

## Projeto P2

### **1- Project II - Application**

With the development of this project, it is intended that students acquire skills in the area of analysis, and modeling of any business process using BPMN 2.0.

It should result in the following documentation:

- a) explanation of the approach to the process and justification of choices made**
- b) Identification of the entities involved**
- c) List of processes and sub-processes considered**
- d) BPMN 2.0 diagram**

It can be used in any framework, namely Bizagi and VisualParadigm

You can consider the three phases and aggregate tasks under subprocesses or only two of them, to simplify the process.

## Theme

### **Order management - Process description**

For a better understanding of this process consider the phases of:

1. Reception and confirmation of the order
2. Order execution
3. Order completion

## Domain description

- Each order refers to a single type of product.
- Each order has a quantity greater than 0
- Each type of product is produced through one or more tasks/operations according to a defined sequence - (operations plan)
- Each product involves one or more raw materials (according to the BOM - Bill of Materials )
- Each task/operation that can be performed by one or more human resources (HR) and one or more physical resources (RF), eg machines.
- Each product has a normal execution time (production cycle)

## Functional requirements

Entities	Functions
Sales department	Order CRUD Receive work orders from customer
Production department	Production planning and production simulation CRUD Plan, design and management of production
Finance department	CRUD invoices and receipts
Warehouse and distribution department	Order fulfilment Store / retrieval the parts, items and final
Procurement Department	CRUD acquisition of raw materials Purchase orders to supplier
Shop floor	Run order to manufacture Produce parts, items and final products through production
Quality department	Validate products after manufacture Check, control , evaluate, test and quality control
Client	Place work order and receive the finished order
Provider	Regular provider of raw material / outsourcing parts

## Business process description

### 1. Order receipt and confirmation phase

The process is triggered from an order.

Each order can be external (coming directly from a customer) or internal (created by an employee from the commercial department).

Once created (product type, quantity, due date), an order can be confirmed or rejected by a sales department administrator.

Before confirmation, you can request:

- the warehouse to check whether or not the product is in stock to satisfy the order.
- to the production department the estimate of production costs (euros) and time (hours).
- current financial availability (yes or no) to the finance department.
- the supply department the existence of raw materials necessary for the production of the product.

If the order can be fulfilled from the stock in the warehouse, it moves to the order completion phase, otherwise to the order execution (production) phase.

If there are no raw materials, the procurement department must proceed with their purchase.

To do this, you can consult at least two suppliers, who must respond within 2 days and send the raw materials within 1 week. If this does not happen, the order cannot be fulfilled and must therefore be rejected.

If the finance department indicates the current financial unavailability, the order must be rejected.

## **2. Order execution phase**

Once confirmed, the order is transformed into a manufacturing order and sent to the production department.

The production manager must confirm the manufacturing order, and may therefore require a simulation of the production plan for a certain period, this simulation must result in significant indicators to support the decision.

In that simulation, material needs planning (MRP) must be carried out and then capacity requirements planning (CRP) for the execution of the manufacturing order in question and the definition of the size of the manufacturing batch, counting for this. with information from the BOM and the operations plan.

If the existence of both is verified, the production process itself takes place. Thus, the scheduling is carried out, that is, the allocation of resources (HR and RF) to the batch to be produced. This process can be automatic (performed by a scheduling system) or manual (performed by a scheduling employee).

At the time of production, each human resource assigned to carry out each operation/task, must confirm the completion of the completion of all units of the product, i.e., the batch.

At the end of production, a quality manager confirms or rejects (with justification and recommendation) the products produced.

In the case of rejection, and to be executed again, the manufacturing order must undergo a new confirmation, in which the confirmer has access to the quality control result.

When it is finished, you must proceed to the order completion phase.

## **3. Order completion phase**

In the warehouse and distribution department, the material is collected to satisfy the order, the sales department is asked for the address to send the order, if you do not receive this information within 1 week, request information about the address again.

The post the receipt of the information shall send the order to the customer.

However, before sending the order, the finance department issues the invoice it sends to the customer, which he can pay during or after the order receipt process.

The finance department receives the payment and sends the receipt to the customer, finally proceeding to the documentation file.