

Project Description

1. Objectives

The main goals of the project from a course perspective are to:

- connect theory to practice,
- give a concrete experience of practical requirements engineering,
- promote student motivation through real stakeholders,
- provide a group-learning setting focused on realistic problems.

2. Project Context and Roles

During the project, each project group works in three separate roles (see Table 1):

Customer Role -To invent a Project Mission and act as a customer providing domain expertise. As a customer the project group creates a requirements specification, which will be reviewed by another group.

Reviewer Role -To review another group's specification and give constructive feedback.

Student Role -To be an effective part of a project group and to reflect on experience and learning outcomes.

Table 1. Different tasks of project groups.

Within Customer Role	Within Reviewer Role	Within Student Role
Align on project mission	Plan the review of another group's specification within your group	Engage in effective group work
Do real elicitation, i.e. go out and interview potential users	Review specification(s)	Reflect on experiences
Write a specification in 3 iterations	Integrate findings into a joint review report	Document and present experiences

3. General Rules

1. The project comprises 80 hours per person
2. Approximately 90% of each team member's total effort shall be devoted to the Customer aspect of the project.
3. Approximately 10% of each team member's total effort shall be devoted to reviewing another project.
4. The total effort shall be evenly distributed among the team members.
5. In weeks W2, W4, and W6 a 30-minute meeting shall be scheduled with the project supervisor, where the project team reports on status, challenges, and plans. These meetings will give the groups the opportunity

to discuss challenges and open issues in their project work. **Important, schedule additional meetings as needed and do not hesitate to engage with your supervisor via email or chat rooms.**

4. Deliverables

There are several different deliverables throughout the project. All deliverables will be handed in as PDF files (for the conference presentation, also PPT/PPTX is permitted) through Canvas. Hand-ins via e-mail will be ignored. Deadlines are hard. The deliverables are listed in Table 2 and described in the following subsections.

Table 2. Project Deliverables

Phase	Deliverables	Deadline
Definition	Project mission	Week 1: Friday 1pm
Iteration 1	Release 1	Week 4: Monday 8am
Iteration 2	Release 2	Week 6: Monday 8am
	Review report	Week 6: Friday 8am
Iteration 3	Conference presentation	Week 7: Monday 4pm
	Release 3	Week 8: Monday 8am

4.1 Project Mission

Acting as customer, every group prepares a Project Mission to guide their activities. The Project Mission shortly defines the scope of a system. The project mission shall fit on one A4 page when printed. The project mission shall include a descriptive project name as well as the names of its authors and email addresses (that are actually used) of all authors.

You shall fulfil the following criteria regarding the system you propose:

- You have a deep understanding of the application domain
- You have a genuine interest in the system
- You should be confident that you can collect requirements from several sources, including through interviews with potential users.
- You have a business case/an idea how to gain revenueBased on this Project Mission, your group will elicit, prioritize,specify and validate requirements.

4.2 Releases R1, R2 and R3

1. You should work iteratively and divide your work into 3 main iterations, each ending with a release with all your accumulated work products.
2. The content of each release should be more complete compared to the previous.
3. Each release should be divided into two explicit parts: The **Requirements Document** and the **(Project) Experience Report**.
4. Additionally, each release contains an **Individual Contribution Assessment** and a joint **Team Agreement** (with identical deadline).

The **Requirements Document** (please check the [suggested template \(pdf\)](#) or [suggested template \(src\)](#)) must generally include the following information (but can be incomplete in Release R1 and R2):

1. A table of contents.
2. Name and Email Address of all members of the group.
3. An overview on how each team member has contributed to both the Requirements Document and the Experience report.
4. An overview description, to make navigation and assessment easy.
5. Different types of system requirements (in particular: quality, function, data) at different levels of abstraction (e.g. goal, domain, product design).
6. Several different specification techniques (e.g., context diagrams, features, virtual windows, task descriptions, planguage).
7. A unique identifier for each requirement.

For releases R2 and R3, you additional need the following:

1. A change history compared to the previous release.
2. A subset of the requirements should be prioritized using at least two different prioritization techniques.
3. Mock-up designs (e.g. screens and prototypes, drawings, clickable presentations, executable GUI-builder mock-ups) for a subset of requirements.

The **Project Experience report (Experience Report)** must include the following information:

1. Name and Email Address of all members of the group.
2. A description of your requirements engineering work, including experiences and reflections in relation to learning objectives as well as team work.
3. Description of the chosen methods/techniques for elicitation, specification, validation, and prioritization.
4. Motivation for why you chose the used methods/techniques.
5. Reflection of the usage of these methods/techniques in terms of what was successful, what was challenging, and why it was successful and/or challenging. Example questions for reflection: What have you learned in relation to the learning objectives in the course syllabus? What would you have done differently if you would do this project again as a "real" project, based on what you know now?
6. The Project Experiences (Experience Report) shall not include course evaluation issues, but focus on your own work and learning outcome.
7. The Project Experience report shall be formatted using the IEEE Conference Proceedings format, which will be provided in the Documents section of Canvas.
8. The Project Experience report must not exceed 8 pages.

In the **Individual Contribution Assessment**, each group member judges the contribution of his/her peers. We will only reveal aggregated results and only to the same group, i.e., a group member cannot see how another group member has assessed individual contributions in the team. We will provide a template for this through Canvas. We will introduce this mechanism in Workshop 1.

The **Team Agreement** captures how the group intends to work together (if no change is necessary, the same document can be submitted in all three releases). We will provide a template for this through Canvas and support the team in creating the first draft during Workshop 1.

4.3 Review another group's specification

During the second Iteration, we will randomly connect groups: Each group will (in their role as customer) send their specification to two other groups and in turn receive specifications from two other groups which they will review. The review should be constructive, based state-of-the art quality assurance of requirements. Additionally,

any ambiguities should be brought up to the authors of the specifications. A description of the review process as well as the review findings will be shared as a **Review Report**, which will also be submitted through Canvas.

In their customer role, each group should improve their specifications based on the feedback they receive.

4.4 Conference Presentation

Prepare and rehearse a short presentation regarding your RE project experiences (not your experiences as a customer).

1. Spend approx. 10% of the time on project mission from which you started.
2. Spend approx. 40% of the time on overview of project results including techniques used.
3. Spend approx. 50% of the time on important experiences and learning outcome.

5. Project assessment

1. The deliverables R1, R2, Project Mission, Review Report and Conference Presentation are pass/fail only.
2. The project grade of fail/3/4/5 is based on Release R3 and supporting documents (incl. the Review Report, the Team Agreement, the Individual Contribution) according to the criteria in Tables 3, 4, 5, 6, and 7 below. In addition, the following general criterias apply to all documents:
 - All tables and figures must have numbers and captions.
 - All tables and figures must be referenced in the text.
 - Provide a table of content when reasonable.
 - A paragraph should be a *self-contained unit of a discourse*.
 - Use the templates provided (e.g. the formatting instructions for experience report).
 - Plagiarism will not be tolerated. Make sure to revisit the academic integrity module on canvas for guidance.
3. We will follow the grading scheme depicted in Tables 3, 4, 5, 6, and 7. In order to get a passing grade, a group must not fail in any of the criteria. If a passing grade is achieved, we will compute the average among all criteria.
4. Students are assessed individually, based on the group reports and their individual contribution. In case of unclear contribution, we will conduct individual question sessions with student members.

Table 3. Assessment criteria *Specification*.

ID	Where checked	Criteria	F	3	4	5
s.1	<i>Requirements Document</i> (content)	A sufficient number of suitable specification techniques has been applied (e.g. task descriptions, feature requirements, planguage).				
s.2	<i>Requirements Document</i> (content)	The specification covers goal, domain, product/design level requirements.				
s.3	<i>Requirements Document</i> (content)	Specification techniques are well combined across requirements types and abstraction levels.				
s.4	<i>Requirements Document</i> (content)	The level of detail and completeness is appropriate.				

ID	Where checked	Criteria	F	3	4	5
s.5	<i>Requirements Document</i> (content)	The level of detail and completeness is well motivated.				
s.6	<i>Requirements Document</i> (scope)	The system boundaries and interactions with external entities are clearly defined.				
s.7	<i>Requirements Document</i> (scope)	Requirements include rationale to minimize the risk of misinterpretation.				
s.8	<i>Requirements Document / Experience Report</i> (scope)	Requirements balance the priorities of multiple stakeholders.				
s.9	<i>Experience Report</i> (reflection)	Critical reflection on specification trade-offs is provided.				
s.10	<i>Requirements Document</i> (dependencies)	Inter-dependencies between requirements are clearly identified and linked.				
s.11	<i>Requirements Document</i> (dependencies)	Important inter-dependencies are managed as requirements evolve, with a focus on cost-benefit considerations.				

Table 4. Assessment criteria *Elicitation*.

ID	Where checked	Criteria	F	3	4	5
e.1	<i>Experience Report</i> (techniques)	Provides reasoning behind the choice of elicitation techniques.				
e.2	<i>Experience Report</i> (techniques)	Elicitation techniques are effectively applied across different contexts.				
e.3	<i>Experience Report</i> (reflection)	Critically discusses experiences from elicitation in relation to project type and domain.				
e.4	<i>Experience Report</i> (depth)	There is a reflection on the connection between specification quality trade-offs and the need for further elicitation.				
e.5	<i>Experience Report</i> (depth)	Elicitation extends beyond initial stakeholders and explores deep domain knowledge.				

Table 5. Assessment criteria *Quality Assurance*.

ID	Where checked	Criteria	F	3	4	5
q.1	<i>Review Report</i> (process)	Quality assurance is planned and executed using various verification and validation techniques.				
q.2	<i>Review Report</i> (findings)	Assess the quality of requirements and find several relevant problems of several different types.				

ID	Where checked	Criteria	F	3	4	5
q.3	<i>Review Report</i> (findings)	Requirements quality problems are prioritized and discussed, including deeper semantic issues.				
q.4	<i>Review Report</i> (prioritization)	Requirements quality problems are related to contextual risks affecting the project's success.				
q.5	<i>Experience Report</i> (reflection)	Reflects on experiences with quality assurance of requirements.				
q.6	<i>Experience Report</i> (reflection)	Provides critical discussion of quality assurance experiences.				
q.7	<i>Experience Report</i> (reflection)	Reflection connects verification and validation techniques, quality problems, and contextual risks to project success.				

Table 6. Assessment criteria *Prioritization*.

ID	Where checked	Criteria	F	3	4	5
p.1	<i>Requirements Document / Experience Report</i> (prioritization)	More than one suitable prioritization technique applied.				
p.2	<i>Requirements Document / Experience Report</i> (prioritization)	Both functional and non functional requirements are prioritized in a consistent way.				
p.3	<i>Requirements Document / Experience Report</i> (prioritization)	Requirements prioritization is consistent across requirements abstraction levels.				
p.4	<i>Requirements Document / Experience Report</i> (prioritization, reflection)	Integrates and reflects on several prioritization techniques that are applied iteratively to different types of requirements.				
p.5	<i>Requirements Document / Experience Report</i> (prioritization, reflection)	Stakeholder priorities are weighted and combined with clear rationale.				
p.6	<i>Requirements Document / Experience Report</i> (prioritization, reflection)	Priorities guide improvements in specification quality for a targeted subset of requirements, based on reflective experiences.				
p.7	<i>Experience Report</i> (reflection)	Reflects on prioritization experiences.				
p.8	<i>Experience Report</i> (reflection)	Compares at least two different prioritization techniques with respect to relevant criteria.				
p.9	<i>Experience Report</i> (reflection)	Critically discusses experiences with prioritization.				

Table 7. Assessment criteria *Team work*.

ID	Where checked	Criteria	F	3	4	5
t.1	<i>Team Agreement / Experience Report (teamwork)</i>	Expectations towards team work and contributions of team members are well documented.				
t.2	<i>Team Agreement / Experience Report (teamwork)</i>	Team work is planned with respect to individual team members' strengths and weaknesses.				
t.3	<i>Experience Report (teamwork)</i>	Communication and inter-cultural aspects of team work are well reflected in the report.				
t.4	<i>Experience Report (teamwork)</i>	Reflects on how communication and inter-cultural aspects influenced the elicitation and specification in the project context.				
t.5	<i>Experience Report / Individual Contribution Assessment (teamwork)</i>	Group work difficulties (if any) were overcome (with help of supervisors if needed).				