BUSINESS ANALYSIS WORK PLAN

Game Design and Programming Capstone Project

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INTRODUCTION

Purpose

This Business Analysis Work Plan work plan was created to document how the business analyst or team of business analysts plan to complete work for the Game Design and Programming Capstone Project. The purpose of the document is to provide guidance on the methods that will be used to manage what is required to complete the project. Documenting the plan will also help ensure that the business analyst's methods will complement how other team members will approach the project.

Document Overview

This document focuses on the first iteration plan of the business analysis approach for the Game Design and Programming Capstone Project. Other plans for the project will be based on the chosen Business Analysis Approach. This document will also provide an overview of the plans for the following: stakeholder engagement, requirements repository, communication approach, traceability, prioritization, change management, and risk management. An appendix for the work schedule is also included.

Project Overview

The Game Design and Programming Capstone for the Digital Media and IT (DMIT) Program was originally done by Game Design and Game Programming students. For the upcoming winter semester in 2019, it will change with the addition of a team of three to five business analyst students that will be joining the game capstone project. This team setup of game developers and business analyst students will help better serve the client by enabling the game students to focus on development while the business analyst students focus on gathering and management of requirements.

The client for the project is the Glenrose Rehabilitation Hospital which is "the largest free-standing, comprehensive tertiary rehabilitation hospital in Canada" that caters to the high level rehabilitation care of patients through various inpatient, outpatient, and specialized rehabilitation services (Alberta Health Services, 2018). The Game Design and Programming Capstone Project aims to build a game that can be used for the rehabilitation of patients from the Glenrose Hospital.

The instructor for the game programs, [redacted], will be overseeing the project. The instructor for the business analyst program, [redacted], will also be providing support for the BA students. Since this is the first iteration of the BA Work Plan, the project sponsor and subject matter experts from the Glenrose are still unknown at this time.

BUSINESS ANALYSIS APPROACH

Purpose

The purpose of outlining the Business Analysis Approach for this capstone project is for stakeholders to understand how the Business Analyst or team of Business Analysts will approach the project. Choosing the right approach for the project will drive the decision making for the other elements of the project, and also ensure that the project goals are achieved.

Business Analysis Approach Description

The Business Analysis Approach chosen for this project is the Scrum Framework. Scrum is an adaptive methodology based on the Agile Manifesto that states that software should be developed in an iterative way by a cross functional team. The Scrum framework operates with a self-directed team of five to nine members that has a shared commitment for the project's success.

The Scrum team is composed of the following roles:

- Scrum Master – This is a support role for the team, the Scrum Master works as a facilitator for to get rid of impediments towards the team's work.
- Team Member – The Scrum team is a cross functional group with members of different expertise. All team members are equal and have equal responsibility, there is no hierarchy in the team.
- Product Owner – The main role of the Product Owner is to understand and ensure business value. They are representative of the business needs and the main contact for the stakeholders.

Although there are business analyst students part of the capstone project, there are no business analyst or project manager roles in the Scrum team.

The Scrum framework places emphasis on working incrementally with the information and requirements available at the time. This defined time box where the team works in one place is called a sprint, and for this project, the length of the sprint will be two weeks. At the end of each sprint, the team has to produce a fully tested potentially shippable product that can be presented to stakeholders for feedback.

The Scrum process is composed of meetings during specific times in a sprint. The first one is the Backlog Refinement Meeting, which is also called Backlog Grooming. This happens before the first sprint, and somewhere inside the sprint for the succeeding ones. During Backlog Grooming, the team tries to understand the Product Backlog Items (PBIs) which are wish list items for the software being built. The list where all the PBIs are in as well as tasks that need to be done is called the Product Backlog. All team members and stakeholders can add items to this list. The team tries to estimate the amount of work each PBI will take, then the Product Owner prioritizes the items in the Product Backlog based on business needs.

After the PBIs in the Product Backlog have been set, the team can have the Sprint Planning Meeting where they will make a Sprint Backlog. Based on the Product Backlog, the team takes the top priority items and places them into the Sprint Backlog. The team only takes in what they think can be finished during the sprint, and everyone commits to finish the work that they agreed to do. The Sprint Planning Meeting is scheduled on the first day of the sprint for this project, so once the Sprint Backlog has been created, the team can proceed with working.

During the sprint, the team also has daily short meetings that are maximum 15 minutes in length to make sure everyone is updated with the work that is going on. This meeting is called the Daily Scrum Meeting or the Daily Stand Up. Each day, the team members tell the rest of the team about what they accomplished the previous day, what they plan on accomplishing that day, and if there is anything causing problems. The team doesn't solve the problems during this meeting, the objective is just for everyone to be updated although the Scrum Master can possibly provide support afterwards.

At the end of the sprint, the Product Owner decides what items are done or not done, based on acceptance criteria and the DoD (Definition of Done). Items that are done are presented during the Sprint Review Meeting where everyone including the stakeholders attend. The team shows the potentially shippable product to the stakeholders and try to adapt based on their feedback. Additional items can be added to the Product Backlog, and anything not finished from the Sprint Backlog can go back to the Product Backlog so that priority items can be re-evaluated. After this meeting, the team will conduct a Sprint Retrospective Meeting where they will review the sprint process or any mistakes that were done during the sprint. The objective of this meeting is to focus on reviewing how they work as a team, not the product, so that the team is given a chance to get better with each sprint. Once the sprint is over, the Scrum process repeats with all its meetings for the succeeding sprints until the product meets its milestones. For this project, the last sprint will take place before the Capstone Expo where the team will be presenting what was completed in the project to the stakeholders.

Rationale

The Scrum approach was chosen for this project because it is the most effective way to allow students to do good work in a short project. Using the Scrum framework for the Game Design and Programming Capstone project enables the team to work in small increments and build a fully tested and potentially shippable product despite not having a well defined vision and scope. The Scrum framework also allows for a lot of flexibility with changing requirements and even with mistakes. Since the team will be building in small increments, any mistakes made in a sprint can just be changed in the next sprint. In capstone, students are also required to manage their own teams. Scrum gives students an advantage because the framework has built in management tools such as the Daily Stand Up and the Sprint Retrospective Meeting. With each sprint, team members learn more about what they have to build and get better over time.

Deliverables and Work Schedule

The table below lists activities that will be done during the project term for the winter semester in 2019. A more detailed calendar can also be found under Appendix 1 – Game Design and Programming Capstone Project Calendar.

Activity	Start Date	End Date
Project Setup	January 7, 2019	January 11, 2019
Sprint 1	January 14, 2019	January 25, 2019
Sprint 2	January 28, 2019	February 8, 2019
Sprint 3	February 11, 2019	March 1, 2019
Sprint 4	March 4, 2019	March 15, 2019
Sprint 5	March 18, 2019	March 29, 2019
Sprint 6	April 1, 2019	April 12, 2019
Project Wrap up and Capstone Expo preparations	April 15, 2019	April 25, 2019
Capstone Expo	April 26, 2019	April 26, 2019

Resources Required

The table below lists items and resources required for the project.

Resource	Required From Date	Required To Date
Product Owner	January 7, 2019	April 26, 2019
Scrum Master	January 7, 2019	April 26, 2019
Subject Matter Expert	January 7, 2019	April 26, 2019
Project Room Access (must have computers and whiteboards in the room)	January 7, 2019	April 26, 2019
Office Supplies (sticky notes, index cards, and markers)	January 7, 2019	April 26, 2019
Printer Access	January 7, 2019	April 26, 2019

STAKEHOLDER ENGAGEMENT

Purpose

The purpose of this section is to identify key stakeholders, the relationships between them, and what their attitudes and interests are.

Requirements Roles and Responsibilities

This section describes the roles in the Scrum team.

Requirements Role	Requirements Responsibilities
Product Owner	• Representative of the business needs and stakeholders • Understand and ensure business value • Main contact person for the stakeholders • Prioritize items in the product backlog
Scrum Master	• Team facilitator • Identifies impediments and works toward removing them
Team Members	• Identifies Product Backlog Items that will be placed in the Sprint Backlog • Commits to finish work in every sprint based on items included in the Sprint Backlog • Attend Scrum meetings • Responsibilities related to managing the team itself
Subject Matter Expert	• Provide expertise on the game rehabilitation needs, patients, business processes, etc.
Client	• Provide feedback on the product increments presented by the Scrum team • Make the decisions on acceptance of the shippable product

For this initial plan, the following people are identified for each role:

- Product Owner – [redacted]
- Scrum Master – [redacted]
- Team Members – Game and Business Analyst Students
- Subject Matter Expert – Medical staff from the Glenrose Hospital
- Client – Glenrose Rehabilitation Hospital

This may change as the project progresses.

Stakeholder Matrix

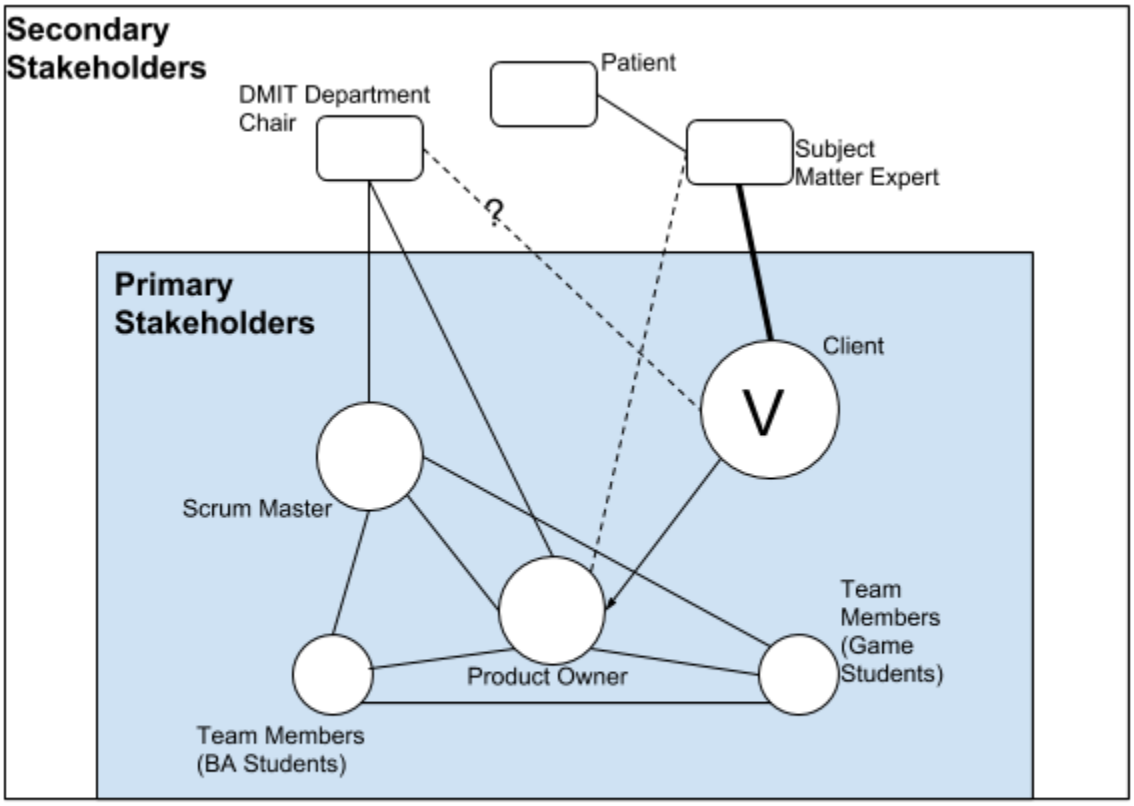
This is the first iteration of the stakeholder matrix for the Game Design and Programming Capstone Project. Roles may change and be more specific after project tasks have been more defined. Attitudes and interests have been assumed at this time, and no constraints have been identified yet.

Role	Attitudes	Interests	Constraints
Product Owner	Strong supporter of having BA students join the game capstone after recognizing the limitations of the project from previous capstone terms. Feels positive about game students doing well in the upcoming capstone.	Interested in building a good product within the project time frame and game students learning from capstone. Also interested in improving the capstone process due to problems in previous semesters where game students ran out of time for development.	None
Scrum Master	Feels positive about having students work in cross functional teams and is willing to support them, but may be unsure of how it will work out.	Interested in student success and having the students learn from the capstone experience.	None
Team Members in the Game Design and Programming streams	Concerned about school workload during capstone and getting stuck with feature creep. This is where they work too long on a feature and run out of time for the rest of the project.	Interested in having a good grade for capstone and learning more about game development. Possibly also interested in working with BA students who will be focusing requirements management so that they don't have to.	None
Team Members in the BA stream	Concerned about school workload and working with game students since most BA students have no background in game development.	Interested in having a good grade for capstone and learning more about business analysis and working in teams.	None

Subject Matter Expert	May be unaware of the project at this time but is expected to be supportive of the project if the game makes patient rehabilitation easier. It is also possible that the SME may not like frequent disruptions from the team if it is not part of their job description.	Interested in patient treatments and possible improvements to rehabilitation tasks.	None
Client	It is expected that the client is concerned about patient rehabilitation and effectiveness of the product. The client might also be unsure of what game can be developed due to the short time frame of the project.	Interested in harnessing technology for patient rehabilitation through game development.	None
Patient	Unaware of the project but is assumed to be eager to try out more fun methods of rehabilitation.	Interested in getting better treatment for their condition.	None
DMIT Department Chair	Feels positive about different streams working together.	Interested in Capstone Project Success	None

Stakeholder Mapping Tool

The Stakeholder Mapping Tool is used to have a visual representation of the stakeholders relevant to the project. It is also used to depict the influence and connections between the different stakeholders and possibly locate any issues if present.



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REQUIREMENTS REPOSITORY

Purpose

The purpose of this section is to document the plan on how requirements will be recorded and stored.

Requirements Documentation

In Scrum, the main method for documenting requirements is through the Product Backlog Items in the form of user stories. User stories are used in agile software development to capture the description of an estimable feature from the perspective of an end user. This method helps with creating a simpler description of a requirement. In the Scrum framework, writing user stories are the responsibility of the product owner although other team members can also help with it, especially for requirements that need more technical expertise. A workshop can be done with the stakeholders or subject matter experts, and based on their input, the user stories can be written. For the Game Design and Programming Capstone Project, the BA student team members may help with writing these user stories to support the Product Owner, although more information is needed to clarify these roles.

Each user story will have the following elements:

- Card – the story will be written on the card
- Conversation – the details that come out through conversation
- Confirmation – the acceptance tests that confirm whether the story was correctly performed/coded

User Stories are written in the format indicated below:

Who:	As a <role>
	+
What:	I want <action that needs to be achieved>
	+
Why:	So that <goal the completed action achieves>

For this project, the user stories will be written on an index card and posted on a whiteboard, although an electronic version will also be considered based on team member input.

Requirements Acceptance Plan

Acceptance in the Scrum works through the Acceptance Criteria Checklist, the Definition of Done, and the Definition of Ready which are created by the team. These have to be created before the sprint during backlog grooming. The Acceptance Criteria will list everything that needs to be verified for each user story to be able to say that the requirement has been fulfilled. The Definition of Done applies to all PBIs, it is a checklist of everything that needs to be done before it can be declared that the PBI has been completed. On the other hand, the Definition of Ready will list everything that needs to be checked to determine whether a story is good enough to be put in a sprint. At the end of the sprint, the Product Owner will go through the Acceptance Criteria Checklist and the Definition of Done. Everything that is deemed “done” will be presented as part of the potentially shippable product to the stakeholders, although what the Product Owner considers to be “done” could be different from what the stakeholders or client decides to accept. Any items that the client does not accept will go back into the product backlog to be worked on in future sprints if it is included in the sprint backlog.

COLLABORATION AND COMMUNICATION APPROACH

Purpose

The purpose of this section is to ensure that we have a plan to provide stakeholders the information they need, and that the communication is effective.

Communications Management Approach

Communication in a Scrum team happens mostly in-person since the framework dictates that the team must work closely with each other and that members are physically present for meetings. The daily stand up ensures that the team members are communicating and updating each other regarding progress on the work being done. Any problems while working will also be communicated during the daily stand up so that the Scrum Master can note these and work towards removing the impediment after the meeting is done. For this project, the daily stand up meeting can be done in the project room assigned for the capstone team, although some adjustments have to be made to be able to meet with the game team members. As of this time, there is only one capstone time schedule that overlaps for the BA and Game team members so a different time block might be set up based on the project requirements.

At the end of each sprint, the team members will be able to communicate with the stakeholders or client through the Sprint Review Meeting. This will be located in NAIT, although depending on the client's schedule, the team may have to go offsite to the Glenrose Hospital to be able to meet. During this meeting, the team members will get in-person feedback on the potentially shippable product from the client. Any other communications required between the team and the client will be done by the Product Owner through emails or additional meetings outside of the Scrum framework. A single point of contact is necessary to avoid work disruption for the rest of the team members.

Contact List

This section will contain the role and contact details of the team members involved in this project once the team members have been finalized.

Role	Name	Email	Phone

Other Communications

Other communications outside of the Scrum framework are unknown at this time, although additional meetings may be required after the last sprint for the project wrap up and to prepare for the Capstone Expo. The meeting times and attendees will be decided closer to the end of the semester.

TRACEABILITY PLAN

Purpose

The purpose of this section is to document the links on how requirements are connected to each other.

Traceability Approach

There is no formal way of documenting traceability in Scrum, although all requirements are traceable based on how Scrum works. Requirements are documented as epics if the chunk of work has not been broken down yet, or if it is too big to understand. Once it is broken down into smaller estimable chunks, they become user stories that originated from an epic. These user stories are included in the product backlog, and an acceptance criteria is written for each item while the definition of done is written for all items in the product backlog. Based on priority, only items at the top of the list get added into the sprint backlog, and therefore priority items get built with each sprint. Testing of each item gets done based on the acceptance criteria and the definition of done that have already been defined so that only the potentially shippable product gets presented to the stakeholders at the end of the sprint. Through these elements, forward traceability is performed because each requirement is implemented using test plans that have been defined in advance. Backwards traceability can be ensured since the product and sprint backlog ensures that only the highest priority items are built within a fixed time box. We are not adding anything to the sprint that are not based on a requirement that have been defined in a user story.

PRIORITIZATION PLAN

Purpose

The purpose of this section is document how prioritization of requirements will happen for the project.

Prioritization of Requirements

Prioritization of requirements in Scrum and for this project will happen through the product backlog. The product backlog contains the list of items and tasks that have to be done but have not been completed yet. The highest priority items will be on top of the list and no two items can have the same priority. Prioritization is done all the time by the Product Owner based on business needs and whenever an item is added to the backlog, but input can be provided by other team members. Items on the bottom of the backlog would be the epics, the requirements that have not been broken down yet or fully understood by the team members. During the backlog refinement meeting, the team tries to break down these epics into user stories and reprioritize based on importance.

CHANGE MANAGEMENT PLAN

Purpose

This section documents the method on how the project team will handle change.

Change Management Approach

Change is welcomed in Scrum and the framework has built-in methods to be able to manage it. Requirements can change at any time so team members and stakeholders can add items as soon as it is identified into the product backlog. The Product Owner evaluates these items and prioritizes as necessary. Anything that is deemed important enough gets added to the sprint backlog so that it can be built in the next sprint. The team commits to building everything in the sprint backlog and if any changes are required to what is being built, this will not affect the current sprint. The changes will still be added as a PBI that will be evaluated for importance. Since the product is being built in small increments, there is a lower risk of losing time or resources from building the product despite changing requirements.

RISK MANAGEMENT PLAN

Purpose

The purpose of this section is to document the risks identified for the project and to have a strategy to manage the risks.

Risk List

This section lists the risks identified for the Game Design and Programming Capstone Project.

Risk ID	Risk Description	Probability	Impact	Risk Management Strategy	Contingency Plan
RI-1	The game developed may not be effective for rehabilitation	Low	High	The product owner will communicate with the subject matter expert to identify what movements are necessary to be included in the game. The game will therefore be built based on rehabilitation movements that have already been identified as effective by subject matter experts.	Since the game will be built in small increments, the team will be able to get constant feedback from the stakeholders and make changes towards effectiveness of the product before the semester is over.

Risk ID	Risk Description	Probability	Impact	Risk Management Strategy	Contingency Plan
RI-2	The patients might not use the game developed	Medium	Medium	The product owner will try to get as much information about the end user or the patient who will be using the game. A profile will be created on the type of patient so that the game is built based on what is interesting and engaging for the end user.	Feedback will be taken during multiple times in the project through the sprint review meetings. If the patient still would not use the game at the end of the project, feedback can be taken from end user and recorded for use during the next game capstone project for the client.
RI-3	Risk of further injury to the patient while using the game	High	High	Requirements will be clarified with the Subject Matter Expert to try to best identify any gameplay movements that may cause injury to the patient. The team will ensure that these are not built into the game.	The game will only be done in the presence of a medical professional. Since the project is only being done for a short period of time, long term effects cannot be identified so the expertise of medical professionals are required.
RI-4	Risk of incompatible schedules between Game and BA students	Low	Medium	The team will try to find other common time periods to work outside of capstone time and possibly reschedule the meetings for that time.	If the team cannot find any common time blocks, the team will plan the work based on the existing common capstone time on Thursday. If more meeting times are required outside of that, the team will identify the members that are critical to the meeting and schedule based on the availability of those team members.

Risk ID	Risk Description	Probability	Impact	Risk Management Strategy	Contingency Plan
RI-5	Risk of losing management support from the Glenrose Hospital	Low	High	The team does not have any control over this risk and will accept it.	The team will continue with the capstone project despite losing support from the client and will focus on building based on the existing identified requirements.

APPENDIX

Appendix 1 - Game Design and Programming Capstone Project Calendar

BAWorkPlan_Sched.xlsx

REFERENCES

Alberta Health Services. (2018). *Glenrose Rehabilitation Hospital*. Retrieved November 24, 2018, from Alberta Health Services: https://www.albertahealthservices.ca/grh/grh.aspx