

# Project specification

## BPMN Implementation of the Quote to Production process

Main target of the project is to demonstrate the advantages of a BPMN Engine in the enterprise to carry on and track most of the repetitive tasks and processes happening in the organization.

The scope of this section of the project is

- Model the actual interactions (as described in this document) between the involved groups of people in the “Quote to Production Process” in a BPMN 2.0 format, including information moving between involved groups of people.
- Propose one or more versions of the model with some automation included, meaning with some Manual Task converted to Service Tasks, explaining how the process should change, if needed, and how the automated task should be implemented.
- Optionally providing one or more implementations of some of the service tasks identified by the optimization step. Implementations should focus on the Active Directory system first, then moving on the Intranet System.

### Tools and processes.

BPMN diagrams and implementation should be produced using the Camunda platform, comprising the Camunda Engine Community Edition and the Camunda Modeler.

Examples of the messages exchanged between the systems will be provided, and all enterprise systems interactions, will be represented in the form of c# interfaces, that can be either implemented on a test system or entirely mocked.

Realization of the project can be executed remotely, outside the enterprise but regular meetings to analyze project progresses are required, every two weeks.

An email channel with the project tutors inside the company will be available at any time.

## Quote to Production process within Loccioni

The following document illustrates interactions between groups of people inside and outside the enterprise and a subset of the software tools deployed within the enterprise.

It is not exhaustive by any means, but should be sufficient to develop a BPMN prototype model representing these interactions, and eventually complete the prototype with some working "Task service" implementations.

## Involved groups of people

- **Customer:** A company requiring our services to solve a specific problem, or to obtain support and or consultancy on existing solutions installed by the customer.
- **Key Account Managers (KAMs):** The main interface with the customer during the offering process. He manages communication with the customer, and is responsible for the commercial and contractual parts of the final agreement (the order).
- **Marketing Project Managers:** They have the responsibility of an entire Marketing Area. They are de facto entrepreneur and manage all aspects of their business, from people to customers. KAMs reports to Marketing Project Managers.
- **Project Engineers (PE):** They study the customer requirements and develop the final overall design. They may require consultancy from internal or external competence areas to explore new solutions when the customer requires them.
- **Project Managers (PM):** Involved when the final agreement is about to be signed. It will be responsible for keeping the execution within the established cost, time and quality constraints, and will be the main interface with the customer during the execution of the project.
- **Designers:** They produce the master design for the solution. The main areas of competence are Mechanical, Fluidical and Software.
- **Planning and Control Department:** They collect information from the Project Managers about the advance status of the project to give an enterprise view of all the projects running in the company, from an economical point of view.
- **Procurement Department:** Provides centralized services to interact with suppliers to manage contracts, purchase items and services.
- **Logistics Department:** Stocks and moves material from the Plant's main depots to the production site (either internally or subcontracting) manages all the issues about the shipping of the solutions.
- **Plant Managers:** In charge of organizing spaces and activities for an entire building.
- **Administration Department:** In charge of managing billing, payments and contract details and to organize abroad shipments.
- **IT Department:** Provides access to enterprise applications by assigning roles and permissions to the users.
- **Q & A Manager:** Provides consultancy for safety issues and risks analysis.

## Involved systems

- **CRM System:** Contains information about customers, referrers and it is the final collector of all quotes and orders sent to and by the customer.
- **GestOff:** The software used to create offers, budgets and order. It transfers the result of the interaction to the CRM System.
- **Loccioni Desktop:** The portal for many of the internal applications (both commercial and legacy).
- **ERP System:** Is the main ERP for the company. It has many functions and modules and often requires "fine grained" access management.
- **JobCost System:** Is an internally developed tool to help keeping track of project cost as the production advances.
- **Document System:** It is the main Document repository for the enterprise. Used throughout the enterprise.

## The main interactions

This section describes what the main interactions are between the previously described groups of people to carry on one or more parts of the process.

### Quote Phase

The KAM interacts with the customer until the customer asks for a "Quote Request". This "Quote Request" is the starting point of the process.

The KAM inserts the Quote Request in the CRM System, and generates a new Quote in "GestOff". The "Quote" will have a unique id (like 02PSN22010--) that will enter the common language of the people involved now on.

The KAM sets up a "Quote Team" including himself, the Purchase Dept, a Project Engineer eventually one or more designers from the main Areas of Competence and when needed, the Q&A Manager, to discuss the solution and to start building a quote.

Documents produced during this phase, along with the requirements sent by the customer, will be stored in the GestOff application.

Once the quote is complete, the KAM is responsible to create the first quote document revision (named after the quote unique id, eg.: 02PSN22010--), that will be stored in the GestOff application and sent to the customer. Now we wait for the customer to provide his answers, and eventually, the customer will ask for a quote revision. The KAM (keeping informed the quote team and eventually involving them) will produce a quote revision document

(02PSN22010--R1), stores it in GestOff and sends to the customer... this loop may happen a few times, producing several quote revisions (02PSN22010--R2, ...R3, ...R4, ...) until the customer either rejects entirely the quote, or, hopefully, accepts one of the revisions, which moves the process to the "Negotiation" phase.

If the customer rejects the quote, the KAM records the rejection in GestOff, and GestOff will notify the CRM system of the fact.

### **Negotiation Phase**

The customer accepted one of the revisions (let's say the 02PSN2010--R3). The KAM confirms the relevant quote in GestOff, and moves it to the negotiation phase. In this phase the kam can slightly adjust the amounts, and if the KAM and the customer come to an agreement, the quote is finally accepted and, often, a document called Result of Negotiation (RON) is created by the KAM and then reviewed and signed by the customer, and finally inserted in GestOff.

If the negotiation aborts, we'll get back to the loop in the Quote Phase, in which the KAM produces another Quote Document, and the customer will accept or reject the quote revision. If the negotiation succeeds the KAM waits for the customer to send the order document, then inserts the order document in GestOff, and finally exports the "Order" to the CRM system.

The order will be a unique id named after the quote id, without the revision suffix (in our example the order will be named 02PSN22010--)

The new order arrival is notified to the Procurement Department, the Planning and Control Department, the Plant Managers, the Administration Department and the Marketing Project Manager.

The Plant Managers use the information about the orders to keep an up to date planning of all the jobs and an estimate of the space allocation.

### **Production Phase**

After the order the Project's Team is defined, and the Project Manager is "elected".

The project's team includes the key people participating to the project. Will involve Department Managers for all the competence areas, including procurement, logistics and administration, just to be sure everyone is aligned on goals and committed to the project.

The PM is responsible for storing "kick off meeting" minute and related document in the Document System.

After the kick off meeting all the competence areas are ready to work.

Procurement will produce "pre-orders" for items that takes long time to ship, this information is tracked by the ERP.

Electrical and electronics Designers will produce executive designs and upload part lists to the ERP, which will produce Order Requests that the Purchase Department will convert to Purchase Orders (also in the ERP).

Mechanical Designers will produce executive designs whose part lists will contain both "purchase items" and "production items" (custom items not provided by any supplier and that MUST be produced ad-hoc)

Software Designers starts developing and configuring the software that will run on the machine.

PM keep tracks of costs and issues recording monthly the results in our Job Cost system.

Planning and Control Departments uses the information from the PMs to keep an up-to date snapshot of all the projects (costs) running in the enterprise.

Logistics work to stock and/or deliver material for the production sites.

When all items required to build a consistent part of the machine (usually all the items in a Work Order) the assembly starts. Space is allocated in the production site and the Logistics Dept fills the “production store” so that people working on the machine have all material at hand.

During the production process all kinds of “exception” may occur. A supplier or a subcontractor delays a shipment, or some error is identified in mechanical customs production or – worst – some design error is spotted and reworked, software does not comply to the agreed cycle time, and whatever can happen ... will happen! All of these exceptions are notified to the PM that will take the decisions to solve or mitigate the problem, including involving the customer if delays are unrecoverable.

At the end of the production phase, starts a “tuning” phase to make sure that the machine is running fine in all situations.

Along the process the customer may come at our place for one or more audits (“Milestones” for us). The most common case is to have 2 audits (M1 and M2) but it is not the rule.

After a successful audit the customer releases a signed document that the PM Stores in the document system.

Milestones might be related to “pre payment” so that passing an audit gives us the right to invoice the customer for the agreed pre payment amount.

The administration department must be notified the successful audit (actually the PM notifies the Administration Dept.). If we fail an audit, we arrange for the audit repetition with the customer, and, depending on the constraints defined by the contract we may incur in some penalties (the customer will ask for a discount) so the administration dept must be notified about the failed audit.

### **The Shipment Phase**

If we pass all the audits, the machine is prepared for shipping and shipped, and if everything goes well the machine is ready for installation at the customer site.

Any issues in the Shipment phase (mostly coordinated by the Administration and Logistics departments) must be notified to the PM.

### **The Installation Phase**

The machine is ready to be installed at the customer place, and a team from Loccioni, usually including a Mechanical Designer and a Software Designer and a couple or more assemblers, is present at the customer site to complete the installation, and, if needed to complete the “tuning” of the machine and to give support to the customer during the first period of use.

During this phase some documents may be produced (last time modifications of some parts of the machine, or to the software).

If the customer is happy with the machine, the final acceptance is signed (the last Milestone) the document is stored and the administration and all the project team is notified of the success. And the project goes in the “Warranty Phase” ... but that’s another story.