U.PORTO

FEUP FACULDADE DE ENGENHARIA
UNIVERSIDADE DO PORTO

INFORMATION SYSTEMS

Integrated Masters in Informatics and Computing Engineering
2020/2021

Final Project Specification

Project ID P1 - Intercompany

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GROUP B

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1. Project Overview

The present document provides insights on the development process of the course project for Information Systems **(SINF - EIC0040)** of the Integrated Masters in Informatics and Computing Engineering **(MIEIC)** at the Faculty of Engineering of the University of Porto **(FEUP)**.

The project in question is based on a fundamental pillar: comfort for the customer. Thus, we are specifying an illustrative model of two companies, one which bottles and sells beverages and one other that sells bottles, and **automating the business interaction** between them with an integration with **PRIMAVERA's ERP software**.

The aim of this project is to develop an interface that allows the companies to **define a set of reactive processes** that are integrated with the *Jasmin* platform: that is, processes that are executed *in response* to specific user-driven events, such as an invoice being generated or new stock being registered, and admit the concept of continuations, which define a sequence of trigger-process-stop steps within a single automated process.

To achieve this goal our work is divided in two phases. In this first, planning phase, we have modeled a set of business processes between the two aforementioned companies, and have identified, developed and mocked up the core views and functionalities needed to implement our product.

In this project we will use *Jasmin* to deal with all the data and processes surrounding transactions, inventory and information about each product. This information will be accessible after establishing a communication layer between *Jasmin* and the backend of our project.

For the validation of the project, as said above, we will use two fictitious companies both utilizing *Jasmin.* These companies, *KSede* and *BottleFlip* interact in two key ways, as described by the **BPMN diagrams** present in section 4 of this report. *KSede* buys bottles from *BottleFlip* for the production of their products, various bottled beverages, and *BottleFlip* rents their factory space from *KSede,* who owns the building where they both operate.

Our main objective for the success of the presented project is the ability to, by creating a procedure entirely through the implemented interface and executing said procedure, detect the creation of a **buy order** in either *KSede* or *BottleFlip,* generate a **sell order** in response, detect the creation of the **delivery note**, generate the **order receipt**, detect the creation of the **invoice**, generate the **invoice receipt**, detect the **proof of payment** and finally generate the **payment receipt**.

2. Features

2.1. Process List View

- **Process visualization** - list of the processes established between the two selected companies represented on a table with their IDs, description and respective timestamp.
- **Add a new process** - button that allows the user to create a new process.
- **Process View** - button that links to the process details - Process Steps View.

2.2. Process Steps View

- **Add a new step** - button that allows the user to add a step on a process.

2.3. Process Log List View

- **Process status** - table representing the status (success/pending) of process instances that are currently running or have recently run.
- **Add new execution** - button and dropdown allowing the user to start an execution of a given process.

## 2.4. Master Data Synchronization Management View

- **Company items** - dropdowns representing the IDs of the items of each company.
- **Equivalent items** - table allowing the user to make a correspondence between the items IDs from both companies.

2.5. Information View

- **Company Information** - displays information about both companies.

3. Sitemap

Our interface sustains on 4 main core views: **PROC_LIST** (Processes view), **LOG** (Logs View), **PROC_STEPS** (Process Steps View) and **SYNC** (Master Data Synchronization Management View). We also needed to implement several other pages that solve some User Experience concerns, such as the **LOGIN**, **ABOUT**, and **INFO** pages.
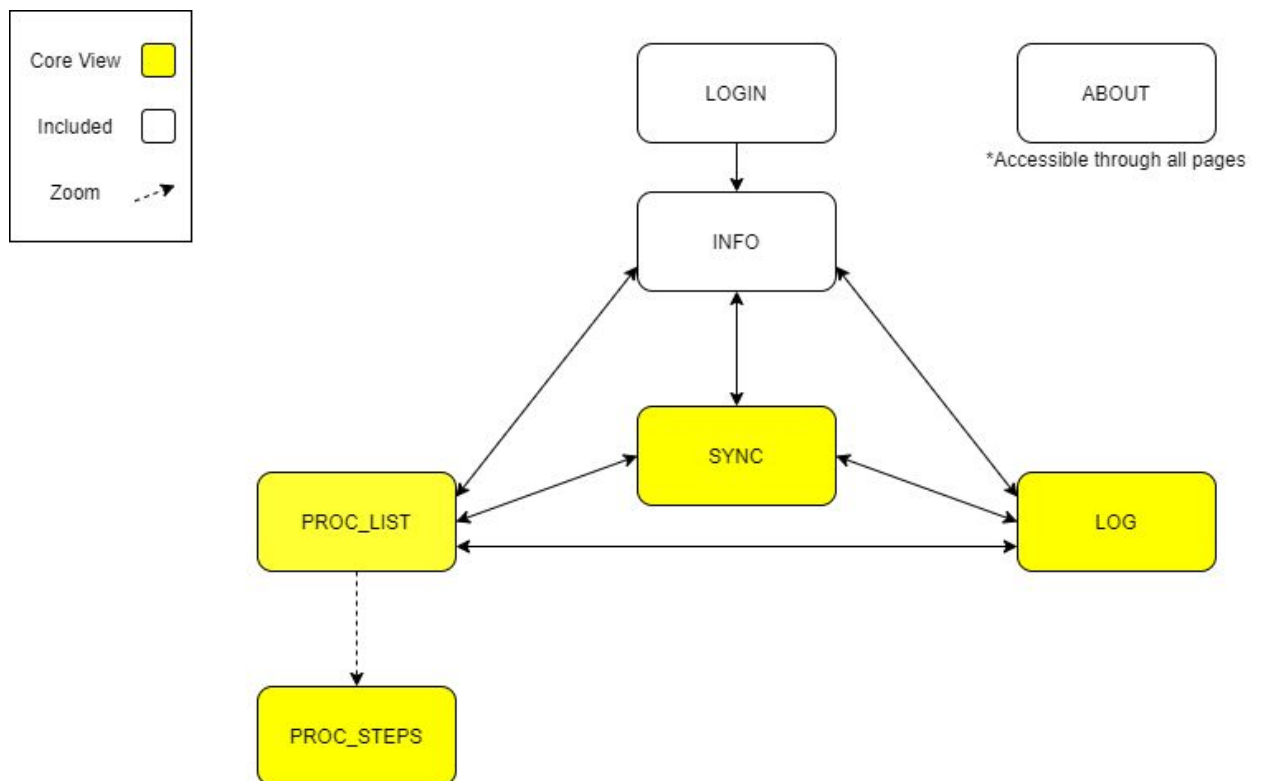
4. Information Architecture (Core views)

4.1. Process List (PROC_LIST)

4.2. Process Steps (PROC_STEPS)

4.3. Process Log List (LOG)

User and Business Goals

Check the status of the processes between both companies. Check the status of the requests to Jasmin.

Inwards Paths / Trigger Words

- Top navigation bar.

- Start a process execution button in **Logs** view.

Outward Paths/Call to Action

- **Start Execution** button inserts a new process in the logs datatable, starting a new execution and updates the table in the view.

- Top navigation bar.

Elements of the core

Navigation Bar: Settings View, Processes View, Data View, Logs View

Select Process Dropdown   Start Execution button   Logs table

4.4. Master Data Synchronization Management (SYNC)

User and Business Goals

Check common products in both companies. Add/Remove correspondences between the products in both companies.

Inwards Paths / Trigger Words

- Top navigation bar.

- Add association button in **Products Association** view.

- Delete association button in **Products Association** view.

Outward Paths/Call to Action

- **Add Association button** inserts a new entry in the products associations table.

- **Delete Association button** deletes the respective row.

- Top navigation bar.

Elements of the core

Navigation Bar: Settings View, Processes View, Data View, Logs View
Company 1 Product ID and Company 2 Product ID selectors   Add Association Button
Table with product IDs and names from both companies   Delete association button

The core views and mockups full size images are also on the deliverable zip folder.

5. BPMN Flows

The implemented interface allows the creation of different types of processes providing a more customizable experience for the user. In order to demonstrate the flow between the two companies, we created two different scenarios in the following BPMNs:

- The Simple BPMN diagram models the process of one of the companies renting a factory space from the other company, who owns the building where they both operate;
- The Complex BPMN diagram models the process of one of the companies purchasing products from the other company (the automation of this process was prioritized and it's represented in the core view *4.2 Process Steps*).

The BPMNs images in full size are also on the deliverable zip folder.

Simple BPMN diagram
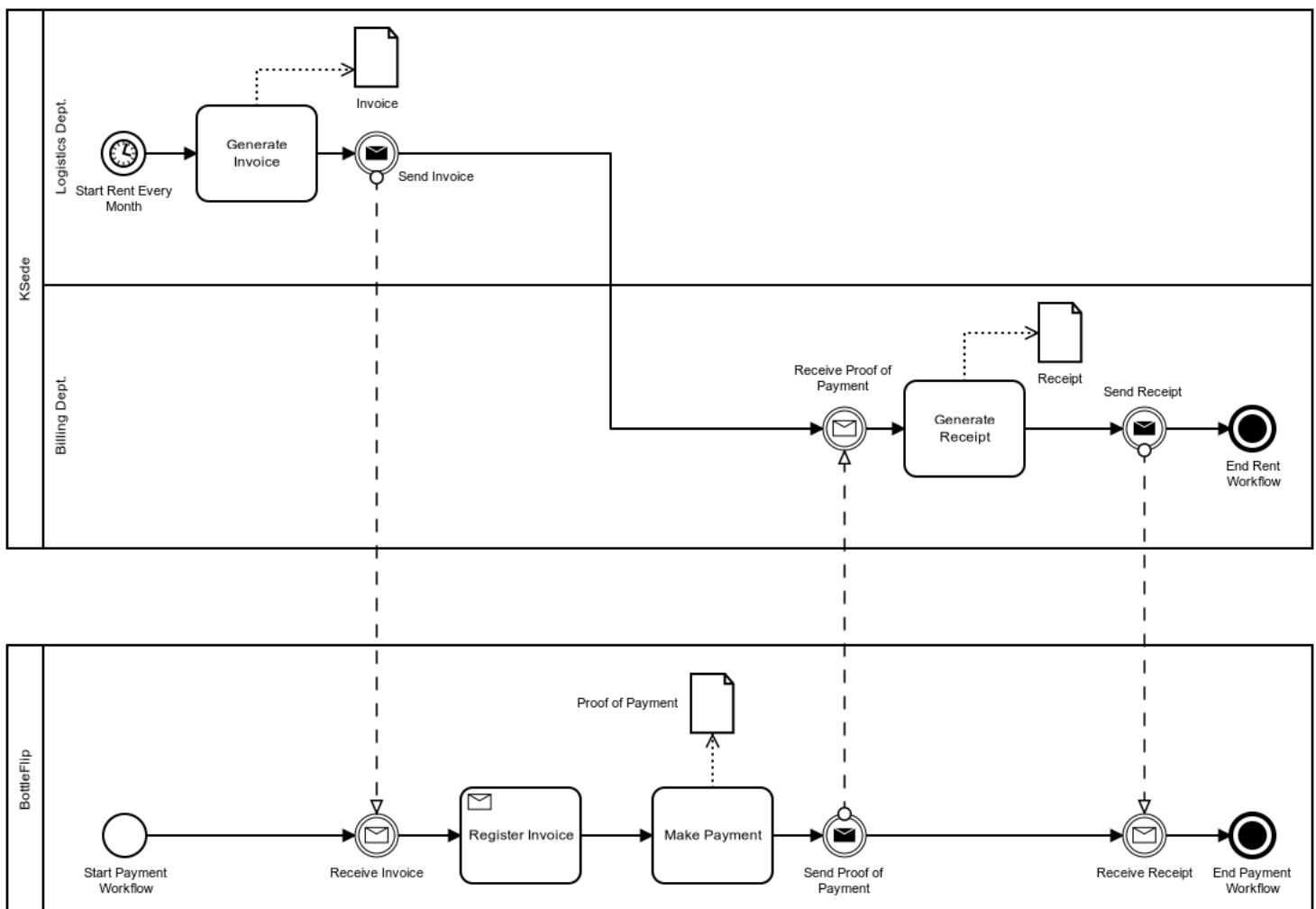
Complex BPMN diagram
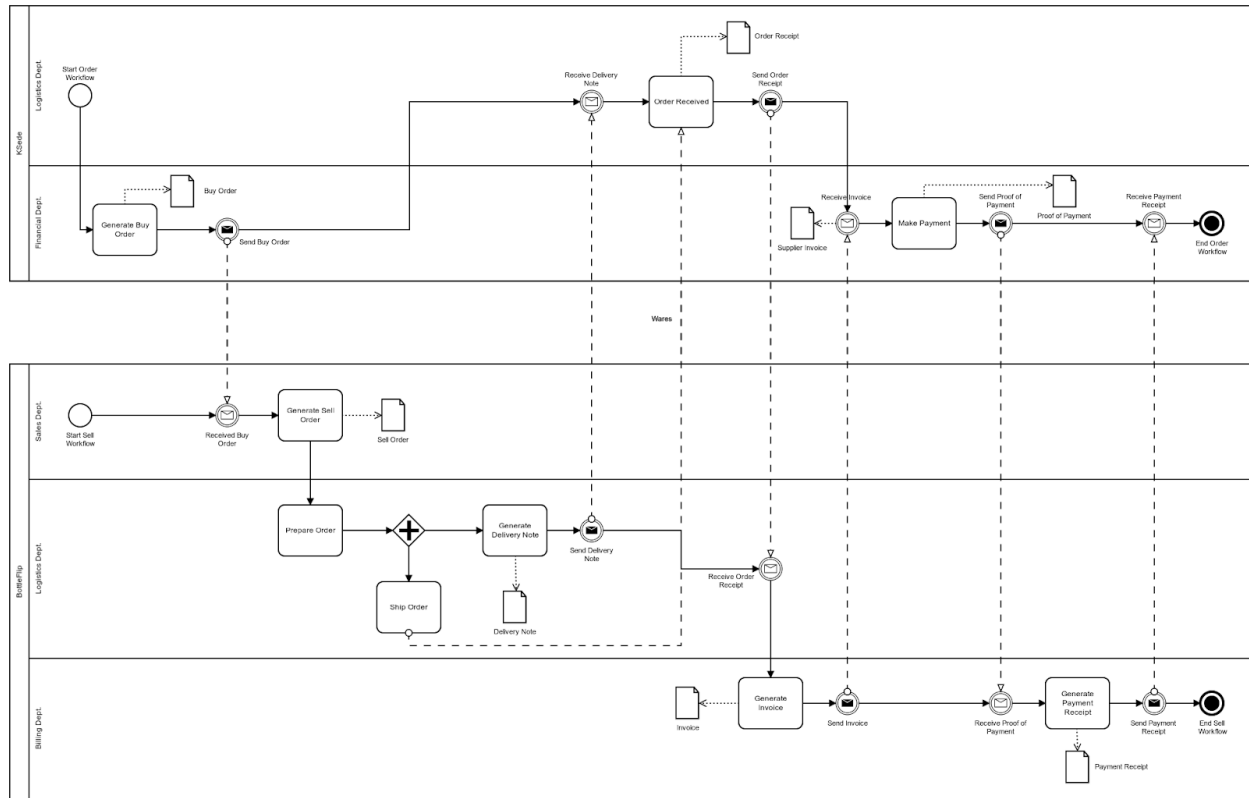
6. Project Planning (Gantt Chart)

In order to organize our time and strategies, while approaching this project, we created a Gantt Chart. By systematizing and defining a time interval for each task, our group found a way to work efficiently. This Gantt Chart helped us manage our work, as we could easily see our progress.
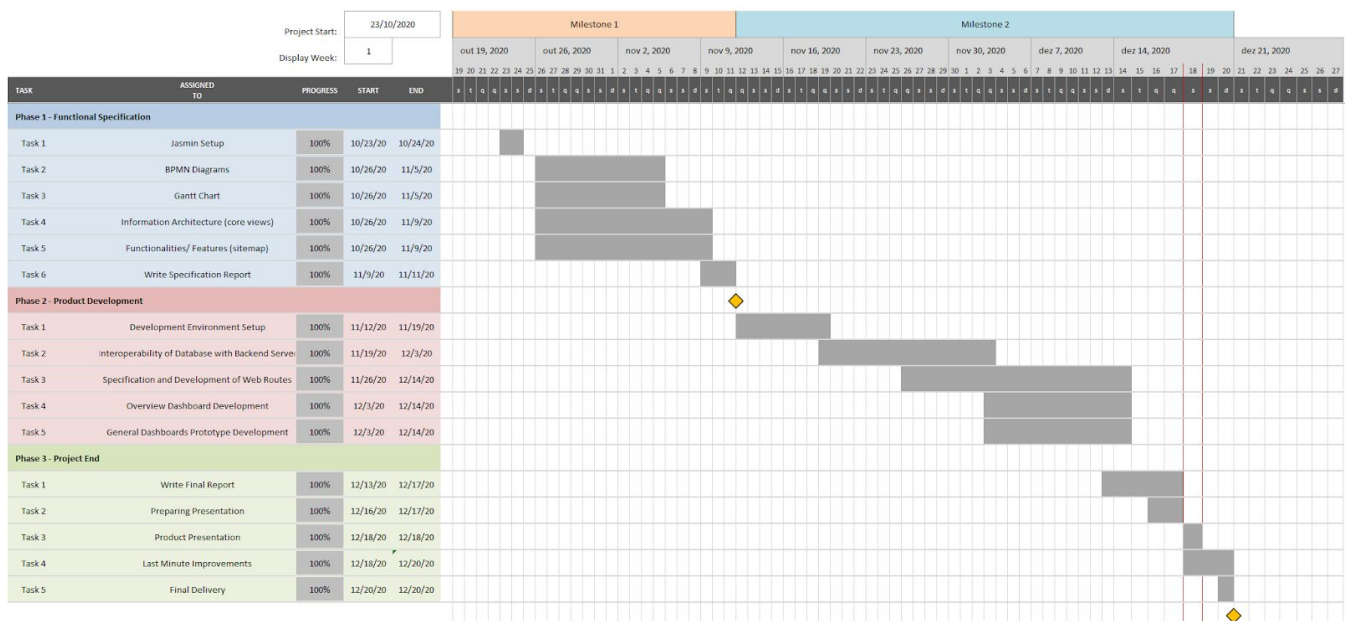
The Gantt chart is also available in its full size in the deliverable's zip folder.

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Project Start: 23/10/2020
Display Week: 1

TASK	ASSIGNED TO	PROGRESS	START	END
Phase 1 - Functional Specification				
Task 1	Jasmin Setup	100%	10/23/20	10/24/20
Task 2	BPMN Diagrams	100%	10/26/20	11/5/20
Task 3	Gantt Chart	100%	10/26/20	11/5/20
Task 4	Information Architecture (core views)	100%	10/26/20	11/9/20
Task 5	Functionalities/ Features (sitemap)	100%	10/26/20	11/9/20
Task 6	Write Specification Report	100%	11/9/20	11/11/20
Phase 2 - Product Development				
Task 1	Development Environment Setup	100%	11/12/20	11/19/20
Task 2	Interoperability of Database with Backend Server	100%	11/19/20	12/3/20
Task 3	Specification and Development of Web Routes	100%	11/26/20	12/14/20
Task 4	Overview Dashboard Development	100%	12/3/20	12/14/20
Task 5	General Dashboards Prototype Development	100%	12/3/20	12/14/20
Phase 3 - Project End				
Task 1	Write Final Report	100%	12/13/20	12/17/20
Task 2	Preparing Presentation	100%	12/16/20	12/17/20
Task 3	Product Presentation	100%	12/18/20	12/18/20
Task 4	Last Minute Improvements	100%	12/18/20	12/20/20
Task 5	Final Delivery	100%	12/20/20	12/20/20

7. Final Considerations

This project aimed to provide an interface that allowed the modelling and automation of business processes between two companies. By creating a service that automates the business interactions between these companies, along with an integration with **PRIMAVERA's ERP software**, we believe that our main goal was achieved in essence.

We also could identify some shortcomings of our project, which could be improved or solved in future work, such as automatic triggering of new executions of each process, supporting more types of documents, validating pricing and details of products when synchronizing master data, implementing retry logic, supporting multiple pairs of companies, and streamlining the setup process.

All in all, we believe that this project was fruitful not only in what we were able to build, but in what we were able to learn regarding the understanding and modelling of business processes, project management and building integrations for an **ERP platform**.