Mälardalen University
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Component Technologies - 7.5 hp - CDT401

COMPONENT REPOSITORY

Project Analysis Report

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1 Background and Objectives

The goal of the project was to build a component repository using component technologies.

The first phase of the project was a planning phase. The planning phase was not that many hours but stretched over a long time. This was so we could get familiar with the technologies before finalizing the plan. After the planning phase was a design phase. The design phase was an iterative process. First, we had to iterate the design because the requirements changed and it was required to have a desktop application to manage the repository. Then we had to iterate the design once we got more familiar with the technologies involved and when we started implementation. The design had to also be iterated upon when we got feedback from the steering group. Both the project plan and the design description was delivered on time.

The repository was built using component technologies. The design for the software we ended up with included six components: two interface components, a repository component, and three parser component. All of the components except for the user interfaces were finished early. The user interfaces where dependant on the other components, therefore changes to the user interface had to be made once all components were integrated.

We, the project group, are very happy with the project and our product. The project has been successful and all deadlines were met.

2 Organization

In order to complete the project, the organization to set up was an important parameter to take into account. Each member of the group has to work during the group meetings but also during his personal time. Meetings were really important to oversee the overall progress of the project.
The hours of work of each were rigorously noted in a time tracking document to see the evolution of hours spent as every person has to work 80 hours.

When meetings were planned, group rooms were reserved in advance so that the group can work in the best possible conditions. The few times the rooms were all booked, the group met at university tables in the corridors. Problems were easily solved because each member of the group had their own computer and could help the other when needed.
For such a project, the work done during the meeting was not enough. Each member of the group also worked during its personal time to complete each repository component.

The distribution of the different tasks was done by assigning one component to each member of the group. The several documents and slides were written together during the meetings as well as the practice of the oral presentations.

3 Milestones

As each member of the group had to work 80 hours for this project, the total number of hours spent had to be 400 hours. Below you can find the different milestones of this project :

Task	Planned Effort	Actual Effort
Project Plan	27.5 hours	32.5 hours
Project Plan Presentation	27.5 hours	20 hours
Project Design	94.5 hours	119 hours
Project Design Presentation	27.5 hours	27.5 hours
Implementation	190 hours	152 hours
Project Analysis Report	22 hours	30 hours
Peer And Self Assessment	11 hours	*Not started yet*
Total	400 hours	381 hours (not definitive)

4 Project Results

4.1 Requirements Definition Compliance

The requirements have been implemented as defined in the requirements elicitation phase. These ones have been codified using tables in the requirement description document. The structure of the UI has been easily implemented using the Bootstrap framework. It provides a *responsive* and *user-friendly* layout to the software.

The inspection functionality `RC-RQ-001` allows a user to select a component from the user interface and to check the characteristics of the latter. The request from the UI is handled by the `Repository Component` that forwards it to the database. The presentation of a component information has been eased through the use of the JSON file. The same thing applies to the search `RC-RQ-002` and download functionality `RC-RQ-004`.

The latter are extended by the fetch functionality `RC-RQ-008` that has been implemented as a function call `getComponents()`. Fetch is called all the times that an update to the database occurs.

Finally, a separated user interface has been implemented for the admin. It has been implemented using Windows Form that helped us to create the UI just dragging and dropping its elements. Using it, the admin is able to add `RC-RQ-005`, delete `RC-RQ-006`, modify `RC-RQ-007`. It was easy to implement them thank to the ADO.NET framework that provides *prepared queries* to perform operations on the database.

4.2 Work Products and Deliverables

The following section contains the table that lists all the documents and deliverables created for the project.

To	Output	Planned week	Deviation (+/-)	Delivered week
Steering group	ProjecPlan.pdf	40	0	40
Steering group	DesignDocument.pdf	42	0	42
Steering group	Source Code	44	0	44
Steering group	AnalysisDocument.pdf	46	0	46
Steering group	PeerSelfAssessment.pdf	46	*Not started yet*	*Not started yet*

5 Project experiences

Project experiences obtained during its execution relates to the process of work. At the beginning of the course and in the project description, it was stated that the waterfall process model should be used. This description was not fulfilled, due to change to the project requirements. All of

the requirements were not stated when the project was introduced, so it was not clear that the project required the development of two separate front-end applications. Thus, this requirement was satisfied depending on the group ability to adopt the changes. Project experiences and project specifications also involved a working prototype during the design phase. With these activities and working status, the project as a whole has been following the agile methodology more than waterfall itself. Besides these project experiences we are introducing positive and improvement possibilities.

5.1 Positive Experiences

Our process of work has been including mostly positive experiences. The group was well organized as long as work division. Each member had their own responsibilities that were assigned during group mutual agreement. Technique or approach of work that we decided to follow was to meet every week, several times if it is necessary, and work together, share experiences, knowledge, and opinions. Each member has equal voting rights and contribution into design, implementation, deliverable and presentation. Positive experiences that have been formed around our group includes working habits, organization, and liability. Besides positive experiences formed around our group, the project positive experiences relate to project meetings where we had the ability to discuss inconsistencies and changes. Positive competition with another group, which direct us in the right direction and gave us the motivation to accomplish a better task. And in the end, project presentations where we have an opportunity to present our work, join forces to defend it even if some designs were under questions attack by the rest of the auditorium and enjoy our time with the group topic collaboration.

5.2 Improvement Possibilities

Regarding improvement possibilities, our major concern at the beginning was a usage of deprecated technologies. Some of the technologies should be substituted with more used ones. With the technologies, the project lacks a variety of patterns for structured component architecture.

6 Financials

6.1 Project Cost Summary

Person/hour cost : 1 000 SEK
Planned cost (100%) = 400 000 SEK
Current cost = 381 000 SEK

As the project is not completed yet, the project cost is still missing the hours that will be spent on the *Peer And Self Assessment*.

6.2 Work Per Member

Week	38	39	40	41	42	43	44	45	Total
Planned	2	9	11	11	11	12	12	12	80
	2	8.5	9	9.5	17.5	18.5	13.5	8	86.5
Anton	0	-0.5	-2	-1.5	6.5	6.5	1.5	-4	6.5
	2	8.5	12	10	11.5	16.5	7.5	8	76
Cécile	0	-0.5	1	-1	0.5	4.5	-4.5	-4	-4
	2	8.5	9	9.5	11.5	12	11.5	8	72
Milos	0	-0.5	-2	-1.5	0.5	0	-0.5	-4	-8
	2	8.5	12	8	11.5	16.5	8.5	7.5	74.5
Stanislas	0	-0.5	1	-3	0.5	4.5	-3.5	-4.5	-5.5
	2	8.5	8	11.5	11.5	13	9.5	8	72
Vincenzo	0	-0.5	-3	0.5	0.5	1	-2.5	-4	-8
	10	42.5	50	48.5	63.5	76.5	50.5	39.5	381
Total	0	-2.5	-5	-6.5	8.5	16.5	-9.5	-20.5	-19

Table 1: Table of work per team member per week compared to the planned number of working hours per week

7 Metrics

7.1 Milestone Metrics

Below, the table that shows all the deadline passed on time and the total of deadlines. Timeliness is defined as the number of deadlines completed in the time divided by total number of deadlines.

Completed as planned or earlier	Total	Timeliness
6	6	1

In this table, there is not the *Peer And Self Assessment* deadline, as this deadline has not passed yet.

7.2 Effort Metrics

Task	Planned Effort	Actual Effort	Deviation (%)
Project Plan	27.5 hours	32.5 hours	+18
Project Plan Presentation	27.5 hours	20 hours	-27
Project Design	94.5 hours	119 hours	+26
Project Design Presentation	27.5 hours	27.5 hours	0
Implementation	190 hours	152 hours	-20
Project Analysis Report	22 hours	30 hours	+36
Peer And Self Assessment	11 hours	*Not started yet*	*Not started yet*
Total	400 hours	381 (not definitive)	-5 (not definitive)