Scheduling System for confocal and FACS facility of BSBE discipline

Software Requirements Specification

5.4.3

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# Revision History

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| --- | --- | --- | --- |
| **Version** | **Description** | **Author** | **Comments** |
| 1.2.0 | It was too trivial and has only first 2 pages with no gui or proper new user login | TSRV | Due to many errors carried on to next build as design got many changes. |
| 2.3.2 | It has no gui yet, has 4 pages to just make it work till trivial slot selection. Other selections were also trivial. New user not ready. | TSRV | Was submitted as first iteration. 40% covered with decent efficiency of 80% but has poor performance. Developed over this as base. |
| 3.6.5 | It has got no GUI but is functional with 6 pages. Booking was still trivial. | TSRV | Has 70% covered with 100% efficiency. But was not giving nice performance and GUI is still absent. |
| 4.23.16 | It has basic level GUI with 6 pages. Boking was better than previous builds. Has few constraint issues. | TSRV | Has 90% covered with 100% efficiency and 80% comfortable expected performance. Was submitted as 2nd iteration. |
| 5.4.3\* | Present build. Has 8 fully functional pages to be adjusted a little to suit the server. Has fully developed GUI and booking system with mailing facility. Constraints are fully realized. | TSRV | Has 100% covered with 100% efficiency and above 95% comfortable expected performance. Is being submitted to customer and also for final evaluation. |
| - | - | - | - |

Note : In x.y.z, x is build number, y is number of alpha test passes, z is number of beta test runs.

# 

# Document Approval

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

|  |  |  |  |
| --- | --- | --- | --- |
| **Signature** | **Printed Name** | **Title** | **Date** |
|  | <Your Name> |  |  |
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**Table of Contents**

Revision History ii

Document Approval ii

1. Introduction i

1.1 Purpose i

1.2 Scope i

1.3 Definitions, Acronyms, and Abbreviations i

1.4 References i

1.5 Overview i

2. General Description ii

2.1 Product Perspective ii

2.2 Product Functions ii

2.3 User Characteristics ii

2.4 General Constraints ii

2.5 Assumptions and Dependencies ii

3. Specific Requirements ii

3.1 External Interface Requirements iii

3.1.1 User Interfaces iii

3.1.2 Hardware Interfaces iii

3.1.3 Software Interfaces iii

3.1.4 Communications Interfaces iii

3.2 Functional Requirements iii

3.2.1 <Functional Requirement or Feature #1> iii

3.2.2 <Functional Requirement or Feature #2> iii

3.3 Classes / Objects iii

3.3.1 <Class / Object #1> iii

3.3.2 <Class / Object #2> iii

3.4 Non-Functional Requirements iii

3.4.1 Performance iv

3.4.2 Reliability iv

3.4.3 Availability iv

3.4.4 Security iv

3.4.5 Maintainability iv

3.4.6 Portability iv

3.5 Inverse Requirements iv

3.6 Design Constraints iv

3.7 Logical Database Requirements iv

3.8 Other Requirements iv

A. Appendices iv

A.1 Appendix 1 iv

A.2 Appendix 2 iv

# 1. Introduction

This SRS is regarding the web based development of scheduling program for 2 machines available in FACS and confocal Facility room School building of IITI. This program has to provide the availability each machine, their status and for booking slots to work on it for multiple spans of 2 hours by any user on payment basis.

## 1.1 Purpose

The purpose of this SRS is to keep track of what are requirements of software are, what is being used to build this software, What are applications, limitations of software, etc.

## 1.2 Scope

This subsection explains the scope of project and is as follows:

(1) Our software product is an online scheduling program.

(2) It will keep track of availability of 2 machines in FACS Facility room, their status and can provide booking slots to work for multiple spans of 2 hours on those machines on payment basis. It can help in booking a slot by any user and pay for it using authentication. It cannot give details of how to use or any details of those machines.

(3) Describe the application of the software being specified. As a portion of this, it should:

(a) Describe all relevant benefits, objectives, and goals as precisely as possible. For example, to say that one goal is to provide effective reporting capabilities is not as good as saying parameter-driven, user-definable reports with a 2 h turnaround and on-line entry of user parameters.

(b) Be consistent with similar statements in higher-level specifications (for example, the System Requirement Specification), if they exist. What is the scope of this software product

.

## 1.3 Definitions and Abbreviations

|  |  |
| --- | --- |
| **Term** | **Definition** |
| Database | Collection of all the information monitored by this system. |
| Software Requirements Specification | A document that completely describes all of the functions of a proposed system and the constraints under which it must operate. |
| Fluorescence activated cell sorting (FACS) | It is a laser or impedance based technology employed in cell counting, cell sorting etc. It is used mainly in the diagnosis of health disorders, especially blood cancers, but has many other applications in basic research, clinical practice and clinical trials. |
| Confocal Microscopy | It is an optical imaging technique for increasing optical resolution and contrast of a micrograph. It finds applications in life sciences , semi conductor inspection and materials science. |
| GUI | Graphical user interface which means the surface design which can be seen and interacted by user. |
| BSBE | Biological sciences and Bioengineering |
| IEEE | Institute of Electrical and Electronics Engineers |

## 1.4 References

IEEE Computer Society 1998 – Recommended Practice for Software Requirements Specifications.

BSBE website of IIT Indore.

## 1.5 Overview

The next chapter, the General Description section, gives an overview of the functionality of the portal. It describes the informal requirements and details of the portal.

The third chapter, Requirements Specification section, of this document is written primarily for the developers and describes in technical terms the details of the functionality of the product.

# 2. General Description

*It is a web based scheduling system, where a user can book 2 hour slots for working on the BSBE facilities, the confocal microscopy machine and the FACS machine. The current schedule will be displayed in the form of a calendar, and the user can simply choose the day and time depending on availability. The booking will be done on a secure payment basis. There will be 2 categories of users, one from IITI and other not from IITI. For authentication, an IITI user can simply login using his official email ID. Those not from IITI will need to fill in a few more details before payment.*

## 2.1 Product Perspective

*The perspective of product is to facilitate user to book slot easily for a machine and pay for it without any discrepancies.*

## 2.2 Product Functions

1) Provide an organized mechanism for booking facilities.

2) View the current schedule to prevent clashing of slots to ensure enhanced productivity.

## 2.3 User Characteristics

Anyone who wishes to use the BSBE facilities of IITI for confocal microscopy or performing cell sorting using fluorescence.

## 2.4 General Constraints

*-Booking can be done only for tomorrow and days after it only.*

*-IITI users have different costs than other users.*

*-Booking can be done only if slot is available and user has an account.*

## 2.5 Assumptions and Dependencies

Payment gateway.

Access to IITI server.

Gmail account

# 3. Specific Requirements

The specific requirements of this software are as follows:

1. Scheduling program which is mostly defined in PHP. Hence PHP.
2. Server to store database and server that can handle the load of space and processing.
3. Software tool that connects PHP with database language to make software available online.
4. Manual modification portal of admin for modification of database files.
5. Etc., (Will update as software development progresses).

## 3.1 External Interface Requirements

### 3.1.1 User Interfaces

The user interface should be dynamic and interactive. Also the GUI must be similar to the official BSBE site, as this software will be linked on the site.

### 3.1.2 Software Interfaces

PHP part linking with the BSBE site back-end. Database to be maintained on IITI server. Other details are not yet completely decided.

### 3.1.3 Communications Interfaces

gmail.com or iiti.ac.in are used as interface.

## 3.2 Functional Requirements

### 3.2.1 Checking Availability

3.2.1.1 Introduction:

It helps to know the availability of machine on input day.

3.2.1.2 Inputs:

Date provided by the user.

3.2.1.3 Processing:

Processing takes place in the PHP part. It checks the database for the required data with the given specifications.

3.2.1.4 Outputs:

Displays the timing of available slots on the input date.

3.2.1.5 Error Handling

No errors detected, but errors will be handled using backup.

### 

### 3.2.2 Booking of slots:

3.2.1.1 Introduction:

Helps to book a machine for an interval on available day.

3.2.1.2 Inputs:

Available Time slot on the required day.

3.2.1.3 Processing:

Processing takes place in the PHP part. It checks the database for the required data with he given specifications and modifies the properties related to the data, and then redirects to the payment site.

3.2.1.4 Outputs:

Displays the confirmation of booking of the time slot by change in the colour of the block on the calendar.

3.2.1.5 Error Handling

No errors detected, but errors are handled using backup.

**3.2.3 Status of the facilities:**

3.2.1.1 Introduction:

Gives information whether machines are working.

3.2.1.2 Inputs:

none.

3.2.1.3 Processing:

Processing takes place in the PHP part. It checks the database for data related to the availability of the FACS and confocal facility.

3.2.1.4 Outputs:

Displays the status of the facilities – working or closed.

## 3.2.1.5 Error Handling

No errors have been recorded so far. But we expect that there will be backup softwares available on IITI server to handle any errors in future.

## 3.4 Non-Functional Requirements

Non-functional requirements may exist for the following attributes. Often these requirements must be achieved at a system-wide level rather than at a unit level. The GUI will be matching with BSBE site. Apart from GUI there are other requirements as follows:

### 3.4.1 Performance

It reached a performance of nearly 95% of expected. Response time is around 0.6s on average of all pages, offline.

### 3.4.2 Reliability

It is completely reliable.

### 3.4.3 Availability

Will be made available in 2017 summer, if it clears the security checks and final assessment.

### 3.4.4 Security

There is nothing to really protect except for data of users which will depend on IITI server. Admin(The client) has to authenticate a new user every time. Once a person is authenticated he will be allowed to book later on with out authentication but has to confirm the usage by clicking the link sent to his/her gmail every time of booking.

### 3.4.5 Maintainability

We assure that it will not come to this. But in case, we will try to help but can’t warranty.

### 3.4.6 Portability

Highly portable from one server to another.

## 3.5 Inverse Requirements

There are no inverse requirements as of now.

## 3.6 Design Constraints

There are few design constraints like:

1.It’s usage is restricted or altered according to availability and limits of IITI server.

2.It can only manage the schedule of 1 year period.

3.Limitations may occur due to internet or server problems, etc but will be managed as necessary.

4.Regular constraints like space requirement, etc are also applicable.

## 3.7 Logical Database Requirements

We are going to use database of basic level with limited size requirements on IITI server. It has variables of size 30 bytes on an average with 9 variables. Expecting around around 30 MB of requirement by 10 years.

## 3.8 Other Requirements

There are some authorization requirements from external devices and services like:

1.IITI server

2.Payment facility is provided through IITI payment portal.