

# 1. SmartCare System Requirements

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## 2. Requirements from Specification

The requirements below are separated into functional and non-functional requirements. Each shall be given a unique identifier. Functional requirements in the form FR.XXX.Y where FR indicates a functional requirement, XXX is replaced with a number and Y is replaced by a letter from the MoSCoW acronym. Non-functional requirements shall take the same form, using NFR to signify a nonfunctional requirement. The easy approach to requirements syntax (EARS) (Mavin et al., 2009) shall be followed for requirement descriptions to ensure they are clear and concise.

## 2.1. User Roles and Access Control

### 2.1.1. Functional Requirements

Requirement ID	Description	MoSCoW
FR.001.M	The data storage system shall track if a user is a Doctor	M
FR.005.M	If a user is a Doctor, then the data storage system shall track if they work full time or part time.	M
FR.010.M	The data storage system shall track if a user is a Nurse	M
FR.015.M	The data storage system shall track if a user is a Patient	M
FR.020.M	The data storage system shall track if a user is an Admin	M
FR.025.M	When a user is successfully authenticated the system shall re-direct them to their designated dhasboard.	M
FR.030.M	If a user has not been authenticated, then the system shall prevent them from accessing the application.	M
FR.035.M	If a user has not been authenticated and they attempt to access the site, then the system shall re-direct them to the login/registration page.	M
FR.040.M	The system shall allow new users to register their details to create an account.	M
FR.045.M	When creating a new user account address information shall be retrieved using an external web service.	M
FR.050.M	The system shall allow users to request their account be deleted.	M
FR.055.M	The system shall allow the user to logout.	M
FR.060.M	When a user has been inactive for 5 minutes the system shall log them out.	M
FR.065.M	When a user attempts to access a dashboard their right to access it shall be authenticated.	M

<b>Requirement ID</b>	<b>Description</b>	<b>MoSCoW</b>
FR.070.M	If the user is an admin, then the system shall allow them to register new doctor users	M
FR.075.M	If the user is an admin, then the system shall allow them to register new nurse users	M
FR.080.M	If the user is an admin, then the system shall allow them to perform create operations on stored records.	M
FR.085.M	If the user is an admin, then the system shall allow them to perform read operations on stored records.	M
FR.090.M	If the user is an admin, then the system shall allow them to perform update operations on stored records.	M
FR.095.M	If the user is an admin, then the system shall allow them to perform delete operations on stored records.	M

## 2.1.2. Non-functional Requirements

<b>Requirement ID</b>	<b>Description</b>	<b>MoSCoW</b>
NFR.001.S	The user authentication and login process shall take less than 3 seconds to complete	S
NFR.005.S	The user authentication and login process shall use secure protocols	S
NFR.010.S	User passwords shall be stored as a password hash.	S
NFR.015.S	Role based access control checks shall take less than 2 seconds to complete	S

## 2.2. Scheduling, Work Scheme and Prescriptions

### 2.2.1. Functional Requirements

Requirement ID	Description	MoSCoW
FR.100.M	The system shall return a timetable of appointments for doctor users.	M
FR.110.M	The system shall return a timetable of appointments for nurse users.	M
FR.115.M	The system shall allow doctor and nurse users to mark an appointment as complete.	M
FR.120.M	The system shall allow doctor and nurse users to issue a prescription after an appointment is marked as complete.	M
FR.125.M	The system shall allow doctor and nurse users to forward a patient to a hospital after an appointment is marked as complete.	M
FR.130.M	The system shall provide an appointment booking form for patient users.	M
FR.135.M	The system shall integrate appointments with an external calendar service.	M
FR.140.M	The system shall allow patient users to request prescription re-issuance.	M
FR.145.M	The system shall create a weekly work scheme that ensures there is 1 doctor and 1 nurse on Monday and Friday.	M
FR.150.M	The system shall create a weekly work scheme that ensures there are 2 doctors on Tuesday, Wednesday, Thursday, Saturday and Sunday.	M
FR.155.M	The system shall return a timetable of appointments for nurse users.	M

## 2.2.2. Non-functional Requirements

Requirement ID	Description	MoSCoW
NFR.020.S	The system shall allow nurses and doctors view patient timetables 24 hours a day, 7 days a week.	S
NFR.025.S	The system shall allow patients to view their booked appointments 24 hours a day, 7 days a week.	S
NFR.030.S	The system shall allow patients to book appointments 24 hours a day, 7 days a week.	S
NFR.035.S	The system shall allow patients to request prescription re-issuance 24 hours a day, 7 days a week.	S

## 2.3. Billing and Invoicing

### 2.3.1. Functional Requirements

Requirement ID	Description	MoSCoW
FR.160.M	The system shall calculate appointment cost based on the duration of the appointment.	M
FR.165.M	The system shall calculate appointment cost based on whether a doctor or nurse attended.	M
FR.170.M	The system shall automatically produce an invoice after each appointment is marked as completed.	M
FR.175.M	The system shall allow invoices to be exported in a pdf format.	M
FR.180.M	The system shall allow invoices to be sent directly to the NHS.	M
FR.185.M	The system shall allow invoices to be sent directly to private healthcare providers.	M
FR.190.M	The system shall allow admin users to produce a report containing patient turnover, private payments and payments sent to the NHS.	M

## 2.3.2. Non-functional Requirements

Requirement ID	Description	MoSCoW
NFR.040.S	Invoices shall be transferred to external services using secure protocols.	S

## 2.4. System Collaboration

### 2.4.0.1. Functional Requirements

Requirement ID	Description	MoSCoW
FR.195.M	The system shall allow nurse operations to be forward to other GP practices.	M
FR.200.M	The system shall facilitate collaboration with other GP practices via APIs.	M

### 2.4.0.2. Non-functional Requirements

Requirement ID	Description	MoSCoW
NFR.045.S	Invoices shall facilitate secure communication with to other GP practices using secure protocols.	S
NFR.050.S	Invoices shall facilitate secure communication with to other GP practices 24 hours a day, 7 days a week.	S

## 2.5. Pages

### 2.5.1. Functional Requirements

Requirement ID	Description	MoSCoW
FR.205.M	The system shall have a main home page.	M

Requirement ID	Description	MoSCoW
FR.210.M	The system shall have a login page.	M
FR.215.M	The system shall have a user registration page.	M
FR.220.M	The system shall have a doctor dashboard page.	M
FR.225.M	The system shall have a nurse dashboard page.	M
FR.230.M	The system shall have a patient dashboard page.	M
FR.235.M	The system shall have an admin dashboard page.	M

## 2.5.2. Non-functional Requirements

Requirement ID	Description	MoSCoW
NFR.055.S	The system shall provide a user interface that allows the user to reach any page within 5 clicks.	S
NFR.060.S	The system shall allow a user to access their dashboard from any page on the site in one click.	S

## 2.6. Full Requirements List

### 2.6.1. Functional Requirements

Requirement ID	Description	MoSCoW
FR.001.M	The data storage system shall track if a user is a Doctor	M
FR.005.M	If a user is a Doctor, then the data storage system shall track if they work full time or part time.	M
FR.010.M	The data storage system shall track if a user is a Nurse	M
FR.015.M	The data storage system shall track if a user is a Patient	M
FR.020.M	The data storage system shall track if a user is an Admin	M

<b>Requirement ID</b>	<b>Description</b>	<b>MoSCoW</b>
FR.025.M	When a user is successfully authenticated the system shall re-direct them to their designated dhasboard.	M
FR.030.M	If a user has not been authenticated, then the system shall prevent them from accessing the application.	M
FR.035.M	If a user has not been authenticated and they attempt to access the site, then the system shall re-direct them to the login/registration page.	M
FR.040.M	The system shall allow new users to register their details to create an account.	M
FR.045.M	When creating a new user account address information shall be retrieved using an external web service.	M
FR.050.M	The system shall allow users to request their account be deleted.	M
FR.055.M	The system shall allow the user to logout.	M
FR.060.M	When a user has been inactive for 5 minutes the system shall log them out.	M
FR.065.M	When a user attempts to access a dashboard their right to access it shall be authenticated.	M
FR.070.M	If the user is an admin, then the system shall allow them to register new doctor users	M
FR.075.M	If the user is an admin, then the system shall allow them to register new nurse users	M
FR.080.M	If the user is an admin, then the system shall allow them to perform create operations on stored records.	M
FR.085.M	If the user is an admin, then the system shall allow them to perform read operations on stored records.	M
FR.090.M	If the user is an admin, then the system shall allow them to perform update operations on stored records.	M



<b>Requirement ID</b>	<b>Description</b>	<b>MoSCoW</b>
FR.095.M	If the user is an admin, then the system shall allow them to perform delete operations on stored records.	M
FR.100.M	The system shall return a timetable of appointments for doctor users.	M
FR.110.M	The system shall return a timetable of appointments for nurse users.	M
FR.115.M	The system shall allow doctor and nurse users to mark an appointment as complete.	M
FR.120.M	The system shall allow doctor and nurse users to issue a prescription after an appointment is marked as complete.	M
FR.125.M	The system shall allow doctor and nurse users to forward a patient to a hospital after an appointment is marked as complete.	M
FR.130.M	The system shall provide an appointment booking form for patient users.	M
FR.135.M	The system shall integrate appointments with an external calendar service.	M
FR.140.M	The system shall allow patient users to request prescription re-issuance.	M
FR.145.M	The system shall create a weekly work scheme that ensures there is 1 doctor and 1 nurse on Monday and Friday.	M
FR.150.M	The system shall create a weekly work scheme that ensures there are 2 doctors on Tuesday, Wednesday, Thursday, Saturday and Sunday.	M
FR.155.M	The system shall return a timetable of appointments for nurse users.	M
FR.160.M	The system shall calculate appointment cost based on the duration of the appointment.	M
FR.165.M	The system shall calculate appointment cost based on whether a doctor or nurse attended.	M

<b>Requirement ID</b>	<b>Description</b>	<b>MoSCoW</b>
FR.170.M	The system shall automatically produce an invoice after each appointment is marked as completed.	M
FR.175.M	The system shall allow invoices to be exported in a pdf format.	M
FR.180.M	The system shall allow invoices to be sent directly to the NHS.	M
FR.185.M	The system shall allow invoices to be sent directly to private healthcare providers.	M
FR.190.M	The system shall allow admin users to produce a report containing patient turnover, private payments and payments sent to the NHS.	M
FR.195.M	The system shall allow nurse operations to be forward to other GP practices.	M
FR.200.M	The system shall facilitate collaboration with other GP practices via APIs.	M
FR.205.M	The system shall have a main home page.	M
FR.210.M	The system shall have a login page.	M
FR.215.M	The system shall have a user registration page.	M
FR.220.M	The system shall have a doctor dashboard page.	M
FR.225.M	The system shall have a nurse dashboard page.	M
FR.230.M	The system shall have a patient dashboard page.	M
FR.235.M	The system shall have an admin dashboard page.	M

## 2.6.2. Non-functional Requirements

<b>Requirement ID</b>	<b>Description</b>	<b>MoSCoW</b>
NFR.001.S	The user authentication and login process shall take less than 3 seconds to complete	S

Requirement ID	Description	MoSCoW
NFR.005.S	The user authentication and login process shall use secure protocols	S
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NFR.015.S	Role based access control checks shall take less than 2 seconds to complete	S
NFR.020.S	The system shall allow nurses and doctors view patient timetables 24 hours a day, 7 days a week.	S
NFR.025.S	The system shall allow patients to view their booked appointments 24 hours a day, 7 days a week.	S
NFR.030.S	The system shall allow patients to book appointments 24 hours a day, 7 days a week.	S
NFR.035.S	The system shall allow patients to request prescription re-issuance 24 hours a day, 7 days a week.	S
NFR.040.S	Invoices shall be transferred to external services using secure protocols.	S
NFR.045.S	Invoices shall facilitate secure communication with to other GP practices using secure protocols.	S
NFR.050.S	Invoices shall facilitate secure communication with to other GP practices 24 hours a day, 7 days a week.	S
NFR.055.S	The system shall provide a user interface that allows the user to reach anypage within 5 clicks.	S
NFR.060.S	The system shall allow a user to access their dashboard from any page on the site in one click.	S

### 3. References

Mavin, A., Wilkinson, P., Harwood, A. and Novak, M. (2009) Easy Approach to Requirements Syntax (EARS). In: 2009 17th IEEE International Requirements Engineering Conference [online]. 2009 17th IEEE

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