

Project 3

Submitted by -
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126250006
(2012 -2014)

पुणे बस संक्रमण मार्ग नकाशा

PUNE BUS TRANSIT ROUTE MAP





IDC IIT BOMBAY
PROJECT

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APPROVAL SHEET

The project titled 'Pune Bus Transit Route Map', is approved for partial fulfilment of the requirement for the degree of 'Master of Design' in Visual Communication Design.

Guide

Chairperson

Internal Examiner

External Examiner

Date

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10/6/14

DECLARATION

I declare that this written submission represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources.

I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/ data/ fact/ source in my submission.

I understand that any violation of the above will be cause for disciplinary action by the institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

Shweta Kamble

Students Signature

Shweta Kamble
126250006

Date

2/06/2014

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ABSTRACT

Pune was the cycle city of India but now it is motor cycle city of India.

Pune scores highest in two-wheeler percentage in the state. Other than auto, bus transit is one of the major public transport Puneits use. [1] Pune's bus routes and also it's services are very chaotic. Connection between buses and timings are literally nonexistent. One of the common scenario you will notice at any Pune city bus stand is, people are running here and there and asking everyone which bus goes where? Or particular bus number or route? Any new traveller who wants to travel from destination A to B needs to find the correct bus which goes to his destination. Also there are various buses which go to the same destination but by a different route.

Project aims to design a Bus Transit Map which will explain routes and focuses on 20 major stations of Pune city. This map will tell you shortest and also all possible bus routes to avoid the confusion. This will provide best possible service to the greatest number of people within the governing economic constraints. The route structure will be clear so it will take minimum time to understand by the user. Bus transit is dominant part of public transport so bus lines should compliment rather than compete with other ways of transport, so each transit mode is used to its best advantage. [2]

People should interact with the route map in terms of comprehension in use and which will make their life easy in terms of bus travelling.

INTRODUCTION

Being a localised of Pune, I was very much fond of things which are related to my life in Pune. One of the thing which disturbed me each and every time when I travelled by public transport was bus service (PMPML). The routes are chaotic and hard to manage but someone should take a stand and start resolving some of the problems. Public buses is the only means of public transport in the city. This project is my sincere attempt to design and develop bus route map system which will be accessible to everyone .

There are various methods of designing it. Eg. Digital, print, Foldable pamphlet etc. The challenge is to pick up one method which can be implemented easily. My objective is to design a Bus route Map which contains each and every bus stop information and it should be easily available, So people can plan their journey without any confusion. This one thing is much needed for Pune city since long time. Creating a schematic map for representing the transport network may be seen as a straightforward task but underlying design of such maps can be quite complex.

In the current scenario, not only there is lack of information about where the bus stops are located, but no one even knows what buses will stop there or what route the bus will take. Even today, the most reliable guide is the conductor of bus and nobody else. Every time, I have to confirm if the bus goes to my destination with people on the bus before boarding. I realised that there were a lot of people who wanted routes information map, because they knew the routes they travelled regularly, but in new areas they were always lost.

Generally what happens, When a person is new in the city or he/she travelling first time to particular destination, he/she needs information about the particular route. When there are no maps then he/she prefers to ask someone about it? but what if there is no-one available to ask or if that person provides wrong information. In such cases why to depend on someone else, that may cause you loss of something.

The current survey says that there are 75.3% people prefer to use two-wheeler for commuting in the city and only 0.8% people use public buses. [3] There are various reasons, first is availability of buses on time and second is biggest confusion at bus stands. People get into wrong buses and after half their journey they realise that they got into the wrong bus. This is the very imperative reason people avoid going by public transport.

There are very few people who smoothly travel by bus but some of them say that they are used to the system and they cannot afford to travel by private vehicle and also because of the continuous petrol and diesel price hike.

My primary aim was to create an information system at the bus stop as it is the place where most of the people wait for the bus, they can plan their journey by looking at the various bus route options in the map and pickup a bus which is suitable for them.

Every time when we know the place and the destination we create mental map in our mind and we travel. If someone asked me for any place, mostly

Designed schematic map will give orientation to millions of users of public transport system of Pune (PMPML)

I prefer to give him/her illustrated hand drawn map, visual always plays effective role in direction and create mental imagery. In this project my focus is, that person should travel from point “A” to point “B” very easily with the help of the map



METHODOLOGY

Stage one : Find the actual problem through discussion survey and user study

Stage two : Study existing information systems, Find out the problems

Stage three: Develop the new solutions based on the step one and step two

Stage four : Refinements and corrections

Stage five : Testing and feedback

Stage six : Final Design and documentation

BACKGROUND STUDY

1. Identifying map styles
2. General Considerations
3. Variations
4. Map Language
5. Analysing examples of Maps

Generally people make sketches for their own use, or for others to understand or for their own interpretation of the landscape. Such sketches closely mimic the way people store information about the physical environment, as a mental maps. Sketches and schematic maps have no sharp boundaries. Schematic maps are related to the transformation of the mental maps of verbal direction into physical map. Sketches are more typically about a small set of features or a single routes.

If we try to superimpose a schematic map on classical map, we will find that most of the locations are not at all correct , what is correct in that is the representation of the network. The map should tell the user what line to take from point “A” to point “B” and where to change lines if necessary. The schematic map should succeed in capturing important pattern in the geography of the network. [4]



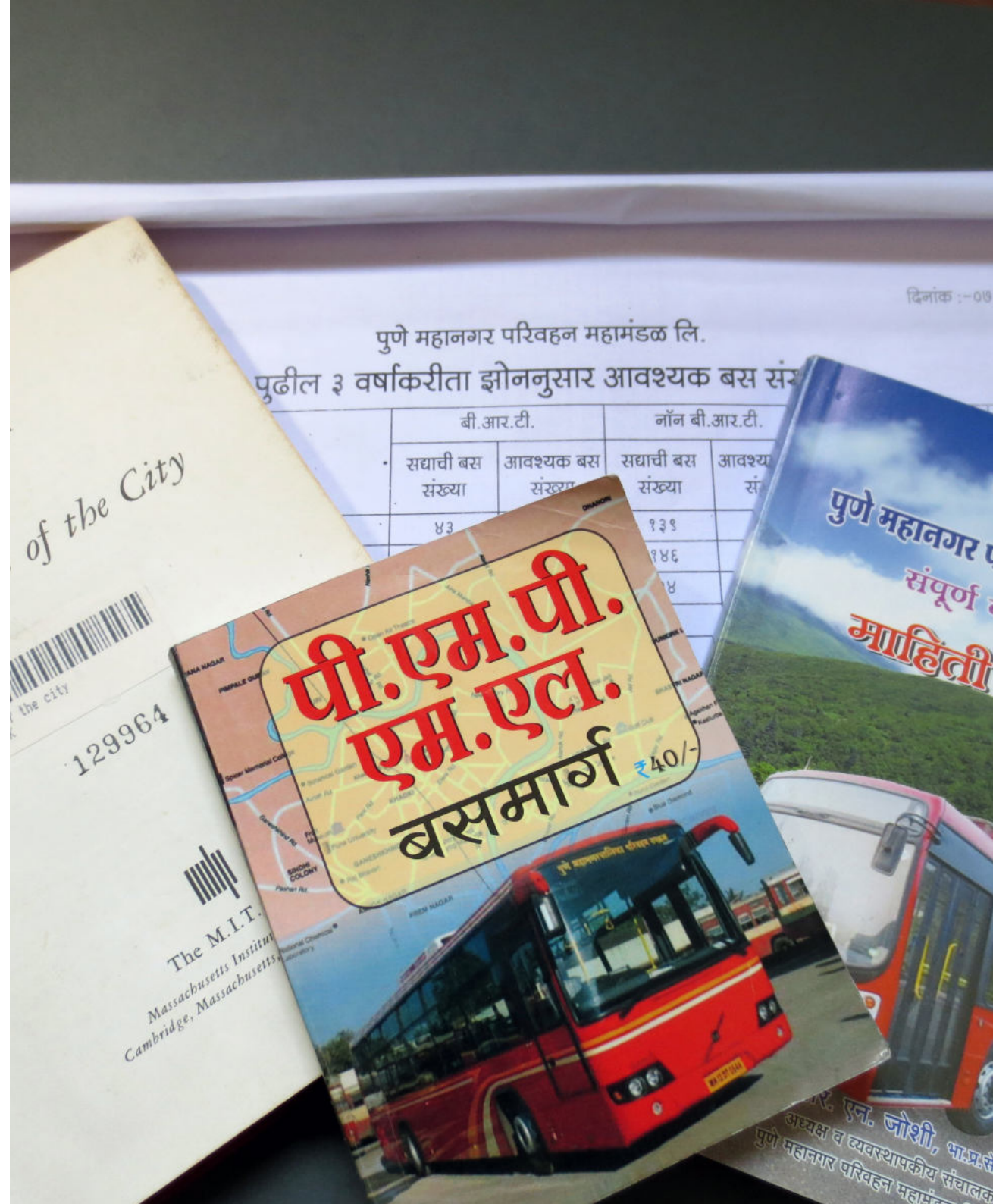
PRIMARY STUDY

As a part of study a survey was conducted to identify the habits and know more about of the frequent travellers as well as the new travellers. The result found that majority of the people who travel by bus are the localise of Pune who can not afford any other means of transport. It also includes elderly people, who get concession in their travelling expenses. There were higher number of students who travelled by public bus but lack of information and time consuming service force them to choose personal vehicle, i.e. Two-wheeler.

Pune's public transport has several problems. Taking all problems in to consideration, I decided to concentrate on information design.

SECONDARY STUDY

After a primary study a deep study was done to understand the actual problem. For secondary study various books, city travel guide and several reports were referred which were created by PMPML. There is also a well known organisation "Janwani" which is a social initiative by MCCIA that helped to collect updated data of route information.



TRANSPORT

Transport is the movement from one place to another. It is important because it enables trade between people. There are different networks of transport like road, air, water etc. Vehicle travelling on these networks may include, bus train, air planes, ship, helicopter, space-crafts etc. Operation of these means of transport can be public or private, depending upon the country and mode.

Passenger transport is public where operators provide schedule services on fixed roads. Taxis and buses can be found in public transport. Buses are cheaper mode of transport but not always flexible taxis and auto rickshaws are very flexible but also very expensive at the same time. [5]

FUNCTIONS OF TRANSPORT

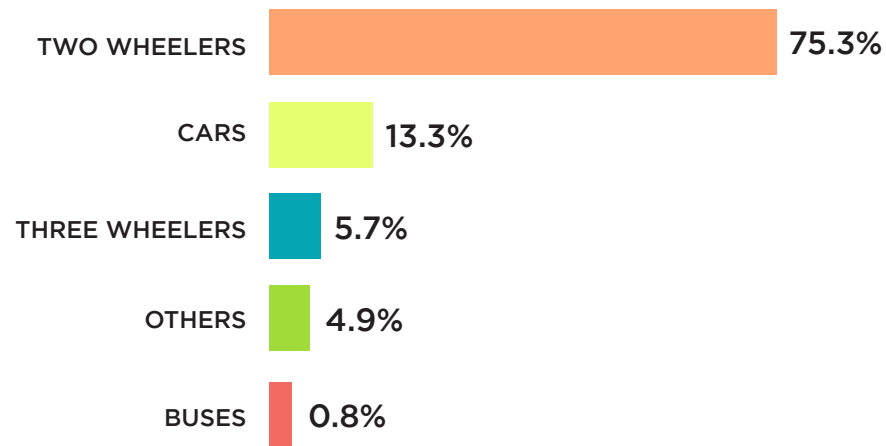
- Movement of product or people from one place to another by private or public means of transport.
- Transport raises standard of living.
- Transport creates place utility.
- Transport creates time utility.
- Transport helps in stabilization of price.
- Transport ensures even flow of commodities and people.
- Transport identifies competition, which in turn, reduces prices
- Transport increases mobility of labour and capital. [6]

MEANS OF TRANSPORT

- ROAD TRANSPORT
- AIR TRANSPORT
- WATER TRANSPORT

Road transport is the back bone of the economy. A well coordinated system of transport plays important role in the economic growth of the country. A development of transport, especially a road transport is one of the key feature of past 50 years. It has allowed improvement of movement in people and goods. Road public transport includes buses, taxies, auto rickshaws, local train, metro etc but in Pune only public buses and auto rickshaws are available.[7]

VEHICULAR GROWTH AND AVAILABILITY



*According to Times of India
Pune city survey report*

CITY SURVEY REPORT

Times of India city survey article says, In Pune there is only one means of Public transport that is PMPML. It is criticised for it's poor service.

Public Transport should be:

- Affordable
- Efficient
- Regular
- Fast

Each person who switches from a private vehicle to a bus, will reduce travel time on the road, both for you in your car/ bike as well as for people who are inside the public buses. Two wheelers also create congestion on the road.



IMPORTANCE OF PUBLIC TRANSPORT

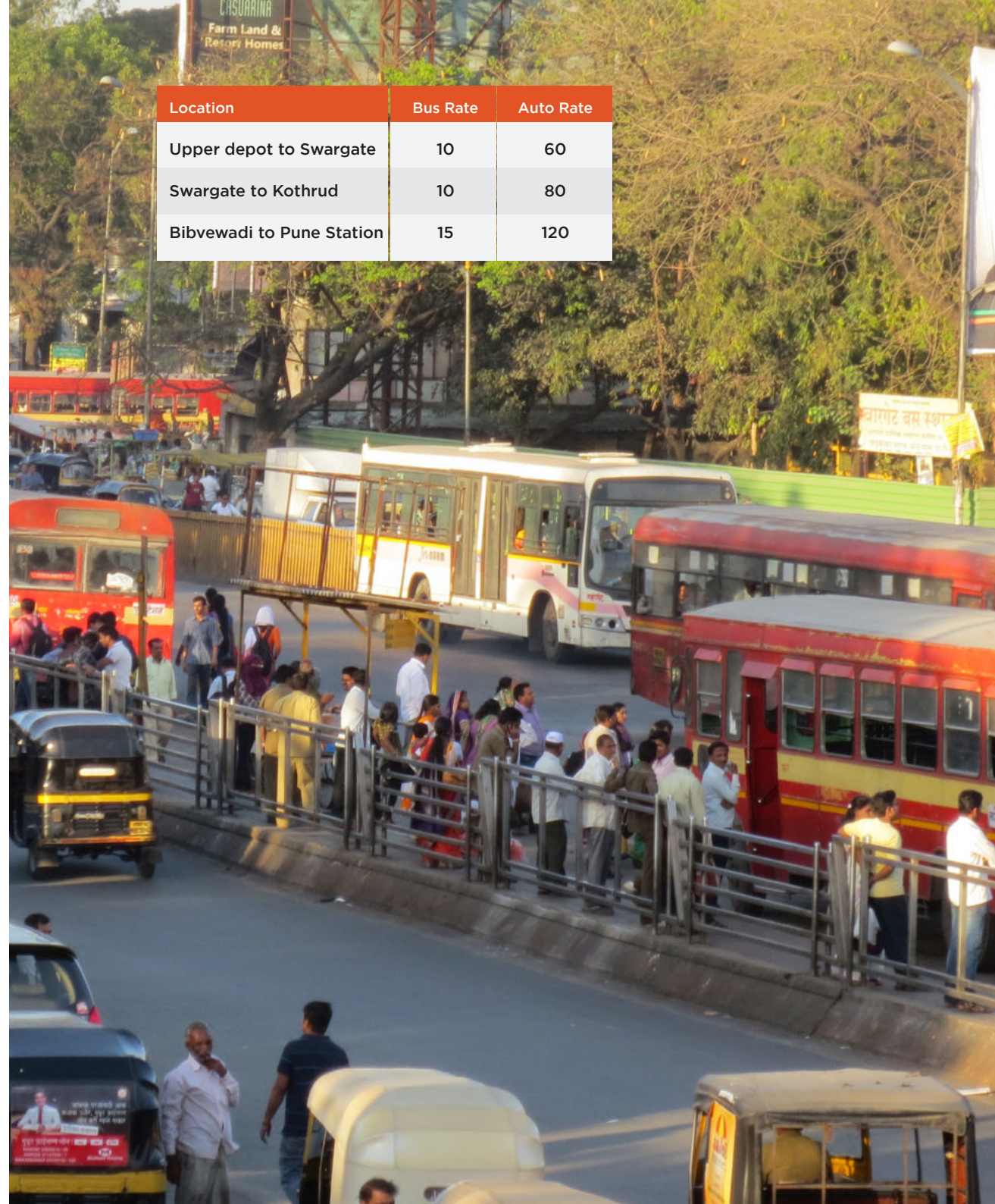
Public transport is very important as it plays a significant role in the betterment of not only the society or nation but the world as whole. It is helpful and useful in many a ways like keeping the environment clean with less carbon emissions, saves a lot of energy as it saves a lot of fuel compared to other private vehicles put together. It also solves the issue of traffic and road congestions as two and four wheelers occupy a lot of area on the road compared to as many passengers in a bus. All this results in the economic growth of the nation.

Here is small comparison how an efficient public transport can save your money. Following chart has the rates for different destinations of an Auto rickshaw and a PMPML bus which are the only means of public transport in Pune.

Benefits for public transportation:

1. It saves time
2. It saves space.
3. It saves money
4. It ensures safety.
5. It eases traffic congestion.
6. It reduce pollution.
7. It assists cities in their wealth creation.
8. It reduces the external costs of car dependence.

Location	Bus Rate	Auto Rate
Upper depot to Swargate	10	60
Swargate to Kothrud	10	80
Bibvewadi to Pune Station	15	120



पुणे महानगर परिवहन महामंडळ लिमिटेड

PUNE MAHANAGAR PARIVAHAN MAHAMANDAL LIMITED

P.M.P.M.L.

PUBLIC TRANSPORT IN PUNE

Pune Mahanagar Parivahan Mahamandal Limited (PMPML) is the public transport service provider for Pune Metropolitan Region (PMR). PMPML was created a merger between the Pune Municipal Transport (PMT) and Pimpri - Chichwad Municipal Transport (PCMT). Formerly, PMT was responsible for public bus operations in the Pune city limits and PCMT ran buses in the neighbouring sister city of Pimpri - Chinchwad.

At present PMPML has fleet of 1000 buses and transporting about 800 thousand commuters daily. There are total 376 routes across the Pune Metropolitan Region (PMPML) and 10 major depots and 20 major bus stations.

PMPML is the bus service provider for Puneites, and plays vital role in providing affordable and convenient public transport service. It helps people to reach any corner in and around of the PMC and PCMC areas. It is useful for different groups of people like students, employed people, senior citizen, people visiting Pune city etc. The inability of PMPML to provide service as per the city's demand, lack of infrastructure as well as inability to upgrade route rationalization is resulting in public shifting to auto rickshaw, share rickshaw (Six Seater) or personal two wheeler. It runs over more than 1000 buses daily but still it does not have proper passenger and route information. [8]

"A developed country is not a place where poor have cars. It's where the rich use public transportation"
- by Petrogustavo (Mayor of Bogota)

EXISTING INFORMATION ON SYSTEM OF BUS TRANSPORT

PMPML has already installed information systems in the form of boards, websites. Indicators etc. But unfortunately passengers do not get the advantage of these facilities. May be because of it is not sufficient or the public is not aware of it. It will never help the person who is new to city. It can help only to a person who is familiar to the place.

Currently very poor and inefficient information is available on Pune's bus stands. Sometimes people get information when bus arrives because it is displayed on the front of the bus. User should get information before he/she gets into the bus.

There is website which shows all the routes and all information of buses but very few percentage of people can afford or use a smart phone and internet.

Destination and bus route number is always written on the bus board,, but everything is written in marathi. The user should aware of the marathi language unless he/she cannot understand it





PROPOSED MODEL OF INFORMATION SYSTEM

This model of information will solve the problem and help the user to plan his journey when he/she is at the bus-stop. We are planning to install route maps which will give user detailed information of routes at the bus stops. Route map only covers the routes which start from that particular bus stop. If your destination is not listed on the board then you have to go to nearest bus depot. Bus stop is the place where generally people ask various questions regarding their journey.



TARGET SEGMENT

As a part of the data collection it is also necessary to find out who are the users of PMPML

- People who can not afford Two-wheeler & the constant hike in petrol prices
- Long distance travellers who have only one means of transport
- Workers who have to travel daily long distances
- School children (mostly std 4th to 12th)
- Elderly people
- People who are not from Pune, coming first time in the city. Many of them not aware about the system of public transport that is why they tend to use auto rickshaws. Rickshaw wallas take advantage of outsiders and they end up spending more money on their local commute.



MAPS & TYPES OF MAP

A map is a symbolic depiction highlighting relationships between elements of that space such as objects, regions, and themes. [9]

Many maps are static two-dimensional, geometrically accurate or approximately accurate representations of three-dimensional space. Some are dynamic or interactive, even three-dimensional. Although most commonly used to depict geography. Maps can communicate spatial information effectively. It always gives you an overview of the space. It will help people to communicate as well as start discussion who has language barrier.

There are different types of map, They are classified into groups according to what they are attempting to show.

Sketches, Classical & Modern Maps

There are differences in the geometric and aesthetic criteria used to represent the public transport network of the different cities, but all such maps share graphic simplicity while retaining network information content and network legibility. Style emerges when many examples have some recognizable and widely accepted visual similarity.

There are some defined styles most of the designers use, they are as follows:

- One line is used to represent each service of each transport mode is Classic style
- Each service of each transport mode is identified by a different line shown in a different colour is French style
- Only two or three different lines appear on each street, each line shown in a different colour is Scandinavian style.
- One line is used to represent each service of each transport mode but different symbology for each transport mode is Dutch style.

Where there are too many routes services and limited number of distinguishable colours, variations in line character can be introduced in addition to colour. The important feature is legibility of the map. Schematic maps are more legible if the transport network itself is skilfully designed. [10]

There are various methods of designing it. Eg. Digital, Print, Foldable pamphlet etc. The challenge is to pick up one method which can be implemented easily.

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LITERATURE REVIEW

Map should be designed foremost with consideration of user and his/her needs. An interesting map should engage the reader into the information.

More than 330 bus routes are functional, according to data collection and updated route list provided by PMPML. It helped to find out total coverage area and main roads. It is also important to create several versions of the map, which allow comparison and also add meaning to it. The title of the map also provides the “needed link” to communicate. In order to convey the message of the map, the designer should design it in such a manner that it will help the reader in overall understanding of its purpose. Maps are made in specific languages.

The main problem we are facing it today is the data we are dealing with, it is multi-dimensional but we have to represent it in 2D. While creating a map, attention should be given on the designing the data not on how it looks. Because lack of content, make it a dull design. Simplicity of reading comes when you properly arrange detailed and complex information. One should add different layers and separations to arrange the information. Your design is failed when it looks cluttered and gaps are only filled with some information. You should activate your design with negative or white space. [12]



“For a successful public transport map, we should not stick to accurate representation, but design them in the way our brains work”

- Aris Venetikidis

(Making sense of maps) TED TALK [11]

KEY ELEMENTS OF MAP

Title - A good map should tell you what it is all about

Orientation - Where is the north

Time- When was the map made or updated

Author - Who made it

Legend - What do the symbols mean

Scale - How the distances on the map relate to the distances on the ground

Index- Where to find specific places on the map

Grid- How to find places on the map

Sources - From where you got all the information

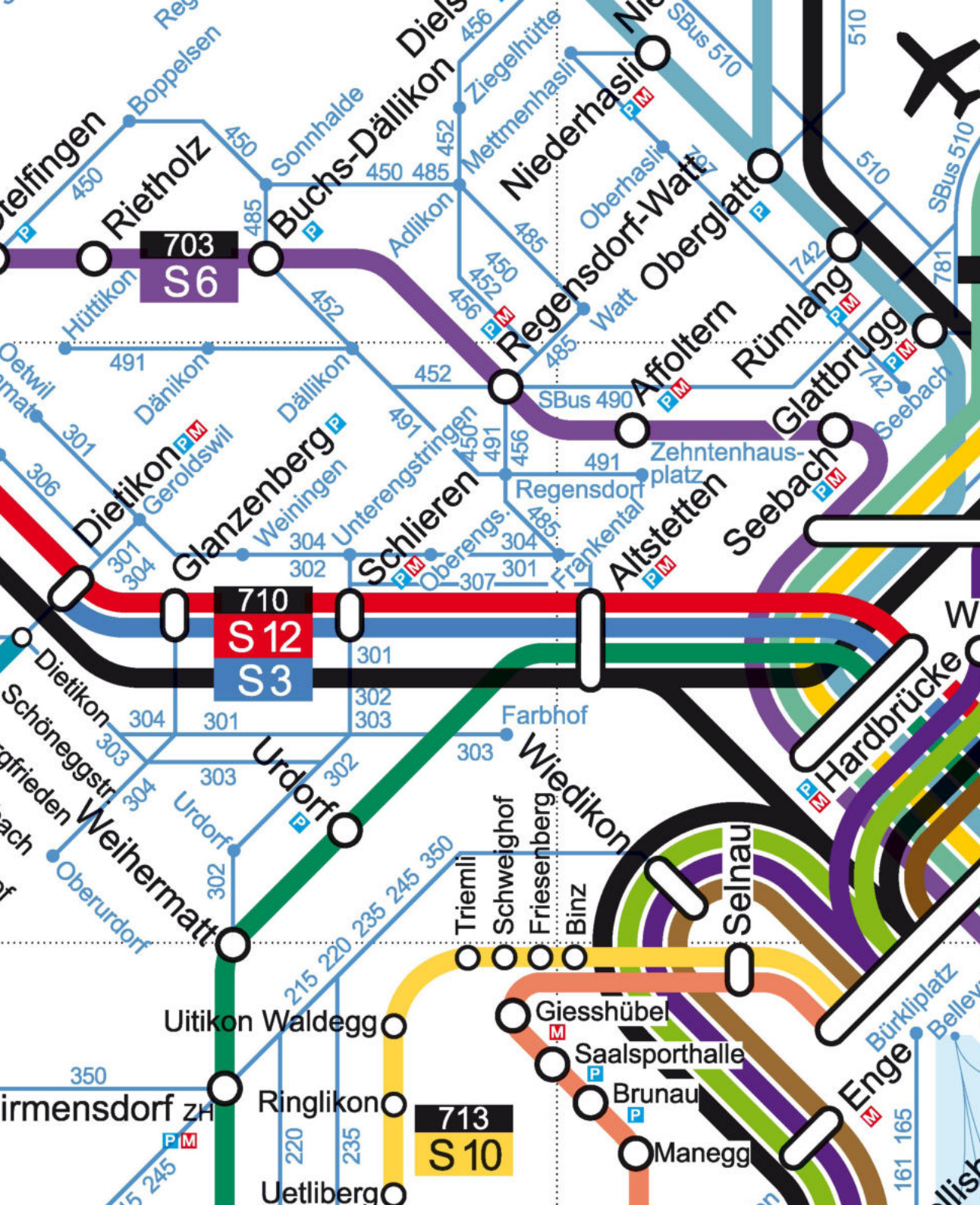
SCHEMATIC MAPS

An effective schematic map for bus routes requires a lot of work by designer, One has to tailor the map design according to potential transport users and the collection of queries that users might expect to be answered. The schematic map concentrates on bus stops and the lines connecting them with the support of geographical features that may be helpful for overall orientation within the transport system.

Schematic maps usually have all routes drawn as straight lines, lines vary with the directions via fixed and stylized angles commonly 45 and 90 degree or 30, 60, 90 degrees or they are simplified with the arbitrary angles. Overlapping routes are separated by minimum legibility distance chosen for the particular map. Adjacent schematic lines can have smooth artistic circular arcs preserving their graphic proximity distance for the greatest length possible. A small number of breaks or changes in the direction can be added to provide better visualization. It will also helps to sense the geometry.

There are different examples of schematic maps which will explain new design tactics, symbolization rules etc. [13]





CASE STUDIES

Schematic map of regional public transport of Zurich- Switzerland

All lines in this map has 45 or 90 degree angle. Train lines are parallel to each other and bus lines are thinner than train lines. Train lines have circular arc at the joining where bus lines are adjoining at the straight angle. Bus stops are symbolised by the full circle with the same colour where train stations are symbolised by circle with white colour. Two or more lines are passing through the same station are symbolised by the cylinders. The labels or names of the train stations are written in the 45 degree angle [14]

Henry Beck was engineering draftsman who was working for underground group. It is believed that his ideas came from his experience in designing electrical circuits. He first developed the idea of reinvented tube map. It was his initial sketches which sparks the idea for the map. Henry Beck developed the system, which can develop large amount of information and arrange it in such a way that it can be interpret easily.

The London underground tube map considered by many a graphic masterpiece in twentieth century. Its structure and simplistic design and the way it can display large amount of detailed information effortlessly. It shows how graphic design is impact-full. Harry Beck, creator of the map came with a concept of taking a map bound by it's geographic reality. He took all the complex information and logically ordered into an effective graphical way. He created the system to display the information. [15]



This map made for one day event
(Bus day 1st Nov 2012).

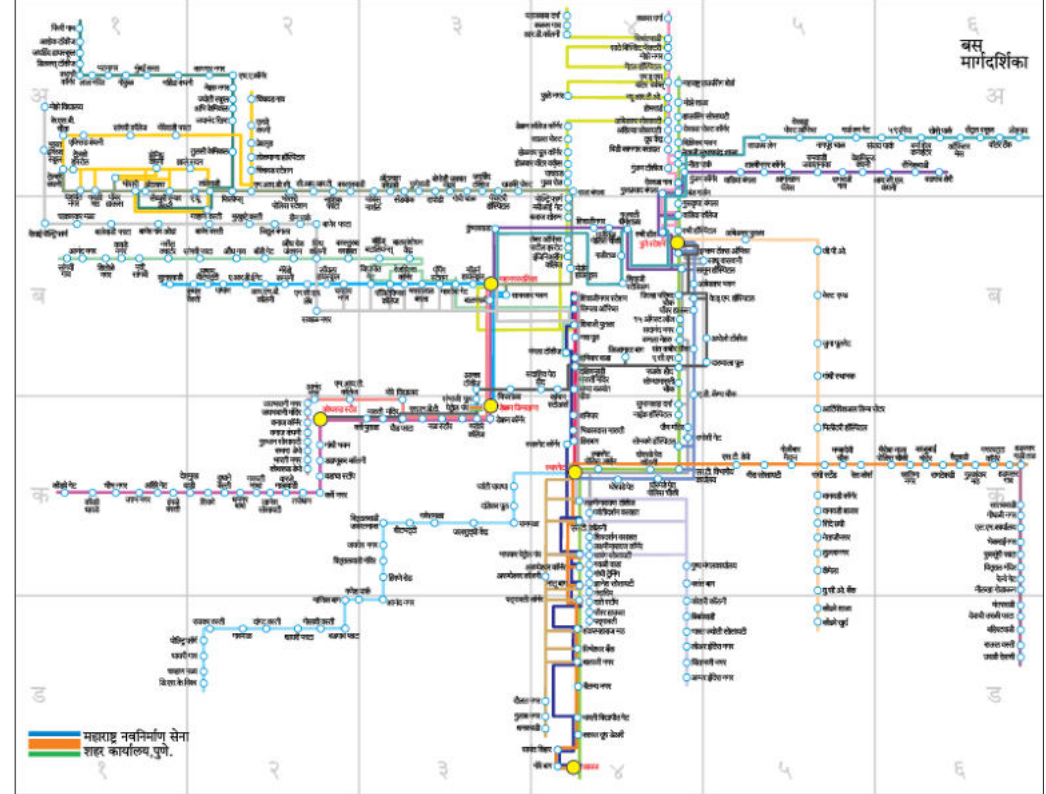
[illegible][illegible]

You need to scan whole map to find your destination. This map did not cover all the bus depots as well as all the area because for that one day they had increased the frequency of the buses and also some extra routes were added for better responses. It is completely an abstract form

MNS Pune Bus route Map

This map has created by one of the advertising agency for Pune. Only those bus routes are covered which have frequency of 10 minutes and below. It means only 24 out of 324 routes covered.

- Colour coding is too much, (24 colours) User cannot remember them
- There are quite similar colour shades used which are confusing.
- I did a user testing of this map, It takes more than 2 mins to search a destination which is quite time consuming.



कर्वे नगर, क२

कर्वे फुल्ल, क२

कागार नगर, अ२

कासारवाडी, अ२

कळस गाव, अ४

काबज, ड४

कुंभार बस्ती, ब२

कुंभारवाडी, ब३

के.ड.एम. हॉस्पिटल, ब४

कोल्हाट डेग, क२

कोल्हाट स्टेट, क२

कोडवे गेट, क१

कोडवे गेट, ड५

खडकी पोस्ट, अ३

गोळीबार मैदान, क५

गांधी भवन, क२

गांधी स्मरण, ब५

गुन ठोकिय, अ४

घोरापडी पेट, क४

चिंचवड गाव, अ२

जी.पी.ओ., ब५

टेल्को कंपनी, अ१

डहाणकर कॉलोनी, क२

हि.ए.के. विद्या, ड२

डेकन कॉलेज कॉर्नर, अ४

डेकन जियरवना, क३

दापोडी, अ३

दावेर पुल, क३

धनकवडी, ड४

धायी गाव, ड२

नळ स्टॉप, क३

नवी संगवी, ब१

नागव्हा चाल, अ५

नाशिक फाट, अ२

न्यू आर.टी.ओ., अ४

नौलखा गोडानगर, क६

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फातिमा नगर, क५

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पुणेवाडी, अ३

फॅडली हॉस्पिटल, अ३

बाळगंधर्व, ब३

बालाजी नगर, ड४

बालेवाडी फाट, ब१

बागेर फाट, ब२

बिक्वेवाडी, ड४

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यशवंत नगर, अ१

येवज गाव, अ४

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वडवे माळवाडी, क२

वडिवा कोटल, अ५

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महाराष्ट्र नवनिर्माण सेना

पुणे बस मार्गदर्शिका

नमस्कार!

पुण्याच्या रस्त्यावरील माद्रील अड्डा घालण्यासाठी आपण सर्वानी सहभागीक वहाकूक व्यवस्थापा जातील जात उपयोग करणाल हवा. आज आपली हवा 'बस मार्गदर्शिका' माध्यमातून बस सेवेची माहिती आपल्यापसंत पोहचविण्याचा प्रयत्न करत आहोत.

माहिती असेल तरच उपयोग करता येईल हा नियम त्याचगे आहे. ज्या बसेस दर दर मिनेटनी किंवा त्यांच्या कमी वेळने थावतात अशा फसत येने घेण्या आहेत. नकाशा पहाणे घेने जाण्यासाठी सोबायत्या सुचना घ्याव्यात.

बस मार्गदर्शिका १००% परिपूर्ण आहे अस आपणा दवा नाही. पण पुण्याच्या वाहतूकविभागा ताण कमी करण्यासाठी ते वे कदाचं लक्षल ते करण्यासाठी हे एक लोटां पात्रल आहे असं आपली मानतो.

जय महाराष्ट्र!

शुभेच्छास,

नकाशा कसा पाहयाचा?

- कुडलल बसल कोडे जाणवं ते उडवा.
- कुडलल निघणवं तो बसस्टॉप कोडच्या चौकोनात आहे ते पहा. (उदा. अ५, ब३, क२)
- या चौकोनात बसस्टॉपची ओळी बसू लागे.
- नेर विणे जाणवं तो स्टॉप उडवा, त्याचा चौकोन पहा.
- आणि त्या चौकोनात विणे जाणवं तो बस स्टॉप रोया.
- देही रिकामे पोलगात रस्त बसू त्याच्या रंगानुसार बस क्रमिक उडवा आणि बसेस मनेत प्रवास करा, वाहतूकीची कमी टाळा.

संकेतः माहिती घे



The initiative taken by Bombay Chambers of Commerce and Industry. They have installed “You are here” bus route map on the Kalanagar - Bandra bus stop.

- Not shown all the routes they have included only long routes in the map
- Very few main bus stops names have shown in the map
- There is no index, if you are searching for one station then you have to scan whole map.
- Similar shades used for colour coding.

PROBLEMS

After the primary data collection some issues were identified related to the major activities in the public transport.

Problems

1. The current information available about the bus routes at the bus depots and bus stands is deficient.
2. Whatever information is available is not updated which causes misguidance to the public
3. On the bus depots there are different bus stops, people are running one place to another for getting into the right bus.
4. Not every bus stop has accompanied by routes information
5. Currently people don't have any trust in the PMPML's service.
6. There is no source available for accurate and reliable routes Information, Frequency, Number of Buses, Reliability, Maintenance, or Timings.
7. Bus stand Design has many issues, Bus stop sign-ages are not available.



PUNE



BUS STOP DESIGNS

In Indian scenario specially in Pune, nothing is there on the bus stops except advertisement hoardings. Every bus stop has to have map which gives detailed information about the routes. If someone is new in the city or travelling first time by public bus he has to ask someone about the routes which he wishes to travel to.

The scenario is completely inverse at a bus stop in England. Bus stops have routes info sign-ages on the pole. Ticket vending machines are also available at the bus stops so that people can buy their ticket in advance. The detailed map include over ground, underground stations and also night buses frequency & airport coaches which is very useful for the user.

ENGLAND



OBJECTIVE

To design a system for Pune Bus Transit Map which will explain you clearly about all possible information of the routes, and it should work for all the bus stands.

When a person goes to nearest bus stop, he should understand the route for his destination so that one can plan his journey as per the availability.



GOALS & CHALLENGES

Goals

1. Create a system to navigate in the Pune City as well as Pimpri - Chichwad by Public Bus.
2. The map should be easy to implement.
3. It should be more efficient and less confusing.
4. It should emphasise on important information and prove clarity of content
4. It should motivate people to use public transport.
5. It should help to improve the standard of Pune's public transport.
6. User should quickly understand it and plan his/her journey
7. It should offer as a visual tool for communicating spatial concepts.
8. Complex routes should also appear in simplistic manner for better understanding

Challenges

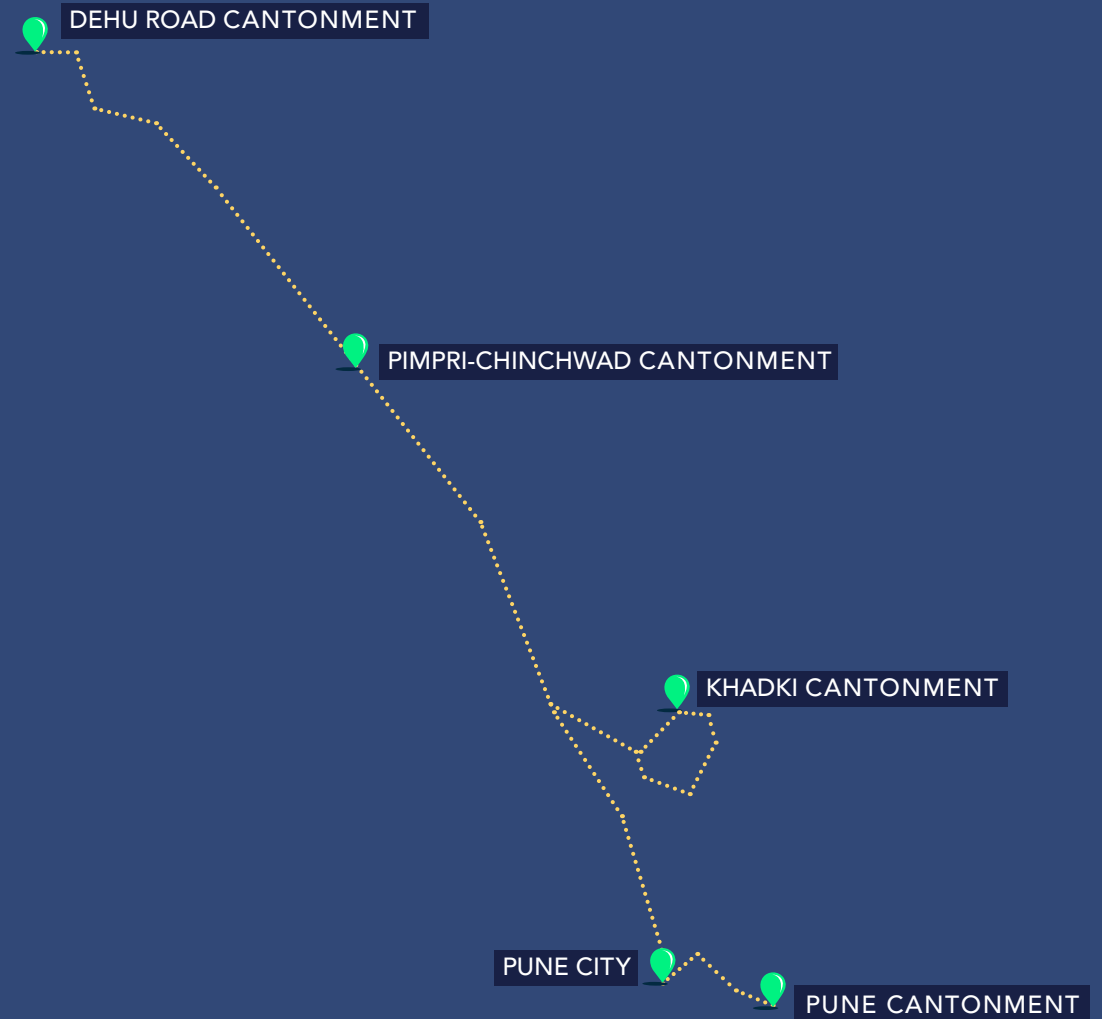
1. To create a system for 324 routes
2. The map should invite people to use it.
3. Visually, it should not look complex, so that people at least attempt it once to understand it.
4. Overlapping, parallel, merged and long routes should fit in the size.
5. Will people look at designed map and use?
6. User should quickly understand the map.

पुणे महानगर क्षेत्र

PUNE METROPOLITAN REGION

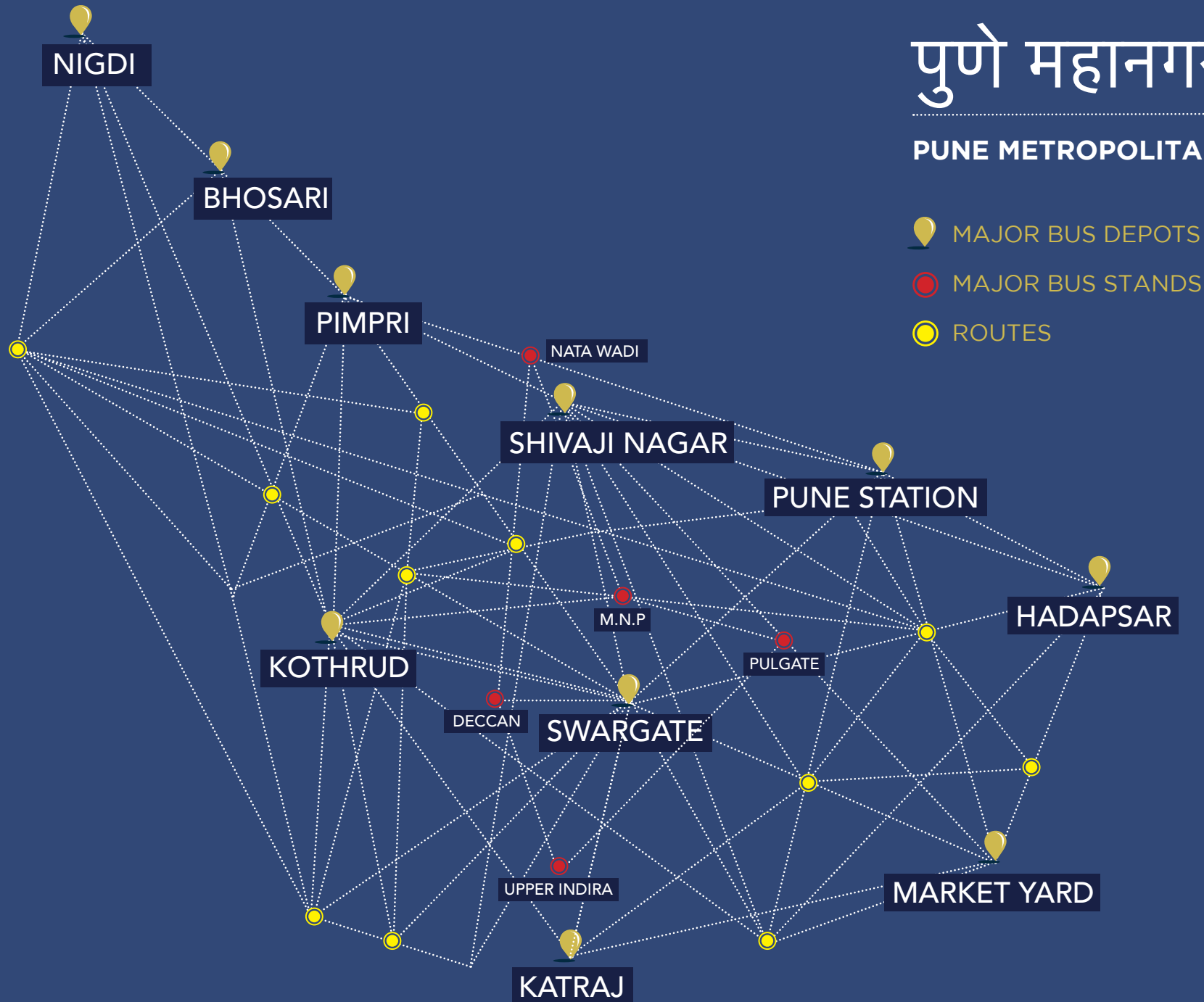
Pune Metropolitan area (PMR) consist of

**PUNE CITY &
Pimpri - Chinchwad
Dehu Road Cantonment
Khadki Cantonment
Pune Cantonment**



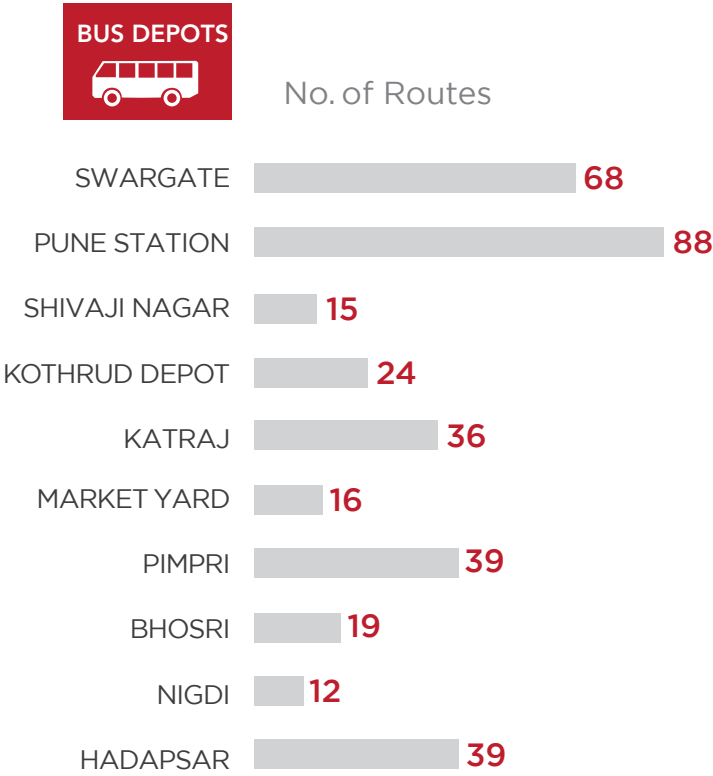
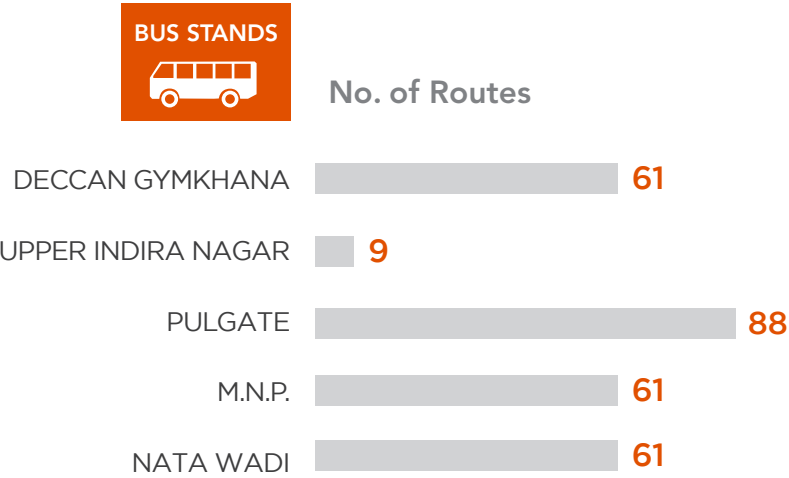
पुणे महानगर क्षेत्र

PUNE METROPOLITAN REGION



BUS DEPOTS & MAJOR BUS STANDS

In following charts, total number of routes each bus depot and bus stand covers has been shown. This graph will give an idea of how routes are divided. Pune station Bus-depot covers maximum routes (88 routes) and even PULGATE Bus-stand covers highest number of 88 routes and falls under the major bus stands category. Similarly other major Bus-stands cover a large number of routes but still they are not called as a Bus-depots.





INITIAL CONCEPTS

There were two concepts which I thought about to start with are following:

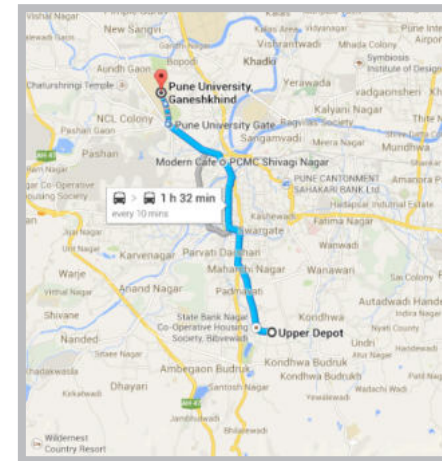
1. Design one map for whole PMR area. Which includes all the routes and which gives overview of the whole area. In this concept size was the biggest issue. practically it nearly impossible to cover all the routes in one map. as it would make the map very complex and not legible.

2. To design Individual map for each bus depot. Which will cover all the bus stands of the particular route, it will be beneficial for the user to understand the sequence of the bus stops. This map will provide detailed information such as frequency of each bus route, total journey time, price of the ticket till last stop. It will also tell you how to get to the nearest bus depot if your destination route doesn't go by the same bus stand.

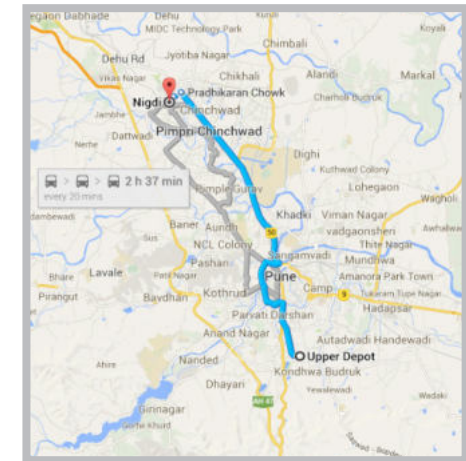
DATA COLLECTION

PMPML and the 'Pune Bus Guide' website by Janwani provided data for the project. There are almost 1000 buses which cover 320 routes of (PMR) Pune Metropolitan Region.

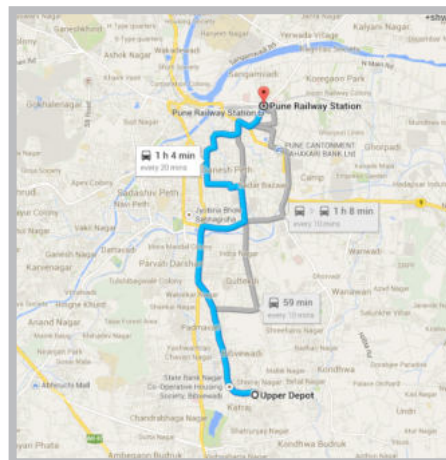
It was a huge task to categorise the data and figure out the routes. To find the route from "A" to "B," I took a screen shots from Google map. To find out each bus route for particular bus stop and arrange it according to its route and that too schematically was a tough task.



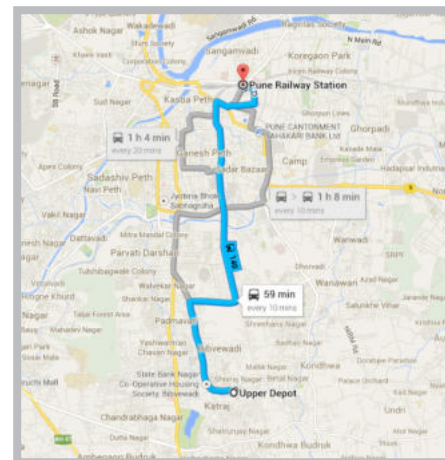
Bus route No. : 25
From : Upper Depot
To : Pune University



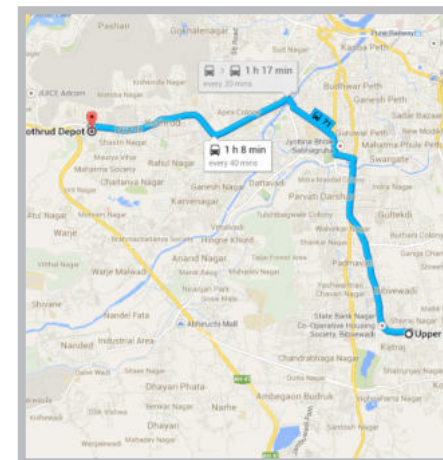
Bus route No. : 12
From : Upper Depot
To : Nigdi



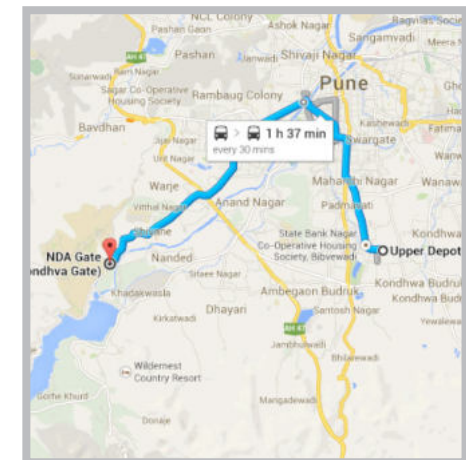
Bus route No. : 23
From : Upper Depot
To : Pune Station



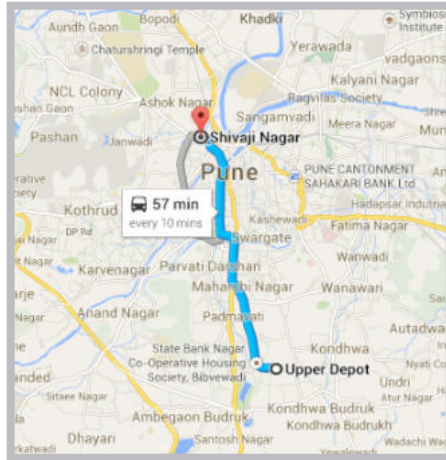
Bus route No. : 140
From : Upper Depot
To : Pune Station



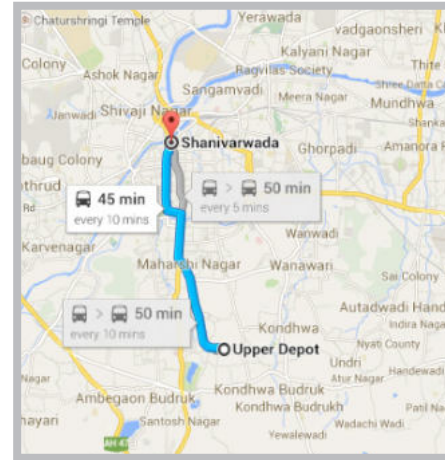
Bus route No. : 71
From : Upper Depot
To : Kothrud Depot



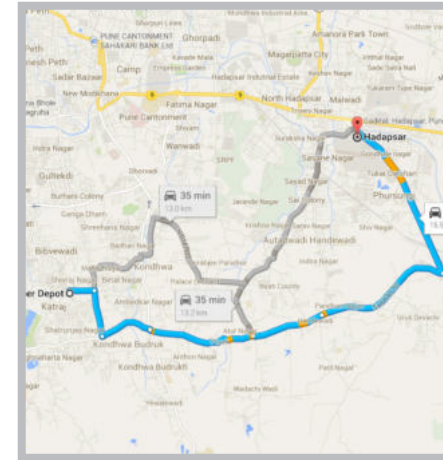
Bus route No. : 72
From : Upper Depot
To : Kondhwa gate



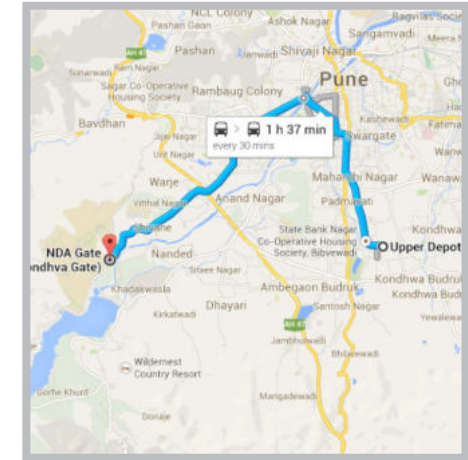
Bus route No. : 13
 From : Upper Depot
 To : Shivaji Nagar



Bus route No. : 22
 From : Upper Depot
 To : Shanivarwada



Bus route No. : 291
 From : Upper Depot
 To : Hadapsar

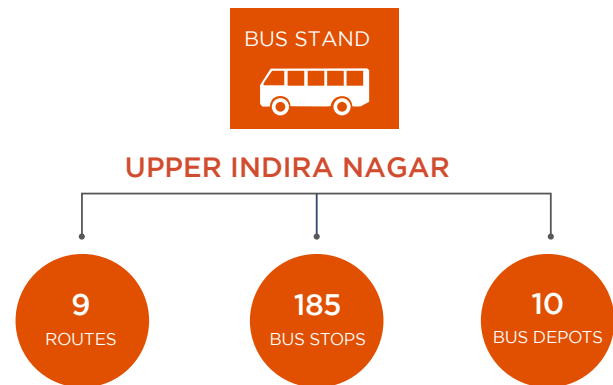


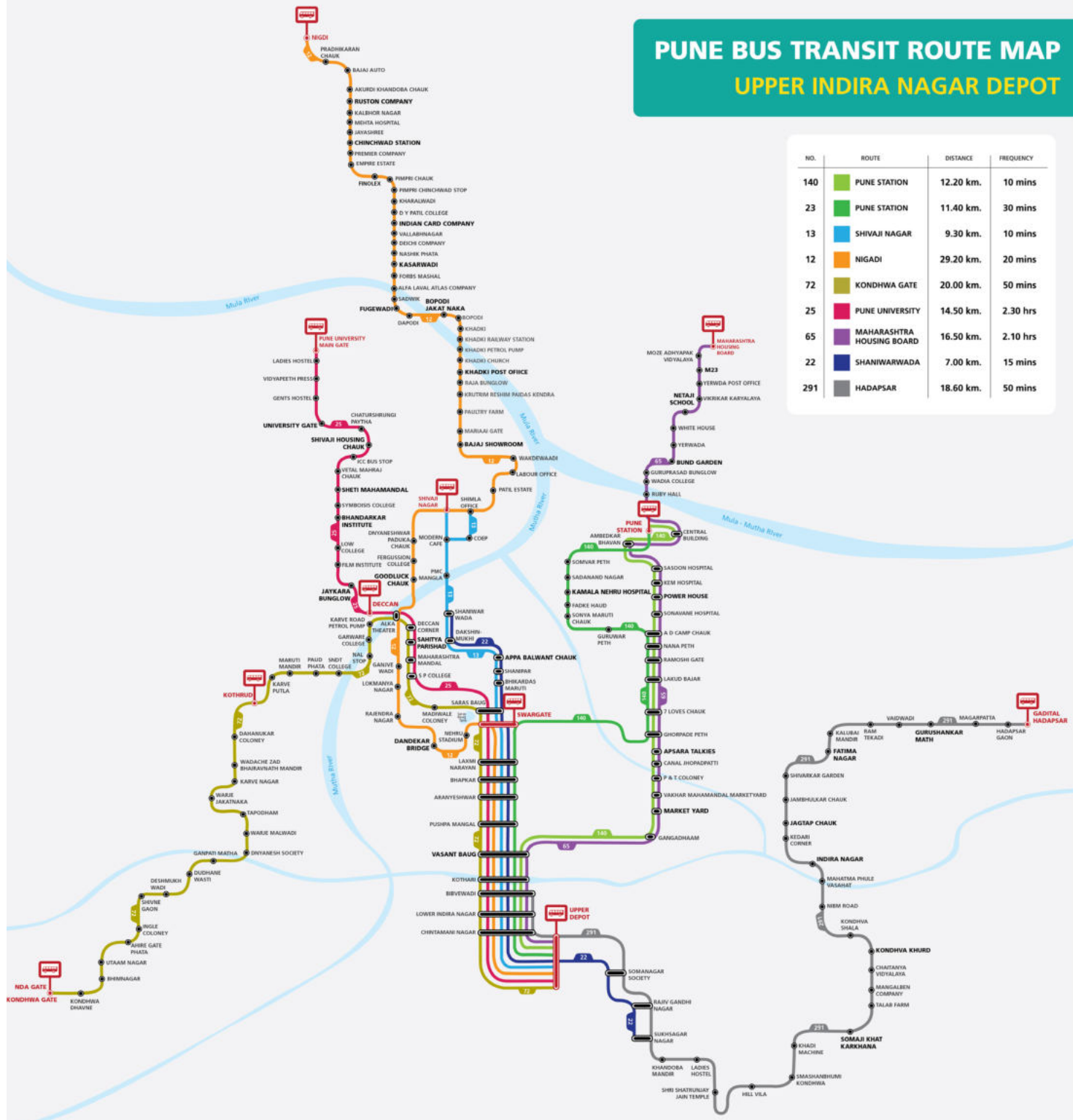
Bus route No. : 65
 From : Upper Depot
 To : Maharashtra Housing Board

UPPER INDIRA NAGAR DEPOT

I have started with Upper Indira Nagar Depot. It is the nearest bus depot from my home and the routes are familiar to me. I have decided A0 (46.8" X 33.1" inches) size for the map. Which will go on the new design of bus stop.

All the bus stops which are cover by all 10 routes are mention in the alphabetical list. .To make it schematic and emphasize on important information was the biggest challenge.





e.g. NAL STOP

DESTINATION	BOX NO.	ROUTE NO.
N NAL STOP	7	72

1 Search the bus stop name in the alphabetical order

2 Look for the box number in the map

3 Look for the route number



To travel other than the mentioned routes the nearest Bus Depot is **SWARGATE**

ROUTE NO.	ROUTE NAMES	FREQUENCY	JOURNEY TIME (approx)	FARE (INR)
22	PUNE STATION	10 mins	45 mins	20
140	PUNE STATION	30 mins	50 mins	20
13	SHIVAJI NAGAR	10 mins	40 mins	15
12	NIGDI	20 mins	85 mins	20
72	KONDHWA GATE	50 mins	35 mins	20
25	PUNE UNIVERSITY	2.30 hrs	63 mins	20
65	MAHARSHTRA HOUSING	2.10 hrs	66 mins	20
22	SHANISWARADA	15 mins	22 mins	15
291	HADAPSAR	50 mins	61 mins	20

Bus stop names in alphabetical order

DESTINATION	BOX NO.	ROUTE NO.	DESTINATION	BOX NO.	ROUTE NO.	DESTINATION	BOX NO.	ROUTE NO.	DESTINATION	BOX NO.	ROUTE NO.
A			G			M			S		
A D CAMP CHAIK	8	23, 65, 140	GADTEL HADAPSAR	9	291	LAKUD BAJAR	8	23, 65, 140	S P COLLEGE	7	25, 72
AHIRE GATE PHATA	10	72	GANGADHAM	8	65, 140	LAXMI NARAYAN	8	12, 13, 22, 23, 25, 72	S T VIBHAGYA KARYALAYA	-	-
AKURDI KHANDOBA CHAIK	1	12	GANIVE WADI	7	12	LAW COLLEGE	4	25	SADANAND NAGAR	8	23
ALFA LAVAL ATLAS COMPANY	4	12	GANPATI MATHA	10	72	LONKANYA NAGAR	7	12	SANDVIK	4	12
ALKA THEATER	7	12, 25, 72	GARWARE COLLEGE	7	72	LOWER INDIRA NAGAR	11	ALL	SAHITYA PARISHAD	7	25, 72
AMBEDKAR BHAVAN	5	23, 65, 140	GENTS HOSTEL	4	25				SARAS BAUG	8	13, 22, 25, 72
APTIA BALWANT CHAIK	8	13, 22	GHORPADE PETH	8	23, 65, 140				SASODN HOSPITAL	8	65, 140
APSARA TALUKES	8	65, 140	GOODLUCK CHAIK	7	12				SEVEN LOVES CHAIK	8	23, 65, 140
ARANTYENHAR	8	12, 13, 22, 23, 25, 72	GURUPRASAD BUNGALOW	5	65				SHANPAR	8	13, 22
			GURUSHANKAR MATH	9	291	MAHARASHTRA HOUSING BOARD	6	65	SHARADWATI	8	13, 22
			GURUWAR PETH	8	23	MAHARASHTRA MANDAL	7	25, 72	SHEETI MAHAMANDAL	4	25
B											
BAJAJ AUTO	1	12	H								
BAJAJ SHOWROOM	5	12	HADAPSAR GAON	9	291	MAHATMA PHULE VAKHAT	12	291	SHIRALA OFFICE	5	12, 13
BHANGALKAR INSTITUTE	4	25	HILL VILLA	12	291	MANGALAM COMPANY	12	291	SIRVALI HOUSING CHAIK	4	25
BIJAPUR PETROL PUMP	8	12, 13, 22, 23, 25, 72				NARAJAN GATE	5	12	SIRVALI NAGAR	5	12, 13
BIRKADAS MARUTI	8	13, 22	I			NARAKET YARD	8	65, 140	SHEKARS GARDEN	9	291
BHIMNAGAR	10	72	ICC BUS STOP	4	25	NEARUTI MANDIR	7	72	SHIVNI GAON	10	72
BIVENWADI	11	ALL	INDIAN CARD COMPANY	1	12	NEHTA HOSPITAL	1	12	SHRI SHATRUJAY JAIN TEMPLE	11	291
BOPODI	5	12	INDIRA NAGAR	12	291	MOODER CAFE	5	13	SMASHANBHUM KONDHWA	12	291
BOPODI JAKAT NAKA	5	12	INGLE COLONY	10	72	MOZE ADHYAPAK VIDYALAYA	6	65	SNOT COLLEGE	7	12
BUND GARDEN	5	65							SOMAJI KHAT KARKHANA	12	291
			J			N			SOMANAGAR SOCIETY	11	22, 291
			JAGTAP CHAIK	9	291	NAL STOP	7	72	SOMVAR PETH	8	23
			JAMBHULKAR CHAIK	9	291	NANA PETH	8	23, 65, 140	SOMVARE HOSPITAL	8	65, 140
			JAYASHREE	1	12	NASHIK PHATA	1	12	SONYA MARUTI CHAIK	8	23
			JAYKABA BUNGALOW	7	25	NDA GATE	10	72	SUKHISAGAR NAGAR	11	22, 291
						NEHRU STADIUM	8	12, 8	SWARGATE	8	12, 13, 22, 23, 25, 72
			K			NETAJI SCHOOL	5	65	SYMBIOSIS COLLEGE	4	25
			KALBHOR NAGAR	1	12	NIBM ROAD	12	291			
			KALUBAI MANDIR	9	291	NIGDI	1	12	T		
			KAMALA NEHRU HOSPITAL	8	23				TALAR FARM	12	291
			KARVE PUTLA	7	72	P			TAPODHAM	7	72
			KARVE NAGAR	7	72	P & T COLONY	8	65, 140			
			KARVE ROAD PETROL PUMP	7	72	PATIL ESTATE	5	12	U		
			KASARWADI	4	12	PAUD PHATA	7	72	UNIVERSITY GATE	4	25
			KEDARI CORNER	9	291	POULTRY FARM	5	12	UPPER DEPOT	11	ALL
			KEM HOSPITAL	8	65, 140	PIMPRI CHAIK	1	12	UTTAM NAGAR	10	72
			KHADI MACHINE	12	291	PIMPRI CHIRCHWAD STOP	1	12			
			KHADI	5	12	PMC MANGLA	8	13	V		
			KHAKHO CHURCH	5	12	POWER HOUSE	8	65, 140	VAIDWADI	9	291
			KHAKHO PETROL PUMP	5	12	PRADHAKARAN CHAIK	1	12	VAKHAR MAHAMANDAL MARKETYARD	8	65, 140
			KHAKHO POST OFFICE	5	12	PREMIER COMPANY	1	12	VALLABHNAGAR	1	12
			KHAKHO RAILWAY STATION	5	12	PUNE STATION	5	23, 65, 140	VASANT BAUG	11	12, 13, 22, 23, 25, 65, 72, 72
			KHANDOBA MANDIR	11	291	PUNE UNIVERSITY MAIN GATE	4	25	VETAL MAHARAJ CHAIK	4	25
			KHARALWADI	1	12	PURSHI MANGAL	8	12, 13, 22, 23, 25, 72,	VIDYAPEETH PRESS	4	25
			KONDHWA KHURD	12	291				VIKRUKAR KARYALAYA	6	65
			KONDHWA SHALA	12	291	R			W		
			KONDHWA DHIVADE	10	72	RAJA BUNGLOW	5	12	WADACHE ZAD BHARAVNATH MANDIR	7	72
			KONDHWA GATE	10	72	RAJENDRA NAGAR	7	12	WADIA COLLEGE	5	65
			KOTHARI	11	12, 13, 22, 23, 25, 65, 72, 140	RAJY GANGSHI NAGAR	11	22, 291	WAKDEWADI	5	12
			KOTHURDI STAND	7	72	RAM TEKADI	9	291	WAKRIE JAKATNAKA	7	72
			KRUTIRIM RESHIM PADAS KENDRA	5	12	RAMOSHI GATE	8	23, 65, 140	WAKRIE MALWADI	7	72
						RUBY HALL	5	65	WHITE HOUSE	5	65
			L			RUSTON COMPANY	1	12			
			LABOUR OFFICE	5	12				Y		
			LADIES HOSTEL	4	25				YERAWADA	5	65
									YERAWADA POST OFFICE	6	65



IOC IIT Bombay | Shweta Kamble | Project 3 | Pune Bus Transit Route Map | version 1

VERSION 1

English

This is first draft of map was created for Upeer Indira Nagar depot.

अप्पर इंदिरा नगर डेपो

मार्ग कसा शोधावा ?

उदा. नळ स्टॉप



वरील दिलेल्या मार्गांशिवाय
प्रवास करण्यासाठी जवळचा
बस डेपो स्वागते

बस मार्ग क्र.	स्वानकाचे नाव	वाग्विहीता	प्रवास वेळ	दुर्गम
२३	पुणे स्टेशन	१० मि	३५ मि	२०
१४०	पुणे स्टेशन	३० मि	५० मि	२५
१३	विवाची नगर	१० मि	५० मि	२५
१२	विवाची	२० मि	८५ मि	२५
७२	कोडवा गेट	५० मि	३५ मि	२०
२५	पुणे विवाची	२.३० ता.	६.३ मि	२०
६५	महाराष्ट्र होमिंग बोर्ड	२.१० ता.	६.६ मि	२५
२२	रत्निवाचाडा	१५ मि	२२ मि	१५
२२१	हडपसर	५० मि	६.१ मि	२०
७१	कोयंबटूर डेपो	३५ मि	५५ मि	२०

बस मार्ग क्र.	बस मार्ग क्र.	बस मार्ग क्र.	बस मार्ग क्र.	बस मार्ग क्र.	बस मार्ग क्र.
२३	पुणे स्टेशन	१० मि	३५ मि	२०	
१४०	पुणे स्टेशन	३० मि	५० मि	२५	
१३	विवाची नगर	१० मि	५० मि	२५	
१२	विवाची	२० मि	८५ मि	२५	
७२	कोडवा गेट	५० मि	३५ मि	२०	
२५	पुणे विवाची	२.३० ता.	६.३ मि	२०	
६५	महाराष्ट्र होमिंग बोर्ड	२.१० ता.	६.६ मि	२५	
२२	रत्निवाचाडा	१५ मि	२२ मि	१५	
२२१	हडपसर	५० मि	६.१ मि	२०	
७१	कोयंबटूर डेपो	३५ मि	५५ मि	२०	



IDC IIT Bombay | Project 3 | Pune Bus Transit Route Map | version 1

संपर्क: श्वेता कांबळे | मो. ९८३३ ६०८७ ३० | shweta304k@gmail.com

VERSION 1

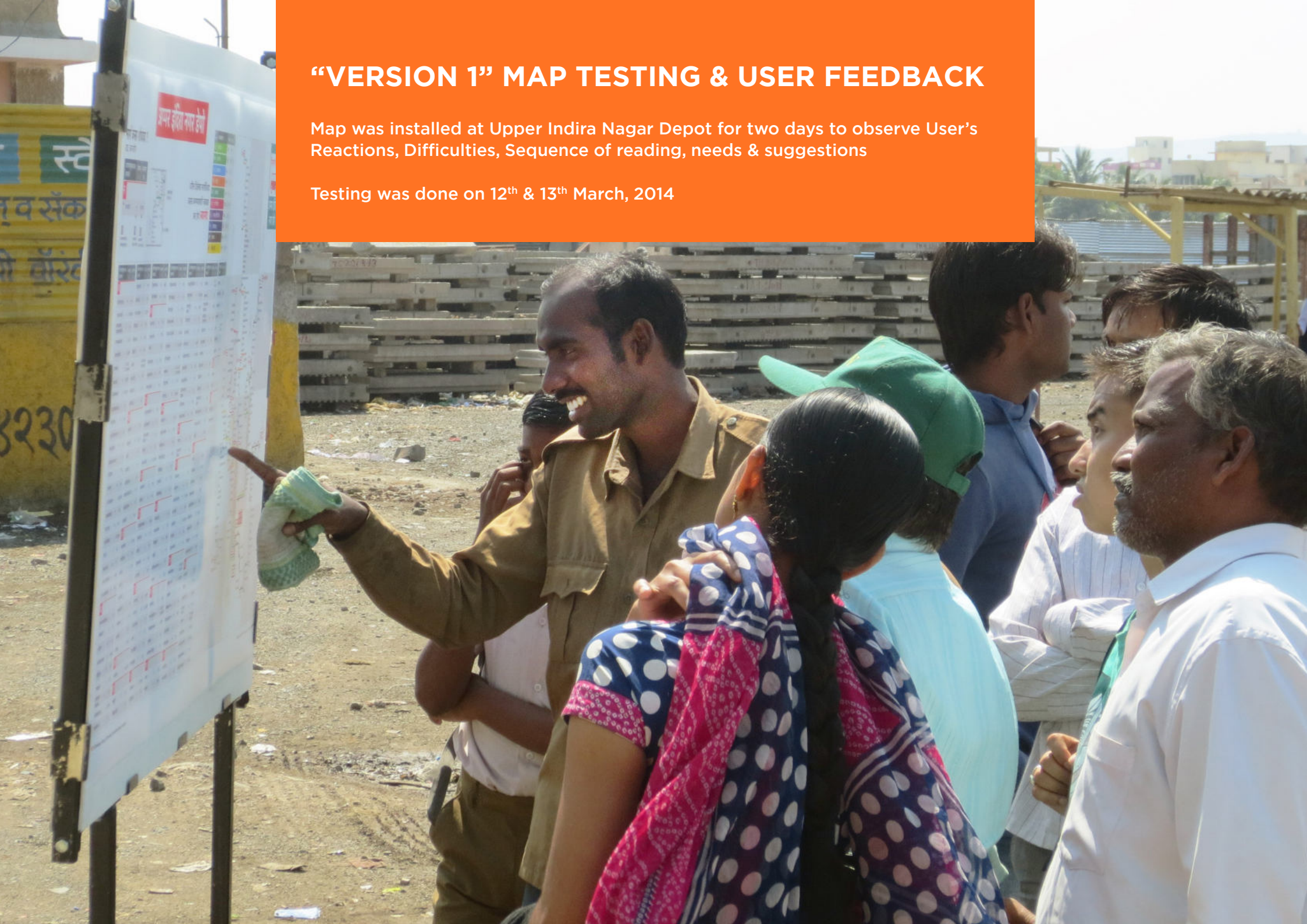
Marathi

After completing first draft, I found out that map should be in Marathi language.

“VERSION 1” MAP TESTING & USER FEEDBACK

Map was installed at Upper Indira Nagar Depot for two days to observe User's Reactions, Difficulties, Sequence of reading, needs & suggestions

Testing was done on 12th & 13th March, 2014



- People from all age group were excited to have a look at the board.
- Some of them gave a critical look and started discussing about it.
- The board has two sides with an English map and a Marathi map on either sides.



Observations during People looking at the map

- Very few people looked at the instruction on the map
- First they were looking at the routes
- Need a guidance on how to read the map
- Box number was confusing at first time but after guidance it's easy to search the bus stop



अप्पर इंदिरा नगर डेपो

मार्ग कसा शोधावा ?
उदा. नळ स्टॉप



बरोल दिलेल्या मार्गाशिवाय
प्रवास करण्यासाठी जवळच्या
बस डेपो स्वारगेट

बस क्र.	मार्गावरील बस	कालावधी	कालावधी	बस क्र.
११३	पुणे जंक्शन	११३	११३	११३
११४	पुणे जंक्शन	११४	११४	११४
११५	पुणे जंक्शन	११५	११५	११५
११६	पुणे जंक्शन	११६	११६	११६
११७	पुणे जंक्शन	११७	११७	११७
११८	पुणे जंक्शन	११८	११८	११८
११९	पुणे जंक्शन	११९	११९	११९
१२०	पुणे जंक्शन	१२०	१२०	१२०
१२१	पुणे जंक्शन	१२१	१२१	१२१
१२२	पुणे जंक्शन	१२२	१२२	१२२
१२३	पुणे जंक्शन	१२३	१२३	१२३
१२४	पुणे जंक्शन	१२४	१२४	१२४
१२५	पुणे जंक्शन	१२५	१२५	१२५
१२६	पुणे जंक्शन	१२६	१२६	१२६
१२७	पुणे जंक्शन	१२७	१२७	१२७
१२८	पुणे जंक्शन	१२८	१२८	१२८
१२९	पुणे जंक्शन	१२९	१२९	१२९
१३०	पुणे जंक्शन	१३०	१३०	१३०

बस क्र.	मार्गावरील बस	कालावधी	कालावधी	बस क्र.
१३१	पुणे जंक्शन	१३१	१३१	१३१
१३२	पुणे जंक्शन	१३२	१३२	१३२
१३३	पुणे जंक्शन	१३३	१३३	१३३
१३४	पुणे जंक्शन	१३४	१३४	१३४
१३५	पुणे जंक्शन	१३५	१३५	१३५
१३६	पुणे जंक्शन	१३६	१३६	१३६
१३७	पुणे जंक्शन	१३७	१३७	१३७
१३८	पुणे जंक्शन	१३८	१३८	१३८
१३९	पुणे जंक्शन	१३९	१३९	१३९
१४०	पुणे जंक्शन	१४०	१४०	१४०
१४१	पुणे जंक्शन	१४१	१४१	१४१
१४२	पुणे जंक्शन	१४२	१४२	१४२
१४३	पुणे जंक्शन	१४३	१४३	१४३
१४४	पुणे जंक्शन	१४४	१४४	१४४
१४५	पुणे जंक्शन	१४५	१४५	१४५
१४६	पुणे जंक्शन	१४६	१४६	१४६
१४७	पुणे जंक्शन	१४७	१४७	१४७
१४८	पुणे जंक्शन	१४८	१४८	१४८
१४९	पुणे जंक्शन	१४९	१४९	१४९
१५०	पुणे जंक्शन	१५०	१५०	१५०

बस क्र.	मार्गावरील बस	कालावधी	कालावधी	बस क्र.
१५१	पुणे जंक्शन	१५१	१५१	१५१
१५२	पुणे जंक्शन	१५२	१५२	१५२
१५३	पुणे जंक्शन	१५३	१५३	१५३
१५४	पुणे जंक्शन	१५४	१५४	१५४
१५५	पुणे जंक्शन	१५५	१५५	१५५
१५६	पुणे जंक्शन	१५६	१५६	१५६
१५७	पुणे जंक्शन	१५७	१५७	१५७
१५८	पुणे जंक्शन	१५८	१५८	१५८
१५९	पुणे जंक्शन	१५९	१५९	१५९
१६०	पुणे जंक्शन	१६०	१६०	१६०
१६१	पुणे जंक्शन	१६१	१६१	१६१
१६२	पुणे जंक्शन	१६२	१६२	१६२
१६३	पुणे जंक्शन	१६३	१६३	१६३
१६४	पुणे जंक्शन	१६४	१६४	१६४
१६५	पुणे जंक्शन	१६५	१६५	१६५
१६६	पुणे जंक्शन	१६६	१६६	१६६
१६७	पुणे जंक्शन	१६७	१६७	१६७
१६८	पुणे जंक्शन	१६८	१६८	१६८
१६९	पुणे जंक्शन	१६९	१६९	१६९
१७०	पुणे जंक्शन	१७०	१७०	१७०

बस क्र.	मार्गावरील बस	कालावधी	कालावधी	बस क्र.
१७१	पुणे जंक्शन	१७१	१७१	१७१
१७२	पुणे जंक्शन	१७२	१७२	१७२
१७३	पुणे जंक्शन	१७३	१७३	१७३
१७४	पुणे जंक्शन	१७४	१७४	१७४
१७५	पुणे जंक्शन	१७५	१७५	१७५
१७६	पुणे जंक्शन	१७६	१७६	१७६
१७७	पुणे जंक्शन	१७७	१७७	१७७
१७८	पुणे जंक्शन	१७८	१७८	१७८
१७९	पुणे जंक्शन	१७९	१७९	१७९
१८०	पुणे जंक्शन	१८०	१८०	१८०
१८१	पुणे जंक्शन	१८१	१८१	१८१
१८२	पुणे जंक्शन	१८२	१८२	१८२
१८३	पुणे जंक्शन	१८३	१८३	१८३
१८४	पुणे जंक्शन	१८४	१८४	१८४
१८५	पुणे जंक्शन	१८५	१८५	१८५
१८६	पुणे जंक्शन	१८६	१८६	१८६
१८७	पुणे जंक्शन	१८७	१८७	१८७
१८८	पुणे जंक्शन	१८८	१८८	१८८
१८९	पुणे जंक्शन	१८९	१८९	१८९
१९०	पुणे जंक्शन	१९०	१९०	१९०

General observations of the People

- They have habit to ask conductor about bus timings
- Instead of asking "dose this bus go to XYZ stand?" people asks "Which bus is this?" Followed by various other questions even when the driver and conductor is busy



Questions & reactions by users

- Is this the map for whole city?
- Where are the bus timings?
- Is this available on all depots/bus stands?
- Is this available on Facebook or website?
- Is it permanently here?
- How did you create the map?

Feedback by conductors and drivers

- This map is helpful for people because it covers most of the information, but people should not ignore it and come back to ask us.
- They should learn how to find route in the map
- It's very useful for new users, tourist and people who don't even know anything about bus routes.
- Sometimes we get confused with certain routes, this will help us to get overview of all routes of upper depot.

Feedback from User

Name : Satish Patil

Age : 47

- System will take time to understand because people have very less time at bus stand
- If you are putting up this map everywhere, and once people know that how to use it then it will work more smoothly
- He was free so, he was checking all details of the map
- Suggested to make a booklet which will give information about all the depots and routes



CHANGES MADE IN DESIGN AFTER TESTING

- After searching bus stop name the user should know the bus numbers and colour so that he can find it in the particular box number.
So, order of the steps should be flipped.
- Box numbers should be prominent, user failed to understand what and where is the box number?
- After which bus stop user should get down?
Many of the user didn't notice "You are here"

मार्ग कसा शोधावा ? उदा. नळ स्टॉप

वर्णमालेनुसार बस स्थानके	बॉक्स नं.	बस मार्ग क्र.
न		
नळ स्टॉप	७	७१, ७२
१	२	३
बस स्थानकाचे नाव वर्णमालेनुसार शोधा	नकाशा मध्ये बॉक्स क्र. शोधा	नकाशा मध्ये बस मार्ग क्र. शोधा

मार्ग कसा शोधावा ? उदा. नळ स्टॉप

वर्णमालेनुसार बस स्थानके	बस मार्ग क्र.	बॉक्स नं.
न		
नळ स्टॉप	७१, ७२	७
१	२	३
बस स्थानकाचे नाव वर्णमालेनुसार शोधा	नकाशा मध्ये बस मार्ग क्र. शोधा	नकाशा मध्ये बॉक्स क्र. शोधा

Order of the steps flipped



You are here



Grid changed to alphanumerical



लोअर इंदिरा नगर



मार्ग कसा शोधावा ?

उदा. नव स्टॉप

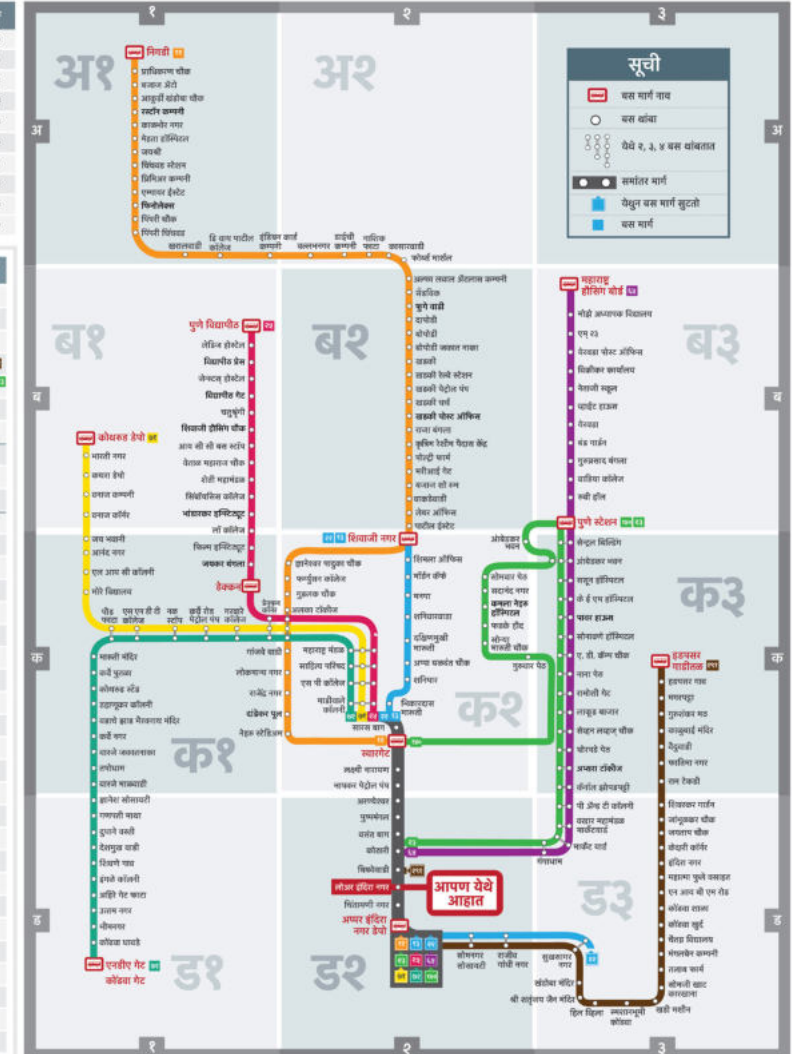


वरील दिलेल्या मार्गाशिवाय प्रवास करण्यासाठी जवळचा बस डेपो स्वाग्रेट

क्र.सं.	मार्ग	वसुळी	वसुळी	वसुळी	वसुळी	वसुळी
१	पुणे स्टेशन	३० मि	५.२५	२२.२५	५५ मि	२०
२	पुणे स्टेशन	३० मि	५.३०	२२.३०	५५ मि	२०
३	पुणे स्टेशन	३० मि	५.३५	२२.३५	५५ मि	२०
४	पुणे स्टेशन	३० मि	५.४०	२२.४०	५५ मि	२०
५	पुणे स्टेशन	३० मि	५.४५	२२.४५	५५ मि	२०
६	पुणे स्टेशन	३० मि	५.५०	२२.५०	५५ मि	२०
७	पुणे स्टेशन	३० मि	५.५५	२२.५५	५५ मि	२०
८	पुणे स्टेशन	३० मि	६.००	२३.००	५५ मि	२०
९	पुणे स्टेशन	३० मि	६.०५	२३.०५	५५ मि	२०
१०	पुणे स्टेशन	३० मि	६.१०	२३.१०	५५ मि	२०
११	पुणे स्टेशन	३० मि	६.१५	२३.१५	५५ मि	२०
१२	पुणे स्टेशन	३० मि	६.२०	२३.२०	५५ मि	२०
१३	पुणे स्टेशन	३० मि	६.२५	२३.२५	५५ मि	२०
१४	पुणे स्टेशन	३० मि	६.३०	२३.३०	५५ मि	२०
१५	पुणे स्टेशन	३० मि	६.३५	२३.३५	५५ मि	२०
१६	पुणे स्टेशन	३० मि	६.४०	२३.४०	५५ मि	२०
१७	पुणे स्टेशन	३० मि	६.४५	२३.४५	५५ मि	२०
१८	पुणे स्टेशन	३० मि	६.५०	२३.५०	५५ मि	२०
१९	पुणे स्टेशन	३० मि	६.५५	२३.५५	५५ मि	२०
२०	पुणे स्टेशन	३० मि	७.००	२४.००	५५ मि	२०
२१	पुणे स्टेशन	३० मि	७.०५	२४.०५	५५ मि	२०
२२	पुणे स्टेशन	३० मि	७.१०	२४.१०	५५ मि	२०
२३	पुणे स्टेशन	३० मि	७.१५	२४.१५	५५ मि	२०
२४	पुणे स्टेशन	३० मि	७.२०	२४.२०	५५ मि	२०
२५	पुणे स्टेशन	३० मि	७.२५	२४.२५	५५ मि	२०
२६	पुणे स्टेशन	३० मि	७.३०	२४.३०	५५ मि	२०
२७	पुणे स्टेशन	३० मि	७.३५	२४.३५	५५ मि	२०
२८	पुणे स्टेशन	३० मि	७.४०	२४.४०	५५ मि	२०
२९	पुणे स्टेशन	३० मि	७.४५	२४.४५	५५ मि	२०
३०	पुणे स्टेशन	३० मि	७.५०	२४.५०	५५ मि	२०

क्र.सं.	मार्ग	वसुळी	वसुळी	वसुळी	वसुळी	वसुळी
१	पुणे स्टेशन	३० मि	५.२५	२२.२५	५५ मि	२०
२	पुणे स्टेशन	३० मि	५.३०	२२.३०	५५ मि	२०
३	पुणे स्टेशन	३० मि	५.३५	२२.३५	५५ मि	२०
४	पुणे स्टेशन	३० मि	५.४०	२२.४०	५५ मि	२०
५	पुणे स्टेशन	३० मि	५.४५	२२.४५	५५ मि	२०
६	पुणे स्टेशन	३० मि	५.५०	२२.५०	५५ मि	२०
७	पुणे स्टेशन	३० मि	५.५५	२२.५५	५५ मि	२०
८	पुणे स्टेशन	३० मि	६.००	२३.००	५५ मि	२०
९	पुणे स्टेशन	३० मि	६.०५	२३.०५	५५ मि	२०
१०	पुणे स्टेशन	३० मि	६.१०	२३.१०	५५ मि	२०
११	पुणे स्टेशन	३० मि	६.१५	२३.१५	५५ मि	२०
१२	पुणे स्टेशन	३० मि	६.२०	२३.२०	५५ मि	२०
१३	पुणे स्टेशन	३० मि	६.२५	२३.२५	५५ मि	२०
१४	पुणे स्टेशन	३० मि	६.३०	२३.३०	५५ मि	२०
१५	पुणे स्टेशन	३० मि	६.३५	२३.३५	५५ मि	२०
१६	पुणे स्टेशन	३० मि	६.४०	२३.४०	५५ मि	२०
१७	पुणे स्टेशन	३० मि	६.४५	२३.४५	५५ मि	२०
१८	पुणे स्टेशन	३० मि	६.५०	२३.५०	५५ मि	२०
१९	पुणे स्टेशन	३० मि	६.५५	२३.५५	५५ मि	२०
२०	पुणे स्टेशन	३० मि	७.००	२४.००	५५ मि	२०
२१	पुणे स्टेशन	३० मि	७.०५	२४.०५	५५ मि	२०
२२	पुणे स्टेशन	३० मि	७.१०	२४.१०	५५ मि	२०
२३	पुणे स्टेशन	३० मि	७.१५	२४.१५	५५ मि	२०
२४	पुणे स्टेशन	३० मि	७.२०	२४.२०	५५ मि	२०
२५	पुणे स्टेशन	३० मि	७.२५	२४.२५	५५ मि	२०
२६	पुणे स्टेशन	३० मि	७.३०	२४.३०	५५ मि	२०
२७	पुणे स्टेशन	३० मि	७.३५	२४.३५	५५ मि	२०
२८	पुणे स्टेशन	३० मि	७.४०	२४.४०	५५ मि	२०
२९	पुणे स्टेशन	३० मि	७.४५	२४.४५	५५ मि	२०
३०	पुणे स्टेशन	३० मि	७.५०	२४.५०	५५ मि	२०

IDC IIT Bombay | Project 3 | Pune Bus Transit Route Map | version 2



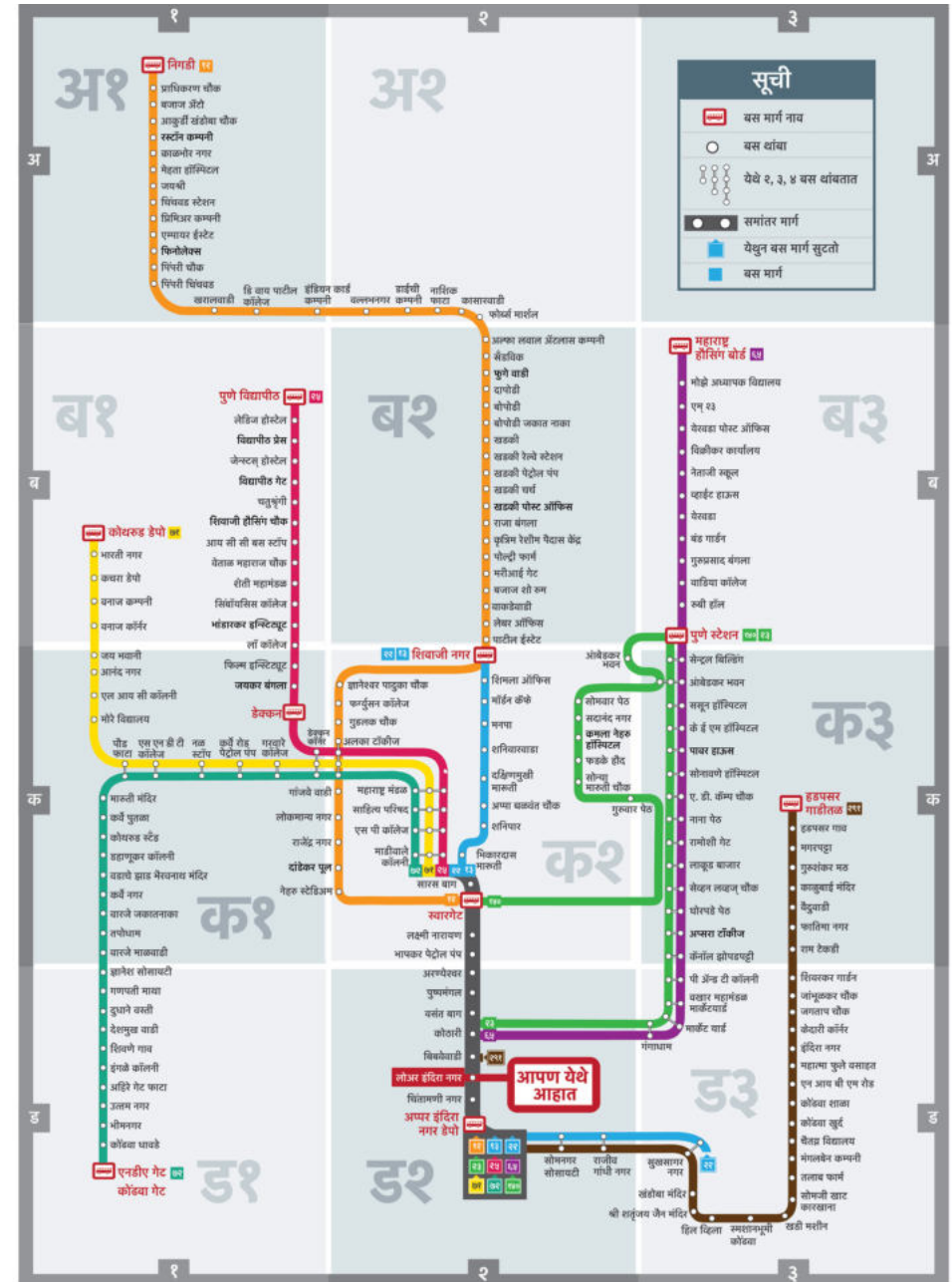
संपर्क: श्वेता कवळे | मो. ९२३३ ६८८७ ३० | shweta304@gmail.com

VERSION 2

After finishing user testing of “Version 1” and taking into consideration all feedback “version 2” has been developed. In this map, all lines of route made simplified and straighten.



Version 1



Version 2

बस मार्ग क्र	स्थानकाचे नाव	वारंवारिता	प्रवास वेळ	मुल्य (₹)
२३	पुणे स्टेशन	१० मि'	४५ मि'	२०
१४०	पुणे स्टेशन	३० मि'	५० मि'	२५
१३	शिवाजी नगर	१० मि'	४० मि'	१५
१२	निगडी	२० मि'	८५ मि'	२५
७२	कोंढवा गेट	५० मि'	३५ मि'	२०
२५	पुणे विद्यापीठ	२.३० ता.	६३ मि'	२०
६५	महाराष्ट्र हौसिंग बोर्ड	२.१० ता.	६६ मि'	२५
२२	शनिवारवाडा	१५ मि'	२२ मि'	१५
२९१	हडपसर	५० मि'	६१ मि'	२०
७१	कोथरुड डेपो	४५ मि'	५५ मि'	२०

Version 1

बस मार्ग क्र	स्थानकाचे नाव	वारंवारिता	बसेसच्या वेळा		प्रवास वेळ	मुल्य (₹)
			पहिली बस	शेवटची बस		
२३	पुणे स्टेशन	३० मिं	५.२५	२२.२५	४५ मिं	२०
१४०	पुणे स्टेशन	१० मिं	५.३०	२१.२०	५० मिं	२०
६५	महाराष्ट्र हौसिंग बोर्ड	२.१० ता.	६.४५, ८.५५, ११.४५, ११.४५, १३.३५, १६.४५, १९.०५		४० मिं	१५
१२	निगडी	२० मिं	५.२०	२२.०५	८५ मिं	२५
७२	कोंढवा गेट	५० मिं	६.००	२०.४०	३५ मिं	२०
२५	पुणे विद्यापीठ	२.०० ता.	६.३०, ८.३०, १०.४०, १५.०५, १८.१५		६३ मिं	२०
१३	शिवाजी नगर	१० मिं	५.४५	२२.१५	६६ मिं	१५
२२	शिवाजी नगर / मंडई	१५ मिं	७.००	२२.१५	२२ मिं	१५
२९१	हडपसर	५० मिं	७.००	२२.१५	६१ मिं	२०
७१	कोथरुड डेपो	३० मिं	५.४५	२०.००	५५ मिं	२०

Version 2

वर्णमालेनुसार बस स्थानके	बोक्स नं.	बस मार्ग क्र.	वर्णमालेनुसार बस स्थानके	बोक्स नं.	बस मार्ग क्र.
अ			काळुबाई मंदिर	९	२९१
अहिरे गेट फाटा	१०	७२	कोदारी कॉर्नर	९	२९१
अलका टॉकीज	७	११, २५, ७२, ७२	के ई एम हॉस्पिटल	८	६५, १४०
अल्फा लवाल अँटलास कम्पनी	४	१२	कोंढवा खुर्द	१२	२९१
अप्पा बळवंत चौक	८	१३, २२	कोंढवा शाळा	१२	२९१
अप्सरा टॉकीज	८	६५, १४०	कोंढवा गेट	१०	७२
अरण्येश्वर	८	१०, १३, २०, २३, २५, ७१, ७२	कोठारी	८	११, १३, १२, १३, २०, ६५, ७१, ७२, १४०
अप्पर डेपो	११	सर्व मार्ग	कोथरुड स्टँड	७	७२
आंबेडकर भवन	५	२३, ६५, १४०	कोथरुड डेपो	४	७१
आकुर्डी खंडोबा चौक	१	१२	कोंढवा धावडे	१०	७२

Version 1

वर्णमालेनुसार बस स्थानके	प्रीड	बस मार्ग क्र.	वर्णमालेनुसार बस स्थानके	प्रीड	बस मार्ग क्र.
अ			काळुबाई मंदिर	क३	२९१
अहिरे गेट फाटा	ड१	७२	कोदारी कॉर्नर	ड३	२९१
अलका टॉकीज	क२	१२, २२, ७१, ७२	के ई एम हॉस्पिटल	क३	६५, १४०
अल्फा लवाल अँटलास कम्पनी	ब२	१२	कोंढवा खुर्द	ड३	२९१
अप्पा बळवंत चौक	क२	१३, २२	कोंढवा शाळा	ड३	२९१
अप्सरा टॉकीज	क३	६५, १४०	कोंढवा गेट	ड१	७२
अरण्येश्वर	ड२	११, १३, २२, २३, २५, ७१, ७२, १४०	कोठारी	ड२	११, १३, १२, १३, २०, ६५, ७१, ७२, १४०
अप्पर डेपो	ड२	सर्व मार्ग	कोथरुड स्टँड	क१	७२
आंबेडकर भवन	क२	१३, ६५, १४०	कोथरुड डेपो	ब१	७१
आकुर्डी खंडोबा चौक	अ१	१२	कोंढवा धावडे	ड१	७२

Version 2

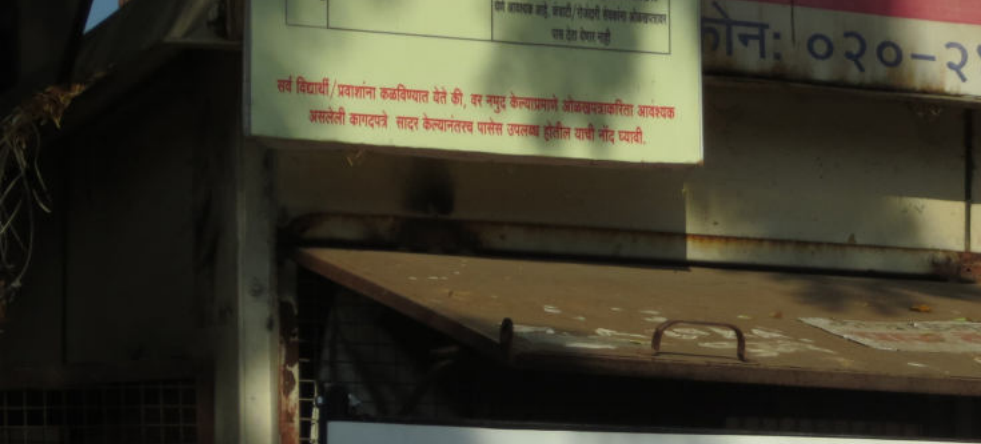
- User is more concern about the timings.
- Timings and frequency added in second version
- Decreased the number of shades for colour coding.
- In the alphabetical list. Colour added to the route colour

“VERSION 2” MAP TESTING & USER FEEDBACK

The map was installed at Indira Nagar bus stop opposite to Mahesh Society for two days for observation. There are two bus stops one after another in a short distance and also there is “PMPML Bus Pass issuing office” in between the two bus stops.

Testing was done on 4th & 5th April, 2014





- More simplified version was understood by most of the people, mainly grid made it more easy.
- People kept asking about the timing, even if it was mentioned in the map
- People want shortcuts to find information that is why they prefer to ask someone else.
- When they ask someone about the bus route info, there are chances of misguidance.



General Observation

- If there is crowd near the map, it will automatically attracts other people to see the map.
- Users clicked photographs of map for their reference and asked whether this map is permanently installed here?
- Some users were keen to know the process of designing the map.





- School children are one of the most enthusiastic users.
- They are keen to know each and every detail of the map
- Once they know the system, they are coming again and again with their friends, and showing the process of how to read map

35%

Users read the instructions.

मार्ग कसा शोधावा ?

उदा. नळ स्टॉप

वर्णमालेनुसार बस स्थानके	ग्रीड	बस मार्ग क्र.
न		
नळ स्टॉप	क१	७१ ७२

१ → २ → ३

95%

Users found their bus stop & bus route

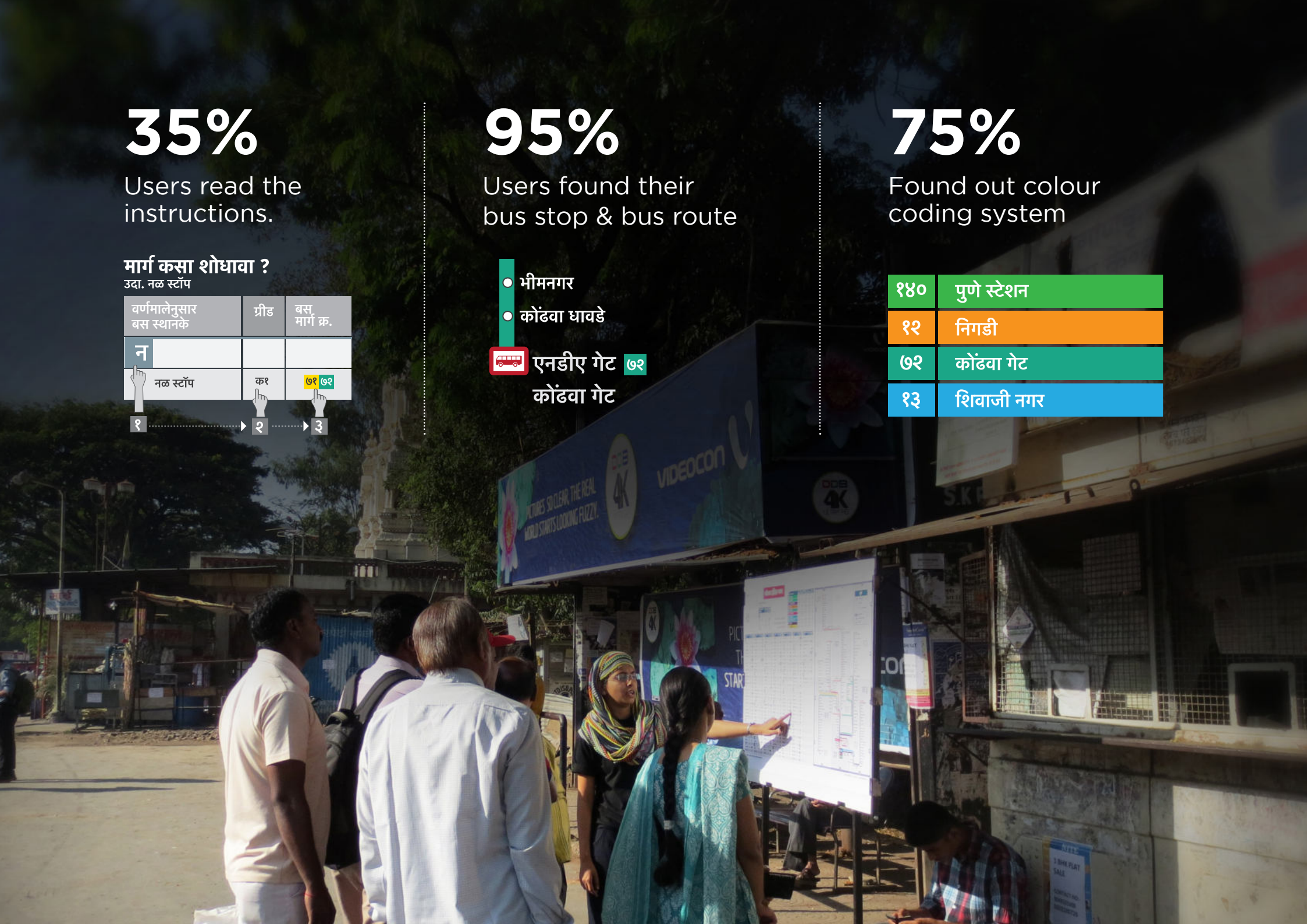
- भीमनगर
- कोंढवा धावडे

 एनडीए गेट ७२
कोंढवा गेट

75%

Found out colour coding system

१४०	पुणे स्टेशन
१२	निगडी
७२	कोंढवा गेट
१३	शिवाजी नगर





ESSENTIAL OF MAP

After designing two versions of same map I found out some points:

- User should quickly find his destination
- Language (Marathi & English)
- It should emphasize on important information and prove clarity of content
- It should offer as a visual tool for communicating spatial concepts.
- Complex routes should also appear in simplistic manner for better understanding

MAP TITLE

After trying some explorations it was decided to give "Pune Bus Map". It is very direct and straight forward instead of some interesting and different name.

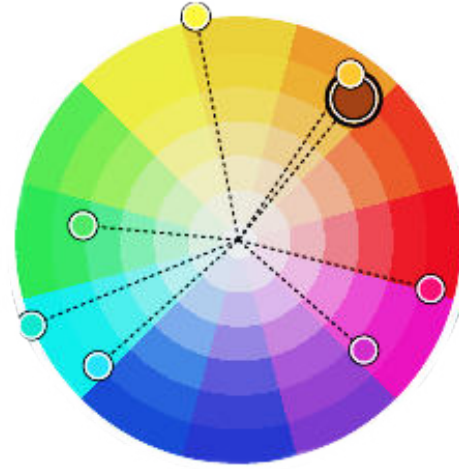
Using a emblem and simplified graphic of bus makes it more traditional and simplified.. The idea behind it, is to give badge kind of a feeling. The retro style of emblem is the very popular way of creating a identity.



IDC IIT BOMBAY
PROJECT



Colours for each bus route



Colour Wheel with selected colours

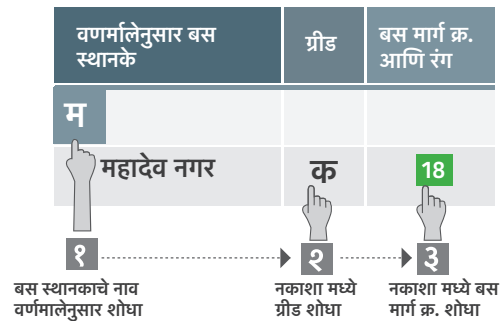
COLOURS

Various colours are used in the map. To show the each bus route differently, it is important to give unique colour to it and also it should create strong relationship with background. There are total 10 bus route in this map but it can increase in other maps.

Background grid is kept in grey scale as well as the index and “how to read a map” instructions also have only grey colour. Everything else is white. In the index red is used to focus on the alphabetical order.

मार्ग कसा शोधावा ?

उदा. महादेव नगर



Grey scale used to stand out bus route number prominently

SYMBOLS

Since map is simplified representation of real world. Many symbols and icons used to indicate things are in simplest manner. Symbols have been changed after testing of Version-1 map. Starting point of bus, terminating point of bus, common bus stops for multiple bus routes, you are here, single bus stop etc all these symbols were created for the map.



Terminating point of bus route



Starting point of bus route



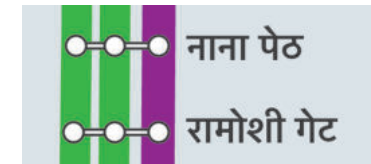
Single circle for each bus stop on each route



Common bus stops for multiple bus routes



You are here sign



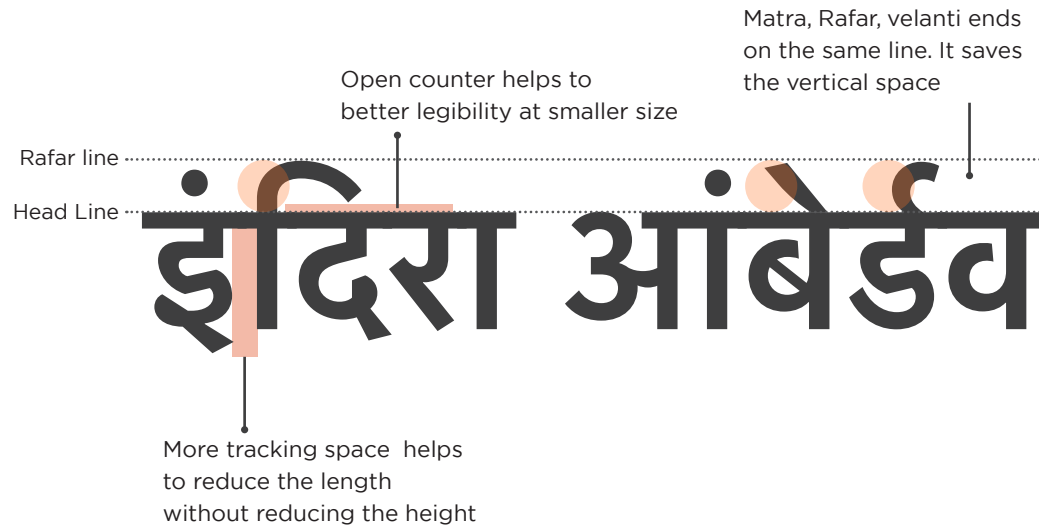
Added joining line to show more than one bus stops on that stop.



Changed to single thick grey line



Changed to this, to give prominence to bus stop name



स्वारगेट बस स्थानक Light

स्वारगेट बस स्थानक Book

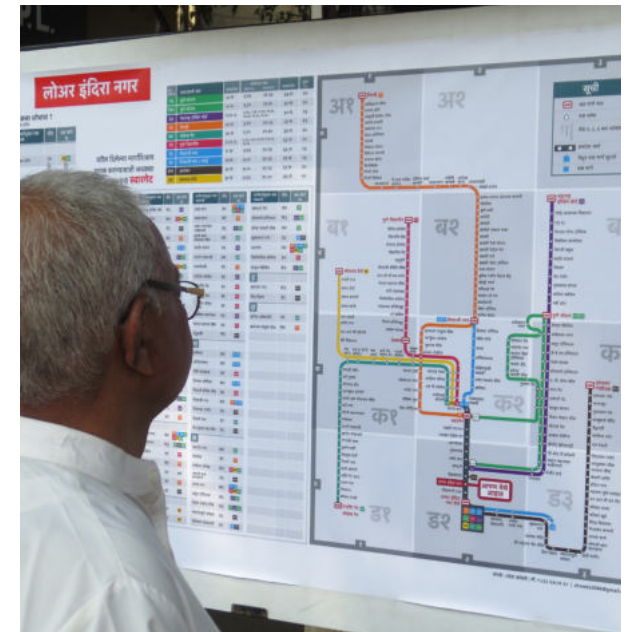
स्वारगेट बस स्थानक Medium

स्वारगेट बस स्थानक Bold

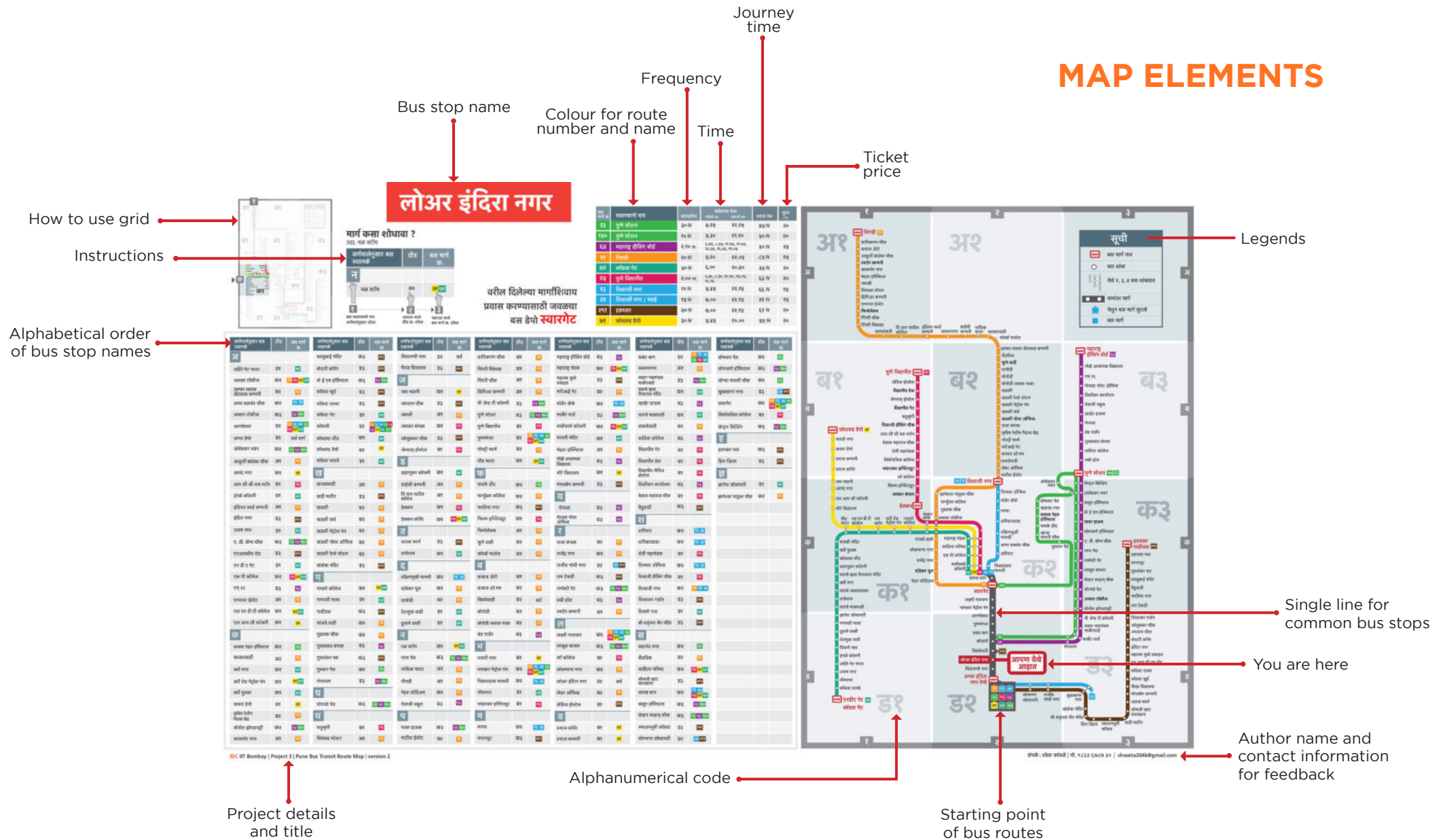
TYPOGRAPHY

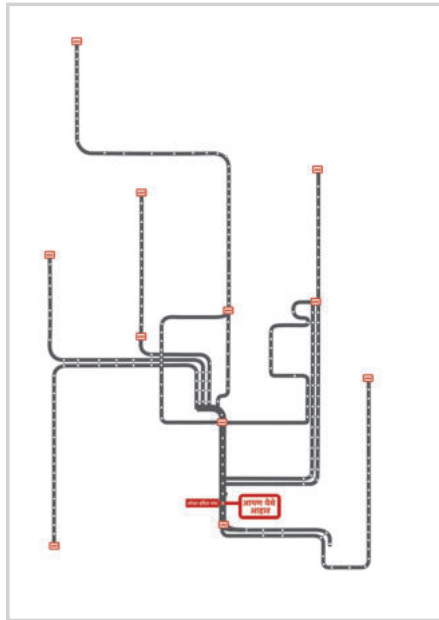
Kohinoor Devnagri,

A high contrast Devanagari typeface. It has a classic proportion as well as legible for smaller point size. It consists of five weights. It goes well for the fast and quick view, when user can't spend much time to look at it. This typeface is designed by font designer Satya Rajpurohit (Indian Type Foundry) and it's a perfect blend of quality with legibility.

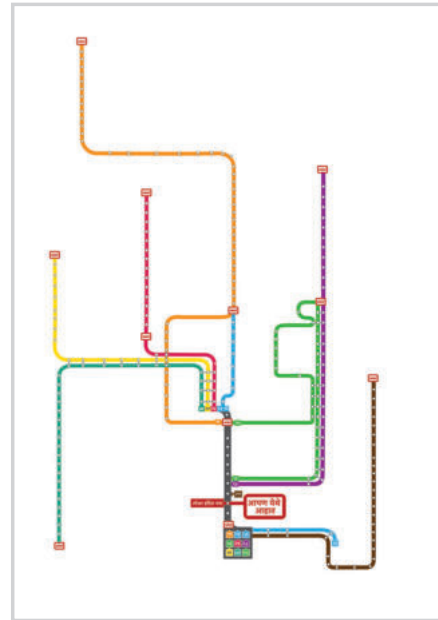


MAP ELEMENTS

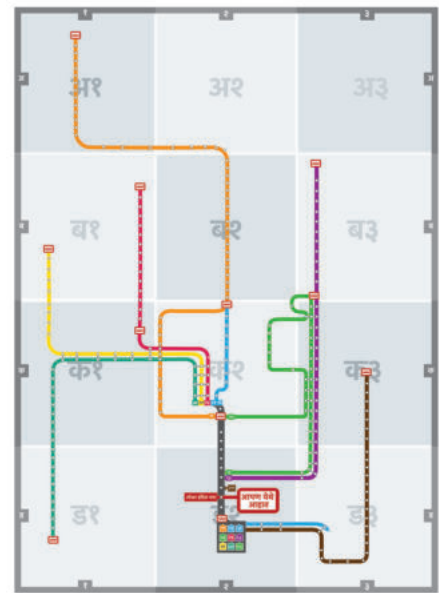




Layer 1



Layer 2



Layer 3



Layer 4

LAYERS

The map was designed with four layers with index.

Layer 1

This layer contains outline of all routes which starts from Upper Indira Nagar depot (You are here)

Layer 2

This layer added each bus separately a single unique colour which helps to identify routes.

Layer 3

This layer includes alphanumeric grid, Which act as a background of the map. It divides map into 12 parts.

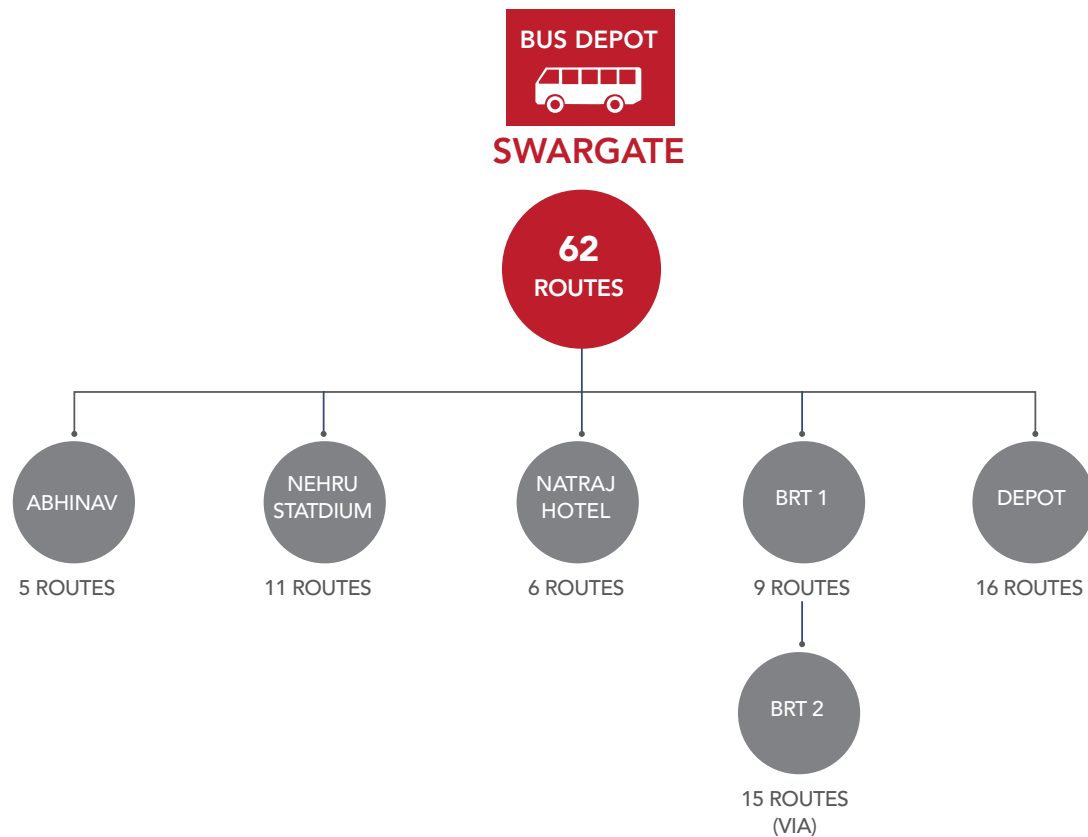
Layer 4

All textual information added in the fourth layer. It also includes legends to know the user which symbol represents what.

GRID

A map having vertical and horizontal reference lines (grid) which facilitates locating a specific point in specific area. This method saves a lot of time because you don't need to scan whole map to find specific point. On the vertical side of the grid divided by alphabets and horizontal side of the grid divided by numbers. This grid creates total 12 boxes and each box has given one alphanumerical code. This code helps user a lot to find his/her destination in map.





SWARGATE BUS DEPOT

- Swargate is the central area of Pune serves as a major bus stand for Pune
- It also serves BRTS (Bus Rapid Transit Service) for “Katraj - Swargate” and “Hadapsar - Swargate” Bus routes.
- In future Swargate will also serve as major location for the Pune Metro project.
- It is well connected to the city and nearby villages by PMPML buses.

I have made a structure of Swargate bus depot, as there are 62 routes for the Swargate bus depot it is not possible to include all 62 routes in one map. So, I decided to divide routes as per the bus stops at the bus stands. On the same lines in such situation we can design multiple maps for one depot.



SWARGATE MAP DESIGN

The following map shows total area of Swargate bus depot and six bus stops which covers all 62 routes. When user arrives at Swargate or any of the six bus stops he is always confused where to stand for his bus. In such situations I decided to give “Codes” to all six bus stops. So that when user will go to any of the six bus stops he can see one board with the detailed map. Which will help find out his bus route or bus stand.

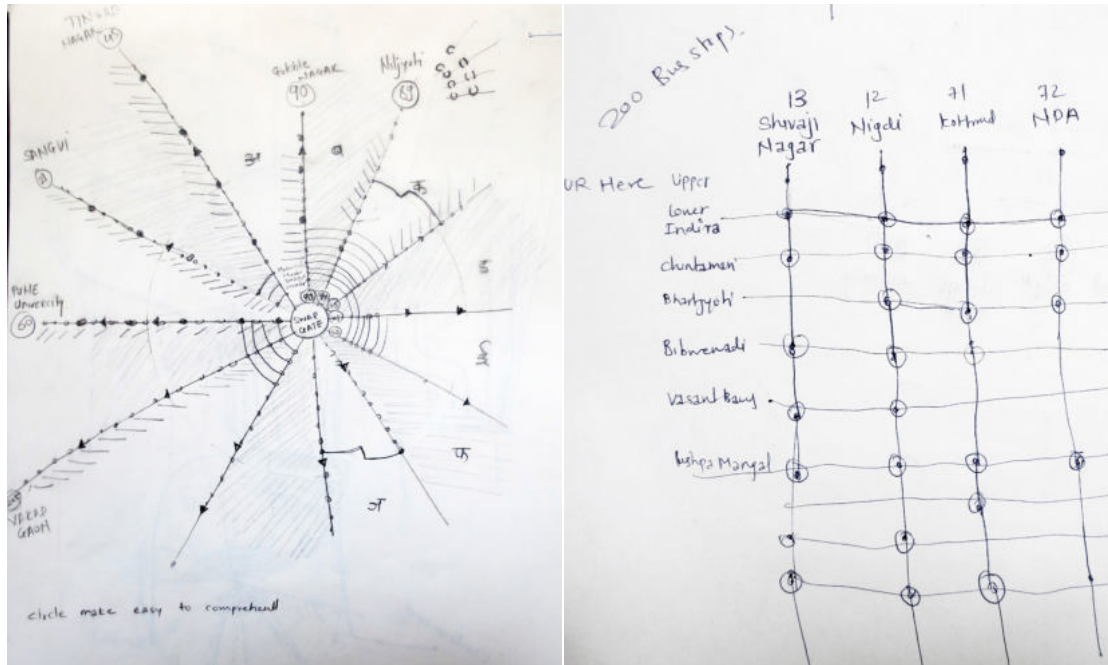
The common current scenario at Swargate is very chaotic, people keep running here and there for their buses. They depend on the unreliable information sources.

The following would be a typical situation when a new user gets down at Swargate ST Stand for the first time and wants to go to particular destination in Pune, with the designed maps installed at Swargate. A new user gets down at Swargate and wants to go to Sun-City. He is standing in front of Swargate S T stand exit gate. As he looks around for nearest bus stop his basic instincts would lead him to BRT 1 bus stop which happens to be dead in front of the Swargate exit gate. There he will find one board with the map and info which will tell him the stop from where he can catch the bus for his destination Sun-City. To locate the stop he needs to follow an alphabetical order to find Sun-City. He will find the code for the bus stop from where busses for Sun-City depart is BS2 which is “Natraj Hotel bus stop”. Then he can follow the map and can catch up the bus from BS2 Natraj Hotel bus stand. At BS2 he can also get detailed information about the fare, frequency and timing as well.



One needs to follow alphabetical order to know where to catch bus

NEW VERSION OF SWARGATE MAP



The idea of new version of map is completely different from the previous versions. Firstly I was thinking about using circular grid and join the common bus stops with a connecting line but later I found that it won't be scalable. Circular grid will take maximum amount of space. Then I converted the same model to a horizontal grid wherein all the routes were shown in a vertical straight line and for any common bus stops then one horizontal line will pass through that. In this concept, starting point is "you are here" and end point is terminating point of the route. In this concept, geography is totally ignored but I can say this is the most simplified version for the most complex system of routes.

मार्ग कसा शोधावा ?

उदा. महादेव नगर

वर्णमालेनुसार बस स्थानके	ग्रीड	बस मार्ग क्र. आणि रंग
म		
महादेव नगर	क	18

बस स्थानकाचे नाव वर्णमालेनुसार शोधा

नकाशा मध्ये ग्रीड शोधा

नकाशा मध्ये बस मार्ग क्र. शोधा

ग्रीड



बस मार्ग क्र. आणि रंग

स्वारगेट बस स्थानक

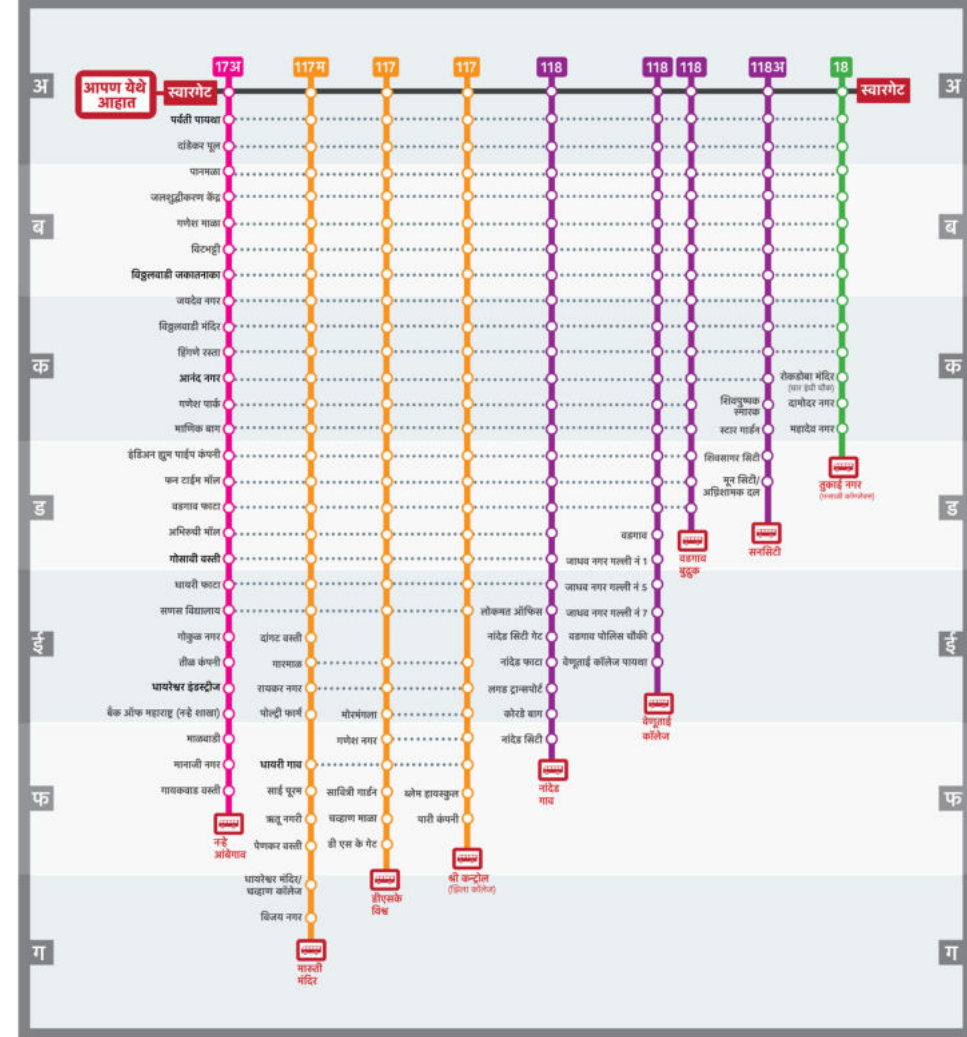
नटराज हॉटेल BS2

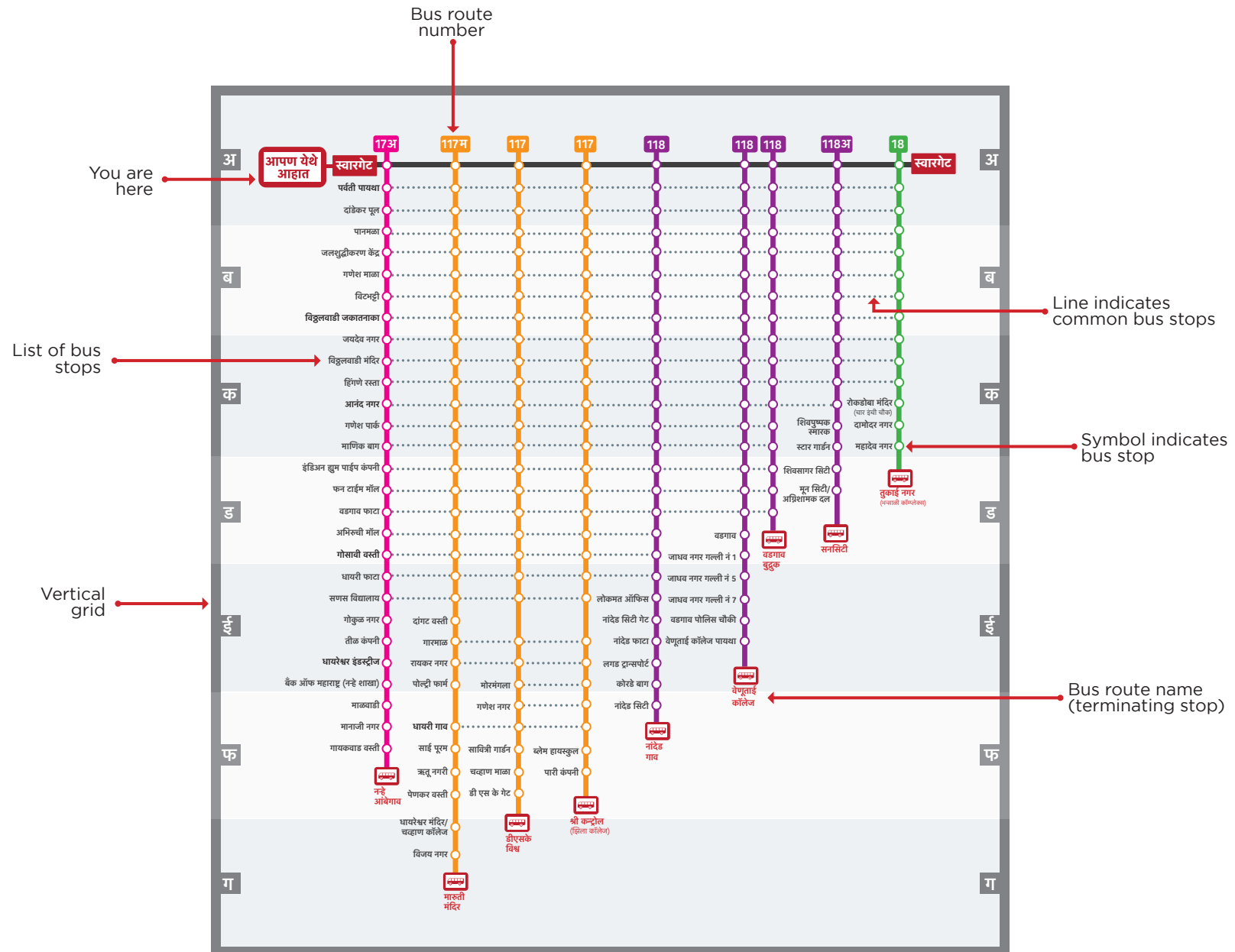
बस मार्ग क्र.	बस स्थानकाचे नाव	वारंवारिता	बसेसच्या वेळा	प्रवास वेळ	मुल्य (₹)
17अ	नहे आंबेगाव	80 मि.	07:00 21:30	40 मि.	15
117	मारुती मंदिर	10 मि.	05:35 00:30	35 मि.	15
117	डि एस के विश्व	40 मि.	06:40 20:50	50 मि.	15
117	श्री कन्ट्रोल (फारी कंपनी)	2 गाड्या	08:25 18:30	35 मि.	15
118	वडगाव	30 मि.	05:45 23:05	30 मि.	10
118	वेणुताई कॉलेज	30 मि.	05:45 20:00	45 मि.	15
118अ	सनसिटी	60 मि.	05:50 21:20	30 मि.	10
118	नांदेड गाव	3 गाड्या	06:10 08:40 17:25	45 मि.	15
18	तुकाई नगर (भन्साळी कॉम्प्लेक्स)	70 मि.	06:30 21:40	35 मि.	15



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वर्णमालेनुसार बस स्थानके	ग्रीड	बस मार्ग क्र. आणि रंग	वर्णमालेनुसार बस स्थानके	ग्रीड	बस मार्ग क्र. आणि रंग	वर्णमालेनुसार बस स्थानके	ग्रीड	बस मार्ग क्र. आणि रंग	वर्णमालेनुसार बस स्थानके	ग्रीड	बस मार्ग क्र. आणि रंग
अ			ड			फ			श		
आनंद नगर	क	17अ 317 117म	डी एस के विश्व	ग	107	फन टाईम मॉल	ड	17अ 117 118म 117म	विठ्ठलवाडी मंदिर	ब	17अ 117 117म 118म 118म
अभिरुची मॉल	ड	17अ 117 118म 117म	डी एस के गेट	फ	107				वेणुताई कॉलेज पायवा	ई	118
अग्रिनामक दल	ड	118अ				बैक ऑफ महाराष्ट्र (नहे साका)	ई	17अ	शिवसागर सिटी	ड	118अ
इंडिअन ह्युम पार्किंग कंपनी	ड	17अ 117 118म 117म	तुकाई नगर	ड	18	क्लोन हायस्कूल	फ	117	शिवपुष्पक स्मारक	क	118अ
क			लीळ कंपनी	ई	17अ	महादेव नगर	क	18	सनस विद्यालय	ई	17अ 117 117म 118म
कोरडे बाग	ई	118				मानाजी नगर	फ	17अ	सनसिटी	ड	118अ
ग			दोंगट वस्ती	ई	117	माणिक बाग	क	17अ 117 118म 118म	सावित्री गार्डन	फ	117
गणेश नगर	फ	117	दांडेकर पुल	अ	17अ 117 118म 118म	माळवाडी	फ	17अ	साई पुरम	फ	117
गणेश पार्क	क	17अ 117 118म 117म	दादोदर नगर	क	18	मोरमंगला	ई	117	स्वारगेट	अ	17अ 117 117म 118म
गणेश माळा	ब	17अ 317 117म 118म 118म				मून सिटी	ड	118अ	स्टार गार्डन	क	118अ
गारमाळ	ई	117	ध			र			ह		
गायकवाड वस्ती	फ	17अ	धायरी गाव	फ	117	रायकर नगर	ई	117म 117	हिंगणे रस्ता	क	17अ 117 117म 118म 118म
गोकुळ नगर	ई	17अ	धायरी फाटा	ई	17अ	रोकडोवा मंदिर	क	18			
गोसावी वस्ती	ड	17अ 117 118म 117म	धायरेश्वर इंडस्ट्रीज	ई	17अ	ऋतू नगरी	फ	117			
च			धायरेश्वर मंदिर	ग	117	ल					
चव्हाण मळा	फ	117	न			लगड ट्रान्सपोर्ट	ई	118			
चव्हाण कॉलेज	ग	117	नांदेड सिटी	फ	118	लोकमत ऑफिस	ई	118			
चार इंची चौक	क	18	नांदेड सिटी गेट	ई	118	व					
ज			नांदेड फाटा	ई	118	वडगाव बुद्रुक	ड	17अ 117 118म 117म			
जयदेव नगर	क	17अ	प			वडगाव फाटा	ड	17अ 117 118म 117म			
जलशुद्धीकरण केंद्र	ब	17अ	पर्यती पायवा	अ	17अ 117 118म 118म	वडगाव पोलिस चौकी	ई	118			
जाधव नगर गल्ली नं 1	ड	118	पेणकर वस्ती	फ	117	विजय नगर	ग	117			
जाधव नगर गल्ली नं 5	ई	118	पारी कंपनी	फ	117	विटभट्टी	ब	17अ 317 117म 118म 118म			
जाधव नगर गल्ली नं 7	ई	118	पानमळा	ब	17अ 317 117म 118म 118म	विठ्ठलवाडी जकातनाका	ब	17अ 117 117म 118म 118म			
झ			पोल्डी फार्म	ई	117						
झिला कॉलेज	फ	117									



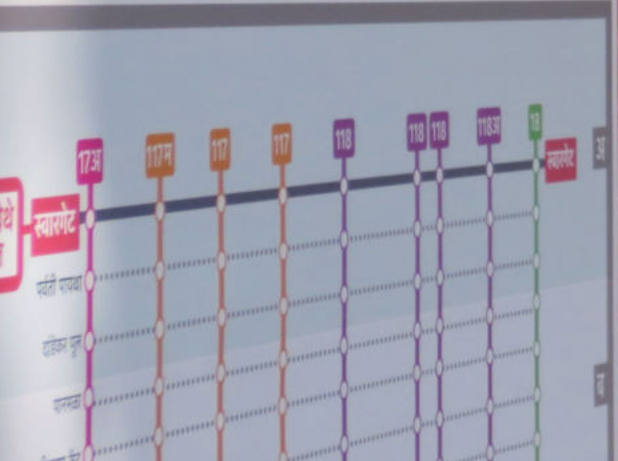


स्वारागेट बस स्थानक

नटराज हॉटेल

BS2

बस मार्ग क्र.	बस स्थानकाचे नाव	वास्तविकता	बसेसमय वेळ	प्रवास वेळ	फुलम र.	
		नियोजी बस	नियोजी बस			
173अ	नेहे आंबेगाव	80 मि.	07:00	21:30	40 मि. 15	
117म	मारुती मंदिर	10 मि.	05:35	00:30	35 मि. 15	
117	डि एस के विश्व	40 मि.	06:40	20:50	50 मि. 15	
117	श्री कन्दोल (फाती कंपनी)	2 गाडया	08:25	18:30	35 मि. 15	
118	वडगाव	30 मि.	05:45	23:05	30 मि. 10	
118	वेणुताई कॉलेज	30 मि.	05:45	20:00	45 मि. 15	
118अ	सनसिटी	60 मि.	05:50	21:20	30 मि. 10	
118	नांदेड गाव	3 गाडया	06:10	08:40	17:25	45 मि. 15
18	तुकाराम नगर (महात्मा कॉम्प्लेक्स)	70 मि.	06:30	21:40	35 मि. 15	



IDC IIT BOMBAY
PROJECT

PUNE BUS ROUTE MAP

User Testing

23rd - 24th May 2014

Swaragate - Natraj Hotel (PUNE)





- As people are well versed with stop names, tend to skip first three steps
- The same bus route numbers for different destination add to the confusion
- Same colours but which indicate different routes are confusing for the user, they think that similar colour leads to a same destination.



- Picture attracts user and if he/she is willing to spend time then only he/she goes to textual part of the information.
- People were directly looking at the grid and searching for the place they want to go.





The conductor and drivers are very happy with the map, they say” If we apply our mind to understand the map at the beginning then it’s quite easy to read and follow the map”

NEWS PAPER ARTICLE

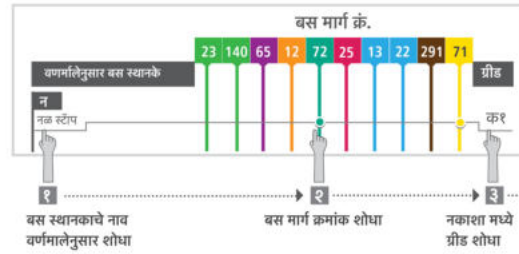
After completing my first user testing of map at Upper Indira Nagar Depot, I thought of why not make more and more people aware about such activity happening in city. We released the detailed research about the project on web page. Which is still open for all for feedback, by doing this activity we are targeting more number of people to involve in the user testing and also making them aware that such project is happening in Pune. Following is the web link: www.mrane.com/punebusmap.php

The user testing activity got overwhelming response and people are very keen to know about the progress of the project. The news got published in the News paper also. It helped me get a lot of user feedback as well as spreading the news.



मार्ग कसा शोधावा ?

उदा. नळ स्टॉप



वरील दिलेल्या मार्गाशिवाय
प्रवास करण्यासाठी जवळचा
बस डेपो **स्वारगेट**

बस मार्ग क्रं.	बस मार्ग क्रं.	बस मार्ग क्रं.
23 140 65 12 72 25 13 22 291 71	23 140 65 12 72 25 13 22 291 71	23 140 65 12 72 25 13 22 291 71
बस स्थानकाचे नाव	बस स्थानकाचे नाव	बस स्थानकाचे नाव
वर्णमालेनुसार शोधा	वर्णमालेनुसार शोधा	वर्णमालेनुसार शोधा
बस मार्ग क्रमांक शोधा	बस मार्ग क्रमांक शोधा	बस मार्ग क्रमांक शोधा
नकाशा मध्ये ग्रीड शोधा	नकाशा मध्ये ग्रीड शोधा	नकाशा मध्ये ग्रीड शोधा

लोअर इंदिरा नगर



IDC IIT BOMBAY
PROJECT

बस मार्ग क्रं.	बस मार्गाचे नाव	वारंवारता	बसेसच्या वेळा	वेळापत्रात	प्रवास वेळ	मुद्रा
23	पुणे स्टेशन	30 min	05.25	22.25	45 min	20
140	पुणे स्टेशन	10 min	05.30	21.20	50 min	20
65	महाराष्ट्र हौसिंग बोर्ड	2.10 hrs	06.45, 08.55, 11.45, 13.35, 16.45, 19.05		40 min	15
12	निगाडी	20 min	05.20	22.05	85 min	25
72	कोडवा गेट	50 min	06.00	20.40	35 min	20
25	पुणे विद्यापीठ	2.00 hrs	06.30, 08.30, 10.40, 15.05, 18.15		63 min	20
13	शिवाजी नगर	10 min	05.45	22.15	66 min	15
22	शिवाजी नगर	15 min	07.00	22.15	22 min	15
291	हडपसर	50 min	07.00	22.15	61 min	20
71	कोडवा डेपो	30 min	05.45	20.00	55 min	20

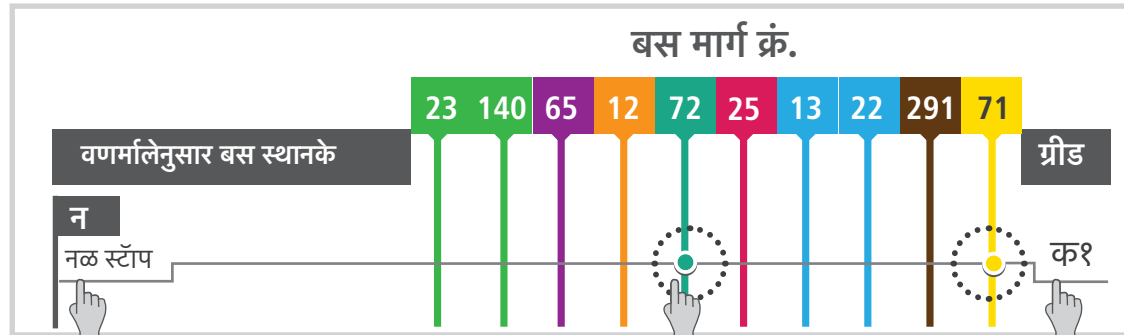


VERSION 4

"How to read the map" Instructions.

मार्ग कसा शोधावा ?

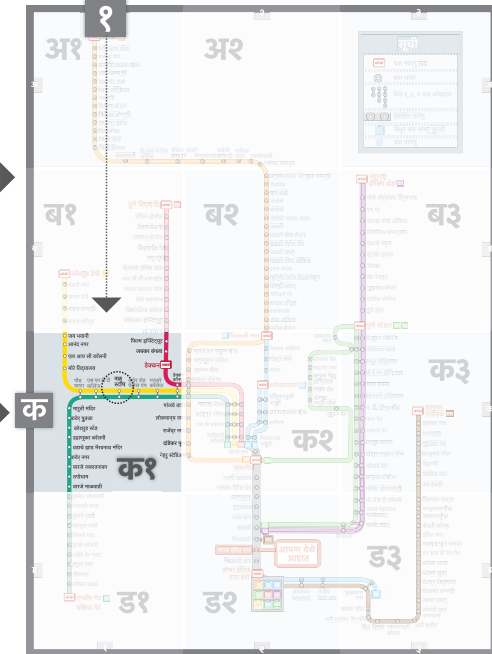
उदा. नळ स्टॉप



बस स्थानकाचे नाव
वर्णमालेनुसार शोधा

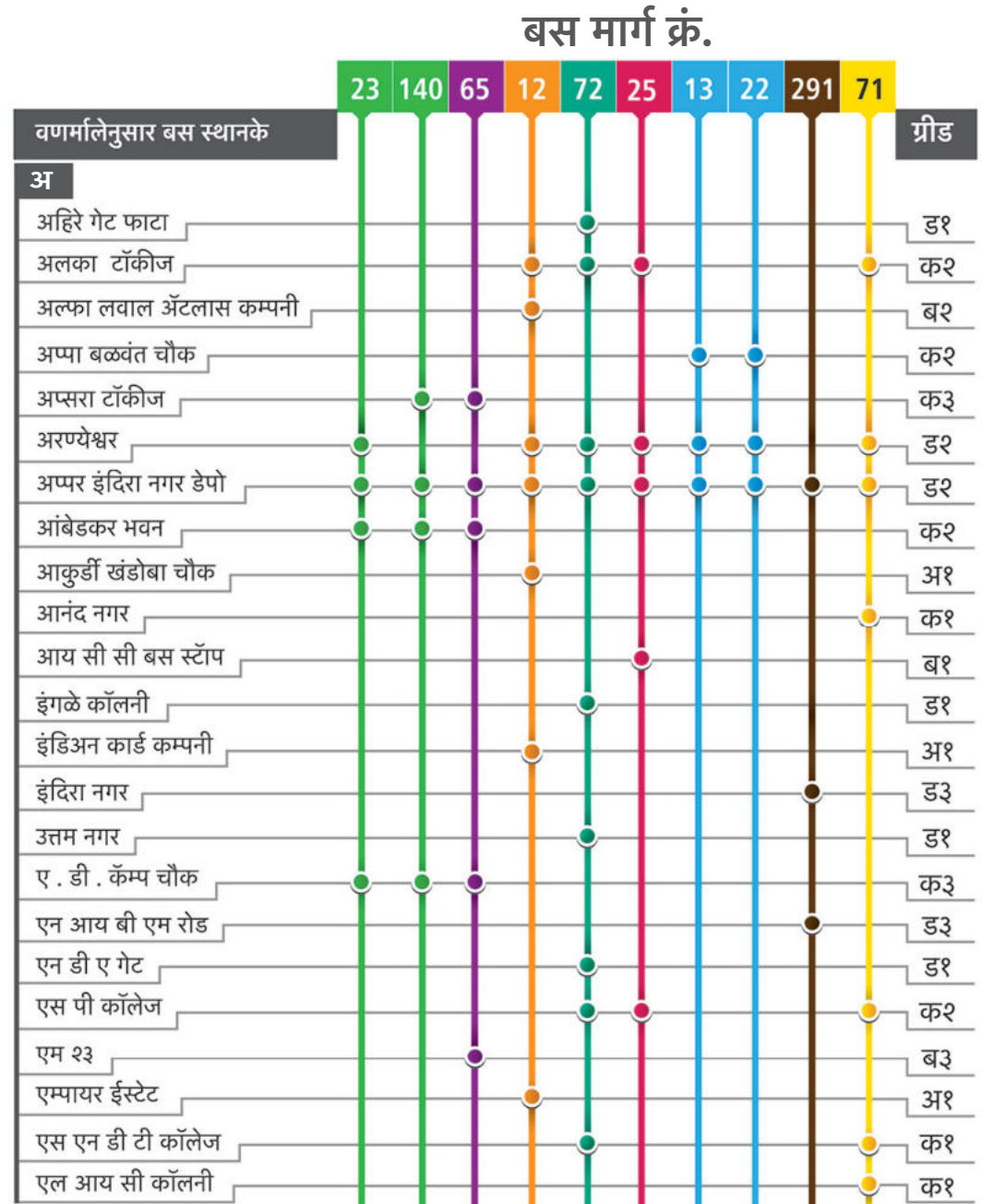
बस मार्ग क्रमांक शोधा

नकाशा मध्ये
ग्रीड शोधा



वर्णमालेनुसार बस स्थानके	ग्रीड	बस मार्ग क्र.
अ		
अहिरे गेट फाटा	ड१	७२
अलका टॉकीज	क२	१२ २५ ७१ ७२
अल्फा लवाल अँटलास कम्पनी	ब२	१२
अप्पा बळवंत चौक	क२	१३ २२
अप्सरा टॉकीज	क३	६५ १४०
अरण्येश्वर	ड२	१२ १३ २२ २३ २५ ७१ ७२
अप्पर डेपो	ड२	सर्व मार्ग
आंबेडकर भवन	क२	२३ ६५ १४०
आकुर्डी खंडोबा चौक	अ१	१२
आनंद नगर	क१	७१
आय सी सी बस स्टॉप	ब१	२५
इंगळे कॉलनी	ड१	७२
इंडियन कार्ड कम्पनी	अ१	१२
इंदिरा नगर	ड३	२९१
उत्तम नगर	ड१	७२
ए. डी. कॅम्प चौक	क३	२३ ६५ १४०
एनआयबीएम रोड	ड३	२९१
एन डी ए गेट	ड१	७२
एस पी कॉलेज	क२	२५ ७१ ७२
एम् २३	ब३	६५
एम्पायर ईस्टेट	अ१	१२
एस एन डी टी कॉलेज	क१	७१ ७२
एल आय सी कॉलनी	क१	७१

Major change in index. People were tend to ignore the textual part (Index), So I have presented the index graphically, which has more colours and more simplified. One can easily find out his/her bus route.



LEARNINGS

This project helped me to understand about the needs and necessities of public transport and the role of public transport information. I went through the happiness and pain of map making process. Whenever there is a need of bus route information it should be resolved by the map. If the map is not easy and usable then people tend to ask someone. So, it should be user friendly.

After doing various user testing of map, I have learnt that most of the user need little training about “how to read the map” Once it’s done then people will make use of map with no trouble. Map reading in India is very poor, people are not used to the alphabetical order and grid based search.

The best way to judge your map is to design the map and put it for testing. Various kind of reactions and feedbacks give you immense information to overcome your flaws and come out with best solution. I can definitely say that I have developed myself in various areas like research process, handling data, decision making, quick solution, and user testing. Certainly it will help me in my future endeavours..

FUTURE DIRECTIONS

I think this map is still in its primary stage. We can modify lots of things in the future. There is a huge scope for improvement in this map. Keep updating with user feedback, adding updated information from PMPML, develop a mobile application or digital kiosks at the bus stop are some of the future directions that I can suggest.

Janwani (social initiative of MCCIA – Pune) is really interested in this project and they are ready to give sponsors in collaboration with PMPML to take this initiative to the next level. Janwani is an organisation with the objective to advocate and promote equitable and sustainable development in the city. Simply put, to address the issues of growth and make Pune a better place to live and work. We discussed about the project future and implementation through which initially we are in the process of finalising 10 critical Bus stops to install maps on it in coming months.



CONCLUSION

Selecting a subject for a project was not difficult for me as there was a inner urge to contribute to the development of my city. As a visual designer, I always find it challenging to deal with information design problems which people face in their day to day life, it's always satisfying when your creation makes a good difference to somebody's problem.

"Pune bus map" project helped me to understand about the needs and necessity of the public transport and the role of the public transport information. I felt that this project has great potential for information design. Also it was challenging because with each day more and more people are avoiding and are hesitant to use public bus transport due to unavailability of good service and reliable information. Now with an ideal map I can at least try to help solve the problem. I went through the happiness and pain of map making process.

The final version of the map is still awaited. Design of the map is still in its developing stage. User testing and critical observations will provide me vital insights and findings which are very much important to do the further design development.

REFERENCES

- [1] <http://timesofindia.indiatimes.com/city/pune/Pune-scores-highest-in-vehicle-percentage/articleshow/19099956.cms>
- [2] Bus route and schedule planning guidelines (Central Library)
- [3] <http://www.cpcb.nic.in/Pune.pdf>
- [4] On the Design of Schematic Transport Maps by Sylvania Avelar & Lorenz Hurni
- [5] <http://en.wikipedia.org/wiki/Transport>
- [6] http://en.wikipedia.org/wiki/Transport_in_India
- [7] http://en.wikipedia.org/wiki/Mode_of_transport
- [8] http://en.wikipedia.org/wiki/Pune_Mahanagar_Parivahan_Mahamandal_Limited
- [9] <http://en.wikipedia.org/wiki/Map>
- [10] <http://sgo.pccu.edu.tw/GEOG/CHI/D/D1/D1A/24B--the%20Design%20of%20Schematic%20Transport%20Map.pdf>
- [11] http://www.ted.com/talks/aris_venetikidis_making_sense_of_maps
- [12] <http://cacm.acm.org/magazines/2011/4/106586-design-principles-for-visual-communication/fulltext>
- [13] <http://e-collection.library.ethz.ch/eserv/eth:4376/eth-4376-01.pdf?pid=eth:4376&dslD=eth-4376-01.pdf>

[14] <http://andynash.com/citypages/zurich/zurich-public-transport-introduction/>

[15] <http://britton.disted.camosun.bc.ca/beckmap.htm>

Books

Bus route and schedule planning guidelines (Central Library)
Pune Diary
PMPML bus marg
PMPML Information book
Image of the city - Kevin Lynch

Web links

<http://punebusguide.org/>

<http://www.pmpml.org/>

<http://www.tfl.gov.uk/>

http://www.tfl.gov.uk/assets/downloads/businessandpartners/accessible_bus_stop_design_guidance.pdf

<http://www.vta.org/getting-around/maps/bus-rail-map>

<http://braga.yapceurope.org/index.cgi?LisbonBuses>

<http://bitterscotch.wordpress.com/2008/12/15/kickstarting-the-chennai-bus-route-mapping-project/>

<http://www.vta.org/sfc/servlet.shepherd/version/download/068A00000001QIdS>

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