**FEASIBILITY STUDY**

**Date:** 26-01-2016

**Get-A-Way**

**TEAM NAME:** 2016 - SEB - 1

**SECTION:** B

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**REVISION HISTORY**

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| **Revision #** | **Date** | **Author** | **Where** | **Change** | **Approved by** |
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# **Problem Statement**

While on a trip, have you ever encountered a vehicle breakdown or any other emergency (food/medical)?

Our project aims at providing a user-friendly interface to avail these amenities from the sellers nearest to the user, while on a tour. We also aim at enriching the user’s experience by suggesting nearby places of attraction. Our main focus is on tourism in Karnataka. Our project also aims at providing the following features:

1. **Optimal path** - If the user/tourist is interested in visiting a set of places (say a, b, c), we try to provide them with an optimal way of travelling through a, b and c. Once a path has been obtained, we try to provide the user with an approximate time it would take and the travelling expenses for the same.

2. **Suggestions** - Provide a list of nearby places the tourist might be interested in visiting besides the chosen points of interest.

3. **Facilities en route to the destination** - Create an interface to access nearby hotels, restaurants, malls, hospitals and other basic amenities en route to the destination.

4. **Tourism Chatbot** - A Chatbot interface to make queries about Karnataka Tourism in a more user friendly manner.

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# **2.** **Executive Summary**

Existing mobile applications and websites on Karnataka tourism offer different facilities ranging from a brief description of Karnataka’s heritage to planning a fully-fledged tour. Using Google Maps API, the supporting pillar of most travel based applications, we not only aim to fuse some of the eye-catching features of the existing applications into our project but also add new helpful features.The assistive features include providing access/directions to miscellaneous facilities which include the nearest facilities related to health-care, automobile maintenance, grocery/supermarkets, restaurants and fuel stations so as to provide complete support to/for the traveller in case of emergencies/needs.

Our application would require us as developers to play around with Google Maps, databases, artificial intelligence and web designing. By statistically analysing usage of smartphones and tablets for travel-based activities, we have concluded that mobile applications for tourists and travellers would be a large marketplace for our product. Hence, we would want to target and tap into that marketplace in Karnataka tourism. As this application is meant to provide directions while on a tour it demands a stable and constant internet connection. As an alternative to issues that we could face due to connectivity problems, we plan on providing some assistive offline features. As per the schedule we have designed, we aim to launch our product within a duration of three months. We expect our product to boost Karnataka tourism and help improve its economy.

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# **3.** **Current Systems and Processes**

# **3.1 Current Operations**

# “Rome2Rio” is a site that returns an estimate of one’s travel time over several different transportation methods and routes.

# “inRoute” is a voice based navigation app that helps plan optimal routes between many locations. It also allows travellers to chart their own course based on visiting hours and weather.

# “Along the way” is an app that helps locate parks, shops and other establishments. This is a good guide when on a trip in an unfamiliar destination.

# “Roadtrippers” app maps the route between the starting point and destination while also providing recommendations across different categories—food, accommodation, attractions, history, entertainment etc.

# “Tripigator(India)” creates customised itineraries based on your interests (adventure, family, romance etc.), budget, location and trip duration. The app shows a list of potential destinations near you with sightseeing options, hotel, transport options and the approximate cost.

# “Amazing Karnataka” application gives complete information about all the tourist attractions of the Karnataka state. It lists out all the important places of each district with information about the place such as weather conditions and important hotels.

# **3.2 Physical Environment**

### Geocode API, Autocomplete API identifies the precise latitude and longitude of textual place names.

### Search API returns train, bus, ferry, air, driving and walking routes between any two points.

# Google Maps API

# MapBox

# **3.3 User Organisation**

# Travelers

# Tour guides

# India’s Ministry of Tourism (Tripigator)

# **4.** **System Objectives**

The product is designed to interact with the user for the inputs at real-time and provide outputs/results as he/she proceeds with the interactions. The outputs (in this case suggestions or the optimal routes and facilities) have to appear as fast as possible as no user likes waiting for results.

The product is mostly automated except for the part where the user needs to enter his/her intended places of visit and whether he/she needs assistance as he/she continues on the trip. The main attribute(s) of this product would be -

1. giving the optimal route along with the time required for such a trip to complete to the user’s proposed travel plans
2. the additional places given as suggestions based on his/her plans for the trip (which may be included in the trip if the user wishes for it to be so)
3. marking the facilities available on the route of the trip so that the user faces close to no problems with respect to -
   1. health-care
   2. transport maintenance services if required
   3. shopping for either souvenirs, food or other basic amenities required for the trip.

The system needs use of various APIs and functionalities of multiple languages for the features to come to fruition. Using the Google Map API the product introduces a map for the user to interact with it. The user can select places of travel and thereby be provided with an optimal route and also with a time required for the completion of the said trip. Further, based on the selections already made, the user is given suggestions (places the user might visit too) through a machine learning algorithm to suit the current user.

The product is designed to be as user friendly as possible by incorporating a ChatBot, which will be used to present the suggestions to the user in an interactive manner.

**4.1 Description of Products and Services**

Person ‘A’ is planning a trip with his family to Place ‘X’. He has a vague idea of where he wants to go and what he wants to do when he gets there. He checks with his relatives and peers for more information on the places that he could visit with his family. Sadly, most of the information he gets is vague and the directions to the said places insufficient. He wants to avoid tour guides and other such travel planners as they are out of his budget . He feels he will not get the most out of the trip with his current level of planning. He wants a way to pick places he wants to go to and somehow plan the trip appropriately so that he has saved effort and cost too.

With this product, ‘A’ can plan his trip with a user-friendly interface. He knows where the various places are and can access the directions to these places remotely. Further, he gets an idea of what the budget will be like if he travels to these locations and can also check what times are most suitable to visit them. This allows him to get the most out of the money spent on the trip. Moreover, he has access to the recommendations of users who have already visited various locations and feel that the location is a good place to visit. In case of emergencies, he can check for miscellaneous locations to provide health-care, maintenance, supermarkets et cetera.

**4.2 Targeted Customers and Benefits**

There is a good market for people hoping to get suggestions on how to improve their travel experience. Our application assists them in planning their route in the most convenient manner and also helps in case of emergencies or vehicle breakdowns.

* Families
* College students

We believe that the customers in these two categories are more likely to be interested in the application and could use the application’s features to a greater effect.

**4.3 Technology Considerations**

* Google API services will be an integral part of the project. Especially the Google Maps API and Google Places API.
  + The APIs can be used to enrich the app with high-accuracy location reporting and other location related services.
  + Can search for and retrieve rich information about points of interest
* MySQL RDBMS
* To create an interesting and interactive website for the tourists, we would require knowledge of web designing. CSS and JQuery would help us build user-friendly interfaces.
* Artificial Intelligence is needed to help us build our tourism based chatbot.AI would help us to deal with a variety of user inputs to a ceratin extent.

# **5.** **Product/Service Marketplace**

The Karnataka tourism and hospitality industry has emerged as one of the key drivers of growth among the service sectors in Karnataka. Tourism in Karnataka has significant potential considering the rich cultural and historical heritage, variety in ecology, terrains and places of natural beauty spread across the state.

Statistics shows that -

* 85% use smartphones to plan their travel when on leisure tours
* 72% people will post photos about their travel on social platforms like Facebook
* 46% check-in via their smartphones when on holidays
* 30% use mobile apps to find the best hotel deals
* 29% use mobile apps to find the best flight deals
* 15% users specifically download travel apps to plan a trip ahead

As the statistics show, mobile apps for tourists and travellers is a really large marketplace. Hence, we would want to target and tap that marketplace in Karnataka tourism.

Traditional tourism apps provides the optimal path set of places but in our app and website

1. We try to provide the user with an approximate of the time it would take to travel

2. Plan the traveling expenses such that the trip would be most economical.

3. We suggest them list of nearby places might be interested to visit besides the chosen points of interest.

4. Facilities such as hotels, restaurants, malls, ATMs, hospitals/pharmacies, rental stores and other basic amenities en route to the destination path which helps the user in emergency situation.

5. Tourism Chabot to make queries about the travel.

While there are many competitors - like Goibibo, MakeMyTrip, Amazing Karnataka - the primary use of our app, which makes us stand apart from our competitors, is that users can get instant help in case of emergencies while traveling. In addition to this, the ChatBot will provide the information to the user in a very interactive manner which makes the system very user friendly.

# **6.** **Marketing Strategy**

Consider this. Let’s say you have just arrived into this beautiful place for a vacation. You’ve rented a car and along with the car come either a road map or a navigation system. Getting from point A to point B will be relatively easy for you because you have the directions, where to turn, when to stop, when to go, and if you get lost you can get back on track with relative ease. Now, what would you do without the map or the GPS? What if You have a medical emergency ? You’d be pretty lost wouldn’t you?

Now this is where our website would be of great help to you . Our Website tells the story of how Karnataka’s unique combination of landscapes, people , activities and Health Care facilities cannot be found anywhere else in the world.

* **Consumer marketing and advertising**
* Consumer Marketing - including advertising, promotions and online marketing work - is the most visible part.Our Website’s advertising evolves from print and billboard advertising, to greater use of technology to reach our target audience that includes Business Travellers , a family or a bunch of friends on a Holiday or any individual who needs travel and health care information within the state irrespective of wherever they are, and whatever they might be doing, in their daily lives.
* This has meant embracing new media such as mobile technology, social media and online advertising.
* **Online channels**
* Our website can help make planning a holiday in Karnataka easy by providing the essential travel know-how .
* Our consumer website is the main way it provides information about Karnataka to visitors from different parts of the world. It provides you with all the health-care information a traveller would need in case of emergencies. The goal of our website is to connect consumers with travel sellers.
* **Public Relations and media engagement**
* Gaining compelling, high-profile media coverage to motivate our target audience to travel throughout Karnataka is the main aim of Tourism Karnataka’s public relations team. Tourism Karnataka hosts journalists in India each year from print, online and broadcast organisations. Tourism Karnataka is also hosting a growing number of respected influencers - opinion leaders, writers and thinkers who endorse Karnataka internationally.

# **7. Schedule**

* Detailed work breakdown with ownership of 2 or more.
* Deliverable #1: Collect the Backend data and Complete the database by 15th Feb, 2016
* Deliverable #2: Create a Web based GUI and link the Front end GUI and the Back end by 10th March,2016
* Deliverable #3: Testing of data and operations by mid of March.
* Deliverable #4: Final Testing by 5th April,2016
* Deliverable #5: Final Demo by end of April.

**8.** **Issues that our App could face**

* Requires an always-on data connection
  + As it’s mobile, users constantly lose coverage(metro/tube stations, inner buildings, car parkings, rural areas). The fact is that as soon as coverage is lost, some apps stop responding.This may affect features like checking live availability, or bookings.
* Assuming high speed network access
  + Many factors can influence the actual speed, such as number of people in the area, architectural structures of nearby buildings, weather conditions, etc. Hence, could slow down user experience.
* Requesting too many permissions
* Problems of data synchronization with the cloud
* Memory and power consumption
  + Draining memory and battery often leads to negative reviews and lower adoption and acceptance rates.

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# **9. Assumptions and Constraints**

1. It is assumed that the user is connected to the server at all times.
2. Availability of data which is obtained from Google Maps.
3. The data obtained from Google Maps is assumed to be accurate.
4. The expected duration of the journey shown between two places is only an estimate.
5. The Global Positioning System is assumed to be accurate.
6. The suggestions given by the application are dependent on user feedback.
7. The feedback of every user is assumed to be genuine.

**10. Alternatives**

**10.1 Status quo**

One alternative would be to maintain status quo of our project and continue providing all the facilities and features the app is providing. Since the main objective of our app is to provide instant help for any emergency the user faces, and our app would achieve that, it is better to continue with the same. The main benefit over other alternatives is that this app achieves our objectives in a simple and straightforward way. It asks the user for an optimal path and redirects the user to the nearest fuel station, hospital in case of emergencies thus providing the user a simple and easy interface to use.

**10.2 Offline feature**

The users while travelling might not get data connectivity in certain regions. In that case, he/she cannot use certain features of the app. So, it is better to provide most of the important features of the app offline as well. Important features provided offline would involve navigation, searching for places like the nearest hospital(s), fuel stations and restaurants etc. offline. The benefit of this would be round the clock access to various features of the app to the user irrespective of the region the user is in. This could be achieved by developing standalone apps with caching. Since a lot of storage space may be required for caching, this alternative might prove to be more costlier than others.

**10.3 Real-time traffic updates**

Another alternative would be to provide real time updates of traffic. If the user is travelling to a certain destination and there has been a major accident on that route resulting in a pileup of traffic, providing real time updates would help the user to not waste time and choose a better route. Real time traffic updates feature can be achieved by making the app community driven. Any user can actively report to the community about traffic jams, accidents, blocked roads, weather conditions about the route he is travelling in. The major benefit of this would be that the users would get information about the amount of traffic, hazards, weather conditions on the route he/she intends to take beforehand itself.

**11. Findings and Recommendations**

Based on the information presented in this feasibility study, it is recommended that project be continued. Key findings are as follows:

**11.1 Project objectives**

1. Assumptions
   1. Users give valid input so that there are no data breakdowns on -
      1. aggregation of time
      2. duration of trip
      3. main destination selected
      4. secondary destination(s) selected
   2. The Global Positioning System and Google Maps are assumed to be accurate.
2. Constraints and Limitations
   1. Always on data connection.
   2. Total budget, price of hotels for stay are a must for calculation of expenses.
   3. Geographic location is only limited to Karnataka.
   4. Access to mobile positioning data is limited due to regulations.
   5. Knowledge about the peak season rates and off season times of popular tourist destinations is required to calculate the final budget.
3. Project scope
   1. Our Project is limited to finding an optimal way of travelling through a set of places and not given a route finding places to visit.
   2. Facilities like medical shops or clinics, vehicle maintenance facilities, restaurants and supermarkets are shown on the path to be travelled.
   3. Suggestions are given relevant to the projected path.
   4. Chatbot only handles queries related to tourism destinations.
4. Technology
   1. Utilises the trending technologies which lowers project risks.
   2. Low maintenance cost once the product is set up.
   3. Improved user satisfaction and product appeal due to suggestions and chatbot integration.
5. Marketing
   1. Product targets a large user group at low cost.
   2. Can expand beyond a particular state (such as Karnataka) to reach users from multiple states or countries.
6. Significant risk factors
   1. Problems with data synchronization with the cloud.
   2. Memory and power consumption by the application.
   3. Integration of Chatbot into the application.
   4. Programming the chatbot to recognize humor and sarcasm.

PROJECT PLAN

# **1. Deliverables of the Project**

We have identified the following features to be delivered at the end of project submission:

* Website for tourists to select places to visit and provide them with an initial optimal path. Registration and login feature for tourists to save their trip.
* Application for registered users. When user logs in, application provides optimal path and total travelling time for the trip saved on website and provide a list of nearby places that tourist might be interested in visiting besides chosen places.
* Users are able to access nearby basic amenities along the route on the app.
* Tourism based Chabot to make queries about the travel.

# **2. Process Model which we intend to follow**

This project was selected with learning as one of its main purposes. The scale of the project is fixed, as is the scope. Deliverables are presented every week to be reviewed. Over the development stage the product might need to add new features into its arsenal or remove already existing ones. Scrums need to keep up with these changes while not deviating from their long sprints.

Taking into account all of the facts, as stated above, we have decided that an Agile Model of development would most suit the project at hand.

# **3. Upstream-Downstream Partners for the Product**

UPSTREAM PARTNERS

* Different scrum groups like android group , website group , chatbot group

DOWNSTREAM PARTNERS

* Travel Agencies
* Tourism Department of Karnataka
* Google Play Store
* Clubs which offer tourism activity like Mountaineering club.

# **4. Resources Required**

Software :

* APP : Google API services will be an integral part of the project. Especially the Google Maps API and Google Places API. The APIs can be used to enrich the app with high-accuracy location reporting and other location related services. Can search for and retrieve rich information about points of interest
* Android Studio
* DBMS : MySQL RDBMS To store login details of the user
* WEB DESIGNING : CSS and JQuery would help us build user-friendly interfaces.

Hardware :

* Significant amount of computing capability on the end system
* The end device must support GPS functionality

# **5. How are you organizing your team in the project**

The work which will go into our project into three main parts:

* An android application
* A web page
* An interactive Chat Bot in the app

Our team consists of 13 members. We have split ourselves up in such a manner so that work required to furnish our product may proceed parallelly with a sufficient number of people working on each of the domains. The web team and the android team each contain 5 members. These two teams will further divide the work of the frontend and backend among themselves. This leaves 3 of us for the ChatBot group.

The web and android teams will need to work closely together, since there is a lot of similarity in what goes on the webpage and the application. Since the ChatBot will be incorporated only on the app, the team going ahead with the ChatBot will need to be in touch mainly with the android team.

|  |  |
| --- | --- |
| Android | |
| Frontend | Backend |
| Srinivas Akhil | Nagashree A.C |
| Parag Karguppikar | Shreyas G |
|  | P Sai Vishwas |
| Rakshaa S Chetty |
| Lisa Sarah Thomas |
| Sharvel Mithali D’souza |

|  |  |
| --- | --- |
| Website | |
| Frontend | Backend |
| R.Sree Soumya | Raghavendra G |
| Srinivas N Shavi | Nagachandra Upadhya |
| Mohammed Aizaz Ahamed |  |

With these organizations in mind for the project, hoping for a successful and enjoyable project experience.

# **6. Standards, Procedures and Guidelines:**

Standards

Maintaining a high standard can only be achieved with teamwork and proper coordination and communication among the group members. This will be done by having regular scheduled group meetings to keep all the scrum teams updated with the work being carried out in the other teams.

Procedures

Regular scheduled meetings will be held; at least every week for the entire group, twice a week or more within each of the scrum teams. Any change of plans which need to be made while developing our product will be first discussed within the respective teams, and then later on presented to the rest of the group. According to the views and opinions of the rest of the members, the group will come to a conclusion on how to proceed. Difficulties faced can also be discussed. Individuals in one team may help those in another team, if required. If a particular problem proves to be too difficult, then after appropriate discussion, we may choose to head down an alternate path.

Guidelines

Each scrum team will have guidelines as to what is expected from each of the teams within a certain deadline. Check points will be maintained to keep the teams in tune.

# **7. Communication Medium**

Scrum meetings are held on a daily basis.The meetings could be either online or offline, depending on the preference of individual scrums. On-campus meeting would be the most convenient offline meeting where individual scrums allocate 5-10 minutes to plan the task for the current day. A google doc is maintained by each scrum to communicate updates, new tools and even code among the members of the scrum.Group discussions are effectively carried out on Watsapp.

A team meeting is held on a weekly basis,usually at the end of the week to analyse the progress of each scrum. This would keep the entire team aware of the progress of the project. This would also help us evaluate our progress against the schedule. Such an evaluation would be effective in delivering the product on-time.

# **8.Risks**

As mentioned in the feasibility report the key issues that our app can face are

* Requires an always-on data connection. As it’s mobile, users constantly lose coverage(metro/tube stations, inner buildings, car parkings, rural areas). The fact is that as soon as coverage is lost, some apps stop responding.This may affect features like checking live availability, or bookings.
* Assuming high speed network access, many factors can influence the actual speed, such as number of people in the area, architectural structures of nearby buildings, weather conditions, etc. Hence, could slow down user experience.
* Requesting too many permissions
* Memory and power consumption
* Draining memory and battery often leads to negative reviews and lower adoption and acceptance rates.
* In addition to this location-based information which is rendered by the GPS feature of an android phone can easily be manipulated.
* There are chances of server crashing at times

# **9. Quality Criteria**

• Effectiveness & reliability:

The app/website must be accurate and must serve all its purposes without any unpredictable events. Random crashes, bugs and slow performance of the app/website should be taken care of.

• Efficiency:

The project should offer value for money and should aim to use the least costly resources allowed in order to achieve the desired results.

• Aesthetic Interface: A neat, presentable and easy on the eye GUI is very important. The users must not find the app/website convoluted to use. Clear communication is the working premise of good UI design. The interface should be clear, consistent, simple and capable of providing feedback.

# **10. Work packages**

The various subprocesses involved in the product are:

* Android and web backend: The backend highlights the places in the state of Karnataka which can be visited in a district-wise manner. The details of these places, such as the timings and the cost (or the approximate cost of places where the exact cost is not known) is also mentioned. To help visitors during their travel, places such as hospitals, pharmacies and ATM's must also be identified. The back end is also responsible for performing the necessary calculations - providing the optimal path, suggesting the nearest places in case of emergency.
* Android and webpage front end: The front end deals with presenting this information to the user in a friendly and presentable manner.
* ChatBot: To make the android app more interactive, we are incorporating a ChatBot into it which will give recommendations and suggestions to the the users.

# **11. Budget and Schedule**

|  |  |
| --- | --- |
| Date | Deliverable |
| 12th Jan 2016 | Introduction |
| 17th Jan 2016 | Project Description |
| 20th Jan 2016 | Group Formation(work breakdown w.r.t. Website, App & ChatBot) |
| 23rd Jan 2016 | Project Research |
| 25th Jan 2016 | Generation Of Feasibility Report |
| 02nd Feb 2016 | Data extraction and Visualisation |
| 13th Feb 2016 | Build a Project Plan |
| 21st Feb 2016 | Project Development initiated by all the groups |
| 28th Feb 2016 | Create SRS document. |
| 05th Mar 2016 | Optimal Path Calculation Completion. |
| 15th Mar 2016 | Get indicators for the respective destinations |
| 27th Mar 2016 | Front End Design(Website and App) |
| 02nd April 2016 | Incorporate ChatBot |
| 08th April 2016 | Testing |
| 18th April 2016 | Final Documentation |
| 22nd April 2016 | Project Presentation |

# **12. Delivery means:**

We intend to create a website which provides some of the services of the app. Since anyone with an Internet connection can access our website, the delivery means for the website is simple and easily achieved.

As our app targets tourists, there is an enormous market for it by mobile users. We intend to tap this large potential created by mobile users by releasing the app on Google Play Store. Users who intend to use the services of the app can download it easily from Play Store and avail its services. Thus by releasing the app on Play Store, we intend to deliver the product to the users such that they can access the product in an easy and hassle-free way.