**Project Charter**

**PRJ4D – Group 9**

**Abstract**

The goal of this project is to find out why creating a Sales Product Analytics and Benchmarking website is best done using Scrum. Our small team benefits from Scrum's efficiency and adaptability, which enable us to work well together and respond rapidly to changes. Prioritizing key features and focusing on our goals are our main concerns to increase the satisfaction of the stakeholder and quality of the end-product. Setting up a database, integrating APIs, and putting features in place for efficient sales data visualization are important steps. Weekly meetings and code reviews are used to guarantee quality. Stakeholder satisfaction, data accuracy, visual aid effectiveness, and security compliance will all be used to make sure we stay on track for our goals. This project provides insightful information about implementing agile approaches in practical development scenarios.

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# **Introduction**

In this project we will be working with an ecommerce company to make an analytics dashboard. This company is based in Maastricht with over 40 years of experience in the textile business. At first they started of as a big warehouse close to the center of Maastricht as a B2B business selling their own brands to other businesses that would sell the product on their webshop as well as on a market & other places online. After this they started selling their own excess products that did not sell well or that they had some leftovers of online. This turned out great and quickly increased in revenue. Most of their B2C sales come from the marketplace bol, but their goal is to expand to sell more on their own webshop as well as other marketplaces such as amazon to increase revenue. Their logistics skills are well developed but they lack knowledge of marketing & interpreting their data. Every season they make new products in the hopes that it’ll sell well B2B as well as B2C, but they’ve never bought in a product that sold well again. That is where we come in, helping them make sense of their data as well as develop a machine learning algorithm to predict future sales will be really beneficial for this company. This algorithms will be the main focus of this project & will consume most of our time. Sales of pajamas fluctuate a lot, there are several factors influencing the sales of pajamas. Holidays & the time of the year play a big role, but other factors include the day of the week, the weather, the area in the Netherlands & the state of the economy.

The company mainly sells their products in the Netherlands but 25% of their sales also come from Belgium. Right now they’re using EffectConnect to make a connection between their systems such as their CMS called lightspeed (in the future Shopify), their B2B management software called Exact online & bol. Helping them make a better connection will safe them a monthly expense that would otherwise go to EffectConnect & will help us get better quality data. That’s why in the first few weeks we’ll make sure that we can replace EffectConnect for them. This will give us more experience working with their data & gaining more insight into what type of data is important.

# **Timeline**

Week 1 & 2: Discuss project idea’s, list out pros & cons of each project idea & think about ways on how to execute on the idea such as which tech stack we would be using, how reasonable the project idea is, how beneficial this idea can be for that company as well as other minor factors.

Week 3 & 4: Start working on the project charter, talking to the ecommerce company about how we can add the most value to their company, what kind of data would be the most beneficial for them & have more knowledge about ecommerce in general. During these 2 weeks we went more in depth into what specifically we were going to build as well as deciding the tech stack that we will be using for this project.

Week 5 & 6: We started with getting a domain & our initial next js website. We had little to no experience working with API’s, so in these 2 weeks we tested a lot with the data that we could gather via the bol & lightspeed api. The company had to get information on the sales per country & per sales channel, so gathered this information using both api’s and cleaned out the data so we could give them an accurate revenue number per sales channel & country for the first quarter of the year.

Week 7: We finished the project charter as well as learning building with the next js framework for the website & connecting a database to the website. We had another meeting with the company talking about all the deliverables that we are going to implement as well as setting expectations as to what we can & won’t implement during this project.

Project week 1: In this week we will focus on displaying useful information on the website such as sales per day/month/year, average order amount graph over time, sales per product for a period of time, amount of orders per day graph as well as a map of the Netherlands with dots giving more information on where the most sales in the Netherlands comes from.

Project week 2: In this week we will build a data stream going from bol to shopify, the business currently uses lightspeed for their webshop but in the future they want to use shopify because of it’s ease of use. Because of this we want to make sure all the product information, orders, stock levels are already accurately displayed on the shopify platform.

Week 8 & 9: In this period we have enough knowledge & experience working with their data to start working on the main task for this project which is building the algorithm. In this period we will get more information on this algorithm as well as making a first implementation of this algorithm.

Week 10 & 11: Working on more specific features on the website, such as a button that will download an excel sheet with sales for that specific sales channel & country for that quarter. This will automatically update every quarter. Another feature we will be working on is when a product is not in stock & set to LVB (logistiek via bol) on the marketplace, it checks if the webshop does still have any stock for this product left and it switch from lvb to logistics by seller. Meeting with the company to talk about the current progress & planning of the work for upcoming weeks.

Week 12, 13 & 14: Working on other features that will be displayed on the website, the first feature is calculating the amount of commission paid to bol for selling products on their website. Depending on the product that you sold you have to pay a percentage of the retail price to bol as well a fixed price which is 0,85€ in most cases. The percentage differs but in most cases this is around 12%. Another feature is looking at how many inventory gets added per drop to the webshop, is this more or less than the amount of orders during that period? Is inventory in warehouse increasing or decreasing?

Project week 12: Working on features that are not finished yet & polishing up the website, working on devOps, making it easy to find certain information on the website.

Project week 13 & 14: If all the features that we said we would implement are done then will be working on graphs that will keep track on ad spend across all sales channels such as google ads & sponsored products on bol. In this week we have a final meeting with the business to talk about all the features that we implemented and feedback on how this project went.

Business case

1. Identify the problem.

There are a lot of different software companies out there that show sales data, and even on the software services that the company makes use of they display certain data. On Lightspeed you get a graph that says the sales for a certain month for a most 12 months ago. On bol you can get more information, but this is only data for the sales of the marketplace, the ecommerce company doesn’t only sell on the marketplace. There are other issues with the data being displayed by bol as well such as not showing how many sales per product there are, instead they show the sale for a certain size per day and not for all the sizes together. Which would be way more helpful for the ecommerce company.

Other software companies that the business works with are EffectConnect & Exact online, both do not show specific data that could help the business grow.

1. Need or opportunity

There is a lot of need for specific data that could help a certain ecommerce business. The kind of data needed to help that business grow differs a lot. For pajamas, which is heavily influenced by the season, would profit from other data then for example a company that sells air fryers.

1. Expected benefits and outcomes

* Connection between webshop & marketplace: We want to build an api connection that gets orders from the marketplace & displays them in one place such as the content management system that they’re using right now called Lightspeed. Our goal is to replace EffectConnect, this will include syncing stock levels, prices & other product information such as images, product descriptions and attributes.
* SARIMA machine learning algorithm: This algorithm makes predictions for future sales based on available data. This algorithm will consider external factors such as vacation dates, weather, day of the week, season & other factors.
* Analytics dashboard: On the website we will display information about sales, and more in-depth information to help the company make better decisions.

# **Approach**

Why Scrum is the optimal choice for building our sales product analytics and benchmarking site.

This chapter talks about why the Scrum methodology is the most effective approach for developing our analytics dashboard. We chose Scrum instead of Waterfall or other methodologies because of its adaptability & efficiency making it perfectly suited to the needs of this project and our small team.

Benefits of Scrum for our project:

Adaptability to evolving needs: Building a data platform involves some unknowns. We’ve never worked on with API’s & have never worked with the next js framework so this will be a new challenge for us, because of our little experience with this tech stack adaptability is important so that we can spend more time on tasks when needed.

Faster delivery and user feedback: It’s important that the stakeholders are content with the results during any period of time during the project. For this reason, Scrum is beneficial to prioritises the delivery of working features in short sprints. This allows us to quickly launch a basic version of the site with core functionality. Early feedback from the stakeholders from these sprints is invaluable in prioritising features and refining the overall user experience.

Efficient workflow for a small team: With a limited team size, clear communication and collaboration are critical. Scrum encourages this through daily stand-up meetings and sprint reviews. Team members stay on the same page, identify roadblocks early and address them together, resulting in a more efficient development process.

Reduced risk and early course correction: Scrum focuses on delivering working features in increments. This allows us to identify and address potential issues early during sprints, minimising rework and development costs associated with significant changes later in the project & making sure that the stakeholders can already use certain features that are made early on in the project.

Continuous improvement based on data: The nature of Scrum allows for continuous improvement of the site. Data collected throughout the development process helps us future optimize the machine learning algorithm.

# **In Scope and out of Scope**

During this project we can only focus on a certain amount of features to show data within the analytics dashboard. There are endless amounts of features that could be implemented, therefore it’s important to put boundaries in place and decide on the most important features that we can implement. These are features that will give the most value to the stakeholders as well as making sure that that certain feature can be done within the given timeframe.

The goal of this project is to help the ecommerce company make additional profits through analysing their data. This is not a clearly defined objective, so our real objective will be to deliver a fully functional website with the necessary API connections from the marketplace & content management system, graphs showing insights in sales & the amount of units sold per product as well as a database that will save all the incoming data. With the main focus of this project being the machine learning algorithm SARIMA to predict future sales with the help of external data.

Most of the data that we will be using besides the data gathered for the algorithm will be through the respective API’s. We will acquire customer reviews for the seller (ecommerce company) via the marketplace API. These are only the seller reviews, not the product reviews. We can only access the product reviews via web scraping, which is not within the scope of this project.

Web scraping on bol is allowed and is being used by other software companies such as Boloo to gather data but because this would be a new learning objective for us since we’ve never done web scraping, we will not include web scraping in our project.

# **Deliverables**

Website: The website comes with a domain name hosted on AWS amplify or vercel which has specialized servers needed to make use of Server-Side Rendering & Incremental static regeneration which will be useful to load the website faster & over time display the graphs. SSR & ISR are possible with the next js framework which we will be using for this project to make the frontend of the website.

API connection: We will have working api connections with data streams in both directions, from the CMS to the marketplace & vice versa to sync data between channels.

Database: The PostgreSQL saves all the data that the business gathers. This includes most of the information that can be gathered through API as well as downloadable data on the website itself gathered in csv format. This will save historical data which will be useful for the company in the future so that when they switch from CMS they will still have all the data gathered over the years saved up in their database.

Features: All the features that we will be making throughout this project will be stored in the GitHub repository which they will have full control over.

During the second project week we will be making a better version of EffectConnect for this business specifically. EffectConnect offers a lot of features that the company doesn’t make use of and never will be making use of. EffectConnect costs over 300 € a month but this could easily be replaced by an API connection of their own that gets hosted in the cloud such as AWS. For this feature we will start by getting a one way connection to the content management system Shopify that they’ll be using in the future.

This means that all the data on the marketplace bol will be send to shopify. Depending on what type of data is being send, the repetition amount changes, for example orders on bol will be send to Shopify every 5 minutes. But syncing all content will not be as important and does not need to be as frequent, for this reason we will be syncing this to Shopify every hour. We will have an option on the website to disable or enable certain data streams such as not syncing product descriptions because this will be bad for SEO. Data duping will hurt both product pages their performance in the google search engine.

The mapping of certain information will be displayed under its own section on the website with a search bar to search for certain barcodes or SKU’s to be able to see what kind of data is getting synced for that product.

Whilst using Postman to test our API connection to Lightspeed & with the help of the lightspeed documentation we could test the orders stream for this API. Using the orders stream we can gather all the orders during Q1 & filter out unpaid orders, order where the product was send retour & orders where we don’t know of if DHL delivered the package because of bad tracking. After filtering out the bad data we can future filter data per sales channel such as sales for bol only & then filter per country to get an accurate amount of revenue for that quarter which is needed for accounting.

This process will be done in de background when clicking on the button “Belgische Lightspeed orders Q1” on the next js website. The same goes for the other sales channel & for the Netherlands.

Displaying amount of sales will be done using both API’s and combining the all the order values for that period together. This feature will include being able to switch from sales per day to sales per week & even sales per year. You can also compare the sales to another period of time, for example checking if today’s sales is more than the sales of last year in that day. We get this data via the orders stream , more specifically the inclusive btw order value.

Displaying amount of sales for a certain period of time for a certain period is another feature that we will include on the website, this feature is important so that the company knows their best sellers and is able to buy their best sellers again because they know that the product sells well. The reviews gathered throughout the period that the product was being sold on the marketplace still exists and will be shown again when there is stock for that product online.

# **Quality Management**

To ensure that our dashboard meets the expected performance, reliability, and usability, we apply the following quality management practices.

Quality Assurance: Every line of code is reviewed by a team member to ensure quality and to ensure we keep up our coding standards.

Quality Control: Weekly meetings are held to review progress and discuss sprints. In addition, we will have three stand up meetings per week to answer questions, discuss challenges, and reassign work if needed.

Definition of "done": Our DOD is about peer review of code, testing to verify logic, and clear, descriptive comments. We will also use standardized naming conventions to make the code easier to read (camel case + descriptive names for classes, functions, and variables.

# **Success Criteria**

The following must be provided to call the project successful:

A satisfied stakeholder and a working dashboard. We want to reach these goals by taking care of the following: data accuracy and integrity, data visualization effectiveness and security and compliance.

Data accuracy and integrity: Being able to assess the accuracy and integrity of the data in the dashboard. Making sure to be able to reliably be able to detect if an error occurred to prevent data errors from occurring.

Data visualization effectiveness: Evaluating the effectiveness of data visualization techniques used in the dashboard. We will measure by clarity and the ability to gain insights effectively to users.

Security and compliance: Verify that the dashboard keeps up to a certain level of security and compliance standard.

# **Work Break Down Structure**