Software Requirements Specification

for

<E-Health Care>

Version 1.0 approved

Prepared by <Junaid Iqbal,Tooba Shafique,Hamna Yaqoob,Saim Ahmad>

Table of Contents

Table of Contents ii

Revision History ii

1. Introduction 1

1.1 Purpose 1

1.2 Document Conventions 1

1.2 Intended Audience and Reading Suggestions 1

1.4 Product Scope 1

1.5 References 1

2. Overall Description 2

2.1 Product Perspective 2

2.2 Product Functions 2

2.2 User Classes and Characteristics 2

2.4 Operating Environment 2

2.5 Design and Implementation Constraints 2

2.6 User Documentation 2

2.7 Assumptions and Dependencies 2

2. External Interface Requirements 2

2.1 User Interfaces 2

2.2 Hardware Interfaces 2

2.2 Software Interfaces 2

2.4 Communications Interfaces 2

4. System Features 4

4.1 System Feature 1 4

4.2 System Feature 2 (and so on) 4

5. Other Nonfunctional Requirements 4

5.1 Performance Requirements 4

5.2 Safety Requirements 5

5.2 Security Requirements 5

5.4 Software Quality Attributes 5

5.5 Business Rules 5

6. Other Requirements 5

Appendix A: Glossary 5

Appendix B: Analysis Models 5

Appendix C: To Be Determined List 6

Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Date** | **Reason For Changes** | **Version** |
|  |  |  |  |
|  |  |  |  |

# Introduction

## Purpose

The main purpose of this system to digitize what are currently doing by manually such as patient assessments, care plans, maintain the record of patients, EHR provides a doctor early access to patient record, provide and maintain all kinds of tests for a patient, Billing and Report generation.

## Document Conventions

This document has been broken into three parts under most sections to cover the three fundamental parts of the application, the database, the Medical Staff Portal.

DB Database

EHR Electronic Health Record

SSL Secure Socket layer

## Intended Audience and Reading Suggestions

The intended audience of this document is all major stakeholders which include the

development team, the project owner, the project customer, the senior project advisor,

project financer and anyone evaluating the project.

## Product Scope

The scope for this project includes everything our team needs to replace their (manual) current system with our system The scope primarily consists of

* The system will be used to get the information from the patients and then storing that data for future usage in the database.
* System will be able to retrieve the data from the database.
* The current system in use is a paper-based system. It is too slow and cannot provide updated lists of patients within a reasonable timeframe.
* The intentions of the system are to reduce over-time pay and increase the number of patients that can be treated accurately.
* The system will allow the patient to book the appointment for checkup, and also check the availability of the doctor.
* This includes basic functionality such as adding a new patient, adding a new scanned document to a patient, or checking on a patient’s basic info,

or checking session details.

## References

<https://www.ehealth.gov.hk/en/healthcare_provider/registration/forms.html>

<https://www.wikipedia.org/>

<https://www2.gov.bc.ca/gov/content/health/about-bc-s-health-care-system/ehealth/benefits-of-> ehealth

# Overall Description

## Product Perspective

This EHR is a self-contained system that manages activities of the Patient Info. Various stakeholders are involved in the EHR.

### 2.1.1

A medical staff portal is required to present and organize the contents of the database. This is the user ­facing interface of the system and will be implemented with special consideration given to usability. A successful implementation of this user interface will above all provide faster access to, and better presentation of, the system data.

## Product Functions

**2.2. Install**

2.2.1.1. A way for system to install the database

2.2.1.2. A way for system to install the server app

2.2.1.3. A way for system to install the front end application

**2.2.2. Database**

2.2.2.1. Stores previous states of all tables with all changes made to them

2.2.2.2. Can store patients signing in for the day

2.2.2.3. Can store patients signing out for the day

2.2.2.4. Can store patients signing in for sessions

2.2.2.5. Can store patients signing out for sessions

2.2.2.6. Can store new documents in the database

2.2.2.7. Store structure of new documents created

2.2.2.8. Can store patient care plans

2.2.2.9. Can track reviews of care plans

2.2.2.10. Can track approval of care plans

2.2.2.11. Can store care plan updates and changes

2.2.2.12. Can calculate who is billable based on dates

**2.2.3**. Medical Staff Portal

2.2.3.1. Will have a way to configure external data requests

2.2.3.2. Will have a way to get external data through configured connections

2.2.3.3. The user shall have access to a “Start Screen”

**2.2.2.4**. The user shall have access to a Patient page, with the following displayed...

2.2.2.4.1. ­ Viewing of the Patient's care plans

2.2.2.4.2 ­ Billing information

**2.2.2.5.** Support for entering and viewing patient assessments

2.2.2.5.1. Nursing, Nutrition, Health Literacy, Care Management, Behavioral Health, etc.

2.2.2.5.2 The user shall be able to create new assessment types

**2.2.2.6.** The user shall be able to conduct the Care­plan process

2.2.2.6.1. ­ Perform Care­plan Review

2.2.2.6.2. ­ Approve a Care­plan

2.2.2.6.3. ­ View Care­plan history

2.2.2.6.4. ­ Make updates or changes to a Care­plan

2.2.2.7. ­ Tracking addition of new documents or data

2.2.2.8. ­ Allowing and Tracking changes to existing documents or data

2.2.2.9. ­ Allowing and Tracking deletions of existing documents or data

2.2.2.10 ­Reports which show auditing history, per user or per patient.

## User Classes and Characteristics

**IT Personnel**:

* Technical Skill : Has full understanding of the system, and working knowledge of SQL
* Frequency of Use : Low
* Education Level : At least formal training or some college
* Privileges : Administrator privileges ­ has access to all parts of the system and can
* directly access the database
* Experience with System : High
* Product Functions: Run database queries, add new forms

**Medical staff**

* Technical Skill: Low to medium
* Frequency of Use: Multiple times per day
* Education Level: Non­specific
* Privileges: Read access to all documents, write access only upon creation or special
* cases.
* Experience with System: Medium
* Product Functions: View and interpret data and documents, create and add new
* documents.

**Patient**

* Technical Skill: Low
* Frequency of Use: Multiple times per day
* Education Level: Not Specified
* Privileges: login to their account
* Experience with System: Low
* Product Functions: see their medical history

## Operating Environment

The Deployment environment shall be window vista, window 8,window 10.

**2.4.1.**

The database will exist on a Microsoft Windows Server That runs MSSQL 2008 or greater versions..

**2.4.2.**

The main user application will be built as a web based system. Users will access it through a browser and login window.

## Design and Implementation Constraints

**2.5.1**

Database needs to be available to internal sources for queries. The customer would like the database to be able to be easily modified in the future for other teams to upgrade the system or do work on it.

**2.5.2**

System Application Features need to be supportable in a web ­application, security features and security design must address this features on the web.

## User Documentation

**2.6.1.**

Database User documentation will consist of the Database Schema and how to guide for running database setup script.

**2.6.2.**

The system application shall have tutorial documentation, for the purpose of educating new

users. Clear procedures and complex procedures must be explained in detail, procedures shall be presented in step­by­step instructions.

## Assumptions and Dependencies

**2.7.1**

Use of MS­SQL depends upon a Microsoft Windows operating system.

**2.7.2**

It is assumed that the Hospital will have enough trained staff to take care of the system, also assume users are capable of using internet browsers

**2.7.3**

We are assuming that by working closely with their development team we will be able to lower the chance of having large integration issues.

# External Interface Requirements

## User Interfaces

**3.1.1** EHR as a web­ based application, will be the primary channel through which user access or modify any information in the database and retrieve data. The interface must be easy to learn and navigate quickly.

**3.1.2** The software must provide good graphical interface for the user (medical staff) can operate on the system, performing the required task such as create, update, viewing the details of the patient.

**3.1.3** The software must provide good usable interface for the customer (patient) so they can operate desire work on the system, performing the required task such as booking the appointment, update, viewing the details of their medical history.

## Hardware Interfaces

* Operating system: window vista,8,10
* Hard disk required :40 GB
* RAM: 2 GB
* Processor: Dual-core CPU

## Software Interfaces

* Java language
* Net beans IDE 8.2
* MS SQL server 2008

## Communications Interfaces

3.4.1. The database will communicate via an encrypted connection using SSL through window.

# System Features

All system features in the system feature file.

# Other Nonfunctional Requirements

## Performance Requirements

5.1.1. The database shall be available 99% of the time during working hours

5.1.2. No Database query shall take more than 5 seconds with only one database

connection active

5.1.3. On average a database query shall take less than .5 seconds with only one

database connection active

## Safety Requirements

5.2.1. Data from the database will never be transmitted to unauthenticated sources

5.2.2. The EHR System will never disclose patient information to users that are

not authorized to see it.

## Security Requirements

5.2.1. The database must be encrypted at rest

5.2.2. All request and data transfer between the server in the database must be done

over an SSL connection

5.2.3. All communication between the server and EHR System will be done over SSL.

## Software Quality Attributes

5.4.1. Database will be in normalized form

5.4.2 Provide robustness in the system, bug free software which contains all necessary requirements that provide Customer satisfaction.

5.4.3. System interface should be ease of use.

## Business Rules

5.5.1 Only the Doctor approve the care plan for the patient.  
5.5.2 Medicine given to a patient must be approve from the doctor.  
5.5.3 Patient history should be shown only to authorized health professionals to support high-quality care.

# Other Requirements

* Back Up The system shall provide the capability to back-up the Data.
* Errors in the system shall keep a log of all the errors for maintenance purpose.
* Medical records in the EHR will be protected by tough security

# Appendix A: Glossary

1: The term “Electronic Health Record” or “EHR” refers to the systematized collection of patient and population electronically-stored health information in a digital format.

2: Secure Sockets Layer (SSL) is a standard security technology for establishing an encrypted link between a server and a client