

	ISCG7427 Agile and Lean Software Delivery Semester 1, 2023 Group Project Due Date: Thursday 8 th June 2023, at 1:00 pm
Computing and IT Practice Pathway Business & Enterprise and High Tech Network	Total Marks: 100 Course Weighting: 50%

This is a GROUP assessment – 4 students in each group

Introduction

The Group Project is designed to let students experience an Agile process in order to reinforce the Agile mindset learnt in the class, and to apply Agile practices to a scenario. You will need to brainstorm a vision for your application, and work with your customer (lecturer) to come up with user stories. You will need to follow the Scrum process and apply Agile practices to deliver the software that satisfy the customer's demand. The key activities including Backlog Grooming, Sprint Planning, and Sprint Review will be conducted in class. Sprint 0 will be completed as a “practice sprint” with no assessment associated to it. The Sprint Review and Presentation of Sprint 1 will be assessed to provide marks for this group assessment.

Objectives

This project has the following objectives:

1. To develop an Agile mindset
2. To familiarize with the Scrum development process
3. To apply Agile and Lean principles and practices
4. To practice using industry collaboration and development tools

Requirements of the group project:

This assessment requires students to complete the following milestones as a group:

Milestone 1 – Define product vision and team roles (due week 4)

- a) In this milestone, you will create the vision of the software product you are going to develop. The vision is a brief description of what software product you are going to develop and why the product is useful. Your software product needs to provide a NEW service that is not already on the market. The product needs to help people or resolves problem relating to one of the following three industries:

Medical Services, Education Services, or Transportation Services.

You will be given time in class to read out your vision and get feedback from the lecturer. You do NOT need to submit your vision in written form in this week (you will do so in week 5).

In later Milestones your team will build the application, therefore you should not make the vision too large that you cannot complete in time. Ideally it helps a specific situation or solves a specific problem and can be done by a simple web or mobile application with less than 10 screens.

You are asked to document your product's vision in 2 paragraphs. The first paragraph should describe a “situation”, “opportunity”, or “problem” you want to address using your product. The second paragraph should describe how your product will help the situation or resolve the

problem. The second paragraph should be in the “For... who... the ... is a... that...” format. The following is an example of how you should define the vision of your product.

Currently students send their peer review marks via email to their lecturer. The lecturer then copies the marks manually to spreadsheet to calculate marks for each student. This process involves a lot of manual copy and paste of student marks. This process is time consuming and it is easy for a lecturer to make an error.

For lecturers who needs to spend time copying and calculating marks manually, the Peer Review Application is a web application that allows students to enter peer review marks online and allows lecturers to see their students’ peer review marks online with totals calculated to reduce effort and error.

- b) Decide the roles of people in the team. Your team will need a Scrum Master, a Product Owner, and the rest are Team Members. The team can choose to perform the same role over 2 sprints, or switch roles in Sprint 1. This task will NOT be marked as part of your assessment. You do NOT need to submit this in written or verbal form.
- c) Come up with a team name

Milestone 2 –Environment setup and Initial Backlog Creation (due Week 6)

- a) Each member in the group will register on YouTrack (<https://www.jetbrains.com/youtrack/>)
- b) Each member in the group will register at <https://github.com/> as a version control and storage repository.
- c) Each member in the group will register at <https://www.heliohost.org/> as your web host, or other host.
- d) The ScrumMaster in the team will setup an Agile board on YouTrack, setup milestones for the 2 sprint reviews according to the course schedule, and invite your team members to join.
- e) Team Members will create fully integrated environment on own computer and participated in development.
- f) Incorporate your customer (lecturer) feedback to your vision from week 4, Product Owner leads the team to create an initial Backlog for your product on DevOps Services. Your backlog should have at least 15 User Stories. The User Stories need to be in the format of “As a..., I want to..., so that...”. For example, ***As a Student, I want to enter peer review marks for up to 6 team members so that I can evaluate all team members.***
- g) Assign priority to each of the user stories using a Value-Driven approach.
- h) Submit both the vision and the backlog in one email to ssubramanian@unitec.ac.nz. Subject line should read “ISCG7427 2022 S2 Milestone 2”. This is going to be marked as 10% of the assessment. Please include your vision, backlog, backlog item priorities, name and email addresses of all team members, and team name in a document file, attached to the email.
- i) During the class, your team will be given time to read out your top priority user stories and receive feedback.

Milestone 3 - Sprint planning, and backlog grooming (due on week 7 and week 11)

- a) Before the class, pick top 5 priority user stories and write acceptance criteria, break into tasks, enter these into YouTrack.
- b) During the class, your team will be given time to read out some of your acceptance criteria and tasks and receive feedback.
- c) During the class, your team will be given time to perform planning poker to add estimates (story points) to the backlog.
- d) During the class, your team will select several user stories to commit to the Sprint.
- e) During the class, your team will define the goals for the Sprint and enter into an Agile boardGitlab Wiki.

Milestone 4 – Develop the software, and apply Agile and Lean practices

- a) In each Sprint, deliver the user stories that you committed to the sprint backlog – including writing tests, writing code, running tests, and deploying your code.
- b) In real-life projects, Standup meetings should be run daily. For the purpose of the group assignment, you should run at least 2 stand up meetings each week to track progress. These meetings can be completed in person, or over the phone/instant messaging for teams that cannot meet physically. ScrumMaster should note down impediments at each Standup Meeting and tick off when completed.
- c) Incorporate some Agile and Lean practices of your choice, such as pair programming, TDD, architectural spikes, refactoring, test automation, limiting work-in-progress.

Milestone 5 – Sprint Review and Retrospective presentation (due Week 10 and Week 14)

- a) You will be given time in class to perform a Sprint Review to demonstrate the software product you developed, and receive feedback. The demonstration needs to run on a live system. Your demonstration should take a maximum of 8 minutes (you are encouraged to do shorter demonstration if you can cover everything). The Sprint 0 Review is a practice run that will not be assessed. Sprint 1 Review will be assessed.

The following contents are required in your Sprint Review:

- a. A list of all user stories you COMMITTED for the sprint
- b. A list of all COMPLETED user stories, their acceptance criteria, and a LIVE demonstration of these user stories

Expect questions from your lecturer like:

- How long did it take to complete coding?
- Can you show me your delivery pipeline if you automated it?
- Can you show me an automated regression test you used?

- b) At the end of the sprint (but before Sprint Review), your team should get together and perform a Retrospective. You will be given time in class to present a summary of your Retrospective discussion. Your presentation should take a maximum of 4 minutes (you are encouraged to do shorter presentation if you can cover everything). Your presentation will be done straight after your Sprint Review. In other words, you will be allocated a total of 12 minutes for Sprint Review and Retrospective presentation. After your 12 minutes, your lecturer will ask you questions relating to your project. The Sprint 0 Retrospective presentation is a practice run that will not be assessed. Sprint 1 Retrospective presentation will be assessed.

The following contents are required in your Retrospective presentation:

- a. What went well in this Sprint?
- b. What is your estimated velocity compared to actual velocity for this Sprint?
- c. Burndown chart for the Sprint – story points by week
- d. What Agile/Lean practices have you tried?
- e. What would you do differently in the next sprint?

Expect questions like:

- Can you show me a user story with tasks?
- Can you show me your Standup meeting tasks?

- What learnings from Sprint 0 did you apply in Sprint 1?

Milestone 6 –Peer evaluation form (due Week 14)

Group projects are sometimes looked upon as being "unfair." Through the use of the peer evaluation your perception of the quantity of work that you performed and that of your peers is analyzed against the perception of your other peers. Through this process, more equity is achieved. These evaluations are a serious statement and are used to re-distribute 50% of the grade on the project. The other 50% will be considered a non-redistributable group core grade. In order for this process to work effectively, there is the need for you to be honest and objective.

You will be asked to enter the peer evaluation ratings online no later than the assignment due date. Your ratings will be confidential; your team members will not see your rating. If you do not submit an evaluation, it will be assumed that you have not performed your fair share of work, and your personal grade on the project will be reduced accordingly.

Your rating for your own will be used as a reference only, it will not be taking into account when scaling. Only your peers' rating will be taken into account.

Sample grade calculation

If the group consists of 4 members and the team obtained a grade of 85, there are $85 * 4 = 340$ points to be redistributed. The computation results are shown below. Note that the average of the four individual redistributed grades is exactly 85. This system is modified based on the article "Using Peer Evaluations to Assign Grades on Group Projects" by L. Feigenbaum and N. Holland, published on the Proceedings of the 1997 Annual Conference of the Associated Schools of Construction.

	Member 1	Member 2	Member 3	Member 4
Response from Member 1	5 (not used in calculation)	7	3	5
Response from Member 2	5	3 (not used in calculation)	4	4
Response from Member 3	5	6	8 (not used in calculation)	5
Response from Member 4	5	5	4	5 (not used in calculation)
Total Rating	15	18	11	14
% Member score	15/58 = 25.9%	18/58 = 31.0%	11/58 = 19.0%	14/58 = 24.1%

Overall project grade: 85

Peer Evaluation = 50%

Member 1's Grade = $(0.5 * 85 * 25.9\% * 4) + (85 * 1 - 0.5) = 86.47$ or 86

Member 2's Grade = $(0.5 * 85 * 31.0\% * 4) + (85 * 1 - 0.5) = 95.26$ or 95

Member 3's Grade = $(0.5 * 85 * 19.0\% * 4) + (85 * 1 - 0.5) = 74.74$ or 75

Member 4's Grade = $(0.5 * 85 * 24.1\% * 4) + (85 * 1 - 0.5) = 83.53$ or 84

Total of all 4 grades = $86 + 95 + 75 + 84 = 340$

a) **Average of all 4 grades = $340 / 4 = 85$**

Assessment Criteria

Your project will be assessed based on the following set of assessment criteria.

Assessment Category	Assessment Criteria (source)	Scale	Marks
Adopted Agile Mindset	Lead an Agile project with a vision and an initial backlog (vision)	0 – vision and backlog not clearly articulated and do not solve a problem 10 – clearly articulated vision, solves a real problem, backlog supports vision and prioritised	10
	Involved User, embraced change, delivered frequent incremental value (review)	0 - did not deliver high priority stories; 10 - delivered high priority stories with requested detail	10
	Team is collaborative (retrospective)	0 – No evidence of Standup Meeting, not used Github to track work 10 – Shown evidence of Standup Meeting, Stories and tasks ticked off in Github	10
	Continuous Improvement (retrospective)	0 - no learnings at retrospective; 5 - more than 3 learnings and put Sprint 0 learnings into changes in Sprint 1	5
	Focus on Quality (review and retrospective)	0 - bad quality presentation and defects in software; 15 - engaging presentation, software free of defects	15
Demonstrated Agile and Lean Practices	Application of User Stories, Acceptance Criteria (review)	0 - do not fit INVEST, acceptance criteria not defined; 10 - fits INVEST, well defined acceptance criteria	10
	Develop story into tasks (retrospective)	0 - no logical story and task; 10 - shown at least 2 story-task breakdown done logically	10
	Track progress with velocity and burndown (retrospective)	0 - no progress tracking; 5 - accurate calculations	5
	Performed continuous integration and continuous delivery (retrospective)	0 – manual delivery pipeline, no testing; 15 – automated delivery pipeline with source control, continuous integration, deployment automation, and test automation	15
	Performed Additional Agile and Lean Practices (retrospective)	0 – did not try any additional Agile/Lean practices 10 – tried 3 Agile/Lean practices in addition to practices assessed by other criteria on this page	10
Total			100

Instructions

This assignment must be a product of your own work, except for the use of resources supplied with the course, discussions conducted with the lecturer and with those involved in your chosen organization and other assistance shown as acceptable in the section *Assistance to other Students* below.

All references need to follow APA5 or APA6 guidelines. Any work copied directly from another source must be acknowledged correctly. Authors also need to be acknowledged if you have reworded or synthesized their ideas.

Late submission of assignments

Assignments submitted within 24 hours after the deadline may be marked, but will achieve a maximum of only a C- grade. Assignments submitted more than 24 hours late will not be marked.

Assistance to other students

Students themselves can be excellent resource to assist the learning of fellow students, but there are issues that arise in assessments that relate to the type and amount of assistance given by students to other students. It is important to recognise what types of assistance are beneficial to another's learning and also what types of assistance are acceptable in an assessment.

Beneficial Assistance

- Study Groups
- Discussion
- Sharing Reading Material

Unacceptable Assistance

- Working together on one copy of the assessment and submitting it as own work.
- Giving another student your work.
- Copying someone else's work. This includes work done by someone not on the course.
- Changing or correcting another student's work.
- Copying from books, Internet etc and submitting it as own work.