SOFTWARE ENGINEERING (IT300)

Software Requirement Specification

School Management System

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Revision History

Name	Date	Reason For Changes	Version

1. Introduction

1.1 Purpose

The purpose of this document is to present a detailed description of School Management System. It will explain the purpose and features of the system, the interfaces of the system, what the system will do, the constraints under which it must operate and how the system will react to external stimuli.This is an interface between Admin, Teacher and Parents of each student.

1.2 Document Conventions

Main Section Titles

- Font: Times New Roman
- Face: Bold
- Size: 18

Subsection Titles

- Font: Times New Roman
- Face: Bold
- Size: 14

Other Text Explanations

- Font: Times New Roman
- Face: Normal
- Size: 12

1.3 Intended Audience and Reading Suggestions

The SRS is intended for several audience, including the customer, as well as the project managers,designers, developers and testers.

- The customer will use this SRS to verify the developer team has created a product that is acceptable to the customer.
- The projects managers of the developer team will use this SRS to plan milestones and delivery date and ensure that the developing team is on track during development of system.
- The designers will use this SRS as a basis for creating the system's design. The designers will continually refer back to this SRS to ensure that the system they are designing will fulfill the customer's needs.
- The developers will use this SRS as a basis for developing the system's functionality. The developers will link the requirements defined in this SRS to the software they create

to ensure that they have created software that will fulfill all the customer's documented requirements.
- The testers will us this SRS to derive test plans and test cases for each documented requirement. When portions of the software are complete, the testers will run their tests on that software to ensure that the software fulfills the requirements documented on this SRS. The testers will again run their tests on the entire system when it is complete and ensure that all requirements documented in this SRS have been fulfilled.
- End users of this application who wish to read about what this project can do.

1.4 Product Scope

It is a well established fact that it takes much and effort to accomplish the task of managing the profiles of all teachers and students manually. Considering the fact that number of students are increasing annually, an automated system becomes essential to meet this need.
The System will provide an online interface to the parent and teacher where they can view information and upload content.
The authority concerned can use this system to reduce his workload and process the application in a speedy manner.Provides a communication platform between the teacher, parent and the administrator.

1.5 References

- IEEE. IEEE Std 830-1998 IEEE Recommended Practice for Software Requirements Specifications. IEEE Computer Society, 1998.
- Fundamentals of database systems by ramez elmarsi and shamkant b.navathe.

2. Overall Description

2.1 Product Perspective

The School Management System is self-contained. This is used in schools coordinating among admin, teachers and parents of the students. This can replace tedious work of teachers taking attendance on paper and calculating the percentage for each student. This helps increasing the parent-teacher interaction. This Project student information system provides us a simple interface for maintenance of student information.It can be used by educational institutes or colleges to maintain the records of students easily. Achieving this objective is difficult using a manual system as the information is scattered, can be redundant and collecting relevant information may be very time-consuming. It also greatly reduces the number of paper resources needed in attendance and grades data management.

2.2 Product Functions

Functionalities of an Admin:

S.No	Function	Description
1	Add Student	The admin can add student information(details) by editing or updating database
2	Add Teacher	The admin can add teacher information(details) by editing or updating database
3	Add Course	The admin can add course information by editing or updating database
4	View Details	The admin can view all student, course, teacher details by collecting information from database
5	View Feedback	The admin can view all teacher feedback given by parents by collecting information from database
6	View Suggestions	The admin can view all suggestions given by parents and teachers details by collecting information from database
7	Upload notices/events	The admin can upload events or notices regarding school which all parents and teachers details by collecting information from database
8	Login/Logout	Admin can login and logout of the application.

Functionalities of a Teacher:

S.No	Function	Description
1	Mark attendance	The teacher can upload students attendance % which will be uploaded in database
2	Mark grades	The teacher can upload students grades which will be uploaded in database
3	View Notices	The teacher should be able view notices/events uploaded by admin by getting information from database
4	Give complaints	The teacher can give complaints about their students which will be uploaded in database
5	Give Suggestions	The teacher can give suggestions about school which will be uploaded in

		database
6	Login/Logout	The teacher can login and logout from his session

Functionalities of a Parent:

S.No	Function	Description
1	View attendance	The parent should be able to view his child's attendance % by collecting information from database
2	View grades	The parent should be able to view his child's grade card by collecting information from database
3	Give feedback	The parent should be able to give feedback about his child's teacher which will be uploaded in database
4	View complaints	The parent should be able to view complaints about his child given by teacher by collecting information from database
5	View notices/events	The parent should be able view notices/events uploaded by admin by getting information from database
6	Give suggestions	The parent should be able to give suggestions about school which will be uploaded in database
7	Login/Logout	The parent can login and logout from their session

2.3 User Classes and Characteristics

Student profile management system is a powerful, yet easy program to use so, all users with some basic experience with computers are able to use it efficiently.

- **Parent:**
  They are the guardians of the student and inspect the progress of them and also provide feedback regarding Faculty and teaching methodology.
  Parent should be able to do the following functions :

  1. View student's attendance.
  2. View student's grades.
  3. Give feedback regarding the faculty and the teaching methodology.
  4. View complaints about the student.
  5. View notices/events happening in school.

6. Give suggestions about the application or school rules.

- **Teacher:**
  They are the persons who are assigned teach different courses created by admin. Teachers evaluate students and keep parents noticed about their progress.
  They should be able to :

  1. Mark attendance to the students
  2. Mark grades to the students
  3. View Notices issued by the Admin/Principal
  4. Give complaints if any un-intended behaviour is observed among students.
  5. Give Suggestions about the application or school rules.

- **Admin/Principal:**
  Is the person who handle all over management of the school. - Refers to the superuser who is the Central Authority who has been vested with the privilege to manage the entire system. It can be any higher official in the respected school management or a dean or principal of the school. He can manage all details of student, teacher and course.He should be able to :

  1. Register a new student to the school
  2. Add a new teacher
  3. Add a course
  4. View details of both existing students and teachers
  5. View feedback given by parents about teachers.
  6. View suggestions about the application or school rules.

2.4 Operating Environment

Operating environment for this school management system can be like this:

- Operating system: Windows, Ubuntu
- Database: MySQL
- Distributed database
- Platform: XAMPP

2.5 Design and Implementation Constraints

Technology Constraints: Proposed web application can be implemented with PHP/JAVA for back-end design purpose & For the database purpose, we can opt for Mysql/Oracle.

Interface Constraints:Since, this is a Web based application so it should work on major browsers like Internet explorer,Mozilla Firefox, Google Chrome, Opera etc.

Safety and Security Constraints: Since, application is intended for the authenticated users only, so anonymous person should not be able to access and operate over the user data.

2.6 User Documentation

For user documentation and information, please consult section 3: External Interface Requirements and attached user manual.

2.7 Assumptions and Dependencies

• The users and Admin must have basic knowledge of computers and English Language.
• Should be connected to the XAMPP server always for functioning.

3. External Interface Requirements

3.1 User Interfaces

As the present day users are more involved in web interfaces for their daily needs User friendly interface is definitely necessary. It should be easy to navigate without any learn curve involved. A decent and pleasant appearance with ease of navigation should helps to users.

Some standard interface designing rules like Schneiderman's golden rules of interface design, Donald Norman’s design principles to be followed for an efficient interface.

3.2 Hardware Interfaces

The server is directly connected to the client systems. The client systems have access to the database in the server.
Recommended Operating Systems:

- Windows: 7 or newer
- MAC: OS X v10.7 or higher
- Linux: Ubuntu

We strongly recommend a computer fewer than 5 years old.

- Processor: Minimum 1 GHz; Recommended 2 GHz or more
- Ethernet connection (LAN) OR a wireless adapter (Wi-Fi)
- Hard Drive: Minimum 32 GB; Recommended 64 GB or more
- Memory (RAM): Minimum 1 GB; Recommended 4 GB or above

3.3 Software Interfaces

1. Front End Client :

The Admin, Parent, Teacher online interfaces are built using HTML (Hyper Text Markup Language) and CSS (Cascading style sheets),PHP, Java script.

- **HTML - HTML or Hypertext Markup Language** is the main markup language for creating web pages and other information that can be displayed in a web browser.HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (like <html>), within the web page content. HTML tags most commonly come in pairs like <h1> and </h1>, although some tags represent empty elements and so are unpaired, for example <img>. The first tag in a pair is the start tag, and the second tag is the end tag (they are also called opening tags and closing tags).
- **CSS- Cascading Style Sheets (CSS)** is a style sheet language used for describing the look and formatting of a document written in a markup language. While most often used to style web pages and interfaces written in HTML and XHTML, the language can be applied to any kind of XML document, including plain XML, SVG and XUL. CSS is a cornerstone specification of the web and almost all web pages use CSS style sheets to describe their presentation.
- **PHP- PHP is a server-side scripting language** designed for web development but also used as a general-purpose programming language.. While PHP originally stood for Personal Home Page, it now stands for PHP: Hypertext Preprocessor, a recursive backronym.PHP code is interpreted by a web server with a PHP processor module, which generates the resulting web page: PHP commands can be embedded directly into an HTML source document rather than calling an external file to process data.
- **JAVA SCRIPT**- JavaScript (JS) is a dynamic computer programming language. It is most commonly used as part of web browsers, whose implementations allow client-side scripts to interact with the user, control the browser, communicate asynchronously, and alter the document content that is displayed. It is also being used in server-side programming, game development and the creation of desktop and mobile applications. JavaScript is a prototype-based scripting language with dynamic typing and has first class functions. Its syntax was influenced by C.

2. Back End :

The back end is designed using mysql which is used to design the databases.

- **MYSQL- MySQL** ("My S-Q-L", officially, but also called "My Sequel") is (as of July 2013) the world's second most widely used open-source relational database management system

(RDBMS). It is named after co-founder Michael Widenius daughter, My. The SQL phrase stands for Structured Query Language. The MySQL development project has made its source code available under the terms of the GNU General Public License, as well as under a variety of proprietary agreements.

3.4 Communications Interfaces

This software package should be securely accessible through internet communication channels(wired or wireless).This project supports all types of web browsers. This contains simple electronic forms for the student and teacher details collection during the process of registration.

HTTP a classic "client-server" protocol is required to reach out to majority of audience. Users click a link on their web browser (the client), and the browser sends a request over the internet to a web server that houses the site the user requested. The server sends back the content of the site, such as text and images, which display in users' web browsers.

4. System Features

The features of student management system are :

- Student Attendance List Creation: It allows the admin to create a student attendance sheet consisting of name, roll number, date, Absent/Present mark and subject. Admin has to fill student names along with associated roll numbers.

- Profile Marking: The faculty has the list of students. He may see the list call roll numbers and select absent if the student is absent or select present if the student is present.He can also upload the grades.

- Academic data Storage: This data is now stored in the database. Faculty and admin may also view it anytime.

- Attendance sheet transfer: The faculty can transfer the file to a server (normal computer) where this data can be stored and maintained by the school or college.

- Adding teachers and classes: Admin can add teachers and assign them to subjects.

Database schema structure used in this project is :

- Admin table

	#	Name	Type	Collation	Attributes	Null	Default
☐	1	username 🔑	varchar(20)	latin1_swedish_ci		No	None
☐	2	password	varchar(20)	latin1_swedish_ci		No	None

- Teacher table

	#	Name	Type	Collation	Attributes	Null	Default
☐	1	id 🔑	int(11)			No	None
☐	2	tname	varchar(20)	latin1_swedish_ci		No	None
☐	3	tmobile	bigint(11)			No	None
☐	4	temail	varchar(20)	latin1_swedish_ci		No	None
☐	5	tqualification	varchar(20)	latin1_swedish_ci		No	None
☐	6	tpassword	varchar(20)	latin1_swedish_ci		No	None
☐	7	taddress	varchar(30)	latin1_swedish_ci		No	None
☐	8	Gender	varchar(10)	latin1_swedish_ci		No	None

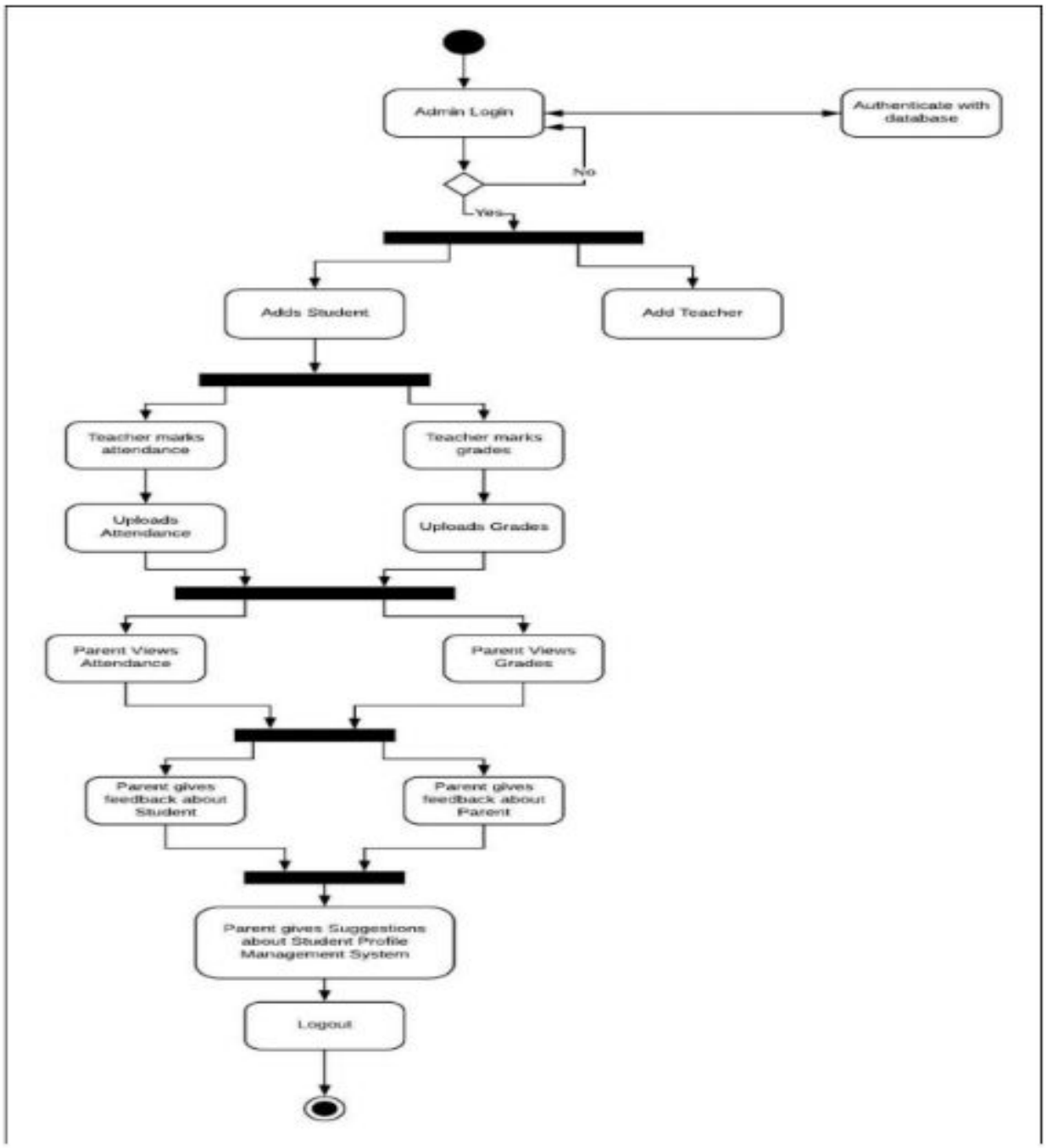
- Student table

#	Name	Type	Collation	Attributes	Null	Default
1	**sid**	varchar(11)	latin1_swedish_ci		No	*None*
2	**sname**	varchar(20)	latin1_swedish_ci		No	*None*
3	**sclass**	int(3)			No	*None*
4	**sphone**	bigint(11)			No	*None*
5	**sparent**	varchar(20)	latin1_swedish_ci		No	*None*
6	**sparent_email**	varchar(20)	latin1_swedish_ci		No	*None*
7	**spassword**	varchar(20)	latin1_swedish_ci		No	*None*
8	**parent_address**	varchar(40)	latin1_swedish_ci		No	*None*

- Grades table

#	Name	Type	Collation	Attributes	Null	Default
1	**sid**	varchar(11)	latin1_swedish_ci		No	*None*
2	**hgrade**	varchar(2)	latin1_swedish_ci		No	*None*
3	**agrade**	varchar(2)	latin1_swedish_ci		No	*None*
4	**course_id**	int(11)			No	*None*
5	**sattendance**	float(5,2)			No	*None*

Activity Diagram for the Management of Grades and Attendance in Systen



5. Other Nonfunctional Requirements

5.1 Performance Requirements

- Product Requirements :
    1. Efficiency Requirements : When a student profile management system will be implemented admin and users should be able to easily access library as uploading and viewing information will be very faster.
    2. Reliability Requirements: The system should accurately perform member login, member validation, report uploading, viewing information and search.
    3. Usability Requirements : The system is designed for a user-friendly environment so that admin, parent, and staff of school can perform the various tasks easily and in an effective way
- Organisational Requirements :
    1. Implementation Requirements : In implementing the whole system it uses HTML on the front end with PHP as server-side scripting language which will be used for database connectivity and the backend i.e the database part is developed using MySQL

5.2 Safety Requirements

There will be unique login ID and passwords for each user. So accessing the personal data of an individual can be prevented.

- Attendance and Scores of a student can be viewed only by his parent after logging in.
- A teacher should log into one's account to update the performance of respective students.
- Admin has to login to make announcements so that no other user can make false announcements.

5.3 Security Requirements

Information transmission should be securely transmitted to server without any changes in information. As the system provide the right tools for problem solving it must be made sure that the system is reliable in its operations and for securing the sensitive details.

The system should provide a secure login to the users by using advanced secure login algorithms and provide access only to the authorized users as security is the key requirement of this system. This system uses a database application, hence the 'Weak Authentication' threat should be taken care of.

5.4 Software Quality Attributes

System should be:-

- Consistent in performance with respect to interface or actions required to perform the tasks.
- Safe and Secure functioning of application over various domains.
- Robust in nature to cope up with errors that can be occured while using it.
- Scalable: As the server has to support three modules of Admin, Parent and Teacher
- Flexible : Modules designed should support for any future possible re-use.
- User friendly : To make users easier and intuitive usage of the system.
- Efficient : In implementation of system to use resources in an optimal way.
- Inter-operable :Across various platforms and technologies.
- Upgradable : To any changes that are wished to be inculcated in future.
- Available all the time.
- Maintainability : The administrators should be able to maintain the system

5.5 Other Requirements

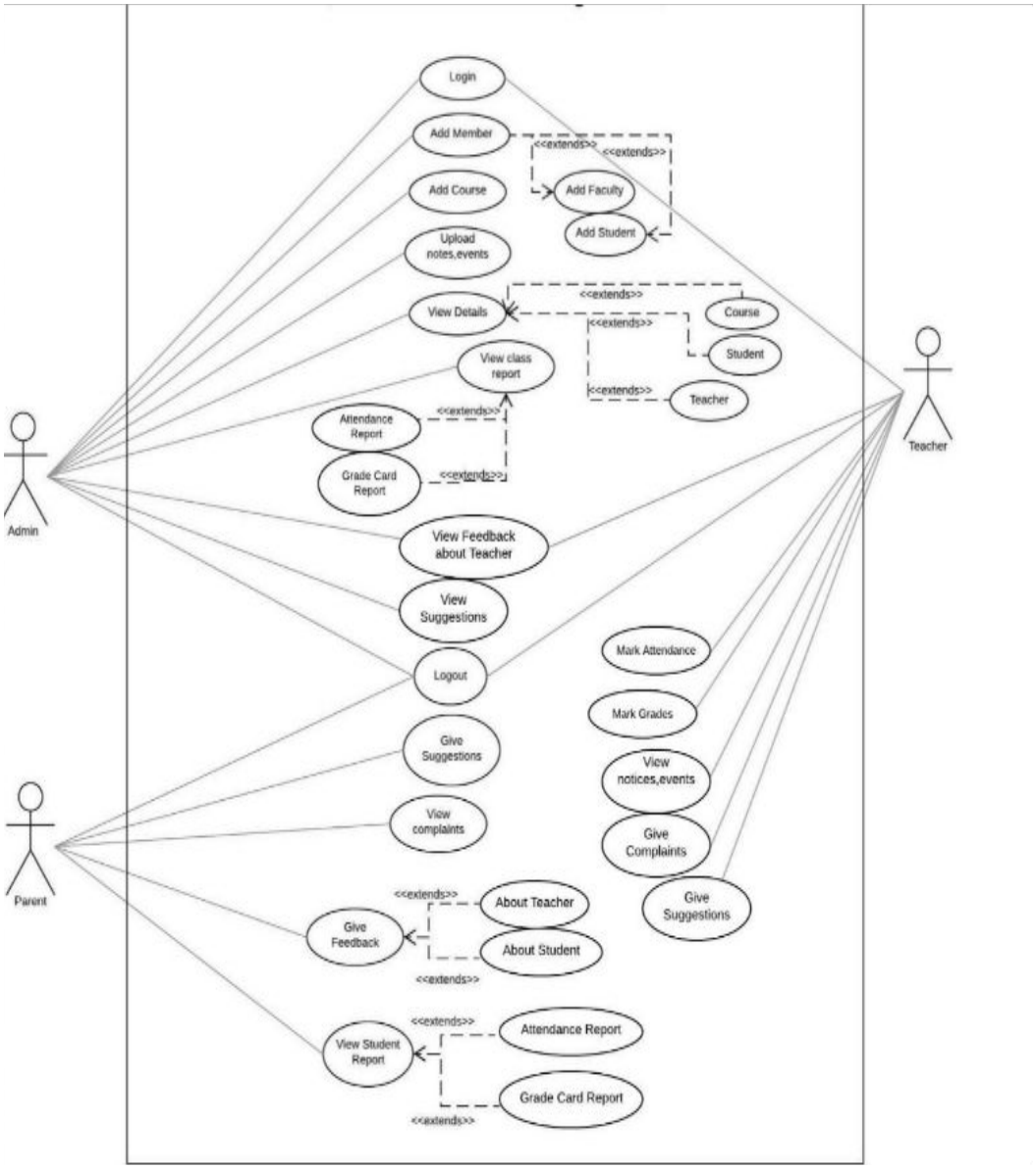
- Organisational Requirements :In implementing the whole system it uses HTML on the front end with PHP as server-side scripting language which will be used for database connectivity and the backend i.e the database part is developed using MySQL

Appendix A: Glossary

- A Software requirements specification (SRS), a requirements specification for a software system, is a complete description of the behavior of a system to be developed and may include a set of use cases that describe interactions the users will have with the software. Source: http://en.wikipedia.org/wiki/Software_requirements_specif ication

Appendix B: Analysis Models

1. Use Case diagram :



Appendix C: To Be Determined List

<Collect a numbered list of the TBD (to be determined) references that remain in the SRS so they can be tracked to closure.>