**SMART TRAFFIC MANAGEMENT SYSTEM**

**Software Requirement Specification**

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# Document Approval

The following Software Requirements Specification has been accepted and approved by the following:

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| **Date** | **Name of the Guide** | **Project Title** | **Signature of the Guide** |
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***1.0 . Introduction***

Our intelligent Traffic Expert Solution for road traffic control System offers the ability to acquire real-time traffic information, .Traffic Expert enables operators to perform real-time data analysis on the information gathered. Traffic management measures are aimed at improving the safety and flow of traffic utilizing traffic capacity more effectively.

* 1. ***Purpose***

Smart Traffic Management is mainly improvised for looking after the Set off data of a region to manage the Traffic along that area and implement various useful technologies which are been required by various persons like vehicle owners, pedestrians, police officers etc….Mainly the purpose of Smart traffic management system is to give the details which can be used and they can be implemented in their daily life. The problems which have been occurred at their presence can be solved by this Smart Traffic.

* 1. ***scope***

Smart Traffic is a Video Analytics Module and provides **Traffic Incident Detection**, and real time **Traffic Flow Metrics** & statistical analysis. Smart **Traffic Monitoring** can integrate with third party **traffic management** and **smart roadway systems** and hosts a feature rich product scope itself. The system can be used for incident detection or for statistical metrics of a roadway.

*1.3 Glossary*

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Traffic police | He co-insides with the remaining users to upgrade the complaints and implement it. |
| Vehicle owners | They use the traffic data and implement when they require.If they have any compliant they can provide. |
| Admin | A Person who is designated the whole dataset which are require by the remaining users and maintain the whole project in a reasonable manner. |
| Pedestrains | A Person(s) who uses the datasets provide by the admin and implement the ideas which he had . |
|  |  |
|  |  |

## 1.4. References

1. Anderson, J. E. 2003. “Control of Personal Rapid Transit Systems.” *Elektronikk* , Vol. 99, No. 1, 108-116

2. Bretherton, D., Bowen, G., Wood, K. 2002. ‘Effective urban traffic management and control – SCOOT VERSION 4.4’. Proceedings of *European Transport* *Conference Proceedings* Cambridge.

3. Christos Xithalis, 2008, PRT Hermes

**1.5. Overview:**

The remainder of this document is two chapters, the first providing a full description of the project for the Smart Management of the Traffic. It lists all the functions performed by the system. The final chapter concerns details of each of the system functions and actions in full for the software developers’ assistance.

***1.6. Definitions, Acronyms, and Abbreviations:***

* **HTML (Hyper Text Markup Language):** It is used to create static web pages.
* **JSP (Java Server Pages):** It is used to create dynamic web content.
* **J2EE (Java 2 Enterprise Edition)**: It is a programming platform, belonging to

the Java platform, which is used for developing and running distributed java

Applications.

* **DB2 (IBM Database 2):** It is a database management system that provides a
* Flexible and efficient database platform to raise a strong "on demand" business
* **HTTP (Hyper Text Transfer Protocol):** It is a transaction oriented client/ server Protocol between a web browser and a web server.
* **Database:** Collection of information in a structured form.
* **Login ID:** A user identification number to enter the system.
* **Password:**  A word that enables one to gain admission into the system.
* **XML (Extensible Markup Language):** It is a markup language that was

designed to transport and store data.

* **Ajax (Asynchronous Java Script and XML):** It is a technique used in java script to create dynamic web pages.
* ORACLE: It is software used in to insert Tables.

***1.7 Technologies to be used:***

* **J2EE:** (Servlet, JSP, JAXP, Java Beans) Application architecture.
* **JAVA:** Application architecture.
* **DB2:** Database.
* **Ajax:** Asynchronous Java Script and XML.
* **XML:** Extension Markup Language.
* **WASCE:** (Web Sphere Application Server Community Edition) Web Server.
* **TSM (Admin):** Tivoli storage Manager Admin.
* **Soda:** For developing use case reports.
* **Local Language Translator:** For local language developing
* ORACLE For inserting Tables.

***2.0 Overall Description:***

2.1 System Environment



The Smart Traffic management System has three active actors one cooperating system. Mainly pedestrians who uses the dataset provide by the admin and give the complaints important suggestions which are under taken by the traffic police and admins.where as the vehicle owners too generate the same idea of the pedestrians .Traffic police maintains the information which are provided by the users(pedestrains,vehicle owners)and make into implementation.These are all settled by the admin of STM.

***2.2 Software Interface:***

* **Client :** Web Browser, Windows series
* **Web Server :** WASCE, Windows series
* **Data Base Server :** DB2,Windows series
* **Development End :** J2EE, Java, Oracle, XML, DB2, OS

(WINDOWS XP), Web Server.

***2.3 Communication Interface:***

* Client on Internet will be using HTTP/HTTPS protocol.
* Firewall security is required for securing the server.
* TCP/IP protocol is basic need for client side.

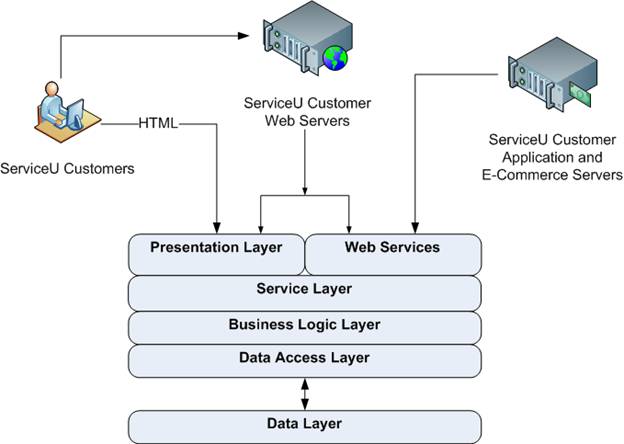
***2.4 User Characteristics:***

* Every user should be comfortable of working with computer and net browsing.
* Every user has to register with the STM.
* Every user should have their own login and password.
* Every users can issue the complaints.
* Every user must have basic knowledge of English too.

***2.5 Constraints:***

* GUI is only in English.
* This system is working for single server.
* Limited to HTTP/HTTPS.
* User should have basic knowledge of computer.

***2.6 Architecture Design:***



In Model 2 architecture, a controller handles the user request instead of another JSP.The controller is implemented as a Servlet. The following steps are executed when the user submits the request.

* The Controller Servlet handles the user’s request. (This means the hyperlink in the JSP should point to the controller servlet).
* The Controller Servlet then instantiates appropriate JavaBeans based on the request parameters (and optionally also based on session attributes).
* The Controller Servlet then by itself or through a controller helper communicates with the middle tier or directly to the database to fetch the required data.
* The Controller sets the resultant JavaBeans (either same or a new one) in one of the following contexts – request, session or application.
* The controller then dispatches the request to the next view based on the request URL.

The View uses the resultant JavaBeans from Step 4 to display data. Note that there is no presentation logic in the JSP. The sole function of the JSP in Model

Architecture is to display the data from the JavaBeans set in the request, session or application scopes.

***2.7 Use Case Model Description:***

A **use case diagram** in the Unified Modeling Language (UML) is a type of behavioral diagram defined by and created from a Use-case analysis. Its purpose is to present a graphical overview of the functionality provided by a system in terms of actors, their goals (represented as use cases), and any dependencies between those use cases.

The main purpose of a use case diagram is to show what system functions are performed for which actor. Roles of the actors in the system can be depicted.

Use Case diagrams are formally included in two modeling languages defined by the OMG: the Unified Modeling Language (UML) and the Systems Modeling Language (SysML).

A **use case analysis** is the most common technique used to identify the requirements of a system (normally associated with software/process design) and the information used to both define processes used and classes (which are a collection of actors and processes) which will be used both in the use case diagram and the overall use case in the development or redesign of a software system or program. The use case analysis is the foundation upon which the system will be built.

***USECASE DIAGRAM:***

****

***2.8 Class Diagram description:***

Class diagrams are widely used to describe the types of objects in a system and their relationships.  Class diagrams model class structure and contents using design elements such as classes, packages and objects. Class diagrams describe three different perspectives when designing a system, conceptual, specification, and implementation.  These perspectives become evident as the diagram is created and help solidify the design.  This example is only meant as an introduction to the UML and class diagrams. Classes are composed of three things: a name, attributes, and operations. Mainly in the class diagram the names include about the traffic management generation ideas which explain about the way how users admin and different systems connect through this. Now the attributes include explanation which should be implemented in the names. this could be shown in the form of operations. this can easily explain how the general project is going to implement the various operations .the below diagram represents the class diagram which gives the following road traffic management system information.

***classdiagram:*** 

***2.9 Sequence Diagram Description:.***

A **Sequence diagram** in Unified Modeling Language (UML) is a kind of interaction diagram that shows how processes operate with one another and in what order. It is a construct of a Message Sequence Chart.

Sequence diagrams are sometimes called event diagrams, event scenarios, and timing diagrams.

***Sequence Diagram***

Pedestrains

vehicle owners

Traffic police

Database

Authority

Registration

Registration Form

Compliant

Compliant issued

Login

Login form

Traffic Information

Sends signals

Updating

Information updated

***2.1.1. Activity diagram Description***

In activity diagram the object may be real or abstract in either case create a swim lane for each attribute imported object, firstly identify the precondition of initial state and post condition of final state.

Render the transaction that connect these actions and active states and state with sequential flows consider branching, forking and joining.

Activity diagram:

***3.0 Requirement Specification:***

***3.1 Non Functional Requirements:***

There are requirements that are not functional in nature. Specifically, these are the constraints the system must work within.

1. Secure access of confidential data (user’s details). SSL can be used.
2. 24 X 7 availability
3. Better component design to get better performance at peak time.
4. Flexible service based architecture will be highly desirable for future extension.

**3.2 Functional requirements:**

### 3.2.1. Login to STM

|  |  |
| --- | --- |
| **Use Case Name:** | Login to STM |
| **Priority** | Essential |
| **Trigger** | Menu selection |
| **Precondition** | The user should have a valid user id and password |
| **Basic Path** | 1. STM Web site contains login window for each user 2. User should provide a valid user id and password to access the STM web site |
| **Alternate Path** | N/A |
| **Post condition** | STM is on its home page |
| **Exception Path** | The may abandon the search at any time. |
| **Other** | N/A |

3.2.2 Registration of Pedestrains,vehicle owners,traffic police of STM:

|  |  |
| --- | --- |
| **Use Case Name:** | Registration to STM |
| **Priority** | Essential |
| **Trigger** | Menu selection |
| **Precondition** | The user (pedestrians,vehicle owners,traffic police)should provide a valid information. |
| **Basic Path** | 1. STM Web site contains Registration window for each users  2. User should provide a valid details to create account in the STM web site |
| **Alternate Path** | N/A |
| **Post condition** | STM is on its validation page of Admin. |
| **Exception Path** | The may abandon the search at any time. |
| **Other** | N/A |
| **Reference** | SRS 2.7 |

3.2.3 Compliant issues by Pedestrains,vehicle owners.

|  |  |
| --- | --- |
| **Use Case Name:** | Complaints issued |
| **Priority** | Essential |
| **Trigger** | Menu selection |
| **Precondition** | The user (vehicle owners,pedestrains) should have to provide valid information to traffic police through admin. |
| **Basic Path** | 1. STM Web site contains Compliant issued dialog box for every user |
| **Alternate Path** | N/A |
| **Post condition** | STM is a validation form for every user |
| **Exception Path** | The may abandon the search at any time. |
| **Other** | N/A |
| **Reference** | SRS 2.8 |

3.2.4Compliants under taken by traffic police,admin in STM

|  |  |
| --- | --- |
| **Use Case Name:** | Compliant uner taken by traffic police |
| **Priority** | Essential |
| **Trigger** | Menu selection |
| **Precondition** | The user (pedstrains,vehicle owners)can give compliant any time to traffic police. |
| **Basic Path** | 1. STM Web site contains Compliant issued dialog box for every user |
| **Alternate Path** | N/A |
| **Post condition** | STM is on its validation page of traffic police. |
| **Exception Path** | The may abandon the search at any time. |
| **Other** | N/A |
| **Reference** | SRS 2.9 |

***3.3 Specific Requirements:***

***Use Case Reports:***

*Use-Case-Model Survey for management system Smart traffic*

# Introduction

# Actors

**Users:**

Documentation: User plays a main role in the project. In users we have different types of users Traffic data which can he able to use and required login form for different users who can register for maintaining the data.

**Admin:**

Documentation: Admin can manage all users and maintain their data securely1He can update the details and day to day updating can be done by admin.

## System:

Documentation: System can give the suggestions to the users during their discussion in discussion forum. He /She will give the traffic details. For participating in discussion forum he/she has to be registered.

**Server:**

Documentation: Smart Traffic Management plays a important role in maintaining data of road Traffic of a region which is helpful to users.

**Ask queries:**

Documentation: User can ask any questions with the system and server during their chat

3 Contact systems:

Documentation: With the information provided by administrator user can directly contact with system or he can contact during their chat.

**Help user:**

Documentation: Smart Traffic Management System can help by creating awareness.

**Login:**

Documentation: User can enter into his account only by login.

## Logout:

Documentation: User can exit from his account.

## Maintain all details:

Documentation: Administrator can maintain all backup data.

Participate in chat:

## Documentation: User can participate in chat with system and SERVER.

System can participate in chat with user and SERVER.

## Provide Traffic details:

Documentation: Admin has to provide the Traffic information to the user.

Respond Queries:

Documentation: System can respond to the queries asked by user.

## Signup:

## Documentation: For register their account user must be click on sign up

## Update latest developments:

Documentation: Day to day updating in improvements of operations can be provided by admin and they can be send to registered users every day

## View Queries:

Documentation: System can view the queries which are asked by user.

## View Response to Queries:

Documentation: User can view the response to their queries which are sent by system.

***View Updates:***

Documentation: User can view the updating provided by admin

***4. Supplementary Requirements:***

**5. Performance Requirements:**

System can withstand even though many no. of customers request the desired service. Access is given to any users

## 6. Safety Requirements:

By incorporating a robust and proven DB2 UDB into the system, reliable performance and integrity of data is ensured. There must be a power backup for server system. Since the product is of 24x7 availability there should be power backup for server which provides the information. Every day the data should be backup even when the operation of a user is not successful i.e., while performing the operation power failure occurs then data should be backup.

***7. Security Requirements:***

Sensitive data is protected from unwanted access by user’s appropriate technology and implementing strict user-access criteria. Facility of unique user number and Password in such a way that unauthorized user cannot log in. Operational rights for each user/terminal can be defined. Thus, a user can have access to specific terminals and specific options only

**3.4 Detailed functionl requirements:**

***Logical Database***

Tables:

1. Pedestrains (users)

|  |  |  |
| --- | --- | --- |
| **Attribute Name** | **Attribute Type** | **Attribute Size** |
| LastName | String | 30 |
| FirstName | varchar | 30 |
| MaidenName | varchar | 30 |
| Address1 | varchar | 50 |
| Address2# | varchar | 50 |
| City | varchar | 30 |
| State | varchar | 2 |
| Zip | Int | 6 |
| Year | Int | 4 |
| EmailAddress | String | 20 |
| ReceiveEmails | Boolean | 1 |
| Password | String | 10 |

***2. Vehicle owners:***

|  |  |  |
| --- | --- | --- |
| Attribute Name | Attribute Type | Attribute Size |
| FirstName | String | 30 |
| LastName | String | 30 |
| Address | String | 50 |
| City | String | 30 |
| State | String | 2 |
| Year | Int | 4 |
| EmailAddress | String | 20 |
| Vehicle Registration No | Varchar | 20 |
| Licence key | int | 10 |
| Vehicle No: | int | 10 |
| Password | String | 10 |

***3. Traffic Police***

|  |  |  |
| --- | --- | --- |
| Attribute Name | Attribute Type | Attribute Size |
| FirstName | varchar | 30 |
| LastName | varchar | 30 |
| City | varchar | 30 |
| State | varchar | 10 |
| Station area | varchar | 10 |
| Email id | varchar | 20 |
| password | varchar | 20 |

***4. Admin***

|  |  |  |
| --- | --- | --- |
| Attribute Name | Attribute Type | Attribute Size |
| username | varchar | 30 |
| User id | varchar | 30 |
| Email Id | varchar | 30 |
| password | varchar | 10 |
| Re-enter password | varchar | 10 |

***References:***

* IEEE SRS format

Project specification requirement