

Used ~~PURPLE~~ SF

70

TEAM50IES

# Software Requirements Specification (SRS)

# of Actors: 7

7C

# of UCs: 9

9C

# of Functional Requirements: 9

# of Non Functional Requirements: 3

NP ① HIPPA  
② MVC

- 30

change according to BLUE SF

Version 2.0

Leave it at 2.0  
No Tables

No appendices  
Table  
Table

Actors

UC

VC Diagram  
VC Doc.

## Approvals Signature Block

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*The document in this file is adapted from the IEEE standards for Software Project Requirements Specifications, 830-1998, which conforms to the requirements of ISO standard 12207 Software Life Cycle Processes. Tailor as appropriate.*

*Items that are intended to stay in as part of your document are in **bold**; blue italic text is used for explanatory information that should be removed when the template is used.*

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## 1. INTRODUCTION

*The introduction of the SRS should provide an overview of the entire SRS.*  
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### 1.1 PURPOSE

- a) *TEAM5OIES will allow doctors and researchers around the world to share data and analysis about endovascular aneurism repair (EVAR) patients. Specifically the CT scans and the results of simulations ran on the scans to identify indicators of serious long term complications with the newer less invasive method versus the older more invasive method. This will allow doctors to recommend the older method when a patient is at risk for long term complications with the newer method*
- b) *The primary users of our application will be doctors/surgeons and researchers around the world*
- <Click Here to Insert Your Text>

### 1.2 SCOPE

- a) We will use ASP.NET MVC to produce the web application, MySQL for our DBMS, Word 2013 for our documentation and design documents, and IIS web server
- b) ASP.NET will allow us to create the user application so that users may interface with our database, MySQL will store our database and handle queries to it, Word 2013 can be used to generate documentation – including this Software Requirements Specification, and IIS will allow us to host the website
- c) Goals
- (a) There are 5 basic users – Doctor, Technician, Visitor, Administrator, and SuperAdministrator
  - (b) All users except visitors will have their own account on the site
  - (c) Doctors will be able to upload and download CT scan data to analyze it
- <Click Here to Insert Your Text>

### 1.3 DEFINITIONS, ACRONYMS, AND ABBREVIATIONS

*Provide the definitions of all terms, acronyms, and abbreviations required to properly interpret the SRS. This information may be provided by reference to one or more appendices in the SRS or by reference to documents.*  
<Click Here to Insert Your Text>

Term or Acronym	Definition
EVAR	Endovascular Aneurism Repair

Table x. Definitions and Acronyms

## 1.4 REFERENCES

- Provide a complete list of all documents referenced elsewhere in the SRS*
  - Identify each document by title, report number (if applicable), date, and publishing organization*
  - Specify the sources from which the references can be obtained.*
- This information can be provided by reference to an appendix or to another document.*  
<Click Here to Insert Your Text>

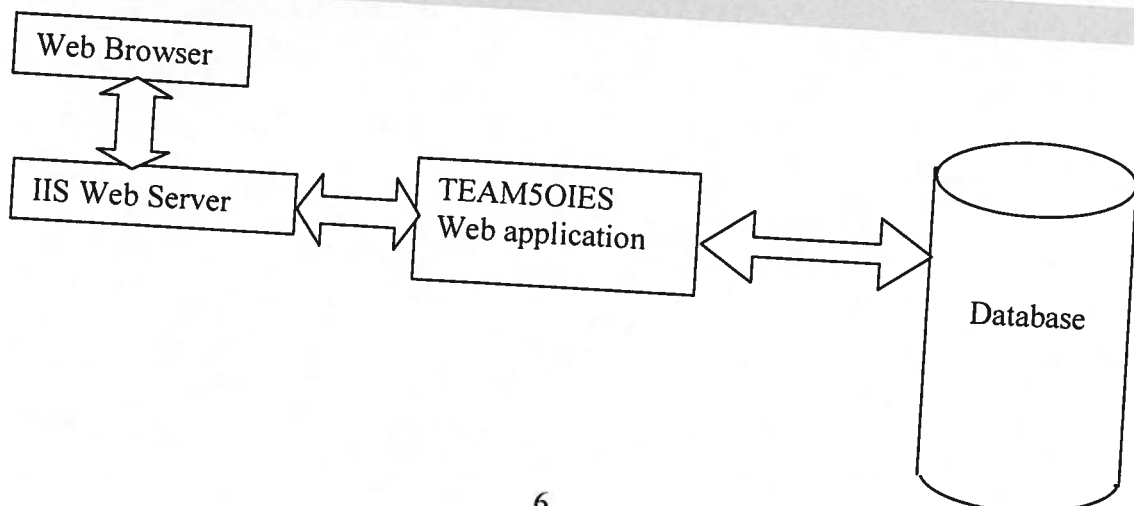
## 1.5 OVERVIEW

- ❖ *Existing System:*
    - ❖ *None*
  - ❖ *Proposed System:*
    - ❖ *Users can:*
      - *Access Customer Service*
      - *Upload Slice*
      - *Upload Metadata*
      - *View CT scans*
      - *Search the database*
      - *Produce a data file*
      - *Download CT scans*
      - *Download Metadata*
      - *View with Paraview*
- <Click Here to Insert Your Text>

## 2. OVERALL DESCRIPTION

*Describe background that affects the product and its requirements. This section does not state specific requirements. Instead, it provides a background for those requirements, which are defined in section 3, and makes them easier to understand.*  
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### 2.1 PRODUCT PERSPECTIVE



<Click Here to Insert Your Text>

### **2.1.1 System Interfaces**

*Client on Internet*

*Web Browser, Connects to IIS server*

*Web Server*

*IIS connects to web application*

*Data Base Server*

*MySQL connects to web application*

<Click Here to Insert Your Text>

### **2.1.2 User Interfaces**

*Specify:*

- a) *The logical characteristics of each interface between the software product and its users. This includes those configuration characteristics (e.g., required screen formats, page or window layouts, content of any reports or menus, or availability of programmable function keys) necessary to accomplish the software requirements.*
- b) *Describe how the interface will appear to the user. This may be a list of do's and don'ts on how the system will appear to the user. One example may be a requirement for the option of long or short error messages. Like all others, these requirements should be verifiable.*

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### **2.1.3 Hardware Interfaces**

*Specify the logical characteristics of each interface between the software product and the hardware components of the system. This includes configuration characteristics (number of ports, instruction sets., etc.). It also covers such matters as what devices are to be supported, how they are to be supported and protocols.*

*Server in PGH XXX?*

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### **2.1.4 Software Interfaces**

*Specify the use of other required software products and interfaces with other application systems. For each required software product, include complete name and version number. For each interface, describe the purpose of that interface software.*

*Client on Internet*

*Web Browser, Connects to IIS server*

*Web Server*

*IIS connects to web application*

*Data Base Server*

*MySQL connects to web application*

<Click Here to Insert Your Text>



### **2.1.5 Communications Interfaces**

*Specify the various interfaces to communications such as local network protocols, etc.*

*TCP/IP over the internet for the client browser to the web server*

*TCP/IP over intranet for the web application to connect to the database*

<Click Here to Insert Your Text>

### **2.1.6 Memory Constraints**

*Specify any applicable characteristics and limits on primary and secondary memory.*

*Must have a large amount of storage for CT scans*

*Must have enough memory to store at least one of these in ram*

<Click Here to Insert Your Text>

### **2.1.7 Operations**

*If appropriate, specify the normal and special operations required by the user such as:*

- a) The various modes of operations in the user organization;*
- b) Periods of interactive operations and periods of unattended operations;*
- c) Data processing support functions;*
- d) Backup and recovery operations.*

- *Access Customer Service*
- *Upload Slice*
- *Upload Metadata*
- *View CT scans*
- *Search the database*
- *Produce a data file*
- *Download CT scans*
- *Download Metadata*
- *View with Paraview*

<Click Here to Insert Your Text>

### **2.1.8 Site Adaptation Requirements**

*In this section, describe any requirements for modifications to the site or to the data at the site, in order to use the product.*

<Click Here to Insert Your Text>

## **2.2 PRODUCT FUNCTIONS**

*Provide a summary of the major functions that the software will perform. The functions should be organized in a way that makes the list of functions understandable to the customer or to anyone else reading the document for the first time. Textual or graphic methods can be used to show the different functions and their relationships. Such a diagram is not intended to show a design of a product but simply shows the logical relationships among variables.*

- *Access Customer Service*



- Upload Slice
- Upload Metadata
- View CT scans
- Search the database
- Produce a data file
- Download CT scans
- Download Metadata
- View with Paraview

<Click Here to Insert Your Text>

### **2.3 USER CHARACTERISTICS**

*Describe general characteristics of the intended users of the product including educational level, experience, and technical expertise. Do not state specific requirements but rather provide the reasons why certain specific requirements are later specified in section 3.*

*Primary users have Medical Degrees but may not necessarily be trained with technology. The system must be easy to use for people who may not have much training with computers.*

<Click Here to Insert Your Text>

### **2.4 CONSTRAINTS**

*Provide a general description of any other items that will limit the design and implementation options. These can include:*

HIPPA – requires us to ensure we do not store private patient data  
A lot of storage is required CT scans

<Click Here to Insert Your Text>

### **2.5 ASSUMPTIONS AND DEPENDENCIES**

*List each of the factors that affect the requirements stated in the SRS. These factors are not design constraints on the software but are, rather, any changes to them that can affect the requirements in the SRS. For example, an assumption might be that a specific operating system will be available on the hardware designated for the software product. IIS and ASP.NET require a windows server*

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### **2.6 APPORTIONING OF REQUIREMENTS**

*Identify requirements that may be delayed until future versions of the system.*

None

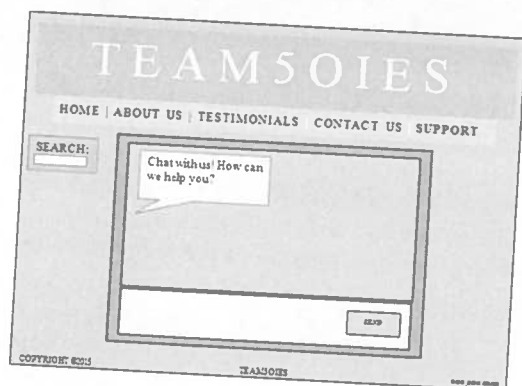
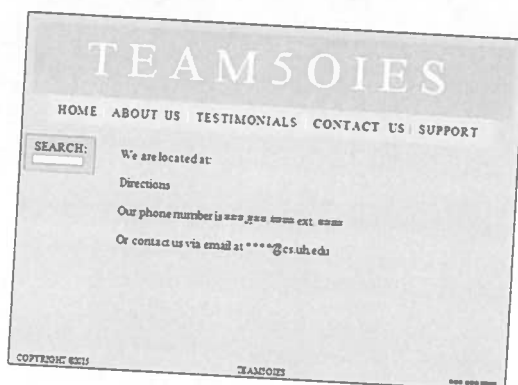
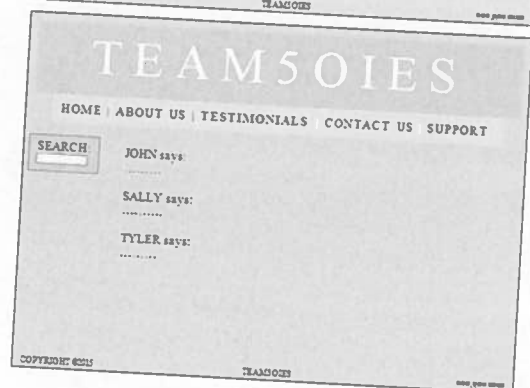
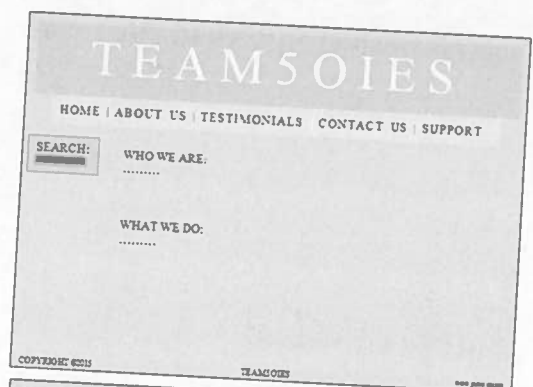
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### 3. SPECIFIC REQUIREMENTS

This section contains all of the functional and quality requirements of the system. It gives a detailed description of the system and all its features.

#### 3.1 EXTERNAL INTERFACES

This will show how the website will look and what a guest of the website will see and be able to do. Users will be able to search, get information about us, contact us, and get support.



### 3.2 FUNCTIONS - see the SRS section 3.2 TEMPLATE.doc for the format

ID	Detail	Type	Priority	Line Numbers	
R1	The TEAM5OBPS shall allow visitors to speak with a representative.	User Interface Functional	MustHave	23	
R2	The TEAM5OBPS shall have surgeons anonymize the EVAR data before any upload is made.	User Interface Functional	MustHave	46	
R3	The TEAM5OBPS shall allow surgeons to upload data once it has been anonymized.	User Interface Functional	MustHave	48	
R4	The TEAM5OBPS shall allow surgeons to upload any follow up EVAR data to the system.	Help Functional	MustHave	49	
R5	The TEAM5OBPS shall allow surgeons to go into the system and analyze data.	Statistics Functional	MustHave	53	
R6	The TEAM5OBPS shall	Orders Functional	MustHave	59	
R7	The TEAM5OBPS shall allow CFD scientists to run CFD simulations.	Orders Functional	MustHave	60	
R8	The TEAM5OBPS shall	Orders Functional	MustHave	77	
R9	The TEAM5OBPS shall allow auditors monitor the database.	Statistics Functional	MustHave	85	
R25	The TEAM5OBPS Use Case and MVC diagrams are to be UML compilable.	Organization Non-Functional	MustHave		
R26	The TEAM5OBPS will be built using visual studio 2010 and asp.net.	Development Non-Functional	MustHave		
R27	TEAM5OBPS needs to run on a web browser.	Development Non-Functional	MustHave		

### 3.3 PERFORMANCE REQUIREMENTS

TEAM5OIES can support light traffic and a minimum of 5 users at a time (5 actors). Data that needs to be handled will consist of the patients info, EVAR CT Scans, and studies. This data will be handled by the application. The other data will consist of login information for the users and employee data which are stored in the server.

### 3.4 LOGICAL DATABASE REQUIREMENTS

When the user asks for access to his or her account, the database will query the user account for matching account username and password. The user login function requires access to account information in the database. If the user has access to the search function then the searching function will query the request that will search for a primary key or secondary key. There are functions in the database that require information related to the patients, scans, and studies these functions will be frequently used.

### 3.5 DESIGN CONSTRAINTS

Depending on the size of the database, there will be a limitation on how much traffic the server can support and the amount of data that can be stored into the database.

#### 3.5.1 Standards Compliance.

The report format is organized according to the table of contents. Data type names, attributes, and entities are named accordingly.

### 3.6 SOFTWARE SYSTEM ATTRIBUTES

#### 3.6.1 Reliability

In order for the software product to be reliable at time of delivery, the testing algorithms and database connection should be tested for complete competence and integration.

#### 3.6.2 Availability

Certain steps along the software process will create checkpoints that will allow our system to restart and recover from design flaws.

#### 3.6.3 Security

Designs constraints allow for username password mismatch errors to deny access also depending on the level of the user deny access to certain functions.

#### 3.6.4 Maintainability

Maintaining the product should be required by the DBA and DBMS to continue to update the database.

#### 3.6.5 Portability

Since this is a website program, integration between platforms and software should be minimal.

ID	Characteristic	Rank
1	Correctness	High
2	Efficiency	Medium
3	Flexibility	Medium

4	Integrity/Security	High
5	Interoperability	High
6	Maintainability	Medium
7	Portability	High
8	Reliability	High
9	Reusability	Low
10	Testability	High
11	Usability	High
12	Availability	High

- Correctness – We are aiming to fulfill all the needs of the customer that allows full functionality to the client's needs.
- Efficiency – The code will efficient to ensure correctness in the system.
- Flexibility – Our program will be written in a way that modifying it should be simple.
- Integrity/Security –Any database/employee functions should only be allowed access by the corresponding individual with the correct access privileges.
- Interoperability – Our website will allow the hospital to connect to the database and upload scans
- Maintainability – Our website should be very easy to maintain.
- Portability – Portability will be high, changing servers for the website should not be a problem
- Reliability – This depends highly on the hardware we are provided. We assume that the hardware provided can handle the amount of requests required.
- Reusability – This system is made based on the EVAR system.
- Testability – The system must be tested to ensure correctness on anonymizing the patient's info.
- Usability – We tried to make our site as easily navigable and user friendly as possible
- Availability – The system should always be available for use by the users and the employees.

### 3.7 ORGANIZING THE SPECIFIC REQUIREMENTS

Our current TEAM5OBPS is organized according to classes and objects. They were specified in a document provided by the customer and we strictly followed the guidelines that were presented by them.

#### 3.7.1 System Mode

The system will be in default mode to allow users to have access to the site.

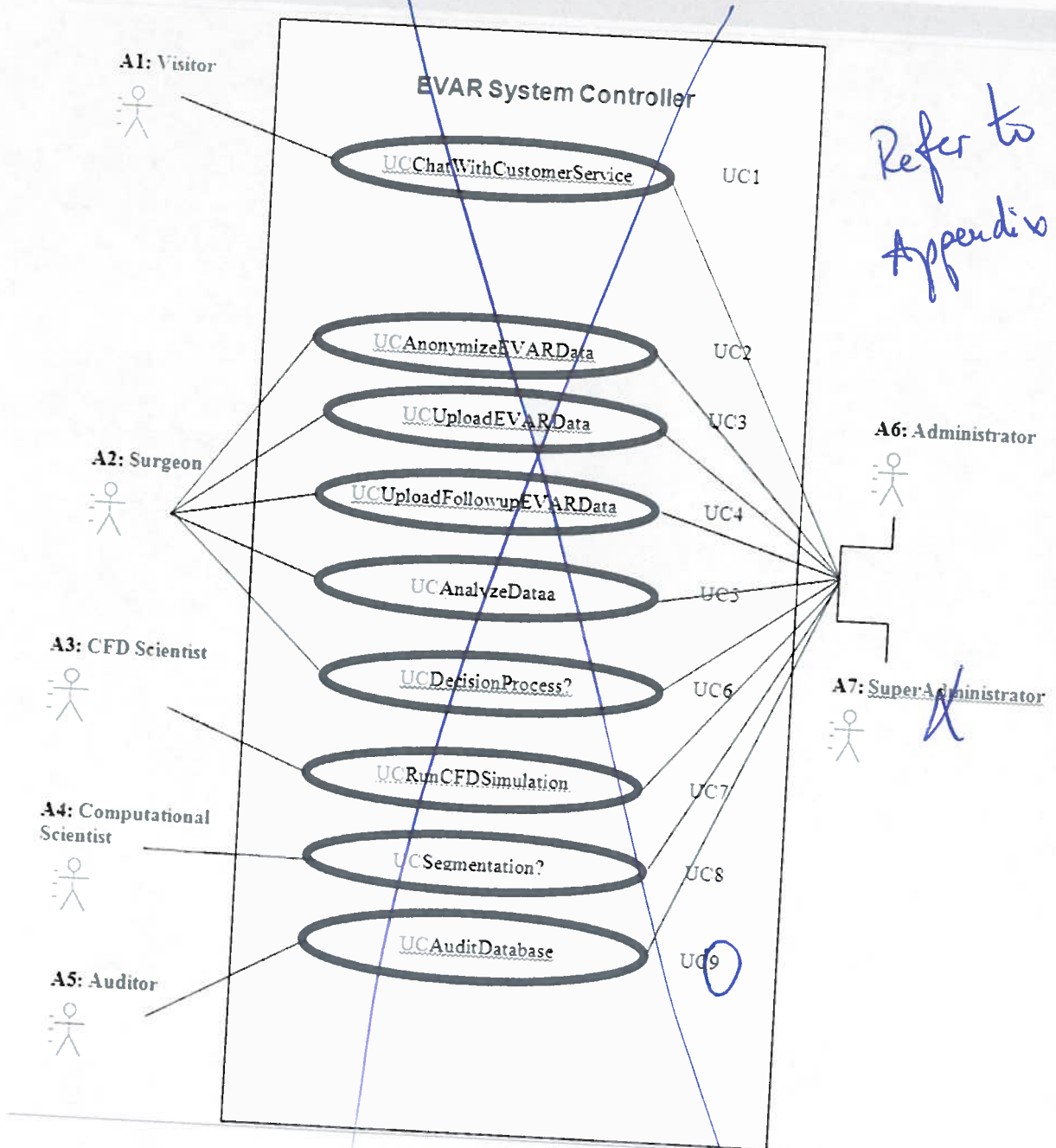
### 3.7.2 User Class

Visitors to the site will have a limited access to site such as customer service. Users depending on their role will be granted more access to the functions in the website.

### 3.7.3 Objects

Users will have their user type, first name, last name, username, password, email, institution, and status. Patients in the system will have their patientID, originalID, first name, last name, birth date, sex, age, and entry date inside the database. This data will be kept hidden and only be accessed by the hospital personal.

### 3.7.4 Use Cases



#### **3.7.5 Feature**

Visitors may use the customer service chat to speak with a representative if they have any questions.

#### **3.7.6 Stimulus**

Employees will have access to their specific function which will allow the employee to gain access to the system dealing with their described function.

#### **3.7.7 Response**

Certain functions allow the user to upload data into the system. Other functions allow user to search through that data. Another function allows the user to download that data.

#### **3.7.8 Functional Hierarchy**

In the system a user will get data, which they will then anonymize that data then upload it. Once data is in the system authorized users may search through that data and run simulations.

#### **3.8 ADDITIONAL COMMENTS**

#### **4. SUPPORTING INFORMATION.**

Our project is based on the requirements given by the customer. For further information, the SE Team Project feasibility study document can provide a better understanding of the Online International Evar System.



## **APPENDICES**

### **A.1 Outline for SRS Section 3: Organized by use case**

**- see the SRS Appendix A.1 Outline for SRS Section 3 Organized by Use Case.doc for the format**

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## DOCUMENT CONTROL

### CHANGE HISTORY

**Table 1: TLs entries (assigned work and due dates) before releasing to the team (all SQAs)**

Revision	Name	Due Date	Description
1.A	TM Johnathan Hornik	03/03/2015	Complete Chapter 1, 2 and Appendix
1.B	TM Joe Lu	03/03/2015	Complete Chapter 3 and 4
1.X	SQA Edison Guevara	03/04/2015	Review Document
1.Y	SQA Shah Zaib	03/04/2015	Review Document

**Table 2: Entries when work completed (SVN Commit Comment matches Description)**

Revision	Name	Completed Date	Description
1.A	TM Johnathan Hornik	03/04/2015	I completed chapter 1, part of chapter 2 – not sure what to put for a lot of these
1.B	TM Joe Lu	03/03/2015	Added # actors, use cases, chapter 3, and chapter 4
1.C	TM Joe Lu	03/04/2015	Added more info on chapter 3
1.D	TM Joe Lu	03/07/2015	Updated chapter 3 from changes made in use case.
1.X	SQA Edison Guevara	03/04/2015	I reviewed Document
1.Y	SQA Shah Zaib	03/04/2015	I reviewed Document

**Table 3: TL entry for RED DELIVERABLES (SVN Commit Comment matches Description)**

Revision	Name	Due Date	Description
2.0	TL & Name	03/09/2015	I changed Version to 2.0

### DOCUMENT STORAGE

This file is stored in SVN at [https://svn.cs.u.edu/svn/cosc4351/team5/TEAMPROJECT DELIVERABLES/Software Requirements Specification.doc](https://svn.cs.u.edu/svn/cosc4351/team5/TEAMPROJECT%20DELIVERABLES/Software%20Requirements%20Specification.doc).