Reflective Report

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Large Scale Requirements Engineering (PA2521)

I. Article Selection:

The article that I have chosen for this study on implementing a technique that is used for market driven requirements engineering is:

[1] Gorschek, Tony and Wohlin, Claes. "Requirements Abstraction Model"

The prime reason for choosing this article is with an intention of having requirements made clear to the all the members involved is very important during the development of the project. It is about having an abstraction of requirements and having different levels of them. With the implementation of this model on the requirements the teams involved in the implementation can easily understand them without much confusion where each requirements can exist from the product level to a component level.

What is RAM?

It is a model with four abstraction levels developed by Prof. Dr. Tony Gorschek and Prof. Dr. Claes Wohlin. They have developed a model where requirements can be placed on different levels and accordingly they can be broken down making it easier to compare with each other. Three constraints are mainly focussed in this model, what (requirements) a release should contain, when (time) of the release should they be implemented and at what cost. Continuous requirements engineering is supported by this model where in requirements can be placed at various levels and can be broken down into detailed ones. RAM is carried out in three steps. They are:

1. Specify: This is the elicitation phase where the requirements are gathered from the stakeholders. Here the raw requirements are taken and the extent to which the Product Manager understands these is analysed. Four attributes are specified in this step. They are:

i. Description: The requirements here should satisfy the criteria that it should not be more than 5 sentences. Forms the central essence.
ii. Reason: deals with why the requirement is specified.
iii. Risk/ Restrictions: it deals with the restrictions and risks of the requirements.
iv. Title: it should be able to clearly depict the requirement.

2. Place: This phase deals with placing the requirements at the right abstraction level. Four abstraction levels exist. They are:

i. Product Level
ii. Feature Level
iii. Function Level
iv. Component Level and finally

3. Abstraction: The requirements are broken down to detailed ones in this phase.

There is good traceability with the requirements being implemented using this model. Comparison between the requirements, prioritization and packaging these requirements can be efficiently done using this approach. All these have motivated the author to look deep into this technique, apply it and find out interesting criteria like the lessons learned, how this relates to market driven requirements engineering and the contribution of other authors in this field.

II. Implementation Plan:

The implementation plan to carry out this approach is that requirements which are a part of the e-learning portfolio systems for universities where different courses, assignments for all the students are managed. Following the article written by the authors of Requirements Abstraction Model (RAM) abstraction of the requirements is done and then elaborated to place them on different levels as specified above. We select 15 requirements that are at the most basic level and thus use the techniques to find out to the level to which they can be abstracted and made detail enough that would eventually be easy to understand.

III. Execution:

To simulate the market driven requirements management in this technique we use requirements that are a part of the e-learning portfolio for university students, release planning assignment of this course. After the requirements are elicited, we then use the guidelines given by the authors of the RAM and describe each requirements using the attributes. Once they are described, we then place each of these requirements at the right level of abstraction.

Execution is done in three steps wherein the steps are described clearly below:

Step1: Specify the requirements that have been listed below. The specification process is mentioned above.

Step 2: Once the requirements are specified then we need to place the requirement at the right level of abstraction. It can be that a random requirement might belong to product level or feature level or any one of the four levels.

Step3: After the requirements are placed at the correct level, then we need to work on framing the requirements on levels of abstraction to one specific requirement. For example a requirements belonging to function level must contain corresponding requirements at all different levels in RAM.

IV. Proof Of Concept:

STEP 1:

Due to extensive number of requirements being implemented and to maintain good traceability the author has made use of excel sheets. The implementation of this step can be found in this sharable excel sheet below.

STEP 2:

Now that the list of requirements have been clearly specified, next step is to place these requirements at some level of abstraction looking at its description.

STEP3:

After placing the requirements at the right level, now we need to detail the requirements enough so that there are corresponding entries for them at each and every level of abstraction. For example a requirements belonging to the functional level must have requirements at all the levels namely the product level, feature and the component level.

Example:

Now we will run through the whole process with the help of an example from the list selected for this technique.

Requirement: As a teacher I want to upload videos of my lectures, to allow the students to stream them later.

This requirements belongs to the feature level as it describes a specific feature that the system should contain. Now that we have an idea of where this requirement belong, the next step is to abstract this requirements and make an entry in all the other levels so that it is easy for the members to understand what this requirement actually means.

Hence the product level requirement for this will be: Interactive Media Support

Functional Level requirements would be: The participants of the course can view the videos

Component Level requirements would be: The videos have to be embedded in the page

Likewise, for all the requirements the abstraction is done and the whole implementation process can be viewed in this sharable excel file:

https://drive.google.com/file/d/0B-LoYmz3jbTMbTVkZ3FWSW1xTkE/view?usp=sharing

V. Lessons Learned:

Implementation of RAM is very challenging yet very useful for any kind of project. The first two steps of this process seem to be pretty easy but the last step is the most crucial task. It was difficult for the author only for 15 requirements and we can imagine that it will be a nightmare for companies dealing with large scale or market driven projects where requirements range at the orders of thousands. Apart from applying this technique being challenging there are many advantages of doing so. It brings in a lot of clarity as of what has to be done. As the abstraction process goes by crystal clear clarity could be achieved. The authors feels that the abstraction of the requirements is a very important process in the requirements analysis phase wherein the different teams involved check up on them and come up with ways to handle these requirements.

VI. Reflections:

This is a very popular model and the author of the paper who proposed this model has made an attempt to involve this technique to different situations where they initially applied this technique to non-functional requirements in [2]. Not only functional requirements this technique can be applied to non-functional requirements too. Another technique that could be used for large scale or market driven projects is Methodological Early Requirements Triage and Selection (MERTS) is developed by Khurum. M et al. [3] where they mention that the

implementation of RAM is a pre-requisite to implement that method. Hence we can this technique is popularly used both in industry and academia.

References:

[1] Gorschek, Tony, and Claes Wohlin. "Requirements abstraction model."*Requirements Engineering* 11.1 (2006): 79-101.

[2] Berntsson Svensson, R., et al. "Quality requirements in industrial practice-an extended interview study at eleven companies. Software Engineering." *IEEE Transactions on, preprint1* (2011).

[3] Khurum, Mahvish, Khurum Aslam, and Tony Gorschek. "A method for early requirements triage and selection utilizing product strategies." *Software Engineering Conference, 2007. APSEC 2007. 14th Asia-Pacific*. IEEE, 2007.