**Project Charter**

**PRJ4D – Group 9**

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# Introduction

In this project, we will be working with an ecommerce company called “pyjamaonline” 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 off 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 and 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 comes 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 and interpreting their data.

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 beneficial for this company. These algorithms will be the focus of this project and will consume most of our time.

Sales of pajamas fluctuate a lot, there are several factors influencing the sales of pajamas. Holidays and 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 and the state of the economy. The company mainly sells their products in the Netherlands, but 25% of their sales also come from Belgium.

# Business Case

# Approach

In the following article, we will explain 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 Sales Product Analytics and Benchmarking site. While waterfall and hybrid approaches have their advantages, Scrum is best on adaptability, continuous improvement and 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. User needs and functionality can adapt based on data gathered during development. Scrum's nature allows us to easily apply these changes into sprints, ensuring the site remains relevant.

Faster delivery and user feedback: Scrum 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 user feedback 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.

Continuous improvement based on data: The nature of Scrum allows for continuous improvement of the site. Data collected throughout the development process (user behaviour, feature usage) informs future sprints.

## 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 to 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.

GitHub is used for collaboration, branches are set up for isolated tasks and are reviewed when merged.

**Coding Readability:**

* Using indentations to mark the beginning and end of control structures to specify code blocks.
* Writing compact code and avoiding longer functions. Ideally, each function should have a single task.
* Using the DRY (Don’t Repeat Yourself) principle. Automating repetitive tasks whenever necessary.
* Avoiding deep nesting. Keep code straightforward and easier to follow.
* Keeping the length of lines manageable for better readability

**Standardizing Headers:**

* Having consistent headers in each module containing:
  + Module Name
  + Creation Date
  + Creators Name
  + Summary of Functionality
  + Functions and Variables

**Unique Identifiers:**

* Assigning meaningful, unique names to each variable.

**Comments and Documentation:**

* Writing comments to explain complex code. Making sure that the reader gets guided through the logic and algorithm.

**Exception Handling:**

* Use try-catch blocks to manage exceptions.

**Peer Review:**

* **Conducting peer reviews for all code changes**

**Testing and Verification:**

* Writing unit tests to verify logic of each module and function.

**Closing Notes:**

* Test all code on real devices, browsers and on live servers to ensure it is working as intended.

## 3.2. 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 many 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 and content management system, graphs showing insights in sales and the amount of units sold per product as well as a database that will save all the incoming data.

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.

During week 6 of the project, we will make sure we have a working API connection, we’ve set up our database as well as having a web hosting service to host the domain name. We’ve gathered a lot of information about the company and what kind of data would be valuable, but we’re still thinking of ways to solve some of the problems they are having such as not knowing if they should keep more stock for B2C clients because the profit margins are way higher as well as other issues that could potentially be solved with the software application.

In week 7 we’ll implement our first feature which is to show a graph with the amount of sales for that day, in the deliverables section we’ll go into more detail on these features mentioned here in the timeline.

In week 8 we’ll give more insights on these sales, particularly the amount of revenue separated for the webshop and marketplace. The amount of profit can be calculated as well with information given from the company such as transport fees, cost of goods, commission, software costs etc.

This will be helpful to know how much discounts will do for profit, because software costs, warehousing costs and employees have a set monthly price, increasing sales with lower profit margins could be a way to increase profits with more information on this data.

During the 9th week we’ll track warehousing stock so we have more insights if the amount of stock is going up or down overall, each month new products will be published on the marketplace but the amount of stock for these products is never the same because of the pre-sale for B2B only clients. Tracking this will give more information on how much inventory to buy in.

# Deliverables

Website:

* Domain hosted on AWS Amplify or Vercel.
* Server-Side Rendering (SSR) & Incremental Static Regeneration (ISR) using Next.js for fast loading and graph display.

API Connection:

* Bidirectional data streams between the CMS and marketplace.
* Sync data between channels.

Database:

* PostgreSQL database to store all business data.
* Includes API-gathered data and downloadable CSVs.

Features:

* All features stored in a GitHub repository.
* Custom version of EffectConnect to replace expensive service: 1. One-way API connection to Shopify for syncing Bol marketplace data. 2. Orders sync every 5 minutes, content sync hourly. 3. Option to enable/disable specific data streams to avoid SEO issues.
* Data mapping with search bar for barcodes/SKUs.

Sales Data Analysis:

* Using Postman and Lighspeed API to filter and gather order data.
* Display sales by period (day, week, year) with comparison to previous periods.
* Feature to identify best sellers for restocking.
* Review display for products when restocked.

# Success Criteria

The following must be provided to call the project successful:

A satisfied stakeholder and a working machine-learning algorithm. 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. How will this be done?

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

# Work Break Down Structure

A diagram of a company

Description automatically generated

# Project Team

Our project-team and what areas we focus on:

Afonso Fernandes da Cruz: Frontend, Machine-learning algorithm

Daniel Schmidt: Analysis (creation of various artefacts), Organisation (Task creation and distribution, meetups, repository-management), Frontend (website), Machine-learning algorithm (using openweathermap.org and python)

Mathijs Vandooren: Backend, Frontend, DB, Machine-learning algorithm