Industrial Software Engineering

Project Manual

Second Year Project: Software Development in Large Teams

Industrial Scrum Master Training

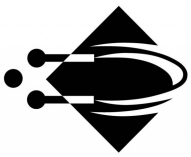

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Table of Contents

1. Introduction

This project manual describes the requirements for learning Scrum, as set by this Industrial Software Engineering (ISE) course.

1.1 Intended Learning Outcomes

(Second Year Project: Software Development in Large Teams)

- Plan, structure, and execute a large-scale software development project as part of a team in collaboration with an industrial customer.
- Select and apply a suitable software engineering method or practice to a given situation.
- Characterize, analyze and solve software engineering problems.
- Apply the Scrum method in practice and reflect over its usage.
- Plan, organize and conduct work in a software engineering team and solve teamwork related issues.
- Analyze, select and apply new technologies / programming languages.
- Plan, organize and conduct collaboration with an industrial customer.

1.2 Course Literature

ISE Project Manual

The Scrum Guide [1].

The Agile Manifesto [2].

1.3 Proposing Changes to the Course Requirements

The Scrum Team must try in every way possible to work in accordance with all the requirements in this project manual. Exceptions to the requirements may be suggested to better support the project work. If this is deemed necessary, the Scrum Team must present these exceptions to the course manager for approval.

2. Course Overview

Stages	Tasks to complete	Output
Group Formation 31. Jan – 9. Feb	- Create the developer group - Match with SM - Familiarize with the projects	- Individual info about Steam - CV from developers (Miro) - CV (Miro) and pitch from the SM - List of group members (email to Paolo) - Group CV (uploaded to MatchIt) - Prioritize projects (in MatchIt)
Matchmaking Event 10. Feb	- Match with company	- Finalize prioritization of projects (in MatchIt) - Book timeslots for DST Scrum simulation, feedback sessions 1 & 2, and the exam
Project Kickoff 14. – 27. Feb	- Agree on ways of working - DST Scrum simulation	- NDA (if required by company) - Book dates for all Scrum events - Product Goal - Initial Product Backlog - Initial Definition of Done and relevant software qualities - Initial burnup chart - Scrum Team agreement - Individual hand-in 0: 3rd March
Project Period 28. Feb – 29. May	- First Sprint starts latest Feb 28th - Feedback session 1 & 2 - Final Sprint finished latest May 29th	- Individual hand-in 1: 24th March - Group hand-in 1: 24th March - Individual hand-in 2: 28th April - Group hand-in 2: 28th April
Exam Submission 30. May at 14:00		- Individual hand-in 3 - Group hand-in 3
Pitching Event 30. – 31. May	- Pitching sessions for each team	- Project pitch & demo
Celebration Event 3. June		- Project pitch & demo
Oral Exam 7. – 26. June		

3. Project Kickoff

1. Product Goal: The course requires that the Scrum Team creates a short Product Goal which must have a clear boundary, known stakeholders and well-defined users or customers.
2. Definition of Done (DoD): Adequately considers at minimum; 1) unit testing, 2) functional system testing, and 3) usage of a specified coding standard.
3. Software qualities: In addition to aiming at functional correctness (=no bugs), the Scrum Team is required to identify the most relevant quality attributes (not design goals!), and state them accordingly.
4. Burnup chart: The course requires that the Scrum Team creates at minimum a burnup chart to show the work that is delivered.

4. Scrum Artifacts and Events

1. The course requires that the Product Backlog and Sprint Backlogs are online in a backlog management tool (i.e., not just an Excel worksheet).
2. The Product Backlog items are required to have a description and be ordered by value, e.g., by using the user story requirement elicitation and the story point techniques.
3. The course also requires that each Increment meets the team's DoD.
4. The course requires that at minimum the following events are included in the process: Sprints, Sprint Planning, Sprint Reviews, and Sprint Retrospectives.

6. Mandatory Activities

All students must participate in the following mandatory activities and deliver the mandatory hand-ins on time, to be allowed to participate in the oral exam:

1. **Don’t Starve Together (DST) Scrum Simulation**
2. **Individual Hand-in (0-2):** Project Journal
3. **Group Hand-ins (1-2):** Feedback Session slides, Process Overview document, Technical Overview document
4. **Feedback Session 1 & 2**

The student will receive the grade NA (not approved) at the ordinary exam, if the mandatory activities are not approved and the student will use an exam attempt. Templates will be provided for all mandatory hand-ins.

6.1 DST Scrum Simulation

The DST Scrum Simulation is a 3.5 hour activity carried out by the whole Scrum Team (i.e., PO, SM, and developers) and will be facilitated by a teaching assistant. The presence of the agile coach is highly encouraged, but not mandatory. More information on this activity will be provided during the first two weeks of the course.

6.2 Individual Hand-in

The Project Journal is an individual hand-in written in English. It must be **one document** that is submitted after the DST Scrum Simulation (individual hand-in 0), then updated and re-submitted before each feedback session and before the oral exam.

The submitted Project Journal must contain all the following sections:

0. DST Scrum Simulation Learning Diary
- Project Learning Goals (initially empty)
1. Learning Diary 1 (initially empty)
2. Learning Diary 2 (initially empty)
3. Learning Diary 3 [written exam] (initially empty)
4. Final Reflections on the Project and Learning [written exam] (initially empty)

Hand-in 0 (DST Scrum Simulation Learning Diary) must be minimum 1 page and max 1.5 pages for BSc students, and is required to contain all the following subsections upon submission:

1. Main Points Learned (WHAT you learned, and HOW you learned that)
2. Reflections (on the learning experience as a whole)
3. Simulation Format (discuss this specific tool for learning)

In addition, the three sections titled “Learning Diary (1, 2, & 3)” must contain the following subsections upon submission:

1. Individual learning goals for the Sprint/Sprints accomplished since the previous submission (a few bullet points only).
2. The main points you learned during the previous Sprint/Sprints, including three educational observations related to the use of Scrum or other work methods (e.g., what did you learn, how, discuss/reflect briefly the topic you learned). This section must be minimum 0.5 and max 1.5 pages each time for BSc students.

6.3 Group Hand-in

6.3.1 Feedback Session Slides

The Feedback Session slides must contain the following:

1. Agenda
2. Short introduction to your project (including the client)
3. Short summary of your Product Goal
4. Team's ways of working (a short summary of points 1-3 from the Process Overview document)
5. Definition of Done
6. Software qualities
7. Results of the Sprint(s) finished after the previous feedback session:
    a. Sprint Goals
    b. Product Backlog/Sprint Backlog items, and other results (add to your hand-in slide set either a link or screen shots of your Product Backlog & Sprint Backlog of the Sprints).
    c. Release burnup chart (and burndown chart if used)
    d. Main findings from the Sprint Retrospectives after the previous feedback session
8. A brief script and screenshots of the software demo that the group will show in the feedback session
9. Spent and remaining project effort per student per Sprint
10. Collaboration/sharing/learning with and from other teams (e.g., peer testing, experience exchange, Scrum Master Community of Practice)

6.3.2 Process Overview

The Process Overview must contain at minimum the following content (1-3 pages). In addition, mark clearly new things that are changed or added for hand-ins 2 & 3:

1. Project schedule and effort
    - Start and end dates of all Sprints
    - Allocated project effort per student per Sprint
    - Other main events such as feedback sessions
2. Description of the recurring events of the Sprints (when and how)
    - Sprint Planning, Daily Scrums, Sprint Review, Sprint Retrospective
3. Description of other main practices and tools

- Team-building activities, other team work sessions
- Project work (backlogs, refinement, time tracking, communication etc.)
- Development (version control, testing etc.)

4. Definition of Done
5. Scrum Team Agreement

6.3.3 Technical Overview

The course sets only minimal requirements for technical documentation as described below:

1. Software qualities (i.e., non-functional requirements, architecturally significant requirements).
2. Architecture design: Document one or more relevant views of your architecture design (you can use for inspiration the 4+1 architectural view model).
3. Technical specifications: Document briefly the most important architectural design decisions. Such design decisions may address, e.g., how the system is divided into its parts, what responsibilities these parts have, what are the interfaces, and what are the used frameworks and technologies.

6.4 Feedback Sessions

During the two feedback sessions, the student group will present the project status and results (software demo) to the course personnel, PO, agile coach and possibly other stakeholders. After the session, the course personnel (in consultation with the agile coach and the PO) will give the group feedback. During the sessions, you might be asked to showcase your working setup; this includes, but is not limited to: the code base, and the backlog management system.

Agenda for Feedback Sessions		
Activity	**Time**	**Participating**
Slack time for introduction (test setup, camera on mic works, presentation works)	~5 minutes	All
Presentation of slides & software demo	~15 minutes	All (student group presents)
Q&A discussion	~20 minutes	All
Private discussion on feedback	~10 minutes	PO, agile coach, teachers
Feedback from teachers, PO & agile coach	~10 minutes	All

7. Exam

7.1 Individual Hand-in 3

The Project Journal for hand-in 3 must contain all the previously mentioned mandatory sections and subsections. The section "Final Reflections on the Project and Learning", is the **most important part** of the final hand-in. For BSc students, this section must be minimum 1 page and max 2 pages, and contain your reflections on your learning during the whole project.

NOTE: The DST Scrum Simulation Learning Diary and Learning Diary 1 & 2 are not used for grading, as they are already part of your mandatory activities. We use for grading only these parts:

- Project Learning Goals (updated)
- Learning Diary 3
- Final Reflections on the Project and Learning

7.2 Group Hand-in 3

In addition to the previously mentioned mandatory slides, the slide set for hand-in 3 must also contain the following:

1. Slide(s) for the one-minute pitch (optional).
2. Realized project scope vs. original/updated Product Goal.
3. Complicating and simplifying factors compared to other projects on this course. This is done based on your experiences from your project, which you can compare briefly to other projects in general based on your discussions with other teams, no extra work for this is required.
4. Overall evaluation of the used work practices and tools, e.g., what did you try out, what worked well, what didn't, how did you change, and why.

7.3 Oral Exam

Differently from the feedback sessions, the exam includes a 30 minutes deliberation slot in which the teaching staff agree on grades for each group member based on all exam submissions and the performance during the oral exam. Individual grades will be communicated thereafter in plenum to the group, unless otherwise requested. Failing either the written or the oral part means failing the whole exam.

Agenda for the Oral Exam		
Activity	**Time**	**Participating**
Slack time for introduction (test setup, camera on mic works, presentation works)	~9 minutes	All
Project pitch (instructions will be given in the Pitching Workshop)	~1 minute	All (students present)
Presentation of slides & software demo	~15 minutes	All (students present)
Q&A discussion	~50 minutes	All
Private discussion on feedback	~10 minutes	PO, agile coach, teachers
Feedback from teachers, PO & agile coach	~10 minutes	All
Scrum Master exam	~30 minutes	SM, PO, agile coach, teachers
Private discussion on grades	~30 minutes	Teachers
Grades given	~10 minutes	Students, teachers

8. Submitting Hand-ins

Submission deadline for all hand-ins is 14:00 on the delivery day. Submissions must be uploaded on LearnIT. You are also required to send your group hand-ins to your PO & agile coach before each feedback session and before the oral exam (this does not include the individual hand-ins).

Individual hand-in: Submit the file as one (updated) pdf. Name the file with your "Group Letter_Student Username_Hand-in Number.pdf", see examples:

- Group X, Paolo Tell, Hand-in 0: **X_pate_0.pdf**
- Group X, Paolo Tell, Hand-in 3 [written exam]: **X_pate_3.pdf**

Group hand-ins: Submit the group hand-ins as one zip file. Name the file with your "Group letter_ Hand-in Number.zip", see examples:

- Group X, Hand-in 1: **X_1.zip**
- Group X, Hand-in 3 [written exam]: **X_3.zip**