PROJECT PLAN

FONTYS UNIVERSITY OF APPLIED SCIENCES

HBO-ICT: English Stream

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Project plan:	
Title:	**A robot does not receive Corona**
Version:	**3.0**
Date:	**24-09-2020**

Approved and signed by the company tutor:

Date:
Signature:

Approved and signed by the university tutor:

Date:
Signature:

Agreed and signed by the student:

Date:
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07/10/2020

Table of Contents

INTRODUCTION

Now, the Corona virus is raging around the world. In order to slow the spread of the virus, people have to change their way of life. People are working from home, taking classes online and cutting down on unnecessary trips. The epidemic has also had a huge impact on the economy, with restaurants and tourism hit hard and a large number of workers losing their jobs. In order to bring people back to their normal lives, many countries are developing vaccines. But until a vaccine is developed, many countries are rapidly testing the virus to avoid widespread transmission.

SPEKTRAX is a company that has further developed an existing spectrum analysis technology for Corona. With a prototype it can be shown within 2 minutes whether someone is infected or not. With this project we want to create a 100% reliable data system around this application. With a private key (biometric, NFC in passport) a user identifies himself at the device, then the test is taken, stored encrypted and only the user can get the test result with his or his key in a secure environment. The spectrum meter is used for reliable and user-friendly detection of the Corona virus. The project is working on the realization of a privacy-friendly and secure information web platform.

The web platform is able to share the Corona test data to researchers. Those researchers are coming from the government, companies and organizations. All of them become users of web platform. Multiple users has to be authenticated and authorised to access the Corona test data. In addition, the web platform must follow the rule of the General Data Protection Regulation (GDPR). This regulation was put in place to protect the privacy of European Union citizens as it relates to Non-Personal Data and Personal Data that is collected when using data capture entities, including websites. In order to share the data in a GDPR proof way, the web platform needs to apply DataStreams service. Datastreams is a regulatory technology ("RegTech") company, whose intelligent automation & collaboration platform helps organizations to assure high-quality data and compliant data operations. Datastreams service can collect, stream, process and share data – in a simple, ethical and (GDPR) compliant manner. So the data has to go through the DataStreams service then becomes available in web platform. Then multiple researchers that they are authenticated and authorized to access the web platform to check the test data and users agreed on that their data can be shared. With this data, the government, companies or organizations can ensure a safe environment in which no one is infected.

What's more, the concrete question can easily be generalized to other applications in which privacy-sensitive data sometimes has to be shared. For example, taking out a mortgage in Credit Registration Office. That is why we want to create an open standard and platform for the exchange of this type of privacy-sensitive data. The Corona test app is the first application.

The goal of this project plan is to create web platform for compliant, fast and reliable sharing of privacy-sensitive rapid Corona test data. Within this document, the following subjects will be taken into consideration: the project statements, project objectives, project sprints, and the management plan.

PROJECT STATEMENT

Formal Client

Mr. Erdinç Saçan from FHICT is my company tutor with background Master on ICT Business. He is also the project leader of this project. The company SPEKTRAX commissioned him and his group to complete a web platform for ultra-rapid COVID-19 testkit application.

Current Situation

Worldwide work is being done on rapid tests with which Corona virus can be detected. SPEKTRAX is currently developing a nanotechnology based ultra rapid COVID-19 test kit that takes minutes instead of hours with a handheld device. The government, companies and organizations want to get these test data to guarantee the secure environment. The test data is stored only at the data source (cloud of SPEKTRAX) and as long as testers agreed that their data can be shared.

I think there are already some platforms that can store and share sensitive data. But I think the database from SPEKTRAX is going to be very large, because in the future a lot of people is going to do rapid test and all the test data is going to store in the database. If the company SPEKTRAX wants to use another platform, they need to pay a lot of money for sharing data service. What is more, I think most platforms must store data before they can share it, but the company SPEKTRAX does not want to store these sensitive data in the other platforms. They would like to only store the data in their own database.

Consequently, there is a need for a platform can share the test data to researchers. The data must be anonymized, secure, reusable, supports analytics, robust and scalability. Multiple reseachers have to be authenticated and authorised to access some of the data.

Project Justification

Recognizing the demand from the government, companies and organizations, it was decided to develop an application to provide a web platform where they can get valuable information. Every party is going to benefit from this web platform. For example, Airports and the aviation sector can guarantee the safety of travelers. Care organizations in which employees have a lot of contact with others because it can be guaranteed that the employees who are inside are not infected. All contact professions that become possible if there is a guarantee that people are not infected. In the case of contact investigations of GDD, the spread of the contamination can be established and mapped much faster.

The application will have a front-end (client) talks to the backend (server) by using a protocol through the RESTful API. The backend is going to use DataSteams service to receive these calls and call the backing database through TCP to fetch such data and send it back to the frontend. One database is coming from SPEKTRAX which stores test data and the other database stores the data about researchers detailed information. So reserachers can access the test data or register a new account or login the web platform through frontend.

Project Goal

The goal of the task is to develop a secure, open web platform for capturing and sharing sensitive personal data and corona related information flows. The web platform is suitable for all parties who want to share sensitive personal data in a secure and reliable way. This may involve medical data, but also personal financial or legal data. Like other entrepreneurs, DataStreams can also develop services on this basis. The platform provides open source to

facilitate the creation of standards, which also increases the opportunities for commercial applications, thereby increasing the economic impact.

PROJECT OBJECTIVES

Project Product

The proposed product is to develop a secure, open platform for capturing and sharing sensitive personal data and corona related information flows.

The following functionality must be implemented:
- The web platform is able to get Corona test data from data source (SPEKTRAX). Data is shared only if the tester agrees to share it.
- The web platform is able to store researchers' detail information after researchers register a new account.
- The Corona test data has to go through DataStreams service and become available for the government, companies and organizations.
- Researcher has to be authenticated and authorized to access some of Corona test data.
- At some point in time researchers' authorization can be revoked.

Project Deliverables and Non-Deliverables

Deliverables for Fontys
- Project Plan
- Project Final Report
- Day Declaration Form
- Assessment Form
- Personal Evaluation Form
- Final Presentation

Deliverables for Company
- Project Plan
- Project Final Report
- Final Presentation
- Running and working web platform application
- The source code of the project
- Test report

Non-Deliverables
- Training

Project constraint

Software implementation
- The front-end framework for web application should be developed by ReactJS.
- The back-end framework for web application should be developed by Javascript.
- The main programming language of the project is JavaScript.
- For the project development, the integrated development environment is Visual Studio Code.
- The web platform needs to integrate with DataStreams service and cloud of SPEKTRAX.

Design
- The web pages (functionalities) should be user friendly

Time
- The duration of the internship is 5 months (from 7th of September to 25th of January), so the web platform must be finished before the end of the project

Project risk

The risks of the project are assessed below.

Risk	Description	Likelihood	impact	Mitigation Strategy
Missing Deadline	Not all of the discussed functionality might be implemented before the deadline	Medium	Medium	At the beginning of each week the intern will put some deadlines for the tasks for the week and don't try to miss them
Changes	Changes might be requested and might not be possible to implement because of various reasons (e.g. not enough time, not applicable)	Medium	Low	The changes will be discussed in details and either rejected or required resources will be provided in order to accomplish the changes
Accuracy	Needed functionality won't be 100% precise	Medium	Medium	Each functionality will be tested before starting another task and if there is some inaccuracy coming from the source code, the intern will rewrite the part where the problem is
Implementation Error	System might encounter errors	High	Low	Different approach will be used as the intern tries not to miss the scheduled deadline
New technology	The technology of datastream is new for me	Low	Low	Contact the Datastreams technician and get help immediately if I have a problem

Data leak	Sensitive data might be leak	Medium	High	Using appropriate Identification methods and Encryption methods to avoid data leak

PROJECT RESEARCH

Main reseach question

How to create a web platform to share people's Corona virus test data?

Sub research question

- ➢ How to capture the Corona test data from SPEKTRAX?
- ➢ How can we share in a GDPR proof way the data of various medical tests among researchers?
- ➢ Which real time data processing architecture are we going to use?
- ➢ How to establish the connection between front end, back end of web platform and database from SPEKTRAX?
- ➢ How can multiple researchers be authenticated and authorized to access Corona test data?
- ➢ How to revoke the researcher's authorization in some way?
- ➢ What needs to be done to make the web platform generalizable to other business uses?

Research methodology

In the report a 'DOT' research framework will be used. This framework consists of 5 strategies. They are,
Library: Information gathering from resources.
Field: Information gathering the project itself.
Workshop: Implementation of the product.
Lab: Product testing.
Showroom: Product demonstration.

Sub question	Method
How to capture the Corona test data from SPEKTRAX?	Library & Field
How can we share in a GDPR proof way the data of various medical tests among researchers?	Library & Field
Which real time data processing architecture are we going to use?	Library & Field
How to establish the connection between front end, back end of web platform and database from SPEKTRAX?	Field & Workshop & Lab
How can multiple researchers be authenticated and authorized to access Corona test data?	Field & Workshop & Lab
How to revoke the researcher's authorization	Library & Field & Lab

in some way?	
What needs to be done to make the web platform generalizable to other business uses?	Workshop & Showroom

PROJECT PHASING

The project is divided into 6 phases, each phase resulting in different deliverables. Phase 3, 4 and 5 will be repeated in each one of the iterations. The iterations take place between Phase 1 and Phase 6. A general phasing overview can be found below.

Phase 1: Initiation

During the Initialization phase, I am going to create the first version of project plan, the scope and the goals of the project will be described and determined. Since this project is about developing a web platform with DataStreams service, it is good to know the technology of DataStreams.

Phase 2: Research & Analysis

Research and analysis about the project is needed for the implementation phase to make sure the used technology and methodology are the right one. I'm using the DOT Framework approach for it.

Iteration One

Phase 3: Design
During the design phase, I am going to use data processing architecture – Kappa. the Kappa architecture is composed of only two layers: stream processing and serving. The stream processing layer runs the stream processing jobs. The stream processing job is run to enable real-time data processing. The serving layer is used to query the results.

Phase 4 & 5: Implementation and Testing
During the implementation phase, I am going to use backend with DataStreams service to define and capture the data from database. Then configure and manage privacy and compliance levels to anonymous or personal data according to data regulations liks the GDPR. Then choose the destinationa and stream the data to the frontend of web platform. Then the web platform is able to share the real time data to researchers.
During the testing period, I am going to perform testing which is based on the use case and debug if needed. Then show the result to company mentor.

Iteration two

Phase 3: Design
During the design phase, I am going to design to two pages. One of the page is used for reaserchers to register a new account. The other page is used for researcher to login the web platform. I am also going to create a database. After researchers register a new account, all the detail information about reserchers will be store in the database.

Phase 4 & 5: Implementation and Testing
During the implementation phase, I am going to work on the front-end framework to realize the design of web pages. The front-end also contains router and component to send http requests to backend. The back-end server that has a router, controller, and model to process the request and query the database server. The database server processes the query, and

the back-end server will grab the data and sent it back to the front-end as a JSON response. The front-end will now have the data and show the data to researchers.

During the testing period, I am going to perform testing which is based on the use case and debug if needed. Then show the result to company mentor.

Phase 6: Finalization

This is the last period of the project. This is the final product of this project will be given to the client. Besides that, final report will be completed and a presentation of the project result will be presented. The software products are stored in a GIT repository and all other relevant documentation in the project wiki.

Detailed Planning

Phase	Activities	Deliverables	Deadline
Initiation	Create a project plan	Project plan	02-10-2020
Research & Analysis	Research DataStreams technology	Use cases	02-10-2020
Design	Create data process architecture	Data process architecture	18-10-2020
Implementation	Get data from data source	Web platforms shares the data	06-11-2020
Testing	Testing the source code	The web platform is running without any error	27-11-2020
Design	Design web pages and database	Design for Register page and login page	04-12-2020
Implementation	Create register, login page and database	Register page, login page and database	18-21-2020
Testing	Testing the source code	The web platform is running without any error	01-01-2021
Finalization	Finish the final report	Final report and final product	15-01-2021

TEST APPROACH AND CONFIGURATION MANAGEMENT

Test approach and strategy

I will test several functionalities behaviors in the web platform by following functional and nonfunctional requirements.
Non-Functionality Test
1. User Interface Testing
Evaluates the overall performance of the system. Key elements are as follows:
- The application must have good compatibility with distributed environments.
- The application must be user-friendly, so the user selections must be smooth and direct the users into the wanted pages in no more that two clicks.
- The application will have an easy to understand GUI, the buttons, selections etc must be recognizable by the user. so the mechanism would not take a lot of time.

2. Transferring DataEvaluates the GUI. Key points are:
- Data is traveling correctly between backend and frontend.
- GUI should not annoy the user or gets difficult to understand.

Functionality Test
1. DataStreams service is able to capture the data.
2. DataStreams service is able to configure and manage the data.
3. DataStreams service is able to stream the data to web platform.
1. User is able to register a new account.
2. User is able to login a new account.
3. User is able to access the shared data.

Test environment and supplies

We recommend systems that meet or exceed the following specifications:
- Processor (CPU): Intel Core i5 1.7ghz
- Operating system: Microft Windows 8 or above
- Memory: 8GB RAM
- Monitor/Display: 14 " LCD monitor

Configuration management

The source code are stored in a gitlab repository. In the process of developing the web platform, I am going to create several branches. Each branch is going match each functional requirements. After that, all the branches will be merged and push to the master branch. So the master branch contains the final project product.

The integrated development environment is Visual Studio Code (version 1.49). I decided to use visual studio code as my code editor because it has many features and advantages. One of the features is that it has a built-in terminal, this feature makes it very convenient since there is no need to switch windows or alter the state of an existing terminal to perform a quick command-line task. Simply hit Command/Control+Shift+P to bring it up. Another feature, it has Git built-in, which makes it easy to instantly see the changes you're making in the project. On the left of the sidebar, the user can find the Git icon where the Git can be initialized, as well as perform several Git commands such as commit, pull, push, rebase, publish, and look into the changes within the file.

For the front- end development I decided to use ReactJs (version 16.13.1) because it is a highly used open-source Javascript library, It helps in creating impressive web apps that

require minimal effort and coding. The main objective of ReactJS is to develop User Interfaces (UI) that improves the speed of the apps.

For the back-end development I decided to use NodeJs (version 12.18.4 LTS) because it is a Javascript runtime environment that helps in the execution of JavaScript code server-side. It is an open–source cross-platform JavaScript that helps in the development of real-time network applications.

For the database I decided to use MySQL Workbench 8.0 CE. It is a very popular database. It provides data modeling, SQL development, and comprehensive administration tools for server configuration, user administration, backup, and much more. The database is going to connect with NodeJs and perform the CRUD operations.

MANAGEMENT PLAN

Money

The amount that is spent on this project is given on the following list

Description	Amount
Student Trainne Expense	+/- €450 / Month
Travel Expense	+/- €0 / Day
IDE	+/- €0
Laptop	+/- €0 (Owned)

Skills

The skills required to finalize the project are as follow:
Web framework knowledge
Experience in working with Database and SQL
Critical thinking
Responsible, punctual and professional attitude
Good time management
Good communication skills

Methodology

The project follows an Agile approach (SCRUM). The entire development process is divided into iterations (or sprints) that last from one to few weeks each. At the beginning of each week, the team (or individual) sets a goal that is desired to be achieved.

Each iteration contains a piece of work that is mainly independent. Instead of doing a lot of tasks in a short period of time, this approach supports the developer to create smaller pieces of work, but to conduct tests and to verify the quality constantly.

Quality

In order to deliver a good quality end product, there are some Key Performance Indicators that need to be followed. They are,

Periodic Meeting with the Client
Periodic meeting is purposed to understand the client's needs and what can be improved from previous implementation.

Fulfill the Client's Requirement
Implement the requirement that is given by the client. A testing would also be useful to avoid error during the demo and delivery. It helps to keep the client satisfied.
On Time Delivery
By delivering the product on time, it gives the client time to try and review the application before the next periodic meeting

Information

The information will be communicated amongst the client, the company tutor, the intern and the university tutor. Verbal communication will be used for critical decisions and tasks, whereas written reports and weekly updates will be sent via email.

The communication between the student and the university tutor will be done weekly via email. In case of emergency, a meeting will be organized between the participants.

Role	Project Plan	Process Rreport	Prototype	Documentation
Intern	Ex/Dr/S/Di			
Company Mentor	R			
University Mentor	R			

Legend (Di = Discuss, A = Approve, S = Send, R = Receive, Dr = Draw up, Ex = Execute)

Time

The project lifespan is five months. The project is split into 5 phases: Initiation, Design, Implementation & Testing, Finalization. The project requires 40 hours of work each week.

The official duration of the internship is 20 weeks.
Start date: 07-09-2019
End date: 25-01-2021

Organization

Below is an outline of the organizational chart of the project.

University tutor	Mieke van Vucht
Project leader/Company tutor	Erdinç Saçan
Fontys (FHICT)	Bartosz Paszkowski
	Gerard Schouten
	Mark de Graaf
	Teade Punter
Fontys (JHAF)	Colette Cuijpers
	Noortje Lavrijsen
DataStreams (cooperator)	Bob Nieme
SPEKTRAX (Stakeholder)	Johan Pieter Verwey