Software Requirements Specification

for

Vehicle Monitoring And Routing System

Version 1.0

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1. Introduction

1.1 Purpose

- The Software Requirements Specification (SRS) will provide a detailed description of the requirements for the Vehicle Monitoring and Routing System (VMARS).
- The purpose of the document is to collect and analyze all assorted ideas that have come up to define the system, its requirements with respect to the need of the consumer.
- This document describes the project's target and its user interface, hardware and software requirements
- This project provides the users a safe and secure feeling for their loved ones and gives them continuous updates about them.
- The users can view the exact positions of the people,can put the speed of their vehicle under scrutiny,can get the alerts on the mobile phone if accident occurs.

1.2 Product Scope

- User login Module
- Finding Shortest Route Module
- Location monitoring Module
- Speed Monitoring
- Alerts in Case of Accidents

1.3 References

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2. Overall Description

2.1 Product Perspective

- We state that this product is a follow-on member of a product family, a replacement for certain existing systems, or a new, self-contained product.
- The SRS defines a component of Vehicle Monitoring and Routing System, relate the requirements of this system to the functionality of this software and identify interfaces between the two.
- A simple diagram that shows the major components of the overall system, subsystem interconnections, and external interfaces can be helpful. Our main perspective is to develop a product that attracts users to have a satisfaction of safety of their loved ones while they are travelling as well as track shipment of large orders.

2.2 Product Functions

- Registration – For any monitoring purpose, the registration of the user is a must.
- Login – Login is needed for every user which adds to his own privacy.
- Location & Speed-The current location & speed of the Vehicle will be provided to the vehicle admin on the server side.
- Route-The optimal Route will be shown to the user from a given source to a given destination.
- SMS Alerts-An SMS Alert will be sent to the vehicle admin with the location of the vehicle in case the product detects an accident.

2.3 User Classes and Characteristics

a) For Users:
    - A secure session would be maintained and a user name and password would be allocated for every user.
    - User will be able to see the location and they will have to monitor the speed of the vehicle and if the vehicle's speed goes above a predetermined limit for that road, he will be notified about it and will be advised to slow down because safety should be the first preference whether it includes safety of people or goods supply.

- User can see the shortest Route so that he can take that route and reach to the destination as early as possible.
- If any Accident takes place the notification will be sent to the number fed in the system.
- Users won't be able to make changes to the system and will be questioned by the vehicle admin if they take a detour or deviate from the path shown by the product.

b) For Administrators:

- An administrator has more privileges than regular user.
- Main functions of an administrator will be the management and updation of users' information, location, routes.
- Administrators can view, modify and delete the personal information and travelling information of users if necessary.
- The product owners can ping the vehicle admin anytime for asking about the whereabouts of the vehicle he is supposed to track and monitor.

2.4 Operating Environment

- On the server side, the software works on windows (vista or higher), Ubuntu (all versions).

- The user will have a mobile phone with Android OS and GPS facility.

2.5 Design and Implementation Constraints

- Must be coded efficiently enough to run well on provided server hardware.
- Minimum memory required for software: 512MB of RAM.
- The database will be created and maintained in a way that makes it of reasonable and manageable size.
- OpenGTS Framework, JSP,Java,Sql will be used for making the software; all their files should be pre-installed on the server computer.

2.6 User Documentation

- User Manual will be provided with Frequently Asked Questions(FAQ's)

2.7 Assumptions and Dependencies

ASSUMPTION:

- The time taken for a requested response may vary depending on the location and network strength.
- This response time may increase if the network is slow or there is a connection error.

3. External Interface Requirements

3.1 User Interfaces

- A Login page for the Vehicle Admin.
- Map with Location, Speed and Route shown on the next page.

Hardware Interfaces

The software can be used on a computer which has the following specifications:
Processor: Intel i3 dual core processor and above.
Hard disk : 50 GB.
RAM: 512 MB or more
The System must run over the internet, all the hardware shall require to connect internet will be hardware interface for the system. As for e.g. Modem, WAN – LAN, Ethernet Cross-Cable.

3.2 Software Interfaces

This software package is developed using java as the front end. Microsoft SQL server as the back end to store the database.
Operating System: Windows 7 , Windows 8, Windows 8.1 and Ubuntu.
Languages: JSP , Java .
Database: MS SQL server.

3.3 Communications Interfaces

- It will be connected to the internet, through a GSM device using GPRS.
- The users will be asked for their contact numbers and will be notified about recommendations for the route etc. on their contact numbers.
- GSM messaging Service will be used for communication in case of emergency like an accident.

4. System Features

4.1 Login (High)

- In login screen, the authorized users will login to the system using his/her unique username and password

4.2 Accident Alerts:-

- In case of Accidents SMS will be sent on urgent basis to the Vehicle Admin with the current location of the vehicle. Then the vehicle admin is responsible to find out the cause by contacting the driver and taking appropriate actions.

4.3 Routing:-

- Shortest path will be provided to the user on request.
- The shortest path provided will be from a particular source to destination.

4.4 Speed Monitoring

- Speed of the Vehicle is monitored
- If the speed of a vehicle exceeds a permissible limit, he will be alerted to slow down.

4.5 Location:-

- The current location of the vehicle will be shown to the user.

- The location of the vehicle will be monitored by GPS device.
- The updates of location will be sent at fixed interval of time.

4.6 Feedback

- The user is provided the freedom of expression by giving them the flexibility of suggesting changes in the system but before or after the d-day to the vehicle admin.
- The user is also provided power of rating the service which would help other users.

4.7 Database Storage

Database is the storage device, in which the application information will be stored in database. The information is normalized in the form of tables. The main entities of the storage are mentioned below:-

- User name
- User Contact details
- Current Location
- Route taken

5. Other Nonfunctional Requirements

5.1 Performance Requirements

It is expected that the database will perform functionally all requirements specified.

- The performance of the system should be fast and accurate.
- Responses to view information must not take more than 5 seconds to load on the screen.

5.2 Safety Requirements

- A backup of the database must be taken from time to time daily ensuring timely recovery in case of any severe loss or a power cut.
- Also information of the users must be stored in the database with proper authorization.

5.3 Security Requirements

- The database must follow a standard authorization so as to prevent any misusage of the private information.
- Users need not be aware of other users' account information.
- Every time the user enters a wrong password while trying to log in, he/she will be notified about the same on the phone no. provided.

5.4 Software Quality Attributes

- **Adaptability:**
  This software is adaptable by any Vehicle.
- **Availability-**
  The availability of the software is easy and for everyone.
- **Correctness-**
  The results of the function are pure and accurate.
- **Flexibility-**
  The operation may be flexible and reports can be presented in many ways.
- **Maintainability-**
  After the deployment of the project if any error occurs then it can be easily maintain by the software developer.
- **Portability-**
  The software can be deployed at any machine.
- **Reliability-**
  The performance of the software is better which will increase the reliability of the software.
- **Reusability-**
  The data and record that are saved in the database can be reused if needed.
- **Robustness-**
  If there is any error in any window or module then it does not affect the remaining part of the software.
- **Testability-**
  The software will be tested at every site. Alpha Testing Beta Testing Acceptance Testing
- **Usability-**
  To perform any operations and to understand the functioning of software is very easy.
- **Productivity-**

This software will produce every desired result with accurately.

- **Timelines-**
  The time limit is very important. It will save much time and provide fast accessing.
- **Cost effective-**
  This software is less in cost and bearable by any Organization.

5.5 Business Rules

- The developer can modify or update the system and its features.
- The client will be able to modify the non-technical part such as adding checkpoints etc. But updating the database, changing authorization etc. will be entirely upon the developer.
- The user will be only able to view and request for information for the vehicle.

6. Other Requirements

- Other requirements include a large memory for database storage, a faster processor for faster loading.
- Rights for Monitoring of vehicle should be taken care of.

Appendix A: Glossary

A: admin, abbreviation, acronym, assumptions
B: business rules
C: class
D: dependencies
F: functional requirement
G: GUI
M: member
N: non-functional requirement
O: operating environment
S: safety, security, system features
U: user class and characteristics
The following are the list of conventions and acronyms used in this document:-

1. SQL: - structured query language; used to retrieve information from a database
2. JSP:-Java Servlet Page.