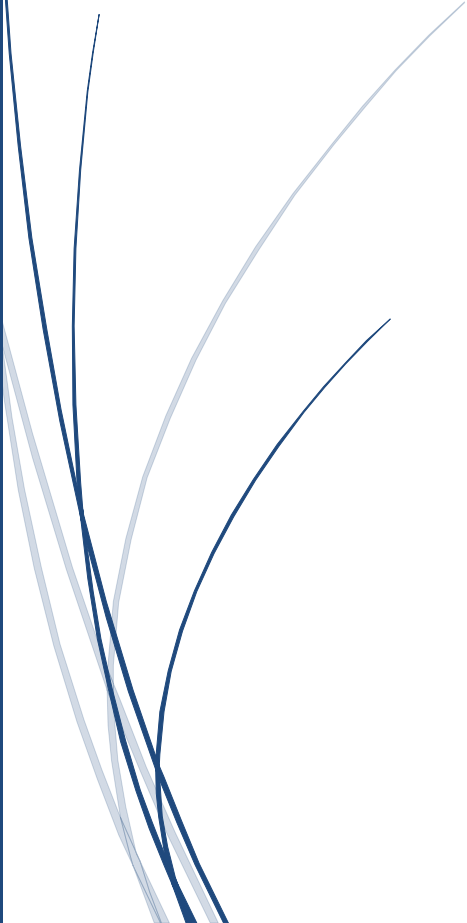




[Date]

Project Plan

Individual Project: FestivalConnect



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Version

Version	Date	Author(s)	Amendments	Status
1.0	04-03-2024	Lucas	Initial setup	Development

Communication

Version	Date	To

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1. Project Assignment

1.1 Context

FestivalConnect is a digital platform designed to improve the festival experience. This is done through connecting enthusiasts to communities worldwide. Choosing from different interests such as music, film, literature, and art, FestivalConnect will give all these festivals a way to create their unique community. It will offer the opportunity to discover, engage, and contribute to their favorite festival genre. By having features like community forums to detailed information about festivals, FestivalConnect is the way to have meaningful interaction between festival goers and organizers, making it possible to have a closer relationship and promoting industry growth. With the use of user feedback and sharing a shared passion and memories, FestivalConnect aims to improve the festival space, solidifying connections from geographical boundaries to the diversity in festival culture.

1.2 Goal of the project

1.2.1 Main Goal

The main goal is to develop FestivalConnect, which is a digital platform that will try and improve the festival experiences for festival-goers and organizations while meeting the software industry standards, especially performance, scalability, security, and privacy. So through this project, it is important to have professional standards, have an investigative problem-solving attitude, and look for the best industry standards for this particular software enterprise product, this mean having the non-functional requirements in prioritization.

1.2.2 Problem

The main problem is that the festival industry doesn't have a digital platform that can effectively connect the festival goers and provide organizations with easy access to feedback and interaction with festival attendees. Therefore, there will be missed opportunities to make a great community and a limited reach to discover new events.

1.2.3 Desired Solution

The desired solution is to have a platform where people can easily discover, engage with, and contribute to their favorite communities. This solution will also align with the learning outcomes that should result in a well-maintained product that can be easily handed over to the client. So by integrating certain techniques based on the research that the student has done, FestivalConnect will be a robust, scalable, and secure platform, meeting all FR and NFR with the defined learning outcomes.

1.2.4 Benefits of the Project

There are some benefits to the project

- **Global Connection:** Connect with people from all over the world with the same interests.
- **Industry Growth:** FestivalConnect promotes industry growth by having a platform where people can discover new festivals that they have never heard of.
- **Improved Interaction:** Improve festivals by having feedback from the community.

1.2.5 Possibilities That the Product Offers

- **Future extensions:** Having clear documentation and a proper system where people can build upon it.
- **Industry information in one place:** Detailed information about each festival in one place.
- **Community engagement:** interaction with festival goers and organizers engages a sense of festivals that care for the experience and the opinion of the festival goer. Improving the overall festival experience.

Of course, it will also keep in mind non-functional requirements, with solutions to problems from scalability and maintenance to security and data privacy.

1.3 The assignment

Making FestivalConnect will be an assignment about making a software enterprise product. It will be a process to try and find the best technologies for this certain project and properly apply them. The focus will be more on quality and the behavior that the user expects the system to have. To give more attention to the functional and non-functional requirements, it is listed on a separate document, called (2024, Jacobs, Software Requirements Specification).

1.4 Scope

To explain the system on how it works, see the following diagram to get more clarity on how the user interacts with the system.



Figure 1: High-level overview of FestivalConnect

Description

Applications: FestivalConnect is a system that connects festival-goers with organizers. It uses various technologies and architecture, with a nice user interface.

Data: Using a database to store data.

Users: The user base consists of users who can be festival-goers, organizers, and admins.

The project includes:	The project does not include:
1 Research and self-study on best solution for the product.	1 Mobile- and PC applications.
2 Product of FestivalConnect.	2 Providing ongoing maintenance and support after the final handover (sprint 5).
3 Tests.	3
4 Documentation.	4

1.5 Conditions

Condition 1: Time

The project needs to be finished and hand-over ready before the 23rd of June 2024.

Condition 2: Quality

The end product needs to meet all specified quality standards and requirements.

Condition 3: Communication

Regular communication and progress updates between the student and the stakeholders are needed for successful project management.

Condition 4: Compliance

The project must meet all requirements that comply with relevant laws, regulations, and industry standards.

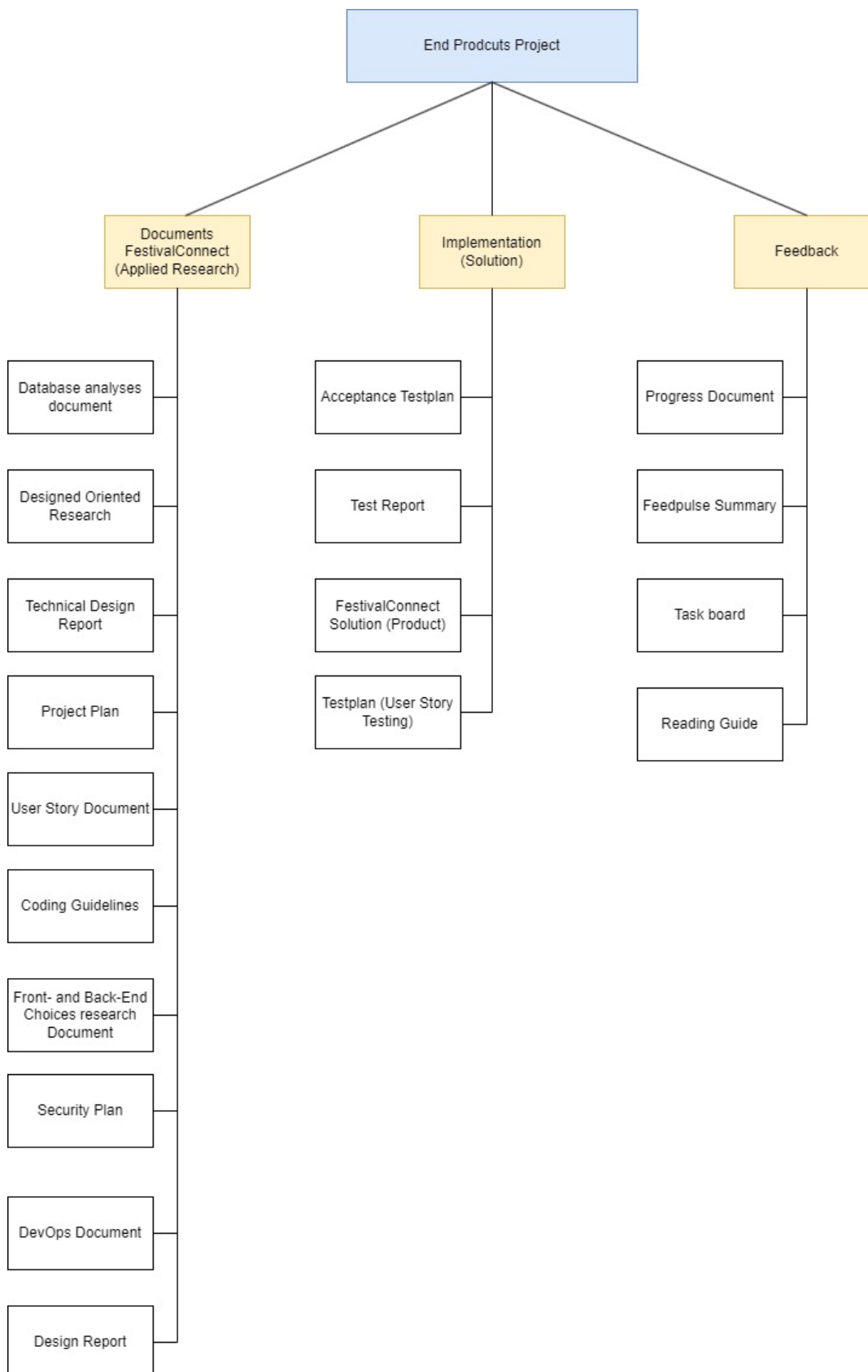
Condition 5: Changes in the project from the original plans agreed with the stakeholders

When there are changes in the scope or schedule, they must be documented properly and approved by the stakeholders.

Condition 6: Acceptance criteria

A project deliverable can only be accepted to be of a definition of “done” when it meets the acceptance criteria.

1.6 Finished products



Product Description

The structure of the end-products is divided into three sections, to explain this structure.

- **Documents FestivalConnect (Applied Research):** The main goal for this project is to validate my decisions and gain insight into how to make a good implementation for the FestivalConnect product with the best practices. This section consists of the following sub-products:
 - **Database analyses document:** Gain inside what database framework to choose, and insight into how the structure of the database is, with functions of each table.
 - **Designed Oriented Research:** Performing research on your own about a certain topic to extend your knowledge.
 - **Technical Design Report:** Analysing the technical aspects of the project. Think of C4, chosen architecture, sequence diagrams, code design report, and chosen language.
 - **Project plan:** initializing the plan of this project, how I am going to achieve a product of software enterprise quality, keeping in mind the learning outcomes.
 - **User Story Documents:** Setting up the user stories to work on during the project, with research on user stories and mapping.
 - **Coding Guidelines:** Rules to follow on how structure and code insight the project.
 - **Front- and Back-End Choices research Document:** Looking at different frameworks, comparing them, and giving arguments on why I have chosen a framework.
 - **Security Plan:** How is security guaranteed in the product, OWASP cover, Vulnerability, what is best security design, potential security issues with fixes?
 - **DevOps Document:** CI/CD, how is this guaranteed and why is it important what is in my pipeline? Supporting automated testing and providing good quality code.
 - **Design Report:** Why I have chosen a certain design for the product. Think of page overview, wireframes, design principles, and applied research on best design choices.
- **Implementation (Solution):**
 - **Acceptance Testplan:** Arguing what the choices are for testing.
 - **Test Report:** Report regarding the results of the tests.
 - **FestivalConnect Solution (Product):** The actual product, so the code and the whole solution around it.
 - **Test plan (User Story Testing):** Document to keep track of the progress of user stories. Tested using acceptance criteria.
- **Feedback**
 - **Progress Document:** The retrospectives of how the sprints went.
 - **Feedpulse Summary:** All the feedback received inside Feedpulse.
 - **Task board:** Tracking the progress of each user story for each sprint.
 - **Reading Guide:** Set up the portfolio to have a clear read-through.

1.7 Research questions

FestivalConnect aims to have a digital platform for festival-goers and organizers to connect and improve the festival experience. However, without proper consideration for maintainability while also keeping in mind the performance, scalability, security, and privacy. The platform can become difficult to update and maintain over time, hindering the ability for FestivalConnect to adapt to the evolving festival industry.

Main research question:

“How can FestivalConnect be developed and maintained to optimize the privacy, performance, security, and scalability throughout its lifecycle?”

Sub-questions:

1. What are the key features and functionalities that should be included in FestivalConnect to improve the festival experience for users?
2. What kind of behaviors need to be taken into account, regarding what the users expect from the FestivalConnect application?
3. Which technologies and architectural frameworks are most suitable for developing FestivalConnect, while having an eye on scalability, security, and maintainability?
 - a. What front- and back-end technologies are best fit for handling FestivalConnect, to handle large volumes of user data and make sure of scalability?
 - b. Can a certain architecture improve the scalability and maintainability of FestivalConnect?
 - c. What database technologies can offer secure and efficient data handling for storing user information and event data?
 - d. What is a good framework to make sure that internationalization can be used and people from all over the world can use the system?
4. How can user feedback and community engagement be implemented into FestivalConnect to better the sense of belonging to the festival and improve interaction between the festival-goers and organizers?
 - a. How can we properly implement the features in a user-friendly way?
5. What strategies and technologies can be implemented to make just that the law, regulations, and industry standards are guaranteed, keeping in mind data privacy and security?
 - a. What are the needed strategies to make sure that it complies with data protection laws, such as GDPR?
 - b. What legal regulations and industry standards are set for collecting, storing, and use of user data in the festival industry?
 - c. How can we assess that these security standards are met and solve potential vulnerabilities or risks?
6. What are the most effective methods for testing and validating FestivalConnect to make sure that it will meet the specified quality standards and requirements?
 - a. What is the most suitable testing to use, to verify the functionality and quality of FestivalConnect?

- b. Can automated testing tools and frameworks streamline the testing process and improve the consistent and reliable results?
 - c. What metrics can be used to evaluate the effectiveness of testing with effect on the quality?
- 7. How can cloud-native principles and technologies be used to improve the scalability of FestivalConnect, with a particular look at handling peak festival periods that lead to increasing user demand?
 - a. What cloud services can be used by FestivalConnect and offer the necessary infrastructure and tools for deploying and managing the environment?
 - b. What are the best architectures to use inside cloud services to improve scalability and is cost-efficient?
 - c. Can there be different strategies implemented to minimize latency for users accessing FestivalConnect from different geographic locations?
- 8. What measures should be taken into account to minimize the security risks and that FestivalConnect is designed with proper security, considering the trade-offs between performance?
 - a. What security threats and vulnerabilities are most relevant to FestivalConnect, and how can we overcome those weaknesses?
 - b. How can secure coding practices, such as input validation or error handling play a role in integrating secure code?
 - c. What authentication and authorization technologies are needed to protect user accounts and protect them from sensitive data from unauthorized access?
- 9. How can FestivalConnect be designed and implemented to support continuous software development and deployment?
 - a. What DevOps practices and tools can be used to support continuous integration and deployment for FestivalConnect?
 - b. How can version control systems and branching strategies give an improved environment to develop in?

2. Approach and Planning

2.1 Approach

This project will use a Scrum method. Every sprint will consist of three weeks, with a total of five sprints. A sprint starts with setting up the user stories that need to be worked on. At the end of each sprint, there will be a retrospective of reflecting on the sprint, how it went, what has been achieved, and a showing of the work to my stakeholders (teachers). Furthermore, we will discuss what user stories to work on next and adjust the backlog accordingly.

The first sprint will be mostly setting a lot of things up and reasoning behind choices. It is an initialization phase where the student will do research and come to certain decisions that will be important for the base of the project. After this phase, research will still be done but now the actual implementation will start as well.

To continue, The progress will be tracked with the retrospectives and the feed pulses of the meetings with my stakeholders. I will use a task board to keep track of my progress (user stories).

2.2 Research methods

During this project, I will do research to get to know what the best technologies and practices are for FestivalConnect. The Development Oriented Triangulation Framework (DOT-Framework) will be used. This framework has several strategies such as library, lab, showroom, and workshop, see the following picture.

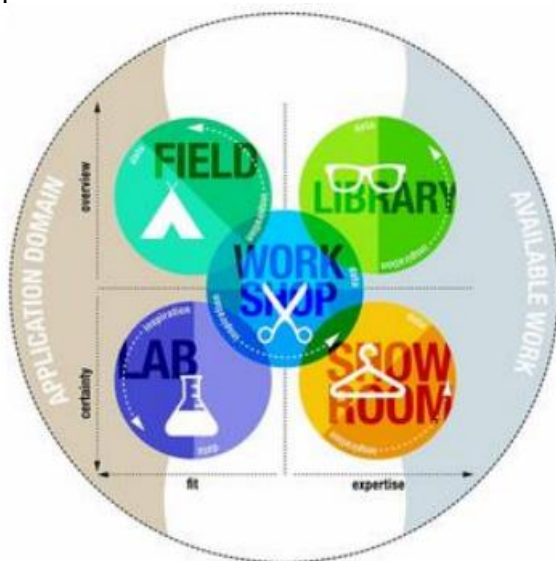


Figure 2: DOT-Framework

To answer the research questions, we need to have a mix of methods to answer these research questions. See the following strategies:

- **Library:** Getting to know what is already been done, guiding to the best information to help me further design my FestivalConnect.
- **Field:** Understand the context. Getting to know the end user's needs, desires, and limitations.
- **Lab:** Test parts and concepts of the product. Test things to validate if it works as intended.
- **Showroom:** Test the ideas that you have for existing work. Testing your product to general guidelines or show prototypes to your stakeholders.
- **Workshop:** Use this strategy to explore new opportunities.

(The DOT Framework, n.d.)

Let's now list all the research questions with certain research methods to answer them. Note that this is just a guideline, and there can always be used another strategy.

1. What are the key features and functionalities that should be included in FestivalConnect to improve the festival experience for users?
 - a. **Literature Study:** Getting to know who my audience is going to be. Based on this adjust my functionalities, keeping in mind and prioritizing what is most important to them.
 - b. **Community research:** What are the existing communities like in the festival industry? Are they diverse? Do they have special needs?
 - c. **Stakeholder analysis:** Look at what my stakeholders have to say during the talks with them. What are we discussing and prioritizing to have the most suitable functionalities for FestivalConnect?
2. What kind of behaviors need to be taken into account, on what the users expect from the FestivalConnect application?
 - a. **Literature Study:** getting to know what the important behaviors for FestivalConnect application needs to be. Also looking at data to get to know what a performance measurements to aim for, what is the expected user base?
 - b. **Community research:** Looking at what people have to say about the importance of how an application should behave. What is important for the user, in the context of festivals?
3. Which technologies and architectural frameworks and methods are most suitable for developing FestivalConnect, while having an eye on scalability, security, and maintainability?
 - a. **Literature study:** Looking at what frameworks work best in the context of FestivalConnect.
 - b. **Community research:** What do trustworthy communities have to say about certain frameworks, and does the information relate to my case?
 - c. **SWOT analysis:** what are the strengths, weaknesses, opportunities, and threats when it comes to certain frameworks?
 - d. **Design pattern research:** Can apply certain design patterns to the design of the database setup, architecture, etc.
 - e. **Pitch:** Justifying to my stakeholders why I have chosen certain technologies.
 - f. **Evaluation matrix:** Final conclusion matrix on how good the technology fit the application.
4. How can user feedback and community engagement be implemented into FestivalConnect to better the sense of belonging to the festival and improve interaction between the festival-goers and organizers?
 - a. **Community research:** Look for what the special needs are for this sector.
 - b. **Design pattern research:** are there needed patterns that can improve the quality and structure of the code when implementing these features?
 - c. **Task analysis:** what is the precise flow of these functions, how do these work, and can this be explained with a certain flow diagram on both high-level as well as in-depth details?
 - d. **Prototyping:** Giving a visual look at how the system can look and function.

5. What strategies and technologies can be implemented to make just that the law, regulations, and industry standards are guaranteed, keeping in mind data privacy and security?
 - a. **Problem analysis:** what are the problems that occur that can lead to weak privacy and security? Getting to know what the real problem is, before implementing and regulating some rules into the application?
 - b. **Literature study:** Are there industry standard regulations when it comes to collecting, storing, and use of user data in the festival industry? What can be the best practices and needed requirements to properly cherish the laws?
 - c. **Available product analysis:** Look for best practices when it comes to handling data in a software enterprise application.
 - d. **Best good and bad practices:** what should be done and don't to have secure data handling.
6. What are the most effective methods for testing and validating FestivalConnect to make sure that it will meet the specified quality standards and requirements?
 - a. **Literature study:** Look for certain patterns to properly test your application.
 - b. **Best good and bad practices:** when it comes to testing, what should we do and not?
 - c. **System test:** Make test scenarios to properly test the user stories. Make a separate test plan for this.
 - d. **Unit test:** test the business logic and if this logic is correct.
 - e. **Component test:** testing the flow of the application.
 - f. **Benchmark testing:** Testing the system benchmarks and if it complies with the agreed metrics.
7. How can cloud-native principles and technologies be used to improve the scalability of FestivalConnect, with a particular look at handling peak festival periods that lead to increasing user demand?
 - a. **Literature study:** Researching what the best practices are for the cloud. How to increase user traffic?
 - b. **Available product analysis:** what is currently already available on the market, that can be used and is proven to be efficient and good.
 - c. **Problem analysis:** Does the improved scalability of FestivalConnect only depend on cloud-native technologies or how can we make sure that the solution that we want to provide is helping?
8. What measures should be taken into account to minimize the security risks and that FestivalConnect is designed with proper security, considering the trad-offs between performance?
 - a. **Code review:** Regularly check the code of the design security to check for faults.
 - b. **Unit test:** is the created code secure and is it logically correct?
 - c. **Literature study:** Looking at the most common vulnerabilities of a website. What can be possible outlooks for hackers to hack the system? The needed security for the product.
 - d. **Available product analysis:** what are the best practices on the market to make a secure website?
9. How can FestivalConnect be designed and implemented to support continuous software development and deployment?
 - a. **Literature study:** Looking at the best software to support CI/CD.
 - b. **Available product analysis:** Getting to know what already exists on the market to ensure CI/CD.
 - c. **Pitch:** Showing to the stakeholders why FestivalConnect is designed to have CI/CD.
 - d. **Community research:** More knowledge of people there opinions if they recommend certain designs and software.

2.3 Breakdown of the project

Throughout this project, I will discover new topics, these consist of the following:

- Foundation: Covered topics in the initialization phase of the project. Think of architecture, Software platforms, etc.
- Cornerstones: When done with the foundation of the project, then we will move on to the more advanced topics in the project. Think of Cloud Native, DevSecOps, etc.

With this project, I will keep structure to these topic ordering. To further clarify, here are all the topics covered within the sprints.

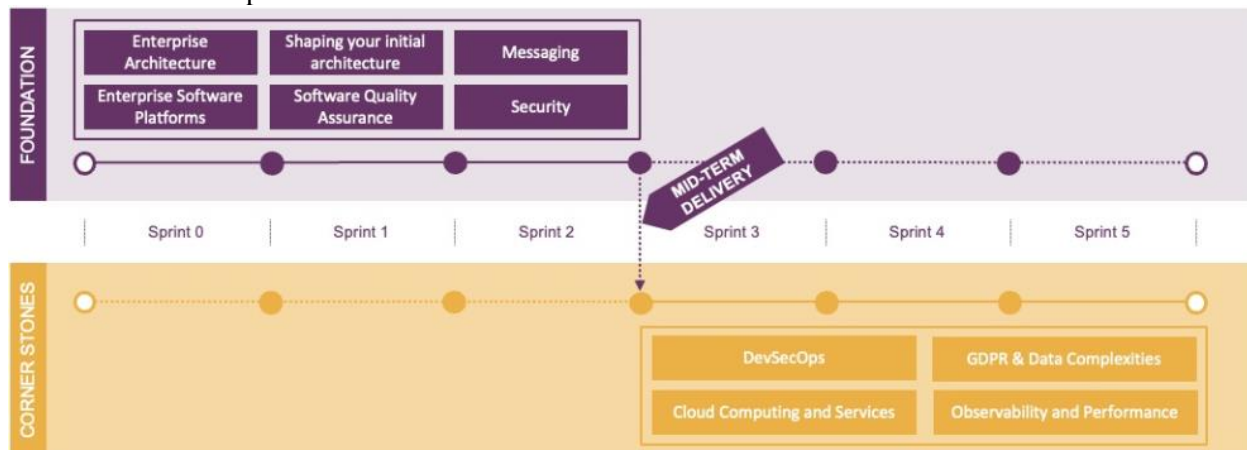


Figure 3: Way of working, divided into sprints

To further dive into the structure of each sprint, see the following picture of how the sprint structure is:



Fontys (n.d.), Planning. Retrieved from "fhict.instructure"

2.4 Time plan

Phasing	Effort	Start	Ready
1 Pre-project phase – Work on the project proposal, initial ideas	2 weeks	19-02-2024	03-03-2024
2 Sprint 1 – Project Plan, User story, Testplan, Coding Guidelines, Architecture, Front- and Back-End Choice	3 weeks	04-03-2024	24-03-2024
3 Sprint 2 – Working on Backlog (user stories)	3 weeks	25-03-2024	14-04-2024
4 Sprint 3 – Working on Backlog (user stories)	3 weeks	15-04-2024	12-05-2024
5 Sprint 4 – Working on Backlog (user stories)	3 weeks	13-05-2024	02-06-2024
6 Sprint 5 – Working on Backlog (user stories)	3 weeks	03-06-2024	23-06-2024

To visualize it more, here is a Gantt chart of the documents that I want to cover, over the time of this project duration. Note, that this chart may not cover all the documents, with also having that some documents need initial research at the beginning and an update throughout the sprints (such as user stories document).

Task Name	Feb	Mar	Apr	May	Jun	July
Project Proposal (Pitch)						
Sprint 1: Sprint 1 – Project Plan, User story, Testplan, Coding Guidelines, Architecture, Front- and Back-End						
Sprint 2 – Working on Backlog (user stories)						
Sprint 3 – Working on Backlog (user stories)						
Sprint 4 – Working on Backlog (user stories)						
Sprint 5 – Working on Backlog (user stories)						

To further divide the research question on when these are expected to be finished the following division.

- Sprint 1-2: Sub questions 1, 2, 3, and 4.
- Sprint 2-3: Sub questions: 6, 8, and 9.
- Sprint 3-5: Sub questions: 5 and 7.

3. Project Organization

3.1 Team members

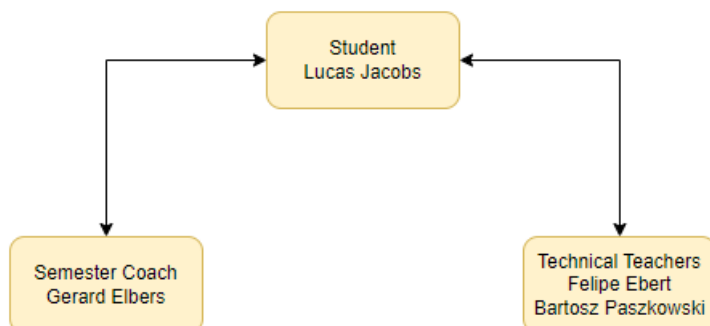
Name + e-mail	Abbr.	Role/tasks	Availability
Felipe Ebert	FEBE	Technical Expert. Explaining concepts to him when needed, showing the progress of technical aspects of the project. Asking questions to him when needed.	Every Monday from 09.00 to 16.00 at TQ5.
Gerard Elbers g.elbers@fontys.nl	GELB	Semester Coach. The person to reach to discuss the progress of the project, for the way of working.	Every Thursday from 09.00 to 16.00 at TQ5.
Bartosz Paszkowski	BPAS	Technical Expert. Explaining concepts to him when needed, showing the progress of technical aspects of the project.	Monday morning from 09.00 to 12.00 at TQ5, Wednesday 09.00 to 16.00 at TQ5

3.2 Communication

During this project, I have a total of three coaches whom I can communicate with. To begin with, the technical teachers, communicate preferred on the side, at TQ5. They are at TQ5 on Monday and Wednesday, I need to have a proactive attitude toward them, to show my progress and ask questions. For the semester coach, Thursday at TQ5 is preferred. I need to show my way of working and need to show my professional standards and problem-solving mindset.

When there are problems due to privacy reasons, you can communicate, either with email or with a Teams message. At last, each coach prefers to have a meeting every two weeks and to have a retrospective meeting at the end of each sprint.

Communication flow



3.3 Test environment

I already created a basic setup for my CI/CD pipeline, this can throughout the project still change when doing more research on continuous integration and development. See the following picture.

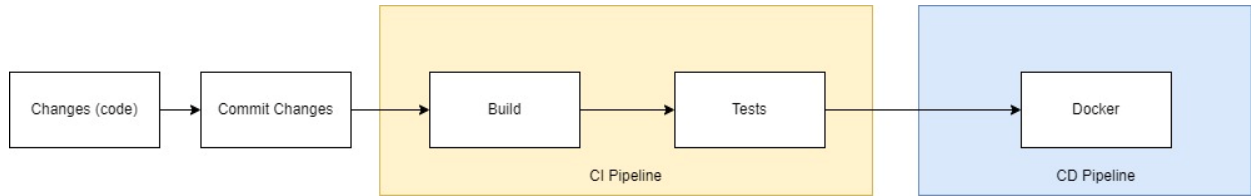


Figure 4: Pipeline skeleton

4. Finance and Risks

4.1 Cost budget

This project has no budget to make expenses. FestivalConnect can only be budgeted with free software. Furthermore, when the project needs access to paid services, it can ask Fontys for potential licenses.

4.2 Risks and fall-back activities

Risk	Prevention activities included in the plan	Fall-back Activities
One of the teachers gets sick for a long time.	Have a healthy lifestyle and drink enough	Ask other teachers for continuous feedback, and fall back with an email to the absent teacher. Ask the semester coordinator for a potential new teacher.
The student is unable to continue for a long time due to personal reasons.	Having a backup plan.	Have clear and early communication with the teachers when there are personal challenges. To discuss possible solutions.
The device that you are working on stops working.	Having the data in the cloud/in git	Get the latest version from the online platform and continue.
Time limitation	Meeting with the teacher beforehand to discuss possible solutions, such as dividing the user story into smaller ones.	Inform the teachers in the retrospective meeting, about why and how you are going to manage this for the next sprint
Delayed feedback from teachers	You deliver it on time, so there is enough time for them to make comments about it.	Test the product as far as possible, within the limits of what can be done.

5. References

Fontys. (n.d.). *Planning*. Retrieved from fhict.instructure:

https://fhict.instructure.com/courses/13669/pages/planning?module_item_id=1060227

The DOT Framework. (n.d.). Retrieved from ictresearchmethods: <https://ictresearchmethods.nl/dot-framework/>

Jacobs, L. (2024). Software Requirements Specification (Unpublished manuscript), FontysICT.