Project Plan

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Client

Quality ICT B.V.

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Version control

Version	Activities	Date
Initial version 1.0	Draft version	06/02/2024

Remarks

Any changes and new developments that have a significant impact on the project proceedings will be noted here.

Chapter I – Introduction

This document provides a detailed description of the project planning, research, and execution of the author's graduation work placement in the client company, Q-ICT.

The graduation work placement will be executed on the behalf of NHL Stenden University of Applied Sciences, which is based in the north of the Netherlands and offers a large variety of courses in both Dutch and English. The schooling has a heavy emphasis on group and practical project-based work, supported by a thorough theoretical education.

This document is created as one of the necessary requirements to submit to the School Supervisor within the first 2 weeks after the author started his graduation project. This document represents one of the essential prerequisites for the author's successful completion of the graduation work placement project of NHL Stenden at the ICT & IC Information Technology Department in Emmen, serving as one of the mandatory requirements therein to achieve his bachelor's degree.

With NHL Stenden being an international educational institution, there are campuses across the country as well as abroad. The one of relevance for this project is in Emmen and offers four international courses, ICT & IC Information Technology course is one of which. This graduation project will be solely undertaken by the author of this document, a 4th year international IT student to complete his 4 years study of ICT in Stenden.

As the details of this commission have yet to be finalized, this document is subject to change and any alterations will be shared promptly and marked accordingly.

1.1 Layout of the Project Plan

General information: Provides an overview of both the sponsoring organizations well as the organization in which the project is to be carried out.

Project objectives: Consists of the objectives which are determined by Q-ICT as well as the projects' intended results.

Project activities: Defines the tasks that need to be performed for the realization of the project, while taking into consideration the prioritization of certain tasks based on significance.

Project boundaries: States the project boundaries and the project duration.

Products and Interim Results: Specifies the products and results, which extends non-physical products such as client meetings.

Quality: Provides an overview of how the quality of the work will be monitored and eventually assessed.

Project Organization: Comprised of organizational information regarding the author and Q-ICT and its inner workings, as well as details regarding the correspondence with the sponsoring organization.

Planning and Scheduling: will show the schedule of tasks to be done as well as their dependence on other tasks for their completion or quality. Including various charts and diagrams, it will outline the time-scope as well as the desired time-consumption of the tasks.

Costs and Benefits: Discusses the time and resources required, while taking the benefits of the sponsoring organization into consideration.

Risk Analysis: Gives a detailed account of potential internal and external risks.

Chapter II – Project Objectives

The primary objective of this assignment is to design and develop a new functionality on top of an existing application that can monitor and present Q-ICT's internal APIs in a meaningful way, ensuring connection status, error handling that frequently results in errors of the return data, handling of expired API keys, secure storage keys, and external validation of API connections.

The specific objectives of the project are:

- Build an API monitoring functionality on top of the QaaS app using Flutter (Dart) for the client-side front-end code.
- Build on an API monitoring functionality in already existing server using Node.js with TypeScript as a template for the server-side back-end code.
- Implement API a comprehensive monitoring functionality, with features such as error handling, connection status warranty, external validation of API connections, expired API keys management, and securely storing API keys implementing products from Firebase such as Realtime Database, Remote Configuration, Cloud Functions, Authentication, Cloud Storage, Cloud Messaging, Hosting, Google Analytics, App Distributions, etc.,
- Ensure proper SentinelOne API integration into the QaaS app.
- Make error logging functionality within the QaaS app, which includes the capability of listing and exhibiting all the unsuccessful API calls to diagnose issues such as expired credentials, while also being able to inspect the payload for further analysis.
- Investigate the potential data integrity issues arising from N-Central API calls which frequently results in errors of the data returned.
- To make the visualization of the returned data from the API calls in the form of JSON and XML for user friendliness.
- To ensure that the product is scalable and can be easily adapted to accommodate future changes and additions to Q-ICT's product line.
- To ensure that the product access is secure, adhering to all cybersecurity best practices, and that all sensitive data is protected from unauthorized access or manipulation.

- To deliver the project on time (90-99 working days), within spec, and to the satisfaction of the project stakeholders.

Chapter III – Project Activities

Project Activities details all activities sorted by category that are needed to successfully complete the project.

3.1 Planning

- Initial contact with Q-ICT (via e-mail and/or LinkedIn).
- Receive the assignment description from Q-ICT, make a definitive version of the Description of the Graduation Project based on the received information.
- Make an initial version of the research topic, main question, and 4 research sub-questions and add it to the Description of the Graduation Project document.
- Send the definitive version of Description of the Graduation Project document to graduation.ict-ct-emmen@nhlstenden.com and to get it approved.
- After making sure that all the requirements to start the graduation project are met, send the Notification Form document to graduation.ict-ct-emmen@nhlstenden.com to notify them that the author has officially start his graduation work placement and to receive a graduation School Supervisor assigned to the author from the Graduation Committee.
- Receive a School Supervisor and set up a physical/online meeting with him/her to discuss the graduation work placement and receive feedback.
- Complete and sign the NDA of the graduation project between NHL Stenden and Q-ICT, along with getting the NDA the signatures of Niels Dorm and the Company Supervisor.
- Triplicate the NDA, so that the school, the author, and Q-ICT can keep the document.
- Make a draft version of this document (Project Plan)
- Discuss the draft version with the Company Supervisor.
- If required, implement the changes proposed by the Company Supervisor.
- Make a definitive Project Plan.
- Make a definitive version of Research Proposal and Planning.
- Send the definitive version of Project Plan, Research Proposal, and Planning to the assigned School Supervisor within 2 weeks of the initial date of the graduation work placement.

- Create a GitHub repo and GCP account from Q-ICT, ensuring that the author obtains all necessary permissions to access Firebase cloud service products.
- Gather information about the project, its boundaries, and goals.
- Have meetings and interviews with the stakeholders and product owner to discuss and discover further boundaries and project specifics.
- Research project planning & management, and the technical part of the research topic, study available materials.
- Set up a project backlog and a SCRUM board in an online DevOps environment.
- Write User Stories and Tasks.
- Create/ generate a Burndown Chart.
- Create Sprint backlogs based on user stories.
- Track when tasks are being completed and trend in burndown charts.
- Receive the previous code and documentation from the previous iteration of this project.

3.2 Research

- Gather information about the project commissioner.
- Set up research thesis document on the agreed research topic.
- Create a definitive version of the research topic, main question and 4 research sub-questions.
- Discuss research questions with the Company and School Supervisor.
- Analyze existing product done by the previous developers.
- Look up programming resources and proprietary integrated development environments.
- Brainstorming with Company Supervisor to define tasks for the product backlog.
- Determine feasible tasks.
- Determine out of scope tasks.
- Determine out of range tasks.
- Make a list of the proposed features.
- Make a list with the required hardware if any.
- Present the list and ideas to the Company Supervisor and Product Owner.

- Create an advice report for the clients and stakeholders backed up by theory.
- Discuss concepts, ideas, and tasks with the client.
- Write down the findings and discussion in a research report document.
- Analyze the feedback from the Company Supervisor.
- Create a feature/task priority document, set up the Backlog board accordingly.
- Discuss a draft variant of the Graduation Research Report to Company Supervisor.
- Send the initial draft of the Graduation Research Report to School Supervisor and receive feedback.
- Implement the feedback and/or task ideas from the client into the task list.
- Discuss the final concept with Company Supervisor.
- Finish the research phase and all related documents.

3.3 Design

- Create a coding convention.
- Create a Definition of Done with the Company Supervisor.
- Create the visual design of the platform.
- Create a test plan, making sure the platform works as planned.
- Create a document for User Stories, explaining what the system will do.
- Create a User Manual, explaining to the users how to use the system.
- Choose the required hardware.
- Decide on fonts, color palette and other design elements.
- Outlining required languages and components
- Make a definitive choice of our concepts.
- Sketch the final product.
- Visualizing the final product with mock-ups (if applicable).

3.4 End Product

- Finalize and use the definitive version of the concepts and tasks.
- Develop the product.
- Develop the responsiveness of the product.
- Plan weekly sprints and sprints reviews.
- Test the product according to the test plan and requirements and log the results.

- Implement the professional product in accordance with the frameworks and requirements of the stakeholders.
- Make sure the professional product meets the given standards.
- Respect the testing plan and scheduling.
- Discuss and implement feedback coming out of the testing phase.
- Make a report on the final product.
- Wrap up all the documentation, proofread and finalize.

3.5 End-Presentation/ Colloquium

- Clean up the project (code).
- Sort and archive all documents.
- Make sure the connections, the live version, the database, API connections, cloud functions, and other cloud services are working.
- Collect essentials for the final presentation.
- Build a coherent presentation detailing both the product and the road to achieving it.
- Presenting the definitive product to the project commissioner (first and second school supervisors), as well as clients
- Receive feedback and the grade for this graduation work placement.
- Reflect on what has been done, and what could have been done better. (Retrospective)

Chapter IV – Project Boundaries

This chapter will give further insight into what the final product will consist of and what is not within the scope of this project. Should there be any changes to the scope of this project, this section will be updated accordingly.

4.1 Duration

The project will take place throughout period 4 of the fourth year of the author's study in NHL Stenden, incisively from 19 February 2024 to ... The duration of the project varies from 90-99 working days depending on the circumstances of the conflicts that will be aroused during the development.

4.2 Scope

No budget is given for this project.

This project is, in part, a continuation of feature development of an already existing application. The application is used by Q-ICT internally, to …(interview)

In brief the graduation work placement project should be consist of the activities of the following:

1. The QaaS app should be able to establish comprehensive monitoring to all the internal APIs, ensuring connection status, error handling, handling of expired API keys, secure storage of these API keys, and external validation of API connections.
2. The company expresses its wish for the integration of SentinelOne API to the QaaS app. SentinelOne is an advanced endpoint protection and response capability powered by AI, with features such as threat detection, mitigation, and incident response. With it, the automation of security task, retrieval of information about detected threats and endpoints, policies and configuration management, and other miscellaneous tasks to enhance the security posture of their systems and applications are all possible. SentinelOne has been recently acquired by the company, and has yet to be properly integrated to their main application, the QaaS app.
3. The QaaS app should have a way to visualize this data given from the APIs in a meaningful user-friendly way to help the helpdesk and other Q-ICT employees to see the data easier.

4. The QaaS app should have a feature that incorporates error logging functionality. This entail the app being capable of listing unsuccessful API calls, displaying their respective status codes and messages. Furthermore, it would be a good to have functionality that this app to be able to conduct testing and debugging to these unsuccessful API calls to diagnose issues such as expired credentials, while also being able to inspect the payload for further analysis.
5. There has been a potential breach of data integrity issue from a specific API, N-Central, resulting in errors of the return data, mainly returned in the form of XML and JSON format. The company wishes the author to investigate more into this issue if the time permits.
6. The QaaS app should have a functionality to serve as a versatile template application for an integration with further new APIs.
7. Ensure proper code refactoring, unit testing, code commenting, and adherence to overall code conventional guidelines are maintained on both the test and live environment of the QaaS app.

4.3 Preconditions

Below are listed conditions that should be met for the project succeed:

- The author needs to implement SCRUM Agile management framework in the project.
- Deliver the required documents stated in the graduation project module book.

The author has been asked to develop the platform with scalability in mind, as this will not be the final iteration of this product and might be carried out further by other development teams of Q-ICT later down the line.

Chapter V - Products & Interim Results

Within this chapter, the expected deliverables and interim results of both periods are listed and briefly explained. This section will be updated should the need for further documentation or products arise during the project.

5.1 Documentation

The documentation of the project will be comprised of a project plan, a research report, minutes of the most informative team meeting, advisory documentation based on the research report (potentially as part of one of the aforementioned documents), a product backlog made up of tasks based on the prepared user stories, user manuals and a project report.

The documentation of working hours is done by means of an excel file that allows the author to enter their individual hours with a brief description what was achieved in that time. Based on the product backlog, burndown charts, that are updated and reviewed weekly, as well as detailed sprint backlogs are created for the realization phase.

5.2 Research and Concept Specifications

This will contain the different concepts thought of during the project and the definitive concept chosen with clear reasoning and arguments. These include – a study title, a working group and investigators, background and rationale, specific aims, and analysis framework.

Furthermore, extensive research will be conducted on scrum and knowledge management, and how they can be used in the realization of the project.

This documentation will help to keep track of the progress of the overall product conceptualization and the intermediate products, that will be stated in the final project plan. The backbones of this will be represented by the research report, to ensure educated choices are made for the selection of methods and overall approach for the product development.

5.3 Design architecture

Software architecture refers to the fundamental structures of a software system and the discipline of creating such structures and systems. Each structure is comprised of software elements, relations among each other, and properties of both elements and relations.

The architecture of a software system is a metaphor, analogous to the architecture of a building. It functions as a blueprint for the system and the developing project, laying out the tasks necessary to be executed by the teams. Different ideas will be explored to see what fits the project the best, and a definitive choice will be made in consultation, together, with the clients.

The database architecture is provided by the client. Database architecture refers to the organization of data within a database system. It defines how data is stored, organized, and accessed by the users and applications that interact with the database.

5.4 Test Products

The product will undergo a rigorous testing process, which will be planned and documented using a minimum of three test design techniques. The approach of testing laid out in the test plan documentation is to be reflected in the resulting reports, and parts that have been found to not be applicable will be marked as such. As part of the planning, a risk analysis is conducted, to help prioritize the most vital areas of the product in testing.

5.5 Final Product

At the end of the agreed project allocated timeframe, a complete final product will have been delivered.

5.6 End Presentation

Once the allotted time for the project concludes, the results of which will be shared in a manner specified by both the client as well as the lecturers, to display the results as well as give a general insight into the project timeline and working methods.

5.7 Period 4 - Interim Products Overview

The table below shows the various documents that need to be finished during this period along with their respective deadlines.

Task	Deadline
Minutes / Documentation of important meetings/ Interview transcript between the author and the stakeholders: Transcripts of the most important	As needed

meetings, and emerging information to be shared with all involved parties.	
Daily Scrum meetings	Daily
Monthly Report Document (Accountability): A table showing the author's working hours every day every week within a specific month, that are to be updated by 5pm each Friday at the latest.	Monthly overview, fill in daily
Project Plan (Initial Version): A document to provide insight into the scope and purpose of the project.	First 2 weeks of the Graduation Work Placement
Research Proposal	First 2 weeks of the Graduation Work Placement
Planning	First 2 weeks of the Graduation Work Placement
Product backlog: A prioritized list of features, requirements, and enhancements that need to be developed for the product.	Week 1-2
Midterm evaluation	Week 4-5
Sprint review	Week 2-10
Sprint retrospective	Week 2-10
Sprint backlog	Week 1-10
Mutual Peer Evaluation	Week 10
Presentation of realization phase results	Week 10
Thesis: All research necessary for the realization phase compiled in one document.	Week 9 (End of the Research Phase)
FO/SRS/PRS	
Definition of Done:	
Code of Conduct: A document detailing expectations and rules regarding work ethics, signed by the author and the Company Supervisor	Week 10 (first week of the Realization Phase)
Version Control	Per document

Table 1: Interim Products

Chapter VI - Quality

6.1 – End Product

The product of this project is to deliver a working, easily scalable and maintainable web application where the client can view the statistics of any machines they have produced, as well as their clients should be able to access these data of their machines. The information can be seen for each machine one by one and can also be visualised from a graph.

This web application must be easily accessible, each component must be created in a separate environment so that each part can be managed easily or scaled up if there is the need to, without breaking the rest of the features or containers.

Special attention needs to be put in the security aspect. Access must be limited to logged users, and each incident listed must be manually curated by approved users. The database must also be protected from any injections or security flaws and the data must be sanitised and uniformised, if possible. More info about the database structure can be found in the Database Architecture document.

6.2 – Control

Code wise, everything will be managed in GitHub, as the author will follow the best practices of quality of code guidelines, which consists of several programming conventions such as Comment conventions, Indent style conventions, Line length conventions, Naming conventions, Programming practices and Programming principles and Ethics Principles. To control the quality of the code, uploading to the Main/Master branch requires the code review and authorisation from the Company Supervisor, as checking the code pre-emptively will reduce unnecessary time spent fixing the program and thus delays. Changes to the most upper branch are forbidden, each new update needs to be committed from a separate branch that has been pulled from the most current safe build.

The interim results such as documentation and various features of the program will be checked by all group members and proofread by the members delegated to this, and feedback will be requested from university staff and the client.

The communication from the author and the company supervisor will be on Teams, Outlook e-mails, and WhatsApp messages, but also physical meetings, in the building of Q-ICT. To

make sure that the project is going smoothly, and both parties are on the same page regarding what is being created and what must be made, weekly report sessions will be held between the author and the Product Owner, with the possibility to the school's supervisor to join.

The meeting between the author and the School Supervisor

6.3 – Testing techniques and programs

Testing will be done in stages. First while developing it, the author will have sessions to test the different parts, accordingly to the Test Documents and the Use Cases that have been written for it. This phase will also focus more on code quality. The second part will involve the clients and possible external parties, which will produce feedback. This part will focus on the features available and how they work.

Having several people for testers, in different stages, with a variety of methods, ensures that the product is of excellent quality and that issues when it comes to the product launch are kept to a minimum.

As basis, the Master Test Plan document will be used, along with the Acceptance Test Plan document. Whereas the system tests that are executed with the introduction of a larger new feature are logged in a table and repeated if they fail. The plan for said tests is contained within the MTP.

Chapter VII - Project organization

Team member, product owner, and contact persons.

There is only one member of the team, the author, along with 2 supervisors from Q-ICT and one supervisor from NHL Stenden.

Christopher Sulistiyo	c.sulistiyo@qict.nl	+31 627553451	Author
Manuel Weidjik	manuel@qict.nl	+31 20 330 2216	Company Supervisor
Mark Kolk	m.kolk@qict.nl	+31 6 85454829	Product Owner
	@nhlstenden.com	+31 6 16054757	School Supervisor

Availability

The author is available on working days between Mondays until Fridays between 08:30-17:00. He can be contacted by e-mail, Teams, WhatsApp, SMS, or a call. Outside of these times the author is not expected to be working on the project but may be reached out due to the flexibility of certain occasions, special occasions, i.e., shortly upcoming deadlines or goals not achieved according to the scrum or activity board. However, the deadline will be kept in mind and the working hours might be adjusted based on that.

Any of the absence days will have to be explained by the author with the Monthly Report. The author will decide how to proceed, putting the project completion as the main objective. Also, all hours that have been done must be recorded in the Monthly Report document with a brief description of what was achieved that will eventually be sent to School Supervisor.

Team roles

There are a couple of roles within this Graduation Work Placement:

- The author himself is responsible for coordinating tasks within the group and making sure those tasks are completed on time and meet the quality expectations. Moreover, they are responsible for piloting the project in the right direction and acting as a bridge in communicating between Q-ICT and the teachers. He also schedules meetings with the teachers and Company Supervisors if needed.
- The author as the developer is focused on doing the tasks that he himself created.

- The company supervisor as the SCRUM Master, is focused on facilitating the backlog among the developers, and making sure that the Scrum team carries out every sprint perfectly.
- Product Owner defines the why is it worth to develop the product, who it is for, and what features, requirements should it contains, and to main the product backlog.

Reporting

The author will meet at least once a week for a Sprint Review and Sprint Retrospective (usually on Monday at 09:30, at the beginning of a new sprint) with the Company Supervisor to discuss progress for individual tasks and overall project progress. Moreover, both members get to speak up about their concerns about how progress has been made so far. This is to ensure that there are no unspoken conflicts or issues. This meeting usually takes about an hour. All this will be taken down from the 8 work hours that are required by the author daily. Using the weekly quota, the author can then plan and adjust the needs of the project going forward. Furthermore, the author has decided to use Teams, Outlook, and WhatsApp as the main ways of communication. Outlook e-mail has been chosen for official contacts between the author and the School Supervisor, with MS Teams as an alternative.

Furthermore, a Daily Standup with the Company Supervisor (and additional interns at his disposal) will be held every working day, with the maximum duration of 30 minutes. This usually takes place at 09:30. This Daily Standup is where the author would state what has been done the previous day, what are his plans for this day, and discuss any potential impediment that he is facing. This method will ensure transparency, collaboration, and adaptability within a real working environment, ultimately contributing to the successful delivery of the sprint goal working as a team.

Initially, during the research and documenting phase, a hybrid project planning method will be used. Whenever work must be done, tasks will be created and assigned to one or more team members along with a deadline. To keep track of current and past tasks, a SCRUM environment chosen by Q-ICT itself will be used, along individual tracking of hours and progress. At least 2 weekly meetings will take place where the tasks will be discussed, and new tasks will be added.

During the period when the SCRUM method is being used, the author is expected to keep his tables detailing the work hours up to date in his Monthly Reports, as well as accurately noting down what feature he has worked on when in the burndown charts. Once a sprint concludes, the sprint is reviewed together with the Company Supervisor and new user stories for the following one are selected based on the product backlog. This backlog is also updated with any new tasks that may have popped up during the sprint and unfinished tasks are updated and reentered.

Finally, the author came to an agreement to use GitHub as the digital tool for collaborating within the project group. This will enable a smooth workflow for the team members, as well as securing older product versions in case of a mishap. This platform will be able to show the working progress of the project, as well as keep track of the SCRUM tasks by using its Project feature. This method of work will be implemented during the developing stage of this project.

Chapter VIII - Planning and Scheduling

As effective planning and scheduling are essential for delivering a high-quality software application within budget and on time, by taking a structured approach to project planning, the development can be ensured that it is working efficiently and effectively towards achieving the project objectives.

Below the prioritization of project deliverables, estimation of their timeframes and a Gantt chart depicting set time frames are described.

The graduation work placement project's duration is 90-99 working days, which makes up for about 18 weeks. The graduation project is split up into 2 parts, the Research phase, and the Realization phase. The Research phase is where the author will work more into the necessary documentations required as stated in the module book, and in the end will produce a Report. The Realization phase is where the author is more focused on the technical coding part of the project, working closely with the Company Supervisor in SCRUM and in the end will produce a working end-product as stated in the Graduation Project Description document.

Because of the nature of planning which is for time estimation and serves as a roadmap for the project, the author will assume that each phase of the project will take about 9 weeks, thus making up the total number of 18 working weeks. Please keep in mind that this plan is just for guiding the author through each phase of the project lifecycle and ensuring that all parties (Q-ICT and NHL Stenden) are aligned with the project goals, timeline, and expectations. Some future changes might be required as the author sees fit, as one cannot predict encountering random unpredictable risks, thus rendering the process development of this graduation work placement project.

Research Phase (26/February/2024-29/April/2024)

Code	Task	Weeks	Can only take place after:
A	Graduation Work Placement Description	1	-
B	Non-Disclosure Agreement	1	-

C	Graduation Project Notification Form	1	-
D	Project Plan (draft version)	2	A, B, C
E	Research Proposal	2	A, B, C
F	Planning	2	A, B, C
G	Research Thesis Report Paper Document (draft version)	6	A, B, C, D, E, F
H	Monthly Reports	1-9	-
I	Interview Transcripts	5	-
J	Test Plan	7	G
K	Functional Overview (FO)	8	D
L	Software Requirements Specification (SRS)	8	D
M	Product Requirement Specification (PRS)	9	D

Realization Phase (29/April/2024-08/July/2024)

Code	**Task**	**Weeks**	**Can only take place after:**
A	Definition of Done	1	-
B	Product Backlog & Epics	2 - 9	-
C	Sprint Backlog	3	-
D	Research Document (final version)	8	G
E	Monthly reports	1-9	-

F	Sprint tasks	2-9	-
G	End-product	9	A
H	Unit test	8-9	G
I	Test Case document	9	G
J	End-presentation (colloquium)	10	G

It is important to note that unexpected hurdles may arise during the execution phase, leading to deviations from the original plan. These deviations may arise due to factors such as prolonged feedback and approvals from clients or situations where activities require more resources than initially anticipated as well as plain lack of knowledge. Therefore, it is crucial that the author and the planning remain flexible and provide enough room to accommodate changes as required to ensure successful project completion and school and Q-ICT satisfaction.

Chapter IX - Cost and benefits

This chapter will discuss various costs and benefits relating to this project.

9.1 Cost

For this project the budget is set around 20€ per month in terms of resource consumption on the Firebase environment. However, should the author require anything in terms of software and/or cloud access, Q-ICT may provide this.

Building the project should not prove expensive since the product is a software application. The expenses may come with hosting and maintenance of the product, for which the author is not responsible.

9.2 Benefits

The project will provide benefits in terms of allowing Q-ICT, as well as its clients, to have data visualisation of the gathered data for internal use or clients' usage. This functionality will ultimately enable the QaaS app to monitor their internal APIs and enable more automation as the new functionality will be a template for integrating their future APIs.

As for the author, building a web dashboard for a real client will provide the author with real-world experience and an opportunity to apply their knowledge and skills in a practical setting.

Chapter X – Risk Analysis

This chapter handles the possible risks that may be encountered during the project and ways to handle the problems. This is visualized on the table below.

Risk	Possibility	Possible Outcome	Prevention	Measure taken
Graduation Work Placement is not finished on time	Likely	The author will be forced to take extended periods in his study in NHL Stenden Emmen	Not possible	
Contracting COVID-19	Less likely	The author will have to quarantine for 2 weeks, and the project will be set back.	Maintain 1.5-meter distance and use face masks when needed	The author will have to work during down time not to fall behind, getting vaccines and respecting measures
Common illness	Less likely	The author will be set back for a moment.	Good health care and communicate properly with the Company Supervisor	
Tasks not finished on time	Possible	Set back until tasks are finished	Proper planning and time management	Sprint reviews, plan next sprints differently, issue warnings if other causes

Insufficient task	Less likely	Set back until task schedule is done correctly	Actively ask members for document / peer review, proof-reading.	Plan next sprint accordingly
Lack of technical knowledge	Less likely	The author might not be able to realize certain parts of the project.	Research proper technical skills needed, practice these and ask for assistance if needed	Research what skills the team is lacking,
Loss of data	Unlikely	Loss of data/files. The amount depends on the most recent back-up.	Frequent back-ups / version control	Restore files from latest back-up / revert to an earlier version
Insufficient testing	Possible	End-product of lesser quality	Structured Test Plans and sufficient time to complete the tests	Review test reports and run tests again
Hardware malfunction	Unlikely	Set back until hardware is replaced	Actively check if hardware is in working condition	Order a new part as fast as possible and replace it
Lack of proper communication with the	Possible	This will slow the development of the project.	Frequent communication with the School Supervisor, follow up	Weekly meetings, multiple ways of communication and reaching out

School Supervisor			emails, messages through WhatsApp, calling on the phone in case of emergency	
Security issues	Unlikely	Personal information could be stolen.	Testing for security issues.	Consultation regarding Secure Programming and following best security practices
Security issues on the libraries used	Possible	Update on the libraries, or change the libraries	Use newer, community trusted libraries, with frequent updates.	Check for updates and be sure that the libraries used can be applied in the future.
Additional research required by the stakeholders	Possible	The progress will be slowed down, causing troubles with keeping the deadline.	Good communication between the author and the stakeholders.	The author will try to communicate as efficiently as possible with the client to avoid any misunderstanding.
Workload Too Heavy	Possible	Due to the possibility of the author being unfamiliar with some of the subject matter, there is a possibility there may be miscalculations	Reassess progress frequently and communicate any setbacks with the	Plan sprints accordingly and have weekly sprints reviews.

		regarding the sprint planning	Company Supervisor	

Table 2: Risks

Appendix

Gantt Chart