



INTEROPERABILITY

INFORMATION SYSTEMS
2018/2019

INTEGRATED MASTER IN INFORMATICS AND COMPUTER
ENGINEERING

360° Company Dashboard

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1 Project Overview

This project consists in the development of a web application to provide data and key performance indicators (KPIs) relevant to the business. The use of comprehensive visualizations aims to simplify the analysis of the large stream of data inherent to the business, thus easing the decision making process.

The dashboard will present information regarding the financial performance of the company, its sales, its purchases from suppliers, its inventory, and its products' specifications. The app will also rely and inter-operate with the *Primavera* ERP, but all authentication data and KPIs calculations will be handled by our own backend service.

This WebApp is for use internal to the company, and thus should not have pages indexed in search engines, safe for, possibly, the login page.

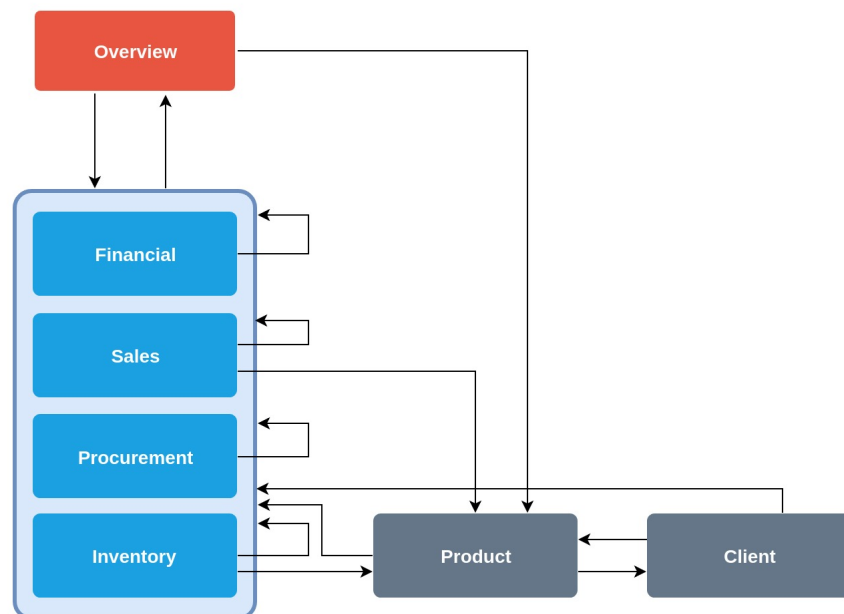


Figure 1: Site map of the project.

2 Functionalities

2.1 Overview

| Functionality | Description | Value | Associated Dashboard |
|-------------------|--|---|----------------------|
| Sales vs Expenses | Graph with the two values against each other. | An overview of financial operation. | CORE_OVER |
| Sales Volume | Graph of the monthly sales volume. | An overview of how well the sales are. | CORE_OVER |
| Accounts Payable | Value currently in debt to the suppliers. | An overview of the procurement liabilities. | CORE_OVER |
| Assets in Stock | Value of the currently held inventory. | Understand how much money is sitting in shelves. | CORE_OVER |
| Top Products | List of the top selling products. | Understand which products the clients buy the most. | CORE_OVER |
| Profit Margin | Indicator of how well we are doing in terms of turning profit. | Understand how much of we earn for every euro sold. | CORE_OVER |

2.2 Financial

| Functionality | Description | Value | Associated Dashboard |
|---------------------------------------|---|--|----------------------|
| Return on sales, assets & equity | A graph with the mentioned metrics plotted against one another. | Presents an overview of the company's financial status. | CORE_ FINANCIAL |
| Average collection and payment period | Descriptors side by side with averages of collection of sales and payments to suppliers. | To understand what type of liquidity we can have with respect to its debts and credits. | CORE_ FINANCIAL |
| Cash Reserve | Current cash in wallet. | Understand to what extent the company can respond to its liabilities. | CORE_ FINANCIAL |
| Debt to Equity | Value for a given time period, to allow some degree of comparison with previous values. | A must-have if the user is to act on loaning necessities/opportunities. | CORE_ FINANCIAL |
| Net & Gross profit margin | Graph of the current and historical gross profit plotted against the net profit. | Instrumental to understand if the profits are actually becoming net earnings or if we need to act on possible abnormal situations. | CORE_ FINANCIAL |
| EBIT/EBITDA | Value of the earnings before interest and taxes and considering depreciation and amortizations. | A common metric to evaluate the performance of a company's core operations. | CORE_ FINANCIAL |
| Accounts Receivable | Credit we supplied to clients. | Understand how much money we are owed, understand our liquidity situation. | CORE_ FINANCIAL |

2.3 Sales

| Functionality | Description | Value | Associated Dashboard |
|-----------------------|---|--|----------------------|
| Sales | A graph of the company's sales volume. | Realise if the company's sales volume is increasing or decreasing. | CORE.SALES |
| Growth | Indicator of the sales volume growth compared to previous time intervals. | Presents a fast way of predicting the company's sales volume behaviour. | CORE.SALES |
| Top Products | List of the top sales completed in the past. | Present information regarding the top sales providing useful comparison data to current sales. | CORE.SALES |
| Cumulative Sales | A cumulative graph about the company's sales volume in the past. | Understand the discrepancy in the sales volume, peaks and stagnation periods between time intervals. | CORE.SALES |
| Sold versus Projected | Doughnut chart with the completed sales and the projected sales. | Realise if the sales are going as projected. Ideally, the doughnut chart is 100% completed. | CORE.SALES |
| Average Profit Margin | Indicator of the average profit obtained in each sale. | Understand how much the company is making in average with each unit sold. | CORE.SALES |
| Sales per Store | List associating each store to its sales' volume. | Understand which stores are selling more and how much are they selling. | CORE.SALES |

2.4 Procurement

| Functionality | Description | Value | Associated Dashboard |
|-------------------|--|--|----------------------|
| Purchase Rotation | A value representing how many days to the next order of the main suppliers (the supplier can be a filter). | At which point a drop in liquidity might be expected due to orders being all concentrated around a point in time or more disperse. | CORE.PROCUR |
| Purchases | A graph of all the purchases from suppliers. | How much money is spent through orders of inventory. | CORE.PROCUR |
| Suppliers | Pie chart of sales percentage grouped by supplier and filtered by the top suppliers. | Understanding about which supplier is contributing more to our sales margin. | CORE.PROCUR |
| Purchases Total | Indicator of how much the company bought to suppliers. | Understand how much money was spent in procurement of products. | CORE.PROCUR |
| Accounts Payable | Indicator of how much the company owes its suppliers. | Understand how much liabilities the company has to its suppliers. | CORE.PROCUR |
| Product Backlog | Indicator of how much of what we bought still hasn't been delivered to us. | Understand what we can expect not to sell because it still isn't in our inventory. | CORE.PROCUR |

2.5 Inventory

| Functionality | Description | Value | Associated Dashboard |
|--------------------------|--|--|----------------------|
| Products | List with search capability of all the inventory products. | Find any company's product and view basic related data, such as units in stock and product name. | CORE_INVENTORY |
| Assets in Stock | Indicator of the total value of the inventory's products and growth compared with previous months. | Understand if the assets' value is having a positive evolution. | CORE_INVENTORY |
| Average Inventory Period | Asset utilization ratio that indicates how long goods remain in inventory or unsold. | Comprehend if the company's good are spending too much time without being sold, therefore losing value. | CORE_INVENTORY |
| Turnover | Ratio showing how many times the company has sold and replaced inventory during the last semester. | Help businesses make better decisions on pricing, manufacturing runs, how to leverage promotions to move excess inventory, and how and when to purchase new inventory. | CORE_INVENTORY |

2.6 Product Specific

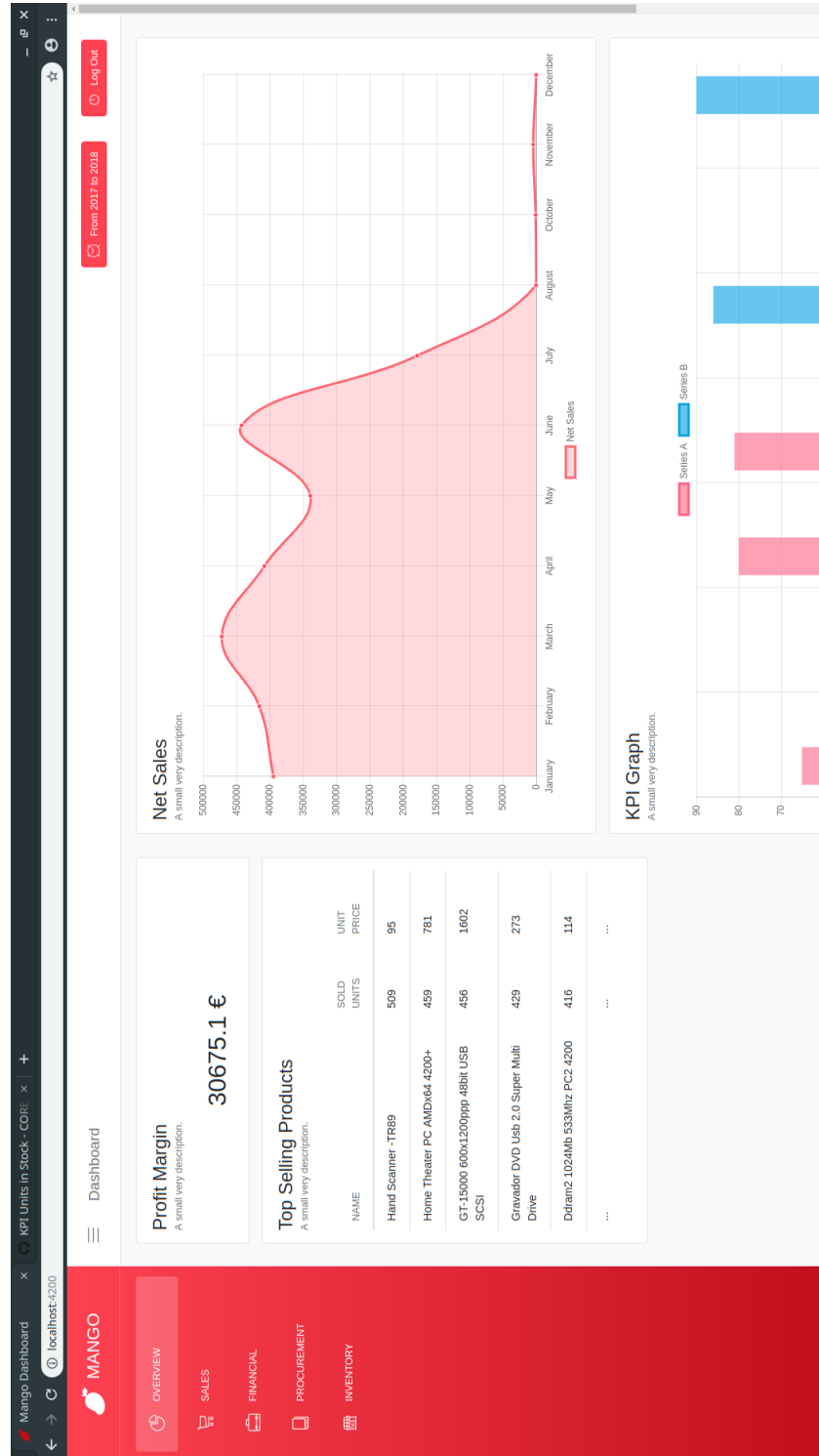
| Functionality | Description | Value | Associated Dashboard |
|---------------------|---|--|----------------------|
| Units Sold | The number of units sold in a given time period. | Conclude about life-time of a given product. | CORE_PROD |
| Units in Stock | Indicator of how many units of the selected product are still in stock. | It's possible to see if a given product represents a lot of cash just sitting tight. | CORE_PROD |
| Profit | A line chart of the profits due to this product. | Understand if a possible change in units sold can be correlated with the profit that arises from said product's sales. | CORE_PROD |
| Product Information | Small product card where the general characteristics can be found. | Easy to understand what kind of product is being reviewed. | CORE_PROD |
| Top Clients | List of clients who have bought the product more times. | Targeted marketing or even promotions. | CORE_PROD |

2.7 Other Functionalities

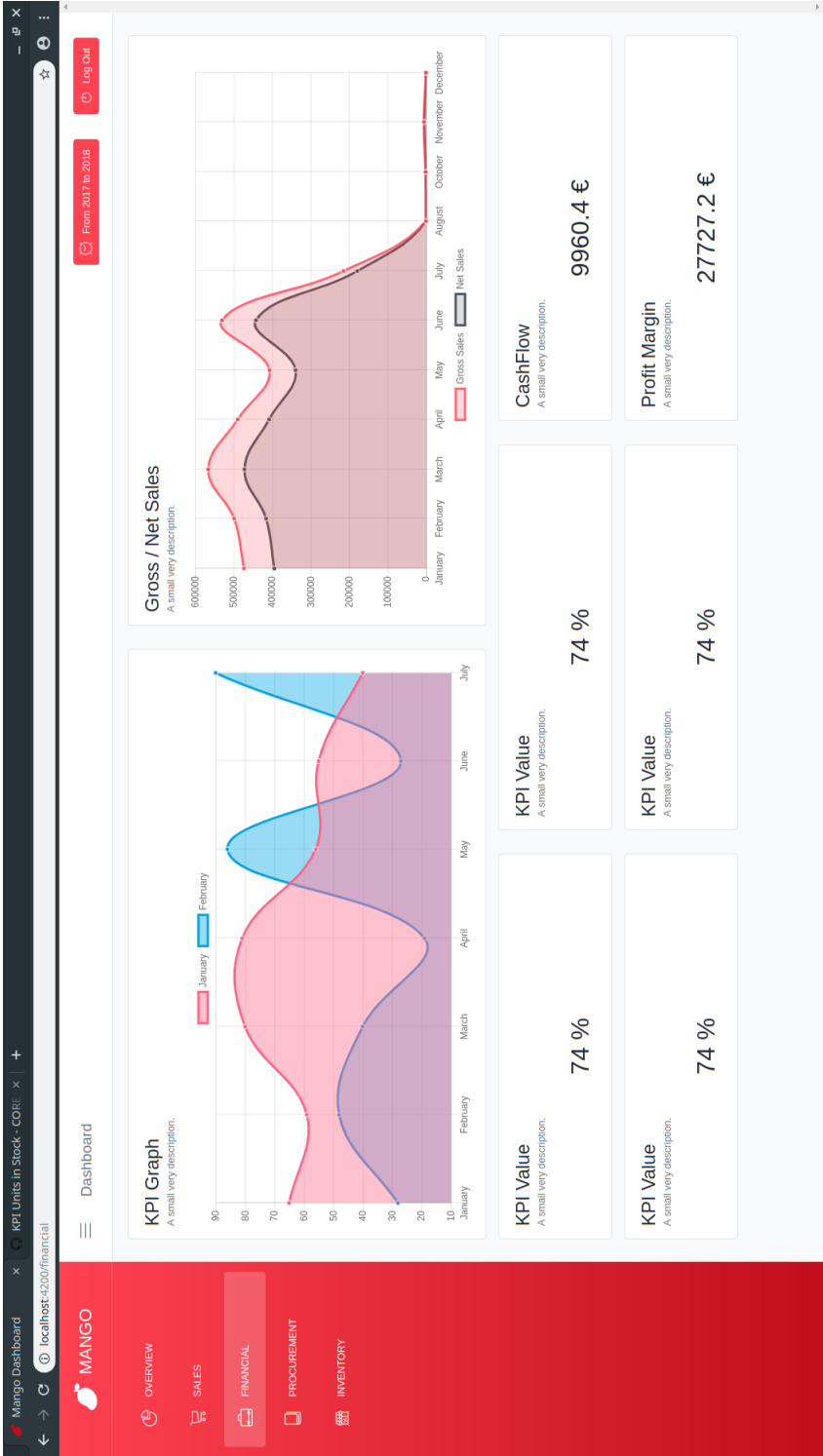
| Functionality | Description | Value |
|------------------------|--|--|
| Login/Logout | The user is able to login and logout. | Provide access to the dashboard. |
| Drilldown Top Products | Go to the product page when a product is clicked in a Top Products page. | Allows the user to investigate more about a product of interest. |

3 Information Architecture

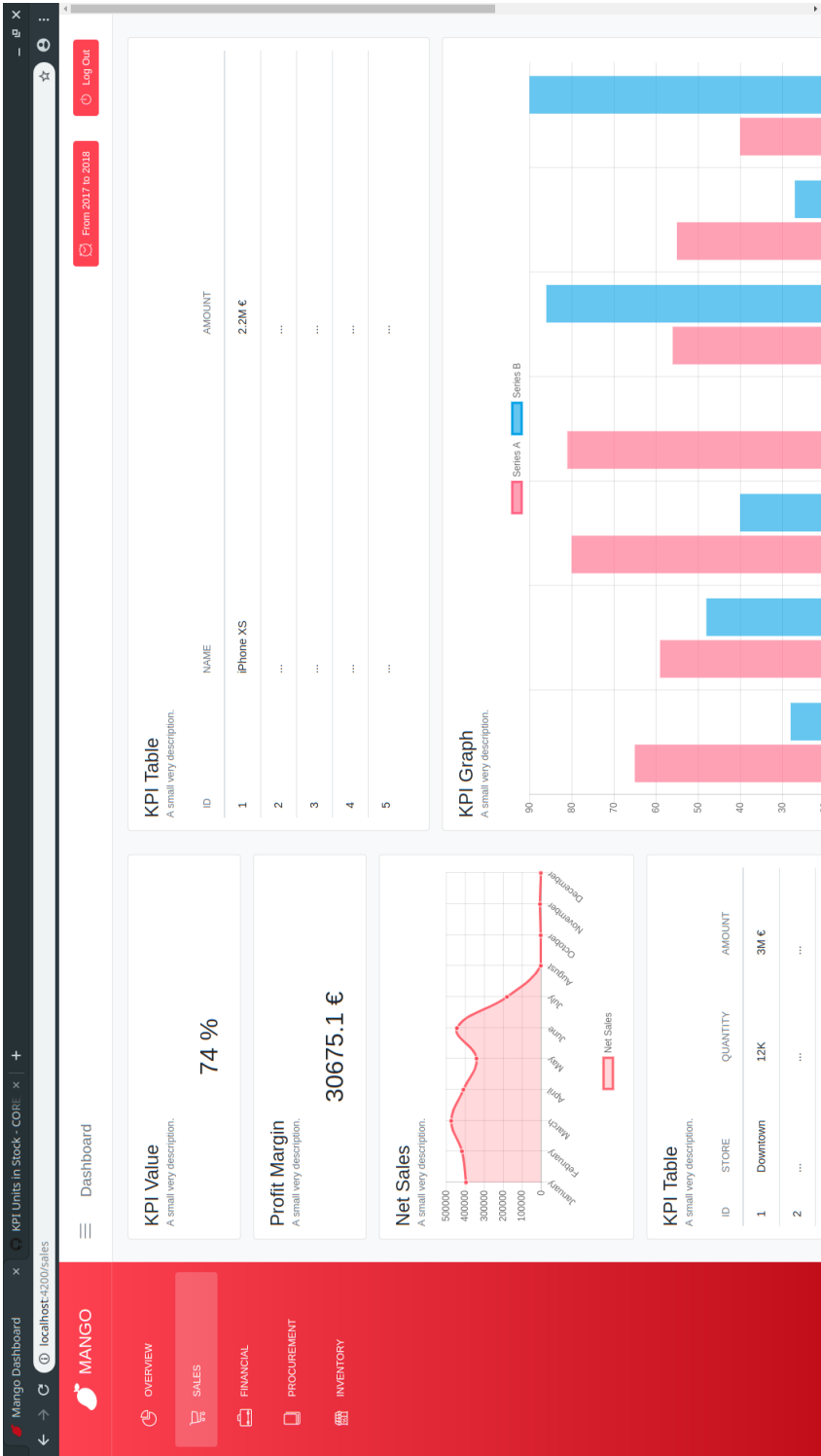
3.1 CORE_OVERVIEW



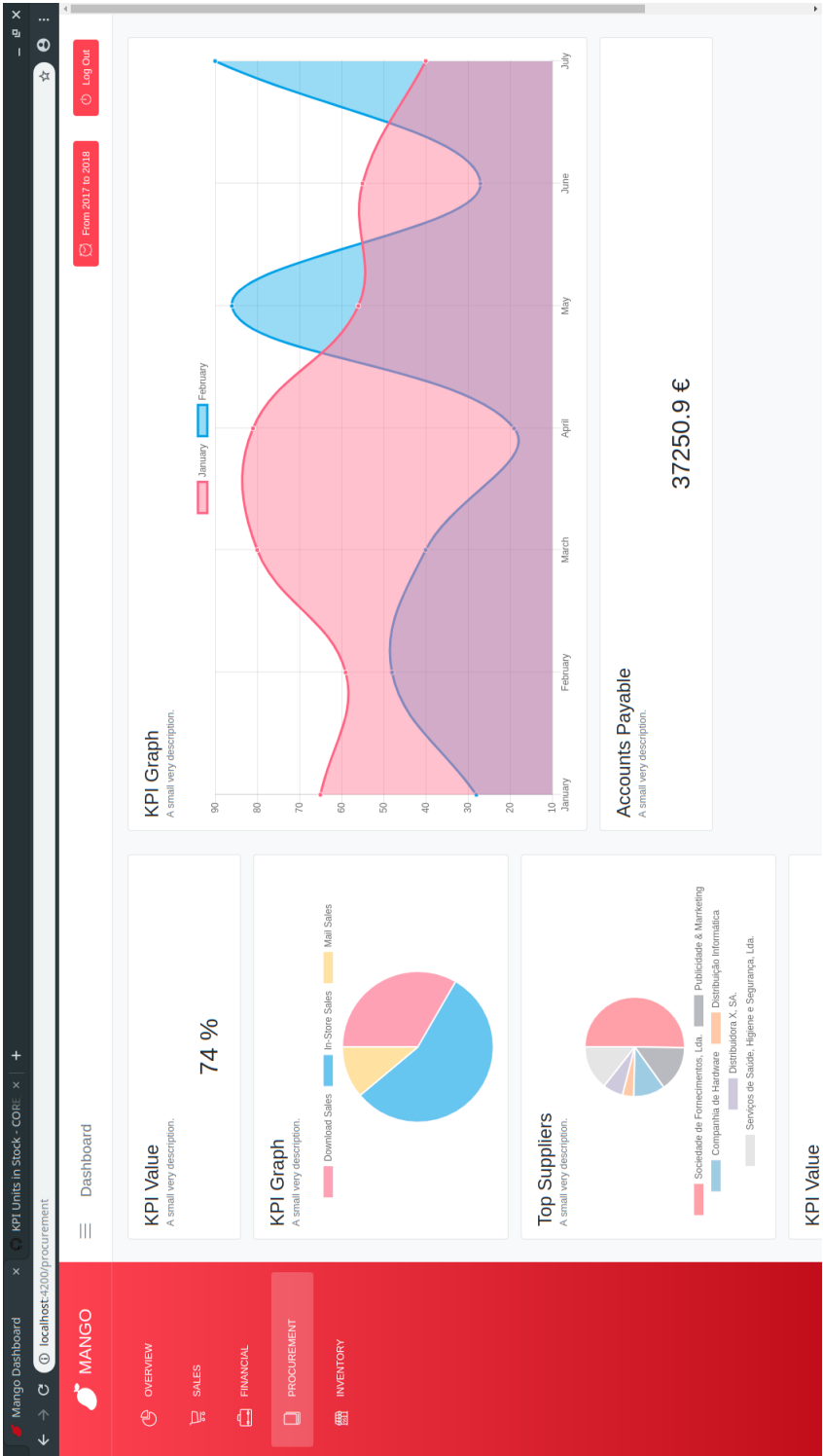
3.2 CORE_FINANCIAL



3.3 CORE_SALES



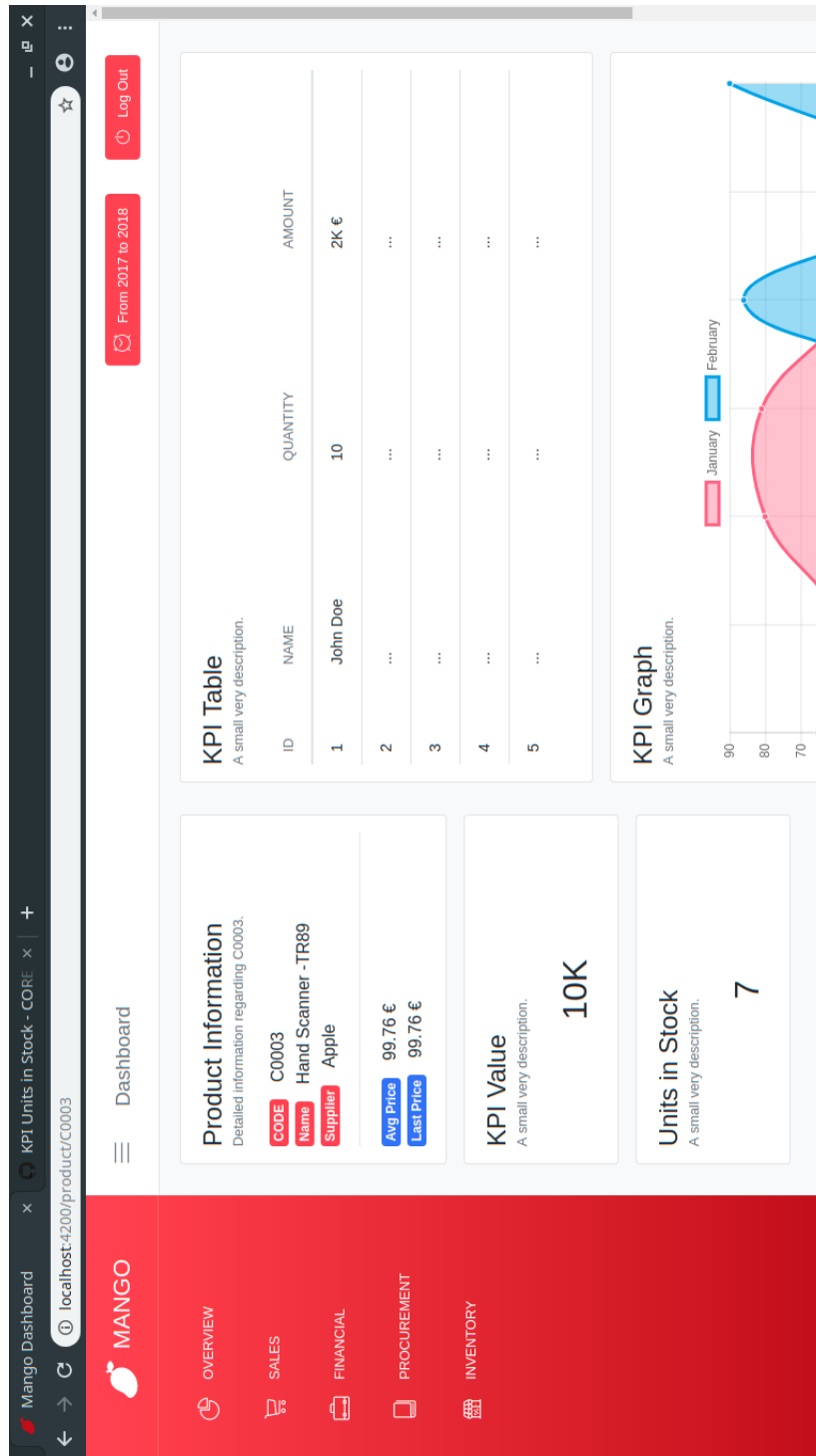
3.4 CORE_PROCUR



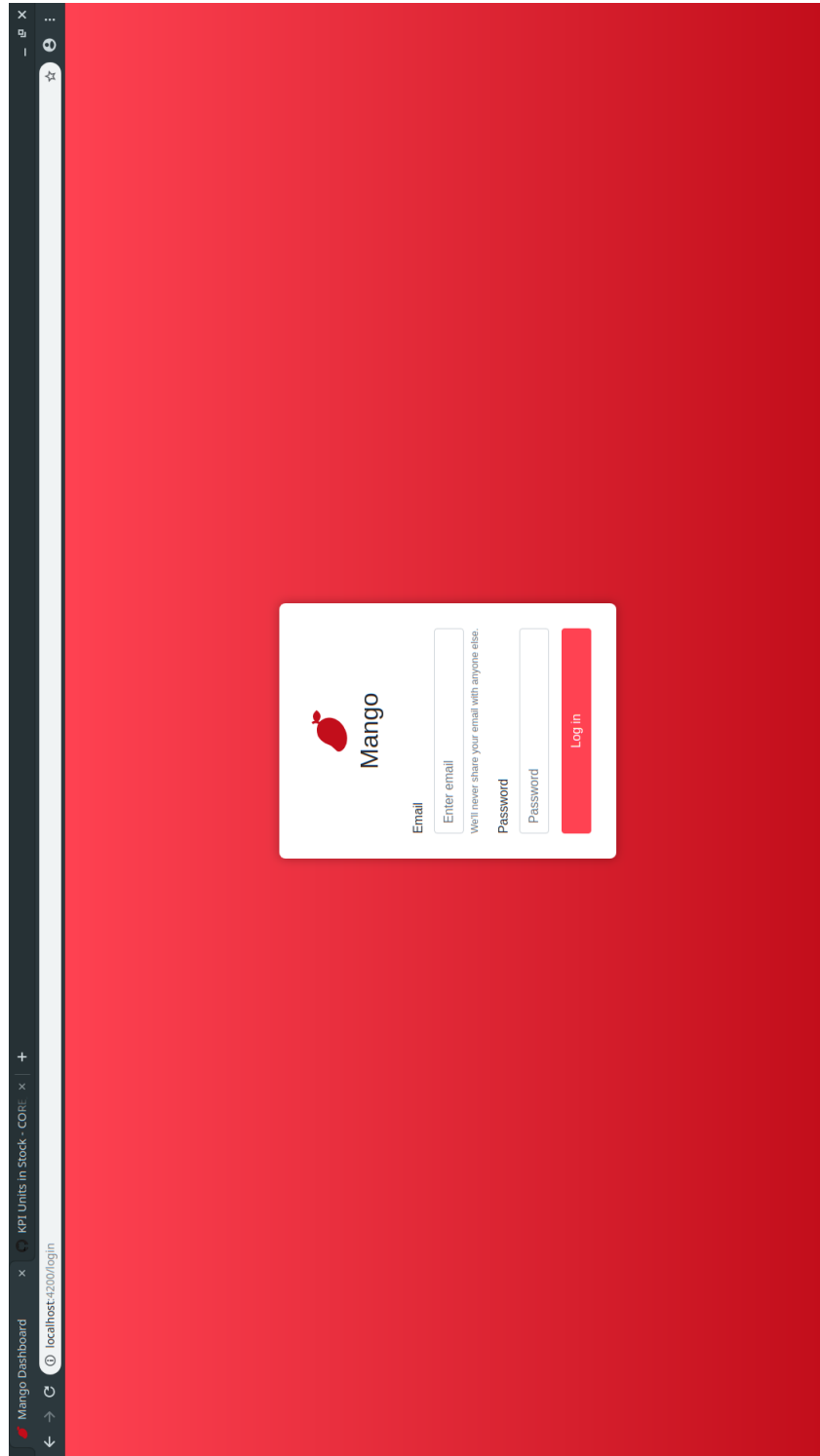
3.5 CORE_INVENTORY



3.6 CORE_PROD



3.7 LOGIN



4 Interoperability with SAF-T

| SAF-T Route | Service Description | Related Core View | Input Example | Output Example |
|---------------------|---|-------------------|---------------------------------|---|
| Accounts Payable | Retrieves the current accounts payable to suppliers. | CORE_ PROCUR | /GeneralAccounts /AccountID /22 | { "AccountID": "22", "AccountDescription": "Forneceedores", "OpeningDebitBalance": "0.00", "OpeningCreditBalance": "6812.30", "ClosingDebitBalance": "523.02", "ClosingCreditBalance": "3773.88", } |
| Accounts Receivable | Retrieves the current accounts receivable from clients. | CORE_ FINANCIAL | /GeneralAccounts /AccountID /21 | { "AccountID": "21", "AccountDescription": "Clientes", "OpeningDebitBalance": "2509.91", "OpeningCreditBalance": "12220.03", "ClosingDebitBalance": "41273.28", "ClosingCreditBalance": "13546.12", } |
| Cash | Retrieves information on the cash account (code 11). | CORE_ FINANCIAL | /GeneralAccounts /AccountID /11 | { "AccountID": "11", "AccountDescription": "Caixa", "OpeningDebitBalance": "17665.92", "OpeningCreditBalance": "8842.92", "ClosingDebitBalance": "19363.29", "ClosingCreditBalance": "9402.92", } |

| SAF-T Route | Service Description | Related Core View | Input Example | Output Example |
|-----------------------------|---|-------------------|---|---|
| Cost of Goods Sold | Retrieves the overall cost of goods sold (between opening and closing times of the SAF-T file). | CORE_ PROCUR | /GeneralAccounts /AccountID /61 | { "AccountID": "61", "AccountDescription": "Custo dos Merc. Vend. Mat. Cons.", "OpeningDebitBalance": "0.00", "OpeningCreditBalance": "0.00", "ClosingDebitBalance": "1259.04", "ClosingCreditBalance": "0.00", } |
| Net Sales (with time pivot) | Retrieves the sales revenue (without VAT) between the two given dates. | CORE_ SALES | /sales /total-net-sales ?start-date= <i>date</i> &end-date= <i>date</i> | { "totalNetSales": 861335.25 } |

5 Interoperability with Primavera WebApi

| WebService ID | WebService Description | Related Core View | Input Example WebApi | Body | Output Example |
|---------------------|---|-------------------|-----------------------------------|--|--|
| Top Clients | Returning relevant information about clients | CORE_SALES | {{apiUrl}} Administrador/Consulta | SELECT Cliente, Nome, TotalDeb FROM V_Clientes | { : "Cliente" : "ALCAD", "Nome": "Soluciones de Madrid", "TotalDeb": 20318.25, } } |
| Product Information | Returning relevant information about products | CORE_PROD-UCT | {{apiUrl}} Administrador/Consulta | SELECT Ar- tigo, Descricao, PCMedio as PrecoMedio, PCUltimo as PrecoUltimo FROM Artigo | { : "Artigo" : "A001", "Descricao": "RAM 4GB", "PrecoMedio": 30.25, "PrecoUltimo": 25.40 } |

| Webservice ID | Webservice Description | Related Core View | Input Example WebApi | Body | Output Example |
|---------------|--|-------------------|--|--|---|
| Product Stock | Returns the stock of products | CORE_PROD-UCT | {{apiUri}} Ad-ministrador/ Consulta | SELECT Ar-tigo, Stock FROM V_INV _ValoresAtuaisStock | { "Artigo" : "A001", "Stock" : 45 } |
| Top Suppliers | Returning relevant information about suppliers | CORE_PROCUR | {{apiUri}} Ad-ministrador/ Consulta | SELECT Fornecedor, Nome, To-talDeb FROM V_Fornecedores | { "Fornecedor" : "F001", "Nome" : "Papalaco Papeis", "TotalDeb" : 25004.50, } |