



FEUP **FACULDADE DE ENGENHARIA**
UNIVERSIDADE DO PORTO

Information Systems, MIEIC

Tempura

P3 - 360° Company Dashboard

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1. Project Overview

With this project we strive to create a web application that is able to present information and key performance indicators (KPIs), relevant to any business, in a more comprehensive and straightforward manner.

In order to achieve our main objective we intend on implementing a dashboard that focuses on displaying all kinds of data using a more graphical centered approach, from high level information about a company, such as its sales or purchases, to more specific information, for example a product's price variation.

This web application interoperates with the Primavera ERP and is meant for the company's internal use.

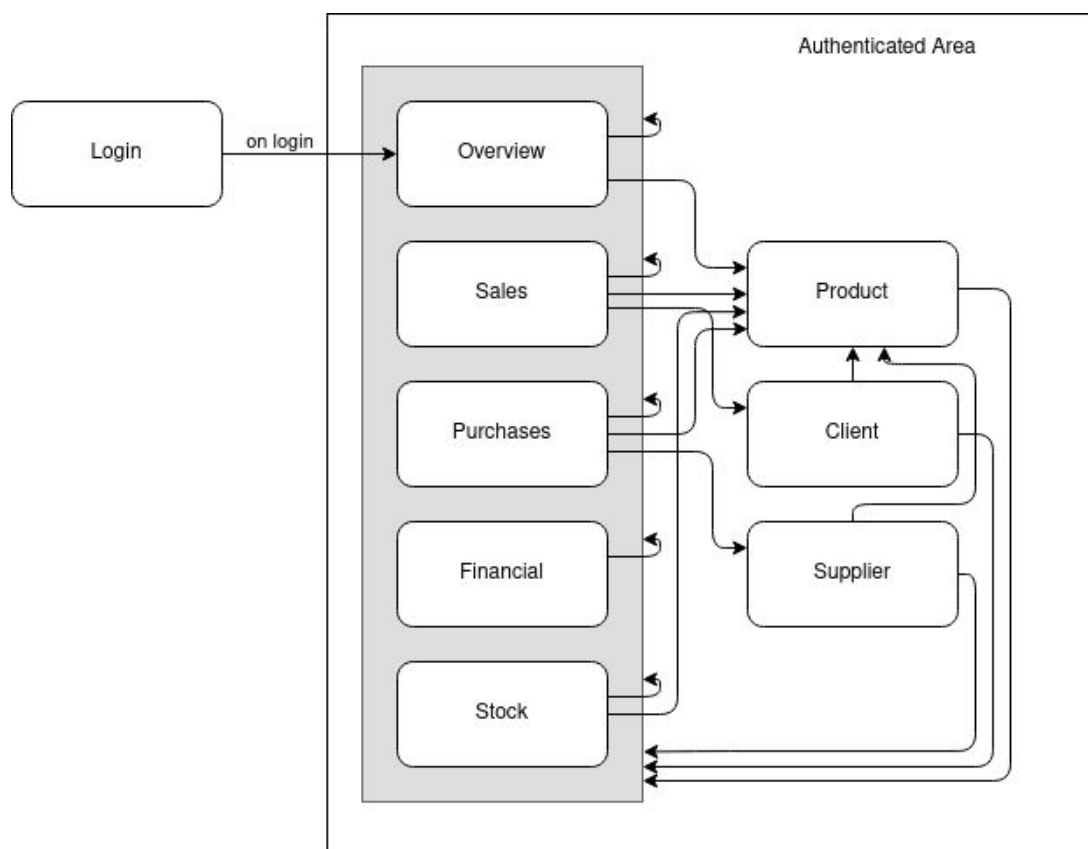


Figure 1: Sitemap of the project

To achieve this, we conceptualized a resale's company called *Tempura*. It focuses on bringing fresh, traditional asian food products to Europe. It acquires big amounts of nourishment products (such as Sushi, Hosomakis, Yakisoba, ...) and resells them to big food chains. *Tempura* owns a warehouse where it stores the food articles bought from foreign suppliers, before reselling them.

This type of company lets us understand basic industry behaviours and financial strategies. We will now define the company's sales and purchases procedures.

Tempura sales procedure begins with the reception of a contact from a client requesting an order of a certain product in a certain amount. After checking if there is enough product in stock, the client is contacted by the company informing the sale value of the requested product and the estimated delivery time. The client then decides whether or not to confirm the order. If the order is confirmed, the client will be sent the billing information and the shipping process will be initiated.

The company's purchase procedure starts as soon as a restock of inventory is necessary. Several suppliers are contacted and rates are requested. After analysis, the best supplier is chosen and the order is processed.

2. Functionalities

Overall content inventory of the project, sitemap

2.1. Overview

Functionality	Description	Value
Total Profit	The amount of profit made so far.	Understand how much the company has profited.
Total Revenue	Value of the total sales volume.	Understand how much the company has received.
Total Costs	Value of all the company's expenses and costs.	Understand how much the company has spent.
Liquidity	The company's liquidity value.	Understand how easily the company can meet its financial obligations with the liquid assets available.
Revenue Growth	Graphic displaying the revenue growth of the company.	Understand the company's revenue evolution over time.
Top Selling Products	List of the top selling products.	Understand which are the most bought products.

Table 1: Functionalities present on the Overview core view

2.2. Sales

Functionality	Description	Value
Total Revenue	Value of the total sales volume.	Understand how much the company has received from sales to clients.
Costs of Goods Sold vs Sales Revenue	Two line graph of cost of goods sold and sales revenue through time.	Understand the profit margin of the company throughout the time of operation.
Top Clients	List of clients top clients.	Understand who are the most lucrative clients.
Average Sales Price	Average value of sales.	Understand what is the average client's purchase value.
Top Selling Products	List of the top selling products.	Understand which are the most bought products.

Table 2: Functionalities present on the Sales core view

2.3. Purchases

Functionality	Description	Value
Total Cost of Goods	Value of the total purchase volume.	Understand how much the company spends on purchases from suppliers.
Top Products Purchased	List of the top purchased products.	Understand what are the most purchased products.
Top Suppliers	List of the top suppliers.	Understand what suppliers the company purchases more inventory from.
Best Supplier Region	Pie chart of suppliers by their regions.	Understand where your stock is coming from.

Table 3: Functionalities present on the Purchases core view

2.4. Financial

Functionality	Description	Value
Revenue Growth	Graphic displaying the revenue growth of the company.	Understand the company's revenue evolution over time.
Accounts Receivable	Credit supplied to clients.	Understand how much money the clients owe to the company.
Accounts Payable	Amount of money owed to suppliers.	Understand how much liabilities the company has to its suppliers.
Total Profit	The amount of profit made so far.	Understand how much the company has profited.
Balance Sheet	A table presenting the company's balance sheet.	Understand the company's financial status.

Table 4: Functionalities present on the Financial core view

2.5. Stock

Functionality	Description	Value
Total Value of Assets in Stock	Value of the assets in stock.	Understand how much all the items currently in stock are worth.
Inventory Turnover	Number of times the inventory is replaced in a year.	Understand how efficiently the company can convert its inventory into sales.

Average Inventory Period	Average number of days the company takes to sell all current stock.	Understand how efficiently the company can convert its inventory into sales.
Product List	Table that lists all the products in stock with relevant information about each product.	Understand how many units of each product are in stock, as well as their ids, purchase and resale values and units sold.
Average Sales Volume	Average number of units sold in a determined accounting period.	Understand how many units the company sells per accounting period.

Table 5: Functionalities present on the Stock core view

2.6. Product Drilldown

Functionality	Description	Value
Information	Product's important information and a detailed description.	Understand what kind of product is being looked at.
Units Sold	Number of units sold in a given time period.	Understand how well a particular product is doing.
Units in Stock	Number of units currently in stock.	Understand the need for the company to acquire more stock of a certain product.
Average Price	Average price throughout time.	Understand the average cost of the product to the company.
Average Retail Price	Average retail price throughout time.	Understand the revenue that this product provides to the company.
Average Profit Margin	Average profit margin throughout time.	Understand the profit margin that this product has given the company.

Table 6: Functionalities present on the Product Drilldown core view

2.7. Supplier Drilldown

Functionality	Description	Value
Information	Supplier's important information and a detailed description.	Understand what supplier is being looked at.
Total Purchases	Total number of purchases from that supplier.	Understand the volume of stock purchased from the supplier.

Accounts Payable	Amount of money owed to that supplier.	Understand the company's liabilities to this supplier.
Top Purchased Products	List of the top purchased products from that supplier.	Understand what the most common products purchased from this supplier are.

Table 7: Functionalities present on the Supplier Drilldown core view

2.8. Client Drilldown

Functionality	Description	Value
Information	Client's important information and a detailed description.	Understand what customer is being looked at.
Total Sales	Total number of sales to that client.	Understand the volume of sales made with this client.
Accounts Receivable	Amount of credit supplied to that client.	Understand how much this client owes the company.
Top Sold Products	List of the top sold products to that client.	Understand what products are most commonly bought by this client.

Table 8: Functionalities present on the Client Drilldown core view

2.9. Other Functionalities

Functionality	Description	Value
Login/Logout	Users can login and logout.	Allow the users to access the dashboard.
Import SAF-T	Import a SAF-T file and extract the present information.	Allow the user to import the information contained on a SAF-T file.

Table 9: Other functionalities

3. Information Architecture

In this section we will cover in more detail the content present in each coreview. In all of the presented pages, it is possible to access the sidebar which allows the user to access the other core views, import a SAF-T and logout.

When first accessing the website, a login page is displayed and the user will not have access to the core views until it is logged in.

Although the date picker front-end component was implemented and it is present on the core views, the functionality was unfortunately not finished and it is not possible to choose the dates.

3.1. Overview Core

The overview core is the landing page of this website after login and provides the user with general and important information about the company. In this page it is possible to get a global view of the state and performance of the business, by means of several Key Performance Indicators (KPIs) such as Total Profit, Total Revenue and Total Costs, as well as a list of the company's top selling products.

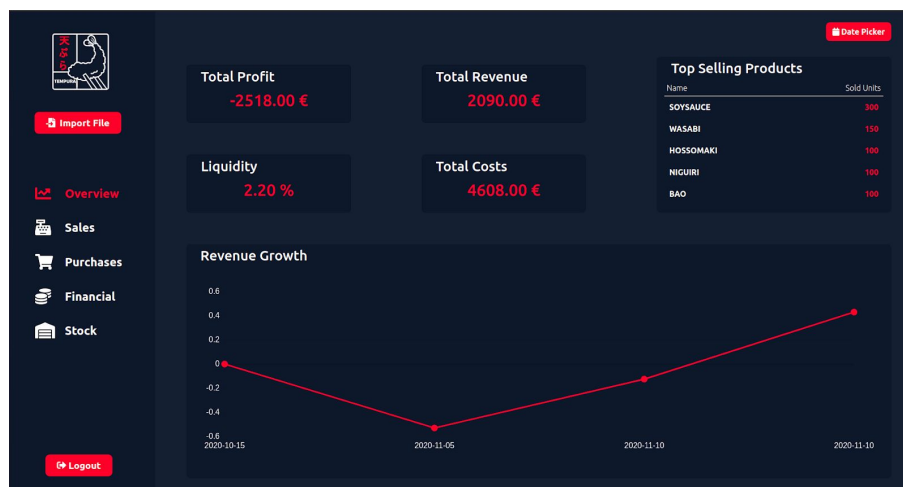
It is also possible to access the page of a product with more detailed information (by clicking on an item of the top selling products table).

USER AND BUSINESS GOALS

- company overview (Profit, Revenue, Costs, Growth...)
- view to be used as management tool
- quick overview of the state and performance of the company

INWARD PATHS

- Login
- Logo Button
- Left Side Menu
- URL
{https://tempura/overview}



OUTWARD PATHS

- Provide the user with a global view of the company in a given period of time
- Changing the viewing period (year)
- Export analysis
- Drilldown to know more on Products
- Access to the left side menu

ELEMENTS OF THE CORE

- KPI_001(KPI) | Total Profit
- KPI_002(KPI) | Total Revenue
- KPI_003(KPI) | Liquidity
- KPI_004(KPI) | Total Costs
- KPI_005(KPI) | Revenue Growth
- LIST_001(LIST) | Top Selling Products

3.2. Sales Core

The sales core presents an overview of the sales of the company, granting the user some more concrete information related to them. This information is conveyed by the means of Key Performance Indicators (KPIs), such as Total Revenue and Average Sales Price, as well as a list of the top selling products and a list of the company's best clients. There is also a line graph showing the relation between cost of goods sold and the sales revenue.

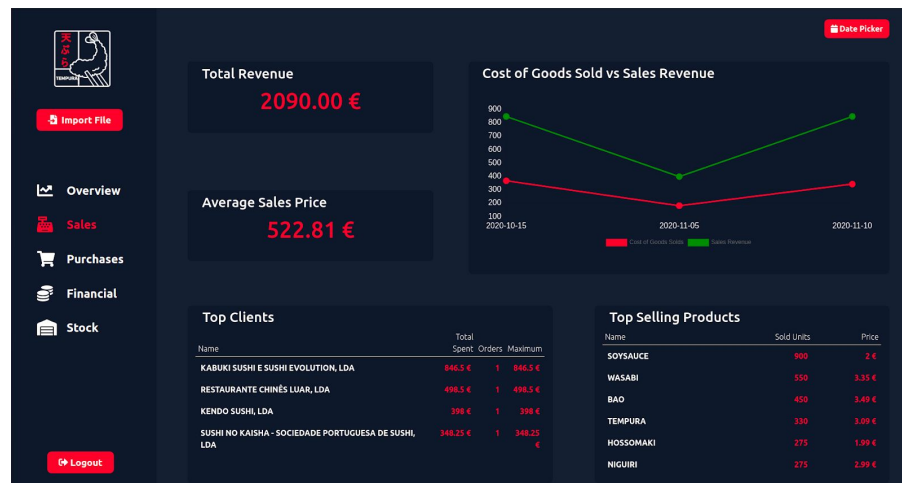
It is also possible to access the page of a product with more detailed information (by clicking on an item of the top selling products table) and the page of a client with its information (by clicking on an item of the top clients table).

USER AND BUSINESS GOALS

- Sales overview
- View to be used as management tool

INWARD PATHS

- Left Side Menu
- URL
{<https://tempura/sales>}



OUTWARD PATHS

- Provide the user with a more concrete view of a company's sales, as well as additional relevant information (top customers, top products sold)
- Changing the viewing period (year)
- Export analysis
- Access to the left side menu
- Drilldown to know more on Products and Clients

ELEMENTS OF THE CORE

- KPI_001(KPI) | Total Revenue
- LIST_001(LIST) | Top Clients
- LINE_001(LINE) | Cost of Goods Sold vs Sales Revenue
- KPI_002(KPI) | Average Sales Price
- LIST_002(LIST) | Top Selling Products

3.3. Purchases Core

Through the Purchases coreview, the user can have a more detailed view of the purchasing process. The user can, for example, consult with which supplier he has been spending the most money, as well as the top most Purchased products.

More information regarding purchases are conveyed by means of Key performance indicators(KPI), such as the Average Profit margin per Supplier, as well as who is the supplier with whom they obtain the most profit. Through a Pie chart it is also possible to see the geographical distribution of all suppliers.

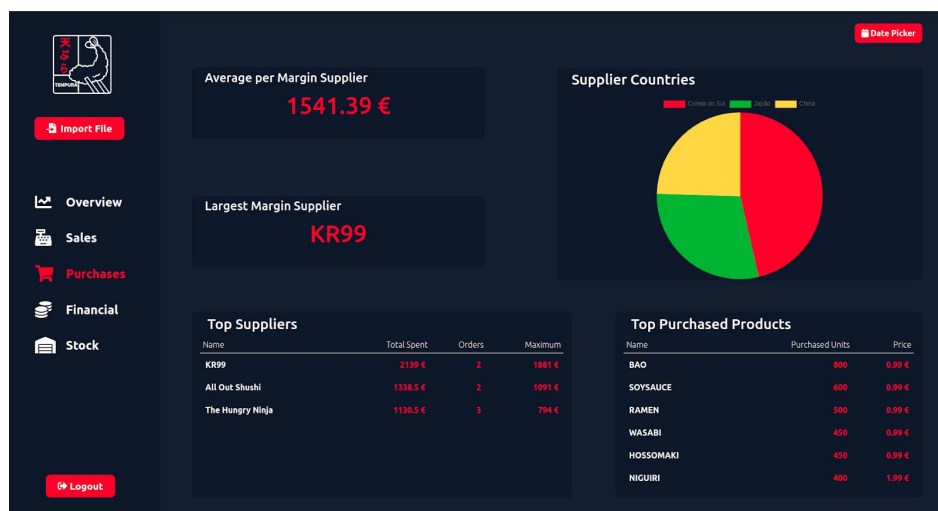
Through this core the user can also click on the name of each Supplier and Product and have more detailed information about each one.

USER AND BUSINESS GOALS

- Purchases overview
- View to be used as management tool

INWARD PATHS

- Left Side Menu
- URL
{<https://tempura/purchases>}



OUTWARD PATHS

- Provide the user with a more concrete view of related purchases, as well as additional relevant information (top suppliers, top products purchased)
- Changing the viewing period (year)
- Export analysis
- Access to left side menu
- Drilldown to know more on Products and Suppliers

ELEMENTS OF THE CORE

- KPI_001(KPI) | Average Margin per Supplier
- KPI_002(KPI) | Largest Margin Supplier
- PIE_001(PIE) | Supplier Region
- LIST_001(LIST) | Top Suppliers
- LIST_002(LIST) | Top Purchased Product

3.4. Financial Core

The Financial core view allows the user to have a more detailed knowledge about the company's expenses and revenues, through the visualization of the Balance sheet and the Income Losses Statement. This information can be imported into the application through the accounting SAF-T provided in Moodle.

USER AND BUSINESS GOALS

- Financial overview
- View to be used as management tool

INWARD PATHS

- Left Side Menu
- URL
{<https://tempura/financial>}

The screenshot displays a web application interface for financial management. On the left is a dark sidebar with a logo and navigation menu. The main content area is divided into two columns: 'Balance Sheet' and 'Income Loss Statement'. The 'Balance Sheet' column shows 'Assets' with a sub-section 'Current Assets' containing items like Inventory, Biologic Assets, Clients, Government and Other Public Entities, Subscribed and Unpaid Capital, Other Accounts Receivable, and Deferrals. Below this is 'Non-Current Assets' including Tangible Fixed Assets, Investment Properties, and Goodwill. The 'Income Loss Statement' column lists various revenue and expense items such as Sales and Services, Operating Subsidies, Imputed Gains/Losses, Variation in Production Inventories, Work for Own Entity, Cost of Goods Sold, Supplies and External Services, Personnel Expenses, and various impairment and provision adjustments. A 'Date Picker' button is located in the top right corner of the main content area.

Balance Sheet		Income Loss Statement	
Assets		Sales and Services	
Current Assets		161834.4 €	
Inventory	5346959.76 €	Operating Subsidies	0 €
Biologic Assets	0 €	Imputed Gains/Losses of Subsidiaries, Associates and Joint Ventures	0 €
Clients	3278394.88 €	Variation in Production Inventories	0 €
Government and Other Public Entities	282632.24 €	Work for Own Entity	0 €
Subscribed and Unpaid Capital	0 €	Cost of Goods Sold and Materials Consumed	0 €
Other Accounts Receivable	0 €	Supplies and External Services	-379610.18 €
Deferrals	13331.1 €	Personnel Expenses	-15718.17 €
Financial Assets Held for Trading	0 €	Impairment (Losses/Reversals)	0 €
Other Financial Assets	0 €	Impairment/Inventory Adjustments (Losses/Reversals)	0 €
Non-Current Assets Held for Sale	0 €	Impairment of Accounts Receivable (Losses/Reversals)	0 €
Other Current Assets	0 €	Provisions (Increases/Decreases)	0 €
Cash and Bank Deposits	178813.04 €	Impairment of Non-Depreciable/Amortizable Investments (Losses/Reversals)	0 €
Sum	9098331.02 €	Other Impairments (Losses/Reversals)	0 €
Non-Current Assets		Fair Value Increases/Decreases	0 €
Tangible Fixed Assets	21612851.33 €	Other Income	-48.74 €
Investment Properties	0 €		
Goodwill	0 €		

OUTWARD PATHS

- Provide the user with a more detailed and in-depth view of a company's finances
- Changing the viewing period (year)
- Export analysis
- Access to left side menu

ELEMENTS OF THE CORE

- LIST_001(LIST) | Balance Sheet
- KPI_002(KPI) | Accounts Receivable
- KPI_004(LINE) | Revenue Growth
- KPI_001(KPI) | Total Profit
- KPI_003(KPI) | Accounts Payable

3.5. Stock Core

The stock core page focuses on displaying the user a list of the items available in stock and information about inventory. Here the client can see a lot of KPI, such as the total assets in stock, the inventory turnover, the inventory period and the average quantity sold.

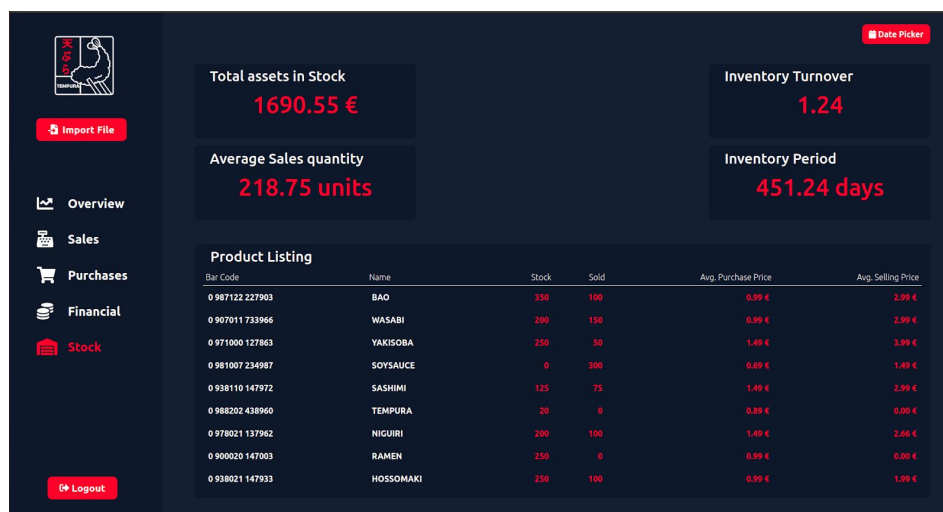
Through the product listing, you can access a product drilldown by clicking in its name. For each product in stock you can see its name, the quantity in stock, the amount of items sold, the average price bought from suppliers and the average price sold to clients.

USER AND BUSINESS GOALS

- Stock overview
- View to be used as management tool

INWARD PATHS

- Left Side Menu
- URL
{<https://tempura/stock>}



OUTWARD PATHS

- Provide the user with a more detailed view of the inventory that the company has, as well as additional relevant information for its management (inventory turnover, inventory period)
- Changing the viewing period (year)
- Export analysis
- Access to left side menu
- Drilldown to know more on Products

ELEMENTS OF THE CORE

- KPI_001(KPI) | Total assets in Stock
- KPI_002(KPI) | Inventory Turnover
- KPI_003(KPI) | Average Sales quantity
- KPI_004(KPI) | Inventory Period
- LIST_001(LIST) | Product Listing

3.6. Product Drilldown

The product drilldown page displays information about a particular product. It has some KPIs such as the number of total units sold, the units that are in stock, the average purchase price from suppliers, the average sold price to clients and the average profit per unit.

There is also a card containing the name of the product, the description, the main supplier providing it (it displays the supplier that we got the most units from) and its barcode.

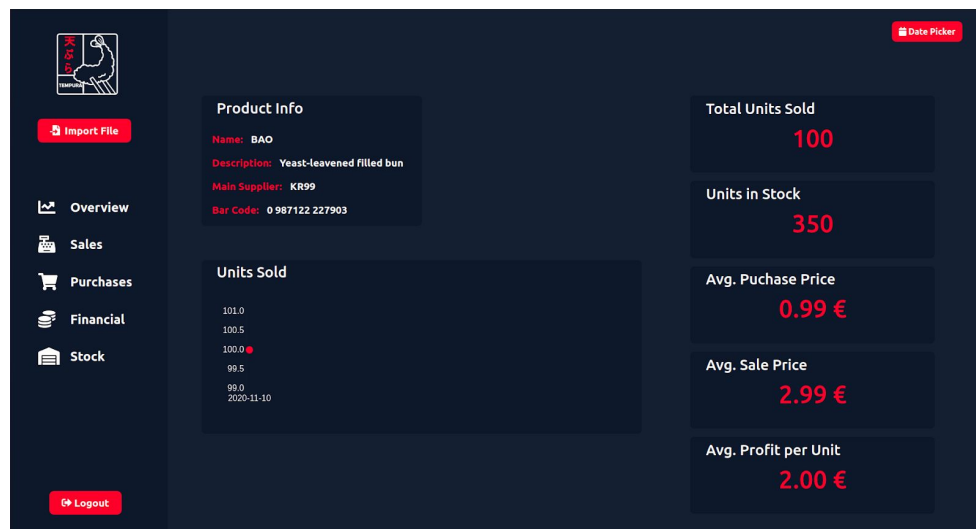
The graph displays the units sold over time (the user can select the range of days in the date picker).

USER AND BUSINESS GOALS

- Product overview
- View to be used as management tool
- View detailed Product's information

INWARD PATHS

- Top Selling Products: Overview Core
- Top Selling Products: Overview Core
- Top Purchased Products: Overview Core
- Product Listing: Stock Core
- Top Products Purchased: Client Drilldown Core
- URL
{<https://tempura/product/id>}



OUTWARD PATHS

- Provide the user with the details of the products that the company sells and buys
- Changing the viewing period (year)
- Export analysis
- Access to left side menu

ELEMENTS OF THE CORE

- CARD_001(CARD) | Product Info
- KPI_001(KPI) | Total Units Sold
- KPI_003(KPI) | Avg. Purchase Price
- KPI_005(KPI) | Avg. Profit per Unit
- LINE_001(LINE) | Units Sold per Month
- KPI_002(KPI) | Units in Stock
- KPI_004(KPI) | Avg. Sale Price

3.7. Client Drilldown

The client drilldown view presents the user with useful detailed information about a company's client. It will display the client's own information (entity, name, country, etc.) as well as a list of the client's top purchased products, the total amount of sales to this client and its accounts receivable.

From this page it is also possible to access the view of a product with its detailed information (by clicking on an item from the top products purchased table).

USER AND BUSINESS GOALS

- Client overview
- View to be used as management tool
- View detailed Client's information

INWARD PATHS

- Top clients:
Sales Core
- URL
{[https://tempura/
client/id](https://tempura/client/id)}

Name	Purchased Units
SOYSAUCE	100
WASABI	100
HOSOMAKI	50
NIGURI	50
SASHIMI	50

OUTWARD PATHS

- Provide the user with the information of the clients that generate the most profit for the company.
- Changing the viewing period (year)
- Export analysis
- Access to left side menu
- Drilldown to know more on Products.

ELEMENTS OF THE CORE

- CARD_001(CARD) | Client Info
- KPI_001(KPI) | Total Sales
- LIST_001(LIST) | Top Products Purchased
- KPI_002(KPI) | Accounts Receivable

3.8. Supplier Drilldown

The supplier drilldown view presents the user with useful detailed information about a company's supplier. It will display the supplier's own information (entity, name, country, etc.) as well as a list of the supplier's top sold products to the company, the total amount of purchases to this supplier and its accounts payable.

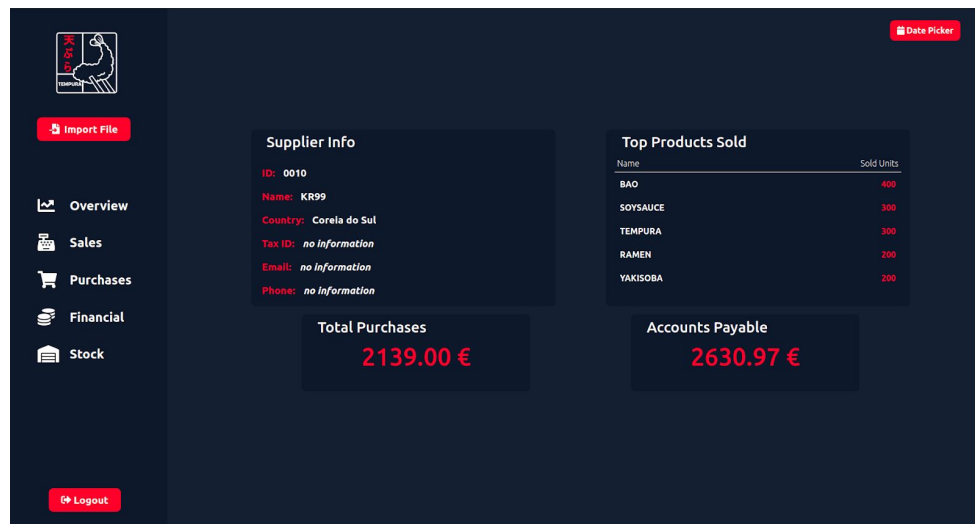
From this page it is also possible to access the view of a product with its detailed information (by clicking on an item from the top products sold table).

USER AND BUSINESS GOALS

- Supplier overview
- View to be used as management tool
- View detailed Supplier's information

INWARD PATHS

- Top Suppliers:
Purchases core
- URL
{<https://tempura/supplier/id>}



OUTWARD PATHS

- Provide the user with the information of the suppliers with whom he most interacts
- Changing the viewing period
- Export analysis
- Access to left side menu
- Drilldown to know more on Products.

ELEMENTS OF THE CORE

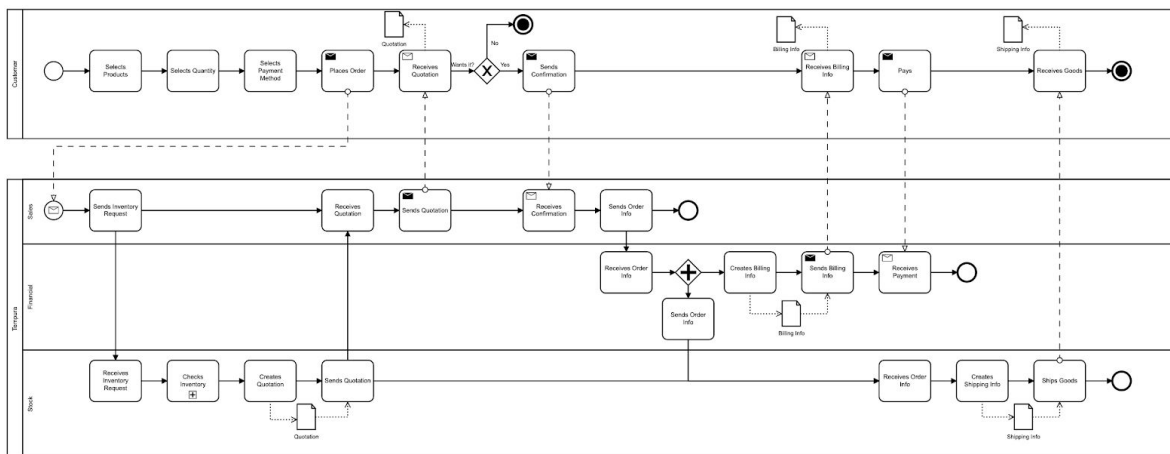
- CARD_001(CARD) | Supplier Info
- LIST_001(LIST) | Top Products Sold
- KPI_001(KPI) | Total Purchases
- KPI_002(KPI) | Accounts Payable

4. BPMN Flows

4.1 Sales Procedure

A sales worker from Tempura receives an email from a potential customer asking for a delivery of a certain product with a given quantity and payment method. The sales worker then contacts the Stock department. There, he checks if there is enough stock for the requested products, if not, he gives an estimated time for a delivery request. The sales worker receives a quotation from Stock with the potential order's price tag and estimated time of delivery.

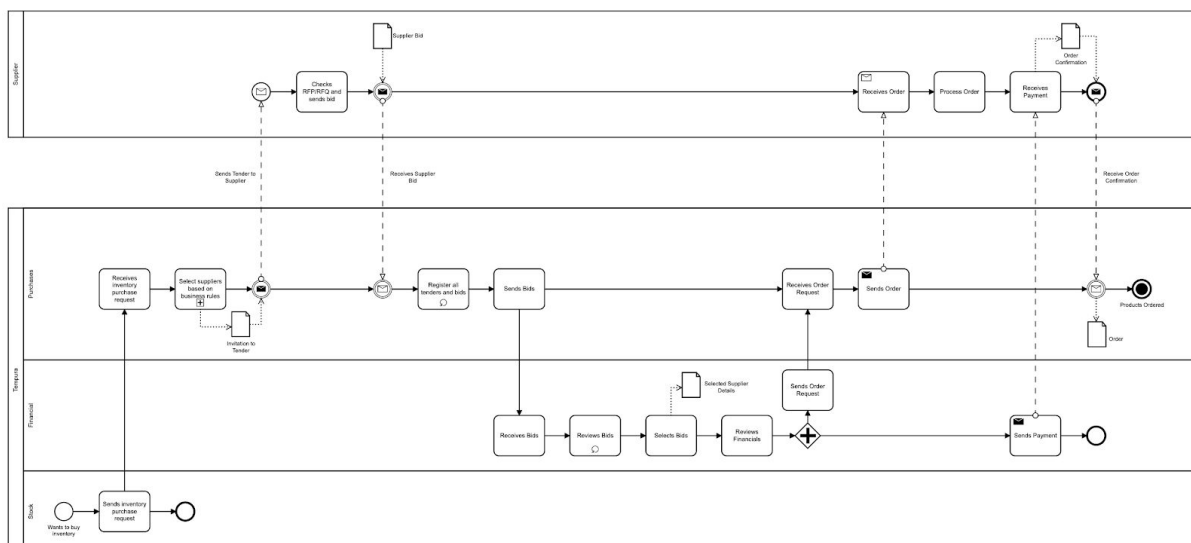
The worker responds to the customer by email with said quotation. The customer then has to decide what to do. Does he want to proceed with the order? If not, the event ends there. If so, he responds, confirming it. The sales worker then contacts the Financial department with the order info needed to pursue with the activity. A financial worker will send the billing info to the client and the shipping info to the Stock department. The stock worker proceeds with the shipping and the goods will finally be sent to the customer.



4.2 Purchases Procedure

A Financial worker can sense that the company will need more inventory in the future and hence, contacts the Purchases department to acquire it. In the same way, after a sales request, a Stock worker can realize that there is not enough stock to complete said sale and will send the same request to Purchases.

The Purchases worker will select some suppliers (based on the company's business rules) and send them tender invitations. After exchanging some emails, the worker will end up with a lot of supplier bids. It will send them to the Financial department to be analysed. The Financial worker will choose the best one and contact Purchases to process the order. The payment is done by the Financial department and the order is processed by Purchases.



5. Planning

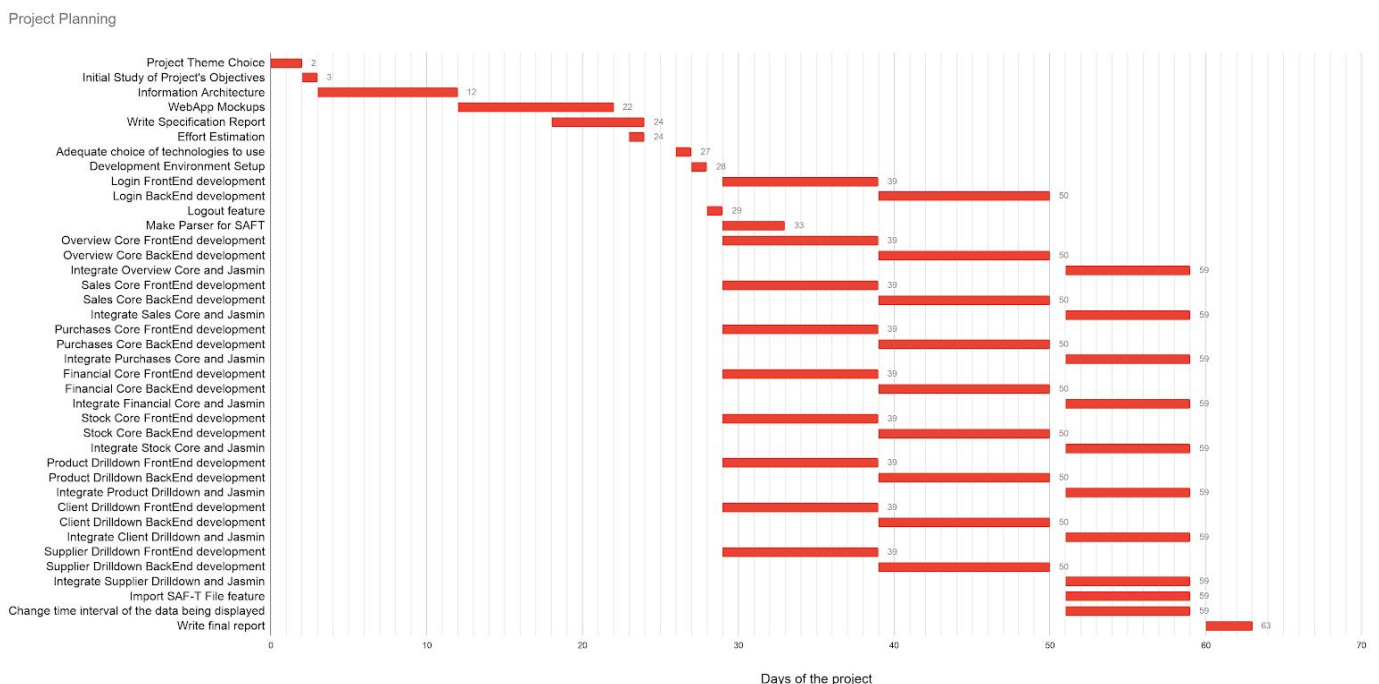
There are two main phases: the specification phase and the development phase.

The main objective of the **specification phase** is to come up with the requirements for the project, this includes the following tasks: effort estimation, website design mockups and information architecture. This phase starts on 18th October and ends on 11th November. Most of the work was done synchronously.

Unlike the first phase, the **development phase** has three milestones:

- frontend development and SAF-T parser (16th November - 25th November)
- backend development (26th November - 7th December)
- jasmin integration, SAF-T import and time window (8th December - 16 December)

Since these are large milestones, all of the work was equally divided amongst the group members and done asynchronously.



6. Final Considerations

We believe that this project contributed to us understanding a little bit more about how the enterprising world works.

We got the chance to interact with *Jasmin* and were perplexed by all of its features and capabilities. Nonetheless, this posed some challenges since none of us had experience dealing with accounting software. Working with big and often confusing amounts of data wasn't easy so we had to work hard for it and, by the end, we felt that some new skills were acquired and new lessons were learned.

Parsing the SAFT files and trying to import them into our database was no easy task. We were very confused by how they worked at first and had to change our parsing technique many times during the project's implementation.

Our system architecture worked very well. React was useful to divide the many components shown in the website (most of them shared the same styling) and save precious time, TypeScript was crucial to prevent common JavaScript mistakes and SQLite allowed us to simply save our parsed SAFTs where most valuable information was saved.

Due to lack of time we had to leave our date-picker feature behind. This would allow the user's to import more than one SAFT file at once, merging their dates together and displaying all those file's information. They could then navigate different time periods using a calendar and analyse more efficiently the company's data and stats.

Summing up, we leave this course's project with a better understanding of how important it is for us to know the meaning of some KPI's. When we graduate we will probably end up working on some company and this knowledge will be essential. Although not everything that was planned made it to the final version, we are happy with the project's results and find the application we have made very useful.