Business Case

TINF21C, Software Engineering I
Praxisproject 2022/23

Project

AAS-Webclient

Customer

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Supplier

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Version	Date	Author	Comment
0.1	09.10.2022	Samara Dominik	Created, added structure, time scope, return of investment, risks
0.2	14.10.2022	Samara Dominik	Added expenses, offer
0.3	26.10.2022	Samara Dominik	Added description and goals
1.0	05.11.2022	Samara Dominik	Final Version

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Description and Goals

In this project we will enhance the frontend visualization of an asset administration shell for digital twins. Nowadays asset administration shells are the standard of industry to digitally visualize various products. Since these shells are technically orientated, our goal is to create a human orientated webpage, which also got the ability to connect to a server and display the corresponding data on the page. To achieve this, we will analyse the usability of other asset administration shells and create a usability- concept for main use cases before we start with the design. It will also be possible to search for and filter contents with this tool. A variety of tests and a detailed user documentation adds on to a great user experience.

Return on Investment

The project focuses on a user-friendly frontend visualization of an asset administration shell. Until now those tools were technically orientated, which lead to a lack of usability. This lack of usability has the effect that users need more time to reach the requested information. Also inexperienced users will need more time to orientate in a technically orientated tool than in an intuitive one. Summarized, a user-friendly frontend accelerates the work of users, thus reduces the costs of work processes. On the long term the reduction of time and costs is the return on Investment in this project.

Time scope

The introduction to the project took place on 9th September 2022. On 23rd September, the customers selected this team for this project. The final presentation and delivery of the project will be in the calendar weeks 19 till 21 in 2023. Given this information our time frame corresponds to 36 weeks. However, between the 29th November 2022 and the 6th March 2023 the team members are already working on other projects. This slowdown of production is considered in the time scope.

The remaining 22 weeks are divided into two parts:

1. Until the 18th November the team is focused on the analysis of the project tasks and the design of the webpage. This includes the design of usability concepts for essential use cases as well as a first prototype for a user-friendly frontend of an ASS-server and its data, which also contains the ability to search and filter content across multiple ASS and ASS-server. Additionally, the time will be used for documentation, communication, and organization within the team members. The results of the first half of this project will then be presented to the customer.
2. The second half includes the finalization of the project as well as the tests of the application and the creation of the technical documentation. Also here, some time will be needed for the documentation and communication across the team. The ASS-Webclient will then be delivered to our customers together with a presentation, which is not only including the information about the project and its development cycle, but also our experiences and lessons learned.

Working hours per work package

The whole project is divided into different work packages, while every team member focuses on different tasks. Hereby every member has a maximum time budget of 180 hours for the whole project. The following table shows how the working time of every team member is distributed across the working packages.

	Tom Engelmann	Severin Helms	Anja Niedermeier	Marcel Hintze	Martin Rittmann	Samara Dominik
Documentation	70	30	30	30	30	30
Customer dialogue	5	5	5	5	20	5
Meetings	30	30	30	30	30	30
Analysis	10	10	10	20	20	10
Design	0	10	10	20	0	0
Coding	25	70	10	50	35	5
Testing	25	0	70	0	35	5
GitHub Organization	5	5	5	15	5	20
Project Management	0	0	0	0	0	60
Presentation	10	10	20	10	15	15
Total	180	180	180	180	180	180

Risks

- Financial risk
  During the last weeks one could observe an immense rise in costs in all different areas. We can expect that the prices will continue to rise, which is why we can expect significantly higher project costs than we would have had in the past. This rise in prices is already considered in the expense calculation and the resulting offer.
- Returning risk
  If our customers are not satisfied with the products or recognize errors while usage, which were not discovered in the development and testing process, we will have to readjust the product. Since the project will have ended by then, we would have to lay other projects aside to work again on this project. We try to avoid this risk by planning enough time for clean development and detailed testing.

Expenses

Since all team members work from home and with their own devices, we do not have any fixed costs. However, we pay every team member an hourly bonus of 10€ to cover electricity, heating, and device-usage costs. Altogether the expenses of this project will be 105.048,03€.

Wages	Salary (project-sight, per hour)
System architect (Marcel Hintze)	100€ +10€ bonus
Project Leader (Samara Dominik)	95€ +10€ bonus
Product Manager (Martin Rittmann)	90€ +10€ bonus
Test-Manager (Anja Niedermeier)	90€ +10€ bonus
Developer (Severin Helms)	70€ +10€ bonus
Technical Documentation (Tom Engelmann)	50€ +10€ bonus

Work package	Costs
Intern+ extern organisation	39.250€
Analysis	7.650€
Design	4.000€
Coding	17.625€
Tests	12.525€
Documentation	19.050€
Total	99.900€

Additional costs	Costs
Microsoft 365 Business Standard, six user for nine months	567€
JetBrain license, three users for one year	2.781,03€
Hosting server, nine months	1.800€
Total	5.148,03€

Offer

Expenses	105.048,03€
+ Profit (25%)	26.262,97€
Total	131.311€

The calculated expenses and a profit margin of 25% result in our offer of 131.311€.