

International School

**Capstone Project 2**

CMU-SE 451

**Project Plan**

Version 1.2

Date: 13 May 2022

**SENIOR PROJECT MANAGEMENT SYSTEM**

**FOR INTERNATIONAL SCHOOL**

**Submitted by**

Tien, Nguyen Van

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**Approved by**

Chau, Truong Ngoc

**Proposal Review Panel Representative:**

Name Signature Date

**Capstone Project 2- Mentor:**

Name Signature Date

**PROJECT INFORMATION**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Project acronym** | Senior Project Management System for International School | | | | |
| **Project Title** | SPMS | | | | |
| **Start Date** | 18 Feb 2022 | | **End Date** | 15 May 2022 | |
| **Lead Institution** | International School, Duy Tan University | | | | |
| **Project Mentor** | Chau, Truong Ngoc | | | | |
| **Scrum master / Project Leader & contact details** | Tien, Nguyen Van  Email: cnnguyenvantien@gmail.com  Tel: 0704.042.832  Student ID: 24211208536 | | | | |
| **Partner Organization** |  | | | | |
| **Project Web URL** |  | | | | |
| **Team members** | **Name** | **Email** | | | **Tel** |
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| 24211206470 | Dat, Nguyen Thanh | ngthanhdat521@gmail.com | | | 0767836541 |

**REVISION HISTORY**

| **Version** | **Date** | **Comments** | **Author** | **Approval** |
| --- | --- | --- | --- | --- |
| v1.0 | 27/02/2022 | Initial Release | All Members | x |
| v1.1 | 14/04/2022 | Update document | Tien | x |
| v1.2 | 13/05/2022 | Format document | Phuoc | x |
|  |  |  |  |  |

Table of Contents

[1. Project overview 8](#_Toc103376317)

[1.1. Project description 8](#_Toc103376318)

[1.2. Scope and purpose 8](#_Toc103376319)

[1.2.1. Purpose 8](#_Toc103376320)

[1.2.2. Scope 8](#_Toc103376321)

[1.3. Assumptions and constraints 9](#_Toc103376322)

[1.4. Project objectives 9](#_Toc103376323)

[1.4.1. Standard Objectives 9](#_Toc103376324)

[1.4.2. Specific Objectives 10](#_Toc103376325)

[1.5. Project risk 10](#_Toc103376326)

[2. Project development approach 11](#_Toc103376327)

[2.1. Technical process 11](#_Toc103376328)

[2.1.1. Reasons for selecting 11](#_Toc103376329)

[2.1.2. Agile methodology 12](#_Toc103376330)

[2.1.3. Scrum process 12](#_Toc103376331)

[2.2. Quality management 13](#_Toc103376332)

[2.2.1. Strategy for meeting quality objectives 13](#_Toc103376333)

[2.2.2. Quality control 14](#_Toc103376334)

[2.2.3. Measurements program 14](#_Toc103376335)

[2.3. Unit testing strategy 15](#_Toc103376336)

[2.4. Integration testing strategy 15](#_Toc103376337)

[3. Estimate 15](#_Toc103376338)

[3.1. Size 15](#_Toc103376339)

[3.2. Effort 16](#_Toc103376340)

[3.3. Schedule 17](#_Toc103376341)

[3.3.1. Project milestone & deliverables 17](#_Toc103376342)

[3.3.2. Schedule detail 17](#_Toc103376343)

[3.3.3. Project schedule 26](#_Toc103376344)

[3.4. Resource 26](#_Toc103376345)

[3.5. Infrastructure 27](#_Toc103376346)

[3.6. Training plan 28](#_Toc103376347)

[4. Project organization 28](#_Toc103376348)

[4.1. Organization structure 28](#_Toc103376349)

[4.2. Project team 30](#_Toc103376350)

[5. Communication and reporting 30](#_Toc103376351)

[6. Configuration management 31](#_Toc103376352)

[7. Security aspect 31](#_Toc103376353)

[8. References 32](#_Toc103376354)

[9. Definitions and acronyms 33](#_Toc103376355)

Table of Figure

**Figure 2.1.3:** *Scrum model.* 12

Table of Tables

**Table 1.1:** *Project description.* 8

**Table 1.3:** *Assumptions and constraints.* 9

**Table 1.4.1:** *Standard Objectives.* 9

**Table 1.5:** *Project risk.* 10

**Table 2.2.1:** *Strategy for meeting quality objectives.* 13

**Table 2.2.2:** *Quality control.* 14

**Table 2.2.3:** *Measurements program.* 14

**Table 3.1:** *Size.* 15

**Table 3.2:** *Effort.* 16

**Table 3.3.1:** *Project milestone & deliverables.* 17

**Table 3.3.2:** *Schedule detail..* 17

**Table 3.4:** *Resource.* 26

**Table 3.5:** *Infrastructure .*27

**Table 3.6:** *Training plain.* 28

**Table 4.1:** *Organization structure.* 28

**Table 4.2:** *Project team.* 30

**Table 5:** *Communication and reporting.* 30

**Table 6:** *Configuration management.* 31

**SIGNATURE**

**Document Approvals:** *The following signatures are required for approval of this document.*

|  |  |  |
| --- | --- | --- |
| Chau, Truong Ngoc  *Mentor* |  | Date: |
| Tien, Nguyen Van  *Scrum Master* |  | Date: |
| Phuoc, Ha Duc  *Product Owner* |  | Date: |
| Huy, Truong Dong  *Member* |  | Date: |
| Dat, Nguyen Thanh  *Member* |  | Date: |

1. **Project overview**
   1. **Project description**

**Table 1.1:** *Project description.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Project code** | SPMS | **Contract type** | Internal project |
| **Customer** |  | **End–user** | Students and lecturers of Duy Tan University |
| **Project type** | Internal | **Project Manager/ Scrum master** | Tien, Nguyen Van |
| **Project Category** | Development | **Business domain** | Application |
| **Application type** | Website |  |  |

* 1. **Scope and purpose**
     1. **Purpose**
* Define the business needs and problems in detail.
* Provide solutions for business needs.
* Provide overview about resources, schedule, solution and budget for the project.

The proposal merely introduces the project to the student development teams, and provides the up-front information necessary for the team to develop a specification.

* + 1. **Scope**

During the current epidemic, organizing students to do projects has become difficult when all jobs have to be done online. It is difficult for students to access the project implementation process and the scientific council is also very difficult to organize for students to carry out the project. To solve this problem, the team decided to create SPMS to help organize and manage graduation projects for students easily. Students easily understand the implementation program and implement the management process. The Scientific Council easily manages students to carry out projects, view progress, evaluate or update notifications for students of timely changes, helping to reduce risks and capacity.

* 1. **Assumptions and constraints**

**Table 1.3:** *Assumptions and constraints.*

|  |  |  |
| --- | --- | --- |
| **No** | **Description** | **Note** |
| **Assumptions** | | |
| 1 | Nodejs version v14.8.0 (or above) and lower version not supported. | Scope |
| **Constraints** | | |
| 1 | The project is developed within 90 days. | Schedule |
| 2 | The project shall conform to security requirements specified. | Security |
| 3 | The product operates at a high level of performance. | Quality |
| 4 | The application operation in website. | Scope |
| 5 | The project will be implemented by a team including 4 members. | Resources |
| 6 | The financial estimation for the project is at a budget limit of $3680 | Budget |

* 1. **Project objectives**
     1. **Standard Objectives**

**Table 1.4.1:** *Standard Objectives.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Metric** | **Unit** | **Committed** | **Note** |
| Start Date | dd-mm-yyyy | 15-02-2022 |  |
| End Date | dd-mm-yyyy | 15-05-2022 |  |
| Duration | days | 90 |  |
| Team Size | Person | 4 |  |
| Billable Effort | Person-day | $2 |  |
| Number of work hours per day for one engineer | Person-hour | 4 |  |

* + 1. **Specific Objectives**
* Based on human resources, allowable time and budget, we will build a Senior Project Management System for International School.
* The system operates with high performance and safety for the user. User security data is encrypted and stored carefully, avoiding data loss.
* The deployment system is minimized defects and good control of risks by the project team.
* Strengthen brand promotion activities and bring products to users.
  1. **Project risk**

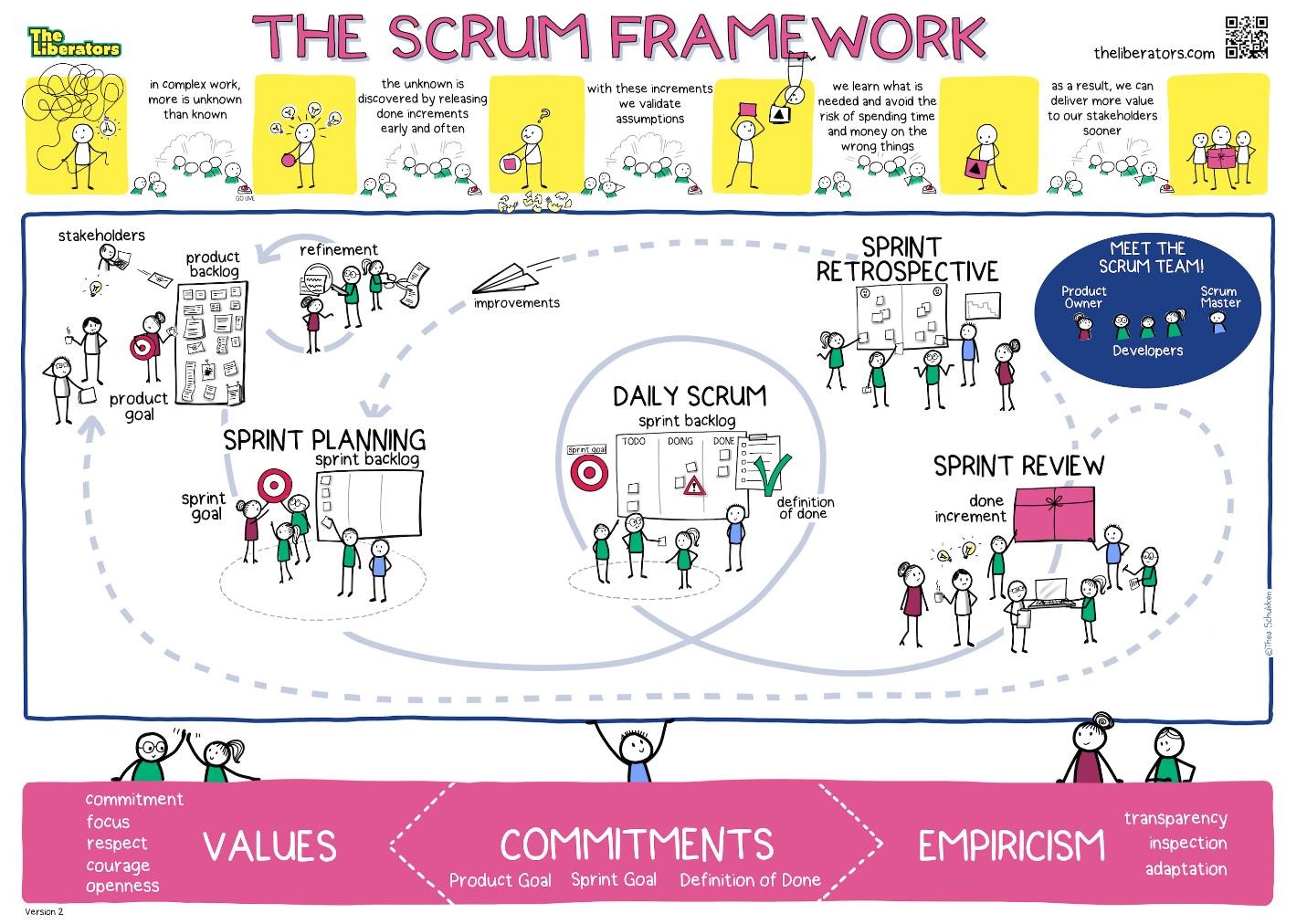
**Table 1.5:** *Project risk.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Risk** | **Description** | **Probability** | **Impact** | **Mitigation**  **Strategy** |
| Incorrect requirements | Developing the product which does not accord with the requirements | 3 | 5 | Discuss and communicate frequently with  Stakeholders |
| Estimate working time | Actual working time is not enough to finish a task compared to the estimated previous time | 2 | 4 | Review old tasks and evaluations to estimate for the new task. Replan for each sprint. |
| People | Team member who is ill, has  health problems, or busy | 4 | 3 | Notify the scrum master  (or ask a colleague to help you) Complete the assigned tasks when possible |
| Team  Communication | Team members  can conflict with each other while discussing something related to the project. Working online | 4 | 2 | Conduct a meeting to share knowledge, experience and learning methods |
| External problems | It has power problems, laptop, personal computer, network system | 3 | 3 | Find another workplace  (library, coffee shop, ...) Notify the scrum master to assign appropriate tasks |

1. **Project development approach**
   1. **Technical process**
      1. **Reasons for selecting**

* To keep up with today's increasingly changing technology trends, we want a truly flexible and easy project development model to adapt to that change. Our project will develop more new features in the future. We will continuously update and apply new technologies that increase the attractiveness and intelligence of the application.
* Currently, our team is a small team with little experience in project development. Therefore, we cannot avoid problems that arise in the software development stages and requirements can be changed to be more suitable. For the traditional model that requires managerial skills and high accuracy, it will not suit our team.

* + 1. **Agile methodology**
* Agile software development refers to a group of software development methodologies based on iterative development, where requirements and solutions evolve through collaboration between self-organizing cross-functional teams.
* Agile software development is more than frameworks such as Scrum, Extreme Programming, or Feature-Driven Development (FDD).
* Agile software development is an umbrella term for a set of frameworks and practices based on the values and principles expressed in the Manifesto for Agile Software Development and the 12 Principles behind it. When you approach software development in a particular manner, it’s generally good to live by these values and principles and use them to help figure out the right things to do given your particular context.
  + 1. **Scrum process**



**Figure 2.1.3:** *Scrum model.*

* Scrum is a subset of Agile. It is a lightweight process framework for agile development, and the most widely-used one.
* Scrum is most often used to manage complex software and product development, using iterative and incremental practices. Scrum significantly increases productivity and reduces time to benefits relative to classic “waterfall” processes. Scrum processes enable organizations to adjust smoothly to rapidly-changing requirements and produce a product that meets evolving business goals.
* An agile Scrum process benefits the organization by helping it to
* Increase the quality of the deliverables.
* Cope better with change (and expect the changes).
* Provide better estimates while spending less time creating them.
* Be more in control of the project schedule and state.
  1. **Quality management**
     1. **Strategy for meeting quality objectives**

**Table 2.2.1:** *Strategy for meeting quality objectives.*

|  |  |
| --- | --- |
| **Strategy** | **Expected benefits** |
| Do defect prevention using the standard defect prevention guidelines and process; use standards developed in JavaScript for coding. | 10–20% reduction in defect injection rate and about 2% improvement in productivity. |
| Group review of program specs for first few/logically complex use cases.  Group review of design docs/first time generated code by project leader, developer, and one consultant. | Improvement in quality as overall defect removal efficiency will improve; some benefits in productivity as defects will be detected early. |
| Introduction of Agile methodology and implementing the project in iterations. Milestone analysis and defect prevention exercise will be done after each Iteration. | Approximately 5% reduction in defect injection rate and 1% improvement in overall productivity. |

* + 1. **Quality control**

**Table 2.2.2:** *Quality control.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Review Item** | **Type of Review** | **Reviewer** | **When** |
| Project plan, Project schedule,  CM Plan | One-person review | Mentor | End of  Initiation stage |
| Product Backlog, User story | Group review | Mentor | End of 90% requirements |
| Design document, object model | Group review | Mentor | End of 90% design |
| Sprint Backlog | One-person review | Scrum master | Beginning of each stage |
| Test case | Group review | Team member | End of detailed |
| Code | Group review  One-person review | Team member  Mentor | After coding for first few programs |

* + 1. **Measurements program**

**Table 2.2.3:** *Measurements program.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Data to be collected** | **Purpose** | **Responsible** | **When** |
| Size: No. of  KLOC/ FP | Early estimate project cost | PM/SM | At the end of stages |
| Effort: No. person-day | Calculate project effort for scheduling | Team members | Daily |
| Quality: No.  defects detected | Early evaluate product quality and the feasibility of the project | Reviewer,  Tester | Right after the review/test |
| Schedule | Divide work and allocate resources properly, ensure the project is completed on time and on budget | PM/SM | Weekly and at the end of stages |

* 1. **Unit testing strategy**

Grey Box:

* It is a combination of a Black Box and White Box testing. It is the type of testing in which the tester is aware of the internal functionality of a method or unit but not in a deep level like white box testing. In this, the user is partially aware of the internal functionality of a system.
* Write test cases before fixing the defect and independent of each other.
* Write cases to verify behavior, also write test cases to ensure the performance of the code
* Execute test cases continuously and frequently.
  1. **Integration testing strategy**

Big bang Strategy:

* All components are put together at the same time, there is no order, except all are integrated at the same time.
* Towards the end of the project, we started to apply this tactic to test the entire application. Beta testing is a type of user acceptance testing where the product team gives a nearly finished product to a group of target users to evaluate product performance in the real world.

1. **Estimate** 
   1. **Size**

**Table 3.1:** *Size.*

|  |  |
| --- | --- |
| **Software Scale Drivers** | |
| Precedence | Nominal |
| Development Flexibility | Nominal |
| Architecture / Risk  Resolution | Nominal |
| Team Cohesion | Very High |
| Process Maturity | Nominal |

* 1. **Effort**

**Table 3.2:** *Effort.*

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Activity/Process** | **Total budgeted Effort Usage (USD)** | **Total % budgeted**  **Effort Usage**  **(%)** | **Sprint 1** | | **Sprint 2** | | **Sprint 3** | | **Sprint 4** | |
| **USD** | **%** | **USD** | **%** | **USD** | **%** | **USD** | **%** |
| Requirement | 350 | 9.51 | 150 | 12.5 | 100 | 9.52 | 100 | 12.82 | 0 | 0 |
| Design | 300 | 8.15 | 100 | 8.33 | 100 | 9.52 | 50 | 6.41 | 50 | 9.09 |
| Coding & Unit Testing | 1500 | 40.76 | 500 | 41.67 | 500 | 47.62 | 300 | 38.46 | 200 | 36.36 |
| Testing | 230 | 6.25 | 50 | 4.167 | 50 | 4.76 | 80 | 10.27 | 50 | 9.09 |
| Deployment | 250 | 6.79 | 50 | 4.167 | 50 | 4.76 | 50 | 6.41 | 100 | 18.18 |
| Support for accepting | 150 | 4.08 | 50 | 4.167 | 50 | 4.76 | 50 | 6.41 | 0 | 0 |
| Project planning | 250 | 6.79 | 50 | 4.167 | 50 | 4.76 | 50 | 6.41 | 50 | 9.09 |
| Project review | 250 | 6.79 | 50 | 4.167 | 50 | 4.76 | 50 | 6.41 | 50 | 9.09 |
| Training | 400 | 10.87 | 200 | 16.67 | 100 | 9.52 | 50 | 6.41 | 50 | 9.09 |
| Total  (USD) | 3680 | 100 | 1200 | 100 | 1050 | 100 | 780 | 100 | 550 | 100 |

* 1. **Schedule**
     1. **Project milestone & deliverables**

**Table 3.3.1:** *Project milestone & deliverables.*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No.** | **Task** | **Duration (days)** | **Time Start** | **Time Finish** |
| **1** | **Initial and plan** | **14** | **15 Feb 2022** | **28 Feb 2022** |
| **2** | **Development** | **72** | **01 Mar 2022** | **11 May 2022** |
| 2.1 | Sprint 1 | 18 | 01 Mar 2022 | 18 Mar 2022 |
| 2.2 | Sprint 2 | 26 | 19 Mar 2022 | 13 Apr 2022 |
| 2.3 | Sprint 3 | 18 | 14 Apr 2022 | 01 Apr 2022 |
| 2.4 | Sprint 4 | 10 | 02 May 2022 | 11 May 2022 |
| **3** | **Final Release** | **1** | **15 May 2022** | **15 May 2022** |

* + 1. **Schedule detail**

**Table 3.3.2:** *Schedule detail..*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **No.** | **Task Name** | **Duration**  **(Days)** | **Start** | **Finish** | **Assign**  **to** |
| **1** | **Initial and plan** | 14 | **15 Feb 2022** | **28 Feb 2022** | **Team** |
| 1.1 | Project’s Kick-off Meeting | 3 | 15 Feb 2022 | 17 Feb 2022 | Team |
| 1.2 | Discuss about project idea | 1 | 18 Feb 2022 | 18 Feb 2022 | Mentor,  Team |
| 1.3 | Create Proposal Document | 1 | 19 Feb 2022 | 19 Feb 2022 | Team |
| 1.4 | Present Proposal & Approval Project | 1 | 20 Feb 2022 | 20 Feb 2022 | Team |
| 1.5 | Create User Story | 2 | 21 Feb 2022 | 22 Feb 2022 | Tien |
| 1.6 | Create Product Backlog | 1 | 23 Feb 2022 | 23 Feb 2022 | Tien |
| 1.7 | Create Project Plan | 2 | 24 Feb 2022 | 25 Feb 2022 | Tien |
| 1.8 | Create Architecture Document | 1 | 26 Feb 2022 | 26 Feb 2022 | Dat |
| 1.9 | Create Project Plan | 3 | 15 Sep 2021 | 17 Sep 2021 | Tien |
| 1.10 | Create Database document | 1 | 27 Feb 2022 | 27 Feb 2022 | Phuoc |
| 1.11 | Create User Interface | 1 | 28 Feb 2022 | 28 Feb 2022 | Huy |
| **2** | **Development** | **72** | **01 Mar 2022** | **11 May 2022** | **Team** |
| **2.1** | **Sprint 1** | **18** | **01 Mar 2022** | **18 Mar 2022** | **Team** |
| **2.1.1** | **Initial Sprint 1** | 3 | 01 Mar 2022 | 03 Mar 2022 | **Team** |
| 2.1.1.1 | Sprint planning meeting | 1 | 01 Mar 2022 | 01 Mar 2022 | Team |
| 2.1.1.2 | Create Sprint Backlog for  Sprint 1 | 1 | 02 Mar 2022 | 02 Mar 2022 | Tien |
| 2.1.1.3 | Create Test Plan document for Sprint 1 | 1 | 03 Mar 2022 | 03 Mar 2022 | Tien |
| **2.1.2** | **Design UI** | **2** | **02 Mar 2022** | **03 Mar 2022** | **Huy, Dat** |
| **2.1.3** | **Design Test Case** | **2** | **02 Mar 2022** | **03 Mar 2022** | **Phuoc** |
| **2.1.4** | **Code** | **10** | **04 Mar 2022** | **14 Mar 2022** | **Team** |
| 2.1.4.1 | [Front-end] Home [User] | 1 | 04 Mar 2022 | 04 Mar 2022 | Huy |
| 2.1.4.2 | [Front-end] Login [User] | 1 | 05 Mar 2022 | 05 Mar 2022 | Dat |
| 2.1.4.3 | [Front-end] Logout [User] | 1 | 06 Mar 2022 | 06 Mar 2022 | Dat |
| 2.1.4.4 | [Front-end] Register [User] | 1 | 06 Mar 2022 | 06 Mar 2022 | Dat |
| 2.1.4.6 | [Front-end] User Information [User] | 1 | 07 Mar 2022 | 07 Mar 2022 | Dat |
| 2.1.4.7 | [Front-end] Update Information [User] | 1 | 08 Mar 2022 | 08 Mar 2022 | Dat |
| 2.1.4.8 | [Front-end] List Account[User[Admin]] | 1 | 05 Mar 2022 | 05 Mar 2022 | Huy |
| 2.1.4.9 | [Front-end] Update Account[User[Admin]] | 1 | 10 Mar 2022 | 10 Mar 2022 | Dat |
| 2.1.4.10 | [Front-end] Create Account[User[Admin]] | 1 | 11 Mar 2022 | 11 Mar 2022 | Dat |
| 2.1.4.11 | [Front-end]get List Students[User[Moderator]] | 1 | 06 Mar 2022 | 06 Mar 2022 | Huy |
| 2.1.4.12 | [Front-end] Create Students[User[Moderator]] | 1 | 07 Mar 2022 | 07 Mar 2022 | Huy |
| 2.1.4.13 | [Front-end] Update Students[User[Moderator]] | 1 | 08 Mar 2022 | 08 Mar 2022 | Huy |
| 2.1.4.14 | [Front-end] Introduce Capstone[User] | 1 | 09 Mar 2022 | 09 Mar 2022 | Huy |
| 2.1.4.15 | [Front-end]get List Mentor[User[Moderator]] | 1 | 12 Mar 2022 | 12 Mar 2022 | Dat |
| 2.1.4.16 | [Front-end] Update Mentor [User[Moderator]] | 1 | 13 Mar 2022 | 13 Mar 2022 | Dat |
| 2.1.4.17 | [Front-end] get list Notification [User] | 1 | 13 Mar 2022 | 13 Mar 2022 | Dat |
| 2.1.4.18 | [Front-end] update Notification [User[Moderator]] | 1 | 07 Oct 2021 | 07 Oct 2021 | Dat |
| 2.1.4.19 | [Back-end] Sign in [User] | 2 | 04 Mar 2022 | 05 Mar 2022 | Tien |
| 2.1.4.20 | [Back-end] Register to execute capstone | 2 | 06 Mar 2022 | 07 Mar 2022 | Tien |
| 2.1.4.21 | [Back-end] get All Account[User] | 1 | 04 Mar 2022 | 04 Mar 2022 | Phuoc |
| 2.1.4.22 | [Back-end] insert Account[User] | 1 | 05 Mar 2022 | 05 Mar 2022 | Phuoc |
| 2.1.4.23 | [Back-end] delete Account[User] | 1 | 06 Mar 2022 | 06 Mar 2022 | Phuoc |
| 2.1.4.24 | [Back-end] update Account[User] | 1 | 07 Mar 2022 | 07 Mar 2022 | Phuoc |
| 2.1.4.25 | [Back-end] get All Student[User] | 1 | 07 Mar 2022 | 07 Mar 2022 | Tien |
| 2.1.4.26 | [Back-end] delete Student[User] | 1 | 08 Mar 2022 | 08 Mar 2022 | Tien |
| 2.1.4.27 | [Back-end] approve for Student[User] | 1 | 09 Mar 2022 | 09 Mar 2022 | Tien |
| 2.1.4.28 | [Back-end] update Student[User] | 1 | 10 Mar 2022 | 10 Mar 2022 | Tien |
| 2.1.4.29 | [Back-end] get All Mentor [User] | 1 | 08 Mar 2022 | 08 Mar 2022 | Phuoc |
| 2.1.4.30 | [Back-end] insert Mentor [User] | 1 | 09 Mar 2022 | 09 Mar 2022 | Phuoc |
| 2.1.4.31 | [Back-end] delete Mentor[User] | 1 | 09 Mar 2022 | 09 Mar 2022 | Phuoc |
| 2.1.4.32 | [Back-end] update Mentor [User] | 1 | 10 Mar 2022 | 10 Mar 2022 | Phuoc |
| 2.1.4.33 | [Back-end] export file Mentor [User] | 1 | 11 Mar 2022 | 11 Mar 2022 | Tien |
| 2.1.4.34 | [Back-end] get All Notification[User] | 1 | 11 Mar 2022 | 11 Mar 2022 | Phuoc |
| 2.1.4.35 | [Back-end] Create Notification[User] | 1 | 12 Mar 2022 | 12 Mar 2022 | Phuoc |
| 2.1.4.36 | [Back-end] delete Notification[User] | 1 | 13 Mar 2022 | 13 Mar 2022 | Phuoc |
| 2.1.4.37 | [Back-end] update Notification[User] | 1 | 14 Mar 2022 | 14 Mar 2022 | Phuoc |
| **2.1.5** | **Testing** | **2** | **15 Mar 2022** | **16 Mar 2022** | **Huy, Dat** |
| **2.1.6** | **Fix bug** | **2** | **16 Mar 2022** | **17 Mar 2022** | **Huy, Dat** |
| **2.1.7** | **Re-testing** | **1** | **17 Mar 2022** | **17 Mar 2022** | **Huy, Dat** |
| **2.1.8** | **Release Sprint 1** | **1** | **18 Mar 2022** | **18 Mar 2022** | **Team** |
| 2.1.8.1 | Sprint review meeting | 1 | 18 Mar 2022 | 18 Mar 2022 | Team |
| 2.1.8.2 | Retrospective | 1 | 18 Mar 2022 | 18 Mar 2022 | Team |
| **2.2** | **Sprint 2** | **26** | **19 Mar 2022** | **13 Apr 2022** | **Team** |
| **2.2.1** | **Initial Sprint 2** | 3 | **19 Mar 2022** | **21 Mar 2022** | **Team** |
| 2.2.1.1 | Sprint planning meeting | 1 | 19 Mar 2022 | 19 Mar 2022 | Team |
| 2.2.1.2 | Create Sprint Backlog for  Sprint 2 | 1 | 20 Mar 2022 | 20 Mar 2022 | Tien |
| 2.2.1.3 | Create Test Plan document for Sprint 2 | 1 | 21 Mar 2022 | 21 Mar 2022 | Tien |
| **2.2.2** | **Design UI** | **4** | **20 Mar 2022** | **23 Mar 2022** | **Huy,**  **Dat** |
| **2.2.3** | **Design Test Case** | **2** | **20 Mar 2022** | **21 Mar 2022** | **Phuoc** |
| **2.2.4** | **Code** | **14** | **24 Mar 2022** | **06 Apr 2022** | **Team** |
| 2.2.4.1 | [Front-end] List Group [User] | 3 | 24 Mar 2022 | 26 Mar 2022 | Huy |
| 2.2.4.2 | [Front-end] detail Group [User] | 3 | 27 Mar 2022 | 29 Mar 2022 | Huy |
| 2.2.4.3 | [Front-end] Create Group [Moderator] | 3 | 30 Mar 2022 | 01 Apr 2022 | Huy |
| 2.2.4.4 | [Front-end] update Group [Moderator] | 2 | 02 Apr 2022 | 03 Apr 2022 | Huy |
| 2.2.4.5 | [Front-end] assign mentor for Group [Moderator] | 2 | 04 Apr 2022 | 05 Apr 2022 | Huy |
| 2.2.4.6 | [Front-end] Delete Group [Moderator] | 1 | 06 Apr 2022 | 06 Apr 2022 | Huy |
| 2.2.4.7 | [Front-end] Submit Topic[User[Student]] | 1 | 24 Mar 2022 | 24 Mar 2022 | Dat |
| 2.2.4.8 | [Front-end] Update Topic[User[Student]] | 1 | 25 Mar 2022 | 25 Mar 2022 | Dat |
| 2.2.4.9 | [Front-end] Topic List[User] | 1 | 26 Mar 2022 | 26 Mar 2022 | Dat |
| 2.2.4.10 | [Front-end] Detail Topic[User] | 2 | 27 Mar 2022 | 28 Mar 2022 | Dat |
| 2.2.4.11 | [Front-end]Approve Topic[User[Moderator]] | 1 | 29 Mar 2022 | 29 Mar 2022 | Dat |
| 2.2.4.12 | [Front-end]Submit Topic Template[User[Moderator]] | 2 | 30 Mar 2022 | 31 Mar 2022 | Dat |
| 2.2.4.13 | [Front-end] Topic template List[User] | 1 | 01 Apr 2022 | 01 Apr 2022 | Dat |
| 2.2.4.14 | [Front-end]Upload file Topic Template[User] | 1 | 02 Apr 2022 | 02 Apr 2022 | Dat |
| 2.2.4.15 | [Front-end]  Group List [User] | 2 | 24 Mar 2022 | 25 Mar 2022 | Tien |
| 2.2.4.16 | [Back-end] detail Group [User] | 2 | 26 Mar 2022 | 27 Mar 2022 | Tien |
| 2.2.4.17 | [Back-end] Group List of mentor [Mentor] | 1 | 28 Mar 2022 | 28 Mar 2022 | Tien |
| 2.2.4.18 | [Back-end] Create Group [Moderator] | 2 | 29 Mar 2022 | 30 Mar 2022 | Tien |
| 2.2.4.19 | [Back-end] update Group [Moderator] | 2 | 31 Mar 2022 | 01 Apr 2022 | Tien |
| 2.2.4.20 | [Back-end] assign mentor for Group [Moderator] | 1 | 02 Apr 2022 | 02 Apr 2022 | Tien |
| 2.2.4.21 | [Back-end] Delete Group [Moderator] | 1 | 03 Apr 2022 | 03 Apr 2022 | Tien |
| 2.2.4.22 | [Back-end] export file Group List [Moderator] | 1 | 04 Apr 2022 | 04 Apr 2022 | Tien |
| 2.2.4.23 | [Back-end] Submit Topic of Student[Student] | 1 | 24 Mar 2022 | 24 Mar 2022 | Phuoc |
| 2.2.4.24 | [Back-end] Submit Topic of mentor[Mentor] | 1 | 25 Mar 2022 | 25 Mar 2022 | Phuoc |
| 2.2.4.25 | [Back-end] Upload file Topic template[Mentor] | 2 | 26 Mar 2022 | 27 Mar 2022 | Phuoc |
| 2.2.4.26 | [Back-end] approve for Student[Moderator] | 1 | 28 Mar 2022 | 28 Mar 2022 | Phuoc |
| 2.2.4.27 | [Back-end] Topic Student List [User] | 1 | 29 Mar 2022 | 29 Mar 2022 | Phuoc |
| 2.2.4.28 | [Back-end] Topic template List [User] | 1 | 29 Mar 2022 | 29 Mar 2022 | Phuoc |
| 2.2.4.29 | [Back-end] update topic [Student] | 1 | 30 Mar 2022 | 30 Mar 2022 | Phuoc |
| 2.2.4.30 | [Back-end] update topic [Mentor] | 1 | 31 Mar 2022 | 31 Mar 2022 | Phuoc |
| 2.2.4.31 | [Back-end] delete topic[Student] | 1 | 01 Apr 2022 | 01 Apr 2022 | Phuoc |
| 2.2.4.32 | [Back-end] delete topic[Mentor] | 1 | 01 Apr 2022 | 01 Apr 2022 | Phuoc |
| 2.2.4.33 | [Back-end] export file Topic Student List[Moderator] | 2 | 02 Apr 2022 | 03 Apr 2022 | Phuoc |
| 2.2.4.34 | [Back-end] Upload file document template[Moderator] | 2 | 03 Apr 2022 | 04 Apr 2022 | Dat |
| **2.2.5** | **Testing** | 2 | **05 Apr 2022** | **06 Apr 2022** | **Huy, Dat** |
| **2.2.6** | **Fix bug** | **4** | **07 Apr 2022** | **10 Apr 2022** | **Huy, Dat** |
| **2.2.7** | **Re-testing** | **1** | **11 Apr 2022** | **11 Apr 2022** | **Huy, Dat** |
| **2.2.8** | **Release Sprint 2** | **2** | **12 Apr 2022** | **13 Apr 2022** | **Team** |
| 2.2.8.1 | Sprint review meeting | **1** | 12 Apr 2022 | 12 Apr 2022 | Team |
| 2.2.8.2 | Retrospective | **1** | 13 Apr 2022 | 13 Apr 2022 | Team |
| **2.3** | **Sprint 3** | **18** | **14 Apr 2022** | **1 May 2022** | **Team** |
| **2.3.1** | **Initial Sprint 3** | 3 | **14 Apr 2022** | **16 Apr 2022** | **Team** |
| 2.3.1.1 | Sprint planning meeting | 1 | 14 Apr 2022 | 14 Apr 2022 | Team |
| 2.3.1.2 | Create Sprint Backlog for  Sprint 3 | 1 | 15 Apr 2022 | 15 Apr 2022 | Tien |
| 2.3.1.3 | Create Test Plan document for Sprint 3 | 1 | 16 Apr 2022 | 16 Apr 2022 | Phuoc |
| **2.3.2** | **Design UI** | **2** | **15 Apr 2022** | **16 Apr 2022** | **Huy,**  **Dat** |
| **2.3.3** | **Design Test Case** | **1** | **16 Apr 2022** | **16 Apr 2022** | **Tien** |
| **2.3.4** | **Code** | **10** | **17 Apr 2022** | **26 Apr 2022** | **Team** |
| 2.3.4.1 | [Front-end] List stage and task [User] | 4 | 17 Apr 2022 | 20 Apr 2022 | Dat |
| 2.3.4.2 | [Front-end] View stage of project [User] | 3 | 21 Apr 2022 | 22 Apr 2022 | Dat |
| 2.3.4.3 | [Front-end] Report contribution | 3 | 23 Apr 2022 | 25 Apr 2022 | Dat |
| 2.3.4.4 | [Front-end] Create Defense [Moderator] | 2 | 17 Apr 2022 | 18 Apr 2022 | Huy |
| 2.3.4.5 | [Front-end] assign group for Defense [Moderator] | 2 | 19 Apr 2022 | 20 Apr 2022 | Huy |
| 2.3.4.6 | [Front-end] Update Defense [Moderator] | 2 | 21 Apr 2022 | 22 Apr 2022 | Huy |
| 2.3.4.7 | [Front-end] List Defense [Moderator] | 2 | 23 Apr 2022 | 24 Apr 2022 | Huy |
| 2.3.4.8 | [Front-end] Detail Defense [Moderator] | 2 | 22 Apr 2022 | 26 Apr 2022 | Huy |
| 2.3.4.9 | [Back-end] List stage and task [User] | 2 | 17 Apr 2022 | 18 Apr 2022 | Phuoc |
| 2.3.4.10 | [Back-end] View stage of project [User] | 2 | 19 Apr 2022 | 20 Apr 2022 | Phuoc |
| 2.3.4.11 | [Back-end] Report contribution [Student] | 2 | 21 Apr 2022 | 22 Apr 2022 | Phuoc |
| 2.3.4.12 | [Back-end] Group contribution [Student] | 2 | 23 Apr 2022 | 24 Apr 2022 | Phuoc |
| 2.3.4.13 | [Back-end] Create Defense [Moderator] | 2 | 17 Apr 2022 | 18 Apr 2022 | Tien |
| 2.3.4.14 | [Back-end] assign group for Defense [Moderator] | 1 | 19 Apr 2022 | 19 Apr 2022 | Tien |
| 2.3.4.15 | [Back-end] Update Defense [Moderator] | 1 | 20 Apr 2022 | 20 Apr 2022 | Tien |
| 2.3.4.16 | [Back-end] List Defense [Moderator] | 2 | 21 Apr 2022 | 22 Apr 2022 | Tien |
| 2.3.4.17 | [Back-end] Detail Defense [Moderator] | 2 | 23 Apr 2022 | 24 Apr 2022 | Tien |
| 2.3.4.18 | [Back-end] Export defense list file [Moderator] | 2 | 22 Apr 2022 | 26 Apr 2022 | Tien |
| 2.3.4.19 | [Back-end] Delete Defense [Moderator] | 2 | 22 Apr 2022 | 26 Apr 2022 | Tien |
| **2.3.5** | **Testing** | **1** | **27 Apr 2022** | **27 Apr 2022** | **Huy, Dat** |
| **2.3.6** | **Fix bug** | **1** | **28 Apr 2022** | **28 Apr 2022** | **Huy, Dat** |
| **2.3.7** | **Re-testing** | **1** | **29 Apr 2022** | **29 Apr 2022** | **Huy, Dat** |
| **2.3.8** | **Release Sprint 3** | 2 | **30 Apr 2022** | **01 May 2022** | **Team** |
| 2.3.8.1 | Sprint review meeting | 1 | 30 Apr 2022 | 30 Apr 2022 | Team |
| 2.3.8.2 | Retrospective | 1 | 01 May 2022 | 01 May 2022 | Team |
| **2.4** | **Sprint 4** | **11** | **02 May 2022** | **12 May 2022** | **Team** |
| **2.4.1** | **Initial Sprint 4** | **1** | **02 May 2022** | **02 May 2022** | **Team** |
| 2.4.1.1 | Sprint planning meeting | 1 | 02 May 2022 | 02 May 2022 | Team |
| 2.4.1.2 | Create Sprint Backlog for  Sprint 4 | 1 | 02 May 2022 | 02 May 2022 | Tien |
| 2.4.1.3 | Create Test Plan document for Sprint 4 | 1 | 02 May 2022 | 02 May 2022 | Phuoc |
| **2.4.2** | **Design UI** | **1** | **03 May 2022** | **03 May 2022** | **Huy,**  **Dat** |
| **2.4.3** | **Design Test Case** | **1** | **04 May 2022** | **04 May 2022** | **Tien** |
| **2.4.4** | **Code** | **6** | **05 May 2022** | **10 May 2022** | **Team** |
| 2.4.4.1 | [Front-end] Submit Grade of Group | 4 | 05 May 2022 | 08 May 2022 | Huy |
| 2.4.4.2 | [Front-end] Report Grade of Group | 2 | 09 May 2022 | 10 May 2022 | Huy |
| 2.4.4.3 | [Back-end] Submit Grade of Group | 4 | 05 May 2022 | 08 May 2022 | Phuoc |
| 2.4.4.4 | [Back-end] Report Grade of Group | 2 | 09 May 2022 | 10 May 2022 | Phuoc |
| **2.4.5** | **Testing** | **1** | **11 May 2022** | **11 May 2022** | **Huy, Dat** |
| **2.4.6** | **Fix bug** | **1** | **11 May 2022** | **11 May 2022** | **Huy, Dat** |
| **2.4.7** | **Re-testing** | **1** | **11 May 2022** | **11 May 2022** | **Huy, Dat** |
| **2.4.8** | **Release Sprint 4** | **1** | **12 May 2022** | **12 May 2022** | **Team** |
| 2.4.8.1 | Sprint review meeting | 1 | 12 May 2022 | 12 May 2022 | Team |
| 2.4.8.2 | Retrospective | 1 | 12 May 2022 | 12 May 2022 | Team |
| **3** | **Closing** | 3 | 13 May 2022 | 15 May 2022 | Team |
| 3.1 | Release | 1 | 13 May 2022 | 13 May 2022 | Team |
| 3.2 | Project Meeting | 1 | 14 May 2022 | 14 May 2022 | Team |
| 3.3 | Final Submission | 1 | 15 May 2022 | 15 May 2022 | Team |

* + 1. **Project schedule**

The Effort estimation is documented in Sprint Backlog

* 1. **Resource**

**Table 3.4:** *Resource.*

|  |  |  |
| --- | --- | --- |
| **Position** | **Member** | **Effort** |
| Back-end Developer | Tien, Phuoc |  |
| Front-end Developer | Huy, Dat |  |
| Designer | All members |  |
| Data Engineer | Tien, Phuoc |  |
| Tester | Huy, Dat |  |

* 1. **Infrastructure**

**Table 3.5:** *Infrastructure.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Work/Product** | **Purpose** | **Expected availability by** | **Note** |
| **Development Environment** | | | |
| Win 10 | Operating system to run application and tools for project | Construction stage |  |
| Postgres SQL | Use open source database to management and store data | Construction stage |  |
| HTML5, CSS3,  JavaScript, material-ui | Development language for Web interface | Initiation stage |  |
| React, Redux, hook | Framework, library for User  Interface | Initiation stage |  |
| Win 10 | Operating system to run application and tools for project | Construction stage |  |
| **Hardware & Software** | | | |
| Laptop | Deployment application |  |  |
| **Other Tools** | | | |
| Git | Source version control | Definition stage |  |
| Slack | Communication | Initiation stage |  |
| Trello | Task tracking | Initiation stage |  |

* 1. **Training plan**

**Table 3.6:** *Training plain.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Training Area** | **Participants** | **When, Duration** | **Waiver Criteria** |
| **Technical** | | | |
| HTLM, CSS,  JavaScript | All members | 7 days | Mandatory |
| ReactJS, NodeJS. | All members | 7 days | Mandatory |
| **Process** | | | |
| Configuration management | All members | 2 hrs. | If already trained |
| Group review | All members | 4 hrs. | Mandatory |
| Git, Slack | All members | 4.5 hrs. | Mandatory |
| Agile | All members | 2 hrs. | Mandatory |

1. **Project organization**
   1. **Organization structure**

**Table 4.1:** *Organization structure.*

|  |  |  |
| --- | --- | --- |
| **Role** | **Responsibility** | **Name** |
| **Scrum Master** | * Communicate the value of Scrum. * Teach the organization on Scrum to maximize business value. * Preserve the integrity and spirit of the Scrum framework. * Serve as a coach and mentor to members of the Team. * Respectfully hold the Team, Product Owner and Stakeholders accountable for their commitments. * Continually work with the Team and business to find and implement improvements. * As a timekeeper. * Helping the team agree on what they can achieve during each development sprint (or other period of time). * Facilitating the daily standup (sometimes called the daily scrum) and helping the team reach consensus on each of the three questions. * Helping the team continuously make progress on the project by making sure each person is working on the right tasks, helping to remove any obstacles to the team members’ progress, and protecting the team from distractions. | Tien, Nguyen Van |
| **Product**  **Owner** | * A spokesperson for the customer and needs to represent them. * Gathers, manages, and prioritizes the product backlog. * Has technical product knowledge or specific domain expertise. * Tracks progress towards the release of a product. | Phuoc, Ha Duc |
| **Developer** | * Responsible for quality. * Responsible for delivering the potentially shippable product of the Application each sprint. * Report progress based on the remaining time. * Self-organized. * Owns the Sprint backlog. | All members |
| **Mentor** | * Guide on the process. * Monitoring all activities of the Team. * Help with anything. * Reviews project documents * Reviews product. | **Chau, Truong Ngoc** |

* 1. **Project team**

**Table 4.2:** *Project team.*

|  |  |
| --- | --- |
| **Full Name** | **Position** |
| Chau, Truong Ngoc | Mentor |
| Tien, Nguyen Van | Dev-team, Scrum master |
| Phuoc, Ha Duc | Dev-team, Product Owner |
| Huy, Truong Dong | Dev-team |
| Dat, Nguyen Thanh | Dev-team |

1. **Communication and reporting**

**Table 5:** *Communication and reporting.*

|  |  |  |  |
| --- | --- | --- | --- |
| **Audience /**  **Attendees** | **Topic / Deliverable** | **Frequency** | **Method** |
| Scrum Master,  Members | Daily meeting | Daily | Google  Meeting/Slack Chat |
| Scrum Master,  Members | Sprint Planning  Meeting | When starting a sprint | Google Meeting |
| Scrum Master,  Members, Mentor | Sprint Review  Meeting | When finishing a sprint | Google Meeting |
| Scrum Master,  Members | Sprint  Retrospective | When the sprint review finish | Google meeting |
| Scrum Master,  Members | Individual  Meeting | When need | Google  Meeting/Message |
| Scrum Master,  Members, Mentor | Working report, review problems | Once a week | Google meeting |

1. **Configuration management**

**Table 6:** *Configuration management.*

|  |  |  |
| --- | --- | --- |
| **No** | **Tool** | **Content** |
| 1 | Trello | Track member activities.  Track the changing of the document. |
| 2 | Slack | Store document resource and designed components, daily scrum**.** |
| 3 | Google Meet | Discuss, meet online, stream and share problems**.** |
| 4 | Git hub | Repositories for open-source code of the project **.** |

1. **Security aspect**

* The credential data is carefully secured by multi-layer encryption and data integrity is ensured. Regularly back up system data.
* Research on network attack prevention solutions to ensure data security, avoid being exploited and stolen data by hackers.
* Deploy project architecture with a high priority in security. Optimized architectural solutions enable the deployment of data security with 99% reliability.
* Social media, sharing and use of data must be approved by the end user and verified by the organization's management.

1. **References**

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Reference item** | **Source** | **Note** |
| 1 | Agile Scrum | <https://www.atlassian.com/agile> |  |
| [https://www.cprime.com/resourc es/what-is-agile-what-is-scrum/](https://www.cprime.com/resources/what-is-agile-what-is-scrum/) |  |
| [https://www.agilealliance.org/ag ile101/](https://www.agilealliance.org/agile101/) |  |
| The Scrum Framework by  International Scrum Institute |  |
| 2 | Software  Standards | [https://www.nws.noaa.gov/oh/hr l/developers\_docs/General\_So ftware\_Standards.pdf](https://www.nws.noaa.gov/oh/hrl/developers_docs/General_Software_Standards.pdf) |  |
| [https://standards.ieee.org/standar d/12208-2017.html](https://standards.ieee.org/standard/12208-2017.html) |  |
| <https://sw-eng.larc.nasa.gov/> |  |

1. **Definitions and acronyms**

|  |  |  |
| --- | --- | --- |
| **Acronym** | **Definition** | **Note** |
| PM | Project Manager |  |
| PTL | Project Technical Leader |  |
| QA | Quality Assurance Officer |  |
| CC | Infrastructure Configuration  Controller |  |
| DV | Developer |  |
| URD | User Requirement  Document |  |
| SRS | Software Requirement  Specification |  |
| ADD | Architecture Design  Document |  |
| DDD | Detail Design Document |  |
| TP | Test Plan |  |
| TC | Test Case |  |
| SC | Source Code |  |
| CM | Configuration Management |  |
| CSCI | Computer Software  Configuration Items |  |
| CI | Configuration Item |  |
| CCB | Change Control Board |  |