet stations. Conducted over two full days, more than 300 passengers were approached, resulting in 200 completed responses.

Ethical considerations were thoroughly addressed; participants provided informed consent and were assured that their data would be protected. However, it is acknowledged that a potential bias may have been introduced based on the approachability of the passengers at the time of the survey. Despite this, the data collected provides valuable insights into the factors influencing passenger behavior and satisfaction within the metro system.

Field notes

To thoroughly understand the complexities of crowd dynamics and commuter behavior within the Hyderabad Metro system, an intensive two-week ethnographic study was conducted across several key stations: Raidurg, Ameerpet, Punjagutta, Parade Ground, MGBS, Nampally, Nagole, Madhura Nagar, Hitech City, Miyapur, and Jubilee Check Post. This research involved immersion in these environments during both peak and non-peak hours, allowing for a comprehensive observation of the variations in commuter behavior, crowd patterns, and overall attitudes across different times of day.



User Interviews

To deepen the understanding of the personal, cultural, and psychological factors influencing the commuter experience, particularly in relation to crowding and its consequences, a series of user interviews and focus group discussions were conducted. This round of research involved interviews with 27 commuters and 23 metro employees, conducted both face-to-face and virtually, providing a diverse perspective on the challenges faced within the metro system.

Focus Group Discussions

Additionally, three focus group discussions were held, conducted entirely in a digital format, allowing participants to share and reflect on their experiences in a collaborative online setting. These insights have been instrumental in shaping the proposed design interventions aimed at mitigating the adverse effects of crowding and enhancing overall commuter satisfaction.

“

First thing is the crowd, especially in the mornings. I start around 9:00 AM and it takes at least 20 minutes to reach Tarnaka. There is so much crowd waiting on the platform. Sometimes, I have to let go of a few trains, because they are so full.

A 49-year-old female commuter



“

We conducted a patrol of the metro tarin from Hitech to Raidurg. There were around 50-60 passengers in the train during non-peak hours. And it can go up to 200 during peak hours. If the passengers in the train see any security personnel, they simple deboard the train at Raidurg and continue to do the same the next day.

Rohit Kumar, Group Station Controller (Stage 4)



“

So, there is so much rush and nobody actually cares about one another. They just push. They just want to get home. Everybody’s such in such a hurry. They want to get to their destination so fast. Nobody considers about the other person. They don’t even provide seats for people in need.

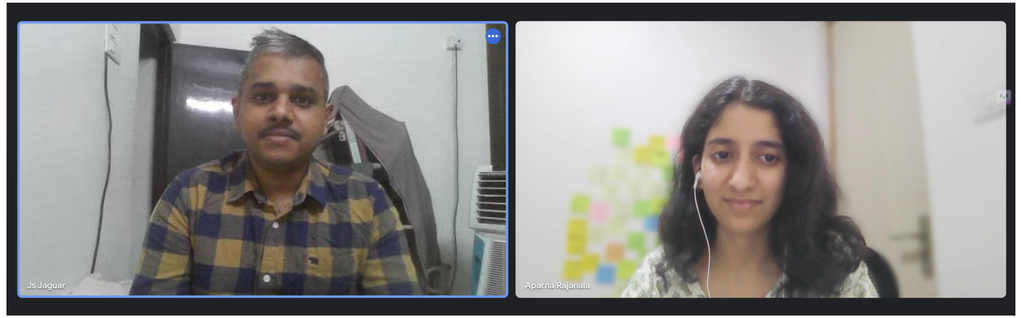
A 26-year-old female commuter



“

if I had any crowd related issues, I’ve had them mostly, only in train. Ones that bothered me. But yeah,I did not face such situations in stations other than Raidurg. (during security check)

A 21-year-old female student



“

Depends on the crowd also like if it’s like peak hours then I just listen to music but if it’s you know a little less crowded or something I attend calls.

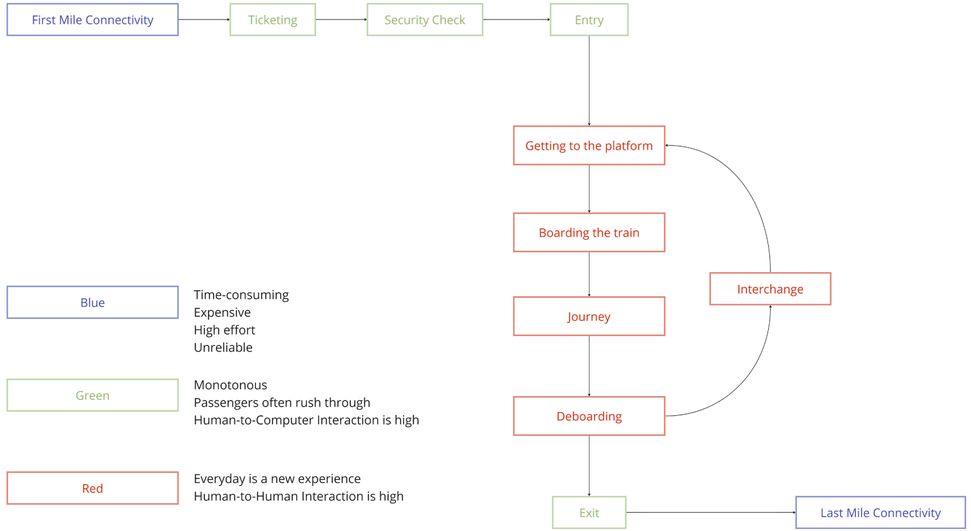
A 22-year-old female commute





Findings

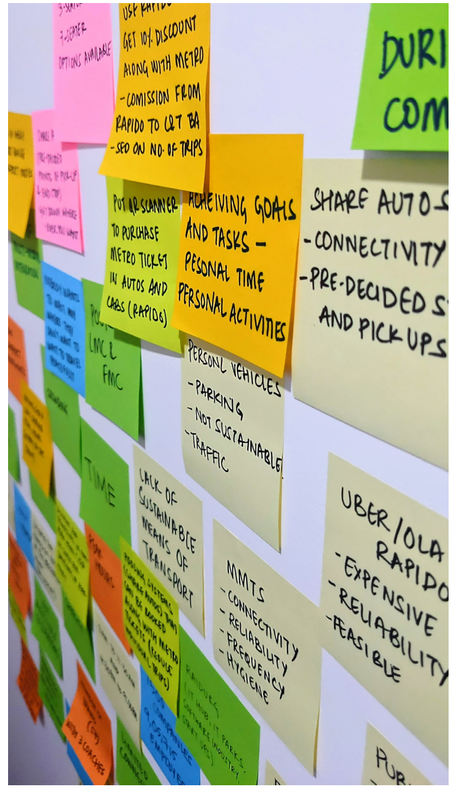
The findings from the first research cycle reveal key characteristics of the commuter journey in the Hyderabad Metro. The First Mile and Last Mile Connectivity (FMC and LMC) are frequently found to be time-consuming, expensive, high-effort, and unreliable. The processes of ticketing, security checks, and getting to the platform tend to be monotonous, causing passengers to mentally drift and often rush, particularly during their commute to work. In contrast, the journey involving boarding and deboarding offers a new experience daily, driven by interactions with varying levels and types of crowds.



Research Cycle 2

In the second round of research for the Hyderabad Metro project, the focus shifted to gathering and analyzing secondary data, complemented by comparative studies. This phase was crucial in contextualizing the primary findings from Research Cycle 1 within broader transit systems and best practices globally, as well as understanding existing literature and trends relevant to urban transit. The second phase of research started with the probing of the following question:

Hyderabad Metro: Reimagining Transit Experince



What is the ideal commute?

It turns out that the ideal commute is not actually no commute at all. A study of more than 1,000 workers in San Francisco(15) found that their ideal one-way commute was 16 minutes. Fewer than two per cent of people wanted a commute time shorter than four minutes, while only 1.2 per cent wanted no commute time at all.

After experiencing the flexibility of working from home during the pandemic, many people now struggle with long commutes, finding it challenging to transition from the convenience of working at their laptop to enduring extended travel times.

Why is commute necessary?

The daily commute, a part of one's daily routine is important to an individual to unfold from their home environment to their workplace. The ideal commute is 16 minutes one way. Commute gives us an opportunity to decompress, plan, prepare, reaffirm, release and activate for the day to fold and unfold.

It seems that people do appreciate some separation between work and home – using the travel time as a psychological tool to decompress from the day. And it's backed up by science. An increasing amount of research shows that 'active commutes', which involve walking or cycling, can make life better – even being as important to wellbeing as a marriage or a pay rise.

How do long commutes affect people?

According to a study conducted in the Europe, every extra minute of commute time reduces job satisfaction, reduces leisure time satisfaction, increases strain and reduces mental health.

Commuting stress has been found to affect mood, function, illness, job satisfaction and likelihood of changing job.

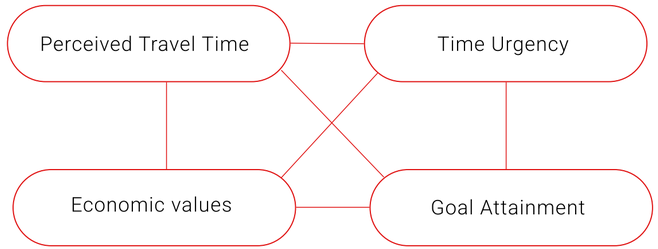
It has also been found that the commute can be seen positively in terms of (i) time to relax, think and 'shift gears' between one activity and the next; (ii) enjoyment of the travel itself and (iii) use of the time productively. Nevertheless, commuting has been found to receive the lowest positive affect scores (extent to which an individual subjectively experiences positive moods) among all daily activities and one of the highest negative affect scores.



What factors effect commute experience?

According to Yuen-wah Li, the subjective perception of travel time during urban commutes are effected by Commute Characteristics, Journey Episodes, Travel Environment and Expectancy which aids in the evaluation of the overall commuting experience.

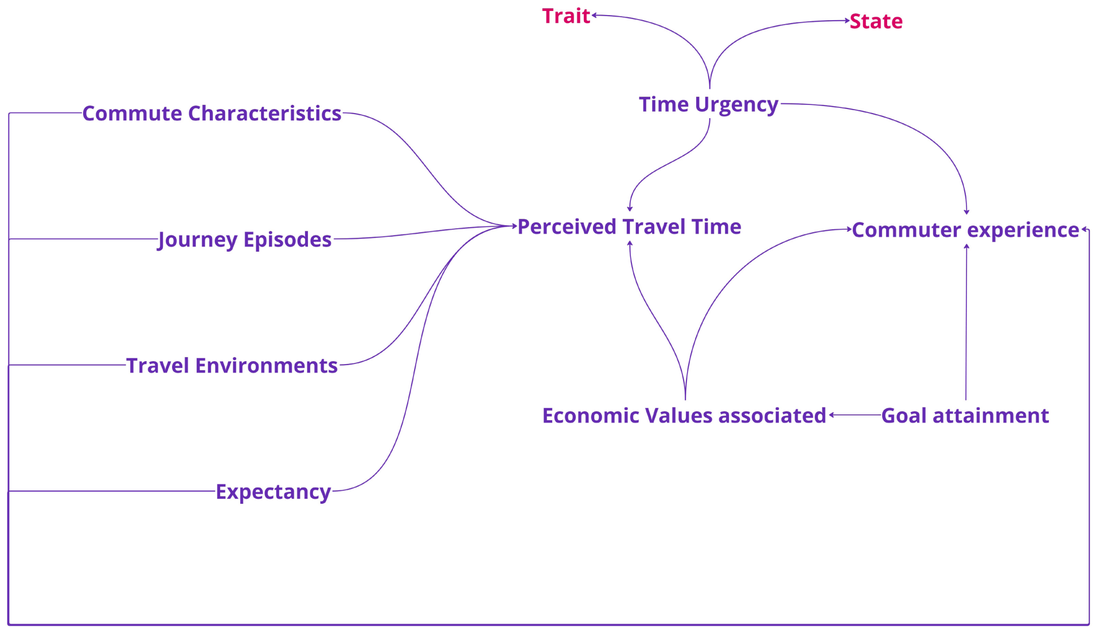
Commuter Experience



Perceived Travel Time

Perceived travel time of a commuter is subjective to each individual. The factors that effect the perceived travel time of a commuter are:

- **Expectancy:** Estimated time of arrival
- **Journey episodes:** Ride, Wait, Access, Transfer, Service Environment
- **Commute characteristics:** Commute stages, Commute duration
- **Travel environment:** Entertainment, Comfort



Goal Attainment

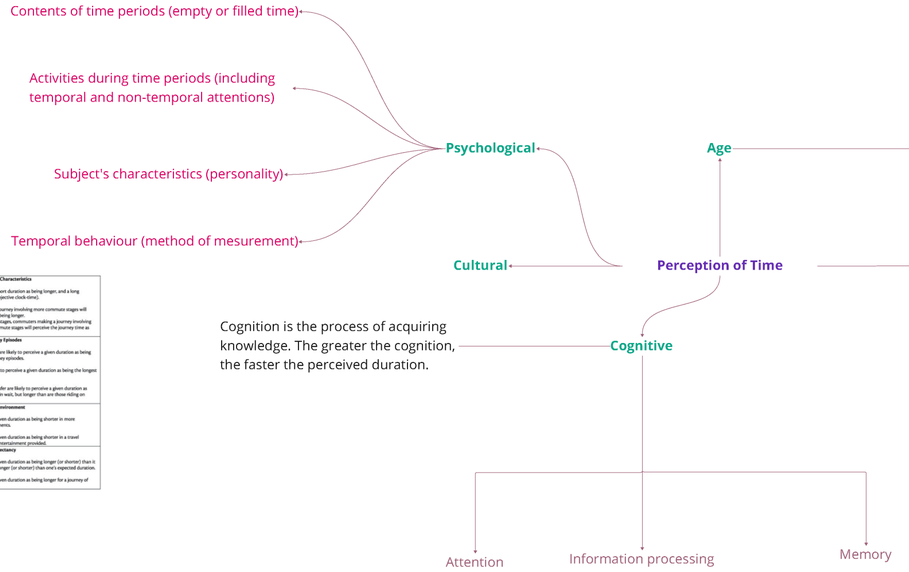
Goal attainment in commuters is generally getting to work. This is associated with economic values of the task itself and is generally evaluated at the end of the trip.

Economic Value

Economic value of the commute experience could be the fare of the ride along with the total fare of the trip. It is associative of the entire trip, including the first and last mile connectivity. The experience is affected by the attributes such as late comer fee, which is associated with the expectancy of the travel time.

Time Urgency

Time urgency is related to the personality of the commuter. Their way of thinking, for example, Type A personality with thoughts of 'I need to get to work on time' with respect to other personality types.


Contents of time periods (empty or filled time)
Activities during time periods (including temporal and non-temporal attentions)
Subject's characteristics (personality)
Temporal behaviour (method of mesurement)
Psychological
Cultural
Age
Perception of Time
Cognitive
Attention
Information processing
Memory
Cognition is the process of acquiring knowledge. The greater the cognition, the faster the perceived duration.
Perception of time changes according the age. Young people perceive time slower than older people.
Commute Characteristics
Commute Duration
P1 Commuters will perceive a short duration as being longer, and a long duration shorter (than the objective clock-time).
Commute Stages
P2a Commuters making a given journey involving more commute stages will perceive the journey time as being longer.
P2b Given a constant number of stages, commuters making a journey involving more evenly distributed commute stages will perceive the journey time as being longer.
Journey Episodes
Ride
P3 Commuters riding on board are likely to perceive a given duration as being the shortest among the journey episodes.
Wait
P4 Commuters in wait are likely to perceive a given duration as being the longest among the journey episodes.
Access or Transfer
P5 Commuters in access or transfer are likely to perceive a given duration as being shorter than are those in wait, but longer than are those riding on board.
Travel Environment
Comfort
P6 Commuters will perceive a given duration as being shorter in more comfortable service environments.
Entertainment
P7 Commuters will perceive a given duration as being shorter in a travel environment with amusing entertainment provided.
Expectancy
Commuter Expectation
P8 Commuters will perceive a given duration as being longer (or shorter) than it should be, if the duration is longer (or shorter) than one's expected duration.
Commute Reliability
P9 Commuters will perceive a given duration as being longer for a journey of lower commute reliability.
Cultural
Perception of Time
Cognitive
Commute experience
It is hypothesized in this article that the perceived travel time of urban commuters (presumably with public transportation) varies with commute characteristics, journey episodes (i.e., ride, wait, access and transfer, service environments), and their expectancies.
Expectancy
Commute characteristics
Journey episodes
Travel Environment
Entertainement
Comfort
Ride
Wait
Access
Transfer
Service environment
Commute duration
Commute stages

Commute Stages

Urban commuters, especially those using public transportation, often experience interruptions during their journeys, such as transfers. These interruptions can divide a single trip into multiple stages. Fraisee's principles, offer insights into how these staged journeys affect perceived travel time:

- A divided time interval feels longer than a continuous one of the same length.
- The more divisions within an interval, the longer it seems.
- Evenly divided intervals seem longer than unevenly divided ones.

These principles suggest that commuters perceive trips with more stages or transfers as taking longer. Additionally, if the stages are evenly spaced, the perceived travel time increases further. For example, a journey divided into two equal segments feels longer than one with uneven segments.

Commuters tend to view each stage of a journey as a separate "loss" of time, making multistaged journeys feel more time-consuming. This perception aligns with decision-making behavior seen in monetary evaluations, where people prefer to minimize losses.

Commute Duration

Travelers often perceive short commutes as longer and long commutes as shorter than they actually are. This suggests that the duration of a commute inherently skews a commuter's perception of time. People evaluate experiences in terms of gains or losses, with the value function being concave for gains and convex for losses. Since commuting time is typically viewed as a loss, the value function for commute duration is expected to be convex, meaning that as commuting time increases, its additional perceived value diminishes.

Expectancy

Urban commutes often become routine, with commuters developing expectations about how long their journey should take. When travel time differs from these expectations, it feels longer if it exceeds their expectations and shorter if it's quicker.

In unpredictable environments like congested roads or delayed public transport, it's harder for commuters to gauge time accurately, leading to overestimation. Reliable services are highly valued because they reduce uncertainty, allowing commuters to plan their time more effectively. Even short delays can feel like significant losses when compared to what was expected.

Urban commutes can be divided into episodes: access, wait, ride, and transfer. The perceived duration of each varies due to differences in attention and emotional states during these episodes.

Ride

During the ride, commuters often engage in activities like reading, napping, or chatting, which distract from time awareness. This multitasking, especially in a comfortable setting, makes the commute feel shorter, with time passing quickly.

Wait

Waiting for transport, like a bus, involves unoccupied time, making commuters very aware of the passage of time. This heightened attention, coupled with possible frustration or discomfort, leads to an overestimation of time, making it feel the longest.

Access & Transfer

During access or transfer, commuters are focused on tasks like walking or navigating crowds, which limits their attention to time. However, these tasks can be stressful, especially in unfriendly environments, leading to a perception of time that feels longer than the ride but shorter than the wait.

Comfort

Comfort is a key factor in public transportation satisfaction, influenced by aspects like seat availability, ride smoothness, space, air-conditioning, lighting, cleanliness, and design. A comfortable environment not only makes it easier to multitask but also reduces stress and negative emotions, leading to a perception that time passes more quickly.

Entertainment

Entertainment in commute environments, such as music or videos, helps distract passengers from focusing on time, making the journey feel shorter. However, if the content is repetitive or boring, it can actually make the commute feel longer. The effectiveness of entertainment also varies based on individual preferences.

Comparative Analysis

Jakarta MRT

Jakarta's MRT (Mass Rapid Transit) system, which began operations in March 2019, is a crucial addition to the city's public transportation network. It operates as part of a public-private partnership (PPP) and is maintained by PT MRT Jakarta, a government-owned enterprise. The metro system was largely funded by a loan from the Japan International Cooperation Agency (JICA), with significant involvement from both the central and local Jakarta governments in its development.

Spanning an area of approximately 664 square kilometers, Jakarta is one of the most congested cities in Southeast Asia, and the MRT was introduced to help ease traffic, reduce travel times, and offer a reliable transit option for its residents.

The MRT currently serves key commercial, residential, and business districts, though it is limited by having only a single line in operation. The system is technologically advanced, with modern trainsets, automated fare collection, and real-time tracking. However, to fully meet the city's needs, the MRT requires network expansion and better integration with other transportation modes.




Bundaran HI
Lebak Bulus
Peron 2
Peron 2








Stasiun
Tanah
Abang
Jak
Lingko

mrt jakarta

1 line

13 stations

163,162 ridership per day



Seamless integration with other public transport modes BRTS, Commuter Rail and Light Rail

Active First Mile Connectivity and Last Mile Connectivity

15.7 km length

Revamped parking spaces

HYDERABAD METRO RAIL

3 lines

57 stations

536,000 ridership per day



Limited integration between other modes of public transport

Dependence on personal vehicles and cab services for FMC and LMC

69.2 km length

Connected to shopping centers

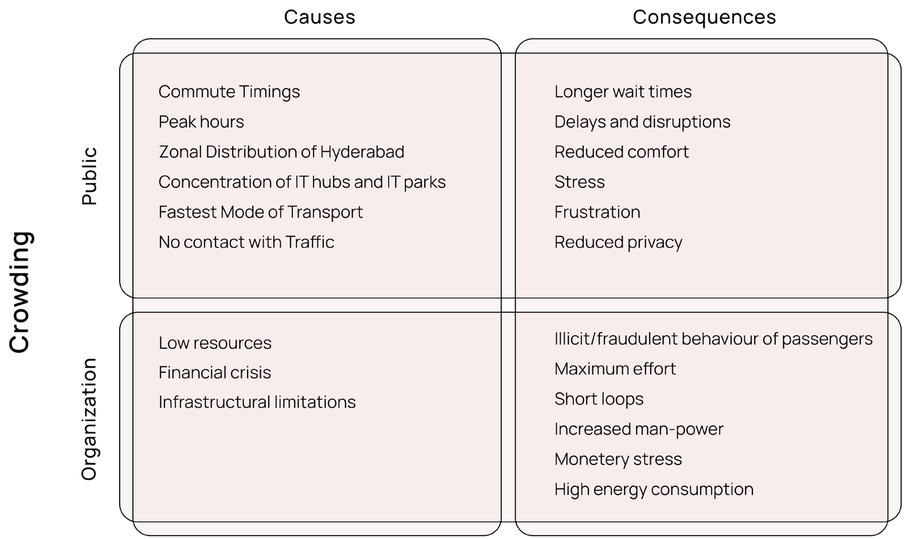
3

Refine

Analysis
Insights

Analysis

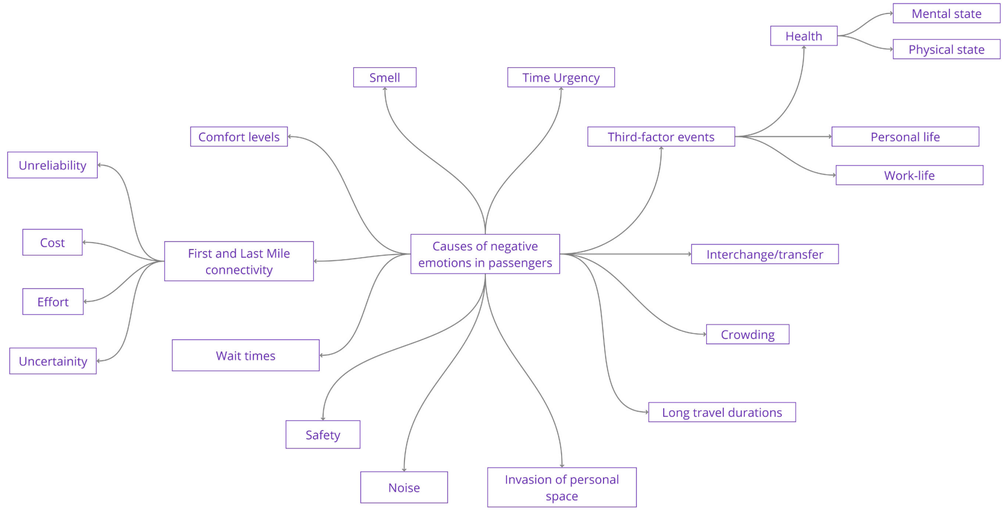
A list of causes and consequences of crowding have been identified and documented. They are divided into two main stakeholder groups: passengers and metro employees. This distinction highlights the varying effects of crowding on each group, facilitating more focused and effective solutions.



Insights

After thoroughly analyzing the data collected from both research cycles, we identified several critical insights that shaped our understanding of the commuter experience. The causes of negative emotions among passengers, such as frustration, anxiety, and discomfort, were traced back to specific pain points in their journey. These included issues like unreliable first and last-mile connectivity, long wait times, and the monotony of ticketing and security procedures.

Additionally, we pinpointed the “frozen points”—moments in the commute where passengers experience the most significant delays or discomfort, such as crowded platforms or congested entry and exit points. By understanding these key factors, we gained a clear direction for ideation, focusing on alleviating these stressors and improving the overall transit experience. This comprehensive analysis set the stage for developing creative and effective solutions tailored to the unique challenges faced by Hyderabad Metro commuters.



Research Data

52.4% Male

46.7% Female

79.4% belong to the age bracket of 13-29 years

60.8% of the passengers use the metro just for commute purposes

32.9% of the passengers use the metro for commute along with other purposes

76.4% prefer standing close to the metro doors

47.1% prefer standing close to the metro doors that open

Moving towards the doors

47.2% One station prior

24.5% When the train halts

23.6% In between stations

Lowest Ratings (out of 5)

3.1 Passenger Behaviour

3.3 Comfort

97.4% of the users mentioned that they consume content or play games in the metro

86.2% of commuters mentioned that they are in a hurry while travelling

92.5% of the passengers have negative emotions while boarding and deboarding the train

4

Define

Approach
Problem statement
How might we?

Approach

The approach to ideation revolves around constructing a series of "How Might We" (HMW) questions. These questions serve as a powerful tool to explore problems from multiple angles, allowing for a more creative and expansive thought process. By framing challenges as opportunities through HMW questions, the mind is opened to a wide array of possibilities, enabling the generation of diverse and innovative ideas. Each HMW question is designed to tackle a specific aspect of the problem, but they all connect back to a central problem statement, ensuring that the ideation process remains focused while still encouraging creativity and exploration.

How Might We?

How might we reduce the stress induced by crowds in a the metro?

How might we reduce the perceived duration of the commuter while travelling in the metro?

How might we reduce the invasion of personal space caused due to crowding in the train?

How might we ensure that the commuters are spending their time polychronically?

How might we reduce the negative emotions passengers endure during their journey?

How might we reduce travel time for passengers?

How might reduce the number of commute stages?

How might we ensure passengers are more immersed in their personal activities?

How might we improve the expectancy of commuters?

How might we redesign the travel environments that improve the overall commute experience?

How might we reduce the temporal perception of commuters?

Problem Statement

How might we redesign the metro commuting experience to reduce negative emotions, ensure comfort, and facilitate a more engaging journey for passengers?

5

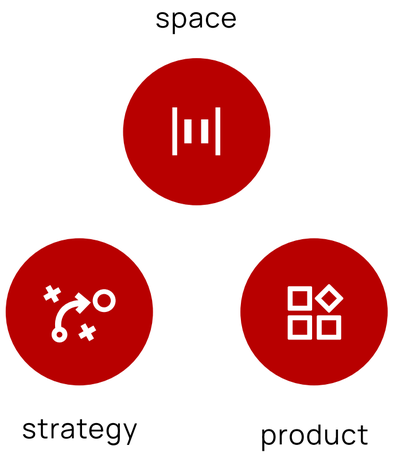
Design

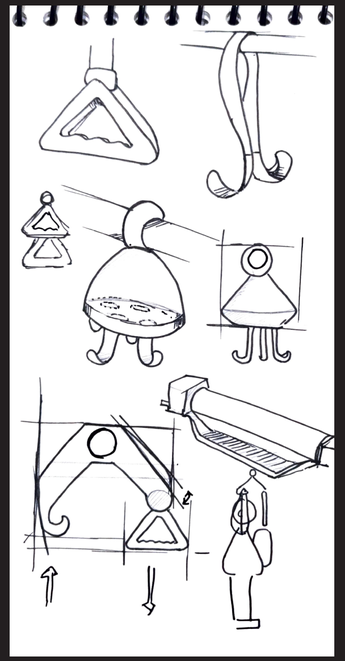
Intervention
Sketch Dump
Design Details

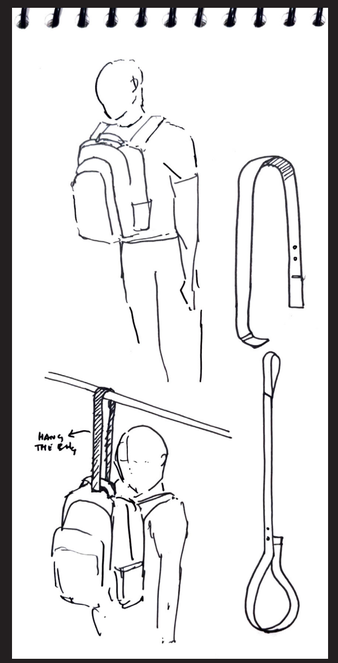
Intervention

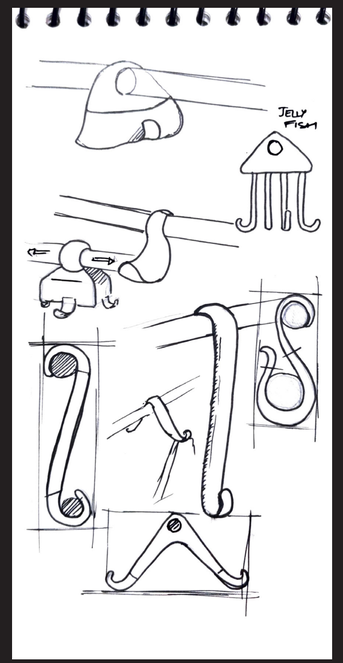
The design interventions for the Hyderabad Metro project encompass a strategic blend of space design, product design, and strategy design. This multifaceted approach is particularly effective due to the complexity of the transit system and the involvement of numerous stakeholders. Space design focuses on optimizing the physical environment within stations and trains, ensuring functionality and comfort. Product design involves creating and refining elements such as passenger engagement and comfort to enhance user experience.

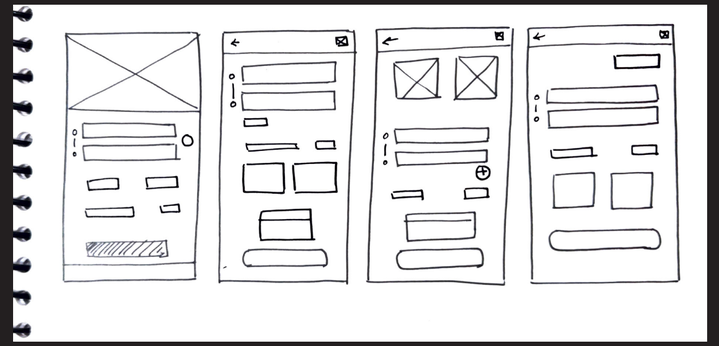
Strategy design addresses broader aspects, including operational procedures and stakeholder engagement, to ensure seamless integration and efficient system management. By combining these design aspects, the interventions provide a comprehensive solution that addresses both immediate and systemic challenges, fostering a more effective and user-friendly transit experience.

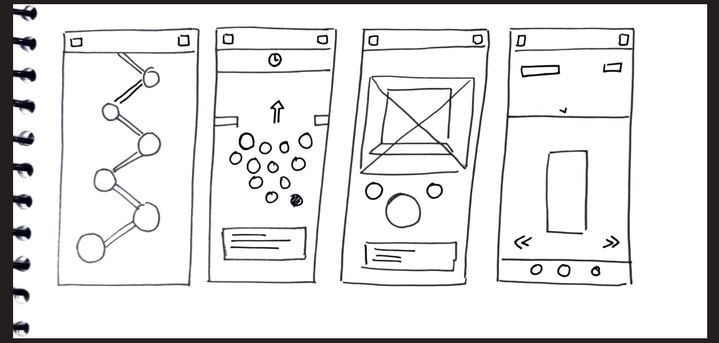


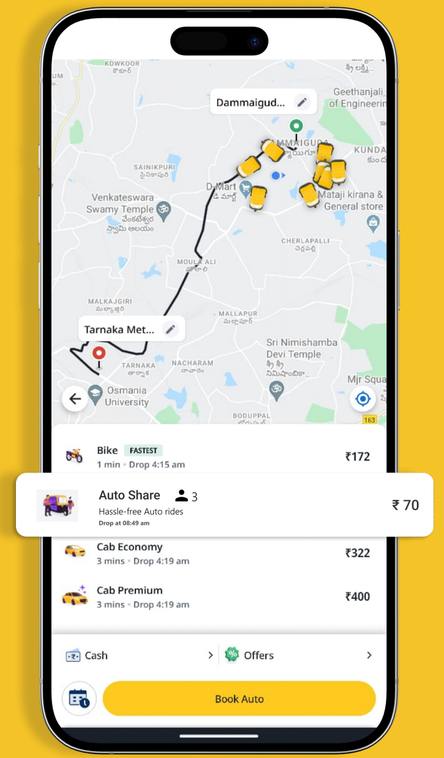



Hand's
this Side


Jelly
Fish







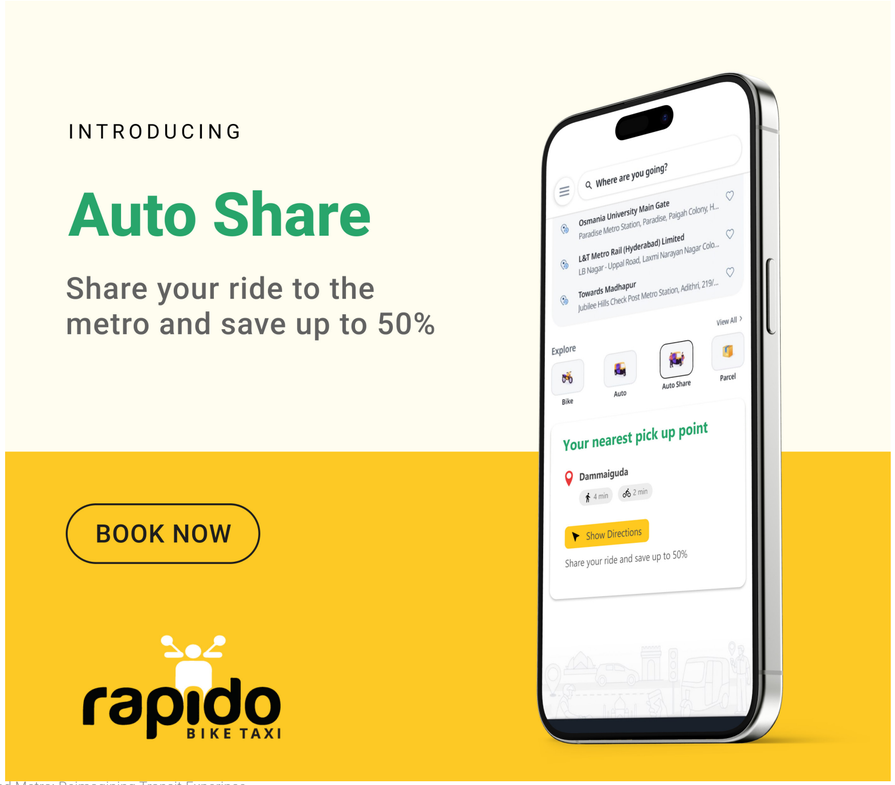


1

A partnership with Rapido, an cab/rickshaw service provider, introducing shared rickshaw rides from limited access transit points in the city to the nearest metro stations, cutting travel costs and boosting metro ridership

Leveraging the existing partnership with Rapido, a bike/auto/cab service provider, to enhance accessibility and convenience for metro commuters. The primary focus of this intervention is to establish additional transit points in densely populated residential areas, where access to public transportation is often limited. By introducing an auto-pooling service facilitated by Rapido, residents in these areas can easily reach metro stations, particularly during peak hours when demand is highest.

This approach aims to reduce the first-mile costs for passengers, making the metro a more attractive and affordable option for daily commuting. By addressing the initial barrier of reaching the metro station, the intervention is expected to increase the overall preference for the metro as a primary mode of transportation. The enhanced connectivity and convenience provided by these additional transit points and the auto-pooling service can lead to a more seamless and efficient commuting experience for Hyderabad's residents, ultimately contributing to the success and sustainability of the metro system.




Open
Rapido App
Enter
location details
Get to the nearest
transit point
Choose a ride
Share the OTP
Get to the metro
station
Pay for the ride



2

A rewards system for frequent Hyderabad Metro users that offers coupons through kiosks in the unpaid areas of stations, encouraging increased metro usage while efficiently managing platform crowds by reducing congestion in the paid areas.

The design intervention for the Hyderabad Metro introduces a rewards system aimed at incentivizing frequent metro users. Commuters can collect coupons or rewards from kiosks placed in the unpaid areas of metro stations. By scanning their metro card at these kiosks, the system tracks their past trips and determines if they are eligible for any rewards, which can be checked and redeemed through the metro application.

This intervention not only encourages increased metro usage by offering tangible benefits but also helps manage crowds more effectively. By positioning these kiosks outside the paid areas, the initiative reduces the number of passengers entering the paid zones, thereby alleviating crowding on the platforms and enhancing overall commuter experience.




Enter the metro station
Find the reward kiosk
Scan the card
Open T-Savaari
Navigate to the rewards page
Get a reward



3

A strategy introducing dynamic, engaging content such as rotating advertisements and interactive mirrors for #OOTD (Outfit of the Day) photos at the concourse level of Hyderabad Metro stations

The strategy involves introducing dynamic, engaging content such as rotating advertisements and interactive mirrors for #OOTD (Outfit of the Day) photos at the concourse level of Hyderabad Metro stations. By offering varied visual stimuli, this strategy aims to distract passengers from their perception of travel time, making the commute feel quicker and more enjoyable.

Additionally, it encourages passengers to slow down and engage with their surroundings, reducing the tendency to rush through security checks, AFC gates, and stairways or escalators. This ever-changing environment transforms monotonous daily routines into a fresher, more interesting experience.





4

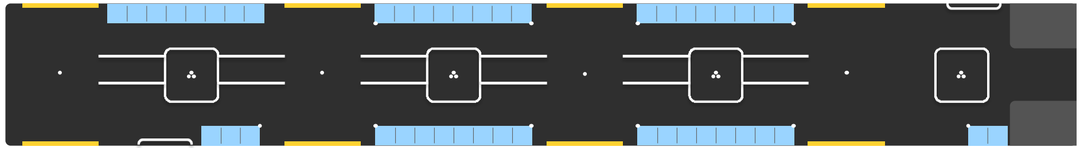
Enhancing train interiors with more handles, strategically placed handrails, and optimized seating encourages passengers to move inside, reducing door blockages; promoting smoother boarding and exiting, and improves overall transit efficiency

The improvement of train interiors aims to enhance passenger comfort while addressing common issues that disrupt the commuting experience. This involves increasing the number of handles to better support standing passengers, strategically placing handrails for easier access, and rethinking seating arrangements to optimize space and flow. By making these changes, the design encourages passengers to move further inside the train, reducing the tendency to stand near the doors, which often blocks entry and exit paths for boarding and deboarding.

This not only enhances comfort but also facilitates smoother passenger movement, leading to quicker boarding and alighting processes. As a result, train dwell times at stations are reduced, potentially increasing the frequency of train services and improving overall transit efficiency.

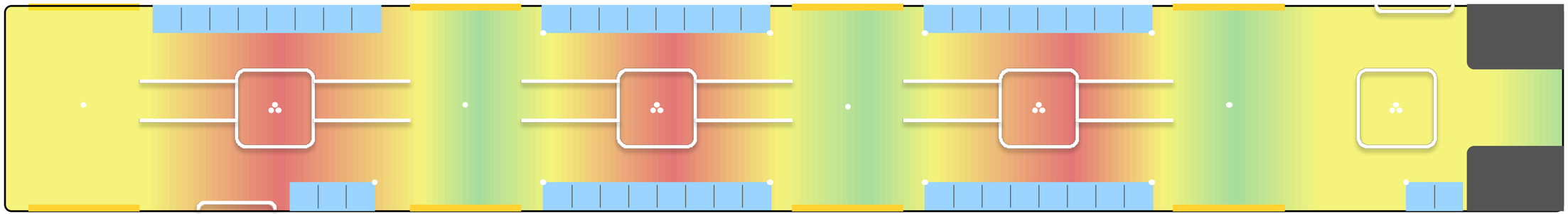


Current Cross-section of a coach



Proposed Cross-section of a coach

Heat Map of the train coach



Ur remporentum que sin cuptaqui core alis inis num reptium rerisquae enet occus de pro bearchil im ut volore re necatem autem quis ari am, voluptature con pora dis am simintur

Ga. Rum fugitia nos rerro ipsa exerrovit raestio nsequi am labor re repudae nem volupit, sero volestibus.
Utat. Ectem consedignat ut occum iunt re, odis il



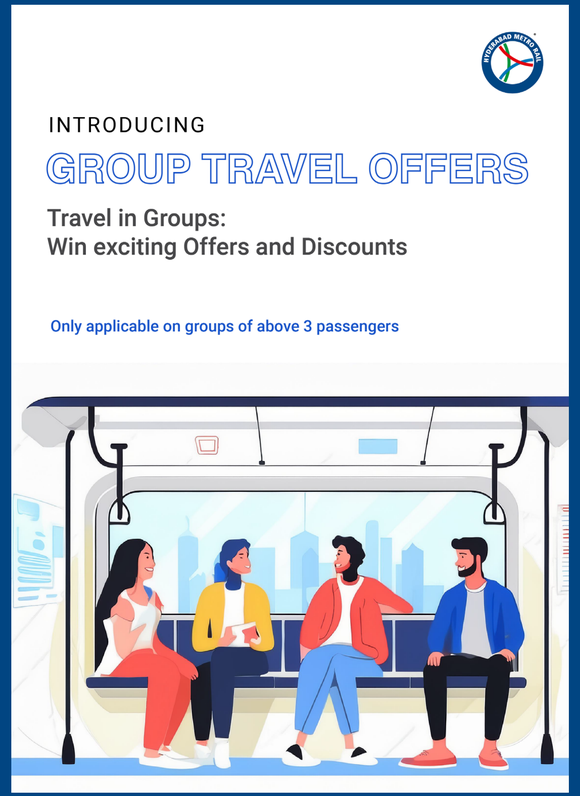
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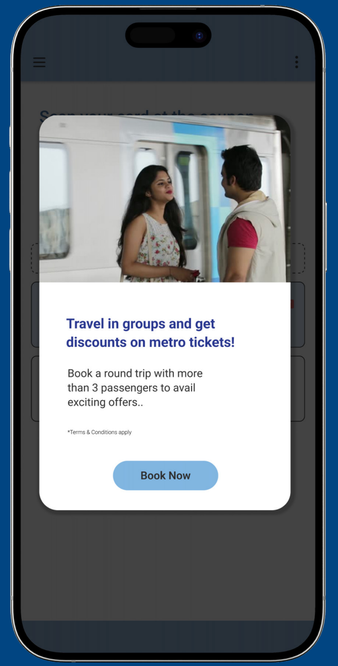
Offering special discounts for group travel encourages social interaction, making the commute more enjoyable and reducing the perception of travel time.

The group travel offer enhances the commuting experience by providing special discounts and incentives for passengers traveling together. This initiative is designed for groups of three or more, offering them reduced fares compared to individual tickets. By encouraging social travel, it makes commuting more enjoyable and engaging.

The program includes discounted fares, which make commuting more cost-effective for families, friends, or colleagues. It features dedicated booking channels and user-friendly options on the metro app and website, simplifying the process of purchasing group tickets. Additionally, groups may receive priority access and reserved seating to ensure comfort and allow them to sit together.

Promoting group travel fosters a sense of community and encourages social interaction among commuters, making the journey less isolating. The presence of companions helps to distract from the monotony of the trip, making the travel time feel shorter and more pleasant. This initiative aims to create a more enjoyable and cost-effective commuting experience while potentially reducing congestion and improving the efficiency of the metro system.







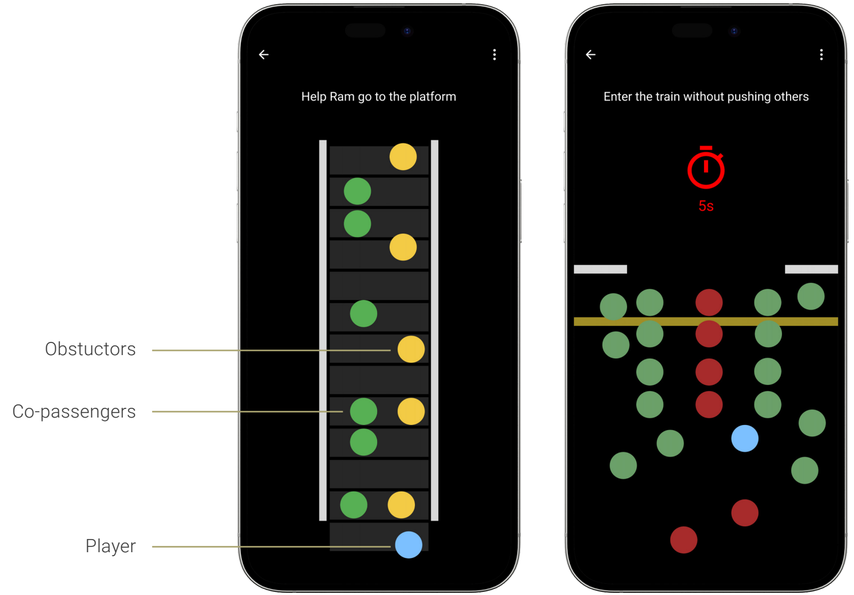
6

Introducing interactive games for Hyderabad Metro that teach metro etiquette while keeping passengers entertained. Players earn rewards for discounts or merchandise, enhancing their travel experience and fostering community engagement

The idea involves integrating interactive games into the Hyderabad Metro experience to enhance passenger engagement and education. These games are designed to teach metro etiquette and responsible behavior while offering an enjoyable and interactive experience. As passengers play, they not only learn about proper conduct and the importance of maintaining a smooth commute but also earn rewards for their participation.

The rewards earned through these games can be redeemed for various benefits, such as discounted tickets or metro merchandise, creating an incentive for passengers to engage with the educational content.

This approach serves a dual purpose: it keeps passengers entertained during their journey and reinforces positive behaviors, contributing to a more pleasant and efficient transit experience. Additionally, by improving the passenger-metro relationship and fostering a sense of community, these games help build a stronger connection between the commuters and the transit system, promoting a more cohesive and respectful atmosphere within the metro network.





7

Offering special discounts for group travel encourages social interaction, making the commute more enjoyable and reducing the perception of travel time.

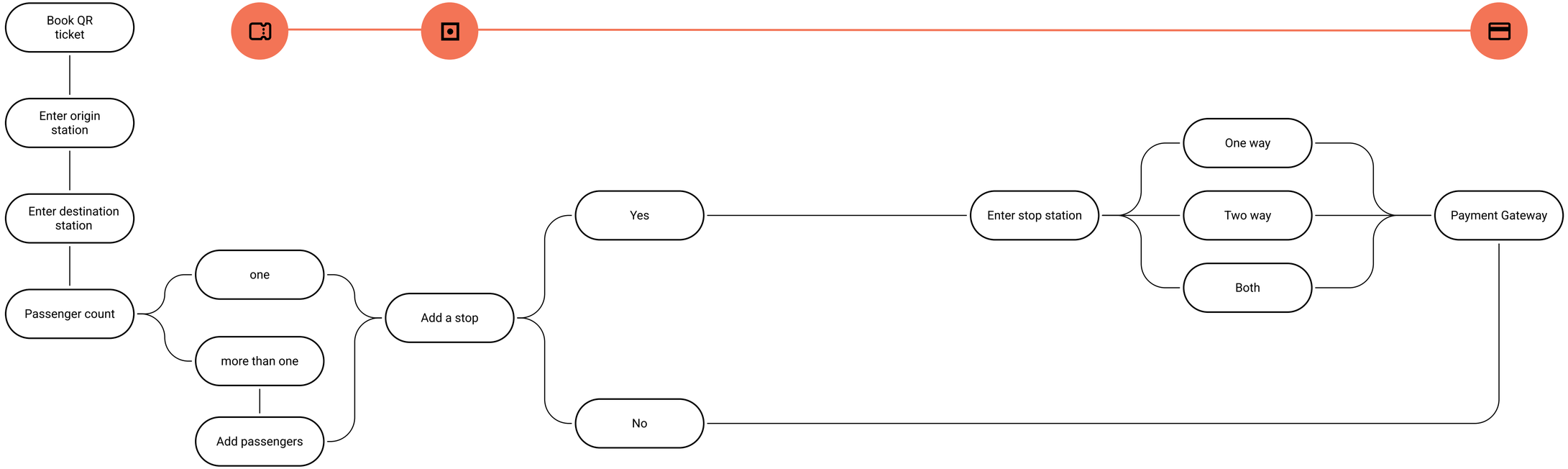
The proposed intervention introduces a new feature in the Hyderabad Metro that allows passengers to make additional stops during their journey on a single ticket. This feature is designed to enhance the versatility of the metro, aligning it more closely with other modes of transport that offer greater flexibility in travel. By enabling passengers to add stops along their route, this intervention provides them with more control over their journey, allowing for errands or brief visits without the hassle of purchasing multiple tickets.

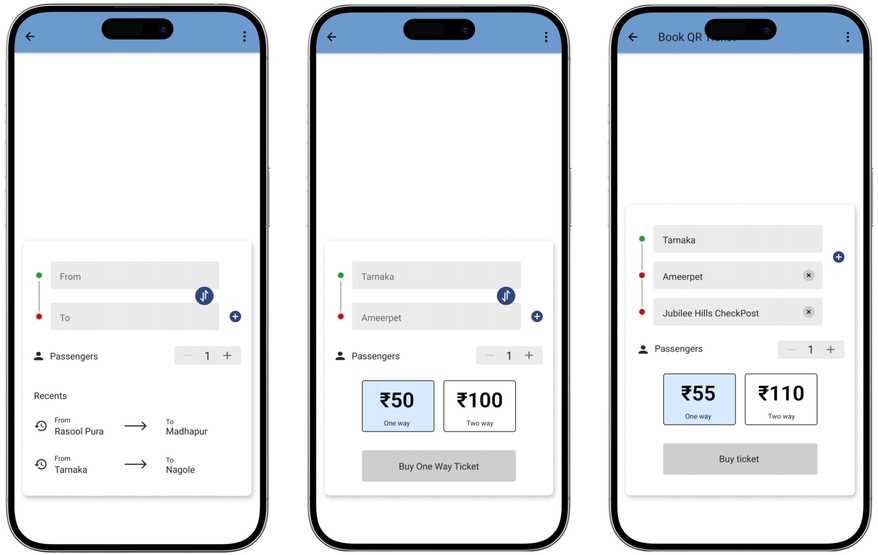
This option not only simplifies the travel experience by eliminating the need to repeatedly buy tickets, but it also caters to the convenience of passengers who may want to manage their time more effectively. Even though purchasing tickets via phone is simple, the ability to make stops on a single ticket streamlines the process further, making metro travel more user-friendly.

Passengers who choose to use this feature will have a set time limit within which they must re-enter the metro station after making a stop. If they exceed this time limit, a small fine will be imposed, with the amount increasing based on the duration of their stay outside the station. This system ensures that passengers can enjoy the flexibility of making stops without significantly disrupting the metro's operations or other passengers' experiences.

Moreover, offering this option can reduce the overall cost of travel for passengers. When compared to buying two separate tickets, the cost of adding a stop on a single ticket is slightly lower, making it a more economical choice for those who need to make multiple stops during their commute. Overall, this feature enhances the metro's appeal by making it more adaptable to the diverse needs of its passengers, potentially increasing ridership and improving the overall commuting experience.

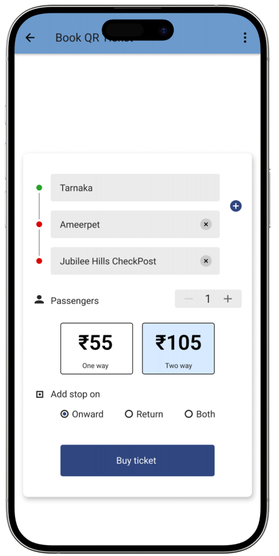



Book QR ticket
Enter origin station
Enter destination station
Passenger count
one
more than one
Add passengers
Add a stop
Yes
No
Enter stop station
One way
Two way
Both
Payment Gateway


From
To
Passengers
1
Recents
From
Rasool Pura
To
Madhapur
From
Tarnaka
To
Nagole

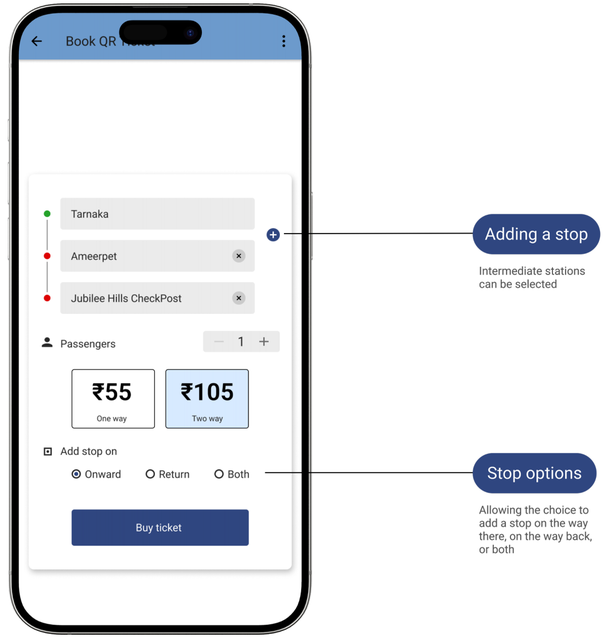
Tarnaka
Ameerpet
Passengers
1
₹50
One way
₹100
Two way
Buy One Way Ticket

Book QR
Tarnaka
Ameerpet
Jubilee Hills CheckPost
Passengers
1
₹55
One way
₹110
Two way
Buy ticket


Book QR
Tarnaka
Ameerpet
Jubilee Hills CheckPost
Passengers
1
₹55
One way
₹105
Two way
Add stop on
Onward
Return
Both
Buy ticket


Scan this QR Code at Metro
Entry and Exit points
Onward
Return
Passenger 1
Starting from
Tarnaka
Expires:
24/06/2024, 11:59PM
Going to
Jubilee Hill Checkpost
Share ticket
Payment
Type
Two way
Passengers
1
Amount
₹40
Cancel Ticket


Scan this QR Code at Metro
Entry and Exit points
Onward
Return
Passenger 1
Starting from
Tarnaka
Expires:
24/06/2024, 11:59PM
Stop 1
Ameerpet
Stop 2
Jubilee Hill Checkpost
Share ticket
Tracker
Exit time
03:52 PM
Re-enter time
04:22 PM
Time Left
9 min
Cancel Ticket


Book QR
Tarnaka
Ameerpet
Jubilee Hills CheckPost
Passengers
1
₹55
One way
₹105
Two way
Add stop on
Onward
Return
Both
Buy ticket
Adding a stop
Intermediate stations can be selected
Stop options
Allowing the choice to add a stop on the way there, on the way back, or both

“

Both me and my husband use the metro to go to work everyday. We go from Habsiguda to Raidurg. I haven't gotten a seat in the metro for over a year now.

A 31-year-old female commute



Acknowledgements

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