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Requirements Engineering

Vultus - Anomaly Detection Project Experiences

Version 1.0

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1 Introduction

We as students are completely new to the area of requirements engineering. Every week our professors introduce new concepts which we get the opportunity to apply during our work with Vultus. As each week brings new experiences it is important to document and reflect on each technique and their outcome to enhance the learning process and avoid future mistakes.

This paper is a result of these reflections. It has been updated for each release to reflect the work that has been done and their results. Also, it is split into multiple sections each describing its' own release. It also contains reflections by us as individual team members.

2 Release 1

2.1 Process

The process during the first 2 weeks up to the first release was quite hectic as we had to handle both administrative problems, as well as elicitate the initial product problems and requirements. For the first week the focus was on understanding Vultus and the domain they were working in. This was done using interviews with Vultus representatives. During the interviews we focused on looking into the domain to be developed within. After the interviews were done we conducted a stakeholder analysis based on what we had learned. This resulted in a context diagram containing the said stakeholders and their interactions.

Still, by the end of the first week we realized we did not have the understanding we needed of the domain to be able to create a good requirements specification, so we decided to conduct another meeting with Vultus. Here we continued and gathered a better understanding of the domain. Furthermore, as we began to understand the domain we continued the elicitation of requirements by discussing some tasks that the product should be able to do together with the different systems and stakeholders. Finally, we as a group gathered and started the work on defining data- and functional requirements based on the information gathered in the interviews.

2.2 Reflection on the process

During this first iteration much was discovered. Firstly, the process of just understanding the domain proved more difficult then expected. This was probably due to the fact that none of us had any experience as farmers and the tools they use. This meant that the elicitation process was halted as we realized that we needed to be more familiar with the domain to be able to ask the right question for the products requirements. For example, during the first week we began the interview by asking questions revolving the specifics of the problem. As we did not yet have the knowledge to understand the answers we quickly realized the need to take a step back and discuss the area as a whole.

As described above we did a stakeholder analysis which resulted in a context diagram. This turned out to be a great starting point for discussions as well as a baseline to talk about. For example, during the second meeting we began by drawing our context diagram step by step for Vultus and explained our understanding of the domain, it's stakeholders and their interactions. This gave them the opportunity to correct and clarify any questions. For example, our previous understanding was that the project was to directly interact with the satellite images. As we presented this to Vultus via the context diagram's relationships they quickly corrected us that this was not the case and that the images were rather fed to the Vultus Engine.

Another mayor benefit with the context diagram was when we tried to dig deeper into the product and elicitate different tasks and data flows, including data requirements. With the help of the context diagram we could discuss how the different stakeholders interactions should work. This meant that we for each relationship could ask which tasks that were to be performed by each stakeholder and what data that were to be exchanged and produced. Once again the diagram

provided a huge benefit for the discussions in providing context and visualization on how each interaction could take place.

While using the produced context diagram proved to be a huge benefit, actually creating the initial model after the first interview proved to be more difficult then expected. This was much due to the fact that each project member had different views on their system and its' parts. As each group member interpreted the respective parts of the system differently multiple views on the context where presented. And as described above none of the models proved correct, which shows the importance of actually talking to the customer until the domain is sufficiently understood.

One thing we took note of during the interviews was also how our questions sparked discussions within the Vultus team. This meant that by digging into the domain we were able to get our customer to actually think about the details of how the product actually should work in practice. This was also noted by the Vultus team which pointed out how these interviews by themselves provided value for their daily work and how they should move forward with the product.

Another reflection regarding the interviews that has come to mind is the fact that the product is almost never actually spoken of, since the only thing discussed is the domain and its relation to the product. This is an essential part of the elicitation due to the simple possibility to start discussing the actual product and start creation of the requirements in a too early stage.

One of the first issues we encountered was deciding the structure of the requirements. After consulting the course book [1] we decided that the task based approach suited us best.

Another problem was creating meaningful and accurate tasks and figuring each precondition, why the task was needed, the frequency, and the purpose of it. It forced us to thoroughly think through how the system is supposed to work, and discuss uncertainties regarding the system.

2.3 Used techniques

In the area of requirements engineering and system analysis there is a multitude of techniques and methods on the elcitation process and requirement modeling. As we were focusing on actually understanding the domain, and based on our gained knowledge create some high level requirements, the main technique used during this week was interviews.

2.3.1 Interviews

The main reason for using interviews during the this early stage of the project was that we had many questions revolving the domain and needed much information to get started. To get answers to our questions we decided that an interview was the best option. Also, this gave us the opportunity to sit down with the customers and get acquainted with them. As discussed above, this turned out to be a great method for the elicitation process.

Still, one of the major cons of using interviews could be argued to be its' cost. It is quite time consuming process with many people involved. In our case we were a total of 8 people, Vultus and LTH combined, for two sessions taking an hour each. Instead, an option to the interviews might have been to do some form of questionnaire or something similar with the questions we had. This initially would have been a cheaper solution as filling out the form could be done quick and easy by Vultus. Still, we believe that the long term cost would have been much higher, as the answers most likely had to be complemented with interviews anyway.

We would argue that interviews is a great technique for the initial requirement elicitation as there are bountiful questions and considerations to take into account. By meeting the customer we are able to dig into there needs and desires and discuss what they require to create value. As the project then evolves, other might be taken into consideration to keep the process cost efficient while still being fruitful.

2.4 Communication with Project Owners

The communication with our project owners up to the first release has been great. They have been quick to answer any questions we have had. They have also provided documentation and feedback on any produced documents. Furthermore, we have been able to establish communication channels using Slack [2] and weekly meetings to discuss the project. This means that Vultus has given us the necessary conditions to be able to produce a good product.

3 Personal and Contribution Statement

3.1 Edvin

Release 1

During the process of the first release I have partaken in all project supervisor meetings, one out of two meetings with Vultus, and all group meetings. I have been responsible for the functional requirements with Niklas and Martin, as well as doing the elicitation with the whole group. I have been assigned the responsibility of document configuration manager by the group as well.

3.2 Martin

Release 1

In the process of the first release I have been taking part in both the meetings with Vultus and our supervisor. During the work with the project mission v2 I sat up the communication channel with Vultus, and is responsible for our communication with them. I have written the introduction for the SRS as well as the introduction parts for the different requirements sections. In addition I have worked with the functional requirements with Niklas and Edvin.

3.3 Niklas

Release 1

During the process of this first release i have taken part in 1 meeting with Vultus, 2 meetings with our project supervisor. I am also responsible for functional requirements with Martin and Edvin, and also quality assurance of the documents, including this one.

3.4 Oscar

Release 1

During process of creating this first release I have taken part in all meetings with Vultus and one meeting with our project supervisor. During the meetings with Vultus I have actively been asking questions revolving the domain and its' requirements. I have also been the main author of this document.

3.5 Peter

Release 1

I have been taking part in both meetings with Vultus as well as both with our supervisor Daniel Helgesson. Responsibility to communicate with our supervisor Daniel is mine. I have quality

assured this document, been responsible for, in the SRS, the data requirements, data dictionary, scope together with goals and stakeholders.

References

[1] Soren Lauesen, 2008, *Software Requirements: Styles and Techniques*, London: Addison-Wesley

[2] Slack, Where Work Happens. `https://slack.com` Latest Fetched 2017-11-18.