
SE3352a: Software Requirements and Analysis

Swerve Modern Software Requirements Specification For Self-Start System

Version 1.3

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Revision History

Date	Version	Description	Author
11/02/17	1.0	Completed initial version of section 1.1-1.5 Started section 2.1.	Everyone
11/10/17	1.1	Compiled Use Cases	Everyone
11/17/17	1.2	Completed Document	Everyone

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Modern Software Requirements Specification

1. Introduction

1.1 Purpose

The purpose of this SRS document is to fully describe the specifications and scope of the application that will be built. This document will be the basis for facilitation of a Web-based system for the Marcotte Physiotherapy Clinic which will provide online assistance to remote patients. The system should seamlessly treat patients without having any in person contact. more broadly, the service aims to widen the market for the Marcotte Clinic to people outside driving range. furthermore, they aim to improve the physical health of the Ontario region. Nonetheless, simple and user-friendly interfaces will be integral to the usability of the software.

1.2 Scope

The software system is designed to bring the treatment of the physiotherapist to the home and provide clinical tools to improve the traditional approaches of the patient's progression assessment. The application will be web-based and available 24/7 to the patients of Marcotte Physiotherapy Clinic and their physicians and administration staff. Patient injury assessment, rehabilitation plans, and progress assessments will be facilitated through forms and multimedia content. The system will be outcome based, and track the patient's history including the injury, diagnoses, treatments and progression outputs.

1.3 Definitions, Acronyms and Abbreviations

Word	Definition
Use Case	a specific functionality or behavior desired of the application being produced.
SRS	Software Requirements Specification. Document and process meant to define both functional and nonfunctional requirements of the application
GUI	Graphical User Interface. The main user-friendly way to interact with systems
Database	a Database is a shared collection of logically related data (and descriptions of said data), designed to meet the information requirements of the correlated software.
HTTPS	HyperText Transfer Protocol over a Transport Layer Security.
Node.js	An open source, cross-platform JavaScript runtime environment. This allows live modifications to web pages and running of online applications
Multimedia URL	Multimedia combines different context forms such as text, image, audio, animation, video, and interactive content
Online Form	Online forms allow for server collection of data from end user submissions
Unique	a Unique Identification Code provides distinct references for each categorized object.

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Identification code	used as a way to track individual entities within a given system.
framework	a collection of software and add-ons aimed at structuring the way an application is developed and operates.
web-server	a web server allows easily accessible 24/7 hosting of web pages and applications
administrator account	separate secure access to the inner workings of the system is designated behind administrative privileges. These accounts allow tools to better manage the overall software.
IP	Internet Protocol, a digital media transport system that runs over standard IP networks
JavaScript	A powerful front end scripting language that relies on HTML
Auth	Authenticating a User

1.4 References

Title: Assignment 1: Developing the Software Requirements Specifications SRS

Reference: Ouda, A. "Assignment 1: Developing the Software Requirements Specifications SRS." SE 3352 Software Requirements and Analysis. Western University, 1, Nov. 2017, Accessed: 2, Nov. 2017. <<https://owl.uwo.ca/access/content/attachment/672f3446-c1d2-46a8-9426-90707ad34952/Assignments/5301af15-c59a-4bde-ab8b-b37a1781abce/SE3352a_assignment1%20_2017_.pdf>>

Title: Marcotte Physiotherapy Website

Reference: Marcotte, Stephanie. "Home." *Marcotte Phsiotherapy Clinic*, Accessed: 2, Nov. 2017. <<<http://marcottephysio.com/>>>

Title: The Tech Terms Computer Dictionary

Reference: "The Tech Terms Computer Dictionary." *The Tech Terms Computer Dictionary*, Accessed: 2, Nov. 2017. <<<https://techterms.com/>>>

Title: Stripe Payments

Reference: "pricing" Stripe, Accessed: 16, Nov. 2017. << <https://stripe.com/us/pricing> >>

Title: PayPal Merchant

Reference: "merchant" PayPal, Accessed: 16, Nov. 2017. <<

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<https://www.paypal.com/ca/webapps/mpp/merchant> >>

Title: OpenTok Video Conferencing

Reference: “pricing” OpenTok, Accessed: 16, Nov. 2017. << <https://tokbox.com/pricing> >>

1.5 Overview

The following document will contain an overall description of system and the requirements of the system in greater detail. The overall description will go over the essentials of the system such as the actors (the entities that are involved in the system) and the use cases involved (the interactions between the actors and the system that comprise the entirety of the project). The use cases and actors will be provided within a UC diagram that entails which actor initiates which use case. The diagram will be a simplistic layout of how the system will interact.

The last chapter covering the requirements will go in depth on individual use cases. Each use case will be given its own specification which can be viewed to understand exactly which each use case means. Other requirements such as usability, reliability, and performance will be provided. This section of the document will provide in the depth requirements for all sectors of the project.

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2. Overall Description

2.1 Use-Case Model Survey

2.2 Introduction

The use case is a tool used to describe the functionality of a system. It explains the flow of events describing the interaction between the system and external systems, denoted below as actors. Each use case description has a name, entry conditions, flow of events, exit conditions and quality requirements. The use case model below outlined the required features to carry out required tasks of the Self Start application

2.3 Survey Description

The users of this program are patients, physicians and admin staff of Marcotte Physio Clinic. The patients are existing and new individuals that are looking for an alternative or complement to traditional therapy. The physicians are the experts that diagnose, treat and review the patient's injury and treatment plan. The admin manages the scheduling and some of the data entry for both the patients and physicians. This system is to be designed as a stand-alone product and will not be dependent on Marcotte's current website.

The use case model below is a direct product of the vision document drafted between Dr. Ouda on behalf of Swerve and SE3352, and Stephanie Marcotte of Marcotte Physiotherapy. This system is maintained by administrators and physicians.

2.4 Use-Case Model Hierarchy

Use Cases	Description
Patient Log-in	Patient logs into currently active account.
Welcome Visitors	Home page of the website is displayed to any site visitor.
Contact Clinic	Visitor has ability to request an appointment or fill out online form describing injury.
Book Appointment	Patient has ability to book an appointment with physician. A confirmation message is sent.
Fill Out Form	Patient fills out provided online introduction form and provide injury photos.
Edit Form	Admin can make changes to the online introduction form provided to patients.
Create Account	Visitor or the Admin registers a new account on the system.
Create Standard Rehab Plan	Physician creates standard rehabilitation plan.
Create New Exercise	Physician defines a new exercise and it is added to the existing exercises set
Create Custom Rehab Plan	Physician creates a custom rehabilitation plan based on a specific injury.
Assign Exercise	Physician assigns exercises to a custom rehabilitation plan.
Assign Assessment Tests	Physician assigns assessment tests to a custom rehabilitation plan.

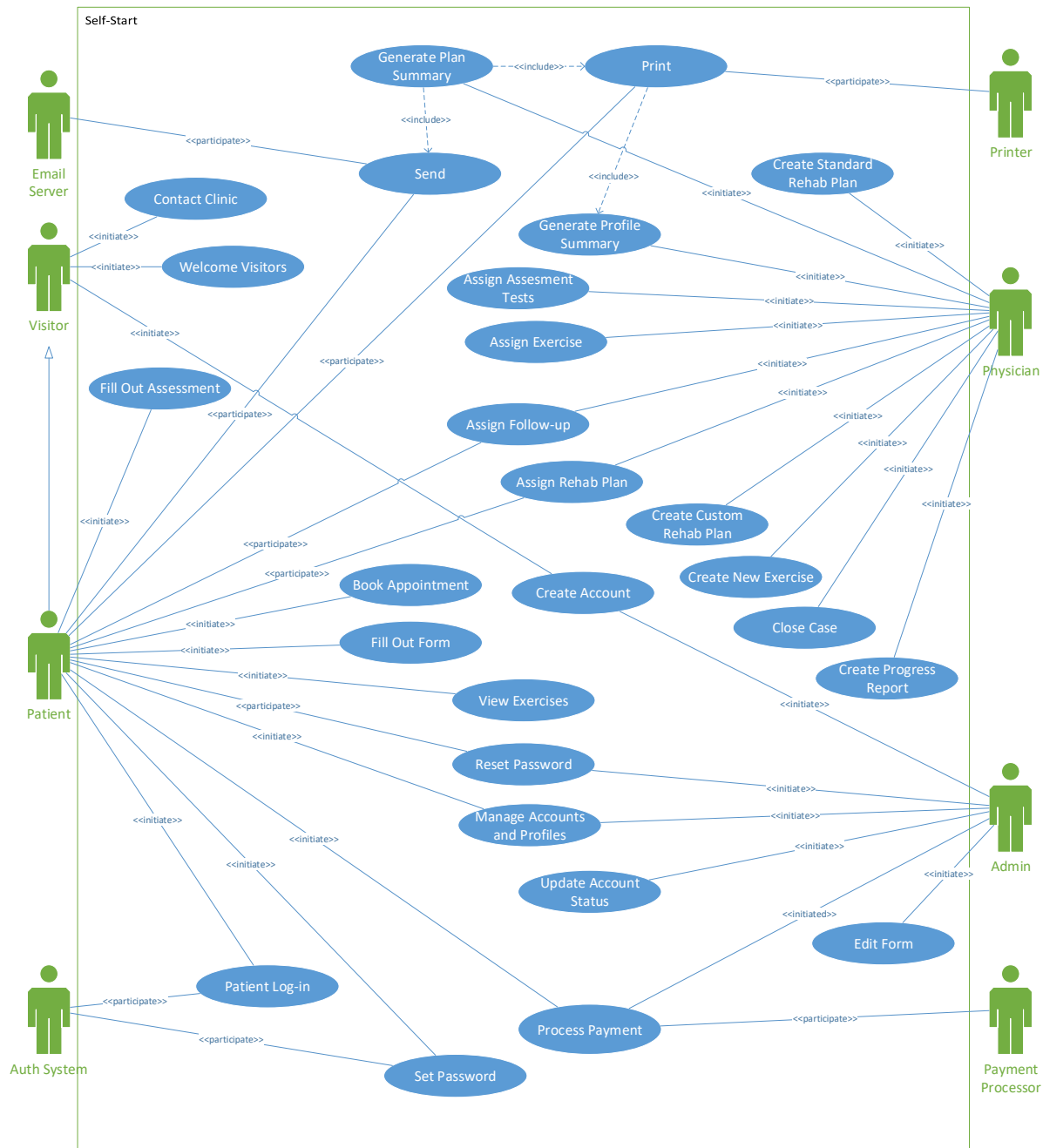
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Assign Rehab Plan	Physician assigns rehabilitation plan to a specific patient.
Generate Plan Summary	Based on assessment test system generates a report to be provided to the patient.
Print	Send printable file to printer to be printed.
Send	Send file to patient via email.
View Exercises	Patient has ability to view suggested exercises through text and simple animations.
Fill Out Assessment	Patient fill out online assessment form.
Create Progress Report	Physician creates progress report on a given patient's record.
Assign Follow-up	Physician has ability to choose whether a given patient requires follow up or a case will be closed.
Close Case	Physician closes a currently active case.
Generate Profile Summary	Physician has ability to generate a profile on summary on given patient and display or print that data.
Process Payment	Patient enters payment credentials which are handled by third party payment processor.
Manage Accounts and profiles	Patient/Admin can edit select fields within profile and account.
Set password	Patient sets password to their account.
Reset Password	Admin can reset user password to base value temporarily.

Actors	Description
Visitor	Any person visiting the site.
Patient (inherits Visitor)	Patient inherits properties of visitor but also has attributes specific to their account.
Physician	Registered physiotherapist that works at Marcotte physiotherapy clinic.
Admin	Administration staff working at Marcotte Physiotherapy clinic.
Payment Processor	Third Party payment processor to take in patient payments.
AUTH actor	A system to assure proper storage and authorization of account passwords.
Printer	A machine for printing text or pictures onto paper.
Email Server	An external email server to communicate with patients.

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2.5 Diagrams of the Use-Case Model



2.6 Assumptions and Dependencies

The Swerve team does not believe there to be any assumptions of dependencies regarding any key technical feasibility, subsystem or component availability, or other project related assumptions on which the viability of the software described by this Modern SRS may be based

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3. Requirements

3.1 Use-Case Specifications

Use Case Name	Patient Login
Participating Actors	Initiated by Patient Participated by Auth System
Entry Conditions	<ul style="list-style-type: none">The patient is on a web browser and navigates to the Self Start Home page and clicks the "Login" button.
Flow of events	<ol style="list-style-type: none">Patient selects "Login" buttonThe system presents a form that takes the username/email as a text field and the password as a password field. The system then sends this information to the Auth System to be verified that the hashed password matches the stored hash.The Auth System verifies the hashed password matches the stored hash.The system receives a response from the Auth System and if successful logs the patient into their account. If unsuccessful, an error message is presented and the patient may attempt to login again.
Exit Conditions	<ul style="list-style-type: none">Patient is successfully logged into their account, ORPatient exits out of the "Login" page.
Quality Requirements	<ul style="list-style-type: none">Must use secure login (SHA-2 Hashing) to handle credentials.

Use Case Name	Welcome Visitor
Participating Actors	Initiated by Visitor
Entry Conditions	<ul style="list-style-type: none">The visitor is on a web browser and navigates to the Self Start Home page.
Flow of events	<ol style="list-style-type: none">Visitor navigates to Self Start URL.The system presents the home page to the Visitor.

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Exit Conditions	<ul style="list-style-type: none">• Visitor leaves the home page.
Quality Requirements	<ul style="list-style-type: none">• Home page is displayed to the visitor with an attractive message and a full description of the online patient services.
Use Case Name	Contact Clinic
Participating Actors	Initiated by Visitor
Entry Conditions	<ul style="list-style-type: none">• The visitor navigates from the home page to the contact clinic page without logging in.
Flow of events	<ol style="list-style-type: none">1. Visitor selects “contact clinic” option from home page.2. The system displays contact information and a form that takes in visitor information and injury information to be sent.
Exit Conditions	<ul style="list-style-type: none">• The form has been successfully submitted, OR• The visitor has navigated away from the contact clinic page.
Quality Requirements	<ul style="list-style-type: none">• N/A

Use Case Name	Book Appointment
Participating Actors	Initiated by Patient
Entry Conditions	<ul style="list-style-type: none">• A registered patient is on the main web page and clicks on a “Book Appointment” button.
Flow of events	<ol style="list-style-type: none">1. Patient selects book appointment button.2. The system presents a calendar with available timeslots.3. Patient selects an available timeslot.4. The system prompts a confirmation message.

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	5. Patient confirms and submits the appointment time.
Exit Conditions	<ul style="list-style-type: none">• Patient is shown a confirmation message that the appointment has been booked and is returned to main page, OR• Patient exits out of the book appointment application without booking any appointment.
Quality Requirements	<ul style="list-style-type: none">• No already scheduled dates will be available through the calendar portion.• Calendar will update upon every confirmed appointment time being submitted.

Use Case Name	Fill Out Form
Participating Actors	Initiated by Patient
Entry Conditions	<ul style="list-style-type: none">• A registered patient is on the main web page and clicks on a “fill out injury info form” button
Flow of events	<ol style="list-style-type: none">1. Patient selects fill out injury form button.2. The system presents a fillable webform for the information.3. Patient fills out the form with needed information regarding their injury. Patient may choose to upload a photo of their injury. Patient attempts to submit the completed form.4. The system prompts a confirmation message.5. Patient confirms and submits the form.
Exit Conditions	<ul style="list-style-type: none">• Patient confirms the information in the form and submits it to the system, OR• Patient exits out of the injury form application.
Quality Requirements	<ul style="list-style-type: none">• Must be explicit in which information is necessary for the patient to fill out.

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Use Case Name	Edit Form
Participating Actors	Initiated by Admin
Entry Conditions	<ul style="list-style-type: none">The Admin selects the edit introduction form option on the main page
Flow of events	<ol style="list-style-type: none">Admin selects edit introduction form button.The system presents the existing questions in textboxes with the option to add or remove sections on the form.Admin selects which portion of the form is to be changed. Then the Admin adds whichever changes are needed to the form. Finally, the Admin submits all changes to the form.The system presents how the new form would look and then prompts a confirmation message.Admin confirms changes and submits the form.
Exit Conditions	<ul style="list-style-type: none">Admin confirms the changes to the online form and is sent back to main page, ORAdmin exits out of the edit introduction form option without making any changes.
Quality Requirements	<ul style="list-style-type: none">The updated form must be shown to the admin before the confirmation occurs to assure the admin understands how the changes will appear on the form.

Use Case Name	Create Account
Participating Actors	Initiated by Visitor, OR Initiated by Admin
Entry Conditions	<ul style="list-style-type: none">Visitor browses site and selects Log In / Register, ORVisitor is prompted to make an account by the system to save data or complete an action (such as accessing paid services).
Flow of events	<ol style="list-style-type: none">Visitor is prompted to make an account.<ol style="list-style-type: none">If this process is initiated by an existing administrator, they can

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	<p>create different account types: Patient and Physician.</p> <p>2. System present a form for the user (visitor/admin) to select important information for the account, such as name, password, contact information. Optional fields will add information to the Visitor's profile, this may be changed or expanded upon later by the Manage Account and Profile use case.</p> <p>3. Visitor enters data and submits the information for the new account when done.</p> <p>4. System checks the information in the form, then if there are no errors it is saved on the server and a new account is initialized. System then adds the account to the set of accounts maintained by the admin. System sends a confirmation email to the patient's email address as an additional verification step.</p> <p>5. Visitor will confirm the email address and receive the ability to log into using the Patient Log-In use case.</p>
Exit Conditions	<ul style="list-style-type: none">• New Account has been created and approved• In the eyes of the system, Visitor is now Patient with access to their profile and more of the functionalities of the site as the administrators and physicians provide them to the account• If an Admin used this process to make an account, it may then be assigned and used by those they are prepared for at the end of this process. After the first login of that new user, they may be prompted to update their information and finish setup of their new account.
Quality Requirements	<ul style="list-style-type: none">• Verification should be a quick and simple procedure to give a small but practical layer of security to both the account and the system.• Account creation should have a mechanism to prevent bots from flooding the accounts database, such as captcha to determine the user is human.

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Use Case Name	Create Standard Rehab Plan
Participating Actors	Initiated by Physician
Entry Conditions	<ul style="list-style-type: none">• The Physician clicks the “Create Standard Rehab Plan” button, OR• The Physician clicks edit on an existing standard rehab plan base.
Flow of events	<ol style="list-style-type: none">1. The Physician clicks the “Create Standard Rehab Plan button”,2. The system presents a list of exercises and assessments to be added to the blank or base rehabilitation plan. Exercises can be selected from the Assign Exercise use case or could be new exercises from the Create New Exercise use case. The assessment will be added through the Assign Assessment Tests use case.3. The Physician selects an exercise or assessment to add to the plan.4. The system adds the exercise to the selected plan and brings the Physician back to page selection page.5. The Physician repeats event 3 for each assessment test or exercise that they would like to be added to the plan. The Physician then selects the “Save as Standard Rehab Plan” button.6. The system prompts the Physician to enter in a name for the new plan. If the plan was built from a pre-existing base plan, the Physician may keep the same name to overwrite the old, or enter a new name to form a new standard rehab plan template7. The physician updates the plan by confirming with a name and the list containing the plans is updated accordingly.
Exit Conditions	<ul style="list-style-type: none">• The Physician clicks “Save Standard Rehab Plan” and enters a name for the plan, OR• The Physician exits out of the “Create Standard Rehab Plan” application and no changes are made.
Quality Requirements	<ul style="list-style-type: none">• N/A

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Use Case Name	Create New Exercise
Participating Actors	Initiated by Physician
Entry Conditions	<ul style="list-style-type: none">The Physician selects the "Create New Exercise" button
Flow of events	<ol style="list-style-type: none">The Physician selects the "Create New Exercise" button.The system presents a base form with entries for information regarding the details of the exerciseThe Physician enters the required details into the form, and is also able to upload a matching video of the exerciseThe system presents a preview of the new exercise formatted, and prompts the Physician to save.The Physician saves the new exercise.The system updates the available exercises.
Exit Conditions	<ul style="list-style-type: none">Physician clicks the "Save New Exercise" button, ORThe Physician exits out of the "Create New Exercise" application without saving changes.
Quality Requirements	<ul style="list-style-type: none">The details of the exercise include: name, number of reps, categories, medical reasoning.

Use Case Name	Create Custom Rehab Plan
Participating Actors	Initiated by Physician
Entry Conditions	<ul style="list-style-type: none">The Physician clicks the "Create Custom Rehab Plan" button, ORThe Physician clicks edit on an existing standard rehab plan base.
Flow of events	<ol style="list-style-type: none">The Physician clicks the "Create Standard Rehab Plan button",The system presents a list of exercises and assessments to be added to the blank or base rehabilitation plan. Exercises can be selected from

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	<p>the Assign Exercise use case or could be new exercises from the Create New Exercise use case. The assessment will be added through the Assign Assessment Tests use case.</p> <ol style="list-style-type: none">3. The Physician selects an exercise or assessment to add to the plan.4. The system adds the exercise to the selected plan and brings the Physician back to page selection page.5. The Physician repeats event 3 for each assessment test or exercise that they would like to be added to the plan. The Physician then selects the "Save as Custom Rehab Plan" button.6. The system prompts the Physician to enter in a name for the new plan. If the plan was built from a pre-existing base plan, the Physician may keep the same name to overwrite the old, or enter a new name to form a new standard rehab plan template7. The physician updates the plan by confirming with a name and the list containing the plans is updated accordingly.
Exit Conditions	<ul style="list-style-type: none">• The Physician clicks "Save Custom Rehab Plan" and enters a name for the plan, OR• The Physician exits out of the "Create Custom Rehab Plan" application and no changes are made.
Quality Requirements	<ul style="list-style-type: none">• N/A

Use Case Name	Assign Exercise
Participating Actors	Initiated by Physician
Entry Conditions	<ul style="list-style-type: none">• The physician enters the "Edit Rehab Plan screen", OR• The physician enters the "Create Custom Rehab Plan screen".
Flow of events	<ol style="list-style-type: none">1. The physician enters "Edit Rehab Plan" or "Create Custom Rehab Plan".2. The system presents a list of all exercises that have been created.3. The Physician selects an exercise from the list and clicks the "Assign

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	<p>Exercise” button.</p> <p>4. The system adds the exercise to the rehab plan that is being interacted with.</p>
Exit Conditions	<ul style="list-style-type: none">• The Physician assigns an exercise to the plan, OR• The Physician exits the application with no changes saved.
Quality Requirements	<ul style="list-style-type: none">• N/A

Use Case Name	Assign Assessment Test
Participating Actors	Initiated by Physician
Entry Conditions	<ul style="list-style-type: none">• The physician enters the “Edit Rehab Plan screen”, OR• The physician enters the “Create Custom Rehab Plan screen”.
Flow of events	<ol style="list-style-type: none">1. The physician enters “Edit Rehab Plan” or “Create Custom Rehab Plan”.2. The system presents a list of all assessment tests that have been created.3. The Physician selects an assessment test from the list and clicks the “Assign Assessment Test” button.4. The system adds the Assessment Test to the rehab plan that is being interacted with.
Exit Conditions	<ul style="list-style-type: none">• The Physician assigns an assessment test to the plan, OR• The Physician exits the application with no changes.
Quality Requirements	<ul style="list-style-type: none">• N/A

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Use Case Name	Assign Rehab Plan
Participating Actors	Initiated by Physician Participated by Patient
Entry Conditions	<ul style="list-style-type: none">The Physician selects the “Assign Rehab Plan” button.
Flow of events	<ol style="list-style-type: none">The Physician selects the “Assign Rehab Plan” button.The system presents a list of all existent rehab plans that have been created with a separate list of all the currently open patients accounts that are on the system.The Physician selects the rehab plan to be added to a selected patient and confirms their choices.The system adds the rehab plan to the selected Patient’s account and notifies the Patient of the change.
Exit Conditions	<ul style="list-style-type: none">The Physician assigns a rehab plan to a patient, ORThe Physician exits the “Assign Rehab Plan” application with no changes saved.
Quality Requirements	<ul style="list-style-type: none">N/A

Use Case Name	Generate Plan Summary
Participating Actors	Initiated by Physician Participated by Patient
Entry Conditions	<ul style="list-style-type: none">Physician selects a patient to generate a report for based on examination
Flow of events	<ol style="list-style-type: none">Physician selects patient the report will be created for.System generates report based on user assessment test.Physician selects format for report to be provided.

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Exit Conditions	<ul style="list-style-type: none">Report is provided to the patient in selected formatPhysician exits the report generating app.
Quality Requirements	<ul style="list-style-type: none">At the final step in the flow of events, this use case will include the Print OR Send use cases. The Print or Send use cases are initiated when the physician selects the display method. When invoked within this use case, the system provides the report in the selected format to be provided to the Patient.

Use Case Name	Print
Participating Actors	Initiated by Physician Participated by Patient
Entry Conditions	<ul style="list-style-type: none">The Physician or Patient clicks “print” on a printable form / reportIncluded by Generate Plan Summary and may be used by Create Progress Report or Generate Profile Summary
Flow of events	<ol style="list-style-type: none">The Application shows a preview of the printed form/report.The user selects the desired or a standard printer.The above user confirms by clicking “Print”.The form is sent to the specified device to be printed.
Exit Conditions	<ul style="list-style-type: none">The page is successfully printed, or the user cancels or exits the page without confirming the print.
Quality Requirements	<ul style="list-style-type: none">N/A

Use Case Name	Send
Participating Actors	Initiated by Physician OR Patient
Entry Conditions	<ul style="list-style-type: none">The Physician or Patient clicks “Send” on a sendable form / reportIncluded by Generate Plan Summary and may be used by Create

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	Progress Report or Generate Profile Summary
Flow of events	<ol style="list-style-type: none">1. The application prompts the user to enter one or more destination email address(es) to send the file to.2. The email is sent using the account bound email address.
Exit Conditions	<ul style="list-style-type: none">• The sender is notified that the email has been successfully sent.
Quality Requirements	<ul style="list-style-type: none">• N/A

Use Case Name	View Exercises
Participating Actors	Initiated by Patient
Entry Conditions	<ul style="list-style-type: none">• The Patient, already logged in, clicks the “View Treatment Plan” tab
Flow of events	<ol style="list-style-type: none">1. The application provides a list of all exercises that have been assigned2. The Patient selects an exercise from the list, expanding the section to show the text-based guidance or animation specific to the selected exercise.
Exit Conditions	<ul style="list-style-type: none">• The Patient transitions to a new section of the website or logs out
Quality Requirements	<ul style="list-style-type: none">• The exercises list should be organized in a simple and intuitive layout, e.g. grouping by muscles used, etc.• The view should include menu and sorting options to ease navigation among the exercises. E.g. sort by length, newest, recommended order

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Use Case Name	Fill Out Assessment
Participating Actors	Initiated by Patient
Entry Conditions	<ul style="list-style-type: none">• Patient selects option to enter responses for the assessment test questions.
Flow of events	<ol style="list-style-type: none">1. Patient selects options to enter assessment test responses.2. System provides patient with an online form to enter their answers.3. Patient enters responses on form and submits.
Exit Conditions	<ul style="list-style-type: none">• Patient submits completed form and is redirected.• Patient exits out of form without sending.
Quality Requirements	<ul style="list-style-type: none">• The assessment test must include: The patient's Unique identification code, patient's name, a description, a form of assessment tools and an assessment rubric.

Use Case Name	Create Progress Report
Participating Actors	Initiated by Physician
Entry Conditions	<ul style="list-style-type: none">• Patient selected with open case.• Physician selects create progress report page.
Flow of events	<ol style="list-style-type: none">1. Physician selects create progress report page.2. Physician proceeds to select a patient with a currently open case from provided list.3. System creates visual representation of patient progress and displays representation to the Physician.
Exit Conditions	<ul style="list-style-type: none">• Physician exits the progress report page.

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Quality Requirements	<ul style="list-style-type: none">• Patient progress includes pain level/mobility progress measurement.
Use Case Name	Assign Follow-up
Participating Actors	Initiated by Physician Participated by Patient
Entry Conditions	<ul style="list-style-type: none">• Physician decides Patient must have a follow-up assessment to adjust treatment.
Flow of events	<ol style="list-style-type: none">1. Physician selects option to book a follow-up assessment.2. System provides physician with all profiles with currently open cases.3. Physician selects patient that requires follow-up assessment and provides optional dates.4. System provides patient with information and a form to select a possible provided date.5. Patient enters response (a date from the list or the inability to use any of the dates).6. System provides physician with response of patient. If no date was selected, events onward from #2 are repeated until a date is selected.
Exit Conditions	<ul style="list-style-type: none">• A date is agreed upon for follow-up assessment by Physician and Patient.
Quality Requirements	<ul style="list-style-type: none">• Only open cases will have the option to have a follow-up assessment, all closed cases are removed from profile list.

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Use Case Name	Close Case
Participating Actors	Initiated by Physician
Entry Conditions	<ul style="list-style-type: none">Physician selects an existing case and chooses the option to close it.
Flow of events	<ol style="list-style-type: none">Physician selects the existing case to review and closeThe system shows the case to the Physician to review before closing itThe Physician confirms the conclusion of the open case, and it is marked closed and will no longer be contributed toThe system generates a case summary, and removes any other case data from the account while keeping the most important or any desired information in a new archived case file.
Exit Conditions	<ul style="list-style-type: none">The client is notified that a case has been closed on their accountThe case summary remains but all other details are removed
Quality Requirements	<ul style="list-style-type: none">N/A

Use Case Name	Generate Profile Summary
Participating Actors	Initiated by Physician
Entry Conditions	<ul style="list-style-type: none">Physician selects option to generate summary for a selected profile
Flow of events	<ol style="list-style-type: none">Physician views the profile they wish to generate a summary for and confirms generation of a new summary.The system condenses critical information by a standard set of filters to only take important data from the information on their accountThe physician is able to edit the summary and add or remove to/from itFinally they are able to save it to view later or exit without saving

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Exit Conditions	<ul style="list-style-type: none">• If saved, the summary is now visible to physicians on the account
Quality Requirements	<ul style="list-style-type: none">• N/A

Use Case Name	Process Payment
Participating Actors	Initiated by Physician OR Administrator Participated by Payment Processor
Entry Conditions	<ul style="list-style-type: none">• The Patient selects the “billing” tab and identifies they wish to make a purchase.
Flow of events	<ol style="list-style-type: none">1. The billing information is shown by the application.2. The Patient reviews the bill, and selects “pay bill”3. The Patient is redirected to a 3rd party Payment processor4. The payment is processed, and the site is notified of the completed transaction5. The Patient is notified of the successful transaction6. Billing information is emailed to the Patient using the send use case7. The site updates the user's billing tab with the new balance and completed transaction history
Exit Conditions	<ul style="list-style-type: none">• The payment is processed and updated, or the user exits out of the payment screen before completing the transaction
Quality Requirements	<ul style="list-style-type: none">• The payment processor should be reputable and safe• The payment processor should accept all major credit card types.• The administrator should be able to complete the transaction on behalf of the Patient (eg: update the bill if the Patient pays in person)

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Use Case Name	Manage Accounts and Profiles
Participating Actors	Initiated by Patient, OR by Administrator
Entry Conditions	<ul style="list-style-type: none">• The Patient, already logged in, clicks “manage account”. OR• administrator navigates to patients account, and clicks “Edit Patient Account”
Flow of events	<ol style="list-style-type: none">1. The application displays the initial form used to create the account, prefilled with the previous values used for the account2. The Administrator or Patient changes the desired fields.3. The Patient or Administrator clicks “save changes”4. The information is saved and the account details are updated
Exit Conditions	<ul style="list-style-type: none">• The Patient clicks the “Cancel” or “save changes” button.
Quality Requirements	<ul style="list-style-type: none">• N/A

Use Case Name	Set Password
Participating Actors	Initiated by Physician Participated by Auth System
Entry Conditions	<ul style="list-style-type: none">• The Patient, already logged in, clicks change password. OR on account creation, prompting the user to set a password
Flow of events	<ol style="list-style-type: none">1. The application prompts the user for their old password2. The Auth system verifies the user’s password3. If the credentials are incorrect, prompt the user to re-enter them4. On correct credentials, the application prompts the user to enter their new password.5. If both password and confirm password match and are up to password standards set in the quality requirements, the new password is saved and the credentials are updated.

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Exit Conditions	<ul style="list-style-type: none">The Patient clicks the “Cancel” button or successfully changes their password.
Quality Requirements	<ul style="list-style-type: none">Password must include one special character, one upper case letter, and be at least 7 characters long.

Use Case Name	Reset Password
Participating Actors	Initiated by Admin
Entry Conditions	<ul style="list-style-type: none">Patient has already requested a password reset
Flow of events	<ol style="list-style-type: none">Admin selects the patient’s account.Admin resets the patient’s password to a base value and needed to be changed.Admin sends the new password to the patient via email.Patient changes the base value to desired password.
Exit Conditions	<ul style="list-style-type: none">Patient changes the base value and confirms the new password.
Quality Requirements	<ul style="list-style-type: none">Password must include one special character, one upper case letter, and be at least 7 characters long.

3.2 Functionality

- 3.2.1 The system will provide a screen and mechanism to log in to the database securely. It will do so referencing third party authorization window. This will be done dynamically as to not limit the number of devices a user can be using at once and to help the system be more scalable.
- 3.2.2 The system will be instantiated with one admin role which will be used to populate the system with the first physicians, exercises and other admins. Admins will later be able to modify create and delete user accounts across all roles.
- 3.2.3 The system will allow users to join the system but will not be properly entered until confirmation by a physician. The system will then prompt new patients to put in any missing information.
- 3.2.4 The patients will be allowed to request consultations and the system send notifications to physicians to accept these requests. At which point an automated email will be sent to both parties to notify them of the successful event creation.
- 3.2.5 Only a user can switch their password however the system itself can be prompted to reset a password if a user is locked out.

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- 3.2.6 The system shall provide a customizable reference data module. This module will contain the response codes to data acquisition requests. The admin will be able to create the necessary response codes and messages given each request based on the corresponding table the request was made on and the outcome of their request.
- 3.2.7 The system will allow the admin to add, modify and delete user records, specifically their workout records. This will ensure that any mistakes or confusions can be rectified. The records are made up previous workout plans. The workout plans are made up of individual exercises and corresponding reviews.
- 3.2.8 Physicians will be able to add new exercises and create new plans. Each exercise will contain a description detailing the reasons for doing the exercises using tags, the muscles which are being worked, the hazards of that exercise, a description of the correct form while doing the exercise and finally a video of someone doing the exercise.
- 3.2.9 The user will only be able to access exercises currently prescribed to them. This will limit confusion and force them to return as customers
- 3.2.10 The system will allow the physicians to see who has been assigned which plans on an individual basis but also in bulk. In other words, any physician can look at a patient and see what plans have been assigned and the physician that assigned them. As well, any physician can look at a plan, see the patients that have been assigned it and which physician did that. Finally, any physician can look at another physician, and see which plans they have assigned to which patients. This will all be done in a table view with dropdown menus to select any combination of the three entities, physician, plan and patient
- 3.2.11 The system will be able to send email reminders to users. These reminders will be for pending exercises, and upcoming consultations.
- 3.2.12 The system will allow users to print and email copies of their plan history and patient information. This is so that they can show it to medical professionals in other settings if need be. Patients may only view, send and print their own history while physicians have access to the entire database

3.3 Usability

- 3.3.1 The system will be made to be optimize user interface. A subset of the design goals will surround maintaining an aesthetically pleasing suite. To do so colors reflecting the company logo will be the basis of or design. The system will use bright colors to indicate the importance of certain subjects.
- 3.3.2 The user interface will also be optimized for easy navigation throughout the suite of pages and information. Clearly stated and well-presented page titles will allow users to understand where they are in the system and how the got there. Simple and digestible page frameworks will be paramount to maintaining a customer friendly environment. The system will be optimized for users looking to learn more about their body and the world of physiotherapy. The system will ensure that the process from log on to completion is no more than 5 clicks.
- 3.3.3 All users will log in at the same portal but will be sent to their respective portals after signing in. this log in portal will be optimized to work with the autofill mechanisms on common browsers. As well, It will be equipped with a stay signed in feature as to not log the user out.
- 3.3.4 The physician's portal will consist of one single page application as it will be much simpler. All entrances to use cases available to physicians will be no more than a click away. This will ensure speed and simplicity.
- 3.3.5 To do all this, the system will be generated as a single suite, dynamic page application. This will ensure the saving of information as the user navigates as well as high speed processing. This method will allow the development to be separated well and easily among the developers. The home page will use a dynamic single page model to allow for easy navigation however the deeper pages will be separate for authorization purposes. This hybrid model will ensure easy navigation with optimal security.
- 3.3.6 The IBM Common User Access standards will be used to ensure usability. Some specific conventions will be: all operations can be performed with mouse or keyboard, navigation within fields can be managed via the Tab key and Shift+Tab keys, and the application will have a Help Menu that can be accessed upon request.

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3.4 Reliability

- 3.4.1 Availability: the system will always be available barring maintenance. Maintenance should take no longer than 8 hours. If there is maintenance, it will be displayed on the website's homepage for a week straight before being implemented.
- 3.4.2 Mean Time Between Failures (MTBF): The MTBF should be no longer than 15 hours. The maintenance team will be alerted in the case of a failure.
- 3.4.3 Mean Time to Repair (MTTR): due to the modular nature of our program we expect repair to take no longer than 6 hours. This could grow based on time of day during the crash or severity of the crash.
- 3.4.4 Accuracy: The output of the system is a function of the entries put in. Therefore, we plan to have perfect accuracy to the inputs placed by the physicians.
- 3.4.5 Maximum bugs or defect rate: The system should have a max of 3 bugs/KLOC. Even then, the errors should be extremely hard to replicate and a result of a rare situation and motivation
- 3.4.6 Bugs:
- 3.4.7 Minor bugs: bugs happen in unique cases and can be worked around to achieve the original goal (2.25 bugs/KLOC)
- 3.4.8 Significant bugs: bugs that prevent a user from reaching their desired goal which is meant to be a feature of the system (0.5 bugs/KLOC)
- 3.4.9 Critical bugs: bugs that challenge the integrity of the system by making it lose security, edit data that should be read only or put the system in a state where it is not functional for many users (0.25/KLOC)

3.5 Performance

- 3.5.1 The system response time for various operations conducted by Patient, Doctor or Admin actors should take no longer than 3 seconds to perform. This includes Patient Login, Create Standard Rehab Plan and View Exercises use cases. Additionally, this performance requirement must be provided 24/7. This means that the system must be able to handle varying levels of patient use and handle a maximum level of web form interactions, estimated at 500, and cross origin requests, without experiencing any interruptions.
- 3.5.2 The Marcotte Online Physio system will come preloaded with clinic-defined standard rehabilitation plans for common injuries, this includes information on exercise and self-assessment methods. The data associated with each plan included, unique ID code, Name, Description, plan Author, Overall Rehabilitation Goal, List and order of exercises and timeframe to complete the plan. These preloaded plans will not restrict the physiotherapist from creating a new plan by combining parts of the standard ones.
- 3.5.3 While the system will have numerous built in features, such as encryption and input sanitization to prevent malicious events, it will come equipped with a degradation mode to protect it from further harm. When the system enters degradation mode, it will be changed to a "read-only" state automatically, or manually overridden to this mode by the system administrator. When in this mode, corrections and repairs can be performed while the system is still available for the users to navigate and access, however not edit or affect the system any further. If it is not feasible to repair the system while it is still accessible, it can be restored to a previous state. This capability will be provided by periodically taking snapshots of the state of the application and storing it on spare disks in a safe location, or remotely via cloud technologies.

3.6 Supportability

- 3.6.1 Modular Code Design: The system should follow a modular programming design. This allows for easier maintenance of the system. Having the code set into modules makes it easier to find bugs in the system.
- 3.6.2 AngularJS and Cross-Browser Support: The system will support and use AngularJS framework. Current versions of AngularJS run on most modern browsers and would make cross-browser support possible. AngularJS works on browsers such as: Chrome, Firefox, Edge, Internet Explorer, and Safari.
- 3.6.3 Mobile Support: With many people using their smartphone over a traditional computer, the system will also support mobile browsers. This is once again possible through the power of AngularJS.

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3.7 Design Constraints

- 3.7.1 Accessibility: The system should be easy to navigate, and easy to use. The main web page will have an easy to navigate menu bar which should allow the user to find their needed page in little time. Forms that appear for the user should also be simply laid out and very organized in a manner of a question followed by a text box where the user inputs their response.
- 3.7.2 Language: The application will be written in JavaScript and HTML using the AngularJS Framework

3.8 Online User Documentation and Help System Requirements

The Swerve development team will provide simple navigation tips for the user to help them find their desired destination in the system. There will also be simple, but helpful comments to help the user when they are dealing with information forms. If a user runs into a problem that is not solved by the other help systems, they can contact a developer by email to get their problem solved.

3.9 Purchased Components

The system will use Stripe or Paypal for processing payments and a service like OpenTok for video conferencing. All three services integrate within our app using API's. The licenses are commercial licenses.

3.10 Interfaces

3.11 User Interfaces

There are four main interfaces:

1. The visitor web landing page of an unregistered patient to browse and learn about the Self Start program
2. The patient interface where an authenticated user is actively being treated.
3. The physician interface will allow the physician to actively manage patients.
4. The admin interface, similar to the physician interface, but with more privileges.

3.12 Hardware Interfaces

The hardware interface will be a server that is accessible through HTTP Requests over HTTPS for secure data transfer. The requests will use the HTTP standard port of port 80 and 8080. The server IP, and addresses will be specified later.

3.13 Software Interfaces

The system will interact with a MongoDB database in order to store user and session data. The system will also interact with printers and email clients.

3.14 Communications Interfaces

The system will run over HTTPS and use data transfer protocols similar to most web applications.
Licensing Requirements

3.15 Licensing Requirements

The final deliverable will be the creation of Swerve. The system will be sold to Marcotte Physiotherapy Clinic and will become their property, which they can use at their discretion. However due to the nature of the produce, updates and maintenance will still be provided and any changes will become property of Marcotte Physiotherapy Clinic thereafter.

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3.16 Legal, Copyright and Other Notices

The information received by Swerve from via testing user login, accounts and profile creation will not be kept and will remain with Marcotte Physiotherapy. Patient injury information, diagnosis and treatment information will remain private and confidential and not be kept by Swerve. All data will be hosted in manner best suited to Marcotte's Physiotherapy's need and practices. Patient consent will be required in order to access any of their records or information. Marcotte Physiotherapy shall license or distribute the system provide by Swerve without its consent, and possible financial agreements.

3.17 Applicable Standards

The system to be developed by Swerve will consist of standards related to: quality and regulatory standards, industry standards and usability.

Swerve must ensure that all patient data and resources from Marcotte Physiotherapy are not abused or exploited. This can be accomplished by ensuring sensitive data is protected and and error free. The wrong information could lead to false diagnosis for the patient, and potentially mistreatment, and medical malpractice resulting in potential legal consequences. This must be avoided with multiple checks and balances and redundancy measures in place, to ensure a fail-safe system.

Swerve must ensure that its system is up to industry standards and adopts best practices in delivering On-line physiotherapy treatment and supplemental clinical tools. This includes ensuring all of the usability requirements are in place as well. The interface and system should be easy to navigate and learn for first time users. They should be intuitive and require minimum effort to accomplish its intended task of provided online physiotherapy care for Marcotte. The included being compatible with, and across multiple platforms and devices, in terms of both functionality and scalability.