



Final Project

# Information Design: A Concept for Bus Transit System

Focus: Ahmedabad Municipal Transport Service

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Masters in Design (Communication Design)

**Dhirubhai Ambani Institute of Information and Communication Technology**

# Information Design: A concept for Bus Transit System

Focus: Ahmedabad Municipal Transport Service

Jenil Malavia | 2001114004 | M. Des 2011  
A Final Semester Project for M.Des program  
Dhirubhai Ambani Institute of Information and Communication Technology

Faculty Guide: Prof. Binita Desai

# Feedback

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I thank my family for their support during difficult situations. I would like to thank DA-IICT and the M. Des department for providing all the resources and giving me a unique opportunity to design this project.

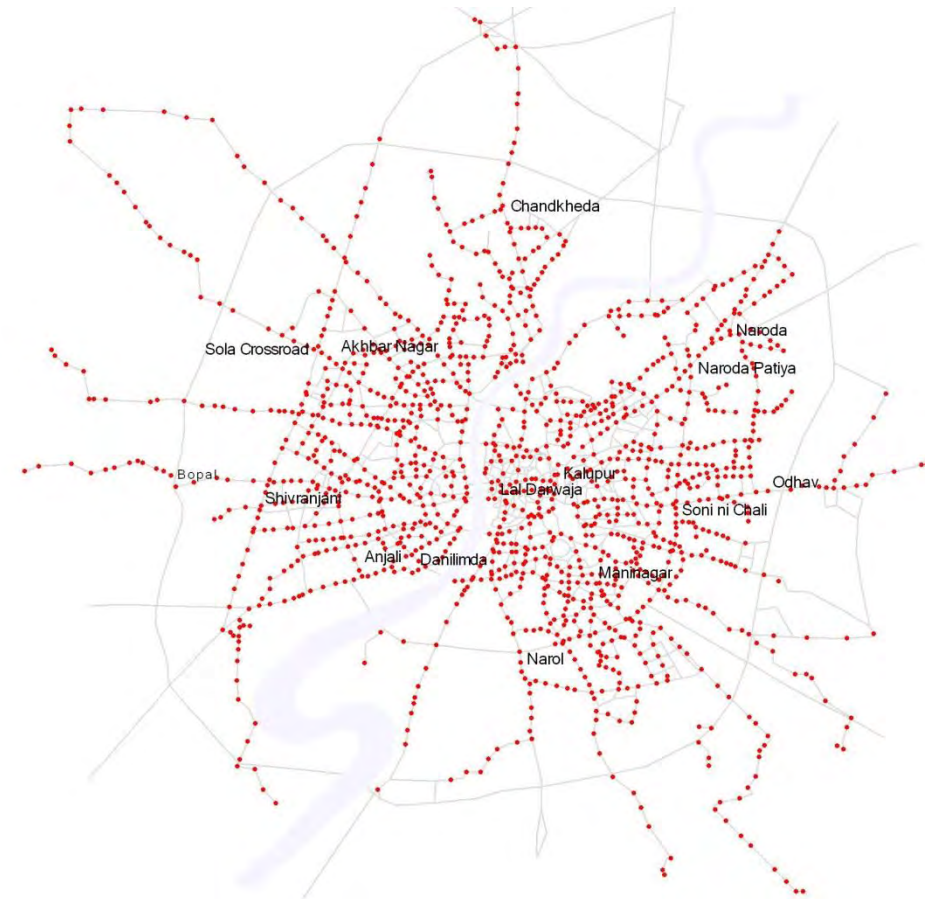
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## Ahmedabad Municipal Transport Service

Ahmedabad Municipal Transport Service (AMTS) runs the public bus service in the city of Ahmedabad in India. At present, AMTS has 750 buses serving the city. In addition to this AMTS is also responsible for 50 BRTS buses, and 100 feeder buses.

AMTS is managed by a Transport Manager under a transport committee and Municipal Corporation from its very inception. The organization is a service mind so one should not be considered it as a firm or a company, but as a service organization. AMTS is a voluntary service managed by the Municipal Corporation of Ahmedabad under Bombay Provincial Municipal Corporations B.P.M.C. Act.



## Abstract

Information is the key when it comes to the functioning of any transit system. We must understand and properly structure information to build experiences. It was important to understand the people for whom we are designing. In the existing scenario people have transformed the bus stop space into something else with giving their own interpretations. And yet the problem of information was not addressed. In absence of the complete set of data, organization of information and the placement of the same it raised questions on the visibility, readability and accuracy. It was important to identify the important features and information required to make travel easy and comfortable for the user. The focus was also to understand the context in relation to the space and information to be conveyed. Through this understanding the intent was to design a communication model that empowers the user by providing all relevant information about the bus transit system

efficiently. Access to Information could be made available to the users not just at the bus stop, in fact anywhere so they could plan their travel and board the bus from the desired location. Time was a crucial factor when it came to quantifying information.

Feasibility of the design was important with considerations to financial aspects that your product addresses and the use of space to redesign information. The project focussed on redesigning information for the existing structures.

The project, gave me an understanding of the user domain and it led into designing solutions that reflects the user interests and solution to the problems raised by the people themselves; with the right use of technology. Through this journey I arrived to a communication enabled solution through which user interacts with the information in context of space.



## Problem Statement

Over the years, the untidy bus terminals in the city strongly represent a lack of accurate information. The basic information about bus routes has the smallest possible place assigned at the terminals with information forcibly made to fit in. Tracing information about buses should be the easiest of tasks ironically it's the toughest. Information is difficult to decode in terms of visibility, accessibility and its structure at the local bus stops in the city of Ahmedabad. The commuters keep waiting for the bus in a way farmer looks at the skies for rain. Moreover the bus stop doesn't stand iconic for image it has. Clothes hanging, garbage dumped around, dogs sleeping, people urinating around the bus stop and other similar cases of the bus stop that questions the existence of the designed *space*. Untidy and confusing information needs to be organized. With the existing scenario, for a stranger trying to figure out how to travel is a difficult proposition.

# The Brief Redesigned

## Information, Space & Design:

Information being one of the prime issues in the research brief the emphasis was on organising and structuring information. In order to do so, I had to understand the bus stop as a space. The challenge was to have a thorough understanding of the bus stop space and how space, information could be packaged for it to adhere and impart meaning.



Through the field visits conducted it was observed that people had their own interpretations of the designed space of the bus stop. Keeping the place clean, so that the bus stop stands iconic for what it was intended to be also came up as one of the issues; this was mainly

observed at the bus stops in the old parts of the city. Designing the surrounding space at the bus stops was one of the aspects to be addressed.

Taking into consideration the flexible or adaptable nature of the human body, they treat the bus stop space according to their comfort and impart their own meaning to it. Considering the context for which I was designing the fear was of any designed space being transformed into unexpected forms. It also seemed evident that the bus stops were in a bad state and they were in dire need of change. Basic information about the timings, routes was inadequate. The visual information was disorganised, it lacked structure and importantly seemed difficult to interpret. Bus arrival time was a crucial factor too when it comes to imparting user a pleasurable experience. It was important in establishing relationship between time and information. Emphasis remains on visual enhancement of information with accurate bus schedules. In today's world where every individual is connected, it seemed possible to impart around to access bus information even if the user is not at the bus stop.

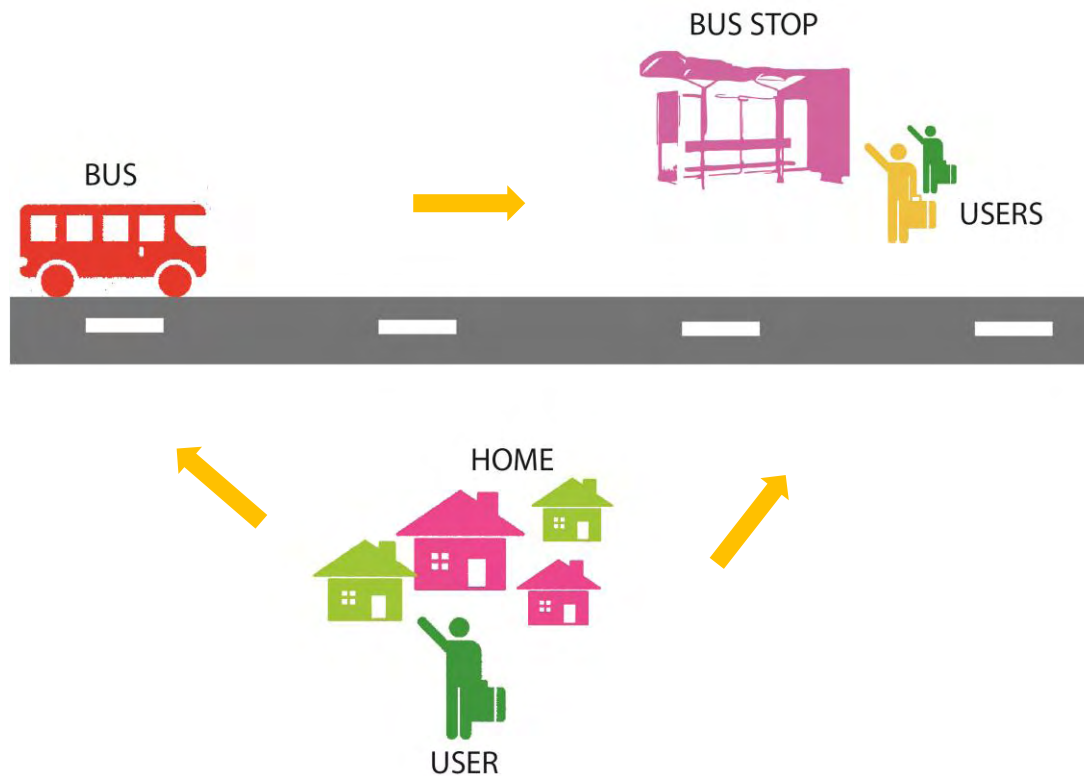


Fig. Designing a model of communication between these three entities

## Establishing Relationships

Clarity in communicating information stands the key for every bus transit system to functioning efficiently. Bus-stop is seen as a point at which the user boards the bus. In-order to do that a user needs to have the accurate and timely access to information.

The **Bus**, **Bus-Stop** and **User** are three different entities that constitute a *virtual space*.

The bus-stops become a *physical space* where the user interacts with bus (moving object in the space) through visual information at the bus stop. The information displayed at the moment is static. Users are looking for real-time updates about the coming bus.

If the user is away from the bus stop there is no means through which the user can receive information of the bus if he is not at the bus-stop. Here we are talking about a new space that these three entities establish called the *moving space*. Bus and the user these two entities are moving and the bus stop is stationary. In this space, we need to identify how the user would receive information so that he can reach the stop to board the bus at the right time.



Fig. An Ideal bus stop

## The Bus Stop Environment

The intention was to identify the necessary features to information at the bus stop which makes it an ideal bus stop. But what is important is: knowing the people who would be using the service.

When you look at an AMTS bus stop you get to see several things that a bus stop should not be. A common glimpse is of the passengers looking in the same direction awaiting a bus. The morning and evening hours have bigger crowds. The bus never stops on the markings made for the driver to stop the bus; there's litter all around most of the bus stops, vehicles are parked in front of the 'No Parking' sign boards and infrastructure seems lacking at few stops and specially with old designed bus stop.

The challenge remains how to design a bus stop environment so things remain intact and are sturdy and robust. Cleanliness is always a challenge.



## What should not happen at the Bus Stop?

Following problems have been identified at the bus stop:

- Broken, Unreadable, Irregular hierarchy, size, colour
- Information has no structure
- Bus arrival times at the stop
- Garbage dumped in/around the place
- People sleeping over the sitting area during day/night
- Dogs sleeping over too and shitting anywhere according to its will
- Men urinating at the back of the stop
- No electricity at couple of bus stops
- Advertisement stuck all over the structure of the bus stop
- Reducing the visibility of the bus stops
- Bus does not stop on the surface markings
- Vehicles parked nearby the stop
- Auto rickshaw's standing right in front of the stop
- Stalls adjacent to the stop making it untidy
- Lack of proper structure



## Brainstorming Ideas for Maintenance of Bus stops

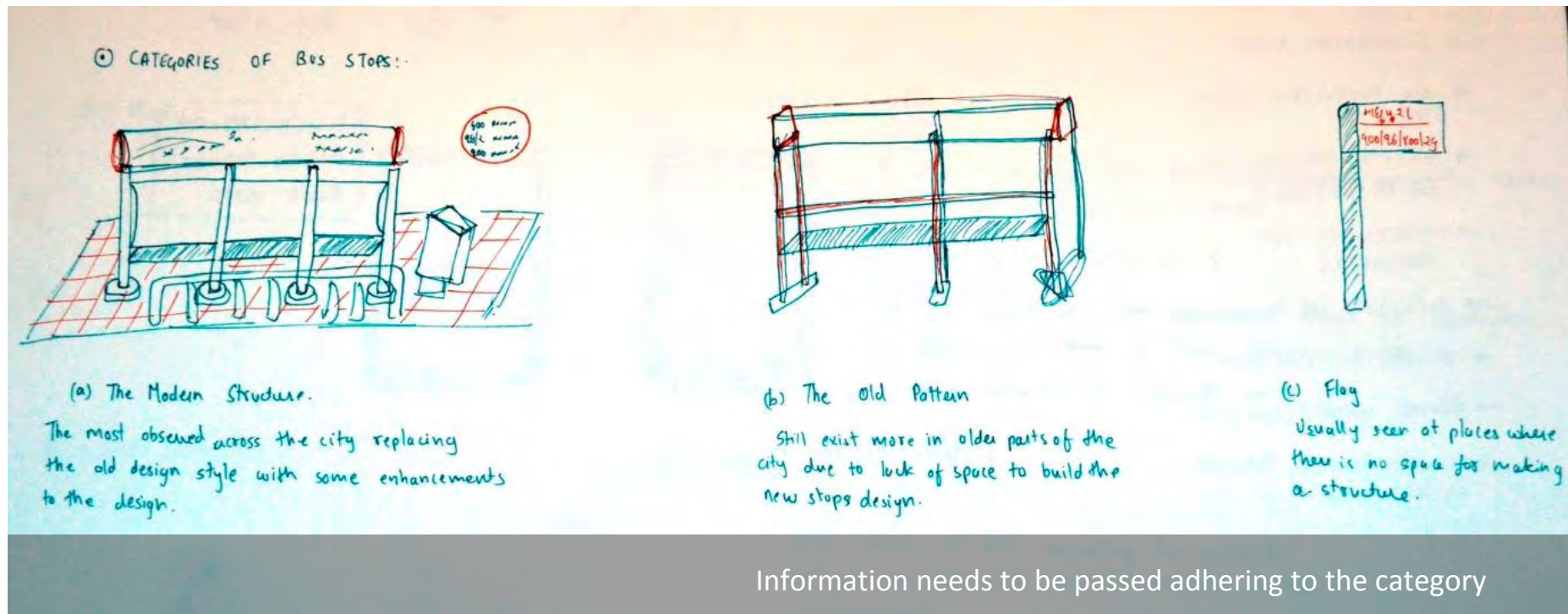
To ensure that the place remains clean and intact I thought of the following solutions:

- Buying a ticket at the stop before one gets onto the bus.  
Considering the number of people who that travel during peak hours there would be chaos at the stop. But under ideal circumstances this sounds infeasible considering the model of the transit system.
- Allotment of official space at the stop to small stalls to avoid arbitrary and owners can ensure things are in place at the bus stop. Why would people listen to him is also a question to be addressed.
- Having images of gods/goddesses at the stop, often seems a solution but could hurt people's sentiments.
- Naming the stop in fond memory of person/family.  
The place could be maintained by the members of the family.
- Ownership could be of the community living nearby.  
This might work in the areas where there are communities living around bus stop but again responsibility of whether people ready to take this up as a challenge.

All these concepts need to be thoroughly examined to see how it would change the existing scenario and what guarantees that it will not go back to its old state. When we design we look for similar instances where things did not work or aid help. A classic example being the circles at the intersection of roads that one sees being maintained by large and small corporates.

In the Indian context people don't have the right attitude and behaviour towards cleanliness and order. From the bus driver to the passenger it is the same attitude towards the system.

## Types of Bus Stops:



The bus-stops in the city have been divided into three categories. The first one is the new design that is robust with a proper infrastructure but unstructured information. One is the older designs which are fewer compared to the newer ones (mostly in the old parts of the city) and lastly the flag-post which act as an identifier for the buses to stop. The challenge remains on how to pass information that is of interest to the

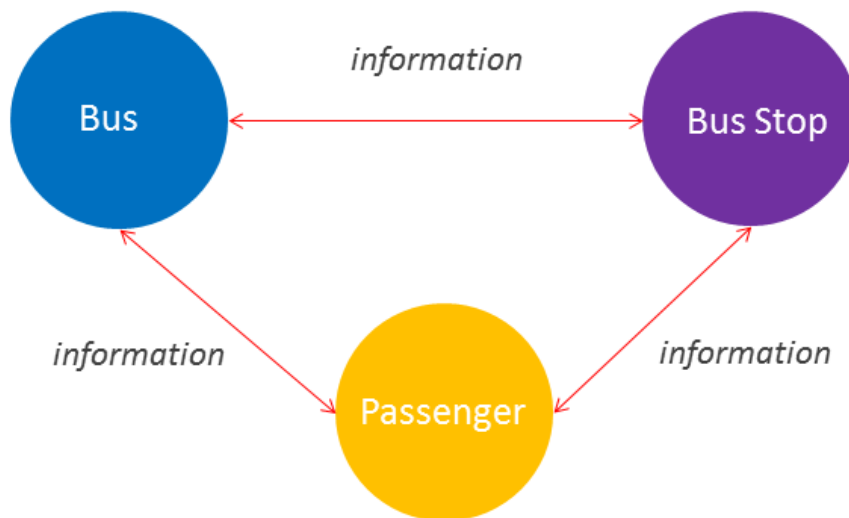
user from boarding the bus to reaching the destination. Importantly, all information should be available to the user regardless of the category of the stop. The user should be able to find the information to board the right bus to reach the right location to the time indicated. The bigger task lies in designing information that is in sync to the bus, bus stop and the user.



## The Communication Model



After studying and analysing the existing Information System, Time and Space were identified as areas to be addressed. There is a correlation among them. Information had to be quantified in terms of time as an attribute and fit into the space for users to make meaning out of it.



In a transit system, information is of utter importance. The bus stop is only a physical space that a user uses to board the bus but the user needs to have information at the physical space from where the user will be getting onto the bus. The medium of communication changes according to the space but the common goal is to have the appropriate information displayed to communicate well and was exploring the possibility of the user being able to get schedules of buses even if the person not at the bus stop. Taking this concept into account the idea is to design a model of communication for users that allow them to travel with ease.



## Design Feasibility

The most important aspect about design implementation is feasibility. A good design takes care of all aspects. It might happen that the design is good and yet it cannot get implemented due to some constraints.

The emphasis lies on the people for whom we are designing for. If we could design an interactive bus stop it would be efficient but people may not know how to use it.

Considering the function and complexity of the bus stop information should be conveyed in a manner that is simpler, clear, has the right emphasis and can be read quickly.



## Summary

On deliberation the initial research brief the highlights were surrounding on the visibility and structure of information and the space. It seemed logical that a hierarchy of information was crucial. The behaviour, attitude and possibility of vandalism had to be taken into consideration.

In order to succeed there was utter need of keeping vigilance of the activities at the stop. AMTS could appoint people to monitor. But considering the number of bus stops it was inevitable to actually put every person so that he can monitor the place to keep the bus stop iconic for what it was meant for.

The BRTS functions differently, with an *enclosed* bus station things stay intact. The reputation it carries for functioning on time makes it the best functioning transit system. The challenge with the AMTS lies in the positioning and fact that it is an open space. The bus stop can accommodate limited number of people. The sitting capacity is only for nine users and large numbers stand at the bus stop. The bus stop becomes shelter for those who have nowhere to go.

Considering all these aspects and the audience for whom we are designing the focus was on designing a concept that provides the user the privilege to access accurate information from and away from the bus stop so that he can plan his travel better.

# DESIGN PROCESS

# FIELD NOTES

I started of my first field visit from the bus terminals outside Geeta mandir on 16<sup>th</sup> August. To my shock the bus stops were in very bad shape they were in utter need of facelift. The first bus stop looked totally congested and filthy. Advertisements had completely taken over and tracing the information was a tough thing. I spotted person taking an afternoon nap.



Infact there was no clear space to read bus information from the sideways infact one had to struggle to read that. Even though the visibility of information created problems to interpret



The bus stop had been totally covered by the auto rickshaws. Rather than a bus stop it seemed more of an auto stand. The visual appearance of the bus stop was shabby with information display again problem.



Location: Astodiya Chakla

Moving ahead I saw that this bus stop had no benches where one could sit. Apparently one could see more people sitting on the pavement which was a strange sight. The bus stop is just metres away from the *Ahmedabad Municipal Corporation's* newly designed building.



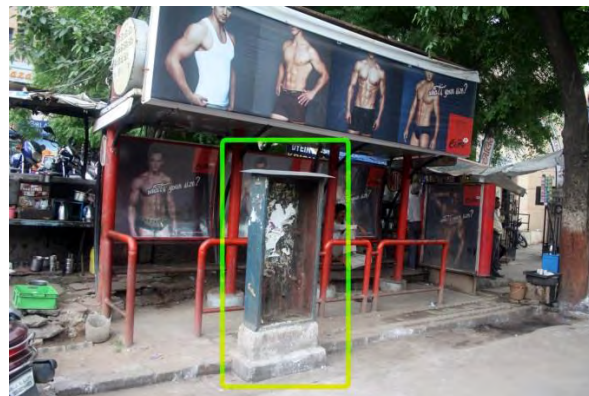
Location: Khamasa

The display boards had information forcibly made to fit in. Moreover at few bus stops the information has been written directly on the terminal itself. The existing status of how information is conveyed about bus routes & numbers is pathetic state. This really sad.



Information Display Boards

The old telephone line booth still had its presence right in front of the bus stop. The tea stall guy told this phone unit is of no use since almost past 2 years and the government does nothing about it. But the police officers don't forget to collect the monthly "Hafta" from them regularly.



Location: Pritamnagar, Paldi



The group of bus stops in the area Shahpur raises question on the existence. A presswala (clothes) who operates next to the bus stop at Shahpur uses the bus top to keep the lot of clothes. However there's also a garbage junction at the back of the bus stop all gathered dirt is brought here. There was seen a plastic bag seems lying with an unidentified owner.



Location: Shahpur Darwaja

The bus stop has no proper infrastructure when you compare with others in the city. There is no roof to cover and especially during monsoon the water pours from the top and the seating is useless. With hardly any information and place to sit the purpose of the bus stop is questioned!



The flag post bus stop was overloaded with information. Infact it was a tough task to spot it as well. So the commuters usually rely on the 'chaiwala' standing adjoining him. The sad part is that 'Mahatma Mandir' signage is given due consideration but the govt. does nothing to design proper information for the bus transport when it comes to the size.



Location: Prem Darwaja

There's a huge market (second hand sale of clothes) that set's up every day in the morning. In the midst of the colours and hustle people fail to identify there's a flag post bus stand infact. This leaves it impossible for the strangers to locate a bus stop until you see people standing on the road.



Location: Delhi Darwaja



Location: Madhupura

In the afternoon one could spot people taking a short nap at the bus stop. One could even spot dogs taking their afternoon nap. So people have to adjust accordingly whether they want to sit beside them or not.



The bus stop is in all tatters the only bench existing for sitting has been occupied by the sleeping dog. Yet information still remains an unresolved problem one can't easily figure out bus information that's written on the board from a sizeable distant.



How could we expect that someone would like to sit or even stand to a place like this? On the backyard people urinate and have turned the bus stop into toiletry. The odour makes it impossible for commuters to even stand by the bus stop. The surroundings can never be of a bus stop.



A Bus stop turned into Garbage cum Toiletry



People come and lay unwanted things. Setting up a garbage collector nearby isn't the ideal thing; this is an invitation for diseases.

## Bus Stop sight at night

As the sun sets the bus stop glows with the advertising hoardings in the new city. Strangely the information display boards have no lighting. So, one finds it difficult to read the information during night time. The advertising block is uselessly shining at many places in the city with no significance and waste of electricity.



At Subhash Bridge bus stop there is no light for the board to glow infact there's no information to be displayed too. Also the tube lights have been disappeared. So the tracing the information during night time is impossible.



Location: Gujarat College.

The bus stop had turned into nomads resident. The backyard was all in mess. Clothes were kept to dry that could be visible from the front

view as well. This can never be a bus stop. Infact there's no one to monitor or take responsibility.

## Journey from Start to Destination



The bus conductor and the driver work in tandem. They register their teams at the start of the day. The team needs to do two rounds two-n-fro in a particular shift. After each trip they come they mark their presence and are given time slots for the next departure. They also need

to mark the total passengers and the sale of tickets after each journey in the trip card issued at the start of the day. In the last trip they need to submit the money for the particular shift to the collection house at the depot.

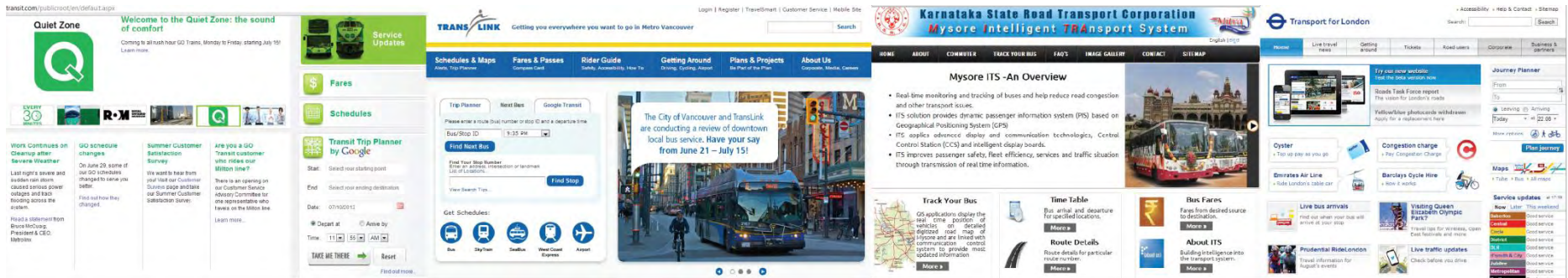


# Compete Analysis



The London Bus Transit System with right use of technology and its elegant design style provides an enhanced user experience to the passengers. It takes care of all aspects of passenger's requirements when it comes to travelling through the local transit and this has given them

acknowledgment worldwide. With use of LCD's, digital displays, nicely compiled information boards, real-time bus information, mobile apps passengers are always updated about the functioning of the bus.



Transit systems across the globe they all have their web presence. The purpose of the web service is to give their users privilege to access all the information pertaining to the operating transit system. The web

services works in compliance with the applications on mobile devices so you are never away from accessing information even when you are on the go!



There are two transit systems functioning within the city; one is Ahmedabad Municipal Transport Service (AMTS) and the other is Bus Rapid Transit System (BRTS). And the other is the Gujarat State Road Transport Corporation (GSRTC) providing travel services across cities, towns and villages in the state.

Following the latest trend the government designed websites for their transit systems. The AMTS website gives you the facility to find the bus for specified location; apparently this seems to be frustrating for the user because this never works on all possible iterations. They have loaded information on the site related to all the proceedings of AMTS however the biggest blunder lies is that users of the local transit service are not even users of computer and those who do never look for information on the website. In-fact this information should be

available for the newly designed BRTS which is not part of it apparently. That still seems fair considering the information design at their stations is nicely organised and structured and they already have mobile apps which few of the passengers are using. Meanwhile GSRTC gives the facility to book the tickets online for people who are literate about using the system. This works only when the prices of the tickets are more compared to the other transit systems.

The design should have always revolved around the user interests. From studying the information about the transit systems across the globe: on the websites and mobile applications the intent is to influence the information design for AMTS. After identifying all crucial aspects in terms of information the idea is to make use of it to communicate to the user through proper channel of communication.

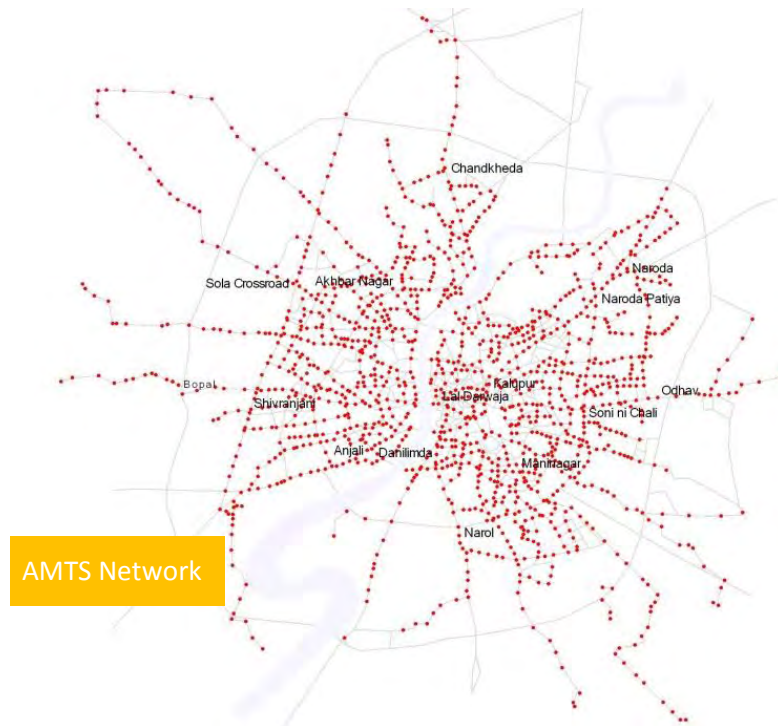


The newly implemented Bus Rapid Transit System (BRTS) ensures fast, reliable and high capacity service for people in the city. The transit system differs from other local services across the country. The secret to its success lies in its unique way of functioning. With an assigned dedicated path in the middle of the road BRTS rapidly navigates the roads at its pace. BRTS is blessed with all the latest technology advancements. The buses are equipped with latest technologies- most of the things are automated. The BRTS boarding stations have been designed with better infrastructure and blissed with structured and organised information design. The bus-station in the centre of the left-right paths seems to be a perfect design. This allows the arrival of each bus scanned and updated for real time tracking to update the successive stations. People can easily get in-out of the bus without any hassle.

There are always guards at the station so the existence of the place remains intact rather than people giving their own interpretation and turning it into something questionable. But in the Indian context things do change with time. Yet this model of transport has stood tall among times.

The idea is to learn from the transit systems functioning in the same city. There are couple of challenges that AMTS faces which are well tackled by the BRTS. We cannot adapt the same approach because they are designed completely different. But the challenge lies how do we adapt and learn from similar instances. Though BRTS and AMTS are different among themselves and they follow different working pedagogy the idea is how we learn and be in par with user's expectations.

## Visual Map: Spread-out of Transit System across the City



When there are two local transit systems operating in the same city; there's a need to understand: what is the purpose they are solving and importantly the way they function. The intent of BRTS was to shorten the travel time for long distances. With having a dedicated path to operate BRTS turned out to be useful for the people. AMTS operates primarily operates with the purpose to provide maximum connectivity to all the areas in the city.

The important aspect lies in the connectivity of these two transit systems. The reach of AMTS to the inner routes of the city and the BRTS running on the main roads should have some common points. Availability of this information to the users should be of great help in order to plan their trip.



## A New Face: State Transport Service

The GSRTC provides transport facilities across the state. It majorly connects cities, towns and villages through the roadways. Information should be a major problem if we compare the existing scenario with AMTS. This bus stop inspite of the infrastructure had no place to seat. In the absence of light the existence becomes questionable. Recently they just redesigned the stops and well this time they do have information. The information connects to the website they have set working. This is preliminary done between Ahmedabad and Gandhinagar. All the scheduled arrival times for the buses going to Gandhinagar have been mentioned. Though it's not real-time information but the user does have an idea about the tentative timings. They are also providing the facility to book the ticket online. With these glowing stickers it becomes easy to notice information even during the night timings. There are many buses going to Gandhinagar through this highway but lack of information to reach to people, they choose to travel through other available options.

# QUESTIONNAIRE

Name: \_\_\_\_\_

Gender:  M  F

Age: \_\_\_\_\_

Occupation: \_\_\_\_\_

Language efficiency:  Gujarati  Hindi  English

Usage of bus transit system:  Daily  Weekly  Monthly

Purpose of use:  Office  Social  Education

Problems at the bus stop: \_\_\_\_\_

Existing experience of the bus trip:  Poor  Fair  Good  Excellent

Information at the bus stop:  Poor  Fair  Good  Excellent

Priorities of the bus stop:  Time  Information  Space

What Information do you really care of: \_\_\_\_\_

Type of mobile phone you have:  Basic  Touchscreen  Smartphone

Please mention handset \_\_\_\_\_



*Language configured on your phone:*  Gujarati  Hindi  English

Do you wish to access to information even away from home?  Yes  No

Do you like to have information on your mobile phones?  Yes  No

Are you a local resident?  Yes  No

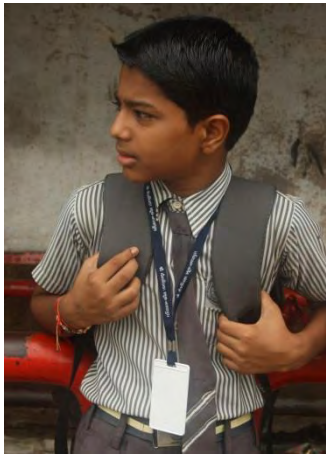
How much of a computer user?  None  Less  Medium  More

What would be your dream bus stop? \_\_\_\_\_

## Research Insights

- People don't want to wait at the stop but reach the place as early as possible.
- Girls don't like waiting cause every person passing keeps stalking. They prefer to be in groups.
- College students see bus stop as their meeting point.
- The people who travel daily they don't depend on the information board.
- Many people rely on asking others or the nearby stall at the stop. However women avoid asking to stranger's cause that opened a conversation or other way they were very choosy about asking to people.
- There's no balance between the number of commuters and the buses plying. People still complained about the frequency of buses.
- Buses operate with a delay of 15-20 mins. From the time they start but people at the stops are not aware about the bus departure timings from the depot.
- The bus stop is designed to accommodate only 9 people at one instance the rest always have to stand on the road.
- Information quantified with time is what commuters are looking for.
- Apart from school kids every individual carries a mobile phone.
- The language configured on the phone is English.
- Attitude of people towards the bus transit system is the biggest problem there's a lack of discipline.
- No one takes the responsibility or measure to keep the place clean. So, people give their own meaning to the designed place.

# PERSONAS



### Student

Age Group – 10 to 18

These kids are monitored on pocket money. The purpose of young kids to travel through the local bus is mainly for going to schools or accompanying their parents. They are able to interpret the information at the bus stops as they have been taught by their parents who use the same transit system. Time is an important factor to adhere to the school timings. There are also few kids who don't go to school but working at some or the other places they depend on asking people.



### College Student

Age Group – 18 to 25.

This lot constitutes as majority of users. They belong from lower class families so the value of money is respected. Apart from studies some of them also work. The use of bus is immense as it's a cheaper mode of transport for them. They are mostly seen travelling in groups and all of them have student concession passes. They are educated with devices and able to communicate in other languages. They all have phones but not high end ones. Girls going to college prefer to be in groups. They don't like people staring them the reason why they don't want to stay longer at the stop.



### Women

Age Group – 25 to 60

Women are either housewives or they are working. The use of the local bus service is mostly for going for work or for social gatherings. They are the ones who are more eager to reach to the place and hate standing at the bus stops. Cause there's always someone waiting for them. The bus stop ambience is a problem for them. They all have mobile phones. The ones who go to office regularly they know the bus numbers and routes the others rely more on asking someone nearby or at the stop. They don't prefer to travel in bus at night.



### Men

Age Group – 30 to 60

Most of the people travelling in the bus at any hour of the clock are men. They are adaptable to the crowd and the bus stop surroundings. All these are service class people travelling to one or the other place for either official or personal work. Apart from the regular travellers there are many people who depend on the information at the bus stop for their journey. A mix blend of people travelling and while waiting they are often seen talking to the next neighbour.



### Senior Citizen

Age Group –60 & above

The have been travelling through bus over the years and they still prefer the local transit system. The frequency of travel compared to men is less and mostly during the day time. Through their experience they understand the information on the bus stop and find it easy to understand. Apparently they don't like waiting for the bus especially at this age. The purpose of their travel is mainly to see someone or their personal work. Most of them understand the local language.

# USER SCENARIOS

## Where people depend on the visual displays on the bus stop or ask amongst their social network

- Rahis, is an Ahmedabad resident. He has travelled in bus previously while going to college. Now he is working as a sales executive at ABC corp. His boss Mahesh has told him to take a parcel from location X. He has to figure out how to reach there. He goes to the bus stop nearby his office and looks at the information board and finds out which bus goes to the area X. And as usual he waits for the bus to come.
- Gayatri, has to been invited for a social gathering at her in-laws place in the afternoon. Being a working day she also takes her kid along with her. As she has never travelled through bus before to be on the safer side she asks her relatives only who have been to her place before. She finds out from them that she has to change two buses to reach there. She has to plan her

time while going back as the journey takes longer time cause of the distance.

- Ajaybhai, a retired government officer has to see the doctor as he is not keeping well. He goes to the clinic taking the bus that he has used before. The doctor tells him to get some tests done and show him the reports. He has been asked to do from a laboratory in the nearby area. Ajaybhai goes to the bus stop and from the information display finds the bus to reach that area where laboratory is.
- Janki, is doing her bachelors from HK college. After the lecture they all planned to alpha mall. So they asked the people who are attending college everyday residing in that area. They go to the bus stop check the bus numbers for assurance and the wait starts. While returning all depart to their respective homes so they all go the nearby bus stop and decode relevant information.



### Where people ideally cannot rely on the visual displays at the bus stop.

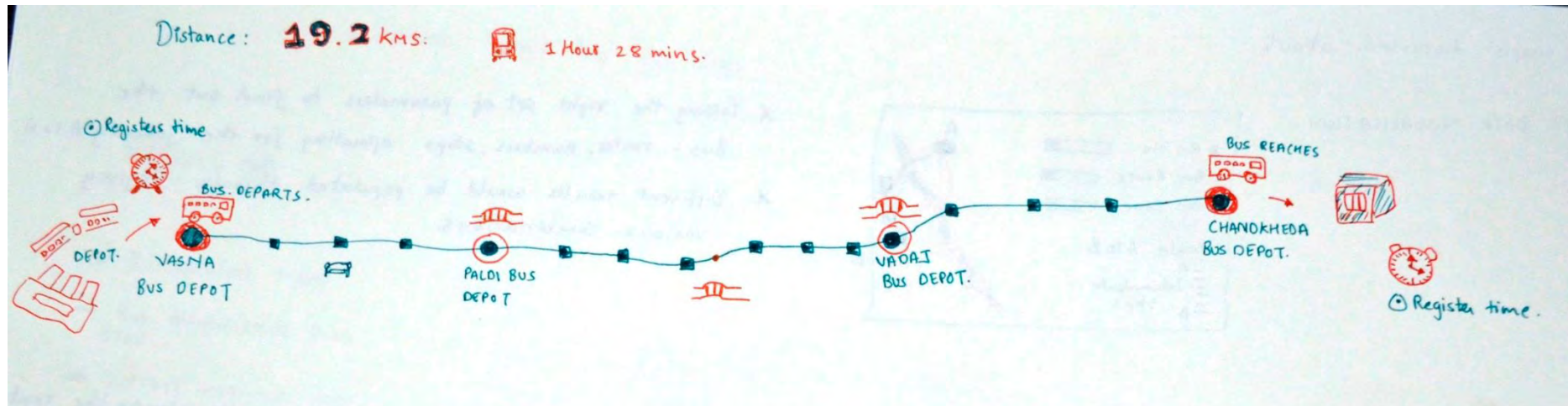
- Jay, an Ahmedabad resident from Narol has to attend a job interview tomorrow. He has no clue about which buses that takes him there. Reaching the location on time is of utter importance. He asks people living nearby in the locality to find which bus takes him there so that he can plan his trip accordingly.
- Megha, is coming from Mehsana to see her old college friend in the hospital she is admitted. She knows the hospital but doesn't know how to reach to the hospital from the bus stop. She doesn't even know which area she should drop from the bus so that hospital is at nearest. All she relies on asking people.

- Jigna, happens to write an entrance exam at Ahmedabad is her centre in the afternoon. She catches a train to reach the Ahmedabad but then she has no information how to reach her centre. All she has to do is to ask people.

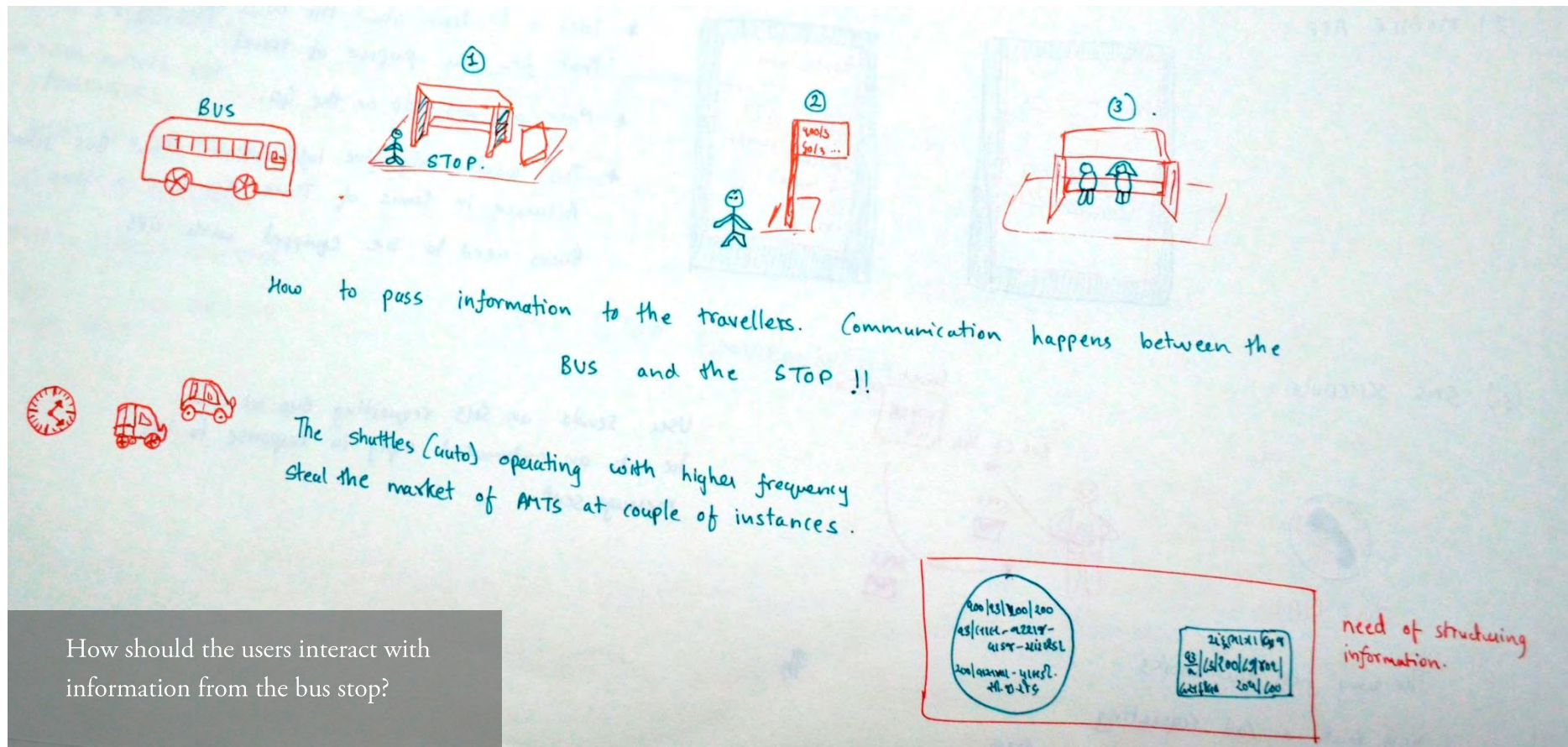
These scenarios help to cater information that is of user interests. They open up areas to think upon in terms of users expectations from a transit system in terms of information. The emphasis lies in providing an enriched user experience. When it comes to designing of information from the local transit system the product gets shape taking care of all the aspects of users.

# IDEATION

Through understanding the existing scenario and identifying the entire process the idea was to explore areas for redesigning, in-fact simplifying the existing process. Before we start ideating with the concepts it was important we have the entire picture of the functioning of transit system.



The exercise brought a clear picture about the working of the AMTS and how much of the system- buses were in sync with bus stops. There were problems to be addressed but that was within an existing space with an understanding of the people who are transit system.

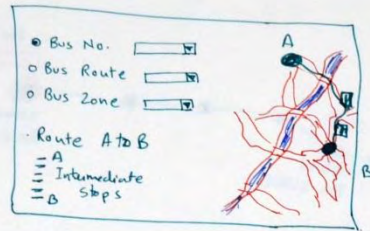


Intent was to have understanding of the space and the entities that are part of the transit system. Time was identified as an important factor cause of which the auto rickshaws were stealing the revenue of the

AMTS. The information not only had to be structured but there was need of accurate information in respect to the bus transport.

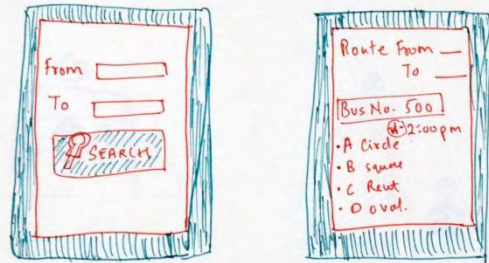
Concepts discussed about:

(1) DATA VISUALISATION:



- \* Passing the right set of parameters to find out the Bus - routes, numbers, stops operating for the journey A to B
- \* Different results would be populated through trying various combinations.

(2.) MOBILE APP:

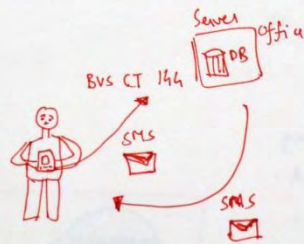


- \* Idea is to learn about the buses operating for on the route that fits your purpose of travel.
- \* More of Self help on the go...
- \* This would only give information about Bus schedules. Accuracy in terms of Time remains a issue! Buses need to be equipped with GPS.

(3.) SMS SCHEDULE:



JUST DIAL:

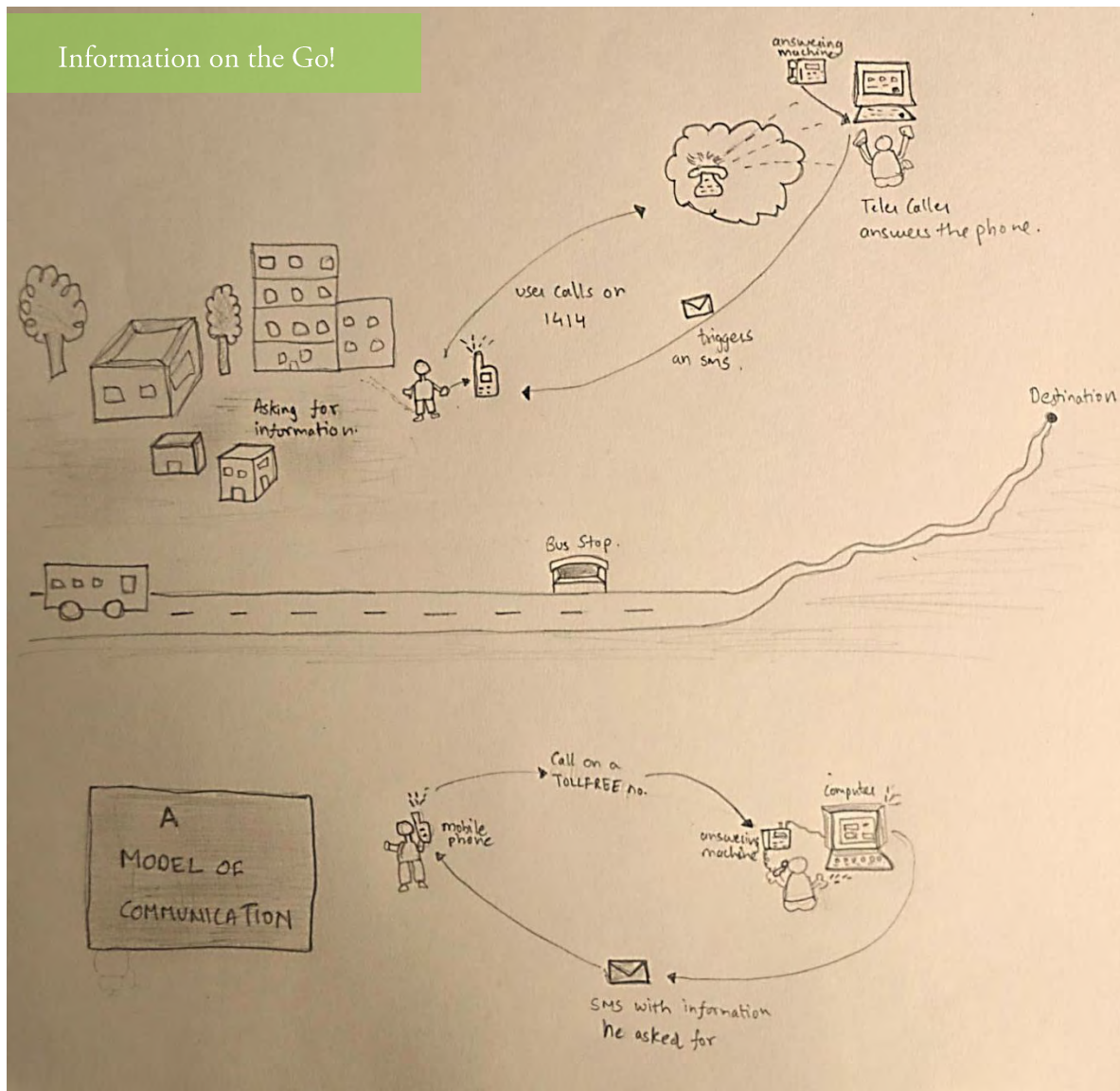


User sends an SMS requesting bus schedule he gets an automated reply in response to his message sent.

The way just dial works you make a call requesting for information they trigger an SMS

Ideating with concepts to find ways to pass information to cater user needs

## Information on the Go!

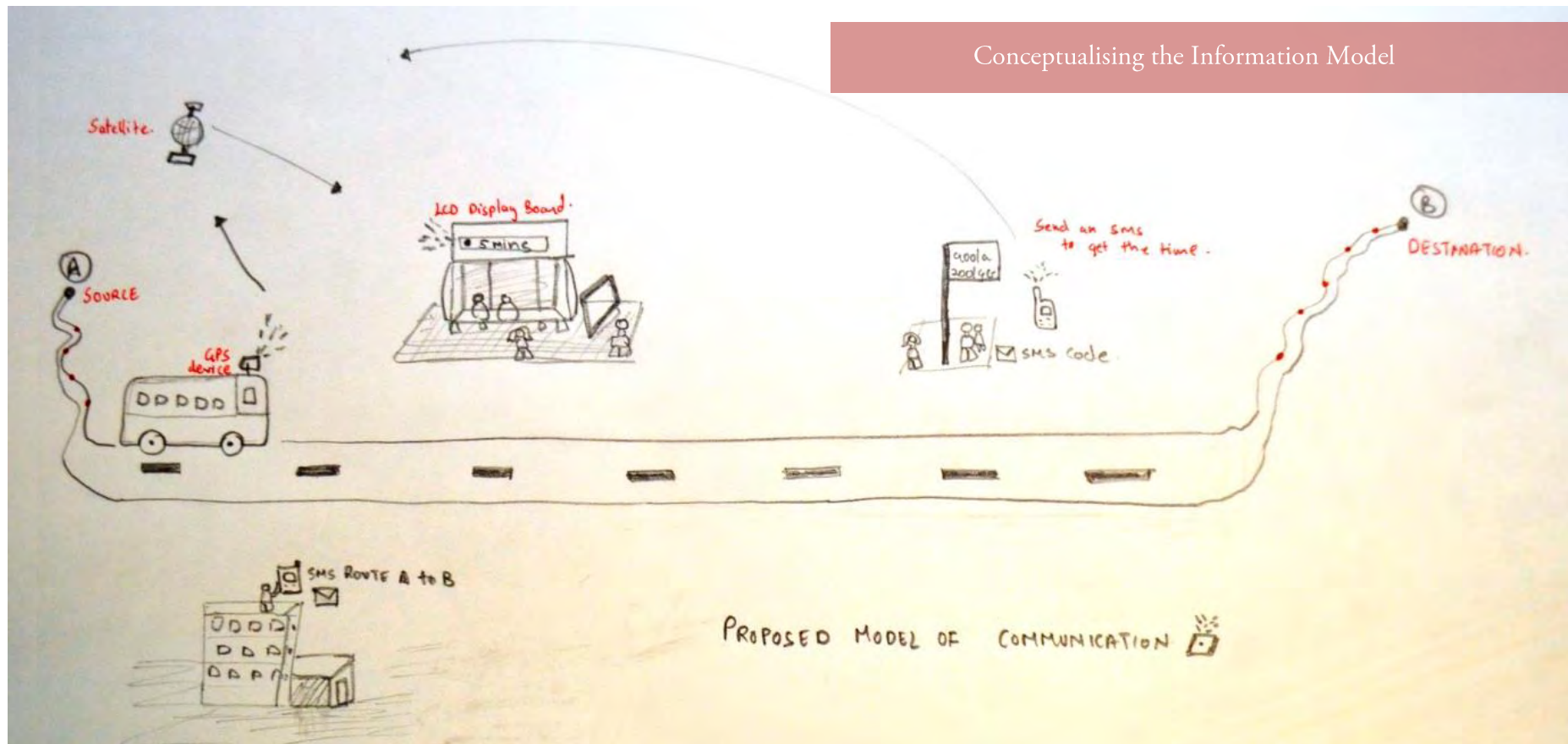


## THE CONCEPT

The proposed model of communication takes care of all user scenarios. Availability of information at the bus stops and away the bus stops were identified as areas to concentrate. With thorough understanding of the bus stop space, information had to be structured.

The concept was designed with the intention that information should be made available even if the person is not at the bus stop. A user can get all the details pertaining to the bus trip through the proposed toll free system. A central information hub about AMTS from user's perspective. The user can get the requested information triggered through a SMS.

## Conceptualising the Information Model



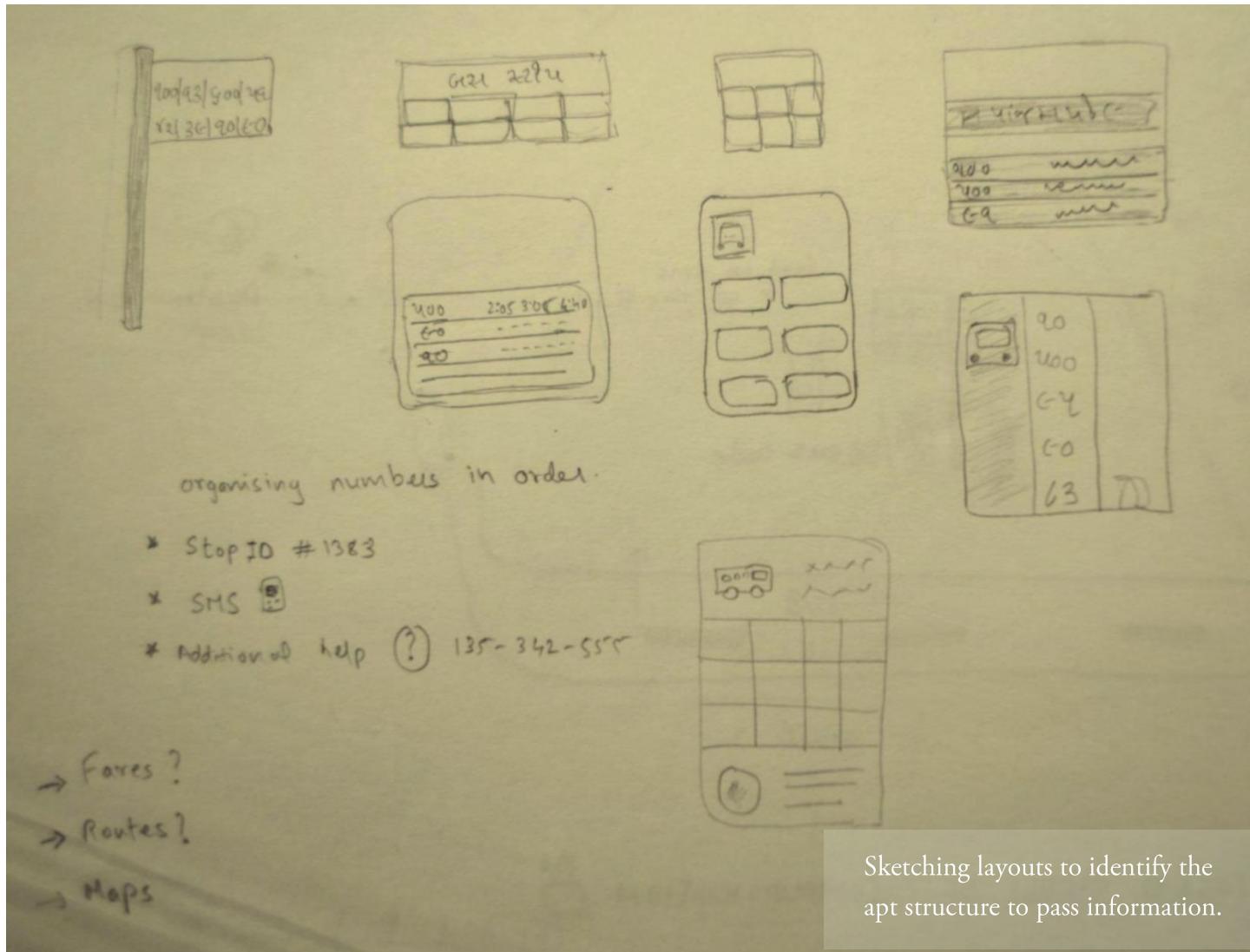
Organising and structuring information in the existing space is of utter importance. Taking a further step the idea is to have a device in the bus with GPS capability which would give its real time position. This would be captured and displayed on the digital display boards on the bus stop. The flag post bus stop would have the SMS code that would allow them to know the timing of the bus approaching. A person from home could find out information of routes and their bus numbers.

# The Product

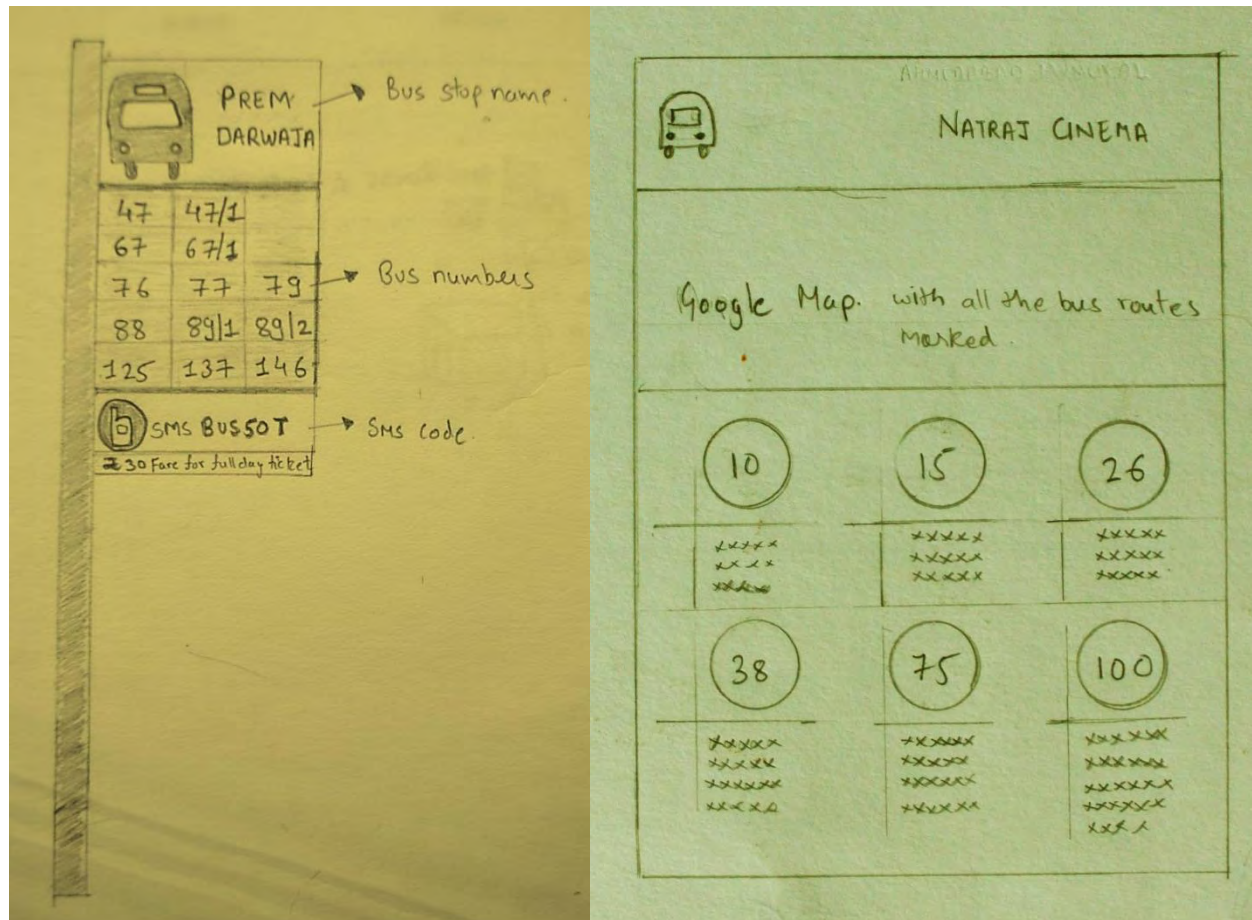


# Visual Design

## Exploring Layouts



## Sketching prototypes

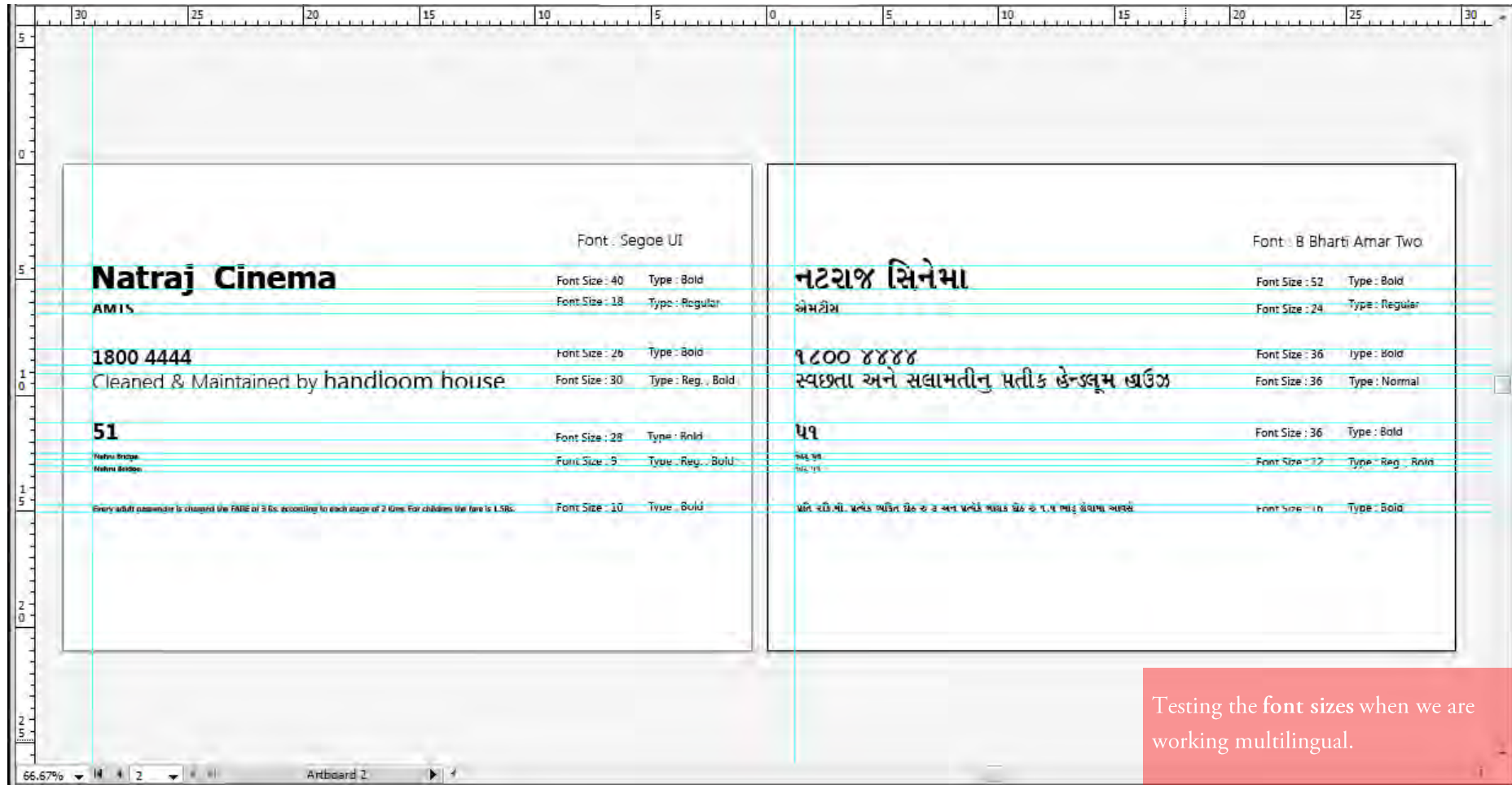


The intent of the exercise is to nail down what information we are trying to pass through the information displays

The challenge here again lies in how we design information taking into account the space. With the flag post bus stop we have the limitation on providing the bus routes, time, distance and fare. So it's just the bus numbers. That too was a problem as there is an information overloading.

However we have the privilege of space at the bigger bus stops. The idea is to pour all necessary information relevant for the commuters.

# Typography Exercise



English : Segoe UI

Gujarati : B Bharati Alok Two

# Natraj Cinema

# નટરાજ સિનેમા

Font Size : 40

Font Size : 60

AMTS  
એમટીસ

Font Size : 18

Font Size : 25

1800 4444  
૧૮૦૦ ૪૪૪૪

Font Size : 26

Font Size : 36

Cleaned & maintained by Handloom House  
સ્વચ્છતા અને સલામતીનું પ્રતીક હેન્ડલૂમ ઘઉંઝ

Font Size : 26

Font Size : 35

51  
૫૧

Font Size : 28

Font Size : 39

Nehru Bridge  
નેહરુ પુલ

Fare for adults is Rs 3 for the first 2 kms with an additional Rs 2 charge for every subsequent 2 kms.  
For children it is half the adult fare.

Font Size : 12

પ્રતિ રકિ.મી. પ્રત્યેક વ્યક્તિ ઈઠ રુ ૩ અન પ્રત્યેક બાલક ઈઠ રુ ૧.૫ ભાડુ લેવામા આવસે

Font Size : 16

English : Tahoma

Gujarati : B Bharati Alok Two

Natraj Cinema

Font Size : 40

નટરાજ સિનેમા

Font Size : 60

AMTS

Font Size : 18

એમટીસ

Font Size : 20

1800 4444

Font Size : 28

૧૮૦૦ ૪૪૪૪

Font Size : 38

Cleaned & maintained by Handloom House

Font Size : 30

સ્વછતા અને સલામતીનું પ્રતીક હેન્ડલૂમ હાઉસ

Font Size : 36

51

Font Size : 28

૫૧

Font Size : 40

Nehru Bridge,

નેહરુ પુલ

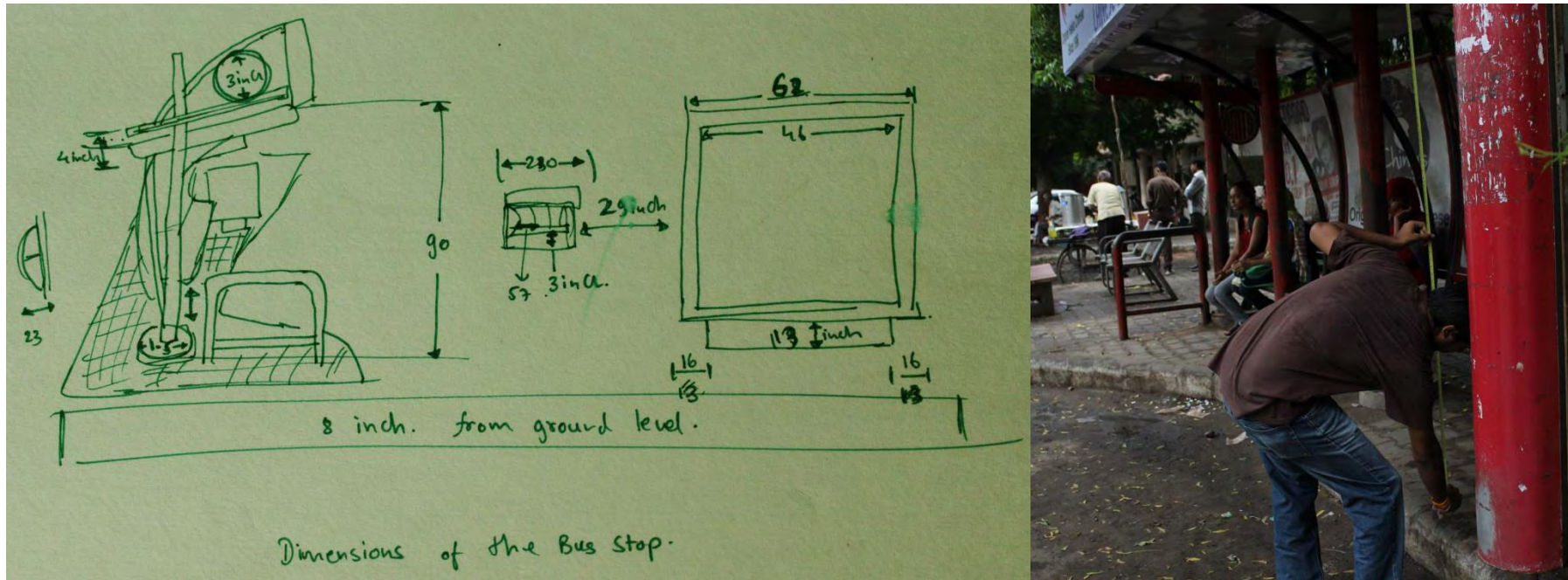
Every adult passenger is charged the FARE of 3 Rs. according to each stage of 2 Kms. For children the fare is 1.5Rs.

Font Size : 12

પ્રતિ ૨કિ.મી. પ્રત્યેક વ્યક્તિ દીઠ રૂ ૩ અન પ્રત્યેક બાલક દીઠ રૂ ૧.૫ ભાડુ લેવામા આવસે

Font Size : 16

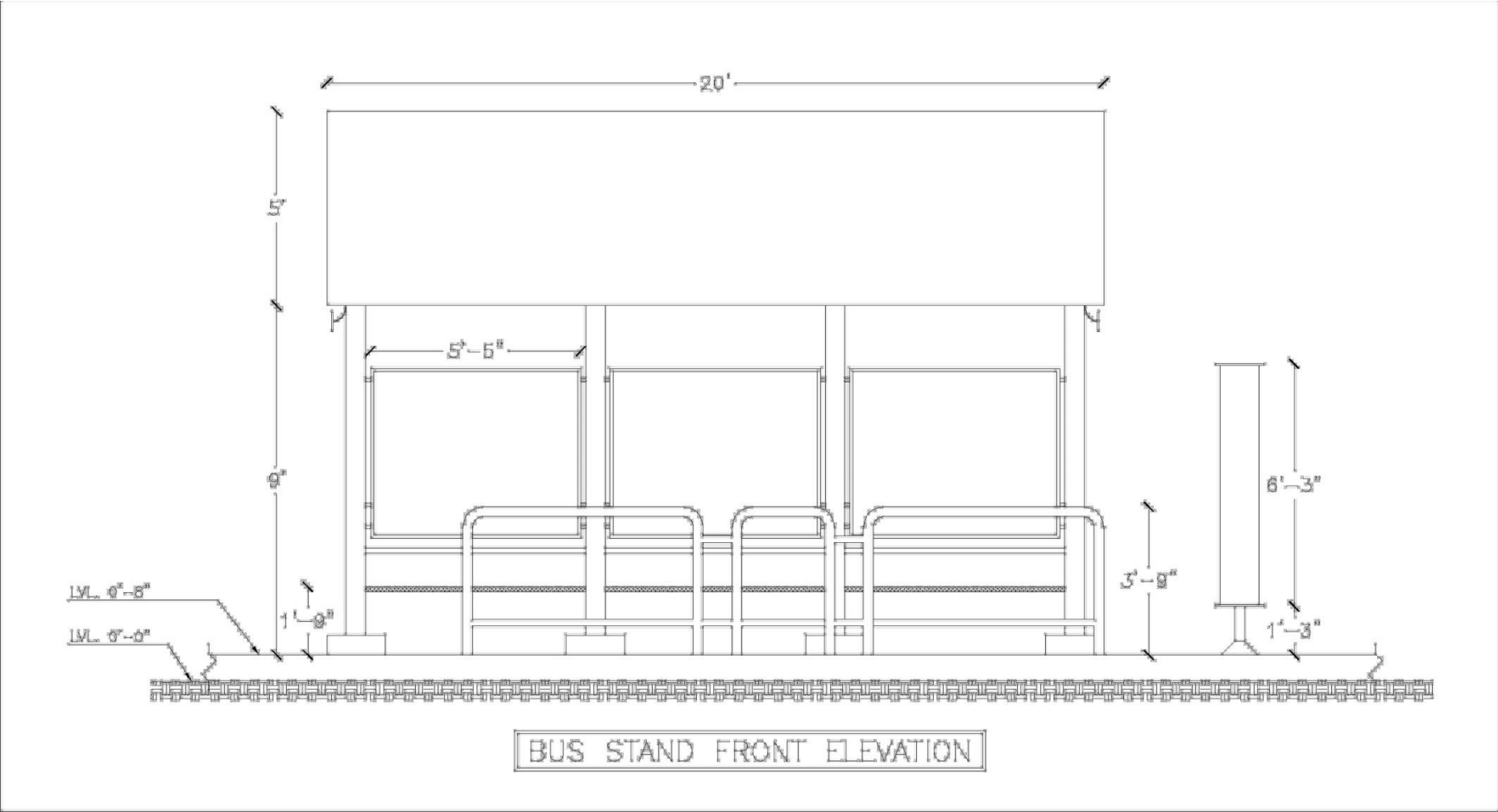
## Getting the dimensions of the bus stop



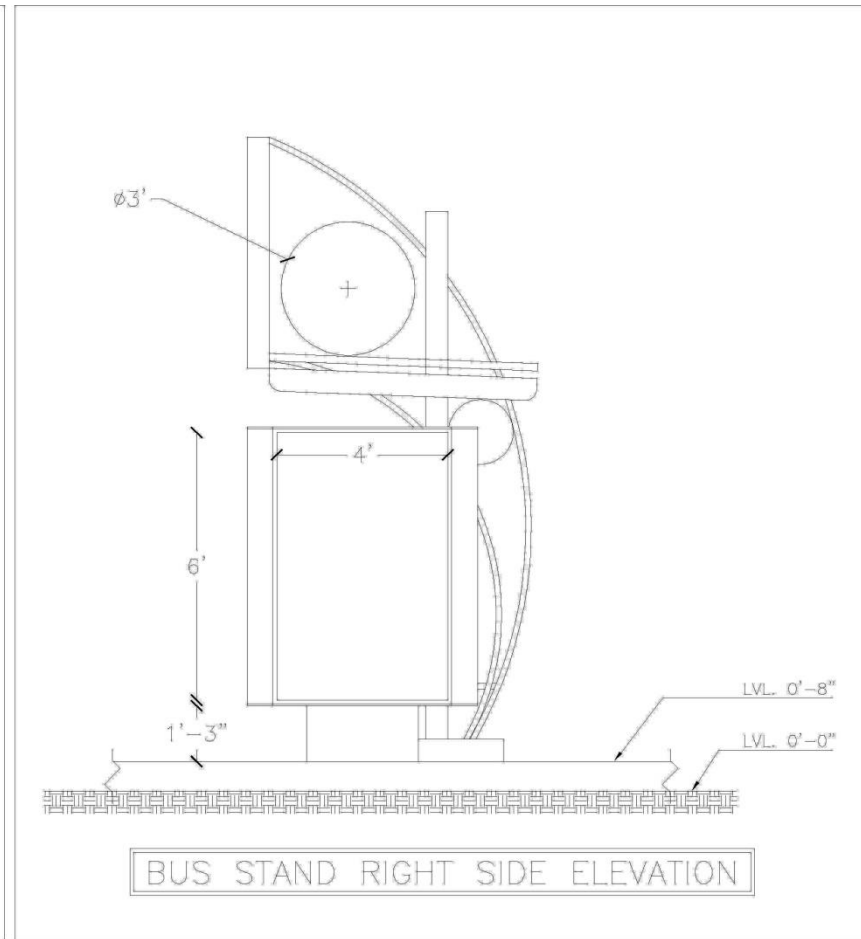
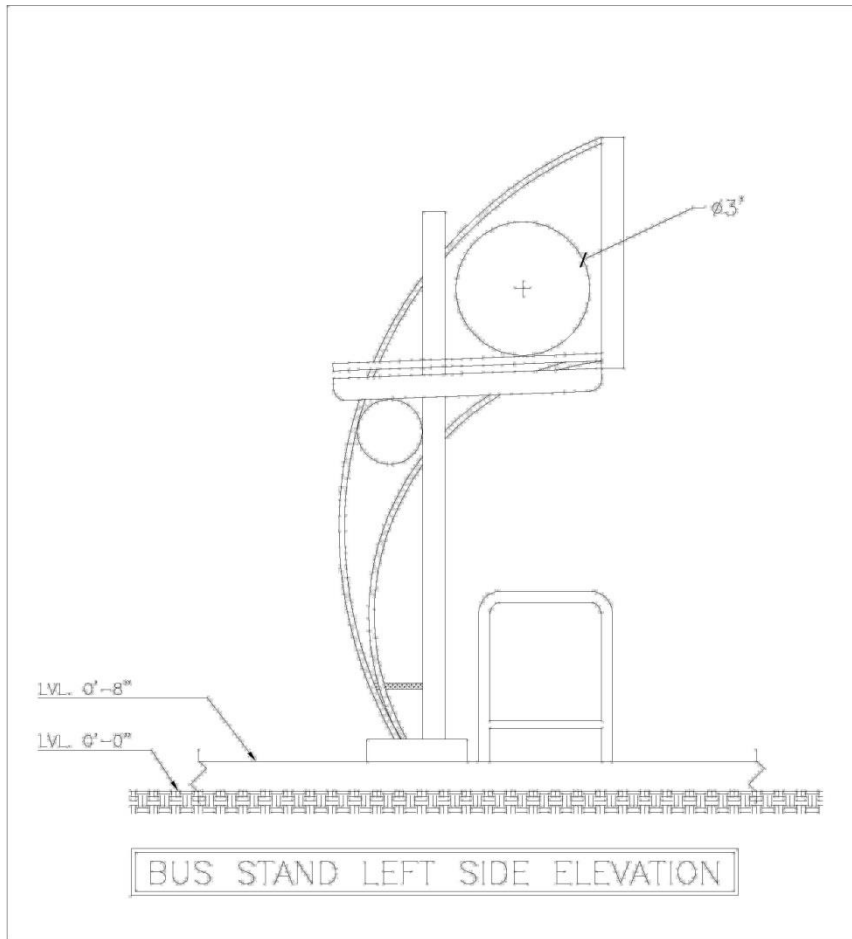
Getting the right measurements was essential in order to test the visual designs. So would get an idea of the right font size, the font colours, the visibility and structure of the design. The technical drawings were

later made from the measurements taken. Once the designs are made they would be tested and then embarked on these drawings.

# Technical Drawings of the Bus Stop







## Actual sizes of designs

### 1. Plate for Flag post

Size: 12.5 x 17 inches

Level: 120 inches from pavement.

Material: Steel/Aluminium sheet

Type: Paint, Sticker

### 2. Plate for Old Stops

Size: 60 x 100 inches

Level: 120 inches from pavement.

Material: Steel/Aluminium sheet

Type: Paint, Sticker

### 3. Poster on the advertisement hoarding

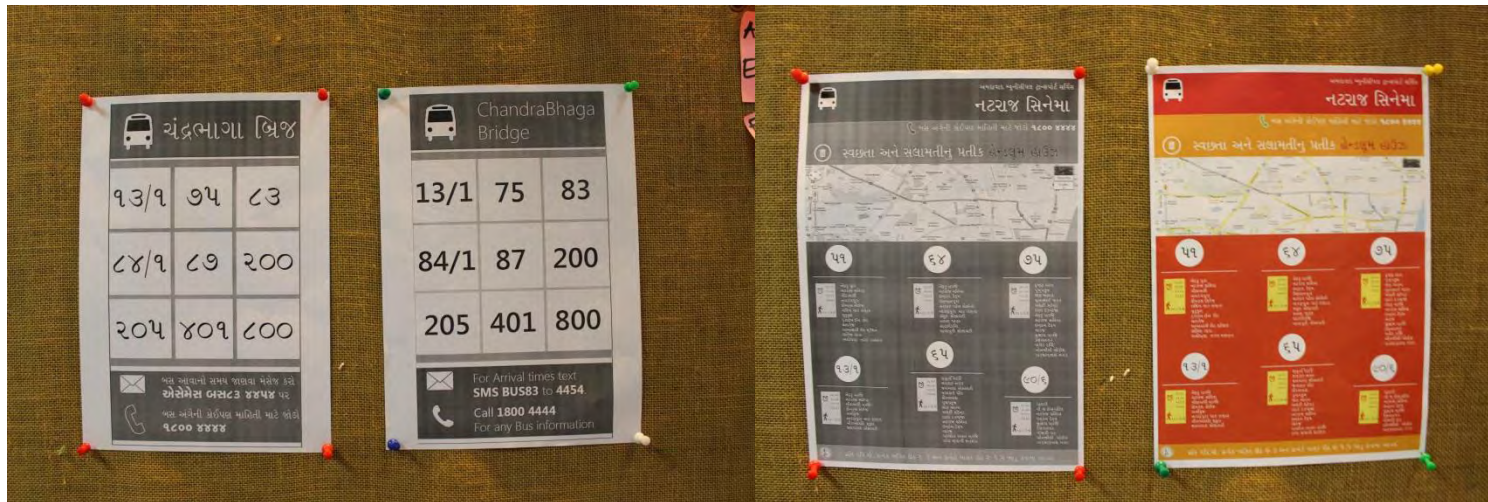
Size: 48 x 60 inches

Level: 3 inches from pavement

Material: Paper

Type: Print.

## Testing the Visual Designs



The designs had to be repeatedly tested in terms of the visibility of the fonts from a sizeable distance. The other challenge was when we are working bilingually, how the font's type and size match. These experiments were done with the designs in black and white. Once the structure and the organisation of images was done we had to check the designs with colours filled into it so how easy was to read the same fonts.

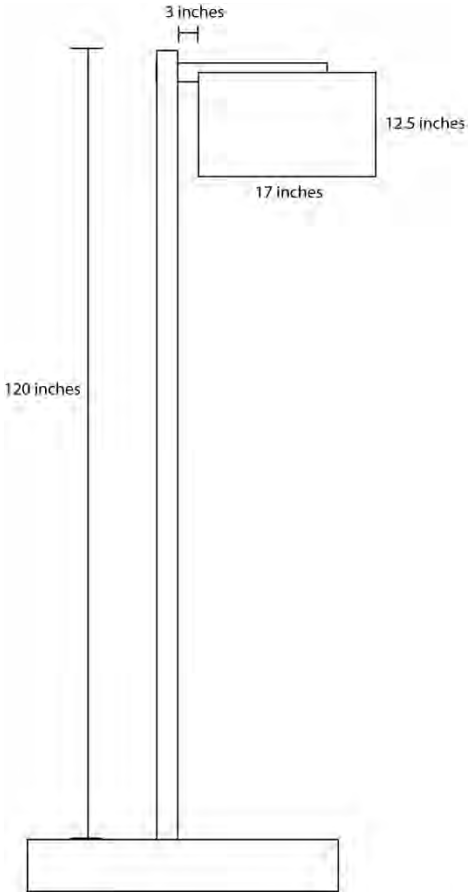
## Sponsorship of the Bus Stop



The Aegis corporate house had a bus stop just outside its periphery. The bus stop is all covered by poster advertisements of Aegis. In fact it looks more an advertisement booth than a bus stop. But this bus stop is decent compared to other bus stops. Infact the bus stop just opposite to it had turned into a nomad's house. This could have very much happened here too but the security guards of the corporate house would have never let this happen.

Most of the bus stops in the city are around some shops or residencies. The idea is to get them sponsored by them. This not just gives them publicity but also gives them a sense of responsibility when things are named after you. To do a check I approached the handloom house owner to do a validity check on the concept.

# Actual size of Flag post Bus stop






Flag Post Bus Stop



## Information Design for Flag Post

 ચંદ્રભાગા બ્રિજ એમટીસ		
૧૩/૧	૭૫	૮૩
૮૪/૧	૮૭	૨૦૦
૨૦૫	૪૦૧	૮૦૦
 'સમસ બસ૮૩' ૪૪૫૪  ૧૮૦૦ ૪૪૪૪		

 Chandrabhaga Bridge AMTS		
13/1	75	83
84/1	87	200
205	401	800
 'SMS BUS83' 4454  1800 4444		

# Information Design for the Old Stops

Fatehnagar					
Bus	Routes	Arrivals	Bus	Routes	Arrivals
31	Lal Darwaja Terminus- Sarfhej/Gam Via: Nehru Bridge- VS Hospital, Paldi. <b>Fatehnagar</b> Vana, Juhapura- Vajapur Road, Sarfhej Railway Station	8:15, 2:00, 5:45 15.6 kms.	37	Juhapura-Meghnagar <b>Fatehpur</b> , Paldi VS Hospital, Nehrubridge, Lal Darwaja Khamasa Rajpur Darwaja, Kakpur, Sirnagar Mills, Shardoon Hospital, Bhewadharji-Hanuman, Bajunagar Terminus, Khodiyarnagar, Viratnagar, Gandhi Park	8:15, 2:00, 5:45 15.6 kms.
*1	Sarfhej Raja- Civil Hospital Sarfhej Bus Stand, Juhapura. <b>Fatehnagar</b> , Paldi, VS Hospital, Nehrubridge, Sardabag, Lal Darwaja Jamnasa Office, Darwaja, Khatia, Girdharnagar Over bridge, Bada Lendi	8:15, 2:00, 5:45 15.6 kms.	38	Juhapura-Meghnagar <b>Fatehpur</b> , Vana, Paldi VS Hospital, Nehrubridge, Lal Darwaja Tlat, Mang, Kakpur, Khatia, Asawa, Overbridge, Asawa Mills, Bantak, Asawa Chata	8:15, 2:00, 5:45 15.6 kms.
*2	Sarfhej Raja- Civil Hospital Juhapura. <b>Fatehnagar</b> , Paldi VS Hospital, Nehru Bridge, Lal Darwaja, Karambhal Centre, Shikhar, Chata, Shikhar Darwaja, Dahi Darwaja, Delyapur -ver hem Darwaja, Rajha Asawa Over Bridge, Nagpur, Sada Lendi	8:15, 2:00, 5:45 15.6 kms.	40	Lal Darwaja Terminus- Sarfhej/Gam Nehru Bridge- VS Hospital, Paldi. <b>Fatehnagar</b> , Vana, Juhapura- Vajapur Road, Sarfhej Railway Station	8:15, 2:00, 5:45 15.6 kms.
36	Sarangpur Terminus- Sarfhej/Gam Rajpur Darwaja, As-di Chata, Khamasa, Jamnagar Chatta, Sadaar Bridge, Paldi. <b>Fatehpur</b> , Vana, Juhapura Vajapur Road, Sarfhej Railway Station	8:15, 2:00, 5:45 15.6 kms.	85	Lal Darwaja Terminus- Chandhibhuda/Gam, Jamnasa Office, Bani Darwaja, Ashoka Mills, Naga Commissioner Office, Luthanabida Circle, Fatehnagar, Power House, OHGC Office, Parthavnagar	8:15, 2:00, 5:45 15.6 kms.
*1	Sarangpur Terminus- Sarfhej/Gam Rajpur Darwaja, As-di Chata, Jamnagar Chata, Sardarnagar, Paldi. <b>Fatehnagar</b> , Vana, Juhapura Vajapur Road, Sarfhej Bus Stand	8:15, 2:00, 5:45 15.6 kms.	150	Sarfhej/Gam- Chandhibhuda/ Nagar Sarfhej Bus Stand, Juhapura. <b>Fatehpur</b> , Paldi, Jamnagar House, Rajpur Darwaja, Sarangpur, Khatia, Ohba, Niyand Ashram, Singava	8:15, 2:00, 5:45 15.6 kms.

₹ Fare for adults is Rs 3 for the first 2 kms with an additional Rs 2 charge for every subsequent 2 kms. For children it is half the adult fare.

ફતેહનગર					
બસ	રૂટ	સમય	બસ	રૂટ	સમય
૩૧	લાલ દારવાજા ટર્મિનસ- સર્ફેજ/ગામ વિા: નેહરુ બ્રિજ- વીસ હોસ્પિટલ, પાલડી. <b>ફતેહનગર</b> વના, જુહાપુરા- વાજાપુર રોડ, સર્ફેજ રેલવે સ્ટેશન	૦૮:૧૫, ૨:૦૦, ૫:૪૫ ૧૫.૬ કીમી.	૩૭	જુહાપુરા- મેઘનગર જુહાપુરા, પાલડી વીસ હોસ્પિટલ, નેહરુ બ્રિજ, લાલ દારવાજા, કામસા રાજપુર દારવાજા, કાકપુર, સીરનાગર મિલ્સ, શરદૂન હોસ્પિટલ, ભુવદેહરજી-હનુમાન, બાજુનાગર ટર્મિનસ, કોદીયાનગર, વિરાટનાગર, ગાંધી પાર્ક	૦૮:૧૫, ૨:૦૦, ૫:૪૫ ૧૫.૬ કીમી.
*૧	સર્ફેજ રાજા- સિવિલ હોસ્પિટલ સર્ફેજ બસ સ્ટાન્ડ, જુહાપુરા. <b>ફતેહનગર</b> , પાલડી, વીસ હોસ્પિટલ, નેહરુ બ્રિજ, સર્દાબાગ, લાલ દારવાજા, જામનસા ઓફિસ, દારવાજા, કાટિયા, ગિરધારનાગર ઓવર બ્રિજ, બડા લેન્ડી	૦૮:૧૫, ૨:૦૦, ૫:૪૫ ૧૫.૬ કીમી.	૩૮	જુહાપુરા- મેઘનગર જુહાપુરા, વના, પાલડી વીસ હોસ્પિટલ, નેહરુ બ્રિજ, લાલ દારવાજા ટ્રાટ, મંગ, કાકપુર, કાટિયા, અસા, ઓવરબ્રિજ, અસા મિલ્સ, બાંતક, અસા ચાટા	૦૮:૧૫, ૨:૦૦, ૫:૪૫ ૧૫.૬ કીમી.
*૨	સર્ફેજ રાજા- સિવિલ હોસ્પિટલ જુહાપુરા. <b>ફતેહનગર</b> , પાલડી વીસ હોસ્પિટલ, નેહરુ બ્રિજ, લાલ દારવાજા, કારામબલ સેન્ટર, શિકાર, ચાટા, શિકાર દારવાજા, ડાહી દારવાજા, ડેલ્યાપુર-વેરેમ દારવાજા, રાજા અસા ઓવર બ્રિજ, નાગપુર, સડા લેન્ડી	૦૮:૧૫, ૨:૦૦, ૫:૪૫ ૧૫.૬ કીમી.	૪૦	લાલ દારવાજા ટર્મિનસ- સર્ફેજ/ગામ નેહરુ બ્રિજ- વીસ હોસ્પિટલ, પાલડી. <b>ફતેહનગર</b> , વના, જુહાપુરા- વાજાપુર રોડ, સર્ફેજ રેલવે સ્ટેશન	૦૮:૧૫, ૨:૦૦, ૫:૪૫ ૧૫.૬ કીમી.
૩૬	સરંગપુર ટર્મિનસ- સર્ફેજ/ગામ રાજપુર દારવાજા, અસ-દી ચાટા, કામસા, જામનગર ચાટા, સડા બ્રિજ, પાલડી. <b>ફતેહપુર</b> , વના, જુહાપુરા વાજાપુર રોડ, સર્ફેજ રેલવે સ્ટેશન	૦૮:૧૫, ૨:૦૦, ૫:૪૫ ૧૫.૬ કીમી.	૮૫	લાલ દારવાજા ટર્મિનસ- ચાંદીબહુદા/ગામ, જામનસા ઓફિસ, બાની દારવાજા, અશોકા મિલ્સ, નાગ કમિશનર ઓફિસ, લુથાનાબિડા સર્કલ, ફતેહનગર, પાવર હાઉસ, ઓગીસી ઓફિસ, પાર્થવનાગર	૦૮:૧૫, ૨:૦૦, ૫:૪૫ ૧૫.૬ કીમી.
*૧	સરંગપુર ટર્મિનસ- સર્ફેજ/ગામ રાજપુર દારવાજા, અસ-દી ચાટા, જામનગર ચાટા, સરદારનાગર, પાલડી. <b>ફતેહનગર</b> , વના, જુહાપુરા વાજાપુર રોડ, સર્ફેજ બસ સ્ટાન્ડ	૦૮:૧૫, ૨:૦૦, ૫:૪૫ ૧૫.૬ કીમી.	૧૫૦	સર્ફેજ/ગામ- ચાંદીબહુદા/ નગર સર્ફેજ બસ સ્ટાન્ડ, જુહાપુરા. <b>ફતેહપુર</b> , પાલડી, જામનગર હાઉસ, રાજપુર દારવાજા, સરંગપુર, કાટિયા, ઓબા, નિયાંદ અશ્રમ, સિંગવા	૦૮:૧૫, ૨:૦૦, ૫:૪૫ ૧૫.૬ કીમી.

₹ યાત્રી માટેની યાત્રા ભાડા રૂા ૩ છે. પ્રથમ ૨ કીમી માટે અને અનુસરે ૨ કીમી માટે રૂા ૨ વધુ ભાડુ લેવામાં આવે છે.

☎ વધુ માહતી માટે સર્ફેજ/ગામ સુધી કોલ: ૧૮૦૦ ૪૪૪૪

# Design for Standard AMTS Bus Stop Information

## Natraj Cinema

1800 4444

Cleaned & maintained by handloom house



**51**

**Mon-Fri**  
09:10 Nehru Bridge  
11:30 **Natraj Cinema**  
13:25 Mithakali Underbridge  
13:25 Navrangpura  
17:40 Commerce College  
17:40 Vijay Char Rasta

**Sat-Sun**  
10:45 Gurukul  
14:15 Drive-in Road  
14:15 Thallej  
14:15 Rambali  
14:2 Kms. Road Station  
Shilaj Gaam  
Acyodhya Township

**64**

**Mon-Fri**  
09:10 Nehrubridge  
11:30 **Natraj Cinema**  
13:25 Income-tax Office  
13:25 Usmanpura  
17:40 Sardar Patel Colony  
17:40 Naranpura Char Rasta

**Sat-Sun**  
10:45 Ankur Society  
14:15 Ranna Park  
14:15 Ghatlodia  
11.2 Kms. Pivapun Society

**75**

**Mon-Fri**  
09:10 Krishna baug  
11:30 Pushkunj  
13:25 ShahAllam -Inaka  
13:25 Bhulabhai Park  
17:40 ST Stand  
17:40 Lal Darwaja,  
Nehrubridge,  
**Natraj Cinema**,  
Income-tax office,  
Vadaj,  
Subhashbridge,  
Keshavnagar,  
Acher Depo,  
ONGC office,  
Parshavnathnagar

**Sat-Sun**  
10:45 VS hospital  
11:30 **Natraj Cinema**  
13:25 Keshavnagar  
14:15 Subhash Bridge circle  
14:15 Power House  
ONGC Office  
11 Kms. Parshavnath nagar

**13/1**

**Mon-Fri**  
09:10 Nehrubridge  
11:30 **Natraj Cinema**  
13:25 Mithakali Six roads  
13:25 Commerce College  
17:40 Amikunj  
17:40 Naranpura CharRasta  
14:15 Mira Ambika School  
14:15 JayMangal Society  
9.8 Kms.

**Sat-Sun**  
10:45 Simruti Mandir  
11:30 Sarnat Nagar  
13:25 Jaymal Society  
13:25 Jawaharchowk  
17:40 Pushkunj  
17:40 Shahallam  
17:40 Amikunj  
10:45 Khomasa  
14:15 Lalidwaja  
14:15 Nehru Bridge  
**Natraj Cinema**  
13:25 Income Tax  
13:25 Subhash Bridge  
14:15 Prabhoth Raval Bridge  
14:15 Radha Swamy Satsang  
14.2 Kms.

**401**

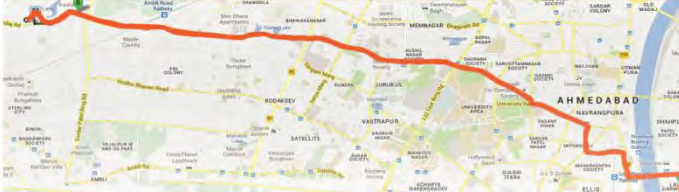
**Mon-Fri**  
09:10 Paldi  
11:30 VS hospital  
13:25 **Natraj Cinema**  
13:25 Keshavnagar  
14:15 Subhash Bridge circle  
14:15 Power House  
ONGC Office  
11 Kms. Parshavnath nagar

₹ Fare for adults is Rs 3 for the first 2 kms with an additional Rs 2 charge for every subsequent 2 kms. For children it is half the adult fare.

## નટરાજ સિનેમા

૧૮૦૦ ૪૪૪૪

સ્વચ્છતા અને સલામતીનું પ્રતીક હેન્ડલૂમ ઘઉંઝ



**૫૧**

**એમ-ફ્રી**  
૦૯:૧૦ નેહરુ બ્રિજ  
૧૧:૩૦ નટરાજ સિનેમા  
૧૩:૨૫ મીઠાકાલી  
૧૩:૨૫ નવરાંગપુરા  
૧૭:૪૦ કોમર્સ કોલેજ  
૧૭:૪૦ શિલાજ વાઝર રોડ

**શનિ-રવિ**  
૧૦:૪૫ ગુરુકુલ  
૧૪:૧૫ ડ્રાઇવ ઇન રોડ  
૧૪:૧૫ થાલેજ  
૧૪:૧૫ રામબાલી  
૧૪:૨ કિ.મી. રોડ સ્ટેશન  
શિલાજ ગામ  
અચોદ્યા તાલુકા નવર

**૬૪**

**એમ-ફ્રી**  
૦૯:૧૦ નેહરુ બ્રિજ  
૧૧:૩૦ નટરાજ સિનેમા  
૧૩:૨૫ ઇન્કમ ટેક્સ  
૧૩:૨૫ ઇસ્માનપુરા  
૧૭:૪૦ સર્દાર પટેલ કોલોની  
૧૭:૪૦ નારાણપુરા ચાર રસ્તા

**શનિ-રવિ**  
૧૦:૪૫ અંકુર સોસાયટી  
૧૪:૧૫ રાન્ના પાર્ક  
૧૪:૧૫ ગઠલોડિયા  
૧૧.૨ કિ.મી. પાવાપુરી સોસાયટી

**૭૫**

**એમ-ફ્રી**  
૦૯:૧૦ કુજી આણ  
૧૧:૩૦ પુષ્કુજ  
૧૩:૨૫ સોલ આણ  
૧૩:૨૫ પુલામાં પાર્ક  
૧૭:૪૦ એન ટી સેન્ટર  
૧૭:૪૦ સાલ દરવાજા

**શનિ-રવિ**  
૧૦:૪૫ નેહરુ બ્રિજ  
૧૪:૧૫ નટરાજ સિનેમા  
૧૪:૧૫ ઇન્કમ ટેક્સ  
૧૪:૧૫ વાડજ  
૧૪:૧૫ કોમ્પાઉન્ડ  
૧૪:૧૫ શિવ નવર  
અંચોદ્યા  
ઓ.એન.કો.ઓ. સોસાયટી  
પાર્શવનાથ નવર

**૧૩/૧**

**એમ-ફ્રી**  
૦૯:૧૦ નેહરુ બ્રિજ  
૧૧:૩૦ નટરાજ સિનેમા  
૧૩:૨૫ મીઠાકાલી  
૧૩:૨૫ કોમર્સ કોલેજ  
૧૭:૪૦ અમીકુજ  
૧૭:૪૦ નારાણપુરા ચાર રસ્તા  
૧૪:૧૫ મિલવનલિંગ સુબુજ  
૧૪:૨ કિ.મી. જયમંગલ સોસાયટી

**૬૫**

**એમ-ફ્રી**  
૦૯:૧૦ સુનિ મંદિર  
૧૧:૩૦ સમીટ નવર  
૧૩:૨૫ જયમંગલ સોસાયટી  
૧૩:૨૫ જયમંગલ ચોક  
૧૭:૪૦ પુષ્કુજ  
૧૭:૪૦ સોલ આણ  
૧૭:૪૦ અમીકુજ  
૧૭:૪૦ નારાણપુરા ચાર રસ્તા  
૧૭:૪૦ ઇન્કમ ટેક્સ  
૧૭:૪૦ નટરાજ સિનેમા  
૧૭:૪૦ ઇન્કમ ટેક્સ  
૧૭:૪૦ પ્રમાણ રાવલ પુલ  
૧૭:૪૦ સુભાષ બ્રિજ  
૧૧.૨ કિ.મી. સુભાષ પુલ  
સુભાષ પુલ  
સુભાષ બ્રિજ  
ઓ.એન.કો.ઓ. સોસાયટી  
પાર્શવનાથ નવર

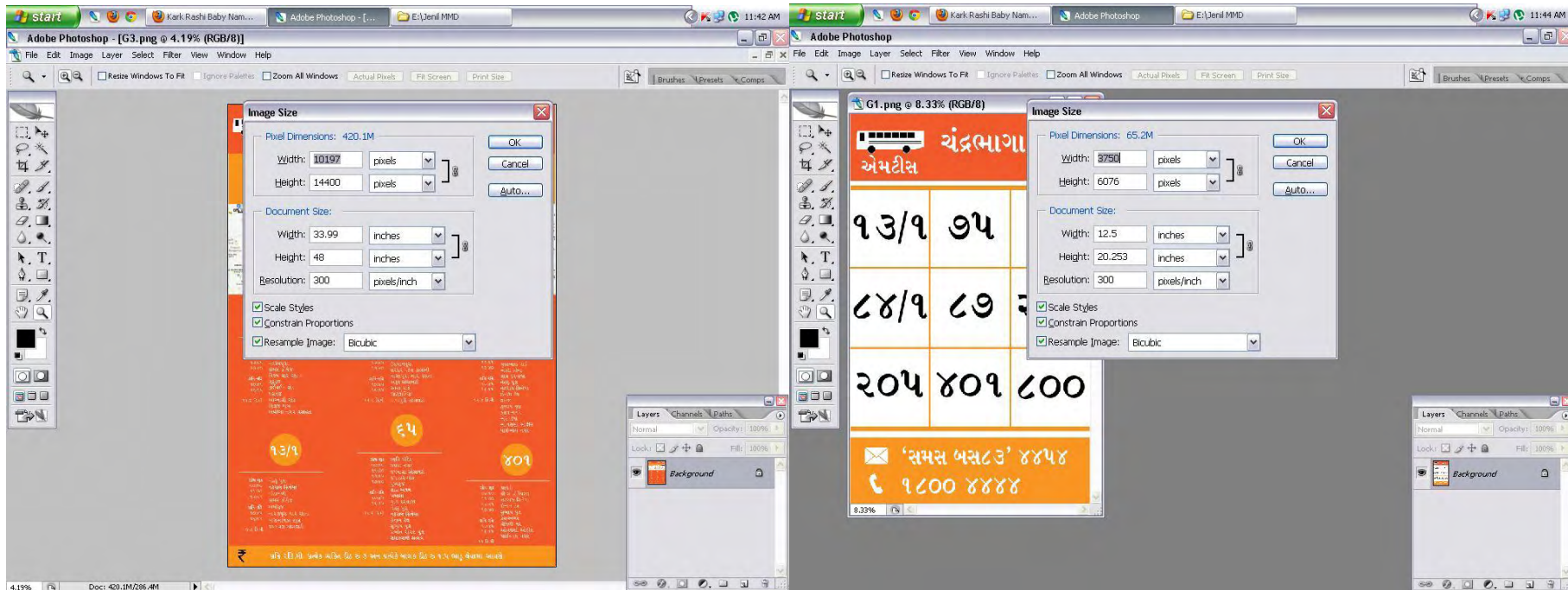
**૪૦૧**

**એમ-ફ્રી**  
૦૯:૧૦ પાલોડી  
૧૧:૩૦ વી.એસ. હોસ્પિટલ  
૧૩:૨૫ નટરાજ સિનેમા  
૧૩:૨૫ ઇન્કમ ટેક્સ  
૧૭:૪૦ સુભાષ પુલ  
૧૭:૪૦ શિવમંગલ  
૧૭:૪૦ વીજળી મંદિર  
૧૪:૧૫ ઓ.એન.કો.ઓ. સોસાયટી  
૧૪:૧૫ પાર્શવનાથ નવર  
૧૧ કિ.મી.

₹ પ્રતિ ૨કિ.મી. પ્રત્યેક વ્યક્તિ ટિકટ ૩ અને પ્રત્યેક બાળક ટિકટ ૧.૫ ભાડું લેવામાં આવશે



## Measurements for actual scale:



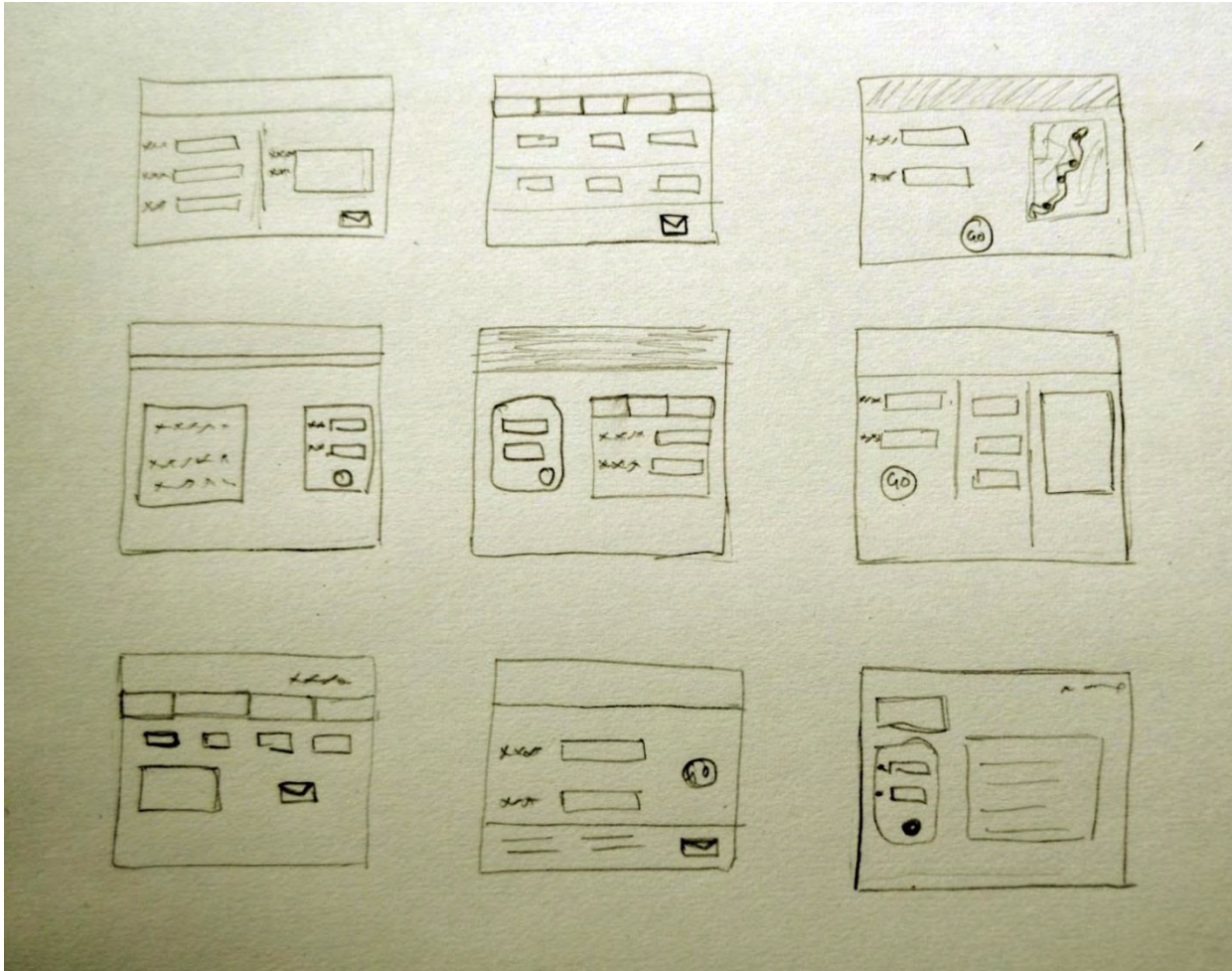
The designs made in the art board are mapped to the actual sizes. This would give us an actual idea, as in how they would look visually when we put it on the stops.

# APPLICATION DESIGN

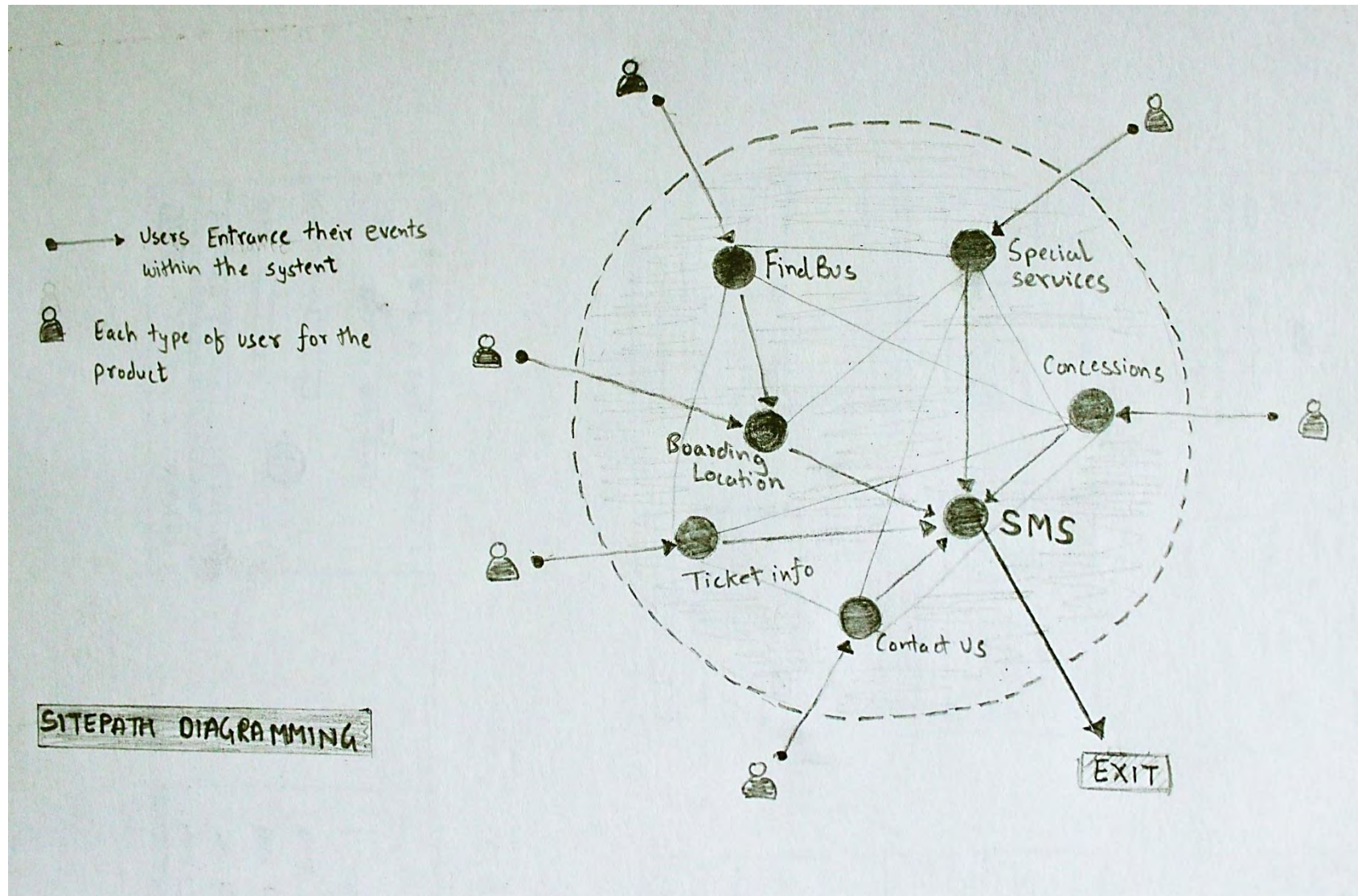
## Information Design

- **Organisational schemes**
  - Task Based
  - Geographic
- **Categories**
  - Find Bus : location, time, fare, distance
  - Tickets : passes, schemes, concessions
  - Services : picnic, sightseeing
- **Pages**
- **Functionality**
  - Tasks that each page of the application does
- **Sitemap**
  - Overview of navigation on the application
- **Wireframes**
- **Prototypes**

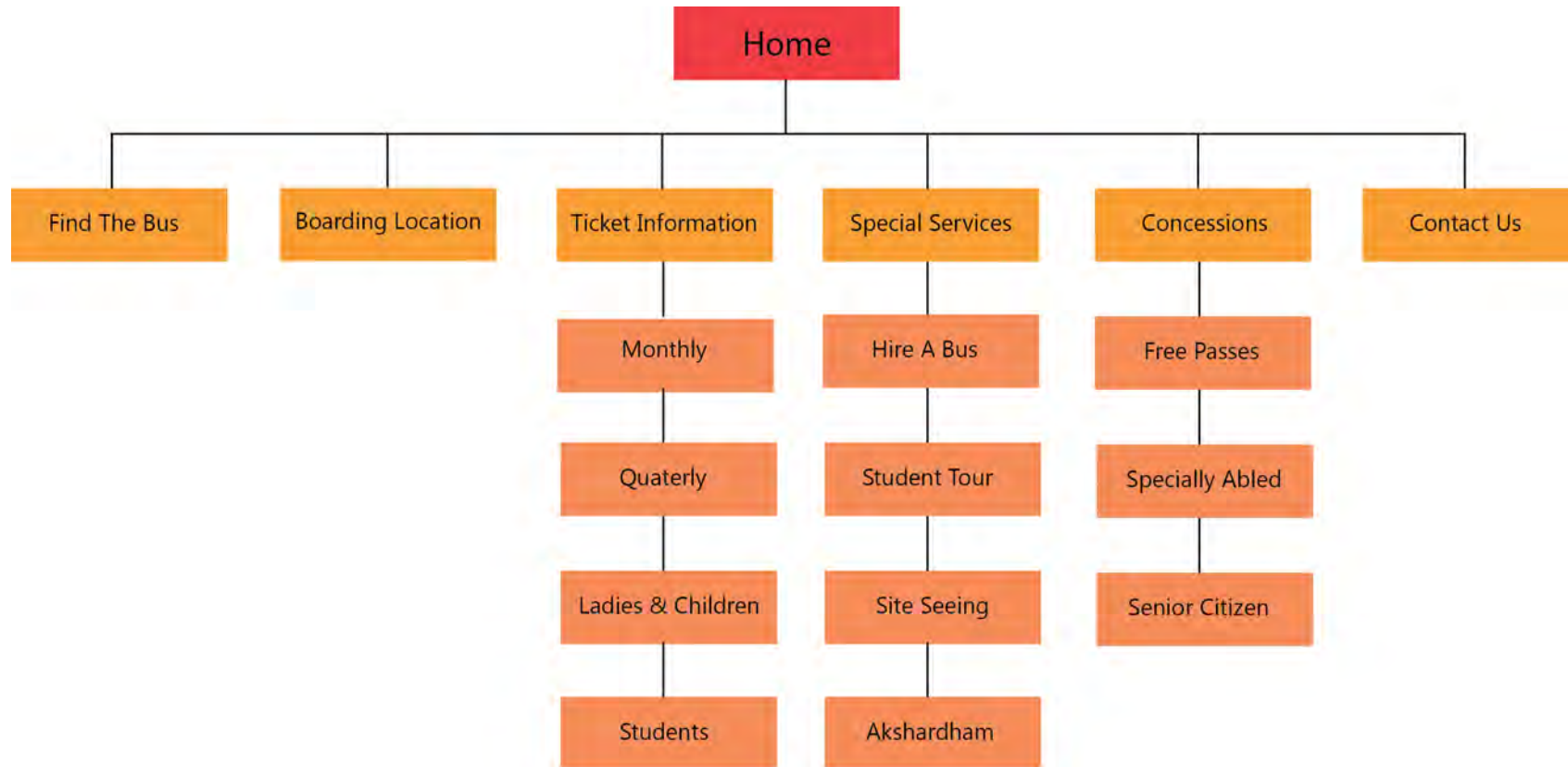
## Early Explorations



## Site path Diagramming

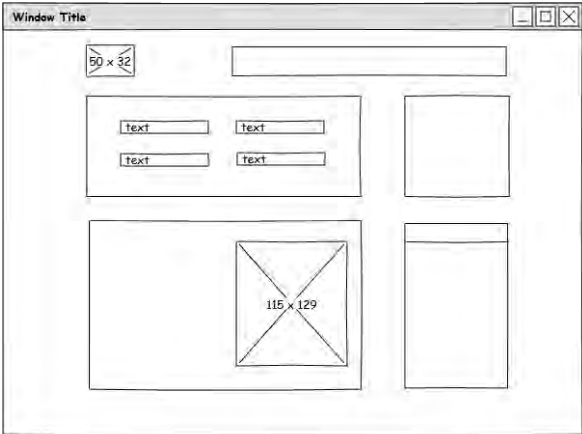
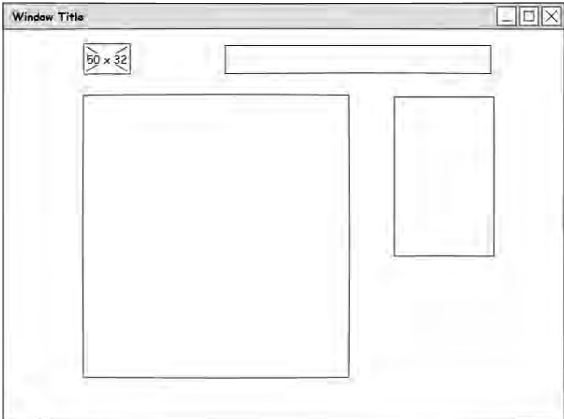
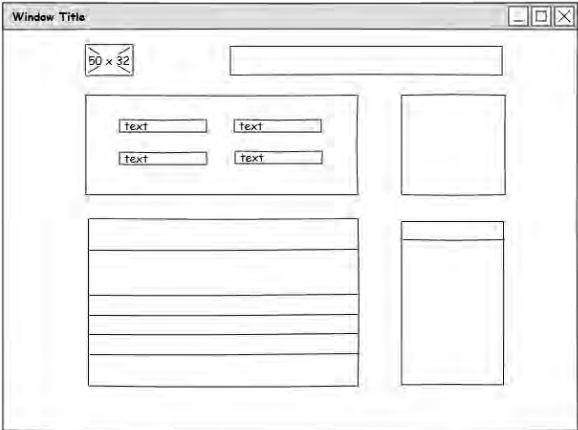


## Site Map



**SITE MAP**

# Wireframes

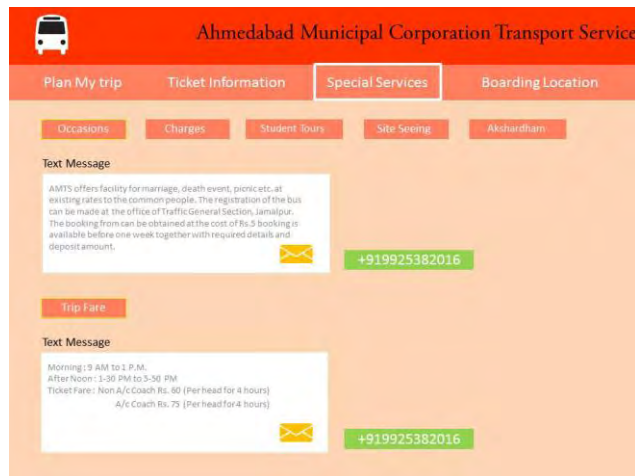


## Task Flows

- Parul, wants to avail the daily bus pass scheme as she got admission into a city college away from her place, she explores and figures out that the pass is issued at the major bus depots by asking people around at her locality bus stop. She is not aware of the bus depots and she ends up to errand for bus pass center.
- Xaviers School administrators plan for an outdoor picnic for school students. They are looking for a reliable and cheap bus service, so they start enquiring at the local government bus stop but they end up getting inappropriate and insufficient information from the local authority leading to booking a more expensive bus for the trip.
- Nirali has her sister coming along with her family to Ahmedabad. She is planning an outing for them to explore the city. She is looking a viable option to take them around for sight-seeing, but is clueless from where she can get the details.
- Mr. Shah, retired government officer has to see the doctor twice a week as he is not keeping well. He is aware of bus concession facility for people above the age of 60 but has to always explicitly confirm about the concession during his journey as he does not have the concession card issued. He does not have a clear directly from where to avail the card and so ends up paying for the entire journey amount.



# Making Prototypes



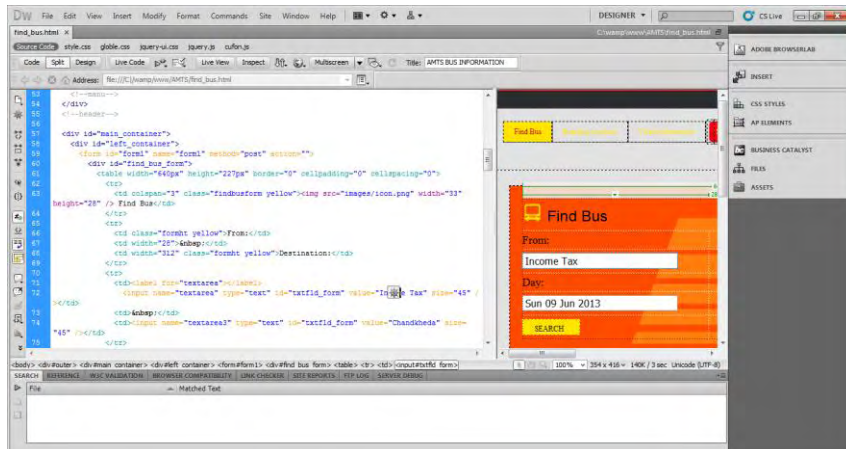
## Software Specifications

Type: Web Application

Language: HTML/CSS  
Jscript

Free API's: Google Maps API – for finding the boarding location.  
FullOnSMS API – for sending SMS on cellphones.

IDE used: Adobe Dreamweaver



Find Bus
Boarding Location
Ticket Information
Special Services

Find your ATMS Bus

Start:  Destination:

Day:  Time:

SEARCH

**Journey Details:**  
**From:** C.N. School  
**To:** Lal Darwaja  
**Leaving:** on Sun 09 Jun 2013 at 11:55 to 13:00

**RESULTS: 11 BUSES FOUND**

Route No.	Start	Destination	Bus stop	Bus Timing	Bus Route
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>
33	Paldi Terminus	Lal Darwaja	C.N. School	12.05 P.M	<a href="#">View Map</a>

**BUS SMS**

**Route No:**  
33

**Start from:**  
Paldi Terminus

**Destination:**  
Lal Darwaja

**Bus stop:**  
C.N.School

**Bus Timing:**  
12.05 P.M.

+91

SEND SMS

## Find the Bus

The Landing page provides you navigation to all other pages. The most important things that people look for in terms of travelling through the bus was to find the right bus, timing, boarding location, distance and fare. The idea is to provide all the information that the user wants through a sms. So that he could also keep for reference and there's no fear of remembering things. The most important thing is that it is coming from a trusted source. The application would be used by a call centre executive who would listen to you and fetch information as per your needs.

Find Bus
Boarding Location
Ticket Information
Special Services

Find your ATMS Boarding Location

Where are you:

Where you want to go:

Day:

Time:

SEARCH

**Journey Details:**

**From:** Paldi

**To:** O.N.G.C. Office

**Leaving:** on Sun 09 Jun 2013 at 11:55 to 13:00

**RESULTS: 1 BUSES FOUND**

**BUS STOP ROUTE:**

- Vasna Terminus
- Fatehnagar
- Paldi
- V. S. Hospital
- Sanyash Ashram
- Natraj
- Income Tax
- Usmanpura
- Wadaj
- Subhash Bridge Circle
- Keshav Nagar
- Power House Staff Quarters
- Chintamani Society
- O. N. G. C. Office
- Parshwanath nagar
- Chandkheda Gam

BUS SMS

**Route No:**  
401

**Start from:**  
Vasna Terminus

**Destination:**  
Chandkheda

**Bus stop:**  
Paldi

**Bus stop Address:**  
Hotel Neelkanth Inn,  
Jalaram Mandir Road,  
Paldi,

**Bus Timing:**  
12.05 P.M.

+91

SEND SMS

## Find Boarding Location

Finding the Boarding location helps you to identify from where you need to board the bus. This works similar to 'find the bus' but additionally also directs you from where to board the bus. This service provides you with the sms of the boarding location of the bus stop so that people who have no clue about where to get into the bus they are well aware about it.

Find Bus    Boarding Location    **Ticket Information**    Special Services

Monthly Pass    Quarterly Pass    Ladies & Children    Students

**MANPASAND PRAVAS (TRAVEL AS YOU LIKE) PASSES**

**DAILY:**  
Under this scheme one can travel from 6 A.M. To 10 P.M. as many times, in any AMTS bus with a single ticket. Ticket fare for children from 3-12 years is Rs.5 and beyond that age, it is Rs.20 Rs. 25/- (suggested by Hingarajia1 as a comment on this page)

**MONTHLY:**  
Under this scheme, a monthly pass is issued at the cost of Rs.600. The pass-holder can any time, in any AMTS bus, as many times as he wishes. [Send SMS>>](#)

**QUARTERLY:**  
Under the scheme, the pass-holder, by paying Rs.1500 for 3 months, can travel in any route, any time and as many times as he wishes to travel in any AMTS bus.

**FOR LADIES AND CHILDREN:**  
Under this scheme, ladies and children from 3-12 years can travel in any AMTS bus, with a single ticket, in any route from 12 Noon to 7 PM. From Monday to Friday. The rate for children is Rs. 3, and for ladies and girls above 12 years is Rs. 10.

**FOR STUDENTS:**  
The students have to produce the photo-copy of school/college fees receipt and Identity card and submit the scheme – form with Rs. 50, charge, thereafter an identity card/smart-card will be issued. The student can travel from 10 AM to 6PM in any AMTS bus on that day, by paying a ticket Rs.10.  
Note: A student can avail only one scheme out of student-concession pass, athlete pass or student 'Travel as you like' pass.

**WHERE TO GET THE PASSES?:**  
Application Forms for all types of passes are available from Ritz Hotel Compound, Near Roopalee Cinema, Lal Darwaja

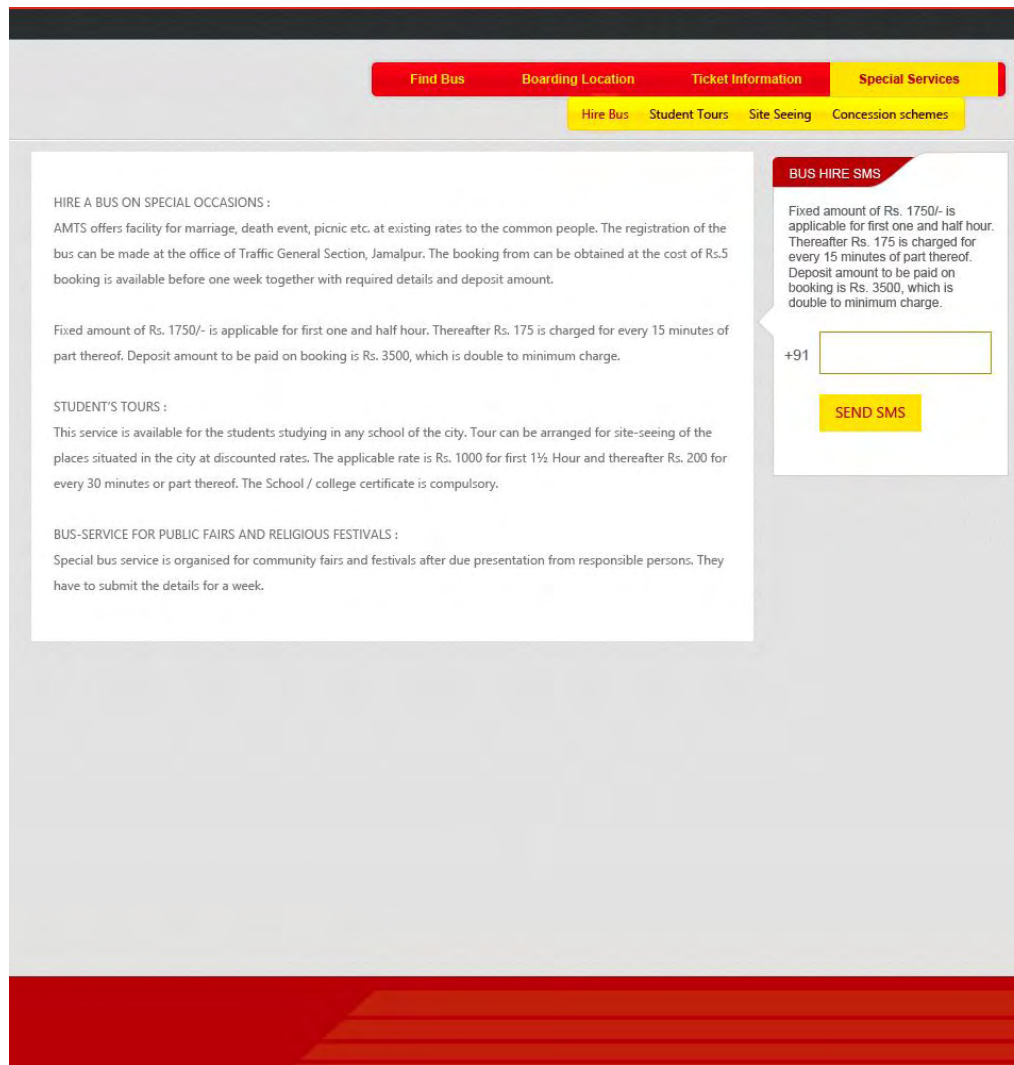
**MONTHLY**  
Under this scheme, a monthly pass is issued at the cost of Rs.600. The pass-holder can any time, in any AMTS bus, as many times as he wishes.

+91

**SEND SMS**

## Ticket Information

This provides you information on all ticket related information for commuters. The on-going passes scheme, from where to buy those smart cards, what all documents are required to get the passes, travel cards etc. every information that the person is unknown would be available to them.



## Special Services

Special Services section provides information on what other facilities does the AMTS gives. That includes hiring the bus for functions, school trips, marriages. The AMTS also provides services for sight-seeing to places across the city and Gandhinagar, all sort of information pertaining to same would be available.

Concessions for specially abled people, senior citizen all such schemes are conveyed to the user.

# *A Connect: AMTS & BRTS*

## A Connect: AMTS & BRT

When there are two local transit systems functioning in the same city the emphasis remains as in how you would connect both the systems. No such system exists currently. The AMTS takes long routes traversing through most of the areas of the city where as BRTS runs on

a dedicated path on the main roads with respect to time. Users should have such information to plan their trip when it comes to time and money. The main reason of this application was to bridge the existing gap and propose such an information application.

### Search

AMTS  BRTS

From

To

Day

Time

### Find Your Bus

AMTS  BRTS

From





To





Day

Time



Providing users the privilege to select their suitable mode of transport with respect to the bus fare and the journey duration.

Search Results						
Service	Route	Bus	Fare	Distance	Duration	
<b>AMTS</b>	1:20 Vishala → 2:30 R.T.O	401	₹ 26	 19	 1h 10 mins	
<b>BRTS</b>	1:25 APMC → 1:50 R.T.O	B-2	₹ 26	 14	 25 mins	

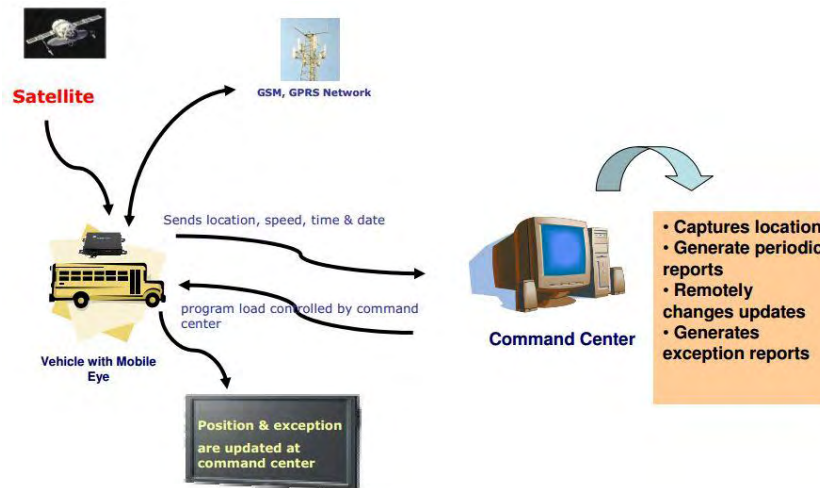
Search Results						
Service	Route	Bus	Fare	Distance	Duration	
<b>AMTS</b>	1:20 Vishala → 2:30 R.T.O	401	₹ 26	 19	 1h 10 mins	
<b>BRTS</b>	1:25 APMC → 1:50 R.T.O	B-2	₹ 26	 14	 25 mins	

# GPS Connectivity

## Vehicle Tracking System:

A GPS based vehicle tracking system is a device that uses the Global Positioning System to determine the precise location of a vehicle to which it is attached and to record the position of the bus at regular intervals. The recorded location data can be stored within the tracking unit, or it may be transmitted to a central location data base, or internet-connected computer, using a cellular (GPRS), radio, or satellite modem embedded in the unit. This allows the vehicle location to be displayed against a map backdrop either in real-time or when analyzing the track later, using customized software.

A GPS tracking system uses the GNSS (Global Navigation Satellite System) network. This network incorporates a range of satellites that use microwave signals which are transmitted to GPS devices to give information on location, vehicle speed, time and direction as shown. So, a GPS tracking system can potentially give both real-time and historic navigation data on any kind of journey.






Overview of the Tracking System

A GPS tracking system can work in various ways. From a commercial perspective, GPS devices are generally used to record the position of vehicles as they make their journeys. Some systems will store the data within the GPS tracking system itself (known as passive tracking) and some send the information to a centralized database or system via a modem within the GPS system unit on a regular basis (known as active tracking).

- **A PASSIVE GPS TRACKING SYSTEM** will monitor location and will store its data on journeys based on certain types of events. So, for example, this kind of GPS system may log data such as turning the ignition on or off or opening and closing doors. The data stored on this kind of GPS tracking system is usually stored in internal memory or on a memory card which can then be downloaded to a computer at a later date for analysis. In some cases the data can be sent automatically for wireless download at predetermined points/times or can be requested at specific points during the journey.
- **AN ACTIVE GPS TRACKING SYSTEM** is also known as a real-time system as this method automatically sends the information on the GPS system to a central computer or

system in real-time as it happens. Data collected as a transit vehicle follows its route is continuously fed into a computer program which compares the vehicle's actual location and time with its schedule, and in turn produces a frequently updating display for the driver, telling him/her how early or late he/she is at any given time, potentially making it easier to adhere more closely to the published schedule. Such programs are also used to provide customers with real-time information as to the waiting time until arrival of the next bus at a given stop, based on the nearest vehicles' actual progress at the time, rather than merely giving information as to the scheduled time of the next arrival. This information can be provided by assigning a unique number to each stop, and waiting passengers can obtain information by entering the stop number into an automated telephone system using SMS service as shown in design.

 <b>Chandrabhaga Bridge</b> AMTS		
<b>13/1</b>	<b>75</b>	<b>83</b>
<b>84/1</b>	<b>87</b>	<b>200</b>
<b>205</b>	<b>401</b>	<b>800</b>
 <b>SMS BUS83 To 4454</b>		
 <b>1800 4444</b>		

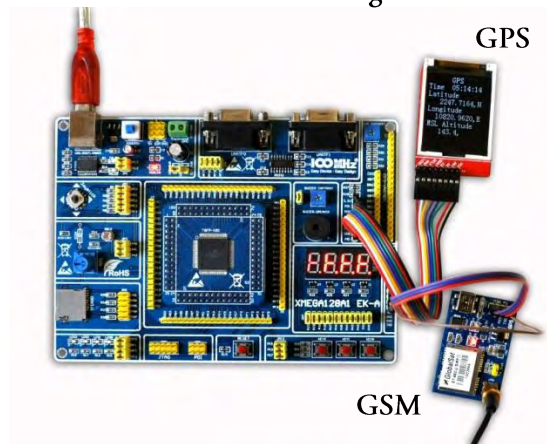
receiver identifies the location of the vehicle and transmits the information to a bus stop over the GSM (Global System for Mobile Communication) network. This system can be installed in the bus by having a microcontroller unit module in the bus along with the GPS module which will track the bus location for every fixed interval of time. The data from GPS will then be processed by a microcontroller for transmitting it via GSM to the bus stop GSM unit and also on the mobile phone.

The figure shows a development board which process all the information acquired by the GPS and send it serially to the GSM module whenever requested. GPS module is installed in the bus which tracks the bus location for specific time interval. This information is feed to the microcontroller in the latitude and longitude format which is processed by the controller. The processed data is then given to the GSM module which gives the exact bus location monitored by GPS device.

- **Prototype: Proof of Concept**

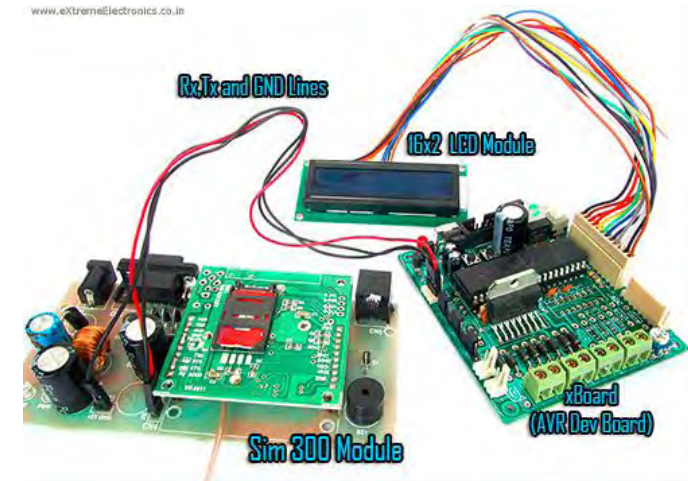
A real time vehicle tracking system includes a GPS based device to track the vehicle along with the GSM module which communicates the bus location based on the data acquired by GPS. The bus location can be called up by sending an SMS for the bus number to the GSM installed in the bus. A GPS (Global Positioning System)

## Microcontroller Atmega128



The Development Board

A GPS module installed in the bus tracks the bus location for specified time interval. Figure shows the development board with an LCD display used to display the bus location. The data coming on the LCD is the GPS data processed by the microcontroller.



Development board with LCD

## References

Ahmedabad Municipal Transport Service, [www.amts.co.in](http://www.amts.co.in)

Bus Rapid Transit System, School of Planning CEPT University

London Bus Transit System, <http://www.tfl.gov.uk/>

Elements of User Experience, Jesse James Garrett

Bilingual Combination of Words, IDC

Design Guidelines for Accessible Bus Stops, Ontario.

Red Bus, <http://www.redbus.in>

Just Dial, <http://www.justdial.com/>

## Conclusion

The local transit systems have to be dealt differently cause the people travelling are different. There have been advancements with use of technology if you see the railways and the airports. May it be any mode of transport people from lower classes are still the ones standing in the queue at the station just to know have the basic details of train journey. Through this project I am trying to propose a model of communication especially for this audience to easily avail information.

When we talk about the surroundings in the Indian context they are never going to be clean and tidy. Things can fall in place if people start having the right attitude towards any system. We cannot change the way they live but we can observe and understand them to design a system that could change their behaviour. I followed this journey by learning from them and made an effort to give something back to the community.



# Information Design for Bus Transit System

Focus: Ahmedabad Municipal Transport Service

**End of Document**

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