Sri Lanka Institute of Information Technology

E-Road Management System

E-Destination Management System

Project proposal – CDAP 2011
Project ID: P2011-072

Submitted by:

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Submitted to:

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Date of submission

1. Abstract

As modern societies move toward fast growing and generalized World and more governments enact laws to protect each and every individual, the management and development of roads reach the higher place with the advancement of Information Technology in this World; the road management should take advantage to upgrade their management techniques. In addition, the mobile nature of today's mobile administration requires immediate information access and total flexibility. This technology comes through as the optimal portable solution for information access, management and improved communication, while providing the strongest security measures in the market today.

Clients should be allowed to access the system anytime, anywhere and through mobile or through their personal computers. Administrator should be able to keep update the system through sending sms to the system or by accessing to the system through the internet or update through internet access able cell phones. Anyone should be able to share resources and exchange ideas through the internet.

The motivation for this research is to solve the traffic, road block's, accident's, inform the Client about the pre-planned road blocks from the government, statistical graph generations, place descriptions and provide better transport services to the Client.

A system and method for real time vehicle guidance by Central Traffic Control Unit are presented.

The proposed E-Road Management System includes a unit equipped with Individual Mobile Units (position determining system adapted to determine their present position) and communicatively linked to the E-Road Management System computer server.

The ERMS unit broadcasts the update traffic patterns in real time, thereby enabling the

Clients to dynamically calculate the desired optimal travel paths.

With regards to the above problems, our team comes across with the solution called **E-Road Management System.**

2. Table of contents

3. Literature Review

3.1 Description of the project

The deliverable product is referred to as **E-Road Management System (ERMS)**.A more enhanced system with lots of new features is proposed. The existing **ERMS** is also considered when designing the system as it already facilitates some of the administration process.

Thus the proposed system is going to be used in the environment as an integrated system, using the facilities provided by other existing systems as well.

3.2 Problem Specification

The typical users of the system are Travelers, Administrator of ERMS & Administration staffs.

There are number of operations that are to be supported through the proposed system. Some of them are indicate accidents, road blocks, traffic in Google map and a calendar it carries the pre-planned road blocks by the Government in addition to this the system will provide an alternative path to the Client by using the Google map by graphically.

The other problem which was brought to our attention was, how an Administrator update the system in a short predate of time, to this problem sms function is used. So it's sufficient to change the approach according to the current situation in the World.

3.3 Solution Outline

The vision of our project is to provide our client with an accurate and efficient system to solve the existing problem domain.

Automate their day-to-day functions by a web based system, and a mobile based web with more features such as each and every day relevant person can update the system by just login to their account through our website, and they can easily keep track of the details of roads through our proposed system. To make their existing website more user friendly, we decided to use Google map, send sms to update the system.

Our other introducing feature is auto generate graphs, this will help to get a brief idea about the past in road vs. traffics time, road vs. no of vehicles uses a particular road, accidents per year and population vs. vehicles. This is more helpful to the government to take the decisions and other to get some idea. Also we are going to introduce a **simulator**. By using this simulator we can get what will happened in the future when no of vehicles increase, when population increase and when road conditions change what will happen. We think this is little challenge for us.

Hence satisfying all the requirements specified the project is going towards the goal of developing a reliable and easy to use tool for the ERMS.

3.4 Key Benefits

The new system is going to radically change the way the Traffic control, transport services, as the will be input directly into the computer in this function.

This solution will also provide the following non quantifiable benefits

- Better relation with Clients.
- More accurate motorway history and information.
- Improved management information.
- Faster processing of staffs and services details.
- This solution will provide e-mail and internet facilities to all staffs of the ERMS.

Architecture Diagram

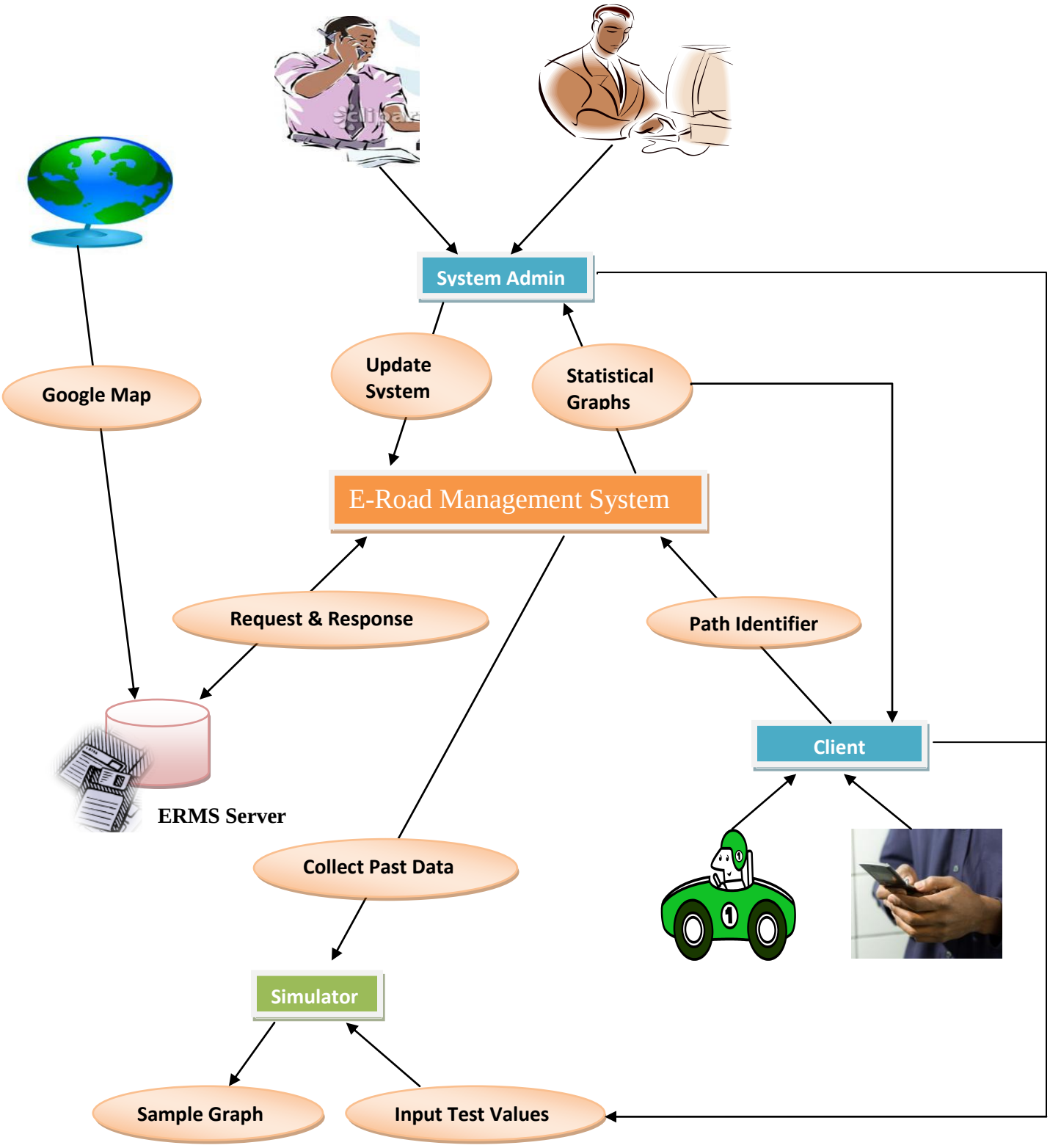


Figure -1-

4. Research Problem

Automotive technologies are gaining ground in modern road traffic-control systems, since the number of road vehicles and passengers is rapidly growing. There is a perpetual need for safety-critical traffic automation, and traffic engineering makes the dynamic or static analysis and the synthesis of automotive vehicle technologies possible. The main goal of engineering is the planning and management of traffic systems.

The project supports the development of reliable and optimal control structures for urban traffic and for motorway systems. The intelligent and cooperative set-up of actuation and its linkage to the central control system is vital for avoiding traffic jams and accidents. Moreover, environmental costs (e.g. pollution) can be decreased.

One aspect of the project aims at developing a traffic control algorithm for future technology. The design of the traffic control system can be evaluated in two steps – synthesis and analysis. Several models and multiple control strategies exist, and engineers must decide between them using a priori knowledge of the real system.

Previously collected information can help to choose the appropriate model, parameters, measurement and control methodologies to create the optimal solution. In many cases, control-related variables are almost inaccessible for design unless estimation techniques are applied. In a situation like this, the approximation, computer-based estimation of the variables could be useful.

Traffic simulations can be classified in several ways, including the division between microscopic and macroscopic, and between continuous and discrete time approaches. The methodologies of static and dynamic analysis of traffic systems are known. Several state variables, derived from the description of the dynamic system, can be used for operational and planning aspects. A newly emerged area is demand estimation through microscopic traffic modeling.

The dynamic aspect of traffic simulation requires previously measured or estimated volumes of traffic. Since the measurement of certain variables in the dynamic description is rather costly, one tries to estimate them. For instance, the observation of constantly varying turning rates at a simple intersection is fairly costly. However, the number of turning vehicles could be applied to traffic light harmonization, or generally speaking to traffic light control.

5. Objective

The E-Road Management System (E-RMS), implemented by us would have both specific and general objectives. Those objectives are mentioned below.

- The attention is mainly focus on the reducing the traffic, to meet all requirements our system provide some services to our Client such as,
  - ✓ Providing best path to the Motorist with the help of Google Map. After Motorist's indicating where they want to go it may show the entire best path avoiding traffic and road blocks.
  - ✓ In real time if any road or two end points jammed in traffic, in a short amount of time it will be updated in the system. After that the system will automatically set a best path between two end points in Google Map.
  - ✓ If any accident happens, after the authorize person update the system. The system automatically looks for nearby Hospitals, Police Stations and send emergency alerts (using auto generated SMS & mails). And direct them to the point. All this happen in a short amount of time.
  - ✓ A calendar is provided in our system, using that calendar Clients can get to know about the pre-planned road blocks and the alternative paths.
- Transport services plays a huge role in a growth of a Country and tourism provides is the major income in our Country to get more income, we have to provide more and more services. To cover those two requirement our system provides following ideas,
  - ✓ Client can search a place (e.g. Colombo) and in on enter, the system will provide with pointing the place in Google Map

and pointing all important locations in that place just like Hotels, Schools, Hospitals, Airport, Railway Station, Police Station.

- ✓ Buses, bus routes and distance also shown in the Google Map when Client searching for a place.
- ✓ Hotels, Hospitals, Railways, Airports, etc. are provided from an authorized web page (profile) there they can update their services and can provide services to our Client such as online reservation. After Client Search the place in Google Map and click on it Clients can view this page or profile.

❖ Mobile accessibility,

- ✓ Using a mobile phone also Clients can get to know or identifies best path.
- ✓ Client needs the system will provide alternative paths as well, such as trains and flight services. After having a look whether our Client like to reserve tickets they can reserve tickets through our system.

❖ The best idea to plan the future is get to know the past, So to get to know about the past and develop todays motor ways our system provide features such as,

- ✓ Auto generated statistical graphs between population, accidents, vehicles and more.
- ✓ Simulator, this is use to get to know how it will look like if any change happens in population, vehicles, etc. When the Client input some values in any of those the following outcome will arrives by studying the past stored data in the system.

6. Methodology

E-Destination Management System going to play roll of road traffic, transport service, guiding the easiest path or alternative path for user and tourist.

When the tourist search a place our system going to provide a place which the client actually go to, And it will pointing the place of the name and other important places. This will easy to identify the places by the users. When they click on the particular place it will show all about the place with important details as well.

Other important thing is transport services, when the tourist needs a transport it will take over a big role and guide tourist which place they are to be. This means transport services is going to be a user friendly for tourist and the clients, and this services are very helpful to all kind of users.

If the tourists select a place then that will played as audio voice and image format it'll appear. This will most help to tourist to get a clear idea.

Other alternative solution is bus root suggestions it will more helpful for tourist which means bus roots shown in Google map when a client searching for a place and accurate distance where tourist stand.

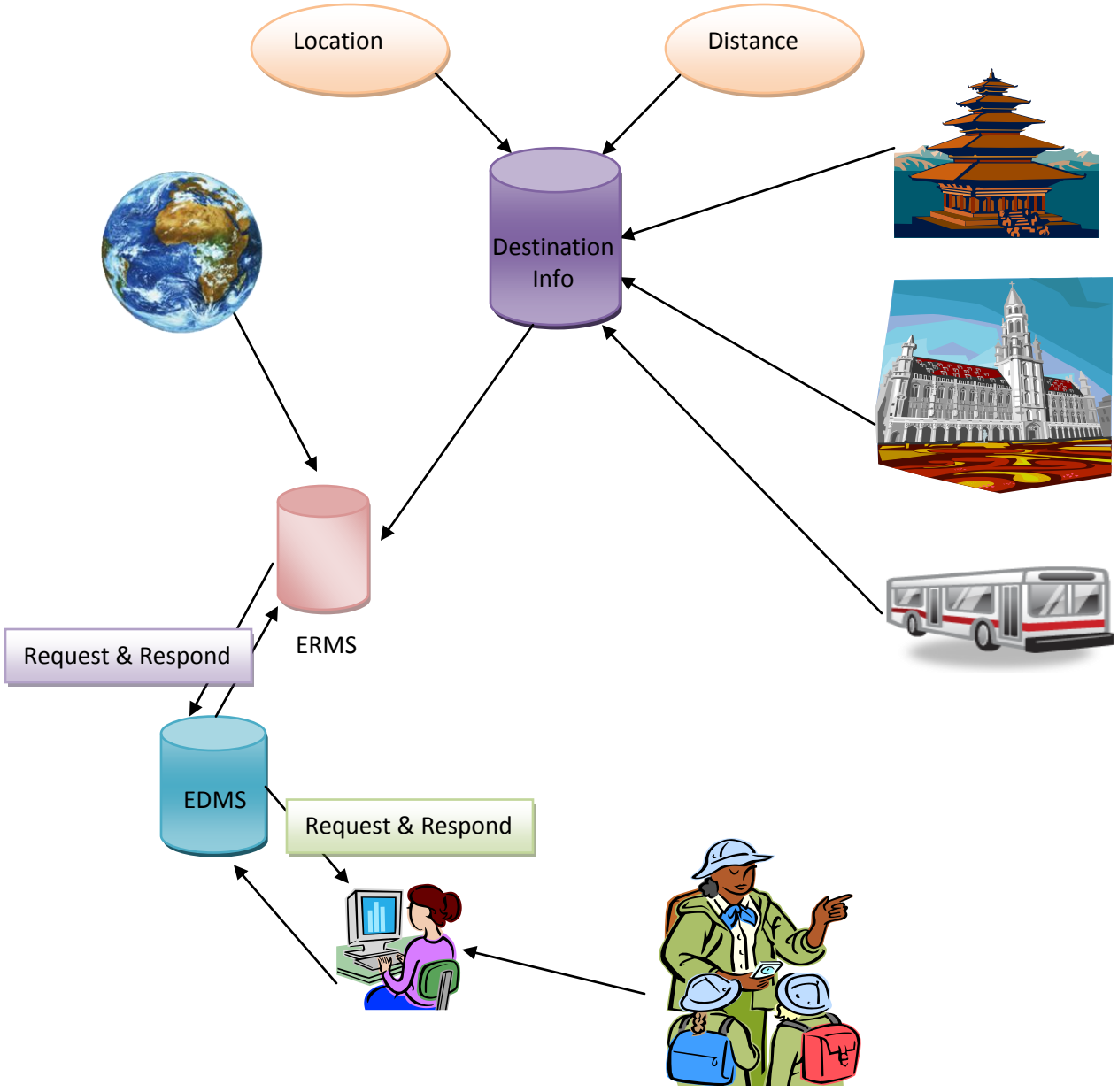
It majorly users of the system are tourist and some other Clients. This will be controlled and guide by Admin of ERMS.

There are number of services that are to be through the **E-Destination Management System**. Some of them are indicate tourist guide, road blocks, traffic in Google map and root which can easy to ride in short while, an alternative path to the Client by using the Google place map.

The main and very useful part is destination for tourist or other user. This is going cover most of the tourist needs. That's means when the tourist clicks on the place that will show the actual place and some other important places. E.g.: Hotels, temple, Tourist spots.

This will very useful for tourist when they visit a particular place they can identify the hotels and important places with description.

Ultimately the tourist can get the correct location and easiest way for his/her destination in an effective manner within a short time and more accurate way. Thus it should need a global system by getting the information of all locations in a defined area for the client.



Information Gathering Methodology

To expand a highly user friendly correct and efficient of destination system, I would need to know what are the functionalities required by the users of this system and how the manual procedure of identifying easy way and tourist actual need. It is important to classify what are the problems about identifying places by clicking and how I can work out those problems using this system.

To add to the accuracy of solution I need the best probable methods to implement the system. In order to I need gather information about Road Destination management systems. Comparing those existing systems would help me to identify the possible methodologies to accomplish face gratitude.

Information could be gathered in various ways such as

- **Existing systems**: - By revising the existing systems, I able to find an idea about the destination management tasks and Recovery which are used by the existing system. I preserve identify what technique can be adapted in to the particular assignment. Also I can search out an idea about which features to be included in at this point by studying the compensation and the drawbacks of existing systems.
- **Research observations**: - Researches about this road destination management system are still carried out by researchers all over the world. I would be analyzing those researches and articles to adapt most excellent practices and techniques for this feature.
- **Online-based Resources**: - This is basically based on Google map, mobile application processing, globalization network and web based programming etc. Consequently online materials such as tutorials, lectures, web articles, sample coding and e-books, mobile applications will be valuable to draw together comprehension and experience.
- **volume and article** :- Additional I preserve go-through books and articles regarding the E-Road Management regions considered necessary for this particular task

3.3 **Design**

We have planned to develop the system in a way that it can cater the needs of each individual who is going to be the user of the system. Each identified solution is mapped and will be focused when it is developed.

3.3 *Implementation Methodology*

The final objective is to build up a web based system which will smooth the progress of the users to search destination and tourist places by Google-map which will provide more accurate results competently.

Consequently the system will be modularized and each module will handle their tasks. In order to implement this modules and the final system I will consider about all .

This includes all the necessary actions and arrangements that we should take to the tourist. Therefore, we can act efficiently during the path and transport service easily.

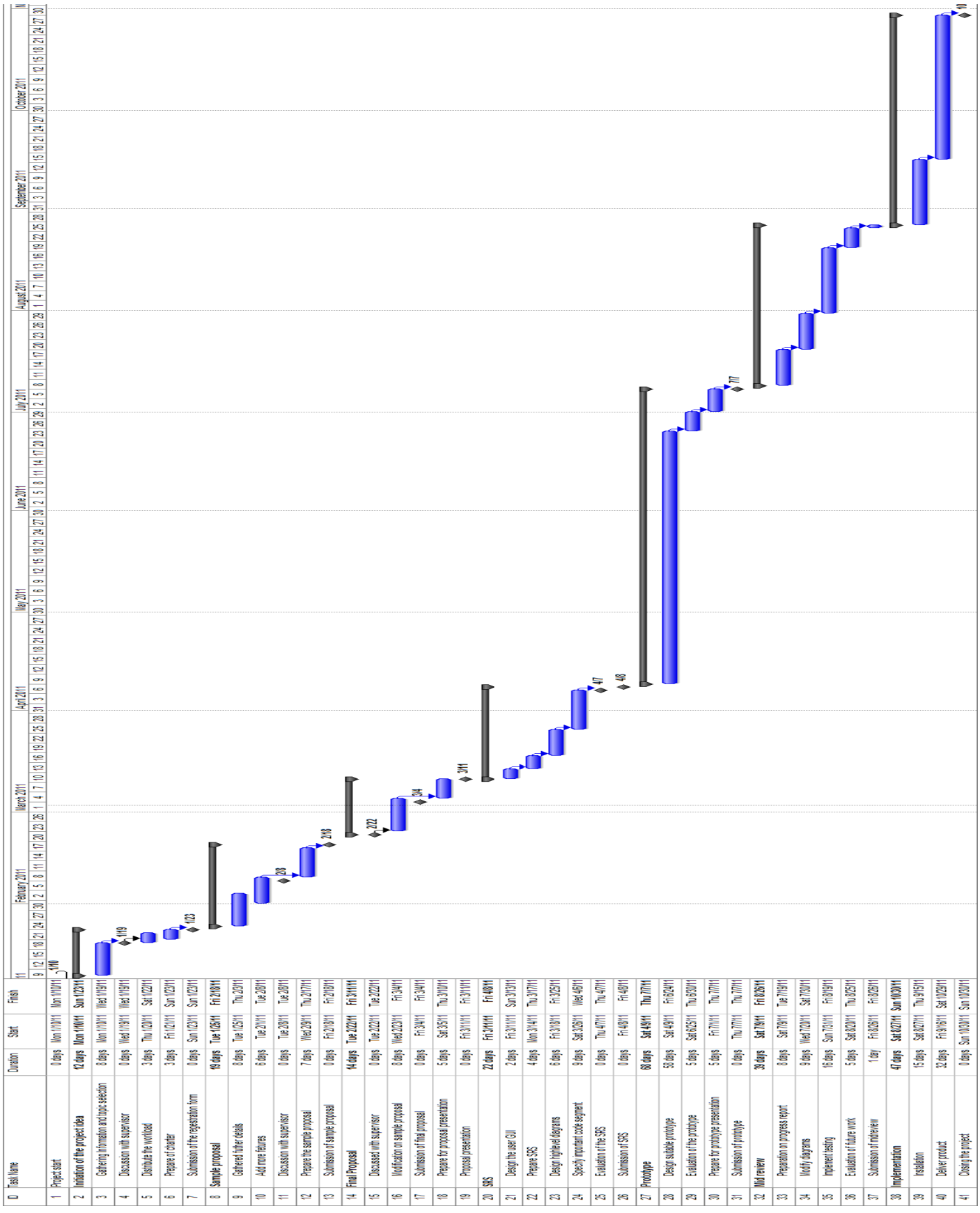
Under this issue it contains lot of spot and covering for the map-based details management such as hotels and some other most important places with road distances.

- Map based Management of tourist popular places

The system could be monitoring the entire best place for tourist or other user and provides an accurate accommodation for them. They can choose when the click on the specific places. This helps to be prepared for the new comers at any time and to take the actions fast as possible when the tourist came to the place.

To implement this we have planned to use a Sri Lankan map like as it is in Google map. In the map there will be functionalities to dynamically mark the existing places and the bus roots with transports.

For example if a user clicks on particular Place in the map, it shows the details about the Place: Specialty, distance and etc. This information can be then setup, edited or deleted by the user according to their needs.



ID	Task Name	Duration	Start	Finish
1	Project start	0 days	Mon 1/10/11	Mon 1/10/11
2	Initiation of the project idea	12 days	Mon 1/10/11	Sun 1/23/11
3	Gathering information and topic selection	8 days	Mon 1/10/11	Wed 1/19/11
4	Discussion with supervisor	0 days	Wed 1/19/11	Wed 1/19/11
5	Distribute the workload	3 days	Thu 1/20/11	Sat 1/22/11
6	Prepare of charter	3 days	Fri 1/21/11	Sun 1/23/11
7	Submission of the registration form	0 days	Sun 1/23/11	Sun 1/23/11
8	Sample proposal	19 days	Tue 1/25/11	Fri 2/18/11
9	Gathered other details	8 days	Tue 1/25/11	Thu 2/3/11
10	Add more fetures	6 days	Tue 2/1/11	Tue 2/8/11
11	Discussion with supervisor	0 days	Tue 2/8/11	Tue 2/8/11
12	Prepare the sample proposal	7 days	Wed 2/9/11	Thu 2/17/11
13	Submission of sample proposal	0 days	Fri 2/18/11	Fri 2/18/11
14	Final Proposal	14 days	Tue 2/22/11	Fri 3/11/11
15	Discussed with supervisor	0 days	Tue 2/22/11	Tue 2/22/11
16	Modification on sample proposal	8 days	Wed 2/23/11	Fri 3/4/11
17	Submission of final proposal	0 days	Fri 3/4/11	Fri 3/4/11
18	Prepare for proposal presentation	5 days	Sat 3/5/11	Thu 3/10/11
19	Proposal presentation	0 days	Fri 3/11/11	Fri 3/11/11
20	SRS	22 days	Fri 3/11/11	Fri 4/8/11
21	Design the user GUI	2 days	Fri 3/11/11	Sun 3/13/11
22	Prepare SRS	4 days	Mon 3/14/11	Thu 3/17/11
23	Design Inderiveal diagrams	6 days	Fri 3/18/11	Fri 3/25/11
24	Specify important code segment	9 days	Sat 3/26/11	Wed 4/6/11
25	Evaluation of the SRS	0 days	Thu 4/7/11	Thu 4/7/11
26	Submission of SRS	0 days	Fri 4/8/11	Fri 4/8/11
27	Prototype	66 days	Sat 4/9/11	Thu 7/7/11
28	Design suitable prototype	53 days	Sat 4/9/11	Fri 6/24/11
29	Evaluation of the prototype	5 days	Sat 6/25/11	Thu 6/30/11
30	Prepare for prototype presentation	5 days	Fri 7/1/11	Thu 7/7/11
31	Submission of prototype	0 days	Thu 7/7/11	Thu 7/7/11
32	Mild reviewv	30 days	Sat 7/9/11	Fri 8/26/11
33	Preparation on progress report	8 days	Sat 7/9/11	Tue 7/19/11
34	Modify diagrams	9 days	Wed 7/20/11	Sat 7/30/11
35	Implement testing	16 days	Sun 7/31/11	Fri 8/19/11
36	Evaluation of failure work	5 days	Sat 8/20/11	Thu 8/25/11
37	Submission of mitreview	1 day	Fri 8/26/11	Fri 8/26/11
38	Implementation	47 days	Sat 9/27/11	Sun 11/13/11
39	Installation	15 days	Sat 9/27/11	Thu 10/15/11
40	Deliver product	32 days	Fri 10/14/11	Sat 11/26/11
41	Closing the project	0 days	Sun 11/13/11	Sun 11/13/11

7. Description of Personal and Facilities

Group Members	Module Name	Description
P.Premje DIT/08/C1/0215	E-Destination Management Service	-DestinationManagementService. -Audio tracker.
R.Darshitha DIT/08/C1/0195	E-Mobile Tracker	-Mobile access to the system.
Y.Tharangini DIT/08/M3/1604	E-Statistical Analyzer	-AnalyticalSimulator. -Statistical Graphs.
V.Thivaharan DIT/08/C1/0235	E-Path Identifier	-Traffic Controller

Group Members	Roles	Resources
P.Premje	Feasibility study Requirement Gathering Requirement Analysis Design Coding Testing Documentation	• Microsoft SQL Server 2008 • WinA&D • Rational Rose • Visual Studio 2010 • Flash • Photoshop
R.Darshitha	Feasibility study Requirement Gathering Requirement Analysis Design Coding Testing Documentation	• Microsoft SQL Server 2008 • WinA&D • Rational Rose • Photoshop • Visual Studio 2010

Y.Tharangini	Feasibility study Requirement Gathering Requirement Analysis Design Coding Testing Documentation	• Microsoft SQL Server 2008 • WinA&D • Rational Rose • Photoshop • Visual Studio 2010
V.Thivaharan	Feasibility study Requirement Gathering Requirement Analysis Design Coding Testing Documentation	• Microsoft SQL Server 2008 • WinA&D • Rational Rose • Visual Studio 2010 • Flash • Photoshop

8. Budget with Budget Justification

Description	**Amount Rs.**
8.1 Software Expenses	
Microsoft SQL server 2008	8500/=
Rational rose	9000/=
Visual Studio2010	37,500/=
Photoshop-CS3	5700/=
Coral Draw	10,000/=
Flash Professional-CS3	10,000/=
MS-Office	13,700/=
Total Software Expense	**94400.00**
Total Employee Salary	**2,70,000.00**

8.2 Other Expenses

Printouts	2000/=
Photocopies	1000/=
Traveling expenses	1000/=
Internet browsing	4000/=
Stationery	1000/=
Transport expense	5000/=
Total other expenses	**14000.00**
Domain Server	6000/=
Total Expenses	**20000.00**

9. References

10.Appendixes