

Requirements Document

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Lab assignment Requirements Engineering



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1 Project Plan

45 The project plan for the first four weeks is explained in this chapter. The goal is to discover some of the essential features that should be provided by the successor of Blackboard. We base our project plan on the requirements engineering process, see Figure 1.1 [2] (chapter 1.1.6). This book identifies four phases of requirements engineering;

1. Domain understanding and elicitation.
- 50 2. Evaluation and negotiation.
3. Specification and documentation.
4. Quality assurance.

During the first week we will get familiar with the problem world, as described in the first phase [2]. We will investigate the system-as-is, ourselves, and ask users (students) about their experiences. We will work through the questions listed in the relevant section in the book. We will also compose a list of stakeholders, which we interview in the coming weeks.

Week 2 will revolve around the second phase: evaluation and negotiation. The goal of this week is to find all critical (business) goals of the stakeholders of the system. Why is it replaced? What is the relation to the mission and vision of the UvA (if there is any)? Why did the UvA use an education management tool in the first place? What are the goals of the students in relation to the tool etc. During this week we will interview remaining stakeholders, to verify and add upon the information we gathered in the first week. We will also interview more students with prepared questions.

In week 3 and 4 we will try to answer the questions we deemed most interesting and essential to get a good successor of Blackboard. These can be found in Chapter 4.

Note that we conduct one round of the spiral model, see Figure 1.1. There will be some backtracking to other phases (previous weeks), because some information becomes available after the relevant week/phase.

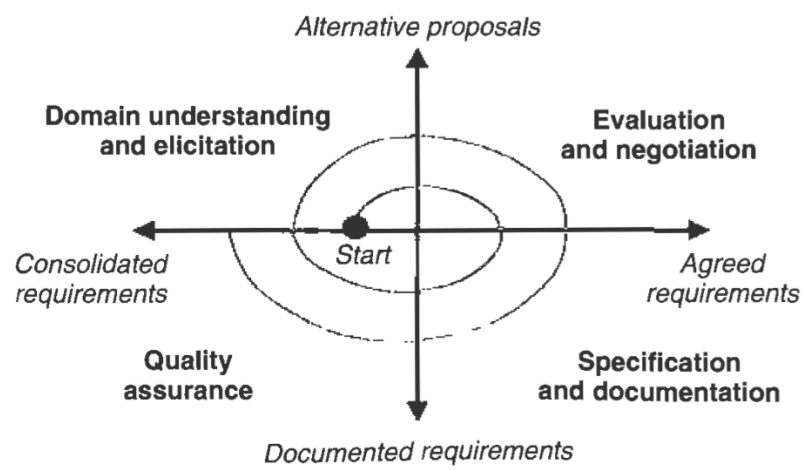


Figure 1.6 The requirements engineering process

Figure 1.1: Spiral Model of requirements engineering process

2 Domain Analysis

70 In the first week we focused on getting a better understanding of the domain in order to form a better understanding of the problems in the domain with relation to the goals, which we will gather during the next phase.

2.1 Glossary of terms

List all relevant terms in the problem world

student A person who studies at an university (in our case the University of Amsterdam).

teacher A person who teachers courses at an university (in our case the University of Amsterdam).

UvA University of Amsterdam.

Blackboard Name of currently licensed ELE by the UvA.

80 ELE Electronic Learning Environment. ICT solution where part of a course teaching and organization is moved to an (online) software platform. An example of an ELE is Blackboard.

2.2 Organization

The organization in which Blackboard is used is the University of Amsterdam (UvA).

85 The organization within which the system-as-is takes place: its structure, strategic objectives, business policies, roles played by organizational units and actors, and dependencies among them.

2.3 Goal

90 The goal of a requirement engineering project in a perfect world would be strife to find all of most important quality requirements for all relevant stakeholders. As stated in Contextual Design [1] a design process could always be further elaborated, so finding all and every requirements for all stakeholders is an illusion.

Because of this and the time constraints of this project, the goal will be limited to the following: *find a couple of the major requirements for the main stakeholder(s)*. We believe 95 this is measurable enough for the assignment given the time frame but still enough of an abstraction given that we do not yet have a clear enough understanding of the domain at this time to make it more concrete without taking away from the achieveability.

2.4 Scope

The scope of the system-as-is: its underlying objectives, the components forming it, the concepts on which it relies, the tasks involved in it, the information flowing through it, and the constraints and regulations to which the system is subject.

2.5 Stakeholders

- Users: Both students and teachers
- Management:
- Blackboard (company):

The set of stakeholders to be involved in the RE process.

2.6 Strengths and Weaknesses

Students:

- + Easy way to access course specific information.
- + Latest schedule of course.
- Hard to use in the beginning.
- Only marginal functionality used, e.g. "We *have* to use it."

The strengths and weaknesses of the system-as-is, as perceived by the identified stakeholders.

2.7 Domain facts

The following facts are from a study in [3]. The implications for the requirements engineering process are in italic.

- Formative feedback can help students improve their work. *BB does not offer formative feedback, this is merely a responsibility of the teacher.*
- Should be clear link between learning goals (of a course) and the ICT solution. If the ICT solution is merely a means to reach a goal it will not improve learning.
- Important how ICT is used that determines its effectiveness. *If a domain fact is that students use BB because they have to, then a BB-related solution might not be effective.*
- Teachers use ICT based on their own skills. This might undermine its effectiveness.
- ICT changes rapidly. Partly, but in an increasingly lesser manner, by Moore's Law. In week 3 we will investigate this fact more in the literature.

- The availability of a tool does not determine its effectiveness. In its initial stages the focus is on how to use the tool, rather than using the tool for learning-promoting purposes.

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- Research also rarely reports on technical issues or problems with equipment, yet these are what teachers find act as barriers to increasing the use of technology in classrooms.
- Media reports faster on trends than research can validate or discredit using that technology. Example: Interactive Whiteboards.
- ICT does not help increase pupils attainment.

3 Essential stakeholder goals

During this phase we set out to gather the essential stakeholder goals. Each stakeholder has a specific goal, be it something that has to do with the system or something entirely different. Our aim is to identify these goals in order to understand how the ELE of the UvA can assist in reaching these goals and which minimal features are needed to this end.

3.1 UvA

Taken from the core values of the UvA is the following:

Engagement for the UvA and its staff implies the age-old obligation based on a privileged academic position to use acquired knowledge and insights to play an ongoing, prominent and visible role in the social debate. This value also reveals that the UvA is committed to the maximum development of the individual talents of its staff and students. Additionally, the choice of this core value suggests a strong mutual involvement between students, staff, employees, study programmes, institutes and the institution as a whole. And, lastly, there is an important link between academia and society. The UvA is located in historical and modern buildings throughout the city of Amsterdam, thus making it an integral part of the city.

Important goals are:

1. The UvA is committed to the maximum development of the individual talents of its staff and students.[4]
2. The UvA strives for a strong mutual involvement between students, staff, employees, study programs, institutes and the institution as a whole.[4]
3. Evidenced-based ICT innovations are incorporated into the UvAs education policy.[?]
 - a) (Strategy): The use of Open Educational Resources as part of blended curricula will be one of the educational innovations implemented. ICT policy will be tailored in part to support the education process.
4. A modular Lifelong Learning programme is developed.[?]
 - a) (Strategy): This programme will draw on the online courses in our blended curricula.

3.2 Teacher

Taken from the UvA goal and by talking to teachers.

1. Develop individual skills.
2. Convey knowledge to students.

3.3 student

The student goals still need to be confirmed by finding a relevant paper. We believe these are the broad categories of students:

1. Optimally develop one's personal and academic skills.
2. Obtain diploma.

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4 Domain understanding

In order to find the essential features of an ELE we set out to find how an ELE can support the various stakeholders with achieving their goals. To this end we have some questions for which we want to find the answers. This we will do by conducting research and elicitation amongst the various stakeholders.

Following is a list of questions, loosely ordered on importance:

- What are the essential features of the Blackboard (or similar ELE) system for the UvA?
- To what extent does the current Blackboard system support the UvA goals?
 - To what extent does the current system support the goals of the teachers?
 - To what extent does the current system support the goals of the students?
- Which type of usability problems have no impact on education?
- What characteristics of users are important to consider for the selection of a new system?
- How will the new Blackboard system contribute to the goals of the UvA?

In this chapter we will answer these questions (though we may not be able to answer them all) and update the information once we get new data. We will also note how reliable the information is based on the source and/or frequency of the information.

4.1 What are the essential features of the Blackboard (or similar ELE) system for the UvA?

In order to find the essential features of the Blackboard system we have performed elicitation amongst both teachers and students. From these we have devised the following preliminary list of essential features:

- Teacher:
 - Publishing documents
 - Publishing assignments
 - Publishing announcements
- Student:
 - Retrieve relevant information/documents.
 - Hand in digital assignments.

We can distil this into a single feature list:

- Share documents.
- Hand in digital assignments.
- Publish announcements.

4.1.1 Reliability

We deem this preliminary feature list as quite reliable and representative for the essential use of Blackboard by teachers and students. The sources of this information are the elicitations that we performed but also our own experience, and talking to the users (students and teachers).

This list is not very reliable for the representativeness for the features with regards to the goals of the UvA, to answer that part of the question we first need to reliably answer the following question "4.2: To what extend does the current Blackboard system support the UvA goals?". **update when answered**

4.2 To what extend does the current Blackboard system support the UvA goals?

In order to answer this question we have divided it into two sub-questions. As the main goal of the UvA (see 3: Essential stakeholder goals) could be divided into sub-goals for its staff and students we have done the same with this question to make it easier to answer.

4.2.1 To what extends does the system support the goals of the teachers?

By reasoning about how teachers develop their skills, from personal experience by looking around in the UvA and talking to teachers we can answer this question for the staff:

- Teachers do not develop their skills through Blackboard, they develop their skills by performing activities related to their field. For example by developing assignments for students. Or by doing personal research, read papers, go to conferences etc.

4.2.2 To what extends does the system support the goals of the students?

By talking to teachers we have answered this question for students:

- Students do not develop their skills through Blackboard because the system does not create *good* teachers. Students develop their skills through individual discipline and programs set up by competent teachers, Blackboard is just one of the many tools used by the teachers. It still boils down to the teacher himself to channel his knowledge.

4.2.3 Reliability

Because our sample size for both answers is really low, and both teachers and ourselves are just talking about personal experiences and beliefs this is not a reliable answer. We might be able to confirm it by doing proper research. **research**

We might also get a more reliable (and possibly different) answer by substituting the main question by two other questions:

- Does Blackboard save the teachers time?
- Will teachers who spend (relatively) less time on bureaucracy teach better?

4.3 Which type of usability problems have no impact on education?

From our elicitations with and talking to students we learned:

- The usability problems that are usually connected to Blackboard have no impact on the education. All who reported usability problems also stated that it was really annoying in the first couple of weeks, but after they got used to it the problem almost entirely ceased to exist.

4.3.1 Reliability

The reliability of these statements is very doubtful. As we later learned from reading Thinking, Fast and Slow by Kahneman, people are not eager to open up and possibly embarrass themselves. So they might not let us know that they find Blackboard hard to use, at it might show that they personally do not have the skills to use the tool, which they can experience as embarrassing.

To answer this question more reliable we might substitute the questions regarding usability by different questions, which are not directed personally at the interviewee, but are harder for him to answer. As Kahneman showed, in his mind the interviewee will (unconsciously) substitute the question by looking at his own experience (and of people around him), which is the answer that we are looking for. **perform elicitation with substitute questions**

4.4 What characteristics of users are important to consider for the selection of a new system?

To answer this question we first set out to find different characteristics of users through our elicitations, focusing mainly on their study goals and use of resources to this end. What we encountered was not really what we expected. Obviously all students want to pass their exams and eventually earn a degree, but besides this most students want to develop specific skills, broaden or deepen their knowledge base; earn intrinsic knowledge to some degree. What we found was:

- Irrespective of the degree of intrinsic knowledge the student seeks, he uses other sources of information than those solely provided by their teacher (be in through Blackboard or other means).

So we found that irrespective of the characteristics regarding study goals of the student, he independently uses resources outside of the ELE to get additional information to help achieve these goals.

4.4.1 Reliability

Again our sample size is small, but the results were not really what we expected. Because of this we believe the information more reliable than when it merely confirmed our predisposition as it is less likely that we were suggestive of the answer during our elicitation.

Finding some proper research to back up our results would strengthen the reliability of the conclusion. **research**

4.5 How will the new Blackboard system contribute to the goals of the UvA?

As we found out when answering "4.2: To what extent does the current Blackboard system support the UvA goals?", we doubt if the current system has a notable contribution towards the main goal of the UvA and are not sure if such a system ever will, although this is hard to answer.

Strategic Plan 2015-2020 Boundless Curiosity, file:///C:/Users/kevin/Downloads/boundless-curiosity.pdf

A different UvA objective states: *Evidenced-based ICT innovations are incorporated into the UvAs education policy* [5].

Tailoring the requirements of the new system to fit this objective might be an easier task to accomplish. Is this a good goal however? We think it isn't. It cannot be refuted - Evidenced-based ICT innovation showing what? - , therefore the goal is ambiguous. Our solution, whatever form it might take, can be easily transformed to satisfy an ambiguous goal by the nature of ambiguously. We can just interpret the goal in favor of our solution.

5 References

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