Projekthandbuch

TINF21C, Software Engineering I
Praxisproject 2022/23

Project

AAS-Webclient

Customer

Markus Rentschler, Christian Holder

Rotebühlplatz 41, 70178 Stuttgart

Supplier

Project Leader: Samara Dominik (inf21001@lehre.dhbw-stuttgart.de)

Product Manager: Martin Rittmann (inf21157@lehre.dhbw-stuttgart.de)

System Architect: Marcel Hintze (inf21056@lehre.dhbw-stuttgart.de)

Test-Manager: Anja Niedermeier (inf21097@lehre.dhbw-stuttgart.de)

Developer: Severin Helms (inf21047@lehre.dhbw-stuttgart.de)

Technical Documentation: Tom Engelmann (inf21010@lehre.dhbw-stuttgart.de)

Version	*Date*	*Author*	*Comment*
0.1	26.10.2022	Samara Dominik	Created, added structure
0.2	28.10.2022	Samara Dominik	Project assignment
0.3	01.11.2022	Samara Dominik	Project context, Project organization, WBS, Risks, Gantt chart, Project Milestone Plan, List of Operations and responsible persons
1.0	05.11.2022	Samara Dominik	Final Version
2.0	01.05.2023	Samara Dominik	Updated final Version according to changes in the second half of the project
3.0	11.05.2023	Samara Dominik	Final final Version

CONTENTS

Project assignment

Project assignment
Project goal (Output) The goal is to design a user-friendly frontend page for a reactive asset administration shell. The frontend application is supposed to be based on React and has to be able to communicate with any ASS-Server over REST-API. The opportunity to search for and filter contents should be possible across several ASS-server. To reach this goal, a usability concept for significant use cases will be designed in advance.
Project use (Outcome) A human orientated frontend helps the user to find and understand information faster than a technical orientated tool. This will improve working efficiency and simplifies the training of new employees, which leads all together to a reduction in costs.
Project Clients Markus Rentschler; Christian Holder
Team members ▪ Dominik, Samara ▪ Engelmann, Tom ▪ Helms, Severin ▪ Hintze, Marcel ▪ Niedermeier, Anja ▪ Rittmann, Marcel
Main tasks ▪ Analysis ▪ Design ▪ Coding ▪ Testing ▪ Documentation
Budget Open -> Offer was accepted in the last project presentation, when our clients started the project
Start of project Introductory lecture, 09.11.2022
End of project Final presentation and project delivery, 19.05.2023

Project context

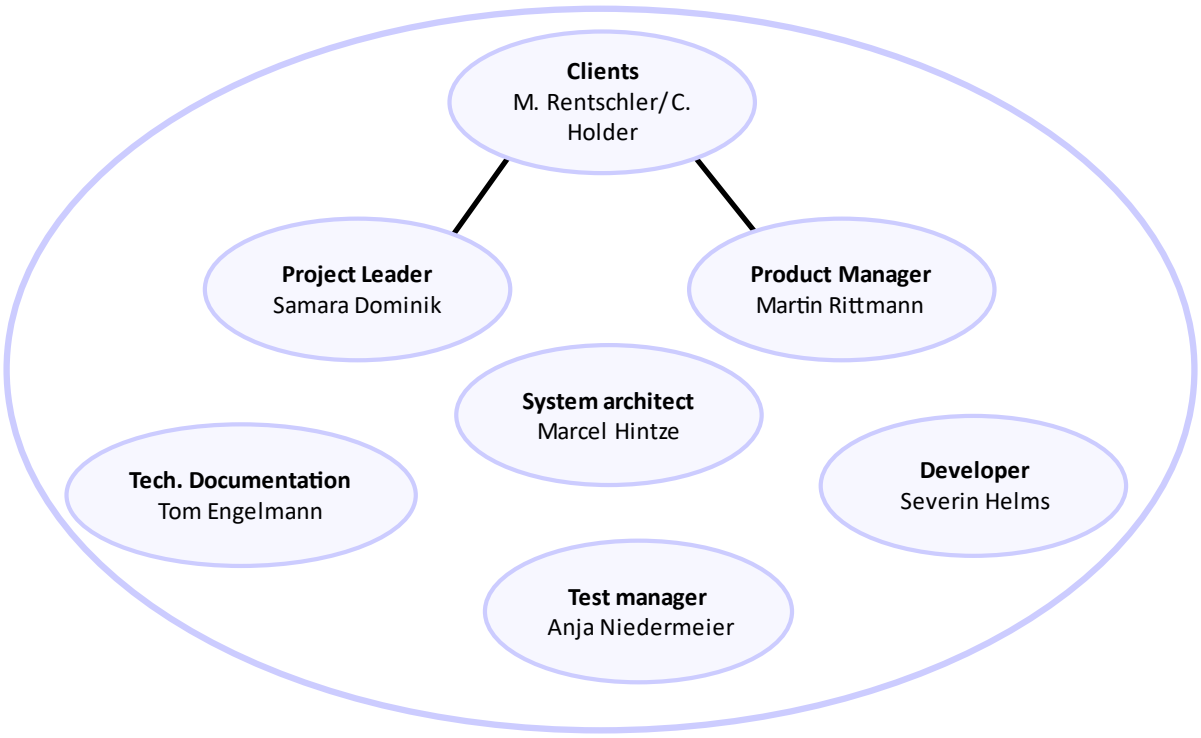
Initial situation
In the context of the project, we have to create a human- orientated asset administration shell. There is no previous project, which means that the code for the frontend must be written completely new. However, we have three asset administrations shells, that can be used as reference, even though we need to be cautious since these are more technically orientated. We also have to add the connection of frontend and the various ASS-server, as well as the possibility to search for and filter content. For this purpose, there is no given logic, which means, that all needed methods still need to be developed.

Temporal context		
Pre-project phase	**Project phase**	**Post-project phase**
▪ No previous project. Introduction into asset administration shells during lectures	▪ Other projects, lectures, tasks, and exams during theory phase ▪ Full-time working on company projects during praxis phase	▪ Increased usability of an asset administration shell ▪ possibility to search for and filter content ▪ still more functions to be implemented to increase the usability even more

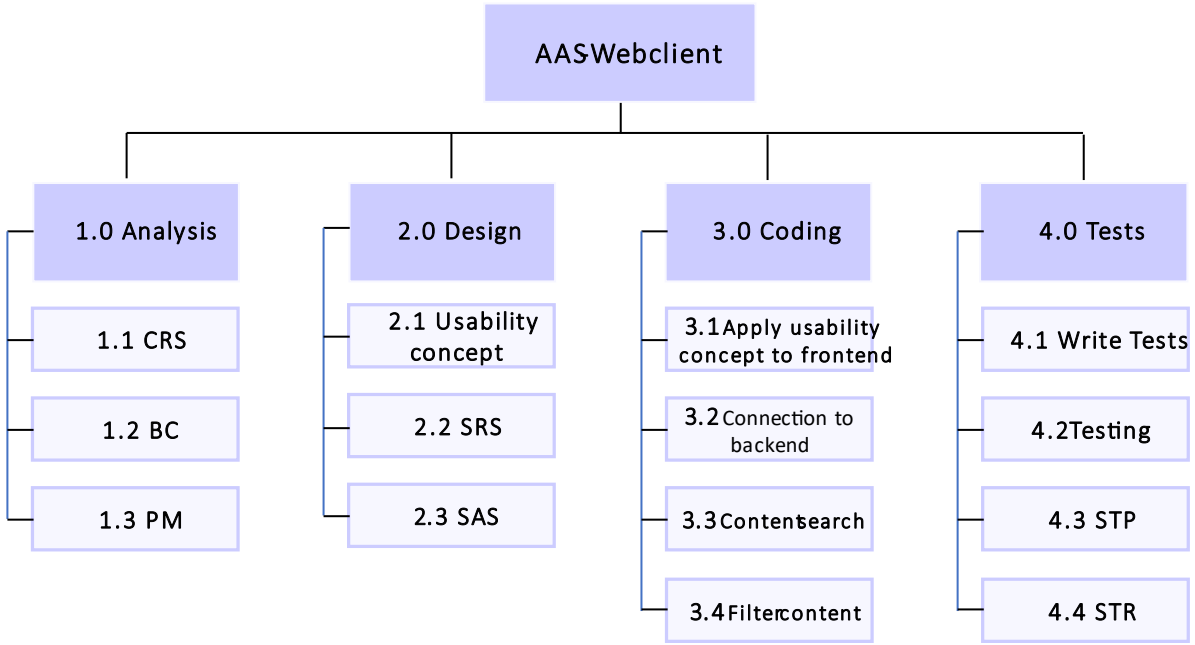
Social context			
Stakeholder	**Chances**	**Risks**	**Actions**
Client	▪ Satisfied with the end product	▪ Not satisfied with the product after the deadline ▪ Additional change requests during the project	▪ Clear communication with the client ▪ Asking for clarifications when needed
Supplier	▪ Client is satisfied, could stay a customer ▪ Reusable solution for a problem	▪ Misjudgements (time, financially,…) ▪ Internal problems (miscommunications, diseases, bad team dynamic)	▪ Meetings, regular talks among team members ▪ Structured project leading ▪ Team members already worked together
User	▪ Better usability of an asset administration shell	▪ Usability worsened	▪ Usability concept ▪ Testing

Project organization

Project Role	Description	Name
Client	Provides project	Markus Rentschler, Christian Holder
Project leader	Leads project, keeps the overview over the project	Samara Dominik
Team members	Specialized on different tasks: ▪ System architect ▪ Product Manager ▪ Test Manager ▪ Developer ▪ Technical Documentation	 Marcel Hintze Martin Rittman Anja Niedermeier Severin Helms Tom Engelmann



Work breakdown structure (PSP)



List of operations and responsible persons

Person	Work package	Task
Samara Dominik Role: Project leader E-Mail: MatrikelNr.: 1047506	▪ Analysis ▪ Design ▪ Coding ▪ Testing	▪ Project organisation ▪ Maintaining GitHub Repository ▪ BC ▪ PM ▪ Presentation ▪ PowerPoint (final presentation) ▪ Help in coding+ testing, if needed
Martin Rittmann Role: Product manager E-Mail: MatrikelNr.: 8461817	▪ Analysis ▪ Design ▪ Coding ▪ Testing	▪ CRS ▪ Presentation ▪ Apply usability concept to frontend webpage ▪ Testing
Marcel Hintze Role: System architect E-Mail: MatrikelNr.: 3932152	▪ Analysis ▪ Design ▪ Coding	▪ SAS ▪ Presentation ▪ Created GitHub Repository ▪ Usability concept ▪ Implementation of prototype ▪ Code connection to backend
Anja Niedermeier Role: Test manager E-Mail: MatrikelNr.: 5697407	▪ Analysis ▪ Design ▪ Coding ▪ Testing	▪ STP ▪ PowerPoint (first presentation) ▪ Presentation ▪ Implementation of prototype ▪ Write tests
Severin Helms Role: Developer E-Mail: MatrikelNr.: 3391129	▪ Analysis ▪ Design ▪ Coding	▪ SRS ▪ Usability concept ▪ Code to be able to search for content ▪ Code to be able to filter content
Tom Engelmann Role: Technical Documentation E-Mail: MatrikelNr.: 1594643	▪ Coding ▪ Testing ▪ Documentation	▪ STR ▪ Apply usability concept to frontend webpage ▪ Testing ▪ Meeting Minutes ▪ User Manual ▪ Readme

Gantt chart 3rd Semester

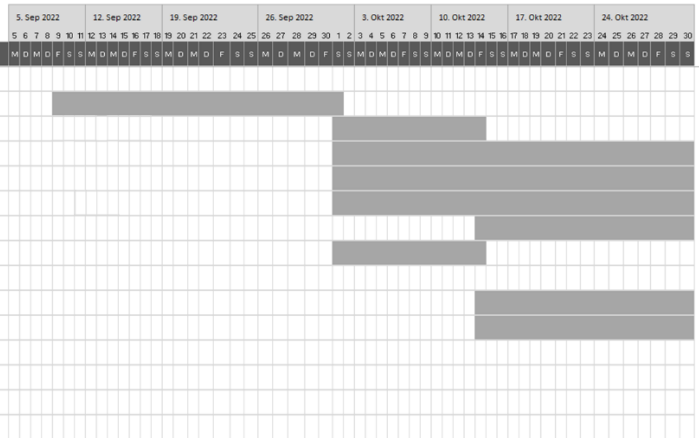
Part 1

AAS-Webclient

Team 1
Projektleiterin: Samara Dominik

Projektanfang: Fr, 9.9.2022
Anzeigewoche: 1

TASK	RESPONSIBLE	PROGRESS	START	END
Phase 1: Analysis				
Internal organisation	Whole Team	100%	9.9.22	1.10.22
Directed requirements to developers	Martin Rittmann	100%	1.10.22	14.10.22
CRS	Martin Rittmann	100%	1.10.22	4.11.22
BC	Samara Dominik	100%	1.10.22	4.11.22
PM	Samara Dominik	100%	1.10.22	4.11.22
SRS	Severin Helms	100%	14.10.22	4.11.22
Create GitHub Repository	Marcel Hintze, Samara Dominik	100%	1.10.22	14.10.22
Phase 2: Design				
SAS	Marcel Hintze	100%	14.10.22	4.11.22
Usability Concept	Marcel Hintze, Severin Helms	100%	14.10.22	4.11.22
Implementation Prototype	Marcel Hintze, Anja Niedermeier, Tom Engelmann	7%	4.11.22	5.3.23
First presentation				
Create Power-Point-Presentation	Anja Niedermeier		7.11.22	9.11.22
Presentation	Marcel Hintze, Martin Rittmann, Samara Dominik		11.11.22	11.11.22



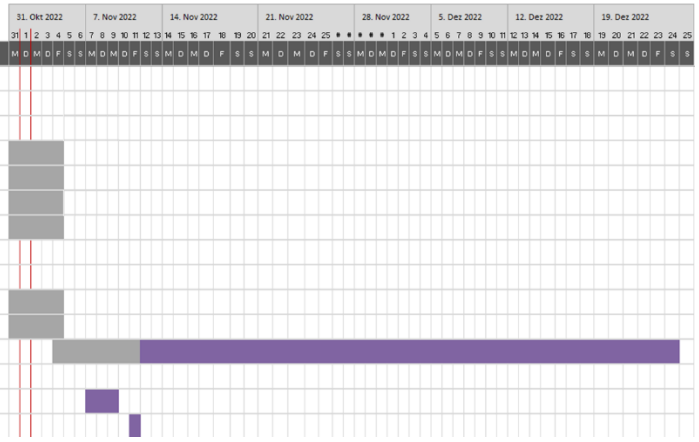
Part 2

AAS-Webclient

Team 1
Projektleiterin: Samara Dominik

Projektanfang: Fr, 9.9.2022
Anzeigewoche: 9

TASK	RESPONSIBLE	PROGRESS	START	END
Phase 1: Analysis				
Internal organisation	Whole Team	100%	9.9.22	1.10.22
Directed requirements to developers	Martin Rittmann	100%	1.10.22	14.10.22
CRS	Martin Rittmann	100%	1.10.22	4.11.22
BC	Samara Dominik	100%	1.10.22	4.11.22
PM	Samara Dominik	100%	1.10.22	4.11.22
SRS	Severin Helms	100%	14.10.22	4.11.22
Create GitHub Repository	Marcel Hintze, Samara Dominik	100%	1.10.22	14.10.22
Phase 2: Design				
SAS	Marcel Hintze	100%	14.10.22	4.11.22
Usability Concept	Marcel Hintze, Severin Helms	100%	14.10.22	4.11.22
Implementation Prototype	Marcel Hintze, Anja Niedermeier, Tom Engelmann	7%	4.11.22	5.3.23
First presentation				
Create Power-Point-Presentation	Anja Niedermeier		7.11.22	9.11.22
Presentation	Marcel Hintze, Martin Rittmann, Samara Dominik		11.11.22	11.11.22



Gantt chart 4th Semester

Part 1

AAS-Webclient

Team 1
Projektleiterin: Samara Dominil

Projektanfang: Fr, 3.3.2022
Anzeigewoche: 27

TASK	RESPONSIBLE	PROGRESS	START	END
Presentation	Marcel Hintze, Martin Rittmann, Samara Dominik	100%	11.11.22	11.11.22
Phase 3: Coding				
Connection to backend	Marcel Hintze	100%	1.12.22	30.1.23
Add AASX-Server-Functionality	Severin Helms, Marcel Hintze	100%	13.2.23	26.3.23
Delete AASX-Server-Functionality	Severin Helms, Marcel Hintze	100%	13.2.23	26.3.23
Find digital twin	Anja Niedermeier	100%	30.1.23	26.3.23
Display digital twin	Anja Niedermeier	100%	30.1.23	26.3.23
Search for digital twin-Functionalit	Severin Helms, Tom Engelmann	100%	13.2.23	9.4.23
Filter entries-Functionalität	Severin Helms, Tom Engelmann	100%	13.2.23	9.4.23
Bug Fixes	Severin Helms, Marcel Hintze	100%	9.4.23	1.5.23
Implementation Usability Concept/ I	Anja Niedermeier, Martin Rittmann, Samara Dominik	100%	27.2.23	1.5.23
Phase 4: Tests				
Writing Tests	Anja Niedermeier	100%	24.4.23	1.5.23
Testing	Tom Engelmann	100%	1.5.23	7.5.23
UI-, UX-Tests	Samara Dominik, Martin Rittmann	100%	1.5.23	7.5.23
STP	Anja Niedermeier	100%	24.4.23	7.5.23
STR	Tom Engelmann	100%	1.5.23	7.5.23
Final presentation				
Create Power-Point-Presentation	Samara Dominik	50%	1.5.23	19.5.23
Self reflection	Samara Dominik	50%	1.5.23	19.5.23
Presentation	Anja Niedermeier, Marcel Hintze, Samara Dominik		19.5.23	19.5.23
Documentation				
Meeting Minutes	Tom Engelmann	100%	1.10.22	18.5.23
User Manual	Tom Engelmann	100%	1.5.23	18.5.23
Readme	Tom Engelmann	100%	1.5.23	18.5.23

Part 2

AAS-Webclient

Team 1
Projektleiterin: Samara Dominil

Projektanfang: Fr, 3.3.2022
Anzeigewoche: 31

TASK	RESPONSIBLE	PROGRESS	START	END
Presentation	Marcel Hintze, Martin Rittmann, Samara Dominik	100%	11.11.22	11.11.22
Phase 3: Coding				
Connection to backend	Marcel Hintze	100%	1.12.22	30.1.23
Add AASX-Server-Functionality	Severin Helms, Marcel Hintze	100%	13.2.23	26.3.23
Delete AASX-Server-Functionality	Severin Helms, Marcel Hintze	100%	13.2.23	26.3.23
Find digital twin	Anja Niedermeier	100%	30.1.23	26.3.23
Display digital twin	Anja Niedermeier	100%	30.1.23	26.3.23
Search for digital twin-Functionalit	Severin Helms, Tom Engelmann	100%	13.2.23	9.4.23
Filter entries-Functionalität	Severin Helms, Tom Engelmann	100%	13.2.23	9.4.23
Bug Fixes	Severin Helms, Marcel Hintze	100%	9.4.23	1.5.23
Implementation Usability Concept/ I	Anja Niedermeier, Martin Rittmann, Samara Dominik	100%	27.2.23	1.5.23
Phase 4: Tests				
Writing Tests	Anja Niedermeier	100%	24.4.23	1.5.23
Testing	Tom Engelmann	100%	1.5.23	7.5.23
UI-, UX-Tests	Samara Dominik, Martin Rittmann	100%	1.5.23	7.5.23
STP	Anja Niedermeier	100%	24.4.23	7.5.23
STR	Tom Engelmann	100%	1.5.23	7.5.23
Final presentation				
Project Delivery (Final version of co	All	100%	11.5.23	11.5.23
Create Power-Point-Presentation	Samara Dominik	75%	1.5.23	19.5.23
Self reflection	Samara Dominik	75%	1.5.23	19.5.23
Presentation	Anja Niedermeier, Marcel Hintze, Samara Dominik		19.5.23	19.5.23
Documentation				
Meeting Minutes	Tom Engelmann	100%	1.10.22	18.5.23
User Manual	Tom Engelmann	100%	1.5.23	18.5.23
Readme	Tom Engelmann	100%	1.5.23	18.5.23

Project milestone plan

First half of the project

Date	Milestone	Responsible
Week 1: 26.09-02.10	Analysis ▪ Official project start for the team ▪ First Meeting, distribution of tasks done	All
Week 2: 03.10-09.10	Analysis ▪ Build up internal project structure, create rough time scope	Samara Dominik
Week 3: 10.10-16.10	Analysis ▪ Collect all requirements, clarify open questions, and hand them over to the system architect and the project leader ▪ Start analysing the requirements, thinking of first ideas for the website ▪ Set up GitHub repository	Martin Rittmann Marcel Hintze, Severin Helms Marcel Hintze, Samara Dominik
Week 4: 17.10-23.10	Analysis/ Design ▪ Create CRS in the first version ▪ Create BC and PM in the first versions	Martin Rittmann Samara Dominik
Week 5: 24.10-30.11	Design ▪ Complete Design phase ▪ Create usability concept ▪ Create SRS and SAS in the first versions	Martin Hintze, Severin Helms
Week 6: 31.10-06.11	Buffer	
Week 7: 07.11-13.11	First Presentation ▪ Create Power-Point ▪ Prepare for presentation ▪ CRS, BC, PM, SRS, SAS, and documentation in final version and pushed in the GitHub repository	All
Week 8: 14.11-20.11	Design ▪ Started implementing first prototypes	Marcel Hintze, Anja Niedermeier, Tom Engelmann

Second half of the project

Date	Milestone	Responsible
Week 1: 06.03-12.03	Coding ▪ Connection to the backend is working	Marcel Hintze
Week 2: 13.03-19.03	Coding ▪ Add and delete AASX-Server-Functionality is working	Severin Helms, Marcel Hintze
Week 3: 20.03-26.03	Coding ▪ Digital twin can be found and displayed	Anja Niedermaier
Week 4: 27.03-02.04	Coding	
Week 5: 03.04-09.04	Coding ▪ Search for digital twin-function done ▪ Filter for manufacturer and order after year should be done	Severin Helms
Week 6: 10.04-16.04	Coding ▪ Bug fixes, feedback from client and enhancement of UI/UX	Severin Helms, Marcel Hintze, Anja Niedermaier
Week 7: 17.04-23.04	Coding ▪ Bug fixes, feedback from client and enhancement of UI/UX	Severin Helms, Marcel Hintze, Anja Niedermaier, Martin Rittmann, Samara Dominik
Week 8: 24.04-30.04	Coding ▪ Last bug fixes done, all wishes from client included Testing ▪ Writing Tests done	Severin Helms, Marcel Hintze, Anja Niedermaier
Week 9: 01.05-07.05	Testing ▪ All Tests done and the test documents written	Tom Engelmann, Anja Niedermaier, Martin Rittmann, Samara Dominik
Week 10: 08.05-14.05	Documentation ▪ 11.05: Final Version of all documents uploaded in GitHub ▪ GitHub structure updated ▪ Presentation pages done	Severin Helms, Marcel Hintze, Tom Engelmann, Anja Niedermaier, Martin Rittmann, Samara Dominik
Week 11: 15.05-21.05	Presentation and End of project	Severin Helms, Marcel Hintze, Tom Engelmann, Anja Niedermaier, Martin Rittmann, Samara Dominik

Risks

Risk	Description	Probability of occurrence	Severity	Action
Personal risk	Member leaves the course	Extremely low	Medium	▪ All time scopes possess buffers, so that the loss of a team member can be compensated by others with a little more time
Personal risk	Member is ill	Medium	Low	▪ All tasks have several weeks time to be competed. ▪ At least two people work on a task that is directly related to the end product (design, coding, testing)
Planning risk	Milestones are not achieved in time	Medium	Medium	▪ Including enough buffers in the time schedule and efficient task planning
Planning risk	Forgotten important documents	Low	High	▪ Double checking
Financial risk	Team members work more or in different areas than originally planned ->Expenses are too high for original offer	Low	High	▪ Letting the team members pick their parts -> everyone is doing what they can do and like best, no need to change roles
Financial risk	Miscalculation of the additional costs	Medium	Medium	▪ Research and use experience of previous projects
Communication risk	Miscommunication within the team members	Medium	Medium-High	▪ Regular meetings, direct clarification in case of problems/ questions
Communication risk	Miscommunication with clients	Low	High	▪ Direct clarification in case of problems/ questions ▪ Rather ask than guess the requirement
Knowledge risk	Many team members first need to get familiar with the technologies they work with	High	Medium	▪ Every member is assigned to the task they are most likely to perform well at ▪ Unexperienced members work together with more experienced ones

Software and hardware requirements

- Basics: Computer/ laptop
- Documentation: Microsoft 365 Business Standard license, GitHub
- Developing: JetBrain license, BW-cloud
- Communication: Teams, WhatsApp

Communication and reporting

Within the team

In the first half of our project and during the time, that we were in our companies, busy with other projects, we agreed to have regular meetings, depending on the process, every two weeks. These meetings served the purpose of informing all members of new developments and to ensure the agreement of everyone on important decisions during the analysis and design phase.

In the second half, during the implementation and testing phase, quicker reactions and decisions, that did not require the whole team, were more crucial. Because of that we chose to use the messenger WhatsApp to communicate.

To maintain a overview of the project's progress, it was essential to keep our project leader, Samara Dominik, well-informed regarding any new developments, deployments of changes, or encountered issues. Hence, all team members were instructed to promptly report such updates to Samara.

By adapting our communication approach based on the project's evolving needs, we ensured efficient collaboration and effective information flow throughout its lifecycle.

With the customer

We integrated our customer in the implementation and testing process by receiving his feedback from the GitHub Issues and in personal form during the lectures.

End of project

The project’s deadline is officially set on 11th May 2023, followed by a presentation on 19th May 2023.

To officially end the project the following project tasks have to be completed:

- Code: The source code and an executable version has to be published on our GitHub repository
- GitHub: The GitHub repository needs to be cleaned up and its wiki has to be updated
- Documentation: CRS, BC, SRS, SAS, projectplan, MODs, STP, STR, user manual, meeting minutes
- Presentation