

Zinnia Nandy

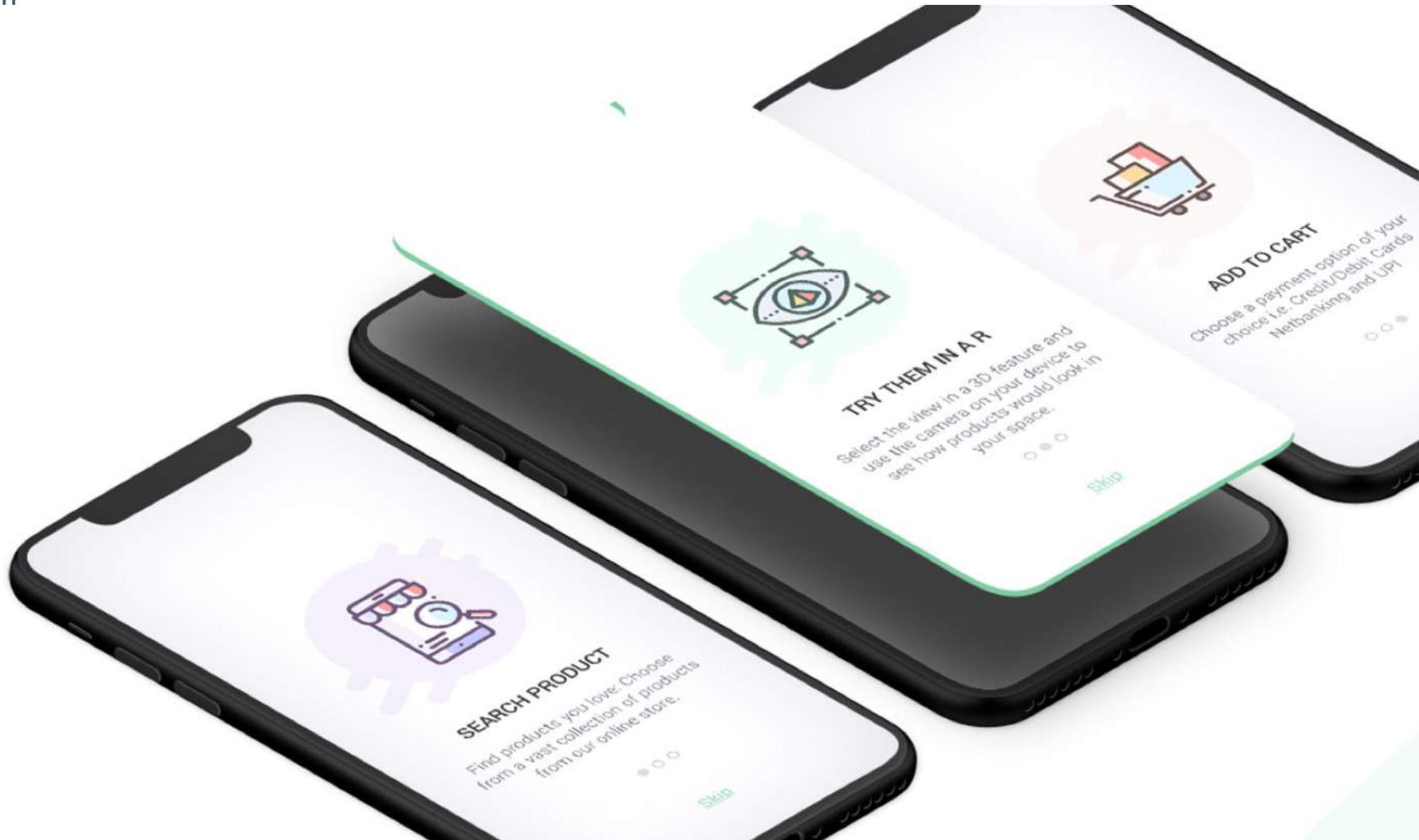
Portfolio (UI/UX)

Smart Online Furniture Shopping

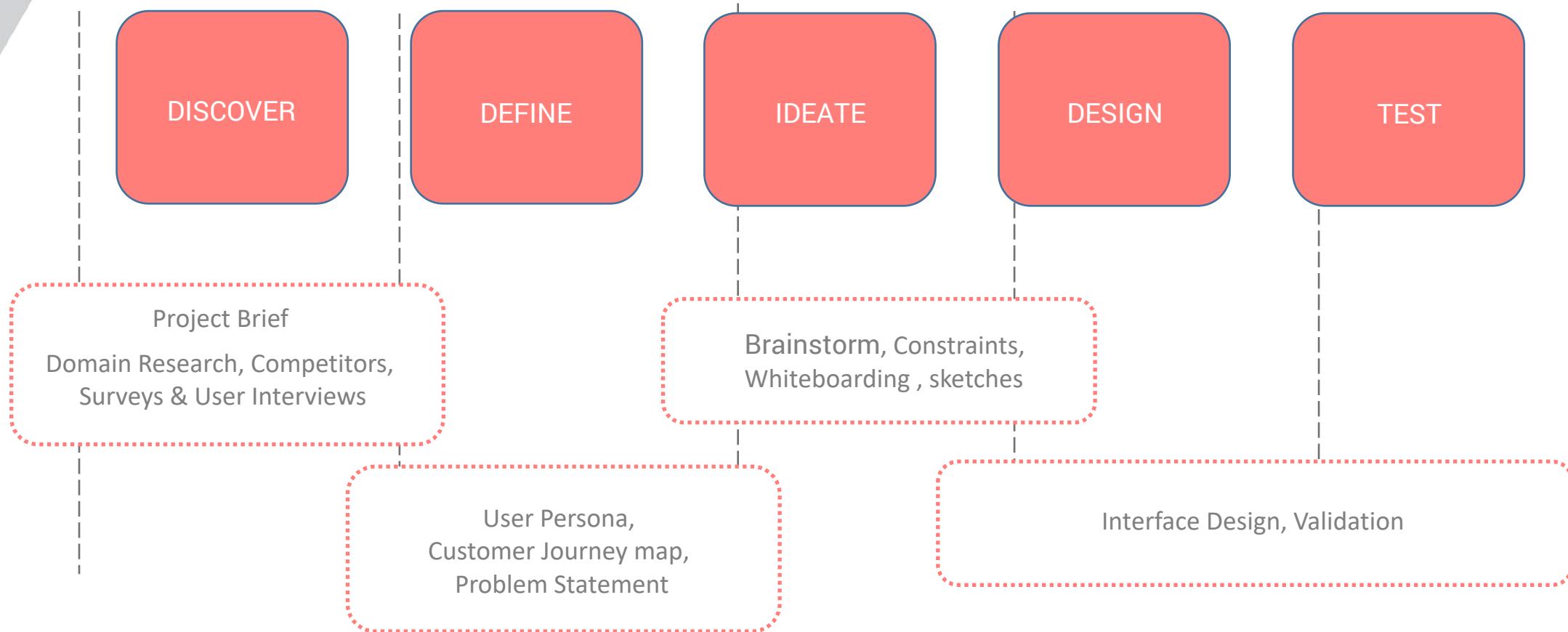


OVERVIEW

We built a Smart Online Furniture Shopping application for our customer X-corp (**Name changed**). The solution was to really make a stand-out impression using **augmented reality** feature to help prospective customers get up close and personal with the furniture available online. Nothing makes a connection better than seeing how a sleek new table would look in your own living room



PROCESS



UNDERSTANDING THE BUSINESS NEEDS

Business Problem/Needs:

X-Corp experienced a slowdown in their Online furniture sales and after research found out that most of the users shows lot of activity in browsing furniture but do not proceed with purchasing them. Some stats showed that users added products in their cart but finally dropped the idea of making the final purchase.

Why?

UNDERSTANDING THE DOMAIN AND OPPORTUNITIES FOR SUCCESS



Retail

Consumers shop online to save time, and for available varieties of products online and the online discounts they get. Both male and female both have the same type of behaviour towards liking and disliking factors; they like home delivery facility and dislike inability to touch and feel the product most.

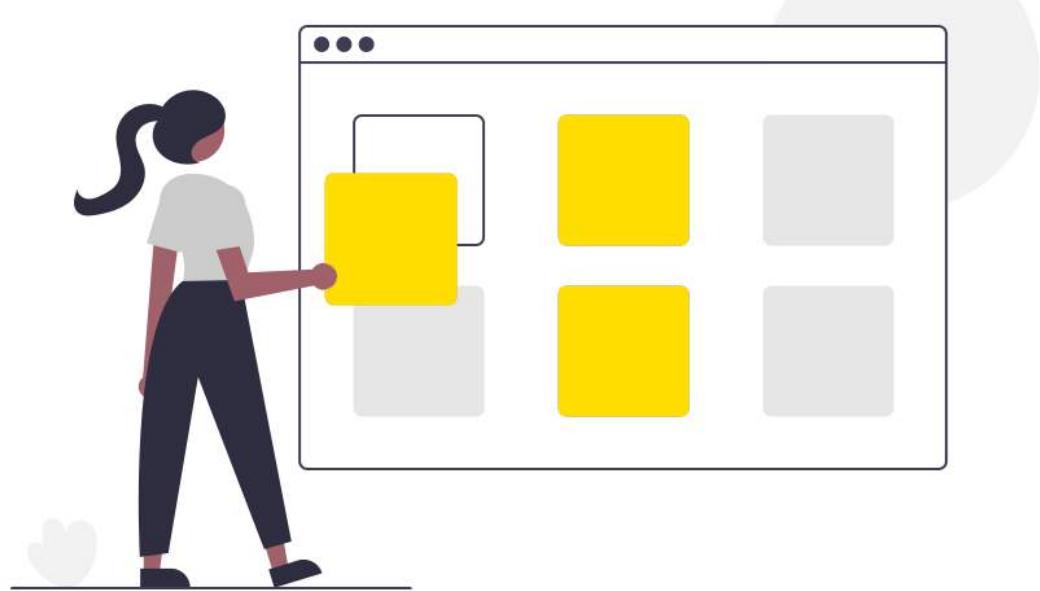
The problem-solving process is based on the principle of User Centered Design in the hope of providing a good of User Experience (UX). Few important questions to consider were:

1. Is this a common problem among target users?
2. If so, what are the chances of success of this application?
3. Are there similar products out there and where are their current positions?
4. What solution can this product provide to users and who is the target user?
5. What should be the key feature of Minimal Viable Product (MVP)?

To drill down more on this problem I tried to understand the Online furniture purchase process and the frustration users face while purchasing a furniture online.

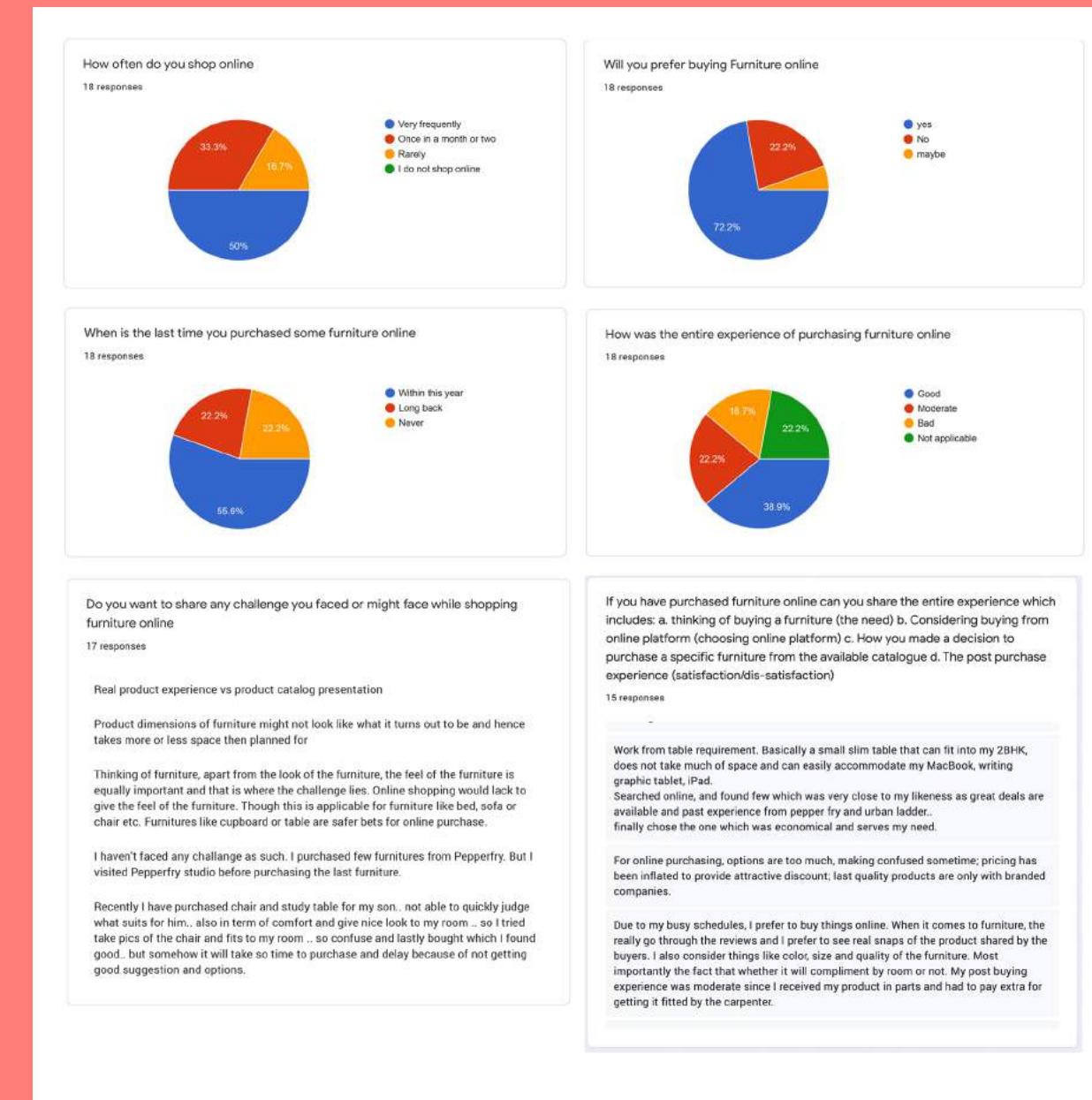
For this I conducted online survey with Google form. The scope of the survey was to find out the purpose, motivation, needs and frustration of users while shopping furniture online.

Survey



ONLINE SURVEY

I collected useful information such as how comfortable users are when it comes to shopping furniture online, will they consider buying furniture online, what was their overall experience while shopping furniture online (choosing a furniture till making payment), have they ever faced problem or challenge while buying a furniture online.



THE PROBLEM

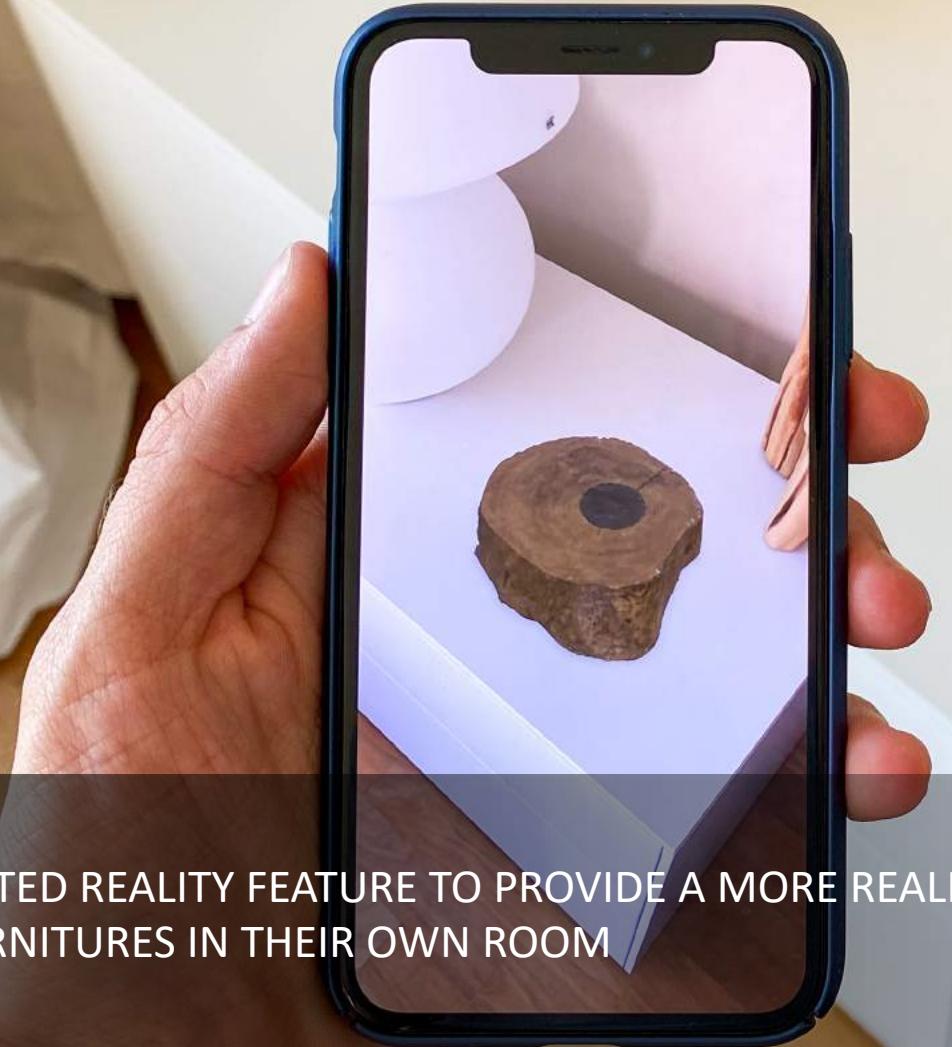
Users do not feel confident on their decision to purchase a furniture online due to many factors like unable to physically touch and feel the product reduces their confidence level, not sure about the fitting of furniture in their room space, matching with their room interior and theme etc.

1. Unable to physically touch & feel the object.
2. Fitting of furniture in available room space
3. Whether the furniture will complement the room interior



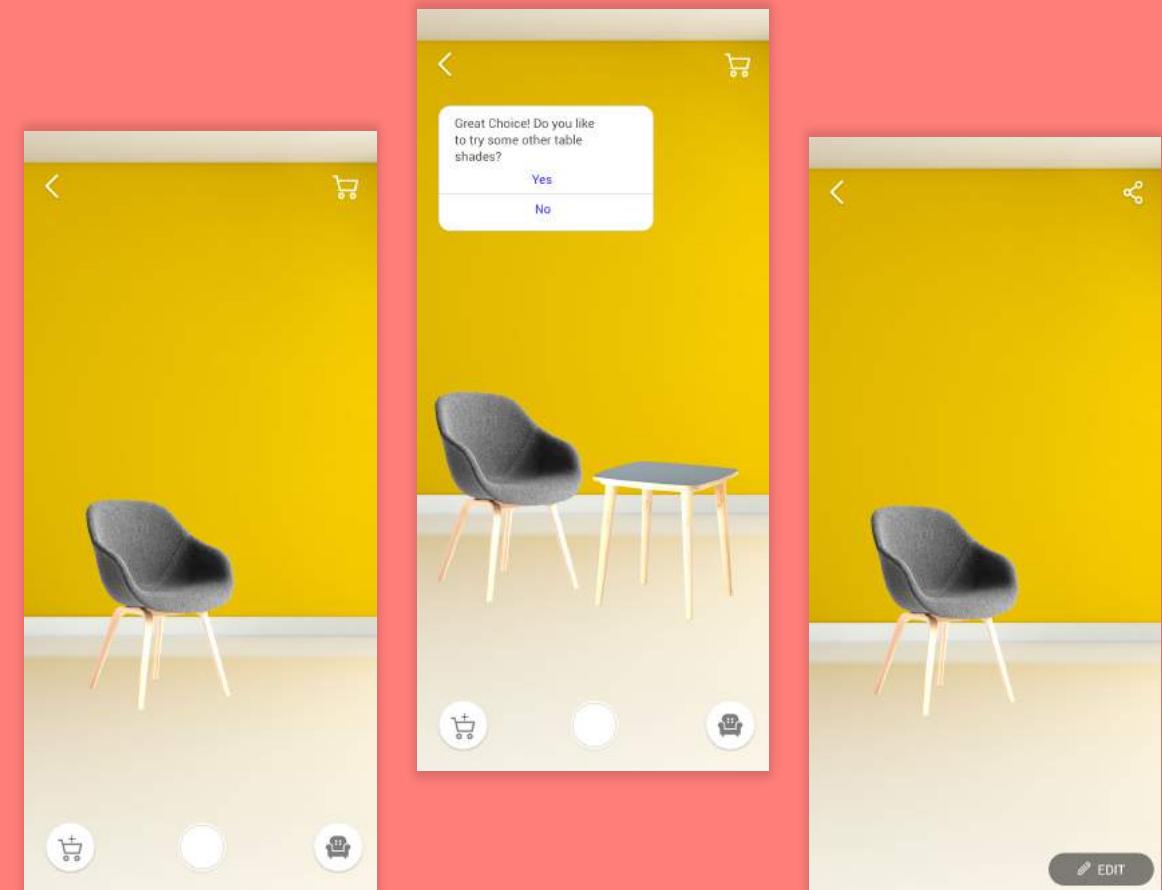
Idea...

USE OF AUGMENTED REALITY FEATURE TO PROVIDE A MORE REALISTIC WAY
TO VISUALISE FURNITURES IN THEIR OWN ROOM



KEY FEATURES

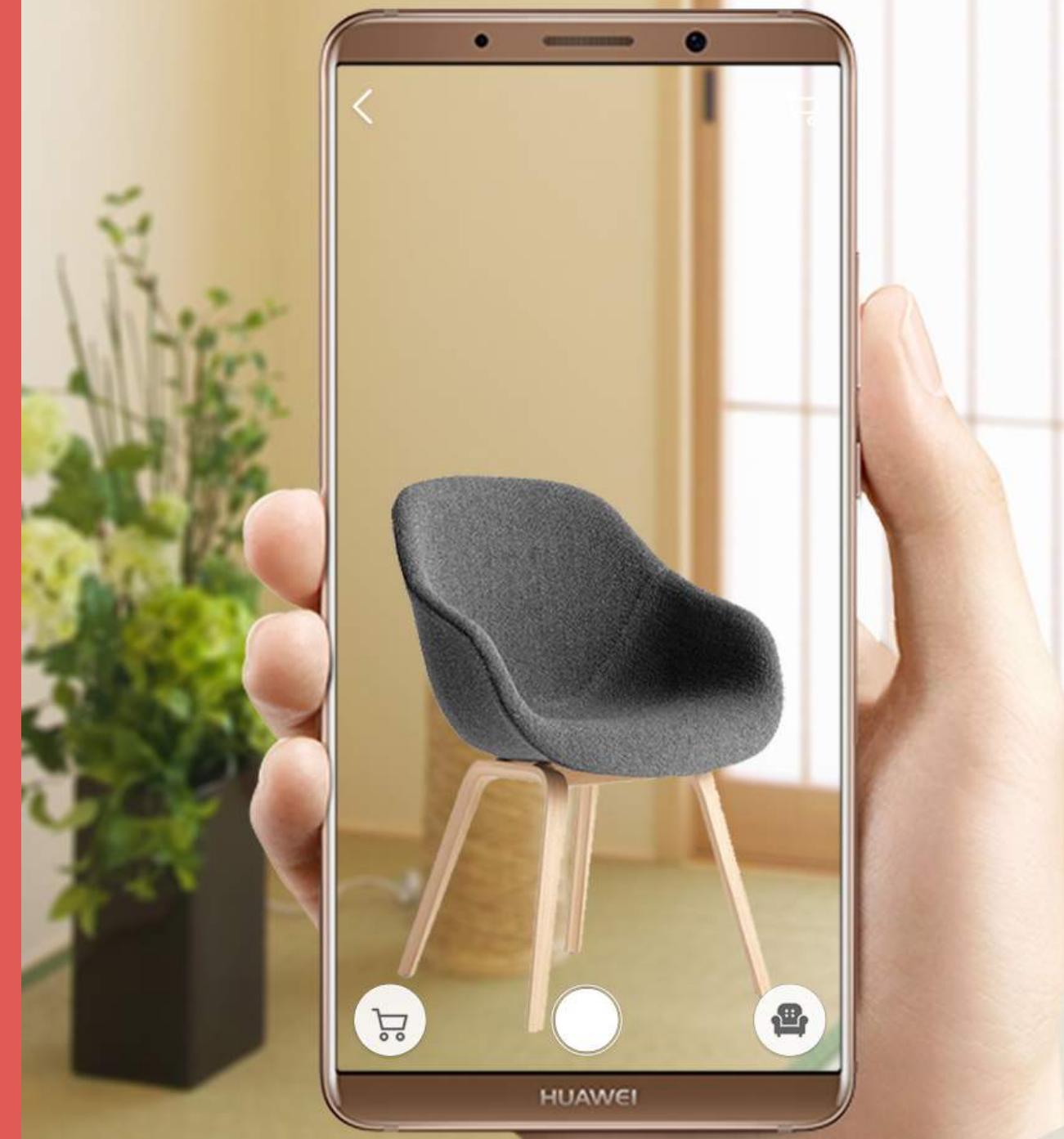
1. Provide augmented reality feature to the users, giving them an instant and realistic impression of how their room will look with the furniture of their choice.
2. Integration with **Social Network services** like Facebook, Twitter, Instagram etc. enable upload of images of their room with the new interior they have ideated.
3. Use of **Artificial Intelligence** to find users taste and likings and recommend them with appropriate choices and show customized information and products.
4. Chat bot assistance to guide the user in their decision-making process.



UNDERSTANDING AUGMENTED REALITY

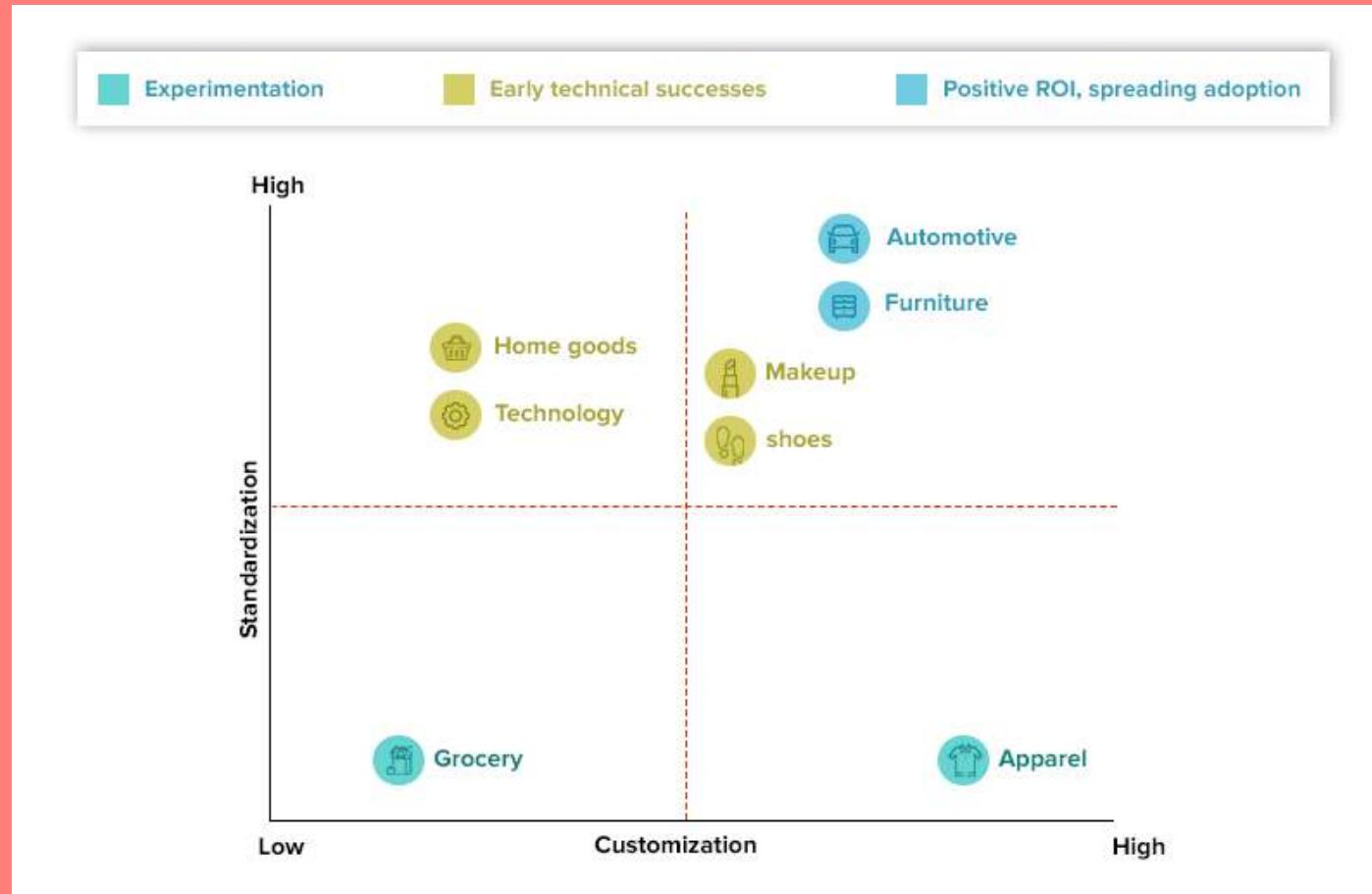
I explored the AR design guidelines and DOs and Don'ts that must be taken into consideration while designing the app. Some of the key aspect that I tried to follow were:

1. To let people use the entire display
2. Avoid cluttering the screen with lots of controls and information that diminish the immersive experience.
Display only limited content that people need for the app experience
3. Place the necessary action items/controls that the user will need while adjusting the object they view at the bottom of the screen for accessibility.
4. Provide guide as an when necessary to make user comfortable using the feature.



AR IN RETAIL DOMAIN

Augmented Reality in retail, [Wikitude](#) approximates that 32% of shoppers are regular users of AR and 73% of smartphone AR users are highly contented with the experiences. Such Augmented Reality retail statistics prove how the market has accepted the technology and is exponentially growing with its help.



USE OF AR IN FURNITURE SEGMENT AND ITS AWARENESS

- Positive ROI
- Spreading Adoption among users

COMPETITIVE ANALYSIS

1

IKEA Place

IKEA Place lets you virtually place true-to-scale 3D models in your very own space.



2

Houzz

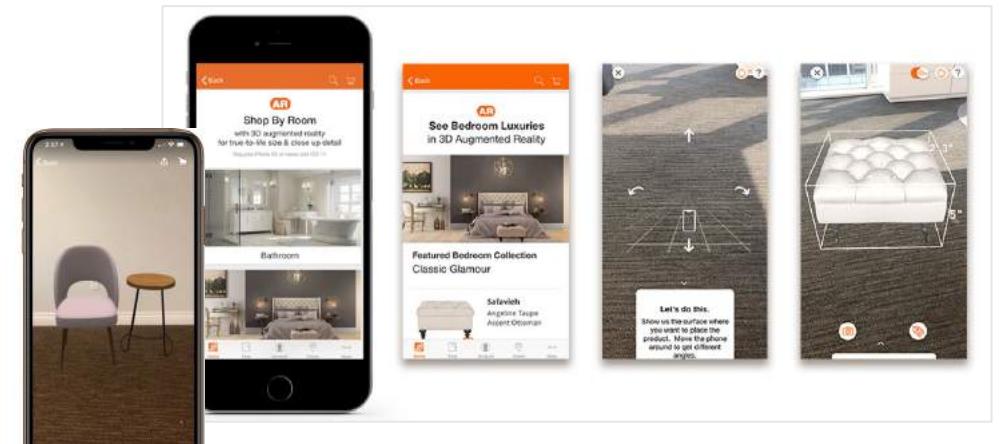
Mobile app for shoppers to try furniture in their room before they purchase.



3

Home Depot

The app enables the consumer to have a 3D visual of a product in any space they want to see a product in.



SO MY EVALUATION CRITERIA IS :

1. User Interface (UI)
2. Usability
3. Features & Functionality
4. Integrations

WHO WE ARE CREATING FOR - PERSONAS



Housewife up-to-date with latest interiors trends

Sally Anderson



Working Professional, in early 20s. Looking for Budget interior solution

Peter Smith

31 yrs., Married, Housewife, lives with her Husband and 2 kids in California

Wants to renovate her apartment where she lives with her husband. Sally has a very good taste for interiors but still finds it difficult to make decisions while designing her room. She is very picky about color and style and does her research online before purchasing.

Despite of her interior knowledge and good taste she feels that if she can somehow try interiors before finalizing things.

Needs a convenient way of playing with different furnitures available online and finding matching ones before purchasing.

"How to find an ideal solution for decorating my room perfectly? It is so confusing which furniture will match with her wall color, flooring etc..."



22 yrs., Single, Trainee in a MNC, from Arizona



Wants to decorate his apartment where he has recently shifted in limited budget.



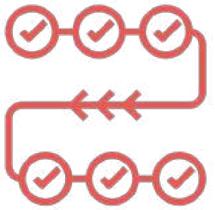
Looking for a solution where he can himself assess the interior requirements and how it will look in his apartment.



Cannot afford to hire an Agency for interiors. Purchasing furniture online cannot guarantee proper fit in his room.

"Can I have an affordable option where I can select my room décor items and also get an idea as to how it will look in my room "

INSIGHTS AND DIRECTIONS



Simplified the guest experience while interacting with the application



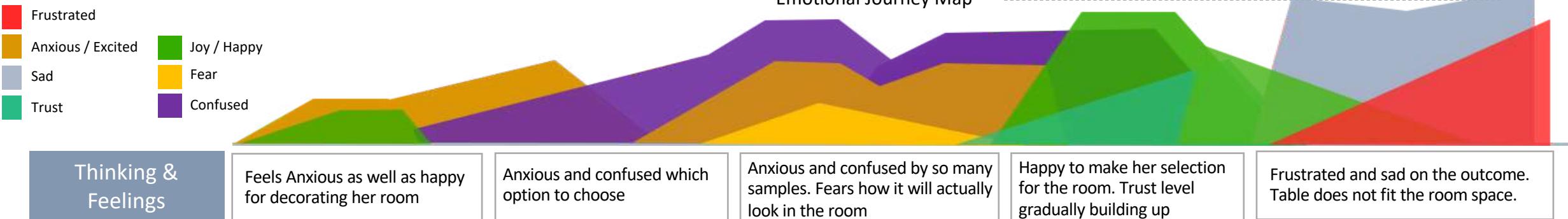
Clear **visibility** of urgent and required actions to achieve the user goals.



On time **notifications and help** for all important tasks related to choosing furnitures

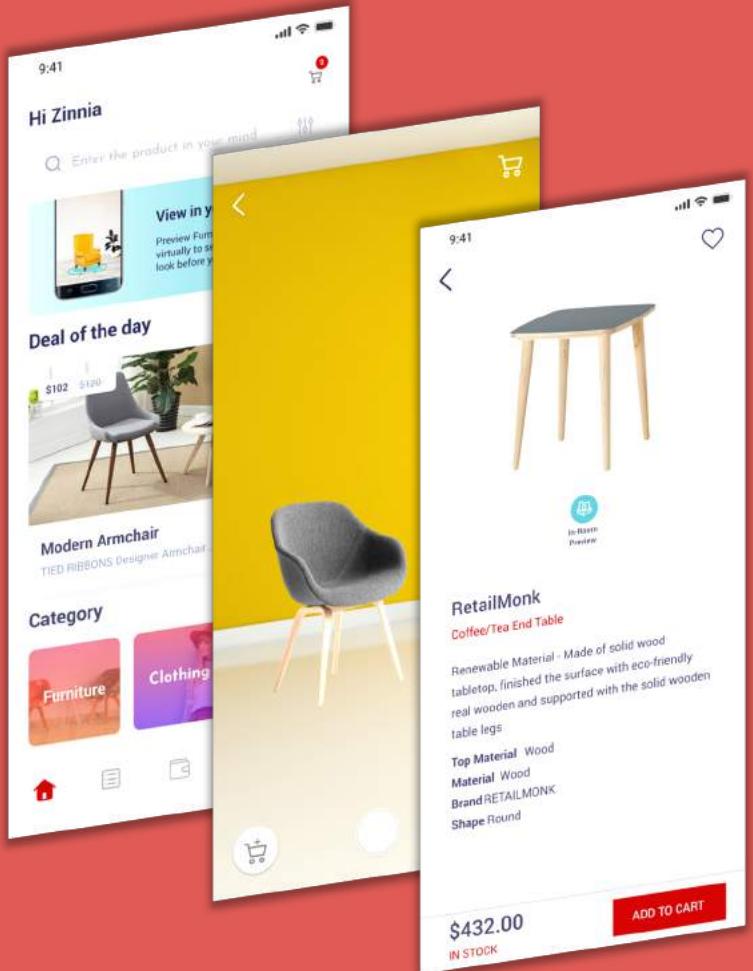
AS IS CUSTOMER JOURNEY MAP

 <p>Sally</p>	<p>I have my 10th Anniversary next month! But there is so much to do... My apartment is a big 5 room apartment and I want to decorate each room perfectly, particularly my living room! I want to renovate my living room as I have lot of guest visiting on my anniversary! I am pretty much up-to-date with the latest interior trends and also have few ideas for decorating the rooms the way I want. But I am not confident enough!</p>				
Stages of Journey	Awareness	Research	Consider	Purchase	Post-Purchase
<p>Activities</p>	<p>Sally feels she must decorate her Living room as her friends will be visiting her next month on her Anniversary. She is planning to buy a Coffee table in her living room. She is arranging a Tea party in her living room.</p>	<p>Sally visits the Target store to find suitable options. Also calls few of her friends to get suggestion on buying the ideal furniture for her drawing room.</p>	<p>Sally is confused which one to select from the sample displayed in the Table section. Finally she selects a coffee table that she thinks will look good in her Living room.</p>	<p>She proceeds to purchase the table and makes payment.</p>	<p>The table does not fit the space in her living room.</p>

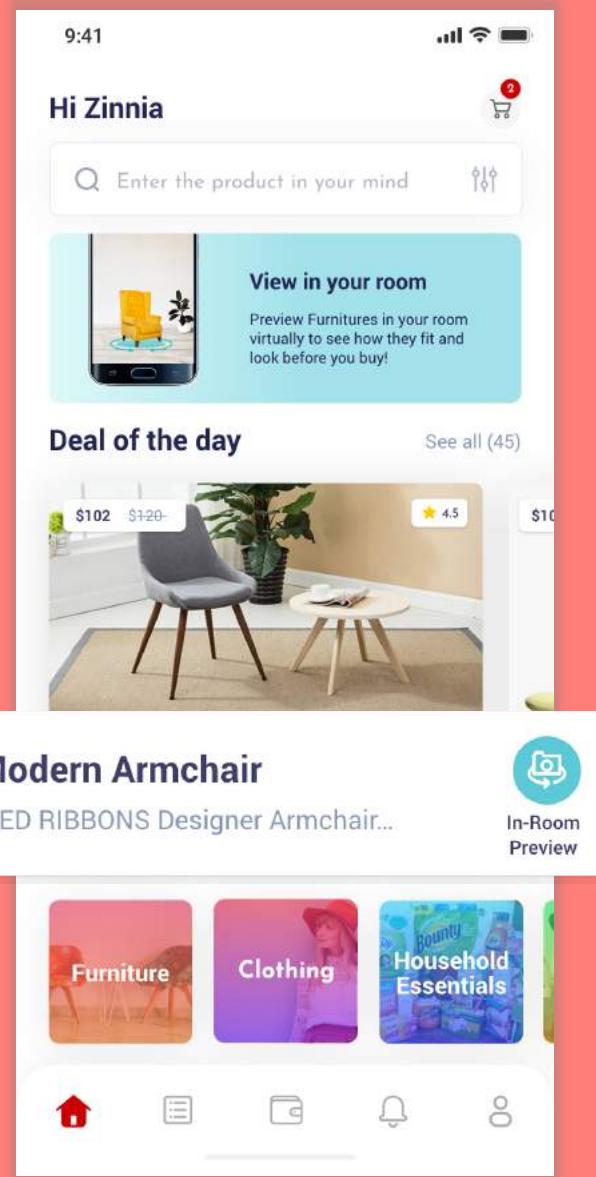


INITIAL SKETCHES





VISUAL DESIGNS



HOME

My design goal was to give end user simple and easy to use experience, focused on clean product imagery, easy to access various categories of online shopping and supported with rich font and minimal text. Big rounded tiles that fits and look seamless on mobile screen and iconography that is simple yet very expressive in terms of the form.



AR SCREEN VIEW

AR feature in this app allows users to visualize furniture in their room ahead of purchase, just by holding their smartphone. It will help users to find the right furniture using AR technology. You can walk around the room to see the furniture from different sides which also helps user buying decision.

Change and try available colors of the same furniture.

It also gives the user suggestion to try similar furniture with suggestions showing at the top. This suggestion strip will automatically disappear when the user removes his hand from the screen and shows up when he touches the screen.

1. Option of Sharing with friends and family
2. Add more furnitures to try with the existing one
3. Adding products to cart



9:41

Coffee Table

Enter the product in your mind

\$210	\$ 230-	★ 4.5
	LJUV Coffee Table	ADD TO CART In-Room Preview
\$432	\$ 520-	★ 4.5
	Coffee Table	ADD TO CART In-Room Preview
\$210	\$ 230-	★ 4.5
	Red Coffee Table	ADD TO CART In-Room Preview
\$210	\$ 230-	★ 4.5

9:41

RetailMonk

Coffee/Tea End Table

Renewable Material - Made of solid wood tabletop, finished the surface with eco-friendly real wooden and supported with the solid wooden table legs

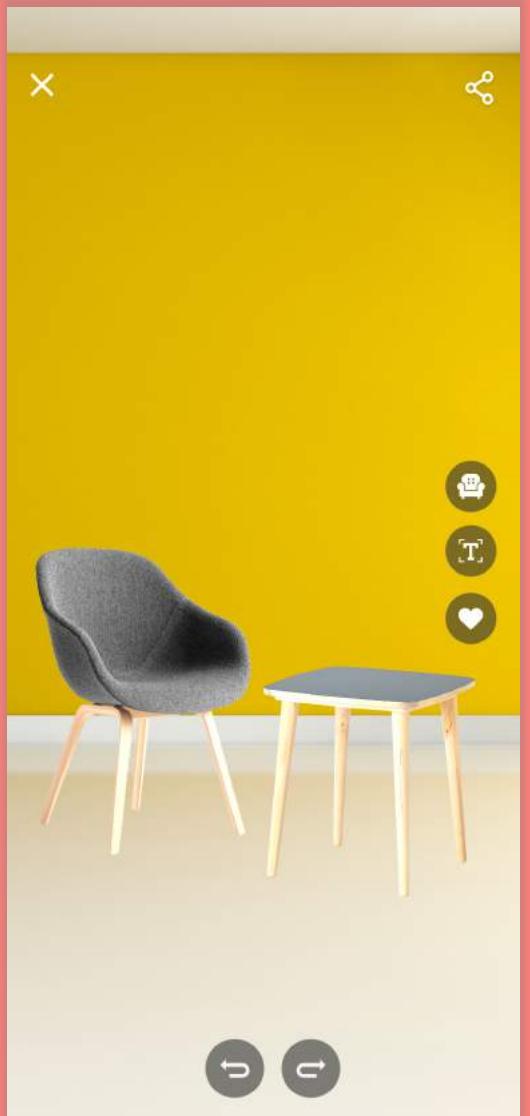
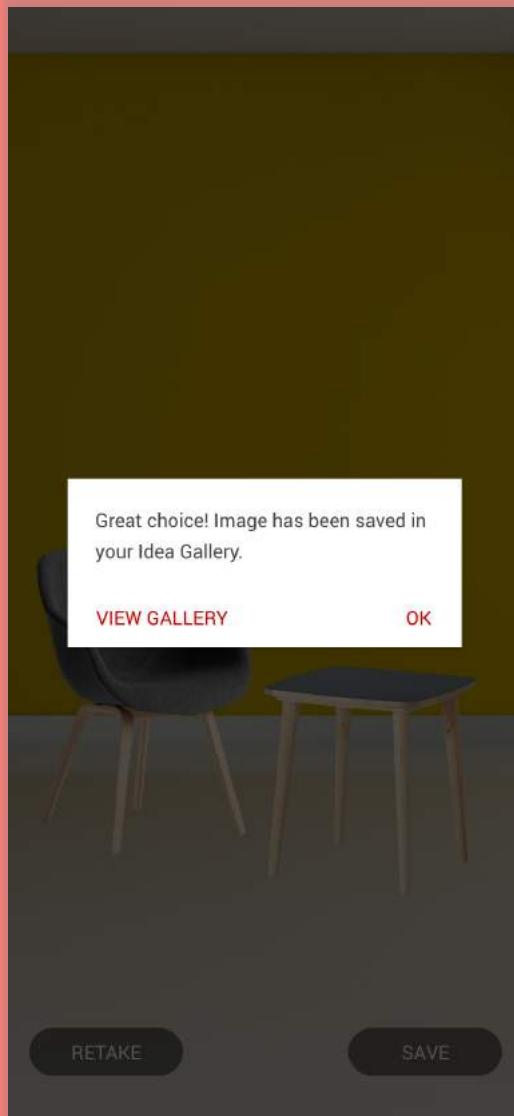
Top Material Wood
Material Wood
Brand RETAILMONK
Shape Round

\$432.00
IN STOCK

ADD TO CART

Info Rotate Flip Duplicate Delete

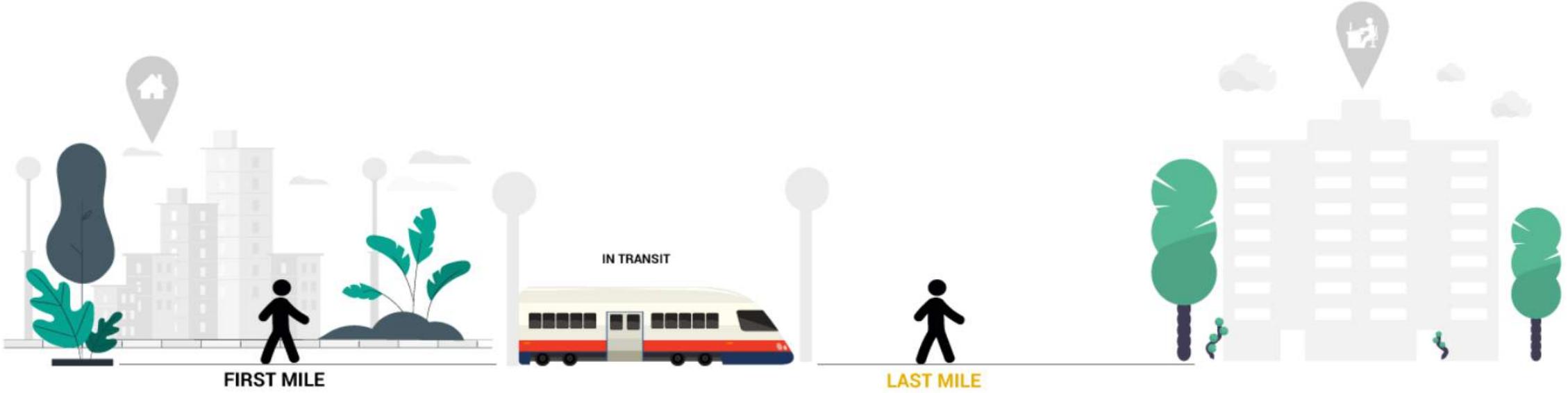




A detailed black and white sketch of a cozy living room. On the left, a large sofa is adorned with several pillows. In front of it stands a low coffee table with a tray holding three round objects, possibly fruits or ornaments. To the right of the sofa is a small wooden cabinet with glass doors displaying various items. A large window on the right side of the room looks out onto a garden with flowers and trees. The room features a staircase leading up to another level, and a fireplace is visible in the background. The overall atmosphere is warm and inviting.

Thank you! Looking forward to you 😊

Last Mile Mobility



The Challenge

To come up with a creative solution to solve the last mile mobility issues. This could be for any touchpoints (mobile app, kiosk, etc.) or continuation of a navigation.

The design solution might take into consideration the following:

- Findability of vehicles
- Connectivity
- Access
- Payment
- Customer Support

Since I live in Noida I decided to take this opportunity to find a solution of this problem for people in Noida. The last mile mobility issue is a very common problem in all major cities and I am sure any people residing in Noida like me would face the same problem in their daily life. I wanted to go to the root of the problem and thus created a research strategy to help understand about:

- The people who live here
- The population mix
- Literacy rate
- Inhabitants
- Their average monthly expenses
- Their average monthly expenses on daily commutation to work
- The common and preferred mode of transportation used by daily commuters

Understanding Noida

- Noida is located in Gautam Buddh Nagar district of Uttar Pradesh state
- It is a satellite city of Delhi and is part of the National Capital Region of India
- It is in the flood plains of the Yamuna River
- Noida is also famous for its tall buildings and comes 2nd in India after Mumbai in this parameter
- Noida has also become a hub for software and mobile app development companies contributing to the city's economy
- Besides Delhi, Noida was the most polluted city in India on November 1, 2019

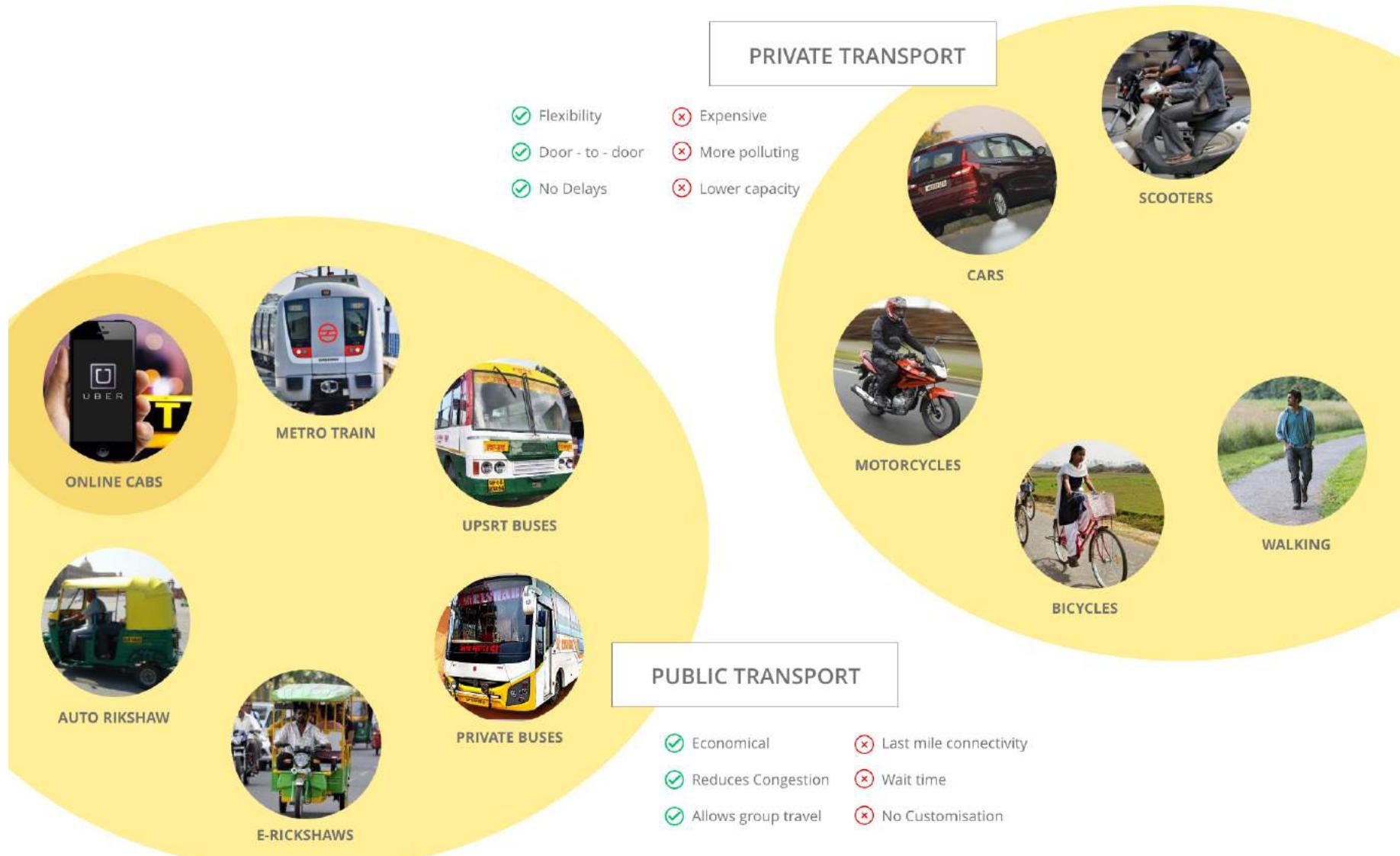
Understanding the people who live here

- Inhabitants: 16,4800 Mil (Male: 890000, female: 758000)
- Population Mix: 45% immigrants, 55% native
- People who live here: All religion people stay in Noida predominantly Hindus and Muslims
- Literacy Rate: 88.58% (Male literacy: 92.90% , female literacy: 83.28%)

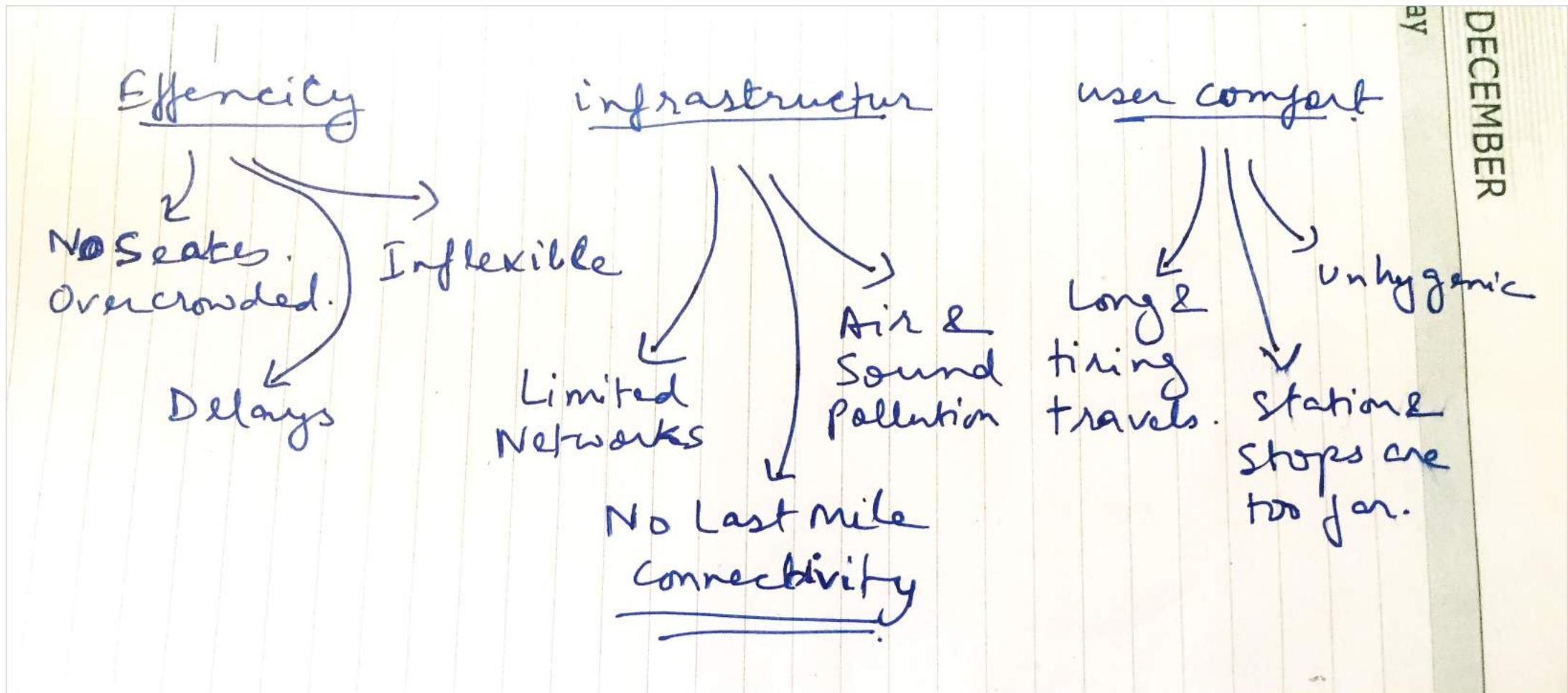


How do people in Noida travel?

UPSSRTC, DTC, Noida Metro service and private buses ply through various routes in the city. Taxi, auto-rickshaws and cycle rickshaws are available for short-distance transport.



Public transport problem in Noida



Problems due to current setup

- There is vehicle for every 2 people in the city
- Noida is fairly big city and consists of many blind transport spots. For local residents it takes quite a while to reach to the nearest bus stop/metro station.
- Every day 1000 new vehicle join this fleet
- Deficiencies in public transport systems & easy loan is leading to increase in private individual vehicles
- Decades ago buses were definitely the most preferred mode of transport, but now have been surpassed by two-wheelers. People prefer private vehicles due to Last mile connectivity problem
- With the rise of economic empowerment and increase in literacy rate among population, all those who ride two-wheelers are now potential car owners and all those who own one car are potential owners of two cars.
- A sharp rise of vehicles in the city have worsened pollution level and has reached danger level.

Synthesising user research findings

From my research findings, I identified three primary personas - a Software engineer, a Factory worker, College girl



Vivek Sharma

26 years, Single, 20 Km daily travel, Takes a Cab/ Bike, Software Engineer in an MNC

Wants

Wants to do well at work and get promotion. Wants to stay stress free. Wants to stay healthy.

Needs

Needs an economical mode of travel. Needs flexibility & freedom to make choices.

Challenge

Finds public transport disjointed and personal vehicle expensive.

"Daily cab sharing is expensive. Also getting cabs are a problem when you stay late in office. Office is 2.5 Kms from metro station. Cannot walk due to shortage of time"



Ramesh Mishra

42 years, Married, 14 Km daily travel, Takes a cycle and public bus, Works in a Factory as a supervisor

Wants

Wants an inexpensive daily means of travel. Wants to be self-reliant and ride his own vehicle

Needs

Needs an economical mode of conveyance for daily use. Wants to save on cycle repair expenses.

Challenge

No direct public transport service to his workplace. Frequent cycle repair expenses and possibility of theft

"My bicycle helps me go to work and also in my budget. But once it got stolen and I was all alone"



Priya Malhotra

20 years, Single, 6 Km daily travel, Takes a Bus or cab, 2nd year student

Wants

Wants to graduate with good grades. Wants to reduce travel expenses. Wants to reduce pollution.

Needs

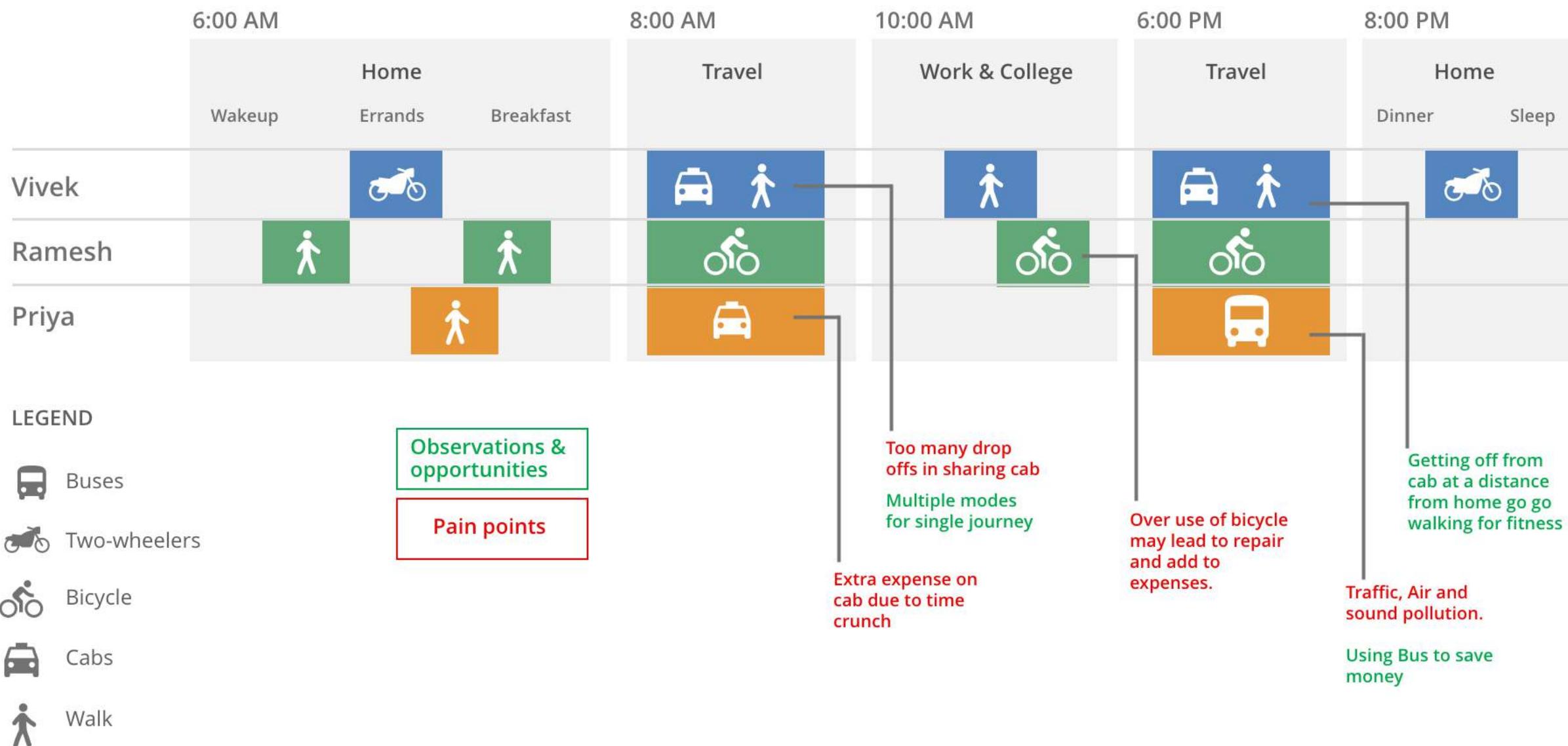
Needs a dependable mode of transport to reach college that saves time and money.

Challenge

Finds shared cabs expensive due to peak hours of the day. Buses are unavailable, congested and run late. College is not on the metro line.

"I want to reach college on time. The buses are unreliable and cabs are too expensive."

User Journey - When & how do they travel and What do they encounter



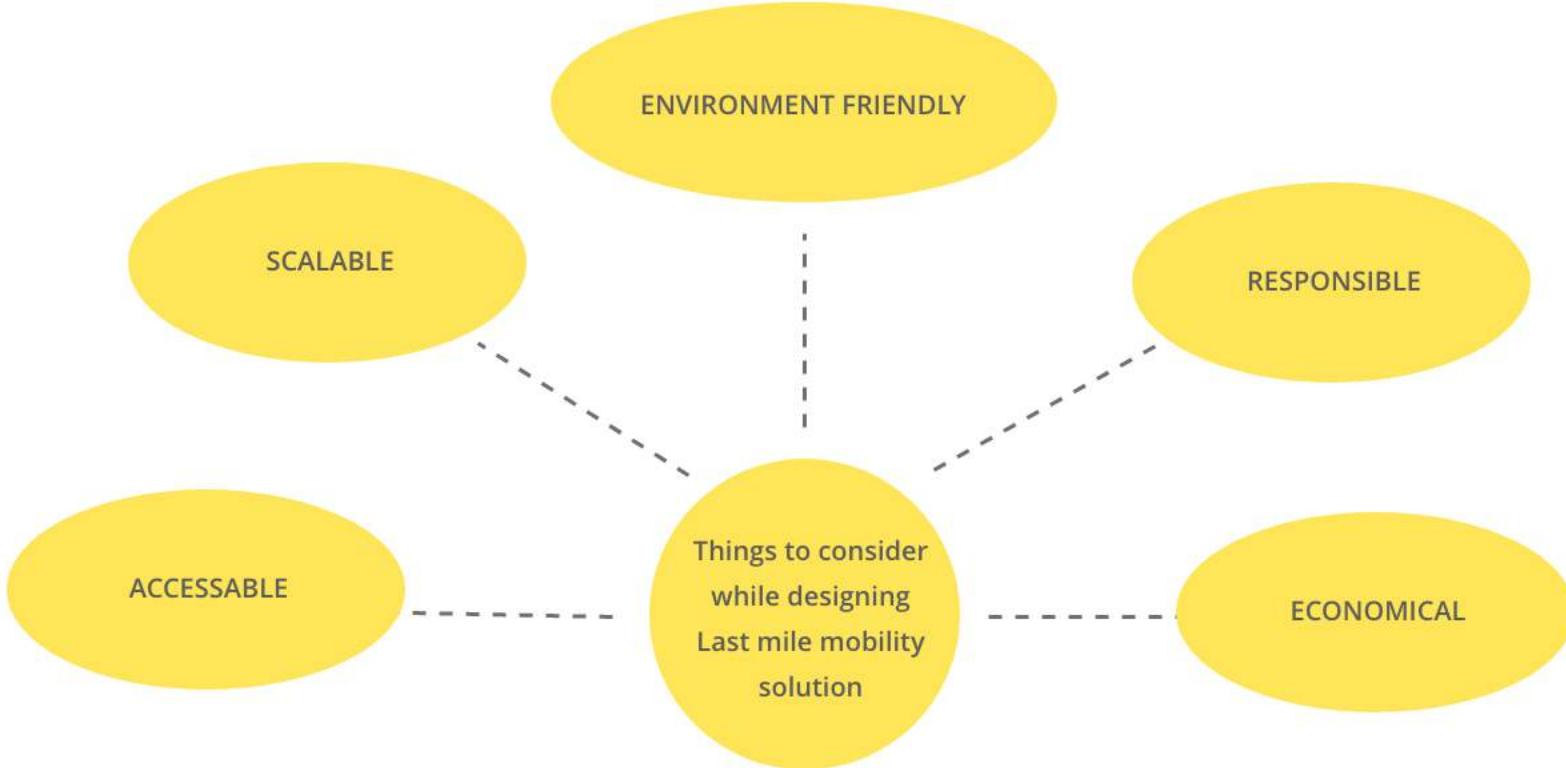
Insights

- People feel that the current transport system is not sufficient to cope up with the growing travel demand thus leading to traffic and slow travel speed.
- Citizen want an end to end sustainable transport solutions. Road transport has to be integrated with metros.
- People need new transport solution that can also integrate with UPSRT and metro services
- Taking in consideration the increasing pollution people are looking for non motorised transport solution that offers basic mobility and affordable transport
- People desire increase in overall transport capacity with faster and more accessible transport systems

Ability Factors

Another important thing to consider while coming up with this concept was user behaviour which takes into consideration ability factor. Ability is the characteristic or set of characteristics of any person to perform a certain task by certain skill set. According to Fogg, "We are fundamentally lazy." This means that people generally avoid certain tasks that require special training or instructions. Due to this reason, simplicity of the service use is a must. Fogg has deduced the following six components that influence Ability factor:

- **Time:** A target behaviour requiring more time is not simple behaviour.
- **Money:** An economical target behaviour is simple in nature whereas costly behaviour can make it complex to achieve for most of the people.
- **Physical Effort:** Behaviours requiring physical effort are not simple.
- **Brain Cycle:** Problems that require extra mental effort can be hard in nature.
- **Social Deviance:** "Going against the norm" is a difficult ask and makes the issue uneasy.
- **Non-Routine:** Fogg explains "In seeking simplicity, people will often stick to their routine." Which implies that changing a habit is not in human nature and requires going a step further. This makes the behaviour uneasy.



How does E-Bicycle fit in this current setup?

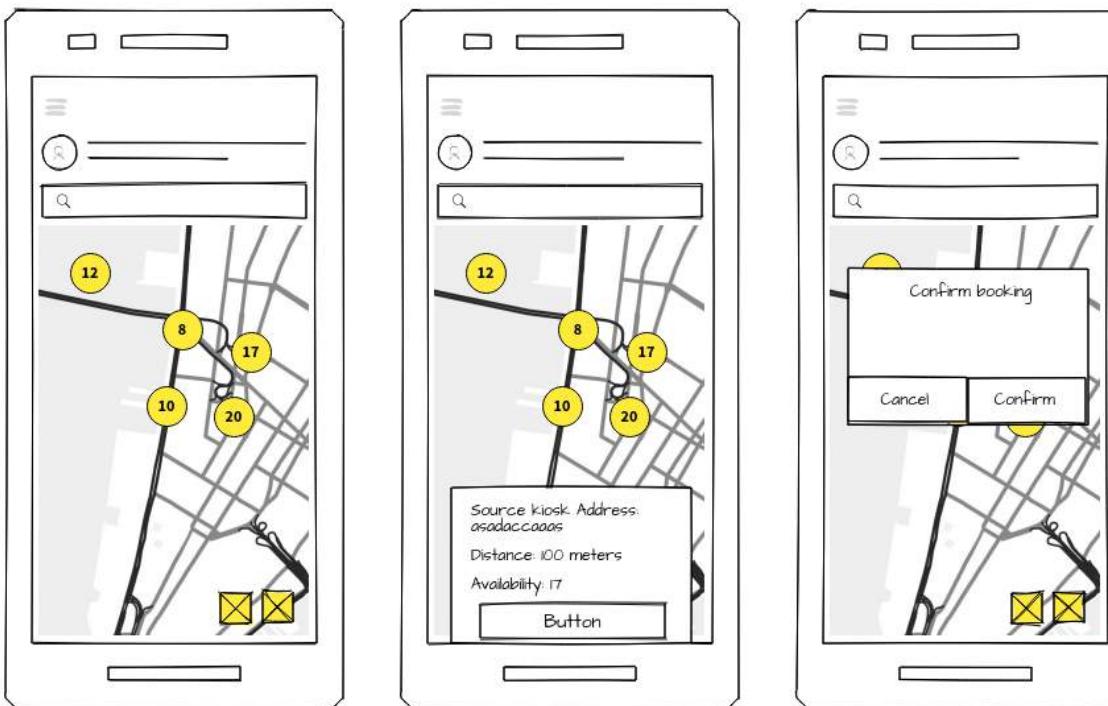
1. Saves the environment, Saves fuel and cost effective
2. Nearly the cheapest form of public transport
3. Freedom, flexibility and convenience
4. Helps one to be fit
5. Safe, secure and avoids accidents
6. Can be afforded by majority of population

Smart Ride

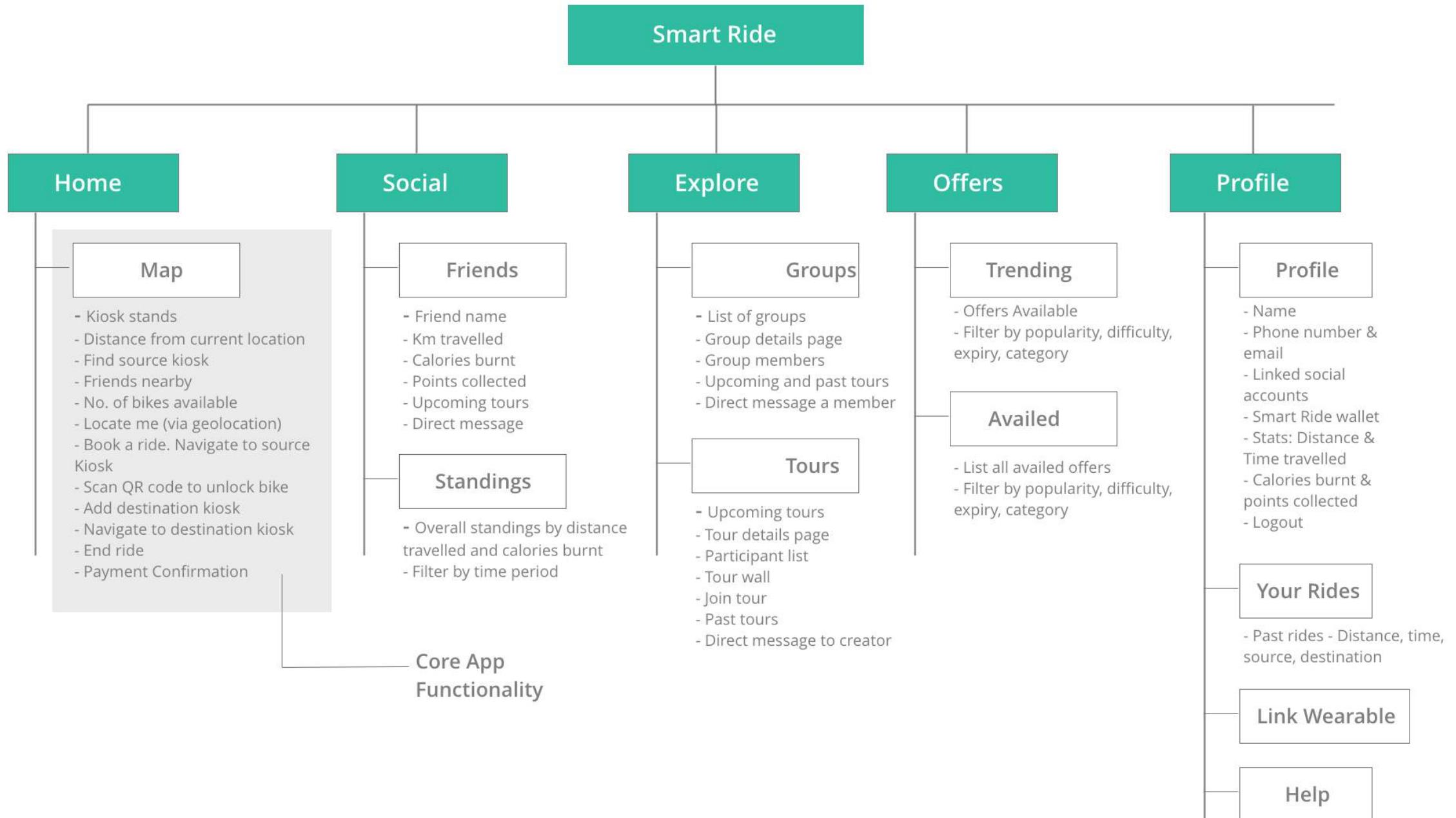
What is Smart ride?

A solution that establishes a network of E-Bicycle kiosks within the city and promotes a healthy lifestyle and flexibility of bicycle transport over short distances to encourage commuters to adopt it. It reduces congestion on roads through its on-demand rental feature and gives real time feedback to users to ensure that they are fairly charged. There is also different reward points attached with each ride to motivate the users and make ride enjoyable.

Few initial concept/wireframes



Information Architecture



Branding & Styling

Logo mark with Brand name



Logo mark used by itself



Brand name

Smart Ride

Open Sans

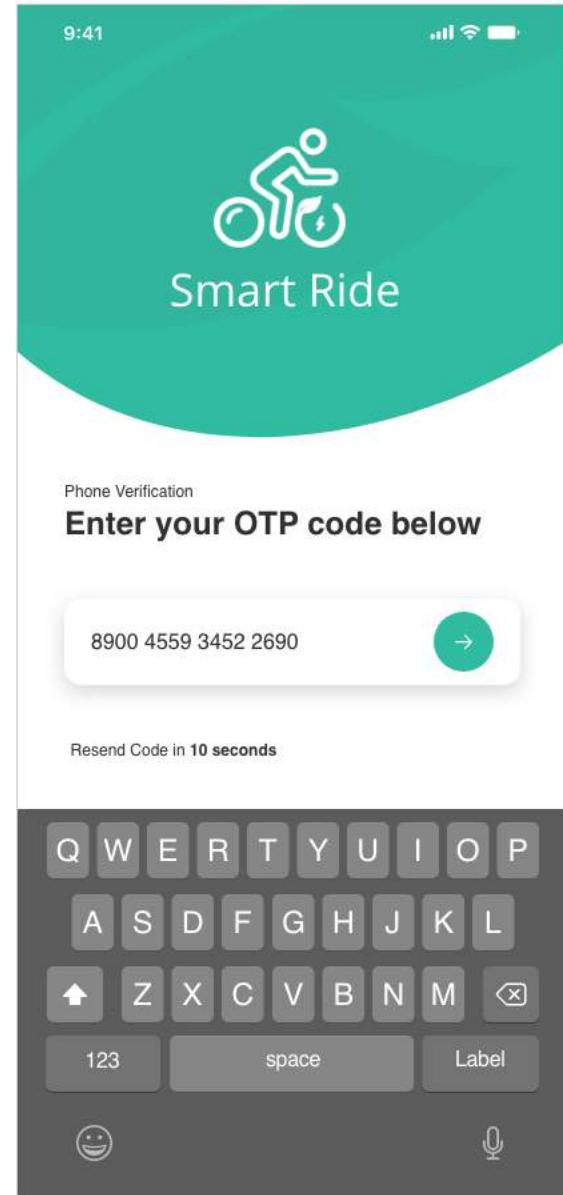
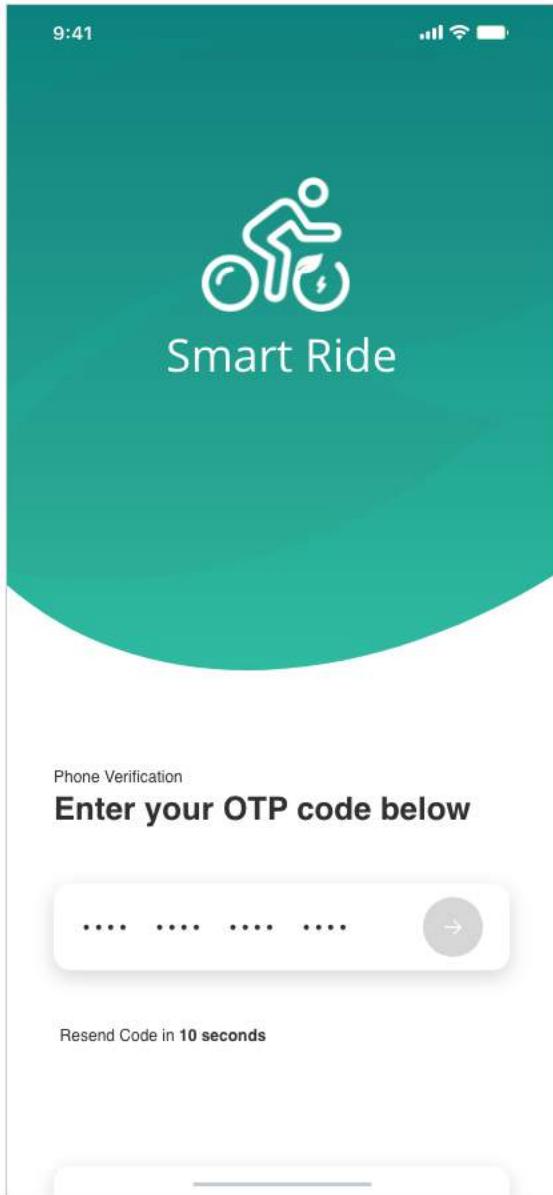
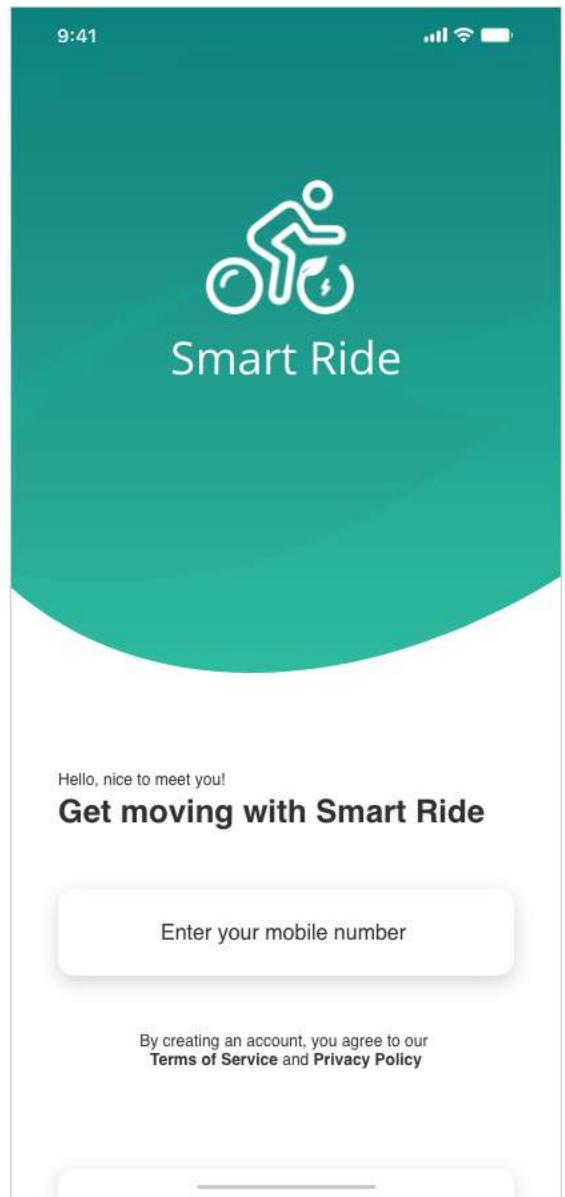
Light

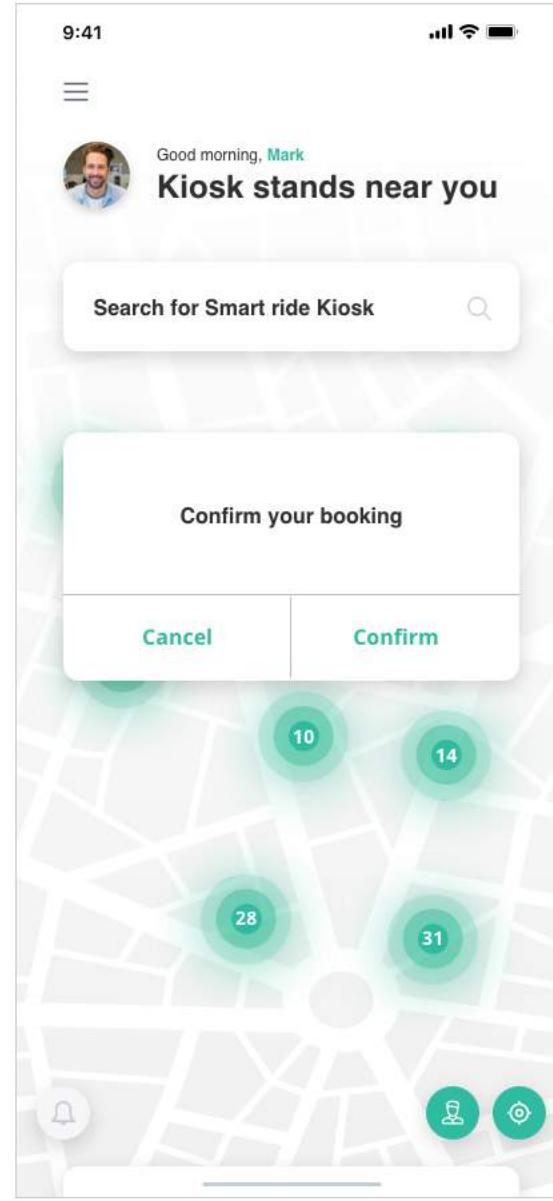
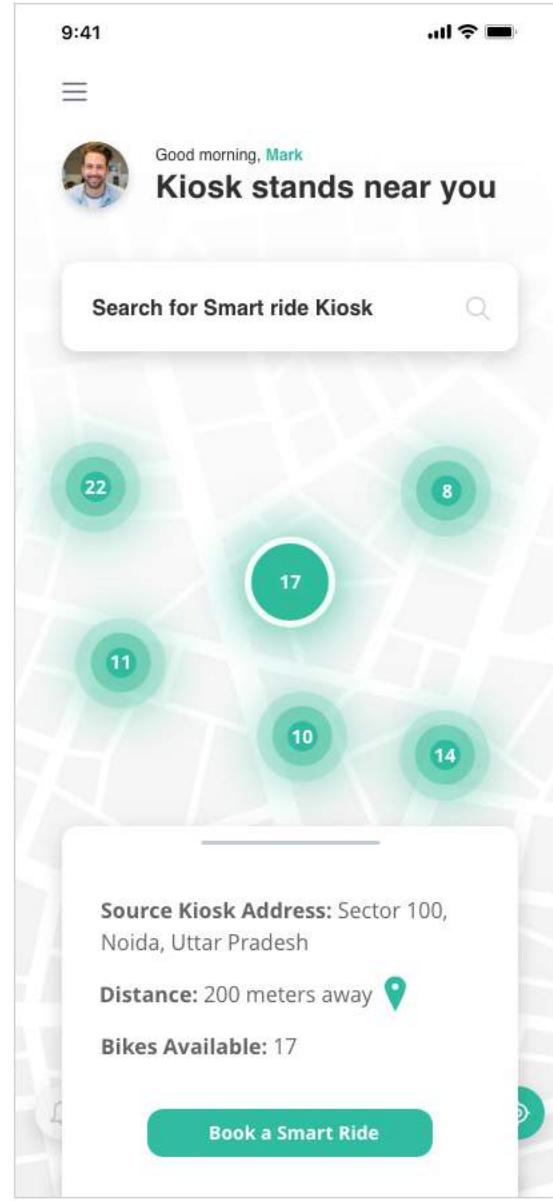
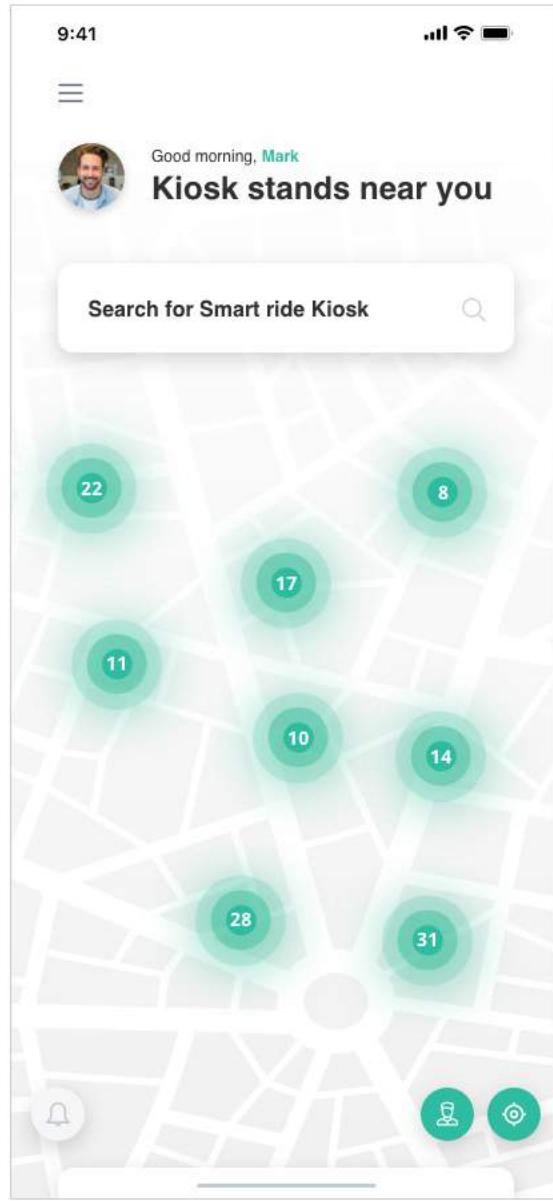
Regular

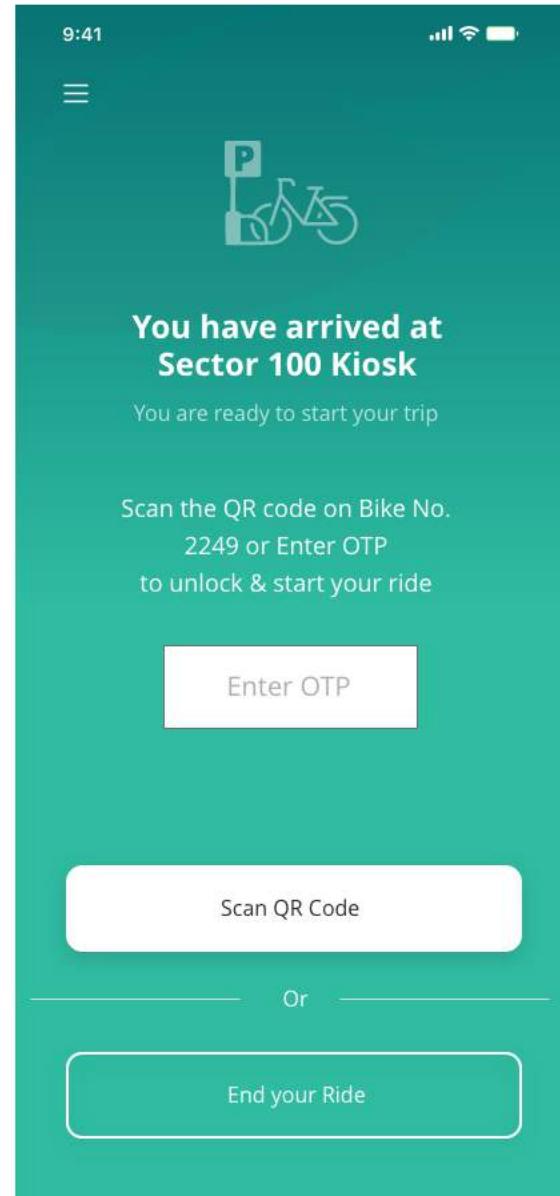
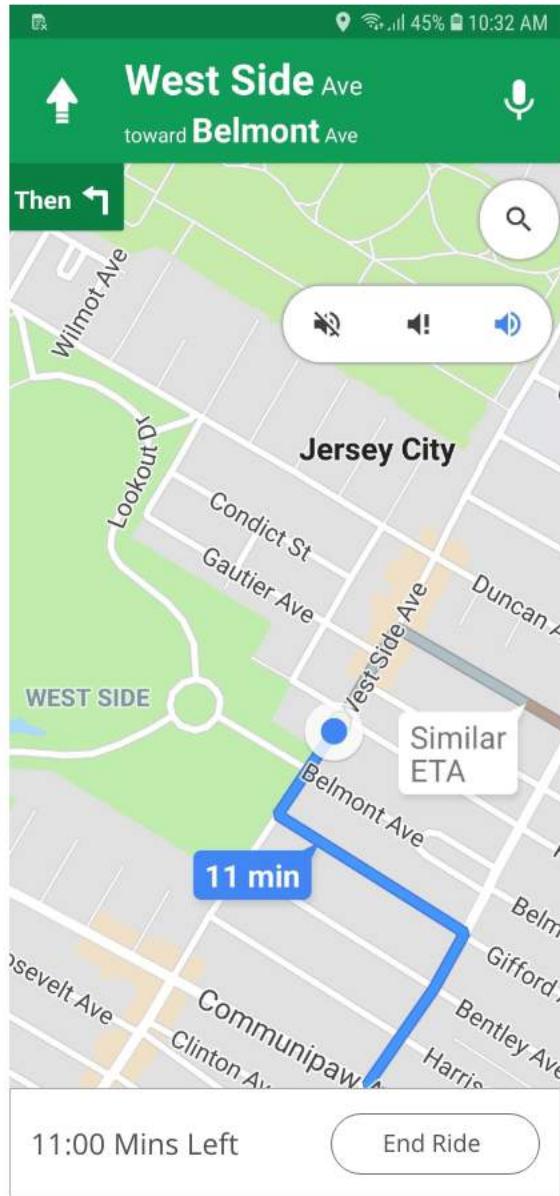
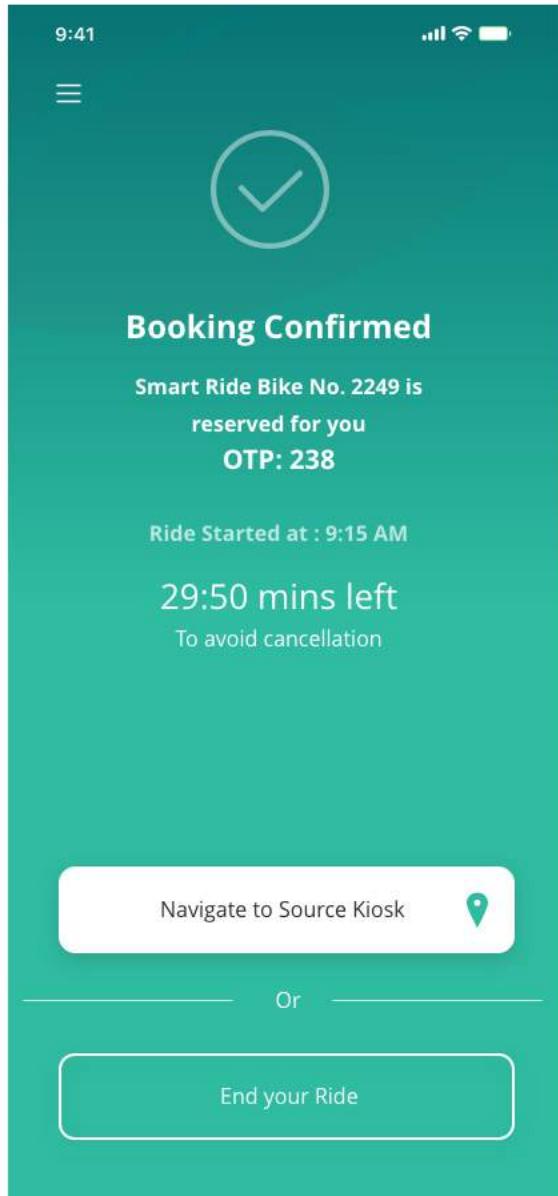
Semi bold

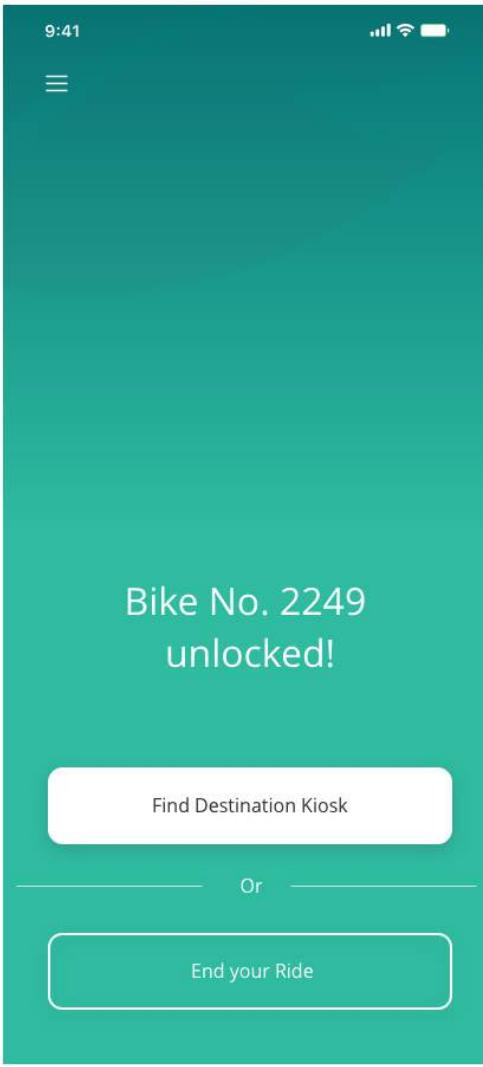
Bold

Visual Designs





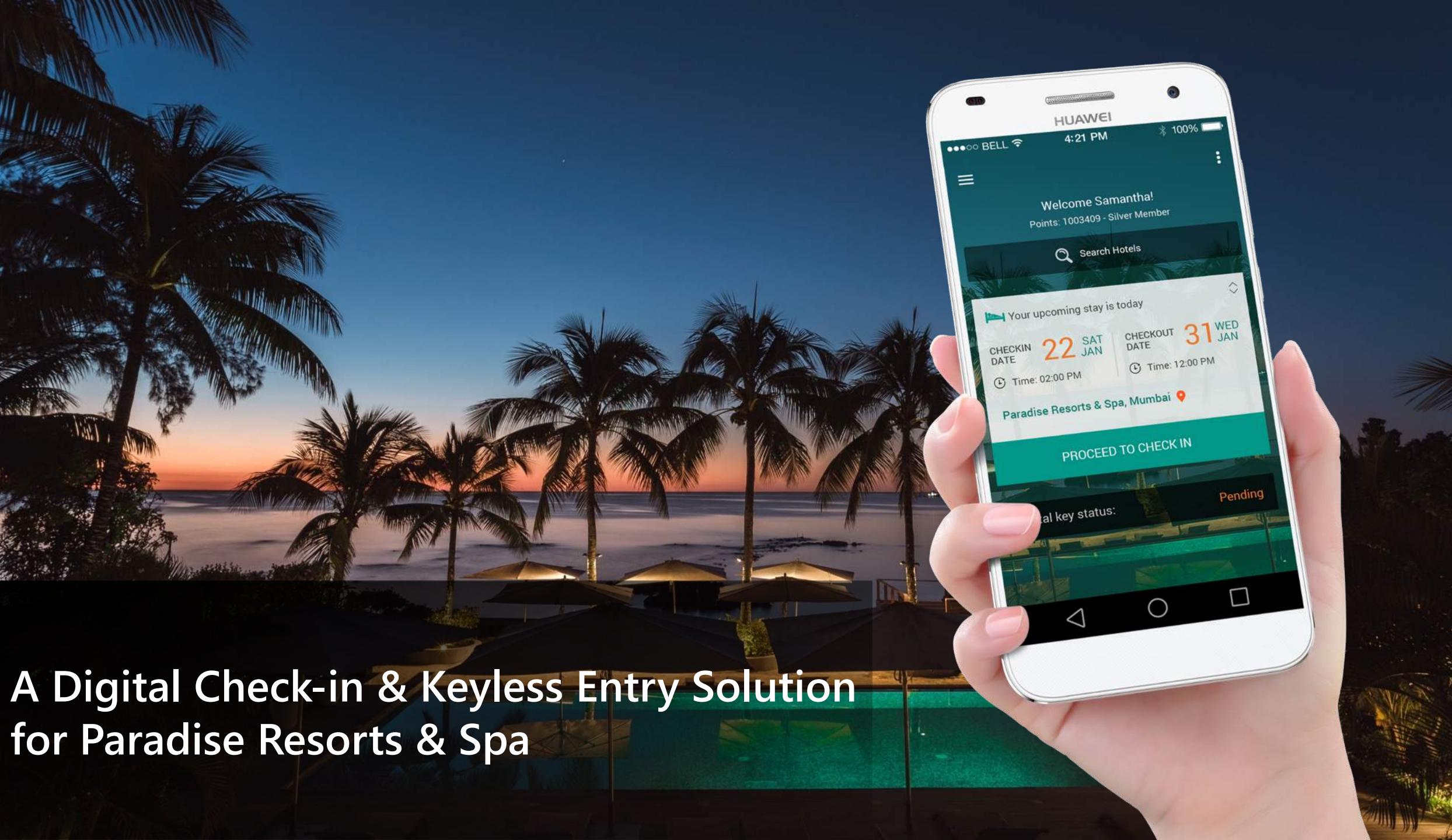




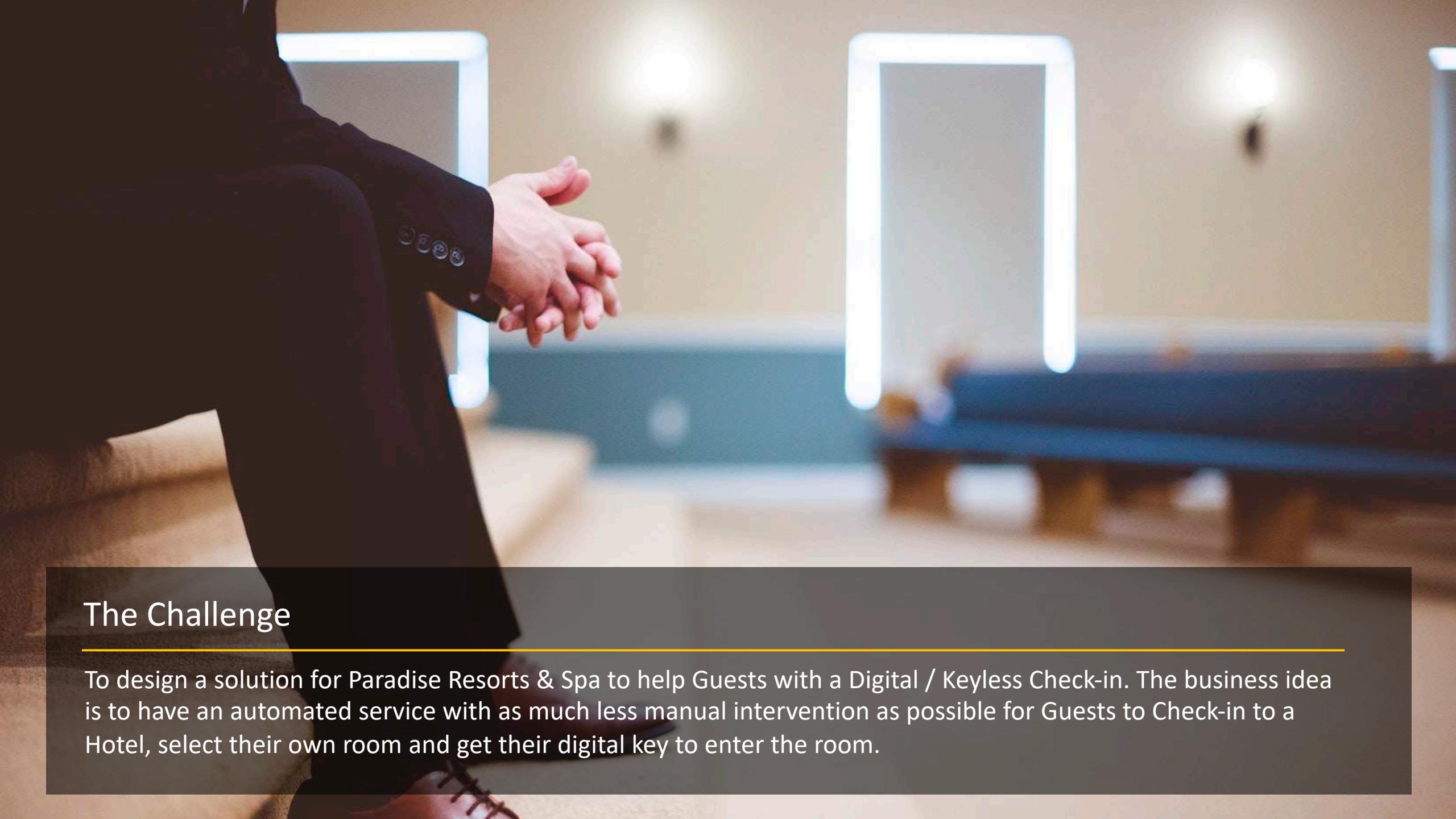
Key screens shown

1. Choose Source Kiosk
2. Book Ride

3. Unlock cycle
4. Find destination Kiosk



A Digital Check-in & Keyless Entry Solution
for Paradise Resorts & Spa



The Challenge

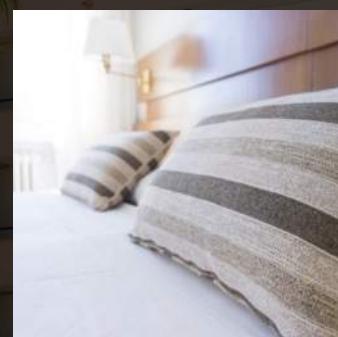
To design a solution for Paradise Resorts & Spa to help Guests with a Digital / Keyless Check-in. The business idea is to have an automated service with as much less manual intervention as possible for Guests to Check-in to a Hotel, select their own room and get their digital key to enter the room.

Hotel Overview

- Located in the midst of bustling city of Mumbai, in Pali Hills, Bandra(West).
- Total 150 Staffs which includes all the departments like Food & Beverages, Housekeeping, Reception, Engineering, Administration, Purchase, Security etc.
- Guests include Businessman, Corporate travelers, Leisure Travelers, mix for business and leisure travelers.
- Well connected to the main offices and MNCs in Mumbai. Also very near to Marine Drive.



Most Common Guests



Problem Statement

These days, travellers prefer to be self-sufficient enough to avoid lengthy, time-consuming processes. The new-age self check-in technology can play a vital role in this regard thereby providing guest convenience and at the same time reducing the load on the front desk staff. Moreover the rate of loss of room keys by the guests have also created a lot of confusion and effects hotel's budget by ordering new keys.

Project Goals

To design a Self check-in app that provide Guests with Digital/Keyless check-in; An automated service that reduces manual intervention as much as possible for guests to Check-in, select their room and get their digital key to enter the room.

Stage 1: Discovery

As my knowledge with the entire Hotel Check-in process and Guest Experience was limited to design an app, our team created a research strategy to help understand:

- About the Hotel group
- The Check-in process and formalities till the Guest enters his/her room
- The Guest experience during the check-in process
- What are the areas of dissatisfaction the Guests faced
- The type of travellers who visited the Hotel the most
- The Guest and staff interaction
- Guest feedback after staying in the Hotel

We started out by conducting a secondary research using online resources to understand guest dissatisfaction with the manual check-in process that resulted in bad guest experience; Visited the popular travel websites to collect reviews on the particular Hotel and also find out their pain points. We proceeded to conduct a competitor analysis of some of the direct and indirect players in the industry by reviewing their solutions, app features, interface design, customization and functionalities.

To help understand the Check-in process and in depth knowledge about the Hotel our team approached the Hotel Floor Manager for deeper insight.

Research

Interview with Hotel Staffs:

Can you explain your Check-in process?

What details do you need from Guest for completing the Check-in formalities?

How long does it usually take for a Check-in process to complete?

How many staffs are there in the Front desk to complete the Check-in formalities?

What is the peak time for Check-in in your Hotel?

Have the guests have complained or shown dissatisfaction due to delay in Check-in formalities?

How do you manage early check-ins and late check-outs?

What is your room allocation process? Do you consider Guest's room preference before allocating the room?

How do you manage loss/mishandling of Room Keys?

Does your Hotel provide Pre-arrival services? If Yes, what is the mode of accepting such requests (through Phone Calls/ Emails/ Online chat etc.)?

What are the segments of Travellers staying at the Hotel and at what percentage? (Business/corporate, Leisure, Mix of both)

Are most of the Guest Smart phone users?

How far is your Front desk from the parking lot?

After check-in does your Hotel provides any staff to escort the Guest till his room or is it a self service for the guest?

Is the food options limited during mid night or late hours of the day?

Usual check-in process

Frustrations

- :(Wastage of time and energy in Manual Check-in
- :(Waiting time while Check-in results in frustration and negative customer experience.
- :(Not able to select room according to personal preference.
- :(No option to place Pre-Arrival service request if anyone wants to avail.
- :(Service staff might not be available at odd hours during night to place orders or requests.



1.

Online Hotel Booking



2.

Reach the Hotel. Keep ready to show the Booking details at the reception.



3.

Reach out to the Guest Service staff at the reception to get the Check-in process done.



5.

After Check-in formalities done get your keys from Reception and enter your room.



4.

Wait if you have arrived before usual Check-in time if incase room is not ready.

Personas



Smart phone User

Excellent Technology Awareness

Raj Joshi, 32

Project Manager, Delhi, India

TRAVEL GOAL:

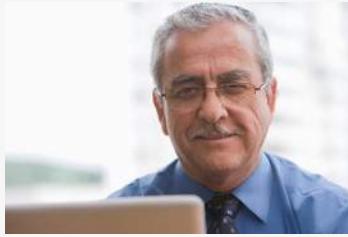
[Corporate Travel](#)

ISSUES:

- Hectic Schedule. Last minute meetings
- Check-in/check-out at very odd hours

NEEDS AND GOALS

- Avoid waiting time in manual check-in/check-out due to busy schedules.
- High Comfort.
- Quick Service.
- High speed Internet
- Less Manual intervention.



Smart phone User

Moderate Technology Awareness

Vikram Shetty, 62

Businessman, Gujarat, India

TRAVEL GOAL:

[Business Travel](#)

ISSUES:

- Travel plans are urgent and last minute
- Health issues

NEEDS AND GOALS

- Avoid waiting time in manual check-in/check-out due to health issues.
- High Comfort.
- Quick Service and food preference.
- Choose Room according to personal preference.



Smart phone User

Excellent Technology Awareness

Mr. & Mrs. Smith, 37, 35

Couple, California, USA

TRAVEL GOAL:

[Leisure Travel](#)

ISSUES:

- Choosy about his Drinks
- New country and people
- Children Impatient

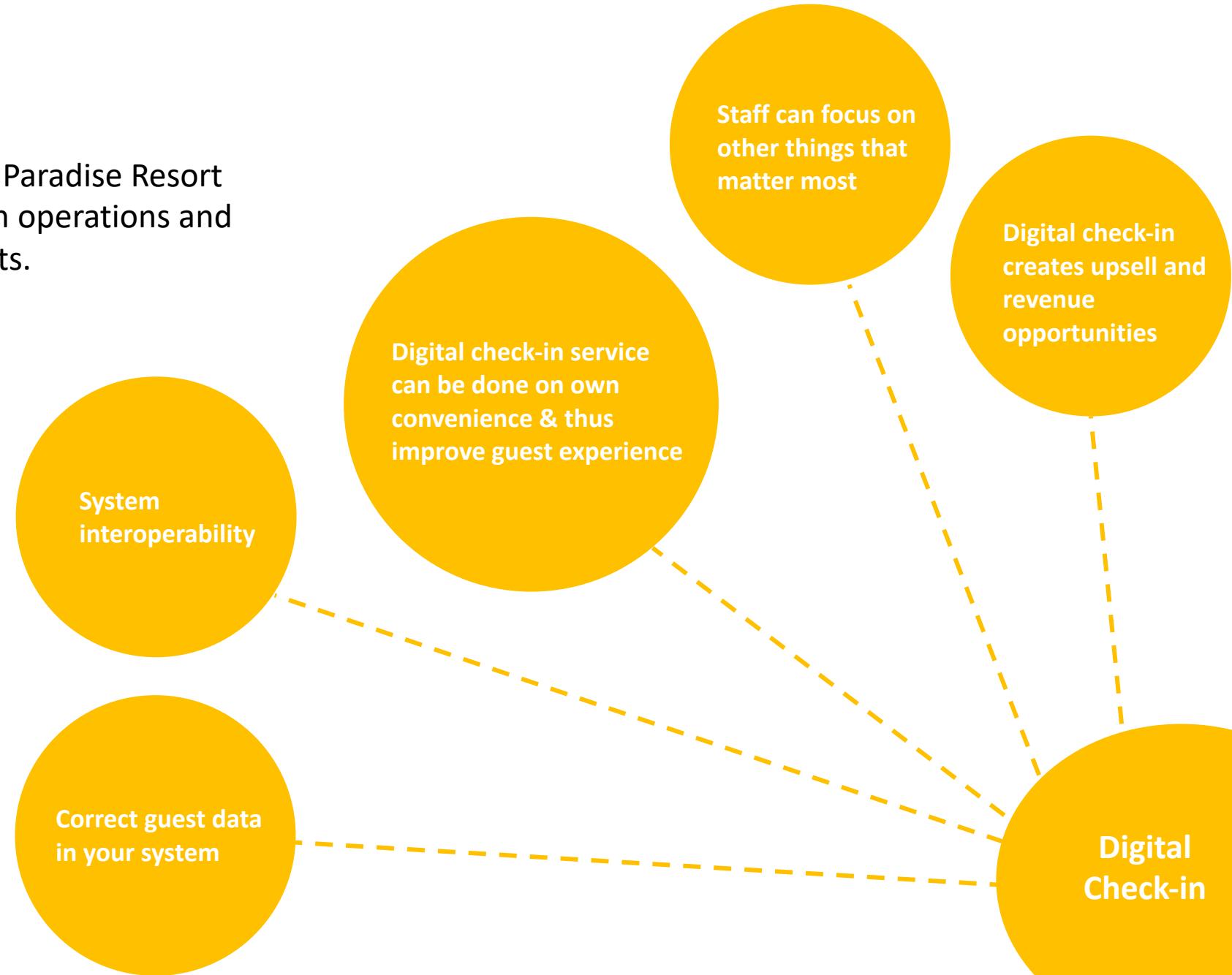
NEEDS AND GOALS

- Prefer pre-arrangements (Favorite Drinks and refreshments) in their room before checking in to the hotel.
- Avoid waiting time in manual check-in due to tiredness from international travel.
- High Comfort and cleanliness.
- Quick Service and food preference.
- Choose Room according to personal preference.

Proposed Solution

Launch of Digital Check-in solution for Paradise Resort & Spa that can improve both their own operations and the customer experience of their guests.

The infographic describes the Digital check-in service will improve the hotel's working life and the experience of their guests.



UX Scope

Following the requirements in the customer journey map and considering resource and time constraints, a crude scope for the list of features was drawn up.

Mobile Application with the following features:

- Register / Login page with password recovery functionality
- Check-in Section with following features:
 - Booking summary page
 - Floor map for room selection
 - Pre-arrival service request
 - Check-in summary page
 - Digital Key access on day of arrival
- Social media (Facebook, Google+, Twitter, Instagram)
- Loyalty Score page
- Customized Offers page



User Journey map – Guest check-in Experience

User Stage	Awareness	Register	Way to Hotel	Arrival	Check-in
User Action	Gets email notification of new Digital Check-in App by Paradise Resorts & Spa.	Landing page ask guest to fill a simple form to Register and get the Digital Key.	Arrival to destination city. Opens the app. Clicks the Check-in Button to make a digital check-in. Selects pre-arrival services and also to select his room through floor map.	Reaches Hotel. There is a waiting line at the reception. Opens his app to see his Digital key ready for use.	Follows the instruction given in the App screen to unlock the room door with the Digital Key. Enters the room.
Reaction / Thoughts	Will this be just like any other booking app? Curious! Wants to explore more...	Registration was simple! When do I get my Digital Key?	This is awesome! I can order for my favorite wine in my room in advance! Is it really possible to Check-in using digital key? I am in hurry to get into my room and take a bath... Will it save my time? Excited!	Wow, I will not have to wait in the queue for my turn to do the check-in formalities! Happy!	Happy to get a smooth check-in experience! Finds his favorite wine bottle ready in his room. Feeling happy and relaxed.
Activity	Reads through the mailer. Sounds Interesting! Clicks on "Download" App	Explores through the app.	Visits the Online map navigator section to locate the Hotel.	Heads towards his room through the floor map guide in the app.	Shares his experience with other friends and colleagues in social media.

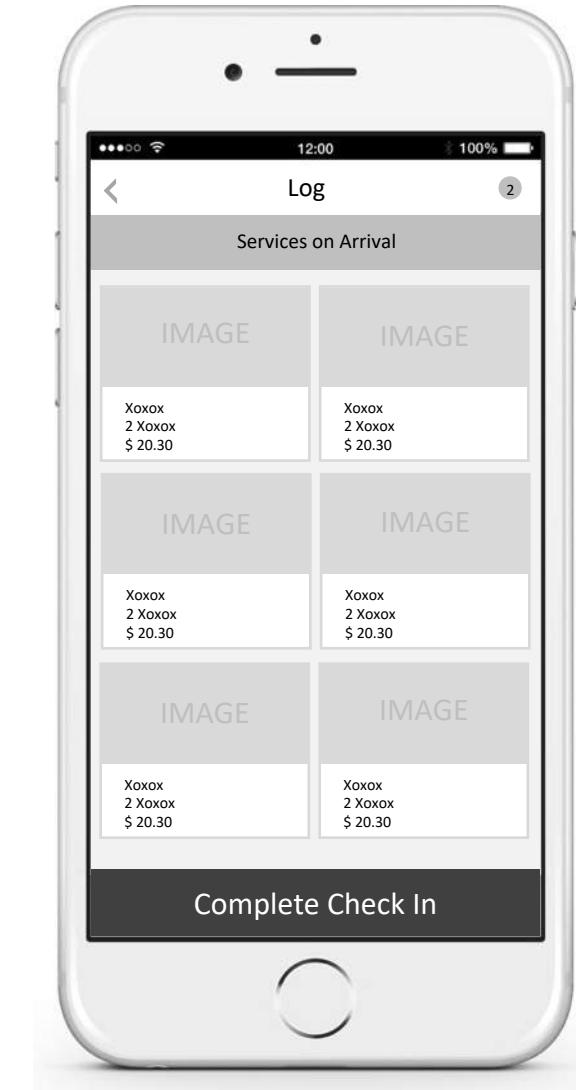
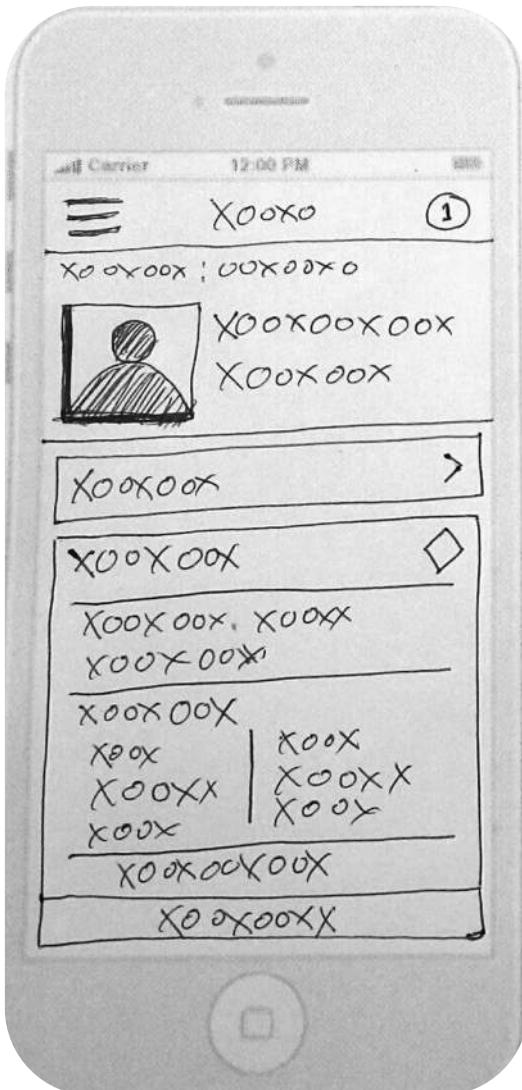


- █ Frustrated
- █ Anticipation
- █ Surprise
- █ Trust
- █ Joy
- █ Fear
- █ Anxious

Experience



Initial concepts & wireframes



Visual Styling & Moodboard



Roboto

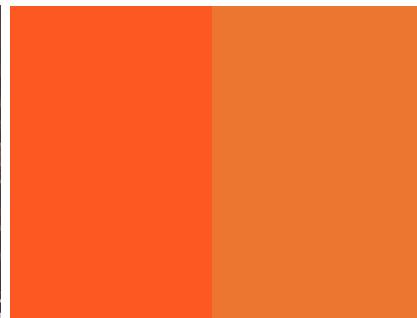
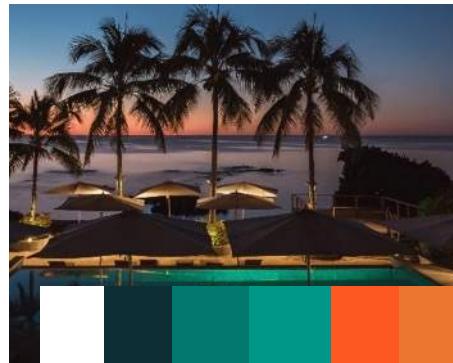
Regular

Medium

Bold

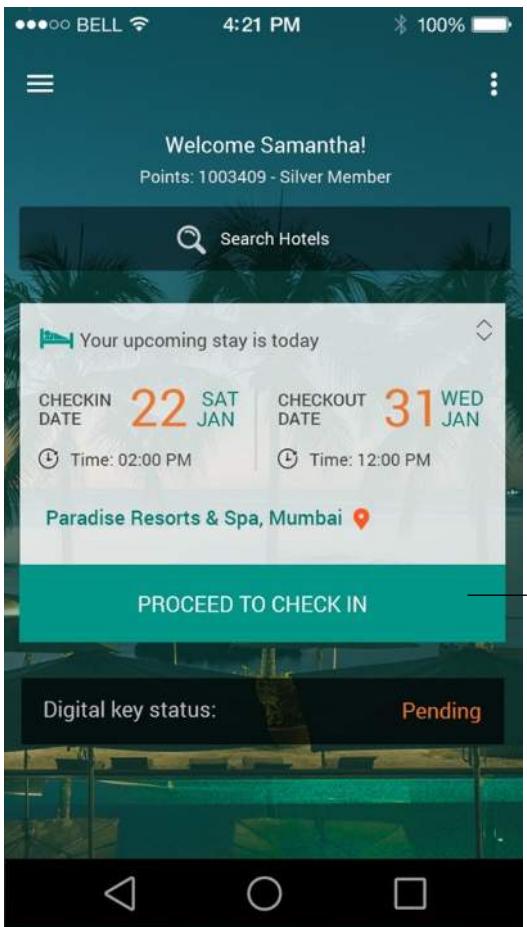
Since this was going to be used by a wide range of users, the icons had to be intuitive and easy to remember. The icons would help in completing the mundane task easily and quickly.

MOODBOARD

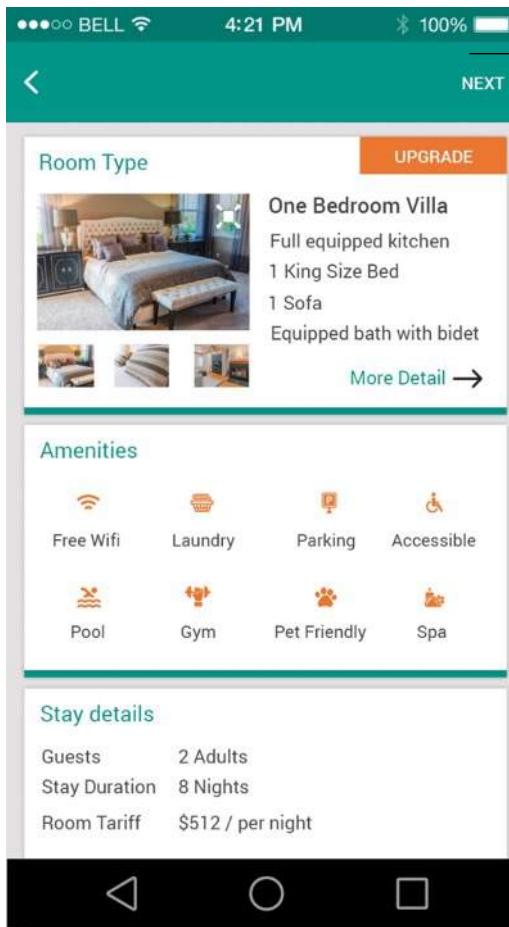


Visual Design

A partially flat style of visual design was incorporated in designing the application so as to keep up with the evolving design trend away from gradient and physicality rich component design.



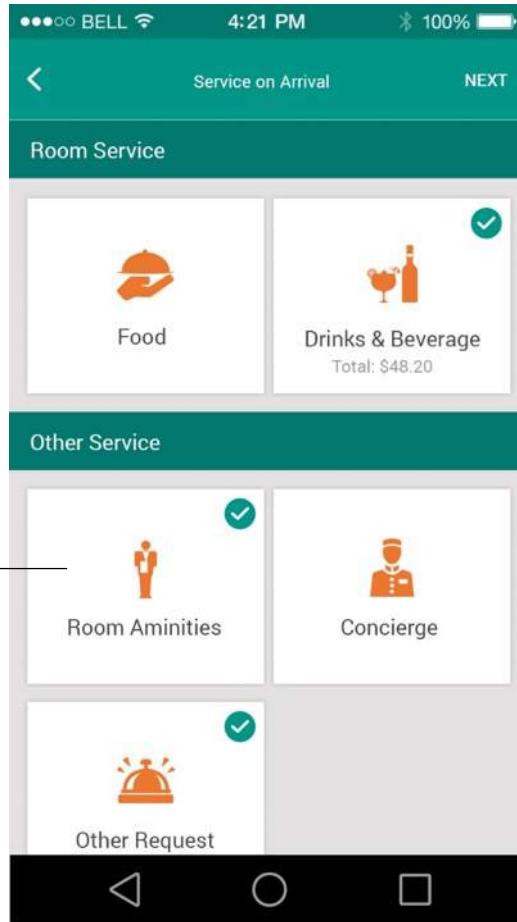
On the day of Check-in,
guest receives the
“CHECK IN” option to
complete his check-in
process



Guest can see the
booking summary while
he does a Self check-in.

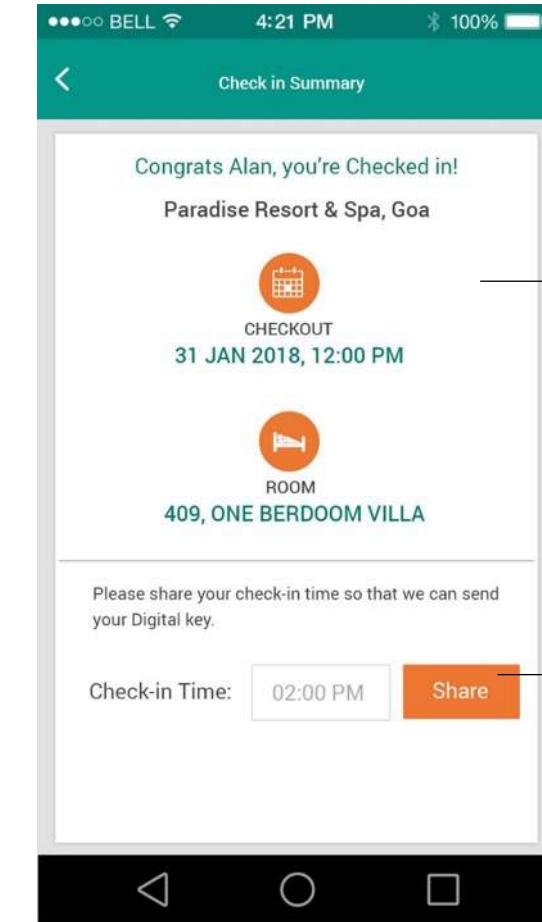
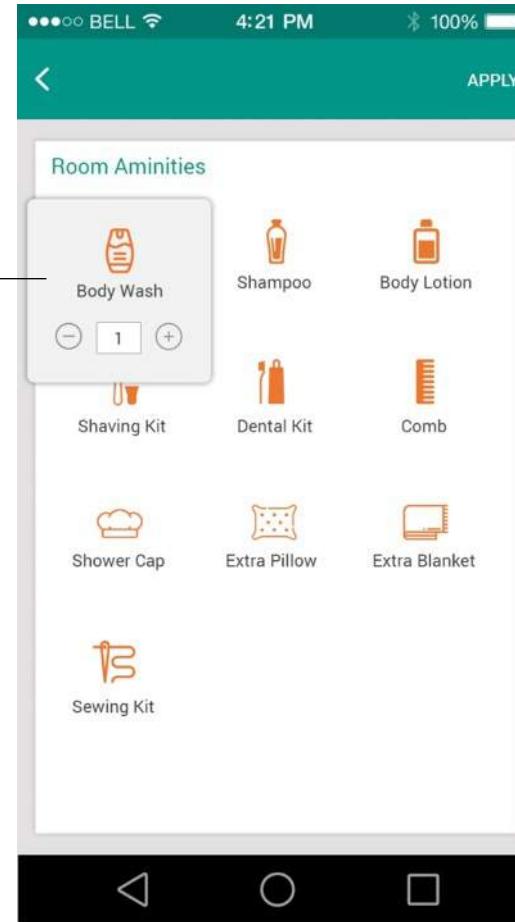


Few more screens from the flow



Allows guest to make arrangements for services he wants to avail just on his Arrival.

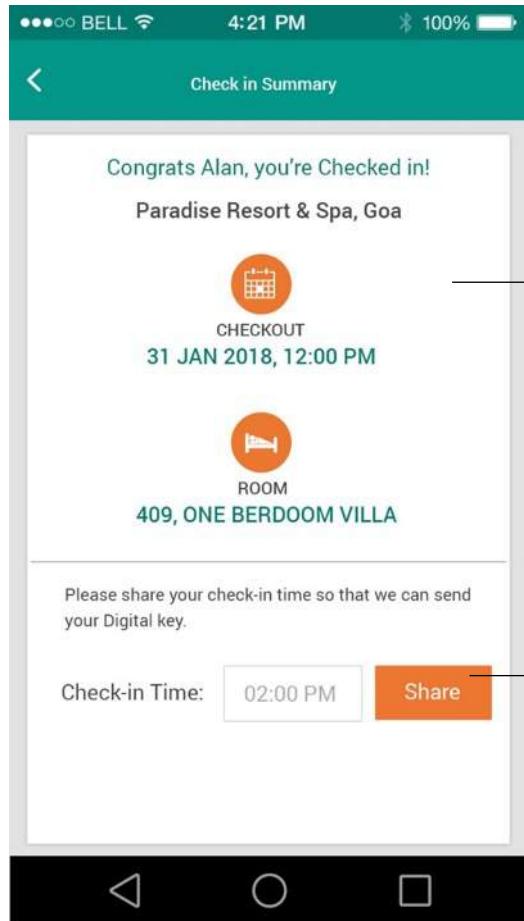
Guest can choose the relevant services he wants to avail. Can specify quantity for Room amenities and other Quantifiable products.



Guest can see the Check-in success screen with his room details.

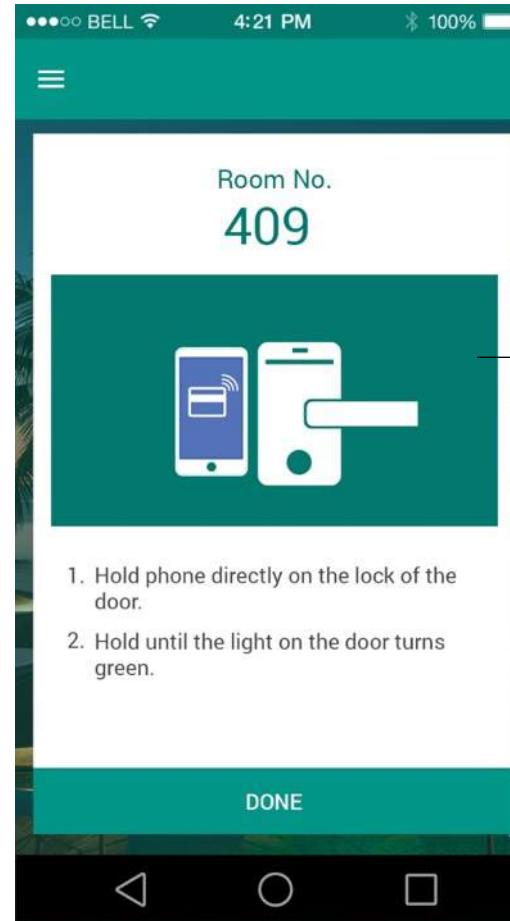
Guest can share his time of Arrival to notify Hotel. This feature is helpful if he is Arriving before his usual check-in time.

Few more screens from the flow



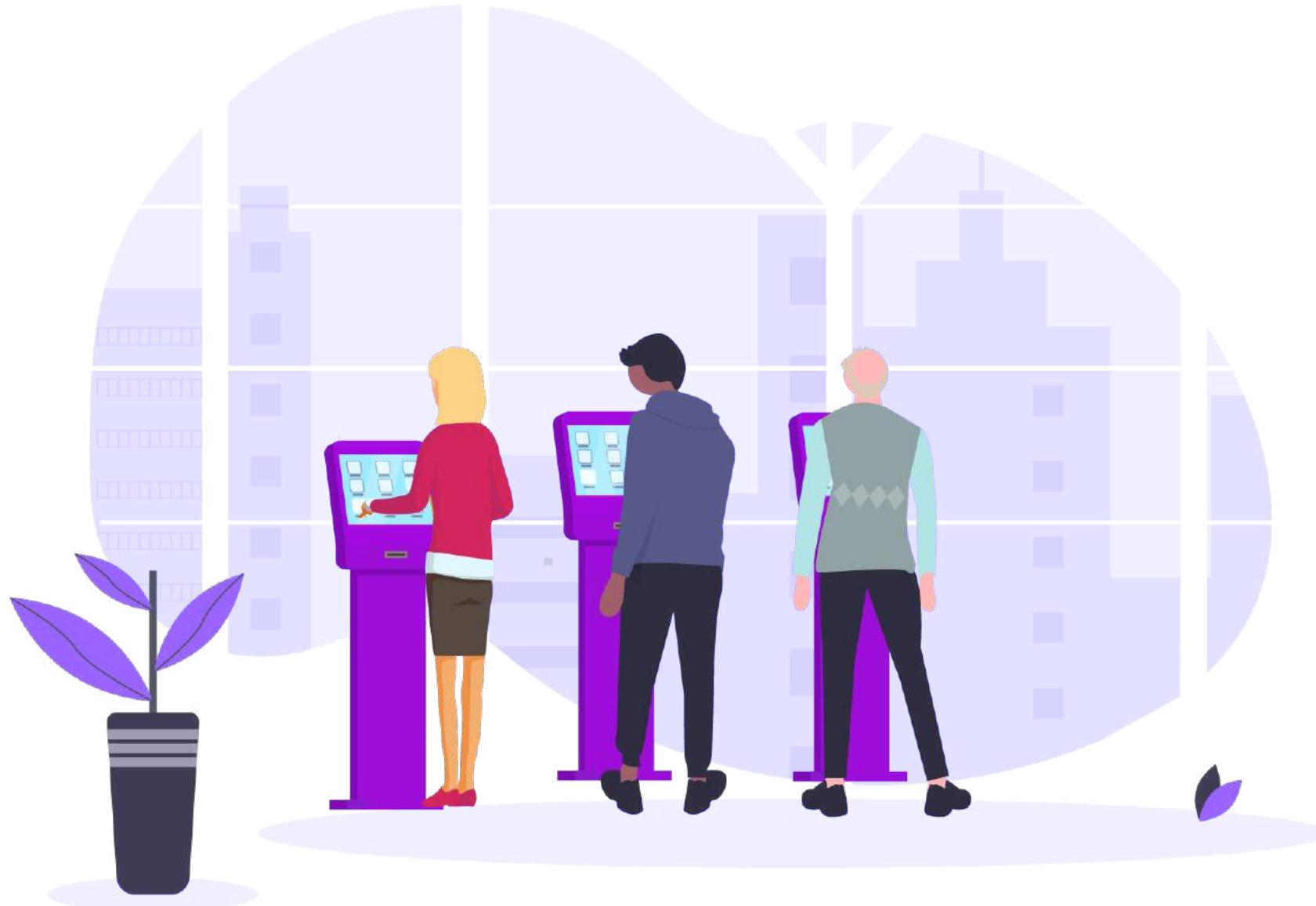
Guest can see the Check-in success screen with his room details.

Guest can share his time of Arrival to notify Hotel. This feature is helpful if he is Arriving before his usual check-in time



Guest gets his Digital key along with instruction to unlock his room.

Patient Self Check-In KIOSK



Introduction

I was given a task for designing a digital self check-in system for outpatients in KAS Hospital. For this we suggested a Kiosk solution as the mode of check-in for their out patients keeping in mind the various age group of the patients including senior citizens and socially backward groups. Outpatients will be able to check-in and enter their demographics using a digital check-in system and can avoid long queues and also maintain privacy related to patient demographics.

Problem Statement

Waiting time in hospital outpatient clinics affects patient satisfaction, access to care, health outcomes, trust, willingness to return and hospital revenue. Only a few studies have explored length and variability of waiting times among patients.

This solution is proposed keeping in mind the factors affecting waiting time experienced by patients in outpatient clinics.



Project Goals

- Design a KIOSK Application that helps outpatients to do self check-in
- There should be an end to end solution where patients can digitally check-in, feed their Demographic details, check Health checkup plans, Insurance checks, Hospital floor map guide for finding departments etc. This kiosk application can solve all these aspects.

Stage 1 - Discovery

Understanding the implications of manual patient check-in process

As my knowledge within the realms of outpatient check-in process was insufficient enough to design an application, I created a research strategy to help understand,

1. What are the types of Outpatient services provided by KAS Hospital?
2. Number of outpatients in a day on an average. Number of days in a week where outpatients are more than usual.
3. The different emotions a patient go through while they visit a hospital for doctor consultation.
4. The patient registration process.
5. The usual wait time for the patient to check-in and consulting a doctor. Also wait time during the peak hours /a particular day/days in a week.
6. How many counters are there to offer patient check-in and registration?

7. How much time is taken for Hospital staffs to enter patient demographics in KAS healthcare system?
8. Is there interoperability of patient data among all the departments for Doctors and staffs to access?

I started out by conducting a secondary research using online resources to understand the importance of digital patient check-in; why digital check-ins are essential for an effective service delivery in hospitals. I proceeded to conduct a competitor analysis of some of the direct and indirect players in the industry by reviewing their solutions, app features, interface design, customization functionalities, pricing and availability.

International Competitors



Indian Competitors



With the knowledge from preliminary investigation I created an interview guide and conducted an empathy research by interviewing hospital administration staffs, doctors and nurses and most importantly the outpatients to understand their struggles from a personal standpoint.

Key Findings

Problem, pain points	Needs, Motivations, Goals
<p>Frustration of waiting so long in the queue</p> <p>Discomfort caused due to health issues. Sometimes worsening of patient health condition</p> <p>Demoralizing</p> <p>Staffs face challenge making difficult financial discussion with patients and asking for payments upfront for those who have not payed their past-due balances.</p> <p>Effects patient's mental health leading to depression, psychological distress and anxiety disorder</p> <p>Sometimes it gets difficult to find the specific department for consultation for a new patient</p> <p>Human errors on manual data entry</p> <p>Expensive and time consuming paper based registration process</p>	<p>A convenient and reliable method that reduces the patient check-in time</p> <p>Accurate patient demographics</p> <p>Hospital wants to improve patient satisfaction and loyalty</p> <p>Automated payment collection that can improve point-of-service collections</p> <p>Central repository that collects all patient demographics filled during registration</p> <p>Verify Insurance</p> <p>Streamline the entire check-in process</p>

From research findings, it can be inferred that designing an application that is dependant of device usage will not be completely beneficial to many patients. As a solution it was proposed to create a Kiosk patient check-in application apart from a Mobile app, keeping in mind the socially backward class who cannot afford a smartphone and also for the old age patients with different disabilities. Here we are focusing on the design of Kiosk application.

Once the problem that needed to be resolved was decided, I created the User experience strategy map to define the guiding principles, challenges, aspiration, focus areas, activities and measurements for success.

Aspirations Ideal outcomes	Challenges Obstacles
<ol style="list-style-type: none">1. A streamlined assisted patient check-in system for hassle free check-in2. Abate the frustration and stress of standing in a long queue3. Interoperability of patient data among all the departments for Doctors and staffs to access4. Improve point-of-service collection5. Reduce Human efforts6. Staffs can be more focused on caring for Patients and provide assistance rather than mundane data entry	<ol style="list-style-type: none">1. Getting patients to rely using technology for sharing their demographics and making electronic payments2. Making patients adapt to the usage of Kiosk machines for check-in mostly among elderly patients3. Patients not filling the right demographics4. Need to appoint a dedicated staff for assistance5. Hospitals often not ready to make enough investments of installing Kiosk6. Lack of understanding medical terminology

Guiding Principles			
Guided Interaction	Use of simple language	Create a satisfying experience	Privacy
Assisting users in every step of their Check-in process for performing tasks easily thereby enabling the discoverability of MVP features.	<p>Less complex medical terminology and use of simple language in the registration process would encourage repeat usage and makes users more confident.</p>	<p>Providing features for all types of users to use the kiosk including socially backward people and also disabled people making a satisfied experience for all.</p> <p>Showing instructional videos on the touchscreen when a kiosk is not in use is an effective way to provide simple training. The welcome video can be playing automatically and stop when the user decides to interact with the kiosk. The most basic execution of this rule is to have a video — or even just a screensaver — that instructs passersby to “Touch Screen to Begin.” It’s a simple, effective way to encourage engagement with the device.</p>	<p>A balance needs to be struck between displaying the information to the user and displaying it to everyone else in the room. Audio (if used) and visuals need to be planned with privacy in mind</p>

Stage 2 - Define

Synthesising user research findings

From my research findings I identified three primary personas. I created persona profiles based on collective analysis of participants inputs from user interviews and secondary research findings.

Aditi Sharma

AGE	35
OCCUPATION	Engineer
EDUCATION	BTech
GENDER	Female
STATUS	Married
LOCATION	Delhi
ARCHETYPE	Foodie
HEALTH ISSUES	Hypertension, Backpain, overweight
DOCTOR VISITS	Once or twice in every 1 month
LANGUAGE	English, Hindi
TECHNICAL COMFORT	High

Bio
Aditi is 35 year old, living in Delhi. She works in Accenture as a Software Engineer. She is married to Akash Sharma who is a Software Developer and has to travel frequently outside India for client projects. Aditi has to take frequent leaves due to her illness which is impacting her office work. Due to her lazy nature she hates to cook food after a long day at work. Being a big foodie she prefers to order food from outside.

Goals / Needs

- ▷ Look healthy and slim by reducing her weight and Blood Pressure.
- ▷ Avoid standing in long queues in the hospital for completing her check-in process and making payments
- ▷ Complete her checkup within a reasonable amount of time and get back to office instead of taking a full day leave
- ▷ Looking for a more welcoming and caring experience from the hospital staffs rather than just fixing the appointments and accepting payments.

Personality

Extrovert	Introvert
Sensing	Intuition
Thinking	Feeling
Judging	Perceiving

Tech Knowledge

IT and Internet	High
Software	Medium
Mobile Apps and Kiosk	Medium
Social Network	High

Frustration / Fear

- ▷ Fear of getting escalated at work due to frequent leaves.
- ▷ Low self esteem due to health issues
- ▷ Getting frustrated with the delayed check-in process that sometimes results in increase in back pain and discomfort.

Motivations

Health	High
Convenience	Medium
Quality of life	Medium

Brand Affiliations

Shopaholic **Stressed** **Slothful**



"I wish I do not have to take the entire day leave from office for my regular followups in the Hospital..."

Tejpal Singh

AGE	76
OCCUPATION	Retired Government Official
EDUCATION	Graduate
GENDER	Male
STATUS	Married
LOCATION	Delhi
ARCHETYPE	Late Adopter
HEALTH ISSUES	Arthritis, Hypertension, Diabetes, Short-sightedness
DOCTOR VISITS	Twice or thrice in every 1 month
LANGUAGE	Punjabi, Hindi, English
TECHNICAL COMFORT	Low

Friendly

Relaxed

Inactive



"Standing long time in the queue for getting doctor's appointment and making the payment, elevates my knee pain... I wish the process takes less time..."

Bio
Tejpal is 76 years old who loves spending time with friends and family. When at home he spends most of his time reading newspaper and listening to old Bollywood songs on his smartphone. It is little difficult for him to read small text in newspaper due to his short-sightedness. He mostly uses his smart phone to have video calls with his children and grandchildren who live in Mumbai. Sometimes he checks his Facebook to get connected with his friends and family. Outside of this realm he is not very comfortable with technology. Often if he is not able to understand any technology he asks help from his neighbour's 18 year old son.

He is suffering from Arthritis for the past 10 years and the pain on his Knee is getting worse day by day. He also has Hypertension and diabetes which is a hereditary problem in his family. Doctor advised him to be under constant followups to monitor his BP and diabetes. For doctor visits he has to travel in Public bus which is very tiring for him. He feels very uncomfortable standing for long time in queues in the Hospital counter for check-in.

Goals / Needs

- ▷ Keep his health issues in control by having frequent doctor follow ups.
- ▷ Efficient Doctor appointment system
- ▷ Looking for a more welcoming and caring experience from the hospital staffs rather than just fixing the appointments and accepting payments.
- ▷ Personalized and authentic care

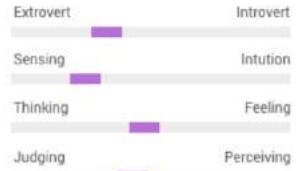
Frustration / Fear

- ▷ Fear of worsening of health due to long waiting time in Hospital
- ▷ Fear of experiencing severe health issues that cannot be controlled without regular check ups.
- ▷ Hospital environment is very demoralising and depressing. Spending more time causes anxiety and stress.

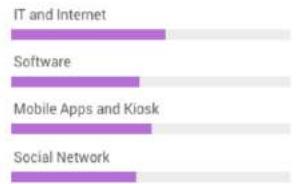
Motivations

- Self care management
- Convenience
- Quality of life
- Fear

Personality



Tech Knowledge



Brand Affiliations



Rohit Kumar

AGE 23

OCCUPATION Factory worker

EDUCATION 12th Standard

GENDER Male

STATUS Single

LOCATION Delhi

ARCHETYPE Autodidact

HEALTH ISSUES Asthma

DOCTOR VISITS Twice or thrice in every 1 month

LANGUAGE Bihari, Hindi, Basic English

TECHNICAL COMFORT Medium

Shy

Friendly

Active



"I am not confident when I am asked to fill the patient Registration form which is in English... Moreover I feel lost and confused in such a big hospital. Staffs usually do not have time to assist... "

Bio

Rohit is a 23 year old factory worker. He is from Bihar and belongs from an agricultural family. He studied in a Hindi medium government school where he completed his 12th. He has 3 elder sister and one younger brother. His father is the only single earner in the family. To support his father financially he moved to Delhi for work at the age of 19 with his uncle. He uses his smart phone to make video calls to his family in Bihar. He is also active in Facebook. He often helps his uncle in using his smart phone.

He has been diagnosed with Asthma from the age of 15. Since then he was under doctor supervision. But the rise in Delhi pollution has aggravated his condition and he was admitted to the Local government hospital twice in the last 6 months. Recently his treating doctor referred him to Dr. Sood in KS hospital where he needs to continue his further treatment. Rohit has never been to a big Hospital. He is worried that his less knowledge in English might be a communication barrier in the hospital. Moreover due to his shy & introvert nature he is reluctant to ask for help in Hospital formalities like filling the Registration form in English.

Goals / Needs

- ▷ Reduce the frequency/intensity of Asthma symptoms.
- ▷ Make Registration and patient check-in process simple and easy to understand.
- ▷ Need a person who can assist him with the formalities inside the Hospital.
- ▷ Affordable and easy payment method

Frustration / Fear

- ▷ Fear of going outside the house due to pollution.
- ▷ Fear of getting Asthma attack while outside or at work.
- ▷ Fear and shy of not being able to understand English properly.
- ▷ Fear and uncomfortable visiting Big private hospitals

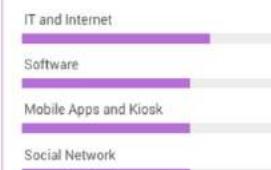
Motivations

- Health
- Convenience
- Quality of life
- Fear

Personality



Tech Knowledge



Brand Affiliations



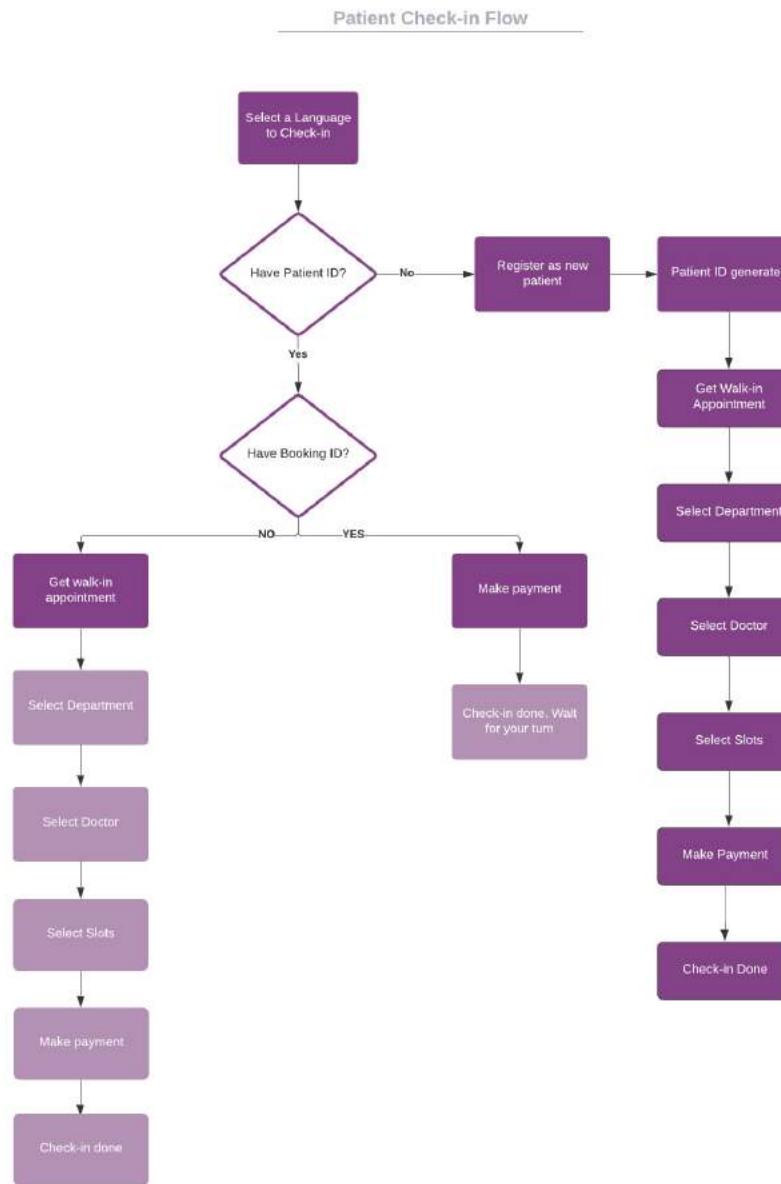
Business Benefits

It was also very important to help KAS understand what business benefit will be there on installation of Patient self-check-in Kiosk. Here are few of the most valuable benefits that can be achieved:

- Improved practice efficiency
- Streamlined administrative tasks
- Improved profitability and revenue cycle
- Improved Patient Engagement via Patient Portal
- Decreased stationary costs
- Improved collections due to more organized claims
- Automated alerts to help the staff on arrival of a patient
- Enhanced Security and Safety Cloud-based EMR Software
- Enhanced Customer satisfaction, which is a key indicator of service delivery in a hospital, and is related to waiting time.

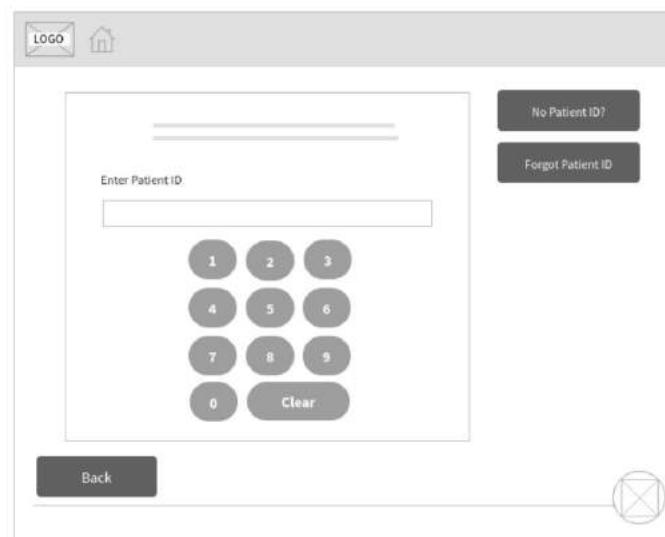
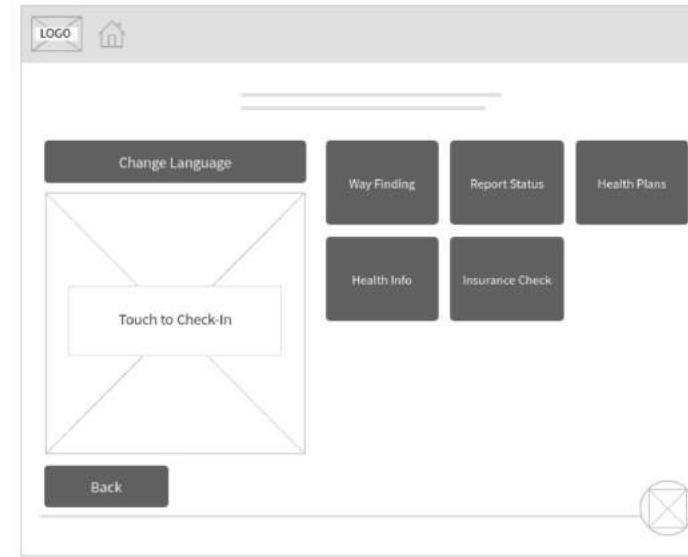
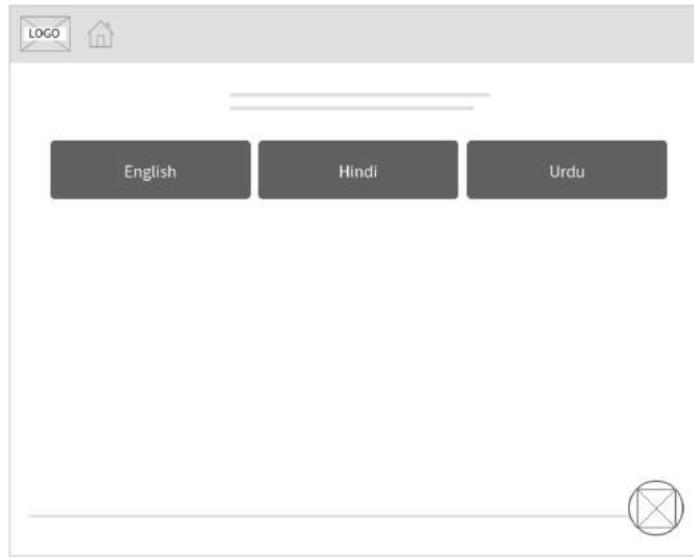
Stage 3 - Ideate

I created an application sitemap with high priority features for important task flows in the app which will be used by all Outpatient users.



After I developed the user flows, I began to flesh out wireframes for each of the tasks. At each and every stage of design I had to ensure that the interface of the application should be easy for the user to comprehend and interact which will enable quicker task completions without much effort.

Here is a glimpse of few low-fidelity wireframes:



Color Palette

Primary Colors



R 152 #983fc1
G 63
B 193



R 91 #5b2175
G 33
B 117



R 68 #441759
G 23
B 89

Secondary Colors



R 245 #f54908
G 73
B 8

Typography

Roboto Regular

Roboto Medium

Roboto Bold

Stage 4 - Prototype

I created a working high fidelity prototype of the designed screens. Glimpses of few screens are given below:

