SE 3XA3: Software Requirements Specification
ScrumBot

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Table 1: Revision History

Date	**Developer(s)**	**Change**
January 23, 2020	Arkin Modi	Copy template
February 3, 2020	Leon So	Worked on Stakeholders section
February 4, 2020	Leon So	Worked on Purpose, Non-functional Requirements sections
February 8, 2020	Leon So	Formatted and added non-functional requirements; Created terminology table; worked on Project Scope; Relevant Facts and Assumptions
February 8, 2020	Arkin Modi	Worked on Mandated Constraints, Off-the-Shelf Solutions, New Problems, Installability Requirement
February 8, 2020	Timothy Choy	Worked on Look and Feel Requirements, Legal Requirements
February 8, 2020	Timothy Choy	Updated SRS formatting, Functional Requirements
February 8, 2020	Leon So	Add Functional Requirements, update Stakeholders section, worked on Project Issues Section
February 8, 2020	Timothy Choy	Worked on Project Planning, Planning of the Development Phases, and Non-functional Requirements sections
February 9, 2020	Timothy Choy	Worked on Work Partitioning, Individual Product Use Cases
February 9, 2020	Everyone	Final Revision

This document describes the requirements for ScrumBot. The template for the Software Requirements Specification (SRS) is a subset of the Volere template (Robertson and Robertson, 2012).

1 Project Drivers

1.1 The Purpose of the Project

Scrum is an agile process framework widely used in industry for managing and coordinating collaborative projects. Scrum being a process based on the agile development method, follows a highly iterative process and often has heavy customer involvement, therefore it can be often be complex. It is often difficult to manage communication and coordination within the project due to the complexity of agile development processes. With Discord being a popular communication tool used by many teams of software developers today, Scrumbot provides a solution that directly integrates the management of a scrum development cycle into the communication channels. Scrumbot will allow for better management and organization of retrospectives, stand-ups, and other scrum/agile stages used by software teams within their routine communication channel.

As a result, Scrumbot, a well-integrated scrum management system, can reduce inefficiencies surrounding the management of projects using the scrum framework, as well as strengthen communication within the agile process. This will help software development firms reduce costs and achieve better workflow.

1.2 The Stakeholders

This solution will be used in an environment where the development team uses the scrum agile framework and uses Discord as their routine communication channel.

1.2.1 The Client

- Dr. Ashgar Bokhari (3XA3)

  The client for this project is Dr. Ashgar Bokhari - professor of the SFWRENG 3XA3 course.

1.2.2 The Customer

The customer of the ScrumBot is any firm looking to improve efficiency in communication and organization during the Scrum process of an agile software development cycle using the Scrum framework. This customer will likely be a software development firm (or the development department of a firm).

- Software Development Firm

The development firm will benefit through centralizing project resources, therefore improving the organization and management of the project. The development firm will therefore be able to reduce any costs associated with inefficiencies during the development process. This will also improve communication between members of the development firm.

1.2.3 The Users (Roles in Scrum process)

- Product Owner(s)

  The product owner(s) will benefit from the reduced development time through improved communication and efficient management of the project. The product owner(s) will also benefit as their ideas and requirements will be better organized, thus helping the development team more efficiently achieve the goals of the product owner(s).

- Scrum Master

  The scrum master will be better able to coordinate scrum plans and division of tasks, as well as routine communication (i.e. retrospectives and stand-ups). With a scrum management system directly implemented into the communication channels, the scrum master will be able to directly manage the meeting information and their scrum development cycle during communication. (Note that Scrum Master is also a member of the Development Team).

- Development Team

  The development team will be able to more easily follow through on tasks assigned by the scrum master. The development team may easily refer to any relevant articles or information regarding their project. This will reduce inefficiencies and speedup communication within the development team. It will also reduce confusion, as all information concerning the development cycle will be available through their routine communication channel (Discord).

- Business Analyst

  The Business Analyst will be able to better coordinate communication concerning the project between the development team and the product owner(s). ScrumBot will also allow the Business Analyst to better: organize and monitor the progress of the project, update requirements, and analyze sprint progress.

1.3 Mandated Constraints

1.3.1 Solution Constraints

Description: The project shall be written in the Python 3 programming language.
Rationale: All developers are familiar with Python 3 and there is an existing API available in Python 3.

Fit Criterion: The software is written in Python 3.

Description: The application shall function within Discord.
Rationale: Discord is a popular communication tool used by many software development team. In addition, the existing project utilizes Discord to perform all of its features.
Fit Criterion: All application features are fully operational within Discord.

1.3.2 Implementation Environment of the Current System

The application will be be installed on the user's local machine or a server, and added to a Discord server. To function, the application be started on the machine and the user will interact with it through the respective Discord server.

1.3.3 Partner or Collaborative Applications

The application will use Discord and the Discord API to function as an interface.

1.3.4 Off-the-Shelf Software

The following off-the-shelf software will utilized:

- Discord (Available at https://discordapp.com/)
- Discord Server (Available through Discord)
- Python 3 (Available at https://www.python.org/downloads/)
- discord.py (Available at https://pypi.org/project/discord.py/)

All off-the-shelf software are available for free.

1.3.5 Anticipated Workplace Environment

The anticipated workplace environment for this application is within a software development team's Discord server. This application can be used from anywhere, as long as the user has access to the respective Discord server.

1.3.6 Schedule Constraints

The project deliverable must completed by their respective deadline. The remaining deadline include:

- Proof of Concept (February 13, 2020, 1:00 PM)
- Test Plan, Revision 0 (February 28, 2020, 11:30 PM)
- Design & Document, Revision 0 (March 13, 2020, 11:30 PM)
- Demonstration, Revision 0 (March 17, 2020)

- Demonstration, Revision 1 (March 31, 2020)
- Final Documentation, Revision 1 (April 6, 2020, 11:30 PM)

1.3.7 Budget Constraints

This project has no monetary budget. If there are any necessary purchases for development, the cost shall be paid by the project members. All resources to re-create and upgrade the existing project are provided.

1.3.8 Enterprise Constraints

This application will be available for free to any user that has access to a Discord server and a machine with Python 3 (and the dependencies) installed.

1.4 Naming Conventions and Terminology

Table 2: Naming Conventions and Terminology

Term	**Definition**
ScrumBot	The name of the Discord Bot
Discord	A cross-platform chat application
Trello	A web-based Kanban-style list-making application
Discord Bot	An automated chat bot that operates on Discord
Agile Development Method	A software development methodology
Scrum	An Agile process framework
Scrum Master	The facilitator for an agile development team who plans, leads and organizes Scrum meetings
Stand-up	A daily coordination meeting used in the Scrum framework
Sprint	A set time period where specific work has to be completed and made ready for review
Retrospective	A team meeting for reflecting on an Scrum sprint
Business Analyst	Communicates and coordinates project requirements and deadlines between the Product Owner(s), Scrum Master, and Development Team
Grooming	A meeting where the Business Analyst communicates and coordinates project requirements and deadlines with the Scrum Master and Development Team
BE	Business Event

1.5 Relevant Facts and Assumptions

It is assumed that the user will be deploying the Discord bot on Discord. It is assumed that the user is familiar with the Scrum Agile process framework and the Agile development software design methodology.

2 Functional Requirements

2.1 The Scope of the Work and the Product

ScrumBot is a specialized chat bot (i.e. a Discord Bot) that runs on the Discord application. ScrumBot will allow users to better manage software development projects using the Scrum Agile Framework. The ScrumBot will have features which help software development teams organize and record Scrum meeting information, as well as features which will help software development teams stay on track. This will allow better organization of Scrum sprints, meetings (i.e. sprint-planning, retrospectives and stand-ups) and improve efficiency within the communication channel.

2.1.1 The Context of the Work

This product is designed to be used by software development teams using: Discord as their main communication channel, an Agile development software design methodology, and the Scrum agile process framework. Additionally, this application can be integrated with Trello, and Google Calendar and Maps.

2.1.2 Work Partitioning

Table 3: Work Partitioning

Event Name	Input	Output	Summary
Scrumbot Initialization	Development Firm	Discord channel	Adding the Discord bot to a Discord server for the first time
Project Creation	Business Analyst		Adding a new project to Scrumbot
Project Removal	Business Analyst		Removing a project from Scrumbot
Sprint-planning Meeting Occurs	Development Team	Discord channel	A meeting is held where a sprint is planned, held prior to the sprint
Stand-up Meeting Occurs	Development Team	Discord channel	A meeting is held, usually daily, where members record what they have done
Retrospective Meeting Occurs	Development Team	Discord channel	A meeting is held where feedback is given on the previous sprint, held after each sprint
Grooming Meeting Occurs	Business Analyst & Development Team	Discord channel	A meeting in which the requirements of the project are specified by the Business Analyst, and communicated to the Development Team

Meeting Creation	Any Discord member	Discord channel	Creates a scheduled meeting into the Discord channel
Meeting Removal	Any Discord member	Discord channel	Removes a scheduled meeting from the Discord channel
List Scheduled Meetings	Any Discord member	Discord channel	A command that lists all the scheduled meetings of a given member
List Tasks	Any Discord member	Discord	A command that lists all the scheduled tasks for a given member

2.1.3 Individual Product Use Cases

This product is primarily used by software development firms, from start-ups to large companies, as these companies will be the most likely users of the Scrum agile framework. They would enjoy the benefits of using Discord as a means for quick communication, with integrated abilities to work on projects using Scrum.

Another use case could be students who want to plan projects and work on them through the Scrum method. A lot of students would benefit from this over other forms of communication, such as Slack, a large portion of students already have access to Discord.

2.2 Functional Requirements

BE1. The development firm wants to add ScrumBot to its Discord channel

VP1. Viewpoint: Development Firm

i. The system shall ask for administrative permissions to the Discord channel

ii. The system shall provide an introduction and basic commands list in the channel

iii. The system shall provide a link to access Scrumbot's documentation

VP2. Viewpoint: Development Team

i. The system shall notify the development team that ScrumBot has been added to the channel

ii. The system shall provide an introduction and basic commands list in the channel

iii. The system shall provide a link to access Scrumbot's documentation

VP3. Viewpoint: Business Analyst

i. The system shall notify the Business Analyst that ScrumBot has been added to the channel

ii. The system shall provide an introduction and basic commands list in the channel

iii. The system shall provide a link to access Scrumbot's documentation

VP4. Viewpoint: Scrum Master

i. The system shall notify the Scrum Master that ScrumBot has been added to the channel

ii. The system shall provide an introduction and basic commands list in the channel

iii. The system shall provide a link to access Scrumbot's documentation

BE2. The Business Analyst wants to add a new project

VP1. Viewpoint: Development Firm

i. The system shall add the project for all roles and personnel involved with the project

VP2. Viewpoint: Development Team

i. The system shall update the project list of the development team

ii. The system shall notify the development team of the new project

iii. The system shall notify the development team of the scheduled first meeting

VP3. Viewpoint: Business Analyst

i. The system shall prompt the Business Analyst for the project details (name, description, product owner)

ii. The system shall prompt the Business Analyst for first meeting details

iii. The system shall append the project and its details to the project list

VP4. Viewpoint: Scrum Master

i. The system shall update the project list of the Scrum Master

ii. The system shall notify the Scrum Master of the new project

iii. The system shall notify the Scrum Master of the scheduled first meeting

BE3. The Business Analyst wants to remove a project

VP1. Viewpoint: Development Firm

i. The system shall remove the project for all roles and personnel involved with the project

VP2. Viewpoint: Development Team

i. The system shall update the project list of the development team

ii. The system shall notify the development team of the removed project

VP3. Viewpoint: Business Analyst

i. The system shall ask the Business Analyst for confirmation

ii. The system shall update the project list of

iii. The system shall ask the Business Analyst if the project is completed or cancelled

VP4. Viewpoint: Scrum Master

i. The system shall update the project list of the Scrum Master
ii. The system shall notify the Scrum Master of the removed project

BE4. A sprint-planning meeting occurs

VP1. Viewpoint: Development Firm

N/A

VP2. Viewpoint: Development Team

i. The system shall allow the Development Team to see new feedback
ii. The system shall allow the Development Team to see the updated backlog tasks
iii. The system shall allow the Development Team to see new goals
iv. The system shall allow the Development Team to assign tasks to its developers
v. The system shall update the Trello Kanban board

VP3. Viewpoint: Business Analyst

N/A

VP4. Viewpoint: Scrum Master

i. The system shall allow the Scrum Master to add goals for the sprint
ii. The system shall allow the Scrum Master to add feedback
iii. The system shall allow the Scrum Master to add backlog tasks
iv. The system shall allow the Scrum Master to add tasks
v. The system shall update the Trello Kanban board

BE5. A stand-up meeting occurs

VP1. Viewpoint: Development Firm

N/A

VP2. Viewpoint: Development Team

i. The system shall allow the development team to update and record their progress

VP3. Viewpoint: Business Analyst

N/A

VP4. Viewpoint: Scrum Master

i. The system shall allow the Scrum Master to update and record their progress

BE6. A retrospective meeting occurs

VP1. Viewpoint: Development Firm

N/A

VP2. Viewpoint: Development Team

i. The system shall allow the development team members to see the sprint feedback

VP3. Viewpoint: Business Analyst

N/A

VP4. Viewpoint: Scrum Master

i. The system shall allow the Scrum Master to add feedback regarding the sprint

BE7. A grooming meeting occurs

VP1. Viewpoint: Development Firm

N/A

VP2. Viewpoint: Development Team

i. The system shall allow the development team to see all updates regarding the project requirements, tasks, and deadlines

VP3. Viewpoint: Business Analyst

i. The system shall allow the business analyst to update project requirements and deadlines

VP4. Viewpoint: Scrum Master

i. The system shall allow the Scrum Master to see all updates regarding the project requirements, tasks, and deadlines

BE8. User wants to add a meeting

VP1. Viewpoint: Development Firm

N/A

VP2. Viewpoint: Development Team

i. The system shall notify the invited members of the Development Team
ii. The system shall prompt the invited members of the Development Team to accept or decline the meeting invitation

VP3. Viewpoint: Business Analyst

i. The system shall prompt the user for the meeting subject, time, location, and room
ii. The system shall prompt the user for the meeting participants
iii. The system shall invite the participants
iv. The system shall notify the invited Business Analyst if applicable
v. The system shall prompt the invited Business Analyst to accept or decline the meeting invitation, if applicable

VP4. Viewpoint: Scrum Master

i. The system shall prompt the user for the meeting subject, time, location, and room
ii. The system shall prompt the user for the meeting participants
iii. The system shall invite the participants
iv. The system shall notify the invited Scrum Master if applicable
v. The system shall prompt the invited Scrum Master to accept or decline the meeting invitation, if applicable

BE9. User wants to cancel a meeting

VP1. Viewpoint: Development Firm

N/A

VP2. Viewpoint: Development Team

i. The system shall notify the participating members from the Development Team

VP3. Viewpoint: Business Analyst

i. The system shall notify the Business Analyst if applicable

VP4. Viewpoint: Scrum Master

i. The system shall notify the Scrum Master if applicable

BE10. User wants to see the scheduled meetings

VP1. Viewpoint: Development Firm

N/A

VP2. Viewpoint: Development Team

i. The system shall display the list of meetings

VP3. Viewpoint: Business Analyst

i. The system shall display the list of meetings

VP4. Viewpoint: Scrum Master

i. The system shall display the list of meetings

BE11. User wants to see the tasks

VP1. Viewpoint: Development Firm

N/A

VP2. Viewpoint: Development Team

i. The system shall display the Trello Kanban board

VP3. Viewpoint: Business Analyst

N/A

VP4. Viewpoint: Scrum Master

i. The system shall display the Trello kanban board

3 Non-functional Requirements

3.1 Look and Feel Requirements

3.1.1 Appearance Requirements

LF1. The system shall follow the text format of the Discord application

3.1.2 Style Requirements

LF2. The system shall use short, clear, and descriptive role names

LF3. The system shall colour code users based on their role

3.2 Usability and Humanity Requirements

3.2.1 Ease of Use Requirements

UH1. The system shall have intuitive user commands

UH2. The system shall be easy to use for ages 13+

3.2.2 Personalization and Internationalization Requirements

UH3. The system shall be used by English speakers only

3.2.3 Learning Requirements

UH4. The system shall have a help menu to explain commands to the user

3.3 Performance Requirements

3.3.1 Speed and Latency Requirements

P1. The system shall respond to user commands within 2 seconds

3.3.2 Precision or Accuracy Requirements

P2. The system shall have a meeting locations and schedules accuracy greater than 70%

P3. All meeting times should be accurate to within 30 seconds

3.3.3 Reliability and Availability Requirements

P4. The system shall load and use the correct data for the team

3.4 Operational and Environmental Requirements

3.4.1 Expected Environment

OE1. The system shall be able to operated and be executed within the Discord application

3.4.2 Requirements for Interfacing with Adjacent Systems

OE2. The system shall connect to Google's API services

OE3. The system shall connect to Discord's API services

OE4. The system shall connect to Trello's API services

3.4.3 Installability Requirement

OE5. It shall be possible for a customer with no special expertise to install the application

OE6. The system shall take less than five minutes to install

OE7. The system shall be uninstallable

OE8. Installation of updates shall not change any setting or user data

3.5 Maintainability and Support Requirements

3.5.1 Maintainability Requirements

MS1. The code shall be documented using comments

MS2. The code shall be documented using Doxygen

MS3. The code documentation shall be easy to understand

3.5.2 Supportability Requirements

MS4. The system shall have a help menu available to users at all times

3.5.3 Longevity Requirements

MS5. The system will be made in modules to increase maintainability and longevity

3.6 Security Requirements

S1. The connection between the system and the APIs shall use HTTPS for security

3.7 Cultural Requirements

C1. The system shall use Canadian English spelling

3.8 Legal Requirements

L1. The system shall not violate any copyrighted properties.

3.9 Health and Safety Requirements

HS1. The system shall not harm the user.

4 Project Issues

4.1 Open Issues

There are currently no open issues.

4.2 Off-the-Shelf Solutions

4.2.1 Ready-Made Products

There are open source projects for a Discord Scrum Bot readily available online. Two of which include Scrum Bot by Austen Goddu (https://github.com/Austen-G/Scrum-Bot) and scrumbot by Colin Brady (https://github.com/colin-brady/scrumbot).

There are also Scrum Bots available for Slack that should be investigated. Two of which include ScrumGenius (https://scrumgenius.com/) and Scrum Bot (https://scrumbot.sifts.io/). ScrumGenius is a paid service.

4.2.2 Reusable Components

The Python library, discord.py, can be used to streamline communications with the Discord server.

4.2.3 Products That Can Be Copied

The existing that this application is a re-make of, can be legally copied and modified.

4.3 New Problems

4.3.1 Effects on the Current Environment

The application needs to be hosted on a server and unless there is an error or the server gets overloaded, the current environment should not be affected.

4.3.2 Effects on the Installed Systems

The application does not interface/coexist with the old implementation.

4.3.3 Potential User Problems

Potential user problems as an adverse reaction from interacting with the application during extended use are any problems that would be a result of using a computer. This include but not limited to, carpal tunnel syndrome, computer vision syndrome, and musculoskeletal problems.

4.3.4 Limitations in the Anticipated Implementation Environment That May Inhibit the New Product

The server that will host the application will not be powerful enough to handle the amount of network traffic as users are interfacing with it.

4.3.5 Follow-Up Problems

In the future, if one or more of the API methods used become deprecated and removed, the application will cease to function.

4.4 Tasks

4.4.1 Project Planning

The following tasks have been taken from the SFWRENG 3XA3 course outline found on Avenue.

Table 4: Tasks

Phase	Task	Due Date
Phase 1	Proof of Concept Demonstration	February 13
	Test Plan Creation	February 28
	Design Document	March 13
	Phase 1 Demonstration	March 16 - 20
Phase 2	Revision to documentation	Throughout March 20 - 30
	Final Demonstration	March 30 - April 3
	Final Documentation	April 6

4.4.2 Planning of the Development Phases

The development phases are split into two phases:

1. Initial development and implementation
2. Post phase 1 demonstration, revisions to the documentation and implementing the revisions

In phase 1, the structure of our project will be created, including our scope and design ideas. The first phase is important as we will design how every module in our program will interact

with one another, and figure out all the pieces necessary to implement the project.
The key turning point from phase 1 to phase 2 is the phase 1 demonstration, where our clients will see how the project is implemented and will provide feedback towards revisions of our project.
Phase 2 will be about the modifications to our project post-demonstration. Our project will not expect major changes, but instead will be building off of what our clients have given through feedback.

4.5 Migration to the New Product

4.5.1 Requirements for Migration to the New Product

N/A

4.5.2 Data That Has to Be Modified or Translated for the New System

N/A

4.6 Risks

There are currently no foreseen risks for this product.

4.7 Costs

There are currently no foreseen costs for this project. All software products used are currently free-to-use.

4.8 User Documentation and Training

4.8.1 User Documentation Requirements

N/A

4.8.2 Training Requirements

Basic knowledge in the use of Discord is needed to use this product. Knowledge of the Agile Development Method and the Scrum agile framework is also necessary for the user of this product. Documentation concerning ScrumBot and its commands will be provided to the users.

4.9 Waiting Room

There are no requirements in the waiting room.

4.10 Ideas for Solutions

N/A

References

James Robertson and Suzanne Robertson. *Volere Requirements Specification Template*. Atlantic Systems Guild Limited, 16 edition, 2012.

5 Appendix

5.1 Symbolic Parameters