

Lecture Requirements Engineering

-

block 1; teacher provides case	
What are requirements, black box, SMART	1/2 day
homework: make requirement specification	
Customer and Application view, Story telling	1/2 day
homework: improve requirement specification	
Discussion of requirement specification per team	1/2 day

block 2; actual current case of OOTI education	
Financial viewpoint, Presentation to management	1/2 day
homework: make presentation outline	
Documentation How-to	Coaching and discussion
homework: make presentation	
Presentation project case to management team	1/2 day
individual report	

Gerrit Muller

University of South-Eastern Norway-NISE
Hasbergsvei 36 P.O. Box 235, NO-3603 Kongsberg Norway
gaudisite@gmail.com

Abstract

This article describes the Requirements Engineering session part of the Software Engineering block in the OOTI curriculum of the Technical University Eindhoven. The focus of this course is on capturing and managing requirements. The notion of key drivers and story telling will be introduced as a means to capture and manage. During the course an exercise is used based on video distribution via satellite. The students have to elicit the requirements for the required systems, working in teams of 4 students. Every student writes an individual report about the exercise.

Distribution

This article or presentation is written as part of the Gaudí project. The Gaudí project philosophy is to improve by obtaining frequent feedback. Frequent feedback is pursued by an open creation process. This document is published as intermediate or nearly mature version to get feedback. Further distribution is allowed as long as the document remains complete and unchanged.

All Gaudí documents are available at:
<http://www.gaudisite.nl/>

version: 1.1

status: finished

September 5, 2020

1 Introduction

This article describes the Requirements Engineering session part of the Software Engineering block in the OOTI curriculum of the Technical University Eindhoven. Trainer is the author of this article Gerrit Muller.

The focus of this course is on capturing and managing requirements. The notion of key drivers will be introduced as a means to capture and manage. A case is used as learning vehicle. The students have to perform the requirements analysis in this case. The findings of the requirements analysis have to be presented to a management team and then to be written down in a requirement specification.

2 Program

The lecture program is:

time	subject
Session 1	What are requirements, black box, SMART
Session 2	Customer and Application view, Story telling
Session 3	Discussion of requirement specification per team
Session 4	Financial viewpoint, Presentation to management
Session 5	Documentation How-to, Coaching and discussion session
Session 6	Presentation of project case to management team

The time in between lectures is to be used to perform a case study. The case study will be explained on the first half day. Half a day must be used to explore the case, During the next half lecture day the status of the case will be discussed and clarifications will be given. At the end of the block the case should be finished and the results will be presented and discussed. The course is closed by writing a summary of the case findings (per group) and lessons learned per individual, see section 4. Figure 1 shows the schedule of the course on a timeline.

3 Case Description

A video content distribution company is planning to deliver video which can be transferred to a local box in the house of the consumer via satellite. Figure 2 shows a diagram of the system.

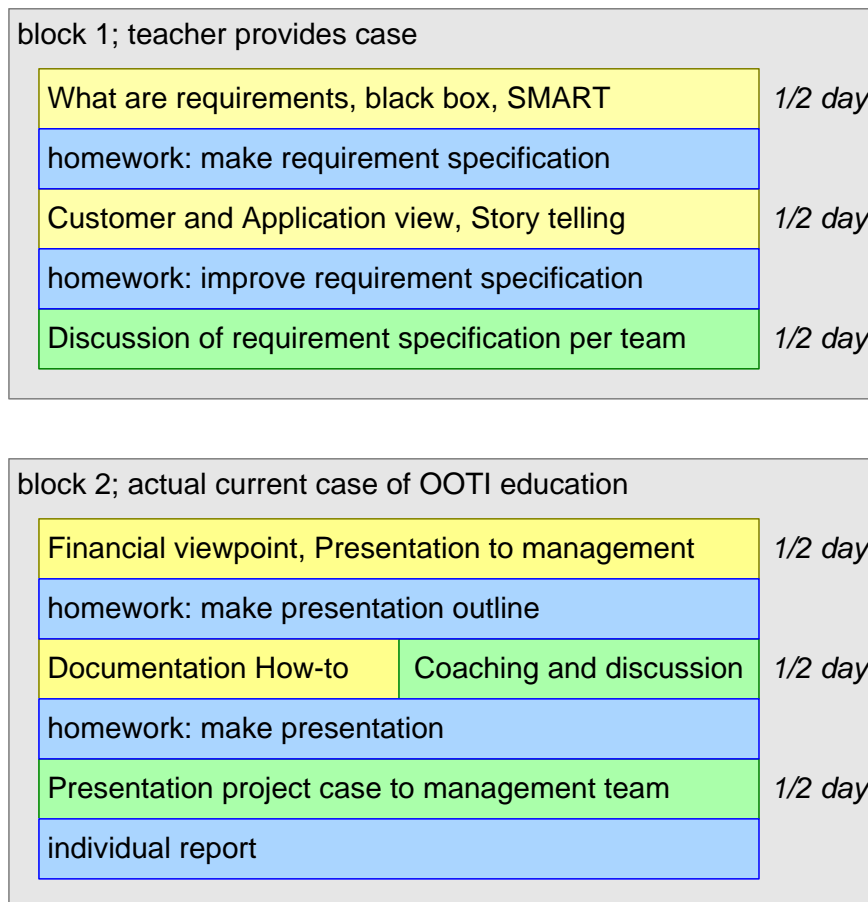


Figure 1: Schedule of the course

4 Instruction for the case

The case is performed in 4 groups of 3..5 people, working together on the same problem. Instructions for the case:

1. Block 1 session 1: Make an initial requirements specification
2. Block 1 session 2: Improve and complete requirements specification
3. Block 2 session 4: Make an outline of a presentation of maximum 10 minutes, target audience: management team of your company
4. Block 2 session 5: Prepare and exercise presentation

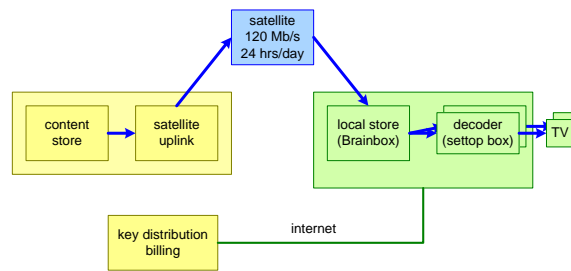


Figure 2: The block diagram of the Cyber Video company system

5. Block 2 session 6: Write an individual report reflecting on: requirement specification, management presentation, lessons learned and how to do it next time.

Recommended way of working:

1. Make a black box view of the system
2. Make some initial drafts and designs to explore the problem.
3. Make a story which helps to understand the products, make sure to use the criterions for a story.
4. Look from all stakeholder points of view towards the problem and identify what they need and what they expect.
5. Analyze the information obtained so far and extract the underlying requirements.
6. Abstract the key drivers behind the requirements.
7. Make a top-down description of the requirements.

Every group will present its findings on day 5, followed by a short discussion. This presentation is to the management team of the company which will make these products and some invited lead customers.

Create a *Requirement specification* which can be used as the starting point of the design. On day 6 a coaching session is held to discuss the results so far, on day 7 the requirement specifications are reviewed.

Write an individual summary of the entire process, maximum 2 A4's, touching the following questions:

- What are the most important lessons you learned from these exercise (requirement specification, management presentation)?

- Which roles did the members of the group play during the exercise?
- How would you approach such a problem the next time?
- Which stakeholders understand your group presentation? Are they happy with the presentation?

Don't answer all these questions perfectly, finish the summary in at most half a day.

5 Acknowledgements

The case used in this course is derived from the case defined by Sjjir van Loo for use in the course SW architecture. The case defined by Sjjir is further reduced in this course to stimulate the students in the requirements exploration, reflecting real-life situations which often start rather ill-defined.

I thank Sjjir van Loo for providing his course material. I also thank Dieter Hammer and Harold Weffers for the initial discussions and for the suggestion to use this case.

References

- [1] Frederick P. Brooks. *The Mythical Man-Month*. Addison Wesley, 1975, ca. 1995.
- [2] J. C. DeFoe (Editor). An identification of pragmatic principles. <http://www.incose.org/workgrps/practice/pragprin.html>, 1999.
- [3] INCOSE. International council on systems engineering. <http://www.incose.org/toc.html>, 1999. INCOSE publishes many interesting articles about systems engineering.
- [4] James N. Martin. *Systems Engineering Guidebook*. CRC Press, Boca Raton, Florida, 1996.
- [5] Gerrit Muller. Positioning the system architecture process. <http://www.gaudisite.nl/PositioningSystemArchitectureProcessPaper.pdf>, 1999.
- [6] Gerrit Muller. Requirements capturing by the system architect. <http://www.gaudisite.nl/RequirementsPaper.pdf>, 1999.
- [7] Gerrit Muller. Roadmapping. <http://www.gaudisite.nl/RoadmappingPaper.pdf>, 1999.

- [8] Gerrit Muller. The system architecture homepage. <http://www.gaudisite.nl/index.html>, 1999.
- [9] Eberhardt Rechtin and Mark W. Maier. *The Art of Systems Architecting*. CRC Press, Boca Raton, Florida, 1997.

History

Version: 1.2, date: September 19 2003 changed by: Gerrit Muller

- major update to reflect new OOTI project based learning cycle

Version: 1.1, date: September 19 2003 changed by: Gerrit Muller

- added documentation how to
- changed the case from CD shop to video satellite distribution
- added writing of the requirements specification to the course

Version: 1.0, date: October 3 2002 changed by: Gerrit Muller

- removed roadmapping from the course material
- added customer view, application view and story howto
- changed the case description accordingly
- the program is described decoupled from the actual days

Version: 0.4, date: June 13 2002 changed by: Gerrit Muller

- minor change

Version: 0.2, date: September 21 2001 changed by: Gerrit Muller

- updated OOTIcourseSchedule

Version: 0.1, date: October 31 2000 changed by: Gerrit Muller

- Created, no changelog yet

Version: 0, date: december 14 1999 changed by: Gerrit Muller

- Created, no changelog yet