Software Requirements Specification

for

Clinic Scheduler Application for Doctor,

Release 1.0

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**April 29, 2018**

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Revision History

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Date** | **Reason For Changes** | **Version** |
| Team | 4/28/18 | initial draft | 1.0 draft 1 |
| Rounak Kulkarni | 4/29/18 | baseline following changes after inspection | 1.0 approved |

# 1. Introduction

## 1.1 Purpose

The SRS (Software Requirement Specification) is the basic document which describes the functional and nonfunctional requirements for software release 1.0 of the Clinic Scheduler Application (CSA). This document is intended to be used by the members of the project team who will implement and verify the correct functioning of the system. Unless otherwise noted, all requirements specified here are committed for release 1.0.

## 1.2 Document Conventions

No special typographical conventions are used in this SRS.

## 1.3   Project Scope and Product Features

The CSA will permit the patient to schedule an appointment online 24/7 in any nearby clinic as per their needs. A detailed description is available in the *Clinic Scheduler Application and Scope Document* [1], along with the features that are scheduled for full or partial implementation in this release.

## 1.4 References

1. Software Requirements, Third Edition, Karl E. Wiegers, Joy Beatty

www.processimpact.com/projects/COS/COS Vision and Scope.docx

2. Beatty, Joy. *Process Impact Intranet Development Standard, Version 1.3*, www.processimpact.com/corporate/standards/PI Intranet Development Standard.pdf

3. Rath, Andrew. *Process Impact Internet Application User Interface Standard, Version 2.0*, www.processimpact.com/corporate/standards/PI Internet UI Standard.pdf

# 

# 2. Overall Description

## 2.1 Product Perspective

The Clinic Scheduler Application is a new software system that replaces the current manual and telephone processes for scheduling an appointment with a doctor or a clinic. The system is expected to evolve over several releases, ultimately connecting to the online scheduling service for several local clinics and to the patient who need health care services.

## 

### Figure 1. Context diagram for release 1.0 of the Clinic Scheduler Application.

## 

## 2.2 User Classes and Characteristics

|  |  |
| --- | --- |
| Patient | A Patient is an entity who wants to book an appointment with a health care clinic to use the health care services. Patients can vary according to the geographic location. The goal of the application is to reach more number of patients and get them connected with the local health services. Patients and sometimes schedule multiple appointments. For a patient to schedule an appointment, information related to the clinic and the healthcare system must be provided. |
| Administrative Staff | The Clinic Scheduler Application can have one or more administrative staff associated with different clinics. Administrative staff has a crucial role in managing appointments for a clinic. Administrative staff can also manage, book, cancel, reschedule the appointments for the clinic according to the clinic’s availability and in case of any schedule change. They are also responsible for providing information for potential customers. Administrative staff can also handle payments using the application. |
| Doctor | A Doctor is an important entity which provides treatment to the patients. A Doctor can have specialty services to provide to the customer. Doctor can view the appointments listed on the application and work as per the schedule. Doctor can view patient history to provide diagnosis. |

## 2.3 Operating Environment

OE-1: The CSA shall operate correctly with the following web browsers: Windows Internet Explorer versions 7, 8, and 9; Firefox versions 12 through 26; Google Chrome (all versions); and Apple Safari versions 4.0 through 8.0.

OE-2: The CSA shall operate on a server running the current corporate-approved versions of Red Hat Linux and Apache HTTP Server.

OE-3: The CSA shall permit user access from the corporate Intranet, from a VPN Internet connection, and by Android, iOS, and Windows smartphones and tablets.

## 2.4    Design and Implementation Constraints

CO-1:   The system’s design, code, and maintenance documentation shall confirm to the Process Impact Intranet Development Standard, Version 1.3 [2].

CO-2:   The system shall use the current corporate standard Oracle database engine.

CO-3:   All HTML code shall conform to the HTML 5.0 standard.

## 2.5    Assumptions and Dependencies

AS-1: The clinic is open for 24 hours to schedule an appointment online.

DE-1: The operation of the CSA depends on changes being made in the Scheduling System to accept appointments and payments according to the clinic’s or doctor’s availability.

DE-2: The operation of the CSA depends on changes being made in the clinic’s availabilities to update the availability of hours and available doctors in the clinic.

# 3.    System Features

## 3.1 Book Appointment through Application

### 3.1.1    Description

A person whose identity has been verified may book an appointment based on the specialty of the doctor, location or time. A Person may cancel or modify an appointment according to his/her needs. Priority = High.

### 3.1.2    Functional Requirements

|  |
| --- |
| **Appointment.Search: Booking an appointment**  .Register: The CSA shall confirm that the Person is registered for making an appointment.  .No: If the Person is not registered for making an appointment, the CSA shall give the Person options to register now and continue booking an appointment or to exit.  .Date: The CSA shall prompt the Person for the appointment date (see BR-3).  .Cutoff: If the appointment date is the current date and the current time is after the order cutoff time, the CSA shall inform the person that it’s too late to book an appointment for today. The Person can either change the appointment date or cancel the appointment. |
|  |
| **Appointment.list: Viewing the available appointment slots**  .Date: The CSA shall display a list of available time slots and doctors for the date that the Person has specified.  .Available: The list for the specified date shall display only those doctors for which at least one time slot is available in the hospital and which can be booked. |
| **Appointment.Multiple: Booking multiple appointments**  .Multiple: The CSA shall permit the user to book multiple appointments, if the appointments are not at the same date and time for different doctors.  .Too Many: If the Person tries to book multiple appointments from the list for the same date and time for different doctors, the CSA shall inform the Person that the maximum number of appointment for that time slot can only be one. |
| **Appointment.Confirm: Confirming an appointment**  .Display: When the Person indicates that he does not wish to book any other appointments, the CSA shall display the time of the appointment, name of the doctor, address of the clinic and the payment amount calculated per BR-11.  .Prompt: The CSA shall prompt the Person to confirm the appointment.  .Response: The Person can confirm, edit, or cancel the appointment.  .More: The CSA shall let the Person book additional appointments for the same or for a different doctor, for a different time. BR-8 and BR-9 pertain to multiple appointments in a single invoice. |
| **Appointment.Pay: Appointment booking payment**  .Method: When the Person indicates that he is done booking an appointment, the CSA shall ask the user to select a payment method.  .OK: If the payment request is accepted, the CSA shall display a message confirming acceptance of the booking with an appointment number.  .NG: If the payment request is rejected, the CSA shall display the reason for the rejection. The Person shall either cancel the appointment or change the payment method to cash and request to pay at the time of the appointment at the clinic. |
| **Appointment.Done: When the Person has confirmed the appointment, the CSA shall do the following as a single transaction.**  .Store: Assign the next available appointment number to the appointment and store the appointment with a status of “Accepted.”  .Database: Update the database with the date and time of the appointment and the details of the person.  .List: Update the list, so that any other person would not book the appointment for the same doctor at the same date and time.  .Person: Send an email message or text message to the Person with the appointment details and appointment payment information.  .Clinic: Send an email message to the Clinic Staff with the appointment information.  Failure: If any step of Appointment. Done fails, the CSA shall roll back the transaction and notify the user that the booking was unsuccessful, along with the reason for failure. |

[Note: Functional requirements for rebooking an appointment and for changing and canceling an appointment are not provided in this example.]

## 3.2    Book an appointment by phone or in person.

[Details are not provided in this example. Quite a lot of the functionality described under 3.1 Book an Appointment through Application could likely be reused, so this section should just specify the additional functionality that addresses the clinic interface.]

## 

## 3.3 Modify, and Delete an Appointment

[Details are not provided in this example. Quite a lot of the functionality described under 3.1.]

## 3.4 Create, View, Modify, and Delete Doctor’s availability

[Details are not provided in this example. Quite a lot of the functionality described under 3.1.]

# 4. Data Requirements

## 4.1 Logical Data Model

## https://lh3.googleusercontent.com/gmsaFTZOSiciwKASLasg2g8_kxuav1pqeiVlQvr-dOGz9ShEviwRWyjBKjxTXNx5o-U2Q5PJQCrxIrUlW_Ey4nBOSL-XAQ6e2A5wVmTFzQkxf4-io2f9ScAVI9IDWB3TyJYSPQbc

### Figure 2: Partial data model for release 1.0 of the Clinic Scheduler Application.

## 4.2 Data Dictionary

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Data Element | Description | Composition or Data Type | Length | Values |
| Patient | An authorized person to schedule an appointment. | Patient name  +Contact details  +User name  +Password |  |  |
| PatientId | Patient’s Unique ID | integer | 10 | initial value is 0001 |
| FirstName | Patient’s first name | String | 50 |  |
| LastName | Patient’s Surname | String | 50 |  |
| MiddleName | Patient’s Middle name | String | 50 |  |
| ContactNo | Patient’s mobile number | integer | 10 |  |
| Email | Patient’s Email | alphanumeric | 30 |  |
| Address | Patient’s Address | alphanumeric | 200 |  |
| Gender | Patient’s Gender | String | 10 | Male  Female |
| Birthday | Patient’s Birthdate | date, MM/DD/YYYY | 10 |  |
| Username | Unique username for patient’s login | String | 20 |  |
| Password | Password corresponding to the username | alphanumeric | 20 |  |
|  | | | | |
| Doctor | Authorized doctor details | Doctor name  +Contact details  +User name  +Password |  |  |
| DoctorId | Doctor’s Unique ID | integer | 10 | initial value is 0001 |
| DoctorName | Doctor’s name | String | 50 |  |
| DoctorTitle | Doctor’s job | String | 100 |  |
| ContactNo | Doctor’s contact number | integer | 10 |  |
| Email | Doctor’s Email | alphanumeric | 30 |  |
| Address | Doctor’s contact | alphanumeric | 200 |  |
| Gender | Doctor’s Gender | String | 10 | Male  Female |
| Username | Unique username for doctor’s login | String | 20 |  |
| Password | Password corresponding to the username | alphanumeric | 20 |  |
| Availability | Doctor’s Availability | date, MM/DD/YYYY | 10 |  |
|  | | | | |
| Admin | Authorized staff details who is responsible to manage the scheduler | Admin name  +Contact details  +User name  +Password |  |  |
| StaffName | Name of person who is handling the admin work | String | 50 | initial value is 0001 |
| Position | Position of the staff | String | 20 |  |
| Gender | Staff’s Gender | String | 10 | Male  Female |
| ContactNo | Staff’s Contact number | integer | 10 |  |
| Address | Staff’s Address | alphanumeric | 200 |  |
| Username | Unique username for admin’s login | String | 20 |  |
| Password | Password corresponding to the username | alphanumeric | 20 |  |
|  | | | | |
| Schedule | This table manages all the appointments scheduled in the system | Scheduling details+time +date |  |  |
| ScheduleId | Id of scheduled appointment | interger | 10 | initial value is 0001 |
| Schedule\_Date | Date of schedule | date, MM/DD/YYYY | 10 |  |
| Schedule\_Time | Time of Schedule | Time, hh:mm | 6 |  |

## 4.3    Reports

### 4.3.1    Patient Appointment History Report

|  |  |
| --- | --- |
| Report ID: | ODS-RPT-1 |
| Report Title: | Patient Appointment History |
| Report Purpose: | User can see the list of all the appointments that were placed from the CSA for that user till the current date. |
| Priority: | Medium |
| Report Users: | Patient |
| Data Sources: | Database of previous appointments. |
| Frequency and Disposition; | Report is generated on demand by the patient. Data in the report is static. Report is displayed on user's web browser screen on a computer, tablet, or smartphone. It can be printed if the display device permits printing. |
| Latency: | Complete report must be displayed to the customer within 3 seconds after it is requested. |
| Visual Layout: | Landscape mode on desktop and portrait mode on mobile devices |
| Header and Footer: | Report header shall contain the report title, patient’s name, and date range specified. If printed, report footer shall show the page number. |
| Report Body: | Fields shown and column headings:  ·         Patient Name  ·         Appointment Number  ·         Appointment Date  ·         Doctor name  ·         Type of appointment  ·         Medicine details  ·         Doctor fees  ·         Other Charges  ·         Total Price  ·         Link for downloaded Invoice Report    Selection Criteria: date range specified by users.  Sort Criteria: reverse chronological order |
| End-of-Report Indicator: | None |
| Interactivity: | Patients can drill down and see all the details from the appointment. |
| Security Access Restrictions: | Patient may retrieve only his own record history |

### 4.3.2    Doctor treatment history Report

|  |  |
| --- | --- |
| Report ID: | ODS-RPT-2 |
| Report Title: | Doctor schedule History |
| Report Purpose: | User can see the list of all the appointments that were taken from the CSA for that user till the current date. |
| Priority: | Medium |
| Report Users: | Doctor |
| Data Sources: | Database of previous appointments. |
| Frequency and Disposition; | Report is generated on demand by the doctor. Data in the report is static. Report is displayed on user's web browser screen on a computer, tablet, or smartphone. It can be printed if the display device permits printing. |
| Latency: | Complete report must be displayed to the customer within 3 seconds after it is requested. |
| Visual Layout: | Landscape mode on desktop and portrait mode on mobile devices |
| Header and Footer: | Report header shall contain the report title, doctor’s name, and date range specified. If printed, report footer shall show the page number. |
| Report Body: | Fields shown and column headings:  ·         Patient Name  ·         Appointment Number  ·         Appointment Date  ·         Type of appointment  ·         Patient history  ·         Medicine details  ·         Doctor fees  ·         Other Charges  ·         Total charges  ·         Link for downloaded Invoice Report    Selection Criteria: date range specified by customer.  Sort Criteria: reverse chronological order |
| End-of-Report Indicator: | None |
| Interactivity: | Doctors can drill down and see all the details from the appointment. |
| Security Access Restrictions: | Doctor may retrieve only his own record history |

### 4.3.3    Appointments Analysis Report

|  |  |
| --- | --- |
| Report ID: | ODS-RPT-3 |
| Report Title: | Appointments Analysis Report |
| Report Purpose: | CSA Managers and admins can see the list of all the appointments and their treatments. They can evaluate appointments per day, top doctors to get selected, patients demand for a doctor, etc. |
| Priority: | High |
| Report Users: | Admin, CSA Managers |
| Data Sources: | Database of scheduled appointments. |
| Frequency and Disposition; | Report is generated on demand by the users. Data in the report is dynamic based on the appointments per day. Report is displayed on user's web browser screen on a computer, tablet, or smartphone. It can be printed if the display device permits printing. |
| Latency: | Complete report must be displayed to the user within 3 seconds after it is requested. |
| Visual Layout: | Landscape mode on desktop and portrait mode on mobile devices |
| Header and Footer: | Report header shall contain the report title, date. If printed, report footer shall show the page number. |
| Report Body: | Fields shown and column headings:  ·         Patient details  ·         Doctor details  ·         Date of the appointment  ·         Time of the appointment  ·         Summary of all the appointments  Total sale.    Selection Criteria – User can select date range, view data for any day by specifying the data in the input field. |
| End-of-Report Indicator: | None |
| Interactivity: | User can roll up or drilldown historic data based on date, months and years |
| Security Access Restrictions: | NA |

### 4.3.3    Administration Report

|  |  |
| --- | --- |
| Report ID: | ODS-RPT-4 |
| Report Title: | Administration report |
| Report Purpose: | User can see the list of all the appointments that were taken from the CSA for any patient or any doctor and the status of those appointment. |
| Priority: | High |
| Report Users: | Admin |
| Data Sources: | Database of the appointments and scheduler |
| Frequency and Disposition; | Report is generated on demand by the admin. Data in the report is static. Report is displayed on user's web browser screen on a computer, tablet, or smartphone. It can be printed if the display device permits printing. |
| Latency: | Complete report must be displayed to the customer within 3 seconds after it is requested. |
| Visual Layout: | Landscape mode on desktop and portrait mode on mobile devices |
| Header and Footer: | Report header shall contain the report title and date. If printed, report footer shall show the page number. |
| Report Body: | Fields shown and column headings:  ·         Appointment Number  ·         Appointment Date  ·         Type of appointment  ·         Status of the appointment  ·         Patient Name  ·         Doctor name  ·         Link for downloaded Invoice Report    Selection Criteria: date range specified by customer.  Sort Criteria: reverse chronological order |
| End-of-Report Indicator: | None |
| Interactivity: | Admins can drill down and see all the details appointment for a particular patient or a doctor. |
| Security Access Restrictions: | NA |

## 4.4 Data Integrity, Retention, and Disposal

DI-1: The system shall retain patient’s data and their medical records. Data will be archived and stored on archived server once the retention date is crossed.

DI-2: The system shall retain doctor’s data and their records details for 10 years. Data will be archived and stored on archived server once the retention date is crossed.

DI-3: If a patient deletes his or her account, the account information will be flagged as deleted but the data will still be retained for two years from deletion date. This data can help patient to register again and retain the data.

DI-4: Network transmissions that involve financial information or personally identifiable information will have 256-bit SSL encryption to preserve data integrity.

DI-5: A backup server will have weekly backups of all the current transactional data. All the backup data shall be archived after 1 year and retained for next one year.

# 5. External Interface Requirements

## 5.1     User Interfaces

UI-1: The Clinic Scheduler Application screen displays shall conform to the *Process Impact Internet Application User Interface Standard, Version 2.0* [3].

UI-2: The system shall provide a help link from each displayed webpage to explain how to use that page.

UI-3: The webpages shall permit complete navigation and doctor schedule availability selection by using the keyboard alone, in addition to using mouse and keyboard combinations.

## 5.2     Software Interfaces

SI-1: Doctor Schedule System

SI-1.1:  The CSA shall transmit the doctor availabilities to the Doctor Schedule System through a programmatic interface

SI-1.2:  The CSA shall poll the Doctor Schedule system to determine whether a requested schedule is available.

SI-1.3:  When the Doctor Schedule System notifies the CSA that a specific schedule is no longer available, the CSA shall remove that schedule selection from the current date.

SI-2: Payment System

The CSA shall communicate with the Payment System through a programmatic interface for the following operations:

SI-2.1:  To allow a Patient to select a Payment method.

SI-2.2:  To allow a Patient to input Payment information

SI-2.3:  To validate a payment information with the financial services

SI-2.4:  To push the payment

## 5.3 Hardware Interfaces

No hardware interfaces have been identified.

## 5.4 Communications Interfaces

CI-1: The CSA shall send an email or text message (based on user account settings) to the Patient to confirm acceptance of a new appointment, doctor price, and modification/cancellation policy.

CI-2: The CSA shall send an email or text message (based on user account settings) to the Patient to report any problems with the appointment cancellation notice.

# 6. Quality Attributes

## 6.1    Usability Requirements

USE-1: The CSA shall allow user to retrieve the appointment history with a single interaction.

USE-2: 95% of new users shall be able to successfully book an appointment without errors on their first try.

## 6.2    Performance Requirements

PER-1:  The system shall accommodate a total of 400 users and a maximum of 100 concurrent users during the peak usage time window of 9:00 A.M. to 10:00 A.M. local time, with an estimated average session duration of 8 minutes.

PER-2:  95% of web pages generated by the CSA shall download completely within 4 seconds from the time the user requests the page over a 20 Mbps or faster Internet connection.

PER-3:  The system shall display confirmation messages to users within an average of 3 seconds and a maximum of 6 seconds after the user submits information to the system.

## 6.3    Security Requirements

SEC-1:  All network transactions that involve financial information or personally identifiable information shall be encrypted per BR-12.

SEC-2:  All users shall be required to log on to the CSA for all operations except viewing the welcome page as per BR-1.

SEC-3: User Login information will be encrypted and stored in database to secure users’ information as per BR-6.

SEC-4:  Only users who are designated as Admin by the application can view all the scheduled appointments (for all doctors and all patients) as per BR-13.

**6.4    Availability Requirements**

AVL-1: The CSA shall be available at least 98% of the time between 5:00 A.M. and midnight local time and at least 90% of the time between midnight and 5:00 A.M. local time, excluding scheduled maintenance windows.

## 6.5    Robustness Requirements

ROB-1: If the connection between the user and the CSA is broken prior to an appointment being confirmed or terminated, the CSA shall enable inform the user about the failed attempt and enable to them to restart the process.