SWEN90016

Software Processes & Management

Assignment 2

Project Management Plan

Version 1.0

Group ER1 Team 2

Kai Soon	869815
ZiPing Chen	1017132
Spike Chun Yi Lee	725748
Medha Mishra	976189

Executive Summary

The purpose of this project is to develop a website that allows the general public to make appointments with their preferred healthcare professionals at a healthcare center. The owner of the healthcare center wants to make the current appointment system more efficient. She wants to implement a web-based system to manage appointment booking, where customers are to visit the website to make their appointment/s with their preferred healthcare professional themselves. In addition to an improvement in efficiency, this system will also expose the healthcare center business to a myriad of customers due to its online presence. This, in turn, can drive greater profit margins, and subsequently, better opportunities for the business to expand and reach new heights.

The project team consists of four students from the University of Melbourne who are currently in their penultimate year of their Masters in Information Technology. The team first outlines essential information about the project. Key stakeholders such as the owner of the healthcare center, development team, and the end users were identified. Features of the final product that is in or out of the scope of the project were also defined. The project will be executed using the Agile-SCRUM software development lifecycle model such that any changes to the project requirements can be quickly rectified such that there is a lesser chance that a wrong product will be developed. How the completed project will benefit the stakeholders were also documented. Constraints of the project were considered. Roles were assigned to the members of the team and communication plans were drafted. Risks of the project were identified, with how the project should respond/mitigate these risks considered. After much research and discussion, the web development platform WIX will be used to develop the product. The progress and evolution of the project will also be documented through weekly reviews and retrospectives.

The project is to be completed in 4 weeks and will incur an estimated cost of $4800 AUD. In addition to this, a recurring cost of $40 AUD per month will be paid to WIX to maintain the website at the completion of the product.

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Introduction

4.1 Purpose of document

This project management plan serves two primary purposes:

1. **Pre-implementation Analysis**
   The scope, execution model, constraints, risks, and technology used are defined such that the project team is aware of what the project entails. The roles and responsibilities of each team member are also assigned and an effective communication protocol amongst team members is agreed upon.
2. **Manage and Review executed Processes**
   The software lifecycle model utilised in this project is SCRUM. As such, all sprint reviews, retrospective, burndown charts, and milestones of the development process will be documented in this plan such that they can be referred to in order to improve the implementation of the succeeding sprint.

The goal of this project is to develop a website that allows patients of a healthcare center to make consultation appointments with their preferred healthcare professionals. The website will be constructed using WIX, a simple and intuitive web development tool that is able to effectively cater for the needs of this project.

4.2 Audience of document

The intended audience of this project management plan is the Alena, the primary stakeholder of the project, and the development team for this project.

4.3 Limitations of document

1. The document is created by a team with limited professional software development experience.
2. Contact between Alena and the team is limited to sprint reviews. If Alena comes up with inputs during a sprint she cannot immediately inform the team of her updated requirements.
3. Fixed template for document. No additions can be made outside of what the template accommodates for.

4. The user response to the planned functionalities of the online booking system along with the user interface is never recorded. Only Alena's requirements are known, nothing is known of the customer's comfort with the system.
5. Testing procedure/s for testing the functionality of the planned system are not documented. While testing is carried out in real life, this document has no record of it even though it could be helpful to future teams.

4.4 Evolution of document

Version	Create by	Date created	Location of document	Comments
1.0	Kai Soon	12th April 2019	Project team's shared Google Drive folder	Nil

Project Information

5.1 Key Stakeholders

1. Alena
2. Development Team
3. Healthcare Professionals
4. Customer

5.2 Scope

5.2.1 What is in-scope?

1. Customer must be able to register for an account. The following are information required to register for an account.
    a. Name
    b. Address
    c. Contact number
    d. Email address (required for login)
    e. Initial password (required for login)
2. Customer must be able to edit account information.
3. Customers must be able to make a booking request with the following steps:
    a. Select a healthcare professional type
    b. A list will be displayed showing all health professional's name and their per-hour charge
    c. Select preferred healthcare professional
    d. A list of available consultation time between 0900-1700, 7 days a week will be displayed
    e. Select preferred consult time
    f. Customer can enter an optional message to be sent to the healthcare professional
4. When a customer has successfully made a booking, system must send an email to the corresponding healthcare professional with the following information:
    a. Name
    b. Contact number
    c. Email address

   d. Date of booking
   e. Time of booking
   f. Optional customer message
5. Customers must be able to view or cancel their appointment on the system.
   a. If customer cancels their appointment, the healthcare professional will be notified by email with the following information in regards to the cancelled appointment:
      i. Name
      ii. Contact number
      iii. Email address
      iv. Date of booking
      v. Time of booking
6. All information discussed above must be stored in a database
7. A super user must have a predefined and default email address, username, and password.
8. A super user (admin) must be able to do the following:
   a. View the history of all booking requests
   b. Register healthcare professionals on the system with the following information:
      i. Healthcare professional must be one of the following types: Podiatrist, Naturopath, Chiropractor
      ii. Name of professional
      iii. Email address of professional
      iv. Charge per hour of professional

5.2.2 What is out-of-scope?

1. Health professional is unable to access the system to view or edit booking information
2. Super user will not be able to add additional healthcare professional types to the system.
3. The system wouldn't store personal health information of the customers who are being scheduled with the software.

5.3 Delivery approach / SDLC - Formal or Agile

We have chosen to use an AGILE model to develop the website. AGILE was chosen for the following reasons:

1. **Ability to deal with varying requirements**

   Alena's business is ever growing. Over the course of development, she might realize problems/additional requirements that she has not yet listed during the first round of meetings. Using an AGILE model allows the business to quickly incorporate/alter features of the software to accommodate for the business growth during each sprint of the life-cycle.

2. **Reduces chance of developing a wrong product**

   Incorporating continuous integration and rapid testing into the development process will allow us to address software development issues as they occur.

   Agile development produces a working prototype after each sprint. As such, end-users are able to test the product and provide feedback to the development team, at which the development team is able to improve the product based on the feedback given. Problems identified and resolved swiftly, and this inhibits small problems from escalating into bigger problems.

5.4 Business Value (Financial & Non-Financial Benefits)

Alena

- **Business becomes more scalable**

  Alena sees the project as a business that can be expanded to provide many different healthcare services other than the initial three healthcare services. The system makes it more feasible to achieve Alena's business goals. The current way of Alena managing the appointments alone will become increasingly infeasible as the business scales up.

- **Increase profitability**

  The system improves customers' appointment booking experience significantly by reducing their waiting time. This improvement in customer experience will potentially attract more customers. In the long run, this increases the profits of the business.

- **Reduces workload and human errors**

  The project will reduce Alena's workload as she will not have to manually enter appointments into the system, email customers a confirmation for a booked appointment, or register new customers in the system. This increases the efficiency of the business and reduces chances of scheduling errors.

- **Development cost savings**

  Having students develop this web-based system, Alena will save the business a lot of money on software development because students developers are a lot cheaper than professional developers.

Development Team

- **Student developer gains hands-on experience**

  Because the development team are still students, the opportunity to collaborate with real world stakeholders to develop a usable software will provide an excellent opportunity for them to exercise what they have learnt in university on a project with real outcomes.

Healthcare Professionals

- **Increases business exposure for healthcare professional**

  Because customers are able to view all available healthcare professionals on the web system, the web system increases the exposure of these healthcare professionals and potentially increases their customer base. An increase in their customer base can in turn increase their income.

- **Improved scheduling efficiency**

  In the previous system, healthcare professionals lost available booking time due to the time lost between Alena checking her messages and the customer calling in to cancel an appointment. The new system immediately makes those time slots available for booking and improves the healthcare professional's time usage and prevents inadvertent wastage of time.

Customer

- **Improved booking efficiency**

  New customers are able to quickly register themselves on the system instead of having to wait for Alena to call them back to process their registration. Customers are also able to see the availability of each healthcare professional and are able to swiftly make/cancel a booking on the required time and day. Appointments do not have to be made through Alena. This also improves the customer's experience.

5.5 Constraints

- There is **limited budget** left for the software system development project since Alena has spent most of her budget on renovating and expanding her health care centre.
- The software development team has **little professional development experiences** and might not have the adequate knowledge and skills.
- The project has a **deadline** that has to be met which is on 25/05/2019)
- **Limited number of users** can concurrently use the system due to available essential technical resources (e.g. commercial database, cloud service).

Project Governance

6.1 Roles and Responsibilities

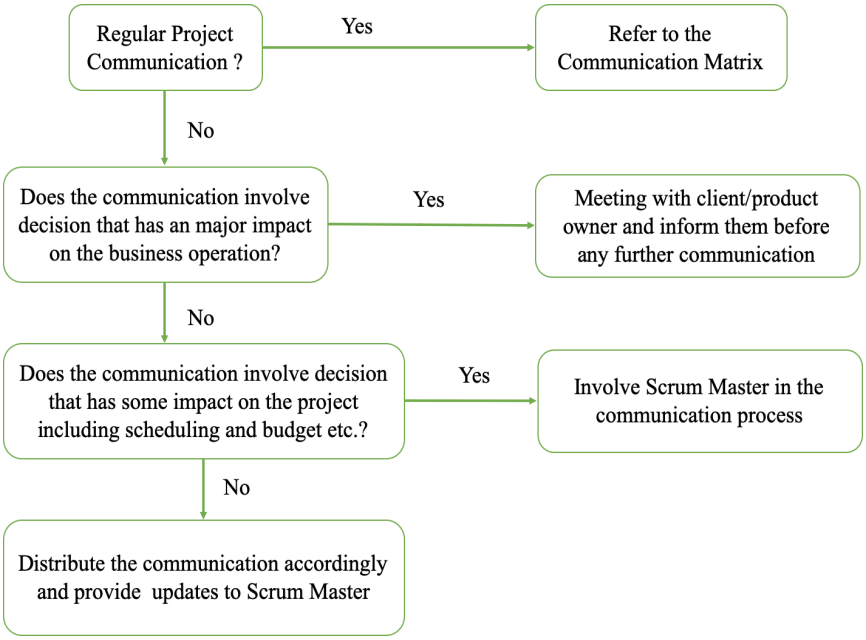
- Spike Lee is the Subject Matter Expert on the subject of web development
- Kai Soon is the Product Owner
- ZiPing Chen is a development team member
- Medha Mishra is the Scrum Master

6.2 Communication Plan

Communication Matrix

Stakeholders	**Communication objectives**	**Format**	**Frequency**	**Owner**	**Importance**
Product owner	1. Gather or update requirements and feedbacks 2. Provide updates on project progress, key issues and milestones achieved 3. Budget approval 4. Sign-off all scope, approve prototype and final acceptance	Regular meeting in person/ Formal report Project/ Expense statement	Weekly Monthly Monthly	Scrum Master	High
Development team members	1. Identify resources required for each phase of the project 2. Tasks allocation and scheduling 3. Report key issues	Regular meeting in person/ Kanban board/ Formal report	Weekly Daily Monthly	Scrum Master	High
Healthcare professionals	Requirement gathering and feedbacks on the prototype	One-to-one interview	Fortnightly	Scrum Master	Low
Patients	Gathering feedback on the prototype	One-to-one interview/ Focus group	Fortnightly Fortnightly	Scrum Master	Medium

Communication flow chart



Communication Escalation Plan

Priority	Definition	Decision for Authority	Timeframe for resolution
Priority 1	Major impacts to the project, if not resolved timely, there will be significant adverse impact to revenue and/or schedule.	Product owner	Within 1 business day
Priority 2	Medium impacts to the project, which may result in some adverse impact to revenue and/or schedule	Scrum Master	Within 2 business days.
Priority 3	Slight impact that may cause some minor scheduling difficulties but no impact on the business operation or revenue	Scrum Master	Within 5 business days.
Priority 4	Insignificant impact but there are better solutions to the issue	Scrum Master	Work continues and any suggestion will be submitted through project change control process

6.3 Risk Management

Risk Impact Analysis Table

Risk ID	Risk Type	Description	Probability	Impact	Justification
1	Business	Data breach of sensitive patient information (address, phone number, etc)	Medium	High	Such a data breach will have significant negative impact on the business and its reputation. The centre might also face legal issues like considerable compensation claims from patients.
2	Project	Development team member cannot commit time and effort to the project, and as such, may leave the project before its completion.	Medium	Medium	The development team consists of students who have many other commitments like assignments and work. It's possible that they cannot devote enough time and effort in this project. The impact of this risk depends on the replicability of the members leaving/slacking.
3	Product	Admin cannot correct errors caused due to faulty system design.	Medium	Medium	Admin can only view but not cancel or create appointments. If due to some internal error the software results in appointments being erroneously created/ cancelled, it cannot be remedied by a human admin. This will reduce the efficiency and performance of the booking system.
4	Product	The quality of this project may not meet the Alena's expectations, who might delay or deny the completion of the project.	Medium	Medium	The project is delivered by inexperienced students without the supervision of professionals developers. The impact varies based on the extent to which the owner requires the project to be reworked.
5	Product	The online booking system is not available due to downtime on Wix, the	Low	High	If booking appointments replace phone call with the online booking

		underpinned infrastructure provider of the system.			system as the sole option, for the entire duration of downtime on Wix, no new appointments can be made. This can result in patients losing faith in the business.
6	Business	Alena experiences financial difficulty (e.g. unexpected expenses) and is unable to pay for resources required for the development.	Low	High	Alena has spent most of her budget on renovating the healthcare centre. If there is any other unexpected expenses incurred like compensation claims from patients, Alena will have to divert the funding for the project to other purposes and this project will be short of budget. Many essential resources will be unavailable.
7	Product	False bookings from adversaries who wants to sabotage the business. The system is vulnerable to attacks like false makings from adversaries who wants to sabotage the business such that genuine customers are unable to make appointments with them	Low	High	The current design does not include any verification or other security mechanism to protect the system from cyber attacks. The impact of a malicious spam of bookings would be disastrous as the genuine customers will not be able to book appointments, which will lead to loss of customers and income.
8	Business	The online booking system may be less appealing for customers that are not well acquainted with using the internet.	Low	High	Alena's clients are used to simply calling in to make appointments. They may regard being required to register and book appointments over an interface they may not necessarily be comfortable with. This may turn some of her older clientele, who are not as comfortable with the system, away from Alena's clinic.
9	Business	Too many customers try to login and book appointments concurrently, causing the server to overload.	Low	Medium	If at a sudden point of time a larger number of customers than the system is built to handle tries to use the service, it may result in some users being denied service. As a result Alena may lose business due to loss of faith by customers.

10	Project	There can be unexpected requirement changes over the course of the project.	Medium	Low	As the centre is expanding, it's likely that new features will be added to the requirements to accommodate new developments. This can delay the delivery of the project, cost more time and money.

Risk Register Table

Risk ID	Trigger	Owner	Response	Resources Required
1	Security logs show a record of suspicious activity.	Development team	The risk can be **mitigated** by adding security mechanism into the system during the design stage.	Cyber security experts. Additional workload and costs.
2	Team members fails to complete scheduled tasks	Scrum Master	This may be **avoided** by actively communicating with team members and adjusting task schedules to accommodate their personal needs.	Management effort in team member engagement and scheduling.
3	A booking with human error has been processed by the system and Alena cannot amend it.	Development team	The risk can be **avoided** by changing the current design, adding the editing access to the admin account.	Additional workload and costs
4	Alena is continuously dissatisfied with the prototype	Scrum Master	More detailed feedback should be procured from the Alena at each sprint. Modify future sprints based on feedback.	Time for sprint modification
5	The underpinned web-infrastructure provider, Wix, becomes not available without any early warnings.	Product owner	The response to this risk is to accept it. As Wix is a third-party independent web-infrastructure provider, the project team will have no control or influence over them. In the unlikely event of downtime of Wix, the product	None

			owner will have no choice but to wait until Wix provide solutions.	
6	A considerable amount of unexpected expenses can be observed during the project	Product owner/Development team	The impact of this risk can be **mitigated** in two ways. The product owner compensates for lacking in budget for the project (e.g. bank loans). The development team can substitute some development tools/technology for more cost effective solutions.	Financing solutions (e.g. Bank loans) Open-source software
7	Noticeable number of absences of booked appointments	Project owner	The risk can be **mitigated** to some extent by implementing some verification features in the design like id verification or ban list for patients didn't show up multiple times.	Additional workload and costs
8	Interviewed patients are unpleased with the replacement of the booking system.	Product owner	The product owner will have to seek feedback from patients to adjust the features of the system to a more user-friendly outcome.	Interviews with patients.
9	Server response to requests slower than usual.	Development team	The development team will inform Alena about this risk before final acceptance as it cannot be avoided at the development stage and she will be responsible for hiring a maintenance team to take care of that.	More computation resources. A maintenance team.
10	Project owner requests additional requirements of the project that is outside its initial scope	Scrum Master	**Accept** the risk. Review if these requirements are realistic and accept them if possible. The development team has adopted agile as the SDLC and is open to changes.	Depends on the features added. Additional workload and costs.

6.4 Technology

We have decided to use Wix, a web-development platform to build the software product. Through our research, we have found that Wix offers a multitude of features such as a drag-and-drop website builder and an in-built database system among others. These features can be used to develop the product. Wix also provides free website host with their assigned URL.

One reason we have decided to use Wix is that its in-built features will allow our inexperienced team to efficiently build the product without having to spend time learning full-stack web development(node.js,bootstrap,javascript). If Alena decides to scale the product up, Wix's features will also allow us to extent or add extra functionality to the product easily without having to learn new frameworks or libraries.

6.5 Project Planning

Product Backlog

ID	User Story	Story Points
1	As a customer, I can **register for an account with my name, address, contact number, email address, and password** so that I can make appointments on the web system.	3
2	As a customer, I can **edit my account information** so that if my contact information changes, I am able to modify it on the website.	3
3	As a customer, I can **view my appointment on the website** so that I can check the website anytime to find out when my booked appointment is.	3
4	As a customer, I want to be able to **login to my signed up account**, so that I can access and utilise the system for my needs.	2
Milestone 1	**User is now able to setup and access account**	
5	As a customer, **I can select a healthcare profession type and a list of healthcare professional's name of the selected type and their corresponding per-hour charge will be displayed** so that I can make a better decision as to which healthcare professional is most suited to my needs and	5

	budget.	
6	As a customer, **I selected my preferred healthcare professional's name and a list of available consultation times will be displayed** so that I can choose which time-slot I would like to request my booking at.	7
7	As a customer, **I can choose my preferred consultation time** so that my appointment can be booked.	4
8	As a customer, **I can write an optional message alongside my booking** so that it can be sent to the healthcare professional at which I have made the booking with.	1
9	As a customer, **I must receive an email with regards to my booking** so that I know that my booking request has been confirmed.	2
10	As a healthcare professional, **I must receive an email with the name, contact number, email address, date and time of booking, and an optional message of the customer when the booking is confirmed** so that I have information about the upcoming consultation with the customer.	3
Milestone 2	**User is now able to book appointments**	
11	As a customer, **I can cancel my appointment on the website** so that I can inform the healthcare center that I am unable to make it to my appointment.	4
12	As a healthcare professional, **I must receive an email with the name, contact number, email address, date and time of booking of the customer if he/she cancels their booking** so that I am aware of the cancellation.	3
Milestone 3	**User is now able to cancel bookings**	
13	As an admin, **I can log into the system with a pre-determined username and password** so that the system is protected from unwanted adversaries.	2
14	As an admin, **I can view the history of all booking requests made on the system** so that I am aware of which customer had made a booking with which healthcare professional.	3
15	As an admin, **I can add healthcare professional's name, profession type, email address, and charge-per-hour on the system** so that if a new healthcare professional joins the center, his/her information can be entered into the system.	3
Milestone 4	**Admin is now able to manage website**	

Sprint 1 Plan

Sprint Goal

Implement features:

1. Create, access and edit user account
2. View healthcare professionals based on their profession type
3. Admin of system able to access system and add healthcare professionals
4. User is able to create a prototype booking system and receive email confirmation
5. UI design of website

Sprint Backlog and Task Breakdown

Note: I might have been too conservative with time needed per task

1. As a customer, I can **register for an account with my name, address, contact number, email address, and password** so that I can make appointments on the web system.

   Tasks:

   a. Create signup form (½ hr)
   b. Save signup information to database (1 hr)
   c. Create error messages (½ hr)
   d. Page Transition after signup(½ hr)

2. As a customer, I can **edit my account information** so that if my contact information changes, I am able to modify it on the website.

   Tasks:

   a. Create edit account information form(½ hr)
   b. Save edited information to database(1 hr)
   c. Create Error messages(1 hr)
   d. Page Transition after editing(½ hr)
   e. Display updated information from the database(½ hr)

3. As a customer, I want to be able to **login to my signed up account**, so that I can access and utilise the system for my needs.

   Tasks:

   a. Create login form(½ hr)

   b. Check login information from database(1 hr)
   c. Create error messages(½ hr)
   d. Page transition after editing(½ hr)

4. As an admin, **I can add healthcare professional's name, profession type, email address, and charge-per-hour on the system** so that if a new healthcare professional joins the center, his/her information can be entered into the system.

   Tasks:

   a. Create profile creation form(1 hr)
   b. Save profile information to database(1 hr)
   c. Create Error messages(½ hr)
   d. Create addition confirmation message(½ hr)
   e. Page Transition after successfully adding profile(½ hr)

5. As an admin, **I can log into the system with a pre-determined username and password** so that the system is protected from unwanted adversaries.

   Tasks:

   a. Check admin login from database(1 hr)
   b. Create admin confirmation message(½ hr)
   c. Page Transition to admin sections after login(½ hr)

6. As a customer, **I can select a healthcare profession type and a list of healthcare professional's name of the selected type and their corresponding per-hour charge will be displayed** so that I can make a better decision as to which healthcare professional is most suited to my needs and budget.

   Tasks:

   a. Create healthcare profession type selection(½ hr)
   b. Get and display professionals & their details from database based on profession type chosen (1½ hr)
   c. Create error messages(½ hr)

7. As a customer, **I can choose my preferred consultation time** so that my appointment can be booked.

   Tasks:

   a. Create display for all consultation times(½ hr)
   b. Create booking form(½ hr)
   c. Create Error messages(½ hr)

d. Create confirmation message(½ hr)
e. Save booking information to database (1 hr)

8. As a customer, **I must receive an email with regards to my booking** so that I know that my booking request has been confirmed.

   Tasks:

   a. Get correct user email from database(½ hr)
   b. Send email with appropriate information(1 hr)
   c. Create Error messages(½ hr)
   d. Create confirmation message(½ hr)
   e. Page Transition after successfully emailing(½ hr)

Burndown Chart