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# **Applying DEMO to model a process and automate it in a workflow system – a case study in a city hall**

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# ABSTRACT

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Organizations are Complex systems. A conceptual model of the enterprise is needed that is: coherent the distinguished aspect models constitute a logical and truly integral comprehensive all relevant issues are covered consistent the aspect models are free from contradictions or irregularities concise no superfluous matters are contained in it essential it shows only the essence of the enterprise, i.e., the model abstracts from all realization and implementation issues.

The world is in great need for transparency about the operation of all the systems we daily work with, ranging from the domestic appliances to the big societal institutions.

In this context the field of enterprise ontology has emerged with the aim to create models that help to understand the essence of the construction and operation of complete systems; more specifically, of enterprises.

Enterprise ontology arises in the way to look through the distracting and confusing appearance of an enterprise right into its deep kernel. This, from the perspective of the system designer gives him the tools needed to design a successful system in a way that's reflects the desires and needs of the workers of the enterprise.

This project's context is the use of DEMO (Design and Engineering Methodology for Organizations) for (re)designing or (re)engineering of an enterprise, namely a process of the construction department of a city hall, the lack of a well-founded theory about the construction and operation of this processes that was the motivation behind this work.

The purpose of studying applying the DEMO theory and method was to optimize the process, automating it as much as possible, while reducing paper and time spent between tasks and provide a better service to the citizens.



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## **KEYWORDS**

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Enterprise Engineering, DEMO, Enterprise Ontology, Workflow Management Systems, BPM



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# ACRONYMS

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DEMO - Design and Engineering Methodology for Organizations

TRT - Transaction Result Table

ATD -Actor Transaction Diagram

PSD - Project Structure Diagram

PAS - Projects Analysis Service

PM - Process Maker

BPM - Business Process Management

DMS - Document Management System

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# I. INTRODUCTION

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## I.1. MOTIVATION

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The growing interest in the practical application of the notion of ontology provides a chance to make a fresh start, to bring approaches to the (re)designing and (re)engineering of enterprises to a higher level of quality. In order to achieve this, one has to find a way to separate the stable ontological essence of an enterprise from the variable way in which it is realized and implemented. Ontology means, study or knowledge of what is or exists, it refers to the reality around us, regardless our own view on it.

75% of IT projects fail to meet the expectations of its users. One of the main causes is an insufficient or inadequate knowledge of organizational reality to be automated or supported by an information system (IS). The Organizational Engineering discipline emerged in the 90's and adds concepts and engineering methods applied to organizations and finally to understand and represent many facets of the same, and to facilitate the analysis and organizational change, regardless of the implementation of SIS.

DEMO methodology, which was applied to this project, have been applied over the last 15 years to all kind of enterprises and for all kind of purposes with very success. Who have participated in DEMO projects, invariably mentioned that they never before had seen such a coherent, comprehensive, consistent, and concise picture of what they agreed was the essence of the operation of their enterprise.

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## I.2. RESEARCH CONTEXT AND GOALS

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The project context is enterprise ontology and its use to model organizations. First the organization was object of study by questioners and observations, with the ultimate goal to model all tasks and subjects involved from the very beginning when the citizen comes in and asks for a construction license till the end when finally the license is emitted and the construction may take place. They had the process described in several pages of flowcharts with several others pages of labels where founded, brought about with the work of several months modeling and remodeling over again. Applying DEMO to this scenario, we started with “The Perfoma-Inforna-Forma Analysis” which will lead us to the first representation of the enterprise reality the “Actor Transaction Diagram”, other diagrams are included to better understand the enterprise transactions, and finally the “Process Structure Diagram”, which was the foundation needed to design the process workflow to implement in a workflow management system as to automate as much as possible the process.

Currently the city hall faces some serious problems in terms of workflow and software installed to support it. The DEMO method is used for the analysis of the problems to occur and for modeling the scenario AS-IS and TO-BE so that the operation can be properly specified independently organizational information technology (IT). The goal is to analysis and a configuration of a workflow system based on the DEMO methodology to help the employees of this organization to execute the tasks and meet deadlines of the license procedure. This work will be a component of socio-technical in order to measure critical factors for a successful adoption of such methods and tools for organizational engineering. For this purpose it was carry out surveys and questionnaires over the execution of the fieldwork for the project definition. In the final phase of work is expected to deployment or installation / configuration software that adequately support the automation required in city hall.

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## **I.3. ORGANIZATION**

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After the introduction follows chapter 2 Problems definition - research strategy and contributions, where we defined the research strategy followed and the contributions given by the members of the case study organization. Here we identify the problem and defined the strategy used. In chapter 3 Related work, we talk about the theory that supports this work and also we make an analysis of workflow systems tested. In chapter 4 Implementation we show the work develop in the organization using DEMO methodology and applying it to a software workflow system. Chapter 5 evaluation is all about the opinion of the leaders of the urban division of the city hall about this work, it was achieved with surveys. Finally chapter 6 we draw about the conclusions derived from the completion of this project and refer what we can make in the future.

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## **II. PROBLEMS DEFINITION – RESEARCH STRATEGY AND CONTRIBUTIONS**

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## II.1. HOW TO RAISE THE ORGANIZATIONAL REALITY IN THE PROCESS

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To be able to understand the organizational context, were assigned to me some flowcharts with several pages with subtitles apart. Despite these organizational documents have multiple pages of content and explanatory captions aside, still they were very incomplete and ambiguous. There was need to meet with the leaders of the urban section of the city hall and make a few clarifications with several interviews.

The first interview was previously planned with a tape recorder to facilitate the perception of all details mentioned in the meeting, and also make the interview more fluid without wasting time to write down and unnecessary repetitions. I managed to meet with the chief of division of urbanism and the lawyer, the city councilman could not attend.

Then the data from the meeting was able to improved the ATD model initially proposed, based on the organizational documents only. When we were building the ATD, doubts began to emerge, many of them were resolved with a few phone calls to the lawyer (since the foundation of the whole process is dictated by law). Interviews were also made to the process manager, the receptionist, civil engineer and to technical coordinators. Along these also been for some time to see how they did their work, to take notes and ask questions.

Also a design of the license procedure in paper was made for us while caring one of the individual interviews to the chief of division of urbanism. But how we didn't understand much of the procedure it arises lots of doubts when looking at. Then, a individual interview took place with the lawyer and we show him the design of the other and he did other with colors to help us to understand the process.

It was important to involve all stakeholders in the process, since, strictly speaking they do not know the work they perform. Along the raising of process reality, some employees came to be differing opinions about some developments of the procedure. The doubts, the contradictions between employees and the undefined rules within the process were firstly clarified with the lawyer by stand up meeting or telephone and then design in the ATD diagram. And then in a collective meetings attended by the three leaders of the urban city hall they were validated. Several times in the collective meetings, they expressed opposing views and in that instance a decision about how the process should go on were taken. Some time the process had to much steps in it and the need to simplify were served. We continued changing it, until they were completely satisfied with the process.

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## II.2. WHICH WORKFLOW SYSTEM WILL WE CHOOSE FOR THE CONFIGURATION

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Several systems were inspected and tested in order to select the best free workflow that has the following qualities: simple to work with in the perspective of the stakeholders, and had more features develop so far, because the city hall urges for a workflow system modeled that meets their needs in the shortest time possible.

- Activiti

Is a light-weight workflow and Business Process Management (BPM) Platform targeted at business people, developers and system admins. Its core is a super-fast and rock-solid BPMN 2 process engine for Java. It's open-source and distributed under the Apache license. Activiti runs in any Java application, on a server, on a cluster or in the cloud. It integrates perfectly with Spring, it is extremely lightweight and based on simple concepts.

- CuteFlow

Is a web based open source document circulation and workflow system. Users are able to define "documents" which are send step by step to every station/user in a list.

It's an electronical way for doing (i.e. internal) document circulations. A document can be assembled from input fields of different types. The fields can be filled with values by the receiver of the document directly in the users E-Mail-Client. After a completed circulation you will have a completely filled document. Also attachments to the document are possible (i.e. for illustration material).

All operations like starting a workflow, tracking, workflow-definition or status observation can be done within a comfortable and easy to use web interface.

- KnowledgeTree

Helps teams create and manage business documents. Professionals like you can build great content, and work with colleagues to improve and approve it. You can access and control your content from anywhere via a secure, cloud-based solution.

- DocMan:

DOCman is a document and download manager for Joomla. DOCman makes offering downloadable documents on your Joomla site a breeze.

Manage documents across multiple categories and subcategories, give users permission to upload, download or edit documents. Store documents either locally or remotely and prevent direct linking using our build-in anti-leech system.

All from within an intuitive and simple to use administration interface.

- ProcessMaker

Is open source business process management (BPM) application which is cost-effective and easy to use. Workflow software such as ProcessMaker can assist organizations large or small with designing, automating and deploying business processes of various types.

The software is entirely web based and accessed through a web browser, making it easy to manage and coordinate processes through the entire organization including user groups and departments.

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## **II.3. FROM DEMO MODEL TOWARDS TO A CONFIGURATION OF A WORKFLOW SYSTEM**

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All the models of DEMO helped to design the final workflow system. The PSD model, was specially important because it shows us when the decisions take place. In the PSD model we can easily see what are the sequence of the normal procedure and the subsequent tasks that may take place if an exception occurs. We have the full vision of the process and the tasks, it is also clear what tasks are optional and what tasks are sequences.

When applying DEMO to the workflow system, we can easily assign the users to the correct tasks and give the right permission to work with the system. Triggers in PHP language were made to automate some decisions process. An evaluation routing rule uses a condition (which is a true or false expression in PHP) to decide whether the workflow moves to subsequent task(s).

When a decision cannot be automated, a selection routing rule appears between the current task and the next, the user will choose the direction of the workflow. Some tasks are sequential, so we applied the sequential routing rule, when one task is completed, a sequential routing rule will move the workflow directly to subsequent task(s).

We only have a start task in our workflow system which is directed related to the initial task of the PSD.

Some tasks leads to end of the process, when successfully the license is a conceived and when is denied for any reason.

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## **III. RELATED WORK**

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## III.1. AN INTRODUCTION TO ENTERPRISE ONTOLOGY

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### 2.1 Theoretical Foundations

There exist two different system notions, each with its own value, its own purpose, and its own type of model: the function-oriented or teleological and the construction oriented or ontological system notion [2]. The *teleological system* notion is about the function and the (external) behavior of a system. The corresponding type of model is the *black-box model*. Ideally, such a model is a (mathematical) relation between a set of input variables and a set of output variables, called the transfer function. The teleological system notion is adequate for the purpose of using or controlling a system. It is therefore the dominant system concept in e.g. the social sciences, including the organizational sciences. For the purpose of building and changing a system, one needs to adopt the ontological system notion. It is therefore the dominant system notion in all engineering sciences.

The *ontological system* notion is about the construction and operation of a system. The corresponding type of model is the *white-box model*, which is a direct conceptualization of the ontological system definition presented below. The relationship with function and behavior is that the behavior is brought forward, and consequently explained, by the construction and the operation of a system. These definitions are in accordance with the work of Gero et al. if one substitutes their use of “structure” by “construction and operation” [9]. The ontological definition of a system, based on the one that is provided in [2], is as follows. Something is a system if and only if it has the next properties:

- *Composition*: a set of elements of some category (physical, biological, social, chemical etc.).
- *Environment*: a set of elements of the same category. The composition and the environment are disjoint.
- *Structure*: a set of influencing bonds among the elements in the composition and between these and the elements in the environment.
- *Production*: the elements in the composition produce services that are delivered to the elements in the environment.

Associated with every system is the world in which the actions of the system get their effect. The *state* of a world is a set of facts. The *state space* of a world is the set of lawful states, and the *transition space* is the set of lawful sequences of transitions. The occurrence of a transition is called an *event*.

A *fact* is something that is the case [17]. The knowledge of a fact can be expressed in a predicate over one or more objects, where an object is conceived as a bare individual [1]. We will consider only elementary facts [6, 10]. Facts can be declared, like the declaration of the concept ‘car’, or defined, like the definition of the concept ‘van’ on the basis of the concept ‘car’. This notion of fact is all one needs for modeling a world. It is only a matter of convenience to conceive of *entities* next to facts.

An entity type is just a unary fact type, for example the type car. Including both types and classes in a conceptual model is also a matter of convenience. An entity *class* is just the extensional counterpart of the (intentional) entity type. As an example, the class  $CAR = \{x \mid car(x)\}$ .

According to the distinction between function and construction, the collective services provided by an enterprise to its environment are called the *business* of the enterprise; it

represents the function perspective. Likewise, the collective activities of an enterprise in which these services are brought about and delivered, including the human actors that perform these activities, are called the *organization* of the enterprise; it represents the construction perspective. An organization is a system in the category of social systems. This means that the elements are social individuals, i.e. human beings or subjects in their ability of entering into and complying with commitments about the things that are produced in cooperation. Subjects fulfill actor roles (to be explained later). A subject in its fulfillment of an actor role is called an *actor*.

## 2.2 The Universal Transaction Pattern

Actors perform two kinds of acts. By performing *production acts*, the actors contribute to bringing about and delivering services to the environment of the organization. A production act (P-act for short) may be material (manufacturing, transporting, etc.) or immaterial (deciding, judging, diagnosing, etc.). By performing *coordination acts* (C-acts for short), actors enter into and comply with commitments. In doing so, they initiate and coordinate the performance of production acts. Examples of C-acts are requesting and promising a P-act. The result of successfully performing a C-act is a *coordination fact* or C-fact (e.g., the being requested of a P-act).

The result of successfully performing a P-act is a *production fact* or P-fact. P-facts in the case Library (see Sect. 3) are “loan L has been started” and “the late return fine for loan L has been paid”. The variable L denotes an instance of loan. An *actor role* is defined as a particular, atomic ‘amount’ of authority, viz. the authority needed to perform precisely one kind of production act.

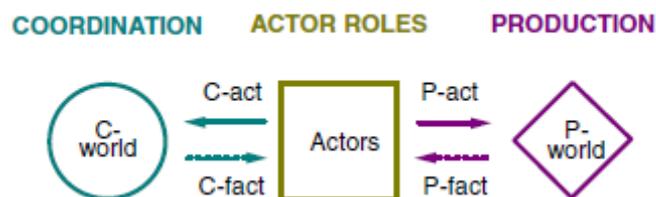


Figure 1: The white-box model of an organization

Just as we distinguish between P-acts and C-acts, we also distinguish between two worlds in which these kinds of acts have effect: the *production world* or P-world and the *coordination world* or C-world respectively (see Fig. 1). At any moment, the C-world and the P-world are in a particular state, simply defined as a set of C-facts or P-facts respectively. When active, actors take the current state of the P-world and the C-world into account (indicated by the dotted arrows in Fig. 1). C-facts serve as agenda for actors, which they constantly try to deal with. Otherwise said, actors interact by means of creating and dealing with C-facts.

The *operational principle* of organizations is that actors feel committed to deal adequately with their agenda.

P-acts and C-acts appear to occur in generic recurrent patterns, called *transactions* [4, 7].

Our notion of transaction is to a some extent similar to the notion of Conversation for Action in [16] and to the notion of Workflow Loop in [3]. A transaction goes off in three phases: the order phase (O-phase), the execution phase (E-phase), and the result phase (R-phase). It is carried through by two actors, who alternately perform acts. The actor who starts the transaction and eventually completes it, is called the initiator or *customer*. The other one, who actually performs the production act, is called the executor or *producer*. The O-phase is a conversation that starts with a request by the customer and ends (if successfully) with a promise by the producer. The R-phase is a conversation that starts with a statement by the producer and ends (if successfully) with an acceptance by the customer. In between these two conversations there is the E-phase in which the producer performs the P-act.

In Fig. 2, we present the basic form of this transaction pattern. It shows that the bringing about of an original new, thus, ontological, production result (as an example: the delivery of a bouquet of flowers) starts with the requesting of this result by someone in the role of customer from someone in the role of producer. The original new thing that is customer producer

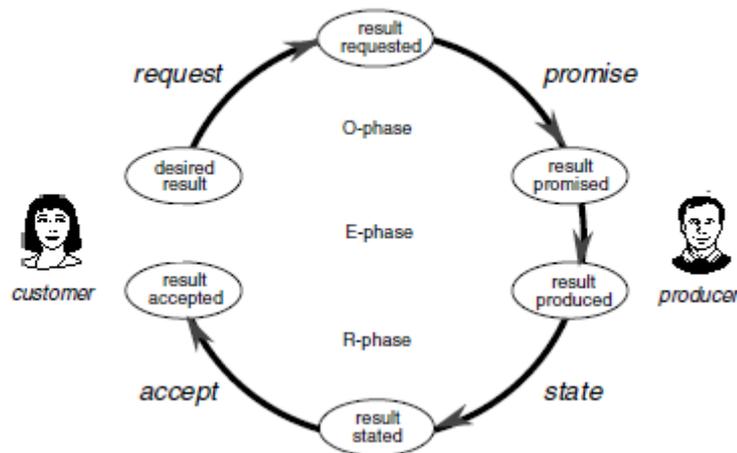


Figure 2: The basic pattern of a transaction

created by this act, as is the case for every coordination act, is a *commitment*. Carrying through a transaction is a “game” of entering into and complying with commitments.

So, the process starts with the request for the bouquet by the customer, which brings the process to the state “result requested”, the result being the ownership by the customer of the desired bouquet. The producer responds to the state “result requested” by promising to bring about the desired result, which brings the process to the state “result promised”. This represents a to-do item for the producer: he has to comply with the promise by actually delivering the bouquet of flowers, i.e., executing the production act. In the act of handing over the bouquet to the customer, he states that he has complied with his promise. The process now comes to the state “result stated”. The customer responds to this state by accepting the result. This act completes the transaction successfully.

The basic pattern must always be passed through for establishing a new P-fact. A few comments are in place however. First, performing a C-act does not necessarily mean that there is oral or written communication. Every (physical) act may count as a C-act. Second, C-acts may be performed *tacitly*, i.e. without any signs being produced. In particular the promise and the acceptance are often performed tacitly (according to the rule “no news is good news”). Third, next to the basic transaction pattern, as presented in Fig. 2, two dissent patterns and four cancellations patterns are identified [4, 7]. Together with the standard pattern they constitute the complete transaction pattern. It is exhibited in Fig. 3. Next to the basic transaction steps (a step is a combined C-act and C-fact) discussed before, there is the decline as the alternative of a promise, and the reject as the alternative of an accept. Both C-facts are discussion states, where the two actors have to ‘sit together’ and try to come to a (new) agreement. When unsuccessful, the transaction is stopped, either by the initiator or by the executor. Four cancellation patterns, on the left and the right side, complete the transaction pattern, one for every basic step.

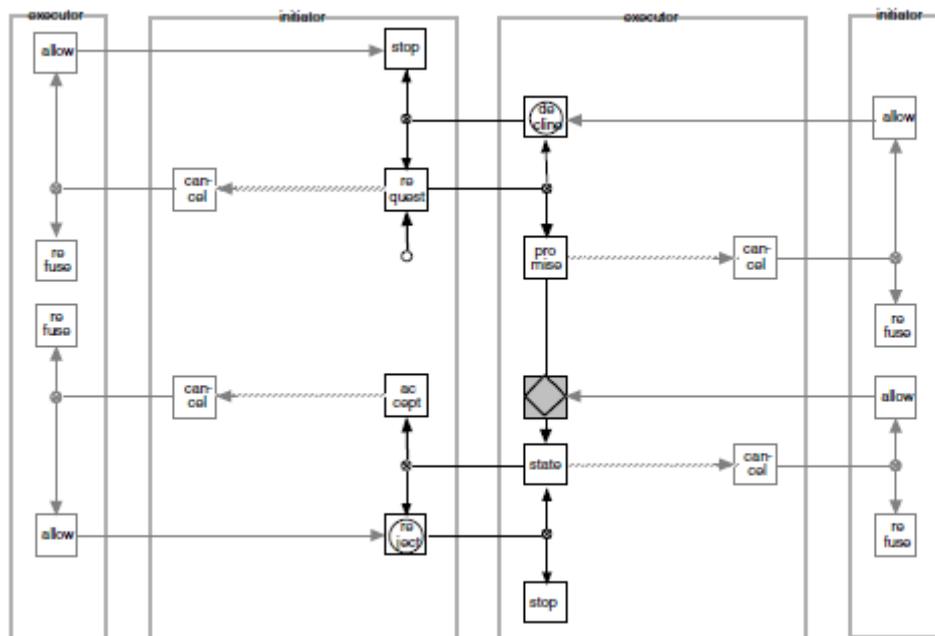


Figure 3: The universal transaction pattern

Every *transaction process* is some path through this complete pattern, and every *business process* in every organization is a connected collection of such transaction processes. This holds also for processes across organizations, like in supply chains and networks. That is why the transaction pattern is universal and must be taken as a *socionomic law*: people always and everywhere conduct business (of whatever kind) along this pattern [7].

### 2.3 The Aspect Organizations

Three human abilities play a significant role in performing C-acts. They are called *forma*, *informa* and *performa* respectively [7]. The *forma* ability concerns being able to produce and perceive sentences. The *informa* ability concerns being able to formulate thoughts into sentences and to interpret sentences. The term ‘thought’ is used in the most general sense. It may be a fact, a wish, an emotion etc. The *performa* ability concerns being able to engage into commitments, either as performer or as addressee

of a coordination act. This ability may be considered as the *essential* human ability for doing business (of any kind).

From the production side, the levels of ability may be understood as ‘glasses’ for viewing an organization (see Fig. 4). Looking through the *ontological* glasses, one observes the business actors (B-actors), who perform P-acts that result in original (i.e., non-derivable) facts.

So, an ontological act is an act in which new original things are brought about. Deciding and judging are typical ontological production acts.

Ontological production acts and facts are collectively called B-things. Looking through the *infological* glasses, one observes intellectual actors (I-actors), who perform infological acts like deriving, computing, and reasoning. As an example, calculating the late return fine in the case Library (Sect. 3) is an infological act. Infological production acts and facts are collectively called I-things.

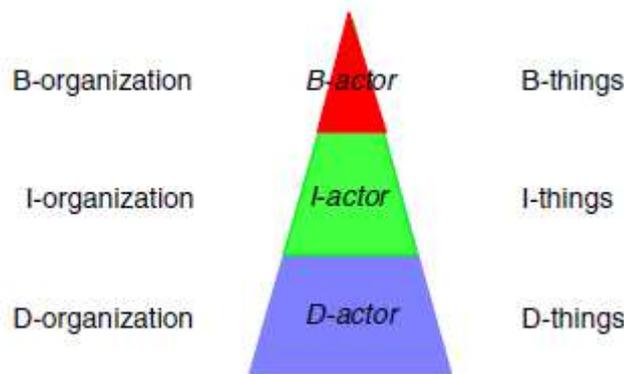


Figure 4: Depiction of the aspect organizations

Looking through the *datalogical* glasses, one observes datalogical actors (D-actors), who execute datalogical acts like gathering, distributing, storing, and copying documents containing the facts mentioned above. So, a datalogical production act is an act in which one manipulates the form of information, commonly referred to as data, without being concerned about its content. For example, the act of recording a loan in the Library’s database is a datalogical act. Datalogical production acts and facts are collectively called *D-things*.

The distinction levels as exhibited in 4 are an example of a *layered nesting* of systems [2]. Generally spoken, the system in some layer *supports* the system in the next higher layer. Conversely, the system in some layer *uses* the system in the next lower layer. So, the B-organization uses the I- organization and the I- organization uses the D- organization. Conversely, the D- organization supports the I- organization and the I- organization supports the B- organization.

In the  $\Psi$ -theory based DEMO methodology<sup>3</sup>, four aspect models of the complete ontological model of an organization are distinguished, as exhibited in 5. The Construction Model (CM) specifies the construction of the organization: the actor roles in the composition and the environment as well as the transaction types in which they are involved. The Process Model (PM) specifies the state space and the transition space of the C-world. The State Model (SM) specifies the state space and the transition space of the P-world. The Action Model consists of the action rules that serve as guidelines for the actor roles in the composition of the organization.

Enterprise Ontology is one of the two pillars of the emerging field of Enterprise

Engineering, Enterprise Architecture being the other one [8]. The paradigm of Enterprise Engineering is that an enterprise is a designed artifact. Its implication is that any change of an enterprise, however small, means a redesign of the enterprise, mostly only a redesign of its construction, sometimes also a redesign of its function.

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## III.2. ANALYSIS OF WORKFLOW SYSTEMS

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**CuteFlow** is a webbased open source document circulation and workflow system. The Portuguese interface has a problem, the program change the characters with accentuation to strange characters. The program doesn't allow decision points where the current logged user can choose the next direction. The workflow in this program is sequential, users and tasks are defined at the beginning of each complete circulation, and every time a new circulation had to start, a new definition had to be done. No decision support during the execution is permitted, what is defined in the beginning stays till the end. Other problem we found is about the number of users/department per circulation, this system only supports four tasks per circulation and in the city hall i have many more. The program is outdated, since 2009 nothing new come out. The documentation of CuteFlow is very "raw". Looks like these program was developed for documents approval and review inside a small organization. The program we are looking for has to add several documents along the circulation (in some stations) and it cannot change the documents previously uploaded there by other users, it can only add more documents to the folder.

**KnowledgeTree** is an easy and secure way to manage a company's document creation, editing, versioning, and sharing - all from a powerful Web interface and Microsoft® Office and Windows® Explorer tools. There are two solutions: an open source and a commercial. The commercial version provides to companies updates, enhanced document management features, and commercial support. The open source solution helps teams to create and manage documents they can access and control online. KnowledgeTree allow us to direct the lifecycle of a document from start to finish. The "Workflow Administration" menu allows us to access and update information about states, transitions, security and notifications as they apply to the workflow. We can control which users can log in, and are part of which groups and organizational units. Assign permissions to users and groups, and specify which permissions are required to interact with various parts of the Document Management System. The first step of the process, we give a name to the workflow and then we define the states it will pass through. Examples of states include "reviewed", "submitted" or "pending", the first state on the list, is the one that will initialize the workflow. Despite being a workflow system used by several enterprises with several users in the world we found this solution unsuitable for the city hall for several reasons. The main page, after login shows a dashboard with many unnecessary information, like "introduction", "tag cloud", "mail server status", "WebDAV connection Information", "RSS feeds", "orphaned folders" and "my dropped documents". The essential for our project is to see the dropped documents on the system and to inform each user when the time to perform the next assignment arrives, this system don't prove to do that in any time of the testing. The system creates a folder "root" which contains several folders with the name of the system users. When

we upload a document we are always asked to fill several fields with the metadata of the document, and this is time spending and unnecessary for our project. We are asked to add a tag, insert the document author, the category and media type. This the data we need to insert in the system when a new case is created “criação de processo” is data, number of the case and requirement, name of the citizen who is applying for a license and a field for comments. The KnowledgeTree is very unflexible about this, having this previously defined interface which is impossible to customize to only insert the information we need. We felt lost in the program, very hard to understand where the document is and assign the document to the next task/user. After uploading the document we don't understand how the document will be routed to the next user/department inside the organization. In general we found it hard to understand and work with, it's more centered in the document storage that in the workflow, so we had to reject this solution.

**OpenDocMan** is an open source document management system written in php. OpenDocMan allows documents to be stored in some sort of centralized location. This makes finding documents in the DMS much easier, as there is only one place to look. A simple folder in our computer can allow files to be stored, but limiting access to specific individuals becomes more of a problem. A good DMS will allow fine-grained access to each and every file.

IT staff and managers can delegate document management duties to any number of staff members, through user and group permissions. Permissions can be set as restrictively or permissively as needed. Department reviewers can authorize or decline files for publication and the file history provides a history of the actions taken upon a file. Document management software and document management in general is based around a concept of centralized document storage, limited access, and change tracking. With the search engine, we can enter keywords and locate documents quickly. The system allows an unlimited number of users, departments and categories. OpenDocMan is a great document management system, but it is not a full-fledged solution for the organizational we are modeling. Several features are missing, it's a very basic system. Portuguese version is missing, and the company we are modeling needs the system in Portuguese, to be easily understood by all the company members. The first step of good communication is to speak a language everyone is familiar with. A good feature is a check expiration date on the files defined by the owner of the document. The check expiration feature says how long should a file be in the system before they expired. For example if the limit is set on 30 days, every file that hasn't been updated will be put in the queue for review.

**Activiti** is a light-weight workflow and Business Process Management (BPM) Platform targeted at business people, developers and system admins. Its core is a super-fast and rock-solid BPMN 2 process engine for Java. It's open-source and distributed under the Apache license. Activiti runs in any Java application, on a server, on a cluster or in the cloud. It integrates perfectly with Spring, it is extremely lightweight and based on simple concepts. Activiti supports all aspects of Business Process Management (BPM) in the full context of software development. This includes non technical aspects like analysis, modeling and optimizing business processes as well as technical aspects of creating software support for business processes. Activiti is composed by: Explorer, Probe, Modeler and Cycle. Activiti explorer is a web application that provides access to the Activiti Engine runtime for all users of the system. It includes task management, viewing reports based on statistical history data

and process instance inspection. Activiti Probe is a web application that provides administration and monitoring capabilities to keep an Activiti Engine instance up and running. This application is aimed at system administrators and operators whom are responsible for keeping systems and infrastructure up and running. The Activiti Modeler is a customized version of the open source Signavio web based process editor. It can be used to author BPMN 2.0 compliant processes graphically. The process files are stored by the server on a central file system. That file system acts as the model repository. Signavio primary's purpose is to author BPMN 2.0 process diagrams in a browser. But we tried to create the city hall diagram and some problems arrived, so we had to use a parallel diagramming tool (Yaoqiang) and import the diagram to the Activiti platform. Activiti Cycle is completely new type of BPM component. In short, it's a web based application that facilitates the collaboration between business people, developers and IT operational people. It's based on the notion of the Process Cycle Layer. We found Activiti a program with lots of potentiality and we could see that it holds great power to develop great things, although a lot of hours writing code would be necessary to come to make the platform do what is needed for the organization in the case study, after Activiti we found the wonders of ProcessMaker and after this taste there was no turn around, if we haven't found ProcessMaker we probably would go for Activiti.

We choose **ProcessMaker** because is extremely efficient and lightweight. ProcessMaker has the advantage of being well documented on a wiki page and forum, so we felt fully supported while applying DEMO to this software, has high quality BPM suite with the additional benefit of it being open source. And one of the big issues that we had was the tiny deadline to come along with a solution, with ProcessMaker we didn't have to spend a lot of time programming and end users liked ProcessMaker because it is very easy to use. And we found out that customers on 5 continents, through 17 different languages and across a variety of industries including manufacturing, telecommunications, finance and government are using ProcessMaker workflow software and are satisfied.

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## IV. IMPLEMENTATION

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This chapter is to explain the implemented work. The purpose of this chapter is to explain the project developed in detail and help those who will work with the software in the future.

This project come to live thanks to the new method for modeling enterprises business called DEMO. First we study the theory of DEMO, and then, we design the models based on enterprise ontology by DEMO. There are several models that support this method, we started with ATD (Actor Transaction Diagram) to have a notion about the actors involved playing roles and tasks performed. This diagram was shown to the directors of the city hall in study, and convince them to take the chance in this project instead of buying another expensive software solution.

There were two major challenges in this project, first understand the theory of DEMO and what it stands for and second understand the enormous confusion of the construction license in the city hall.

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## IV.1. FLOWCHARTS

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### IV.1.1. Part of a flowchart of the license procedure in the city hall

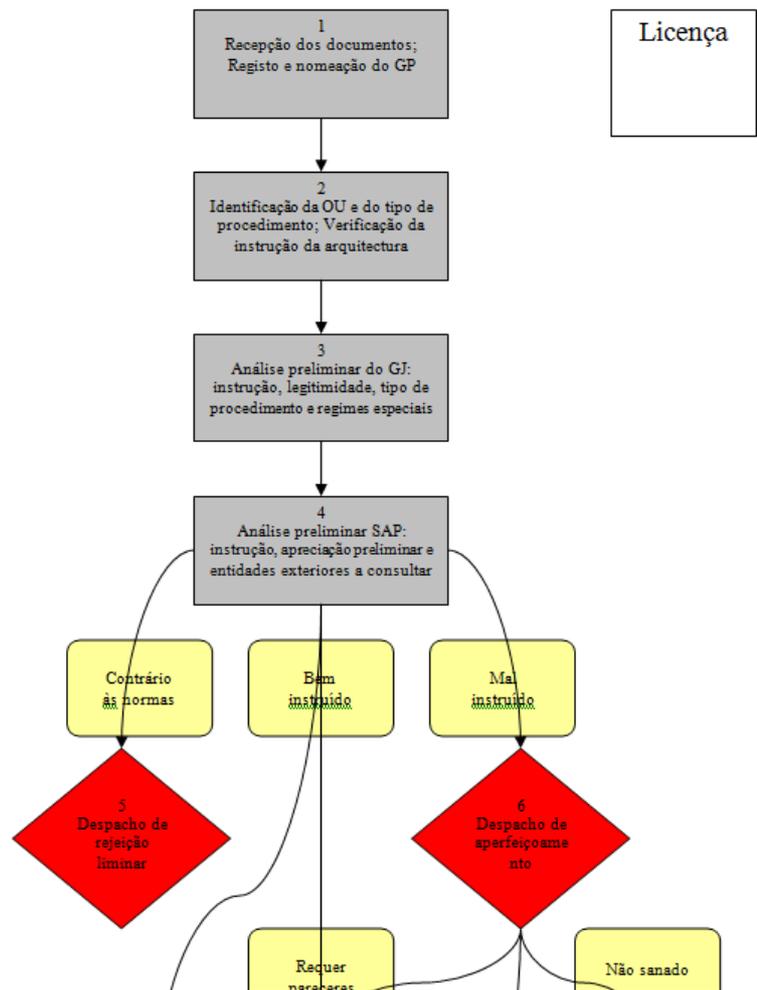


Figure 5: Part of a flowchart of the license procedure

## **IV.1.2.Part of the labels of a flowchart of the license procedure in the city hall**

### **LEGENDA**

#### **1. RECEPÇÃO DOS DOCUMENTOS, REGISTO E NOMEAÇÃO DO GESTOR**

Responsável: recepcionista

1.1. Recepção do requerimento inicial e dos documentos que o acompanham com a aposição de carimbo de entrada.

Obs. no acto de recepção do requerimento e dos documentos que o acompanham não é feita nenhuma conferência sobre se estão todos os documentos, legal e regulamentarmente exigíveis.

1.2. Atribuição de número ao processo e ao requerimento e identificação do respectivo gestor do procedimento.

1.3. Entrega de comprovativo de recepção e/ou devolução de duplicado carimbado ao apresentante com a identificação do gestor do procedimento e de como e quando o poderá contactar.

#### **2. IDENTIFICAÇÃO DA OPERAÇÃO URBANÍSTICA E DO PROCEDIMENTO E ANÁLISE INSTRUTÓRIA**

Responsável: gestor do procedimento

2.1. Identificação do tipo de operação urbanística com referência ao artigo 2.º do Decreto-Lei n.º 555/99, de 16 de Dezembro.

2.2. Identificação com carácter provisório do tipo de controlo prévio a que está sujeita a operação urbanística, neste caso licença administrativa, com referência ao n.º 2 do artigo 4.º do Decreto-Lei n.º 555/99, de 16 de Dezembro.

2.3. Verificação da instrução do processo através da conferência de uma ficha de instrução.

#### **3. ANÁLISE PRELIMINAR DO GABINETE JURÍDICO**

Responsável: jurista

3.1. Verificação do enquadramento da operação urbanística conforme o requerimento e com referência ao artigo 2.º do Decreto-Lei n.º 555/99, de 16 de Dezembro, e do enquadramento procedimental, com referência ao artigo 4.º do referido decreto-lei e a regimes especiais aplicáveis.

3.2. Verificar se o requerente tem legitimidade para o pedido.

Obs. Se os documentos necessários a esta análise não estiverem junto ao processo esta será feita assim que a instrução do pedido seja completada com todos os documentos, legal e regulamentarmente exigíveis.

#### **4. ANÁLISE PRELIMINAR DO SAP**

Responsável: arquitecto

4.1 Verificação dos documentos instrutórios, com referência à Portaria n.º 232/2008, de 11 de Março, à Lei n.º 31/2009, de 3 Julho, ao Novo Regulamento Municipal da Edificação, Urbanização e Taxas e à legislação especial aplicável.

4.2. Identificar as entidades externas a consultar em função do tipo de operação urbanística, da sua finalidade e dos regimes especiais aplicáveis.

4.3. Apreciação liminar do projecto de arquitectura com as normas legais e regulamentares em vigor aplicáveis, em particular com o Plano Municipal de Ordenamento do Território em vigor.

#### **#. GESTÃO DO PROCEDIMENTO**

Responsável: gestor do procedimento

##### **#.1. O PEDIDO CONTRÁRIO ÀS NORMAS:**

Até ao prazo de 10 dias a contar do dia da respectiva apresentação, sendo o pedido manifestamente contrário às normas, prossegue-se para o quadro 5 (despacho de rejeição liminar).

Obs. O pessoal dirigente, no caso, o Chefe da Divisão de Urbanismo, deve informar nesta fase se concorda ou não com a rejeição liminar do pedido, em atenção ao prescrito no n.º 1 do artigo 71.º da Lei n.º 169/99, de 18 de Setembro.

#### **5. DESPACHO DE REJEIÇÃO LIMINAR**

Responsável: presidente da câmara/vereador

5.1. O despacho de rejeição liminar do pedido está previsto no n.º 4 do artigo 11.º do Decreto-Lei n.º 555/99, de 16 de Dezembro, e constitui uma decisão de indeferimento do pedido na fase preliminar do procedimento, visto o mesmo ser manifestamente contrário às normas legais e/ou regulamentares aplicáveis

Obs. 1. O despacho de rejeição liminar é da competência do presidente da câmara municipal, ou do vereador com competências delegadas, conforme o n.º 4 e o n.º 10 do artigo 11.º do Decreto-Lei n.º 555/99, de 16 de Dezembro.

Obs. 2. O despacho de rejeição liminar do pedido, tratando-se de um acto administrativo que põe termo ao procedimento, deverá ser precedido de audiência prévia do interessado, nos termos do Código do Procedimento Administrativo.

#### **#. GESTÃO DO PROCEDIMENTO**

Responsável: gestor do procedimento

##### **#.1. O PEDIDO MAL INSTRUÍDO:**

Até ao prazo de 8 dias a contar do dia da respectiva apresentação, estando o pedido mal instruído, e não havendo motivos para rejeição liminar (designadamente por o pedido ser manifestamente contrário às normas legais e/ou regulamentares) prossegue-se para o quadro 6 (despacho de aperfeiçoamento do pedido).

Decorrido o prazo de 15 dias para o aperfeiçoamento do pedido, a contar da notificação ao requerente, e tendo o requerente completado/corrigido o pedido nos termos da notificação, prossegue-se para o quadro 7 (solicitar pareceres a entidades externas).

Decorrido o prazo sem que o requerente tenha instruído o pedido nos termos da notificação ou apenas o tenha sanado parcialmente, o processo retorna ao quadro 5 (despacho de rejeição liminar).

Obs. Durante o prazo de 15 dias ou até à data em que o requerente completar/corrigir o pedido, o procedimento fica suspenso, de acordo com o n.º 3 do artigo 11.º do Decreto-Lei n.º 555/99, de 16 de Dezembro.

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## **IV.2. LOGBOOK - INTERVIEWS AND QUESTIONNAIRES**

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25/02/2011

When the desk receptionist receives the request for licensing procedure of the citizen, she stamps it and assigns a registration number and a file number. A process can have several applications registered. The receptionist assigns a process manager to the case and the manager gives the citizen. She stamps the document with the number of process and register then a proof of claim is delivered to the citizen with these data, the contact of the process manager and office hours after clear payment.

The process manager makes the initial screening process, here it indicates which documents were delivered. The manager takes responsibility for the pace (watch the deadlines to meet) and takes the process one side to another to be subjected to internal administrative act next. Depending on the opinion, he knows where the process follows next. He has to monitor, verify that the deadlines are being met, you have to draw the attention when an employee has stopped the process there. The case manager also provides information to interested parties when they seek and promote the notifications. It is what makes the interconnection between different points. It is the network administrator for the procedure. Even if he does not take the papers from one side to another (when there will be a workflow system), it must always be to control the timing and location of the process.

The process always follows the direction: receptionist, process manager, lawyer, architect, division chief of urban Planning and city councilman. At the time of the reorganization process of the process are concentrated all causes for rejection, so that the citizen can improve the documents of the request.

If the request is contrary to the rules, the opinion contained is "Order against the rules." When this happens within 10 days is issued an order for preliminary rejection by the councilman or, failing this, by the President. The process manager is responsible for making the necessary communications to inform the applicant of this decision and the process is suspended.

After receiving notification, the applicant will decide whether to make the change of the application as indicated. In making the decision to modify the order, will have to examine the application according to the missing documents. If for 15 days from the date of issue of the letter, the applicant does not respond, or has not dealt with the request pursuant to notice, or has only partially resolved (delivered only a few documents), the process is circulated to the manager councilman and is given the decision to order an injunction. After the preliminary decision to dispatch manager, closes the case and sends a notification to the applicant of the decision of the town council about that process. The whole process is terminated. A day later if the applicant wish to request reconsideration of that process, you may do so, so, start a new cycle of analysis.

When the lawyer receives the process, makes an analysis of the contents of each document and also annotates other missing documents as appropriate. After consideration of the information contained in each document, an analysis that may be on the legitimacy of the request, or if the applicant owns, or has power of attorney of the owner, or have a permission from the owner to make that request. One document that serves to make this analysis is the land register. The lawyer also verifies that the way the procedure is correct, if not a licensing procedure is indicated by a lawyer. The lawyer makes the verification of legal regimes. In addition to the normal documents missing checks the documents of the special regime (whether industry, hotels, etc. ..) and alert the PAS in its opinion. The lawyer gives an opinion and the manager moves the process to the cabinet architecture.

The architect draws attention to servitudes that are to cover that land issues (PDM). The servitudes require specific standards or external advice that serve these areas of bondage. A stream along the construction is a servitude. An airport is a servitude, if the building is near the airport. They are also servitudes, area of influence of the stream, the airport area of influence, the government brought irrigation, within the area of protection of a patrimony listed building.

The chief of urban planning division, analyzes the opinions of the lawyer and the architect and tells, whether he agrees with the opinions issued or not and also if the internal procedure has complied with all applicable legal standards. Then the process goes to the city councilman, who issues an order in accordance with the information in the process introduced by the legal office, the technical office, PAS and Chief of division.

When the claim is well educated and requires advice from external bodies, the process manager sends a copy of the architectural project for the authority.

**03/04/2011**

Question: The expiry of the application happens when specialties were not delivered within one year from the date of approval of the architecture? Answer: Yes.

Question: Revocation of the decision is when he has detected some technical irregularity. This happens when? When the city councilman has already licensing? Answer: Any irregularity can be detected at any time of the procedure. The detection of irregularities is the responsibility of all players within the planning procedure and also of others citizens. Where it appears that the applicant does not own the building or have any documents to give you that right. (identification of irregularity - a lawyer). Where the applicant gives the specialty after the deadline and the city council said nothing, the act of "approval of architecture" has already expired. (The manager or person who handles the process can intervene and prevent the decision-making)

Question: If someone decides to make a claim during the course of the licensing procedure, it is appreciated in the process? Answer: Before the licensing, people do not have access to processes that are still under review. A third person may consult the file at the assessment stage, provided they demonstrate that they have legitimate right to a direct and personal consultation, you can see the process and make a claim. Otherwise, people can only refer a process after the decision, or one year from the date of filing. When a person begins to build and not yet approved the license. If there is a complaint about this act, the work may be choked.

A complaint will give rise to an appreciation, during the licensing process, if a legal issue goes to the legal office (property) if it is a matter of area or leaves goes to technical office.

Question: The manager process has to be one person or may be a computer? Answer: The manager process has to be a person, not a computer, because the machines do not take responsibility. People assume if the fault occurs, have responsibilities, duties are functional before the public entity may take disciplinary liability and the damage caused to its conduct. The computer is only a tool, the law provides for an individual process manager and that manager can help the other instruments to facilitate their work.

Question: When the city hall gives a favorable final decision, is awarded the license for the application of that work. Are calculated the amounts payable by the applicant, which is the time for payment of these values? Answer: The law says that when licensing proceeds to the settlement of fees, and then they are paid with the issuance of the permit. The permit is never issued with the final decision. After the final decision will be notified and then has a period of one year for withdrawing the permit. The applicant is notified of the amount payable, and has one year to raise the license and make the payment. You can also request an extension and have two years to make the payment. Fees are calculated according to tables and rules that are part of a municipal regulation, operations are sometimes mere arithmetic according to the criteria attached, sometimes depend on some factors. And this transaction settlement is done by a technical coordinator. The amount payable, as well as the deadline for doing so expires and the project can apply for renewal. The applicant may also request to make a payment that has since phased basis. To pay such a deposit and the number of benefits cannot go beyond the implementation period of the work. If the applicant does not pay, city hall triggers the municipal bond.

Question: What happens when licensing deadline for the execution of the construction is outdated and is not yet complete? Answer: The extension of the license can be authorized for more than half the time in the initial application request. And after completion of construction, the applicant makes a application to asking for the license to use the building.

16-03-2011

Question: Anytime you can get a claim of others citizens related to a process, this claim might derail the approval of the architecture? Answer: The City Hall may determine who committed an illegal act and repealing decision approving the architecture. Although it is an unusual situation because the imminence of a construction site at the stage of examining the viability of the licensing application is limited knowledge of the applicant and the camera. If someone outside to know and understand city hall and complain have the same duty to accept, analyze and respond to him.

Question: What happens if the application comes with the wrong urban operation? Answer: The lawyer asks the applicant for him to correct the request. The urban operation may change licensing application for prior notification for example.

17/03/2011

Question: What does the preliminary analysis to the process? Answer: The preliminary analysis is the legal office and technical office. If you are not missing

documents as soon gives a legal opinion and technical. The preliminary analysis is the instrument that detects the absence of one or more documents, this analysis results in a letter asking the applicant to properly instruct the request.

**23/03/2011**

Question: Why does the City Hall checks the projects of specialties, if the law does not obligate? Answer: camera does not have to take responsibility or give an opinion on the projects of specialties the technicians responsible for making the projects, but it does because if a failure soon it prevents from alterations on the construction latter.

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### **IV.3. TRT – TRANSACTION RESULT TABLE**

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<b>Transacção</b>	<b>Tipo de resultado</b>	<b>Papel iniciador</b>	<b>Agente iniciador</b>	<b>Papel executante</b>	<b>Agente executante</b>
T01 Atribuição de licença	R01 A [licença] é atribuída	CA01 Requerente	Pessoa	A01 Atribuidor de licença	Câmara municipal , Presidente ou Vereador
T02 Criação processo	R02 É criado um processo de [licença]	A01 Atribuidor de licença	Câmara, President e ou Vereador	A02 Criador de processo	Rececionista
T03 Nomeação de gestor processo	R03 É nomeado um gestor de processo à [licença]	A02 Criador de processo	Rececionista	A03 Nomeador de gestor de processo	Recepcionista
T04 Verificação da instrução do pedido	R04 É feita a verificação da instrução do pedido de [licença]	A03 Nomeador de gestor de processo	Rececionista	A04 Verificador da instrução do pedido	Gestor de processo
T05 Emissão de parecer jurídico	R05 É emitido um parecer jurídico da [licença]	A04 Verificador da instrução do pedido	Assistent e técnico	A07 Emissor de parecer jurídico	Jurista
T06 Aperfeiçoamento jurídico do pedido	R06 É entregue um aperfeiçoamento jurídico do pedido de [licença]	A07 Emissor de parecer jurídico	Jurista	CA01 Requerente	Pessoa
T07 Emissão de parecer técnico de arquitectura	R07 É emitido um parecer técnico de arquitectura à [licença]	A07 Emissor de parecer jurídico	Jurista	A07 Emissor de parecer técnico de arquitectura	Arquiteto
T08 Aperfeiço	R08 É entregue um	A07 Emissor de	Arquiteto	CA01	Pessoa

amento técnico do pedido	aperfeiçoamento técnico do pedido de [licença]	parecer técnico de arquitectura		Requerente	
T09 Submissão das especialidades	R09 São apresentadas as especialidades do pedido de [licença]	A07 Emissor de parecer técnico de arquitectura	Arquiteto	CA01 Requerente	Pessoa
T10 Emissão de parecer de arquitectura externo	R10 É emitido um parecer de arquitectura externo ao pedido de [licença]	A07 Emissor de parecer técnico de arquitectura	Arquiteto	CA 03 Entidades externas	Entidade externa
T11 Emissão de parecer de mérito preliminar	R11 É emitido um parecer de mérito preliminar da [licença]	A07 Emissor de parecer técnico de arquitectura	Arquiteto	A11 Emissor de parecer de mérito preliminar	Jurista
T12 Verificação final da arquitectura	R12 É feita uma verificação final da arquitectura do pedido de [licença]	A11 Emissor de parecer de mérito preliminar	Jurista	A12 Verificador final da arquitectura	Chefe de divisão do urbanismo
T13 Aprovação da arquitectura	R13 É aprovada a arquitectura do pedido de [licença]	A12 Verificador final da arquitectura	Chefe de divisão do urbanismo	A13 Aprovador da arquitectura	Presidente ou Vereador
T14 Emissão de parecer técnico de especialidades	R14 É emitido um parecer técnico de especialidades ao pedido de licença	A13Aprovador da arquitectura	Presidente ou Vereador	A14 Emissor de parecer técnico de especialidades	Engenheiro civil
T15 Emissão de parecer de	R15 É emitido um parecer de especialidades externo ao	A14 Emissor de parecer técnico de	Engenheiro civil	CA03 Entidades externas	Entidade externa

especialidades externo	pedido de [licença]	especialidades			
T16 Apresentação de aperfeiçoamento das especialidades	R16 É entregue um aperfeiçoamento das especialidades do pedido de [licença]	A14 Emissor de parecer técnico de especialidades	Engenheiro civil	CA01 Requerente	Pessoa
T17 Liquidação da caução	R17 É liquidada a caução da [licença]	A14 Emissor de parecer técnico de especialidades	Engenheiro civil	A17 Liquidador da caução	Engenheiro civil
T18 Emissão de parecer de mérito final	R18 É emitido um parecer de mérito final ao pedido de [licença]	A14 Emissor de parecer técnico de especialidades	Engenheiro civil	A18 Emissor de parecer de mérito final	Jurista
T20 Cálculo das compensações urbanísticas	R20 São liquidadas as compensações urbanísticas da [licença]	A19 Verificador final de especialidades	Chefe de divisão do urbanismo	A20 Liquidador das compensações urbanísticas	Arquiteto
T21 Cálculo de TMU	R21 São liquidadas as TMU da [licença]	A20 Liquidador das compensações urbanísticas	Arquiteto	A21 Liquidador de TMU	Coordenador técnico
T22 Cálculo das taxas	R22 São liquidadas as taxas da [licença]	A21 Liquidador de TMU	Coordenador técnico	A22 Liquidador das taxas	Coordenador técnico
T23 Aprovação de especialidades	R23 São aprovadas as especialidades	A19 Verificador de especialidades	Chefe de divisão do urbanismo	A23 Aprovador de especialidades	Câmara, Presidente ou Vereador

ades	da [licença]	des	o	es	
T24 Apresentação dos elementos finais	R24 Os elementos finais da [licença] são apresentados	A23 Aprovador de especialidades	Câmara, Presidente ou Vereador	CA01 Requerente	Pessoa
T25 Verificação dos elementos finais	R25 Os elementos finais da [licença] são verificados	A23 Aprovador de especialidades	Câmara, Presidente ou Vereador	A25 Verificador dos elementos finais	Gestor de Processo
T26 Aperfeiçoamento dos elementos finais	R26 O aperfeiçoamento dos elementos finais da [licença] é apresentado	A25 Verificador dos elementos finais	Jurista	CA01 Requerente	Pessoa
T27 Aprovação técnica dos elementos finais	R27 Os elementos finais da [licença] são aprovados	A25 Verificador dos elementos finais	Jurista	A27 Aprovador técnico dos elementos finais	Engenheiro Civil
T28 Pagamento dos encargos urbanísticos	R28 São pagos os encargos urbanísticos da [licença]	A01 Atribuidor de licença	Câmara, Presidente ou Vereador	CA01 Requerente	Pessoa
T29 Pagamento da taxa de requerimento	R29 A taxa de requerimento do pedido de [licença] é paga	A02 Criador de processo	Rececionista	CA01 Requerente	Pessoa
T30 Aprovação de pagamento faseado dos encargos urbanísticos	R30 É aprovado o pagamento faseado dos encargos urbanísticos da [licença]	CA01 Requerente	Pessoa	A30 Aprovador de pagamento faseado dos encargos urbanísticos	Presidente ou Vereador

os					
T33 Verificação de pedido de prorrogação de prazo para entrega de especialidades	R33 É verificado o pedido de prorrogação de prazo para entrega de especialidades de [licença]	CA01 Requerente	Pessoa	A33 Verificador de pedido de prorrogação de prazo para entrega de especialidades	Jurista
T34 Aprovação de pedido de prorrogação de prazo para entrega de especialidades	R34 É aprovado o pedido de prorrogação de prazo para entrega de especialidades de [licença]	A33 Verificador de pedido de prorrogação de prazo para entrega de especialidades	Jurista	A34 Aprovador de pedido de prorrogação de prazo para entrega de especialidades	Presidente ou Vereador
T35 Decisão de Reclamação	R35 É tomada uma decisão sobre a reclamação da [licença]	CA02 Detetor de irregularidades	Pessoa	A35 Decisor de reclamação	Presidente ou Vereador
T36 Emissão de parecer jurídico sobre a reclamação	R36 É emitido um parecer jurídico sobre a reclamação da [licença]	A35 Decisor de reclamação	Presidente ou Vereador	A36 Emissor de parecer jurídico sobre a reclamação	Jurista
T37 Emissão de parecer técnico sobre a reclamação	R37 É emitido um parecer técnico sobre a reclamação da [licença]	A36 Emissor de parecer jurídico sobre a reclamação	Jurista	A37 Emissor de parecer técnico sobre a reclamação	Arquiteto
T38 Emissão de parecer	R38 É emitido um parecer jurídico	A05 Emissor de parecer	Jurista	A38 Emissor de parecer jurídico	Jurista

jurídico preliminar	preliminar sobre o pedido de [licença]	jurídico		preliminar	
T39 Emissão de parecer técnico preliminar	R39 É emitido um parecer técnico preliminar sobre o pedido de [licença]	A07 Emissor de parecer técnico de arquitetura	Arquiteto	A39 Emissor de parecer técnico preliminar	Arquiteto
T40 Emissão de parecer técnico de especialidades preliminar	R40 É emitido um parecer técnico de especialidades preliminar sobre o pedido de [licença]	A14 Emissor de parecer técnico de especialidades	Engenheiro Civil	A40 Emissor de parecer técnico de especialidades preliminar	Engenheiro Civil
T41 Gestão de processo	R41 O processo da [licença] é gerido	A41 Gestor de processo	Administrativo	A41 Gestor de processo	Assistente técnico

## IV.4. ATD - ACTOR TRANSACTION DIAGRAM

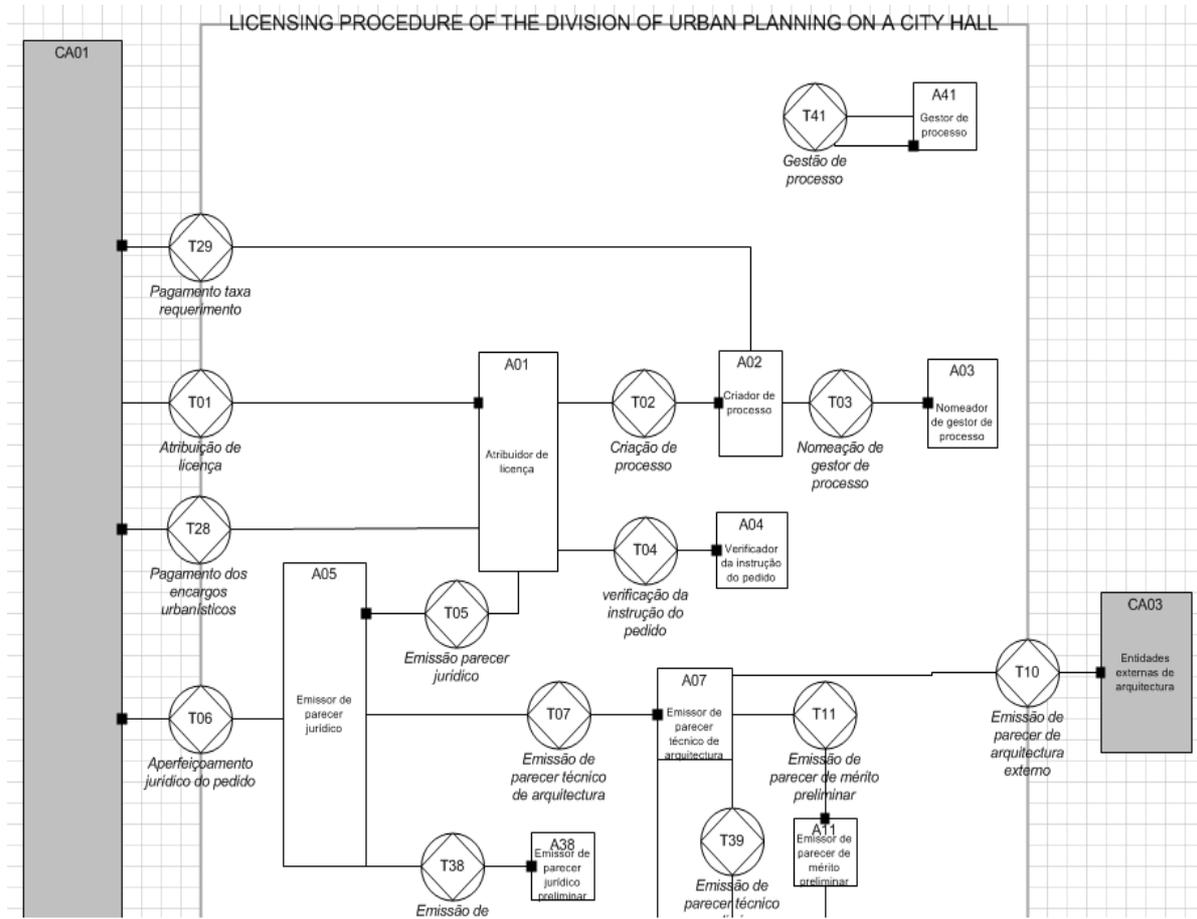


Figure 6: screenshot 1 ATD

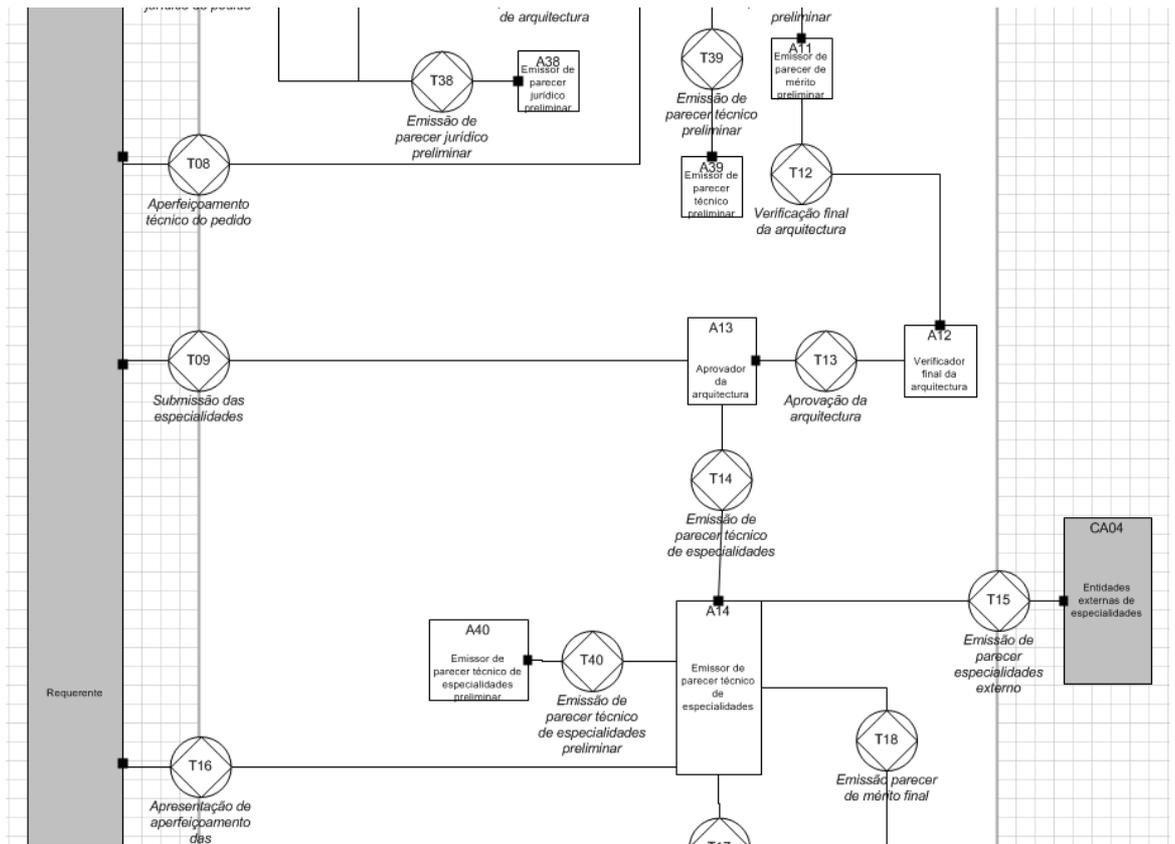


Figure 7: screenshot 2 ATD

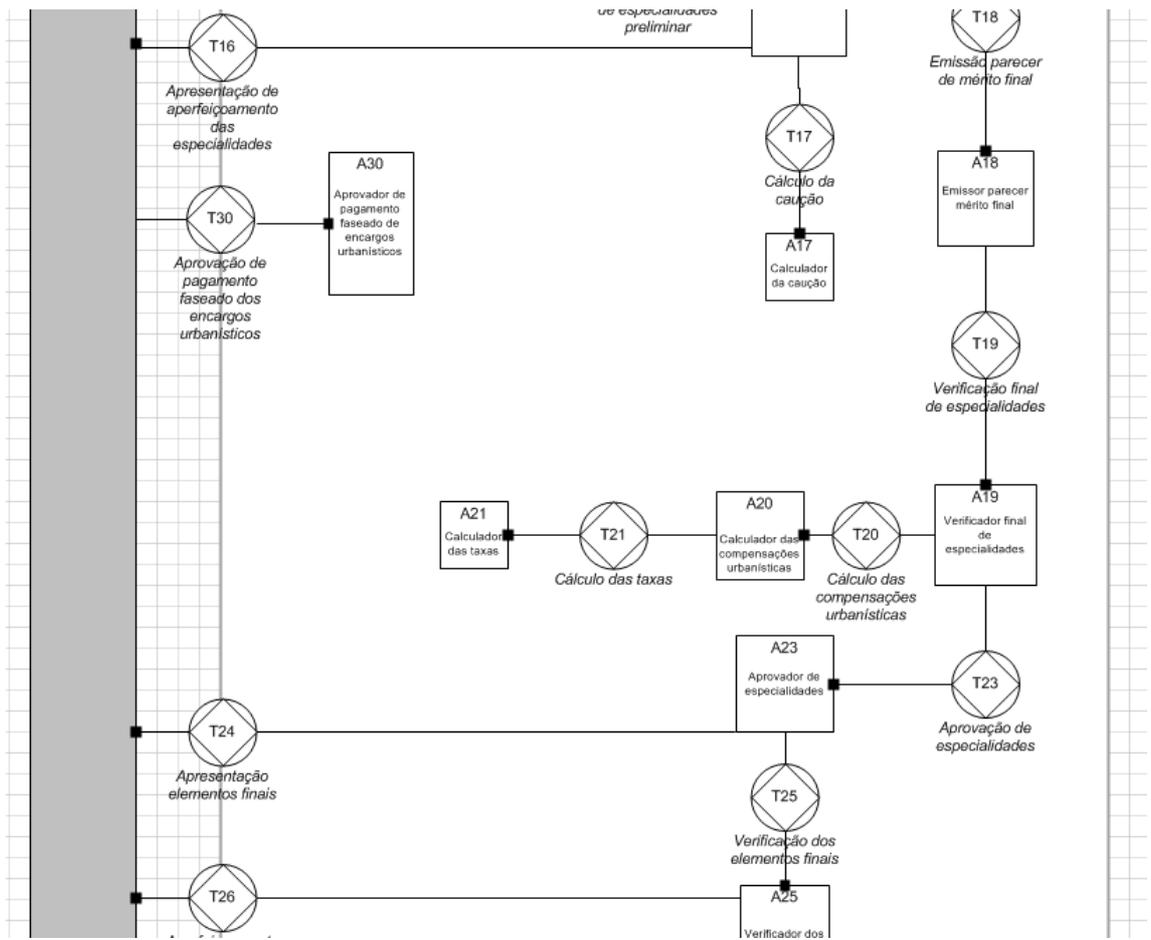


Figure 8: screenshot 3 ATD

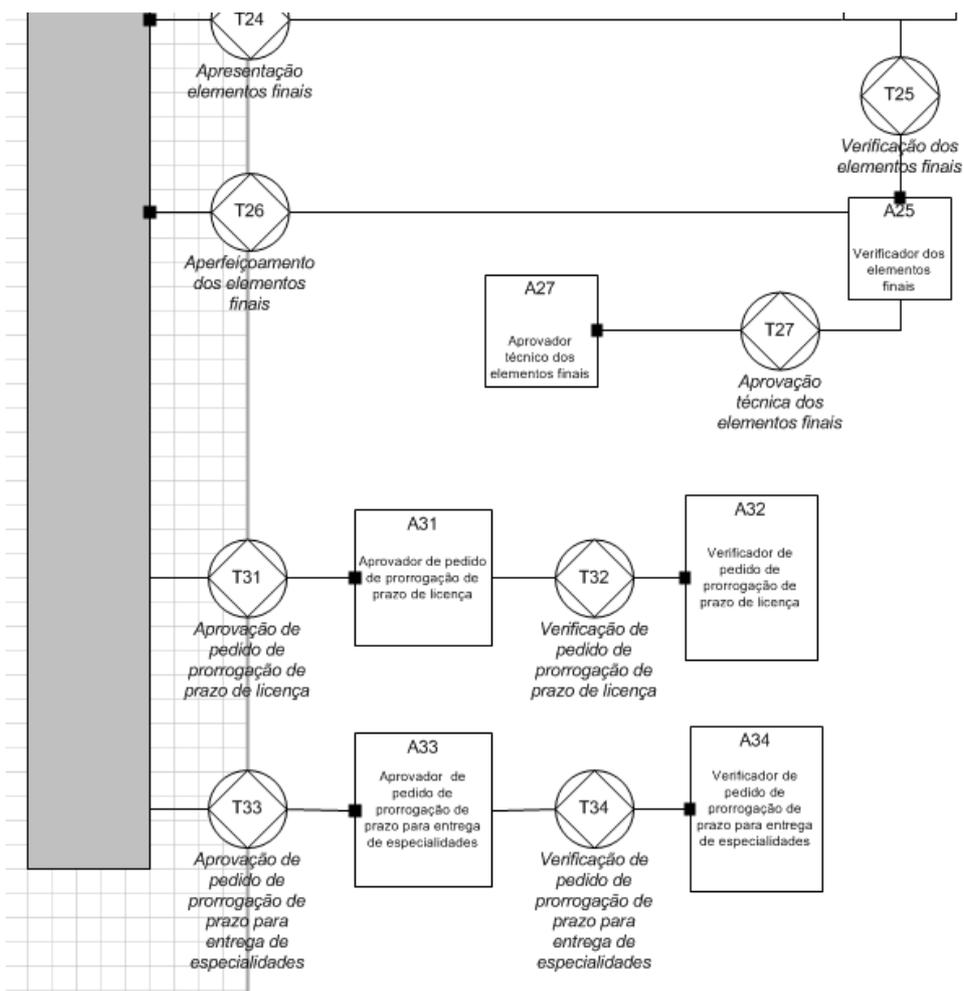


Figure 9: screenshot 4 ATD

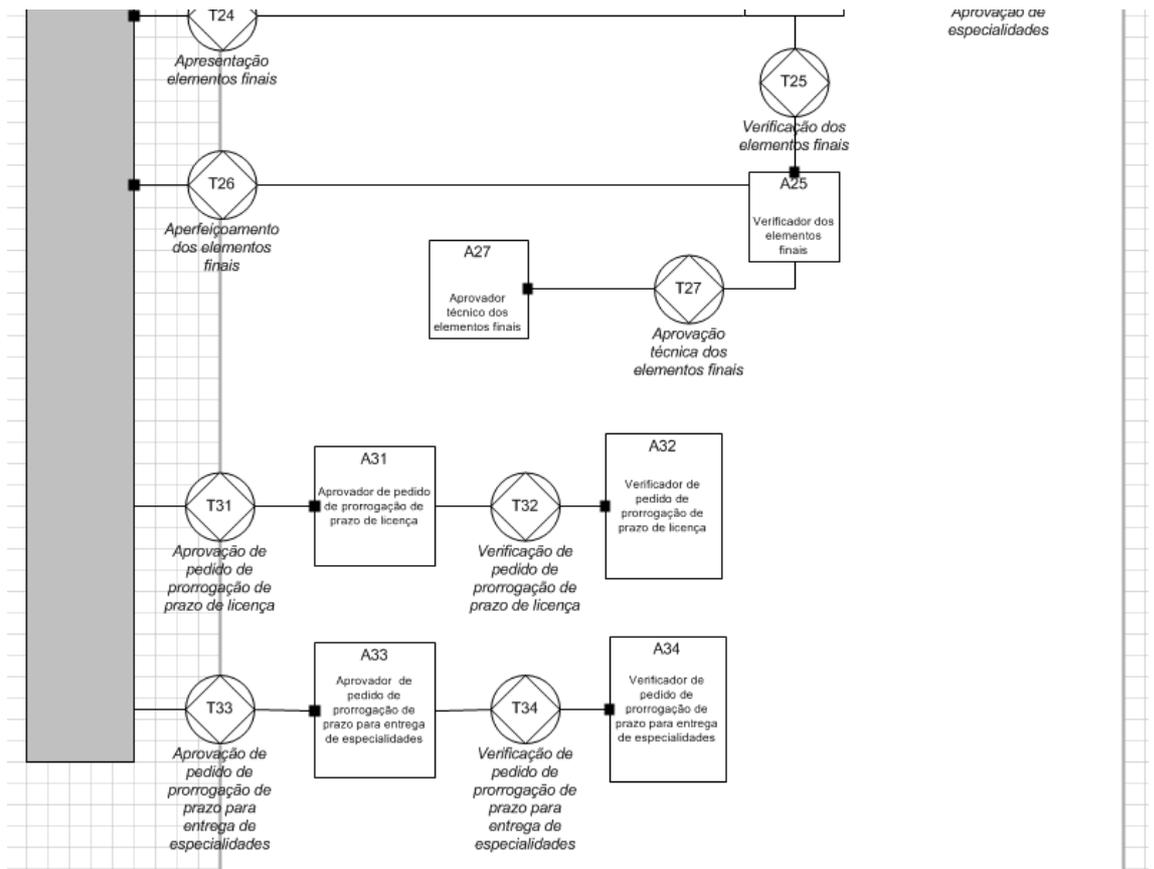


Figure 10: screenshot 5 ATD

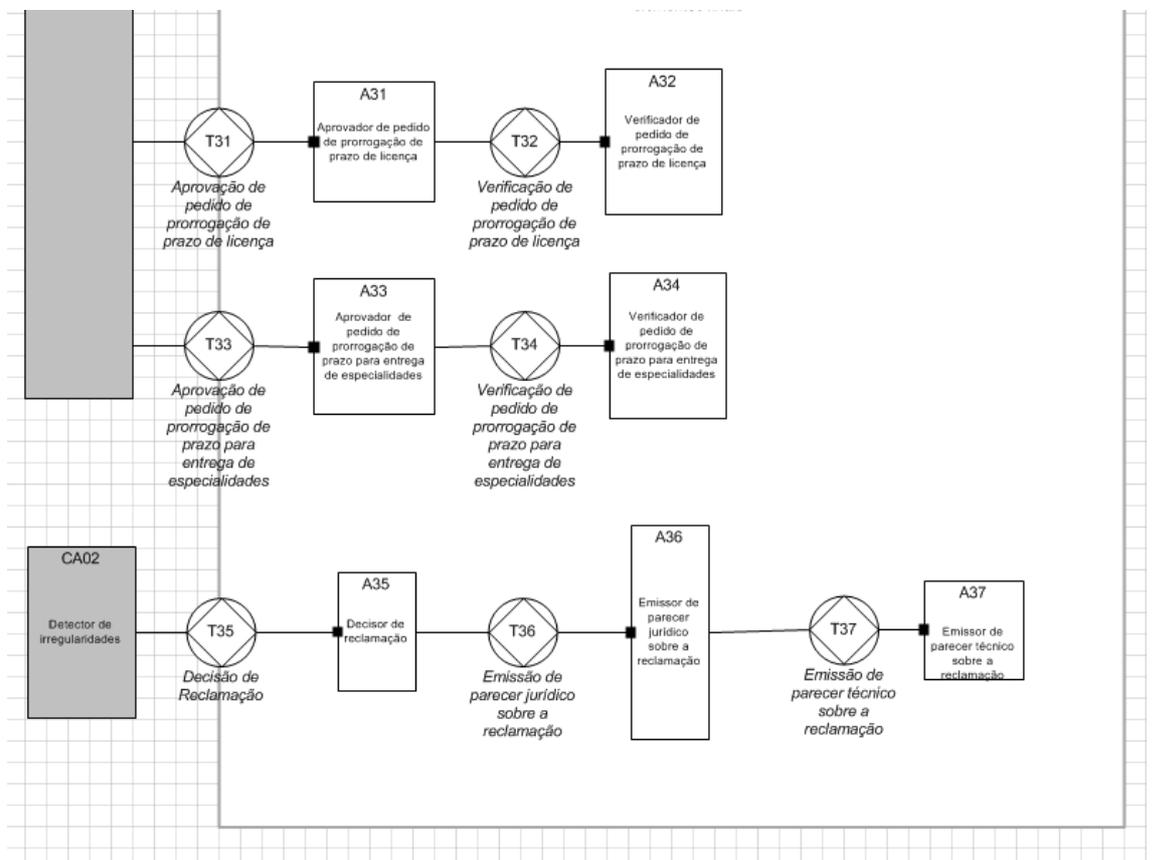


Figure 11: screenshot 6 ATD

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## IV.5. ACTION RULES

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### *Action rule for A01*

**when** aprovação de pagamento faseado dos encargos urbanísticos **of** [licença] **is** requested  
**then** liquidação das CAEEV **of** [licença] **is** stated  
**then** liquidação de TMU **of** [licença] **is** stated  
**then** pagamento dos encargos urbanísticos **of** [licença] **is** accepted  
**then** atribuição de licença **of** [licença] **must** be promised

### *Action rule for A02*

**when** criação de processo **of** [licença] **is** requested  
**then** nomeação de gestor de processo **must** be promised  
**then** cobrança taxa de requerimento **must** be stated  
**else** criação de processo **of** [licença] **must** be declined

### *Action rule for A05*

**when** emissão de parecer jurídico **of** [licença] **is** requested  
**if** < pedido de procedimento de licença é um pedido de procedimento de licença **and** pedido de procedimento de licença está bem instruído **and** (data actual - data entrada <= 20 dias)>  
**then** emissão de parecer jurídico **of** [licença] **must** be promised  
**else** emissão de parecer jurídico preliminar **of** [licença] **must** be promised  
aperfeiçoamento jurídico do pedido **of** [licença] **must** be requested

### *Action rule for A07*

**when** emissão de parecer técnico de arquitectura **of** [licença] **is** requested  
**if** <pedido de procedimento de licença está bem instruído **and** (data actual - data entrada <= 20 dias)>  
**then** emissão de parecer jurídico **of** [licença] **must** be promised  
**else** emissão de parecer jurídico preliminar **of** [licença] **must** be promised

### *Action rule for A13*

**when** aprovação da arquitectura **of** [licença] **is** requested  
**if** <(parecer jurídico **and** parecer técnico estão positivos) **and** (data actual - data entrada <= 20 dias) **or** (data pedido parecer externo + data de entrada) ≤ 40 dias >  
**then** aprovação da arquitectura **of** [licença] **must** be promised  
submissão das especialidades **of** [licença] **must** be requested  
**else** aprovação da arquitectura **of** [licença] **must** be declined

*Action rule for A14*

**when** emissão de parecer técnico de especialidades **of** [licença] **is requested**  
**if** <projectos de especialidades necessários estão OK **and** (data de submissão das especialidades - data de aprovação da arquitectura <= 6 meses) **and** data de prorrogação ≥ data actual **and** pareceres de especialidades a entidades externas **is not** necessário>  
**then** emissão de parecer técnico de especialidades **of** [licença] **must be promised**  
emissão de parecer técnico de especialidades **of** [licença] **must be executed**  
liquidação da caução **of** [licença] **must be promised**  
emissão de parecer de mérito final **of** [licença] **must be requested**  
**else if** <projectos de especialidades necessários estão OK **and** (data de submissão das especialidades - data de aprovação da arquitectura <= 6 meses) **and** data de prorrogação ≥ data actual **and** pareceres de especialidades a entidades externas **is** necessário>  
**then** emissão de parecer especialidades externo **must be requested**  
**else** apresentação de aperfeiçoamento das especialidades **of** [licença] **must be requested**

*Action rule for A21*

**when** cálculo das taxas **of** [licença] **is stated**  
**then** aprovação de especialidades **of** [licença] **is requested**  
**then** apresentação de elementos finais **of** [licença] **is requested**  
**then** pagamento dos encargos urbanísticos **of** [licença] **is requested**

*Action rule for A23*

**when** emissão da decisão final **of** [licença] **is accepted**  
**then** atribuição de licença **of** [licença] **must be promised**  
**then** pagamento dos encargos urbanísticos **of** [licença] **is requested**  
**then** apresentação de elementos finais **of** [licença] **is requested**  
**else** emissão da decisão final **of** [licença] **is declined**

*Action rule for A24*

**when** aprovação de pagamento faseado dos encargos urbanísticos **of** [licença] **is requested**  
**if**  
aprovação da extensão do prazo **of** [licença] **is** concedida  
**and** dia do pedido de aprovação de pagamento faseado <= último dia de pagamento dos encargos urbanísticos  
**then** pagamento dos encargos urbanísticos **must be promised**  
**else** aprovação de pagamento faseado dos encargos urbanísticos **of** [licença] **must be rejected**

*Action rule for A25*

**when** verificação dos elementos finais **of** [licença] **is requested**  
**if** <elementos finais estão todos OK **and** está de acordo com as normas **and** está dentro do prazo >

**then** verificação dos elementos finais **of** [licença] **must be promised**  
aprovação técnica dos elementos finais **of** [licença] **must be requested**  
**else** aperfeiçoamento dos elementos finais **of** [licença] **must be requested**

*Action rule for A35*

**when** decisão de reclamação **of** [licença] **is promised**  
**if** reclamação **of** [licença] **is fundamentada and** (aprovação da arquitectura **of** [licença] **is stated or** atribuição de licença **is stated** )  
**then** aprovação da arquitectura **of** [licença] **must be canceled**  
**or** atribuição de licença **of** [licença] **must be canceled**  
**else** reclamação **of** [licença] **is infundada**  
**then** aceitação de reclamação **of** [licença] **must be rejected**

*Action rule for A30*

**when** aceitação de modificação dos projectos de arquitectura **of** [licença] **is requested**  
**if** projecto de arquitectura **of** [licença] **is bem instruído**  
**then** emissão de parecer técnico de arquitectura **of** [licença] **must be promised**  
**else** emissão de aperfeiçoamento técnico do pedido **of** [licença] **must be requested**

*Action rule for A31*

**when** aprovação de pedido de prorrogação de prazo de licença **of** [licença] **is requested**  
**if** <é a primeira vez que o pedido de prorrogação é submetido **and** prazo para termo da licença não foi ultrapassado **and** tempo de prorrogação pedido  $\leq 1/2$  tempo de licença aprovado para conclusão da obra>  
**then** aprovação de pedido de prorrogação de prazo de licença **of** [licença] **must be promised**  
verificação de pedido de prorrogação de prazo de licença **of** [licença] **must be requested**  
**else** aprovação de pedido de prorrogação de prazo de licença **of** [licença] **must be declined**

*Action rule for A33*

**when** aprovação de pedido de prorrogação de prazo para entrega de especialidades **of** [licença] **is requested**  
**if** <é a primeira vez que o pedido de prorrogação é submetido **and** data de pedido para entrega das especialidades - data actual  $\leq 6$ meses **and** tempo de prorrogação pedido  $\leq 3$  meses>  
**then** aprovação de pedido de prorrogação de prazo para entrega de especialidades **of** [licença] **must be promised**  
verificação de pedido de prorrogação de prazo para entrega de especialidades **of** [licença] **must be requested**  
**else** aprovação de pedido de prorrogação de prazo para entrega de especialidades **of** [licença] **must be declined**  
**when** emissão de parecer jurídico **of** [licença] **is requested**  
**if** <verificação preliminar da instrução do pedido **está** bem instruído> **and**

pedido de procedimento de licença of [licença] **é um pedido de** procedimento de licença **and** enquadramento da operação urbanística of [licença] **is** bem definido **and** requerente tem legitimidade para o pedido de procedimento de licença of [licença] **then** emissão de parecer jurídico of [licença] **must be stated** **then** emissão de parecer técnico preliminar of [licença] **must be requested**

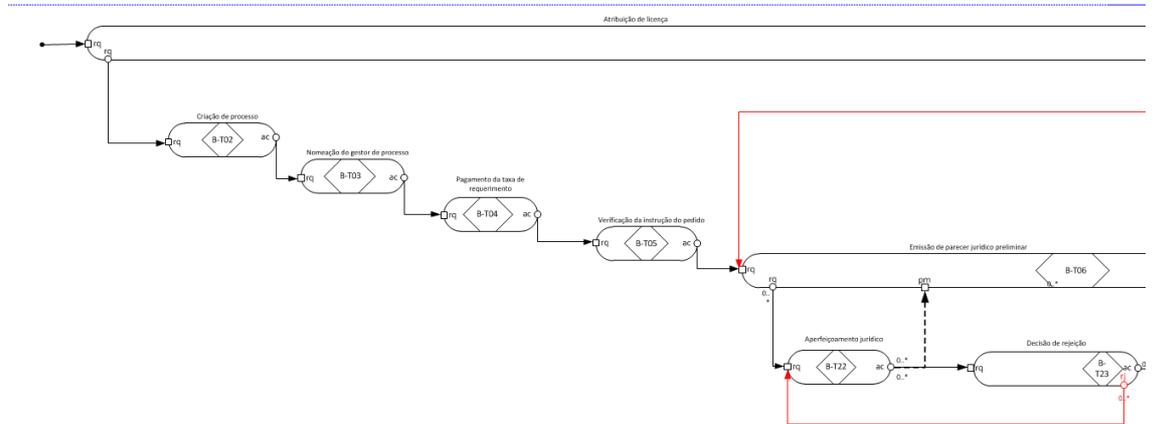


Figure 12: PSD screenshot 1 of a license procedure

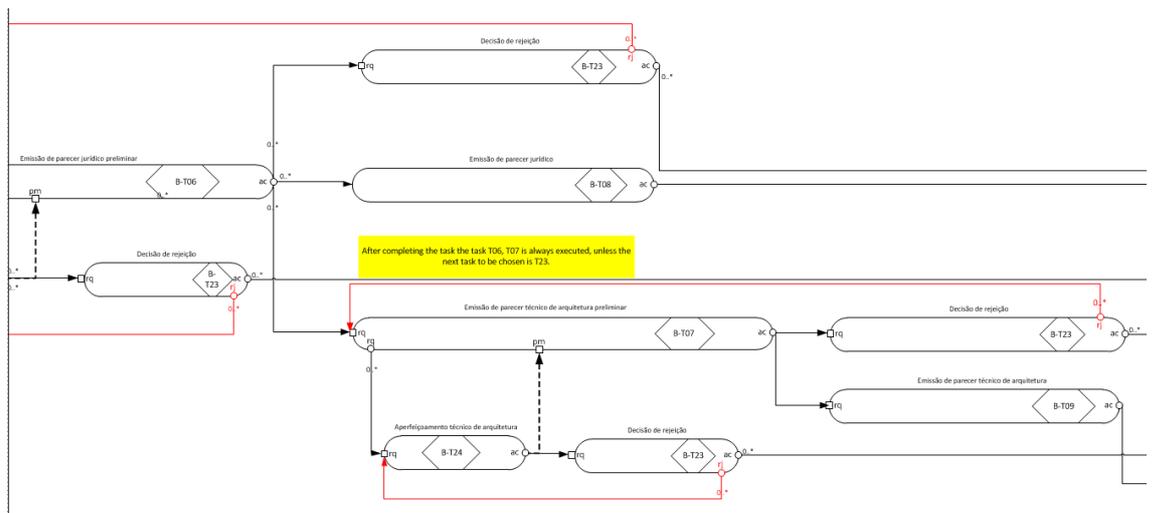


Figure 13: PSD screenshot 2 of a license procedure

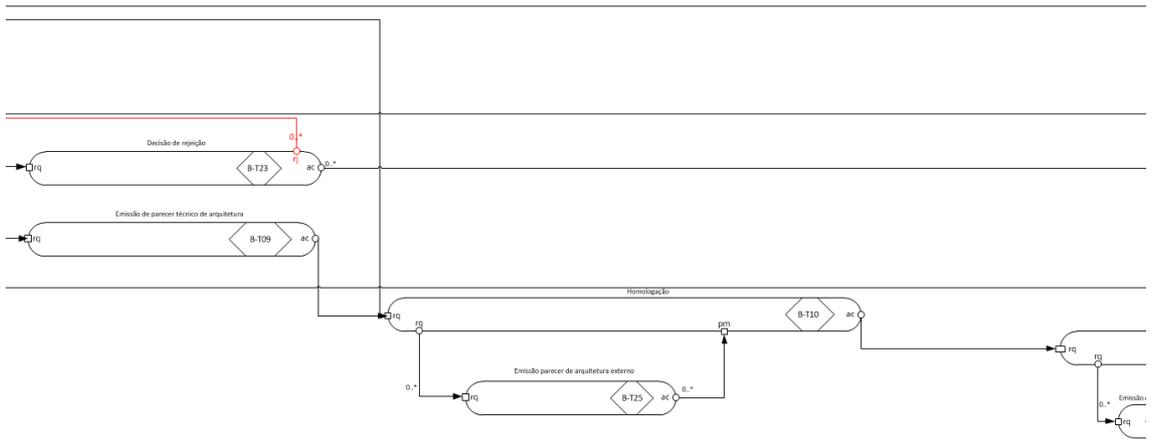


Figure 14: PSD screenshot 3 of a license procedure

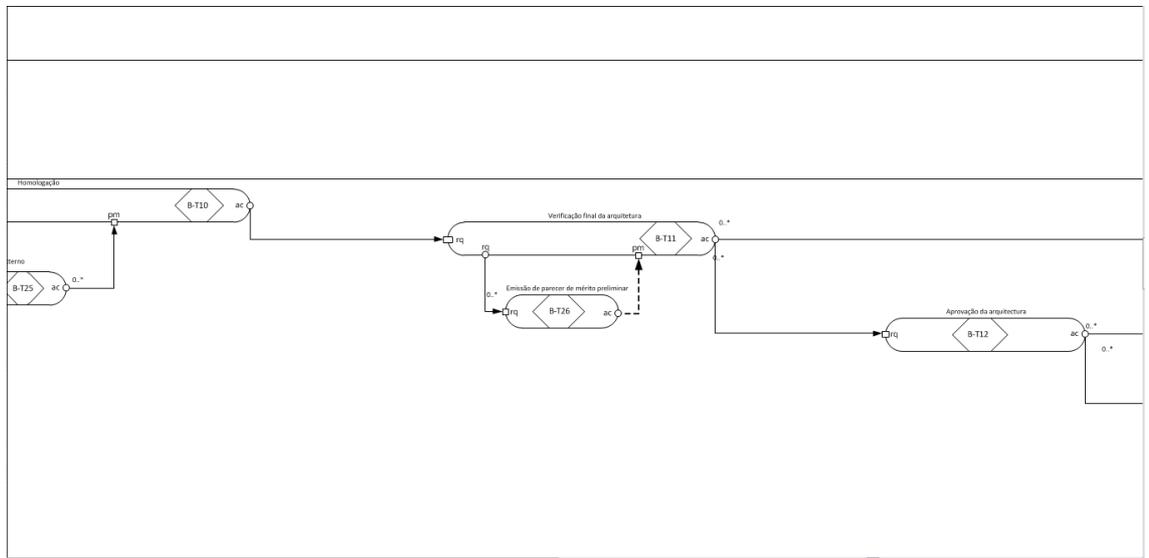


Figure 15: PSD screenshot 4 of a license procedure

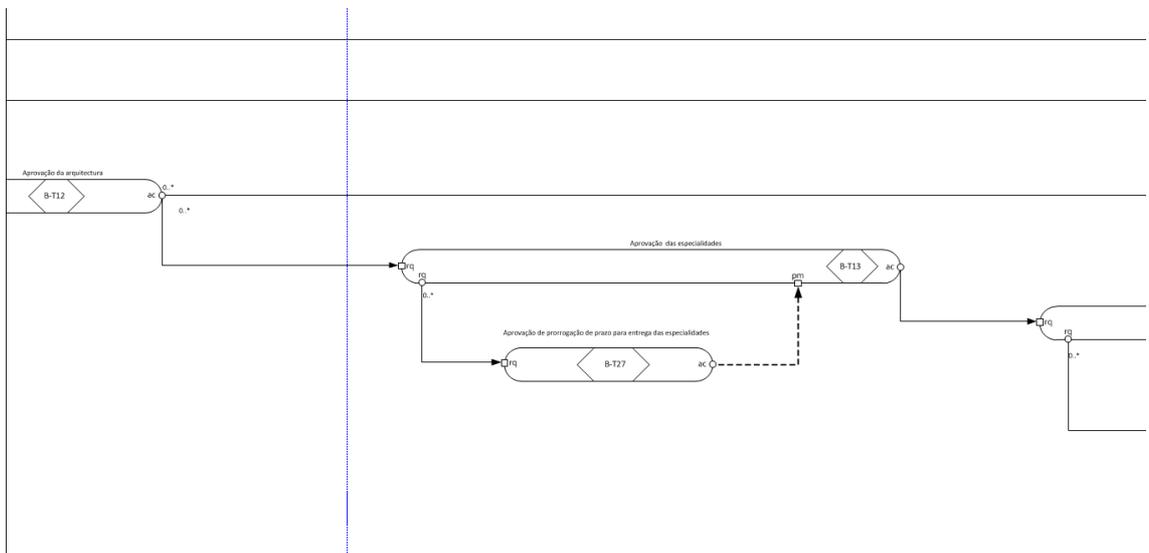


Figure 16: PSD screenshot 5 of a license procedure

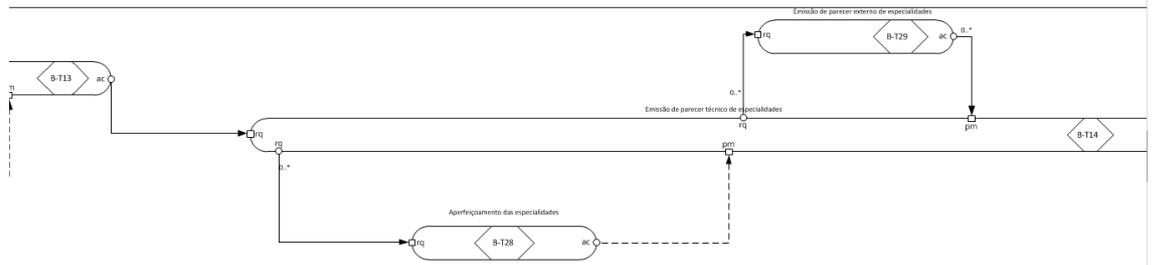


Figure 17: PSD screenshot 6 of a license procedure

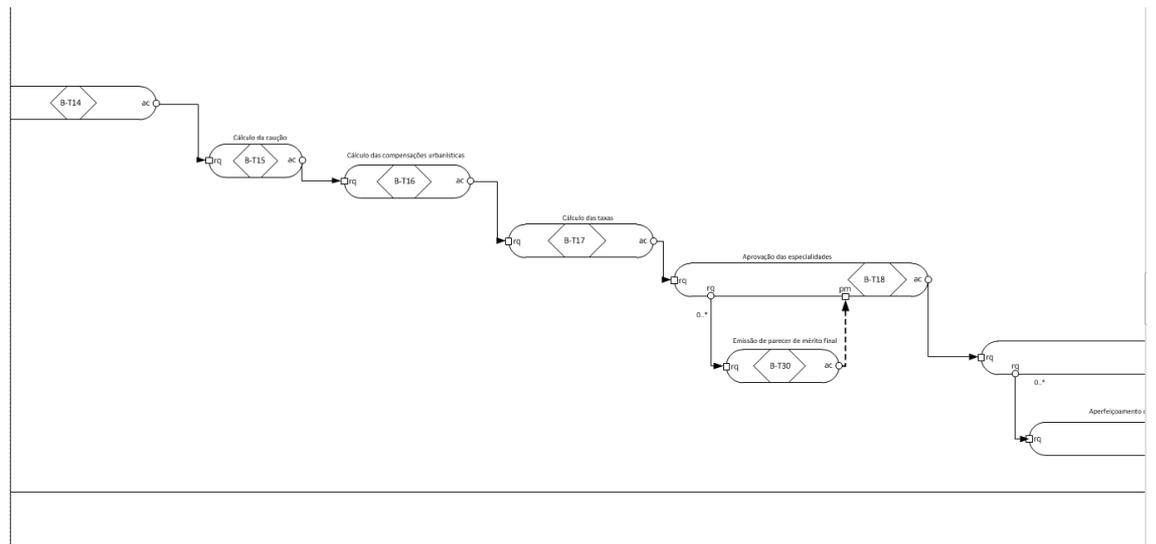


Figure 18: PSD screenshot 7 of a license procedure

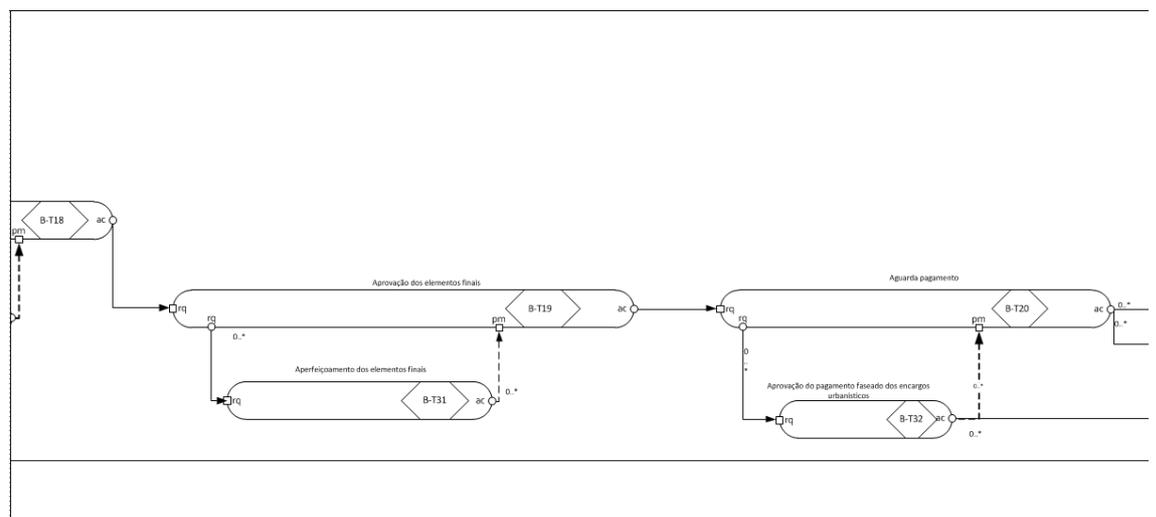


Figure 19: PSD screenshot 8 of a license procedure

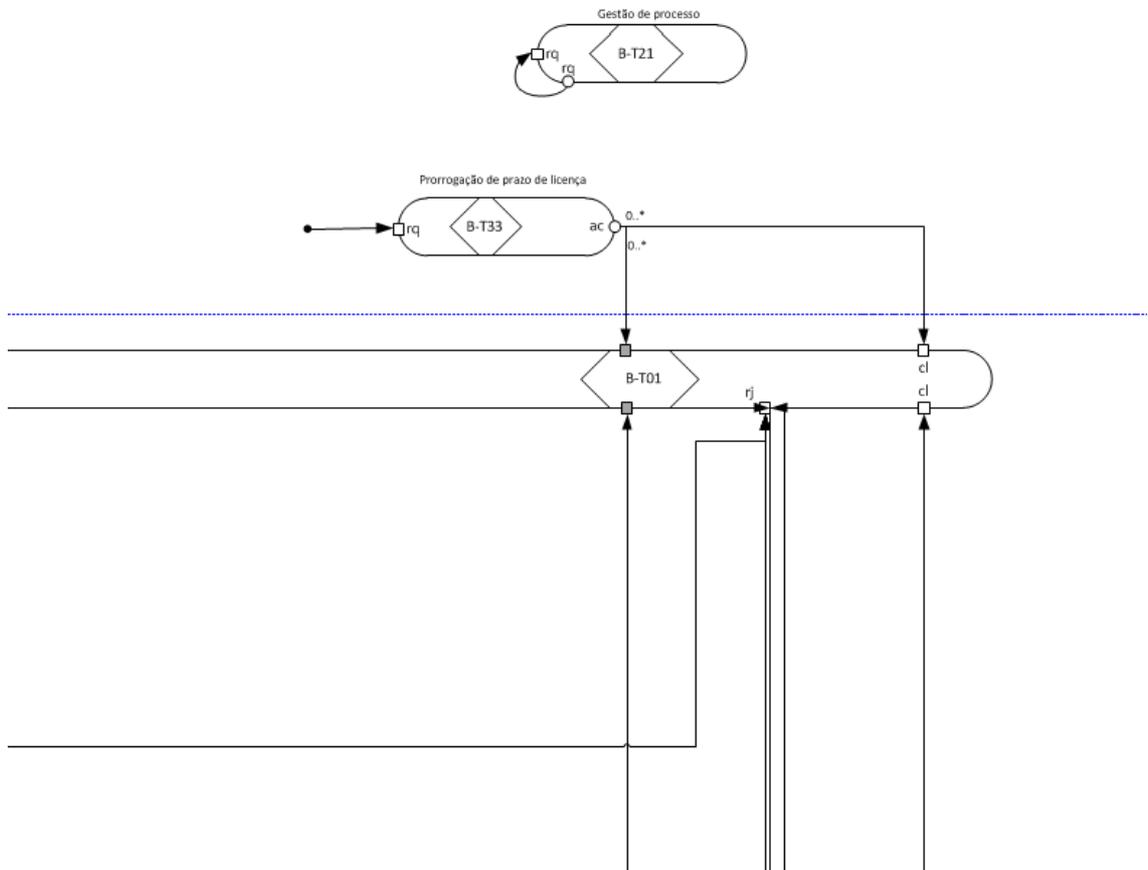


Figure 20: PSD screenshot 9 of a license procedure

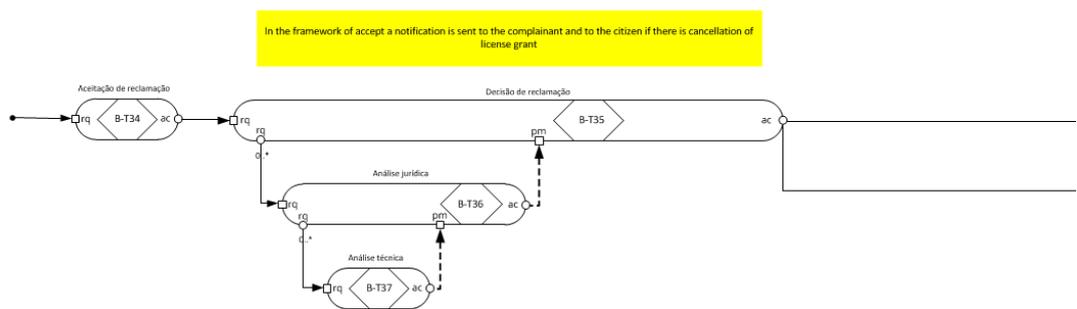


Figure 21: PSD screenshot 10 of a license procedure

## IV.6. THE COMPOSITION AXIOM

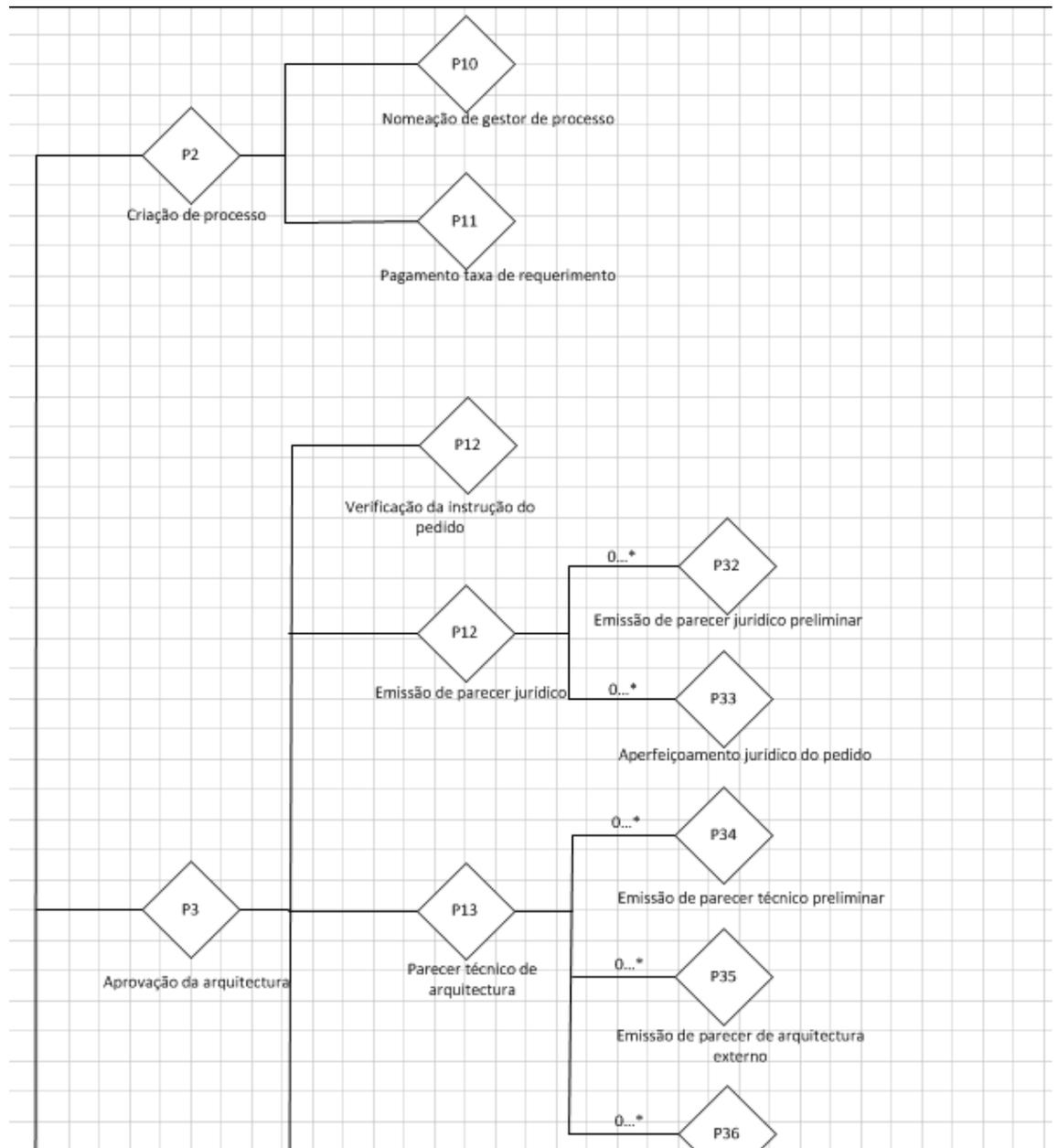


Figure 22: screenshot 1 component structure of a license process in a city hall

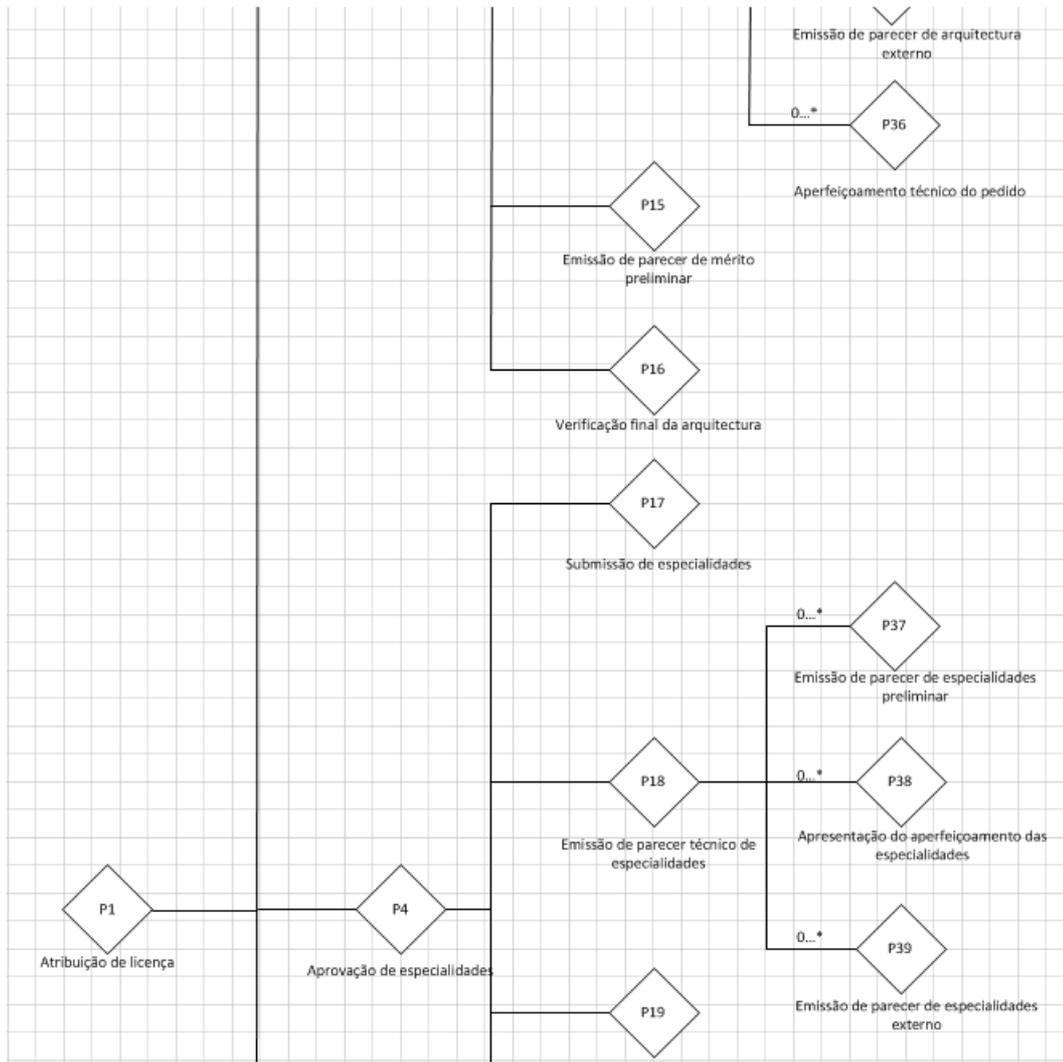


Figure 23: screenshot 2 component structure of a license process in a city hall

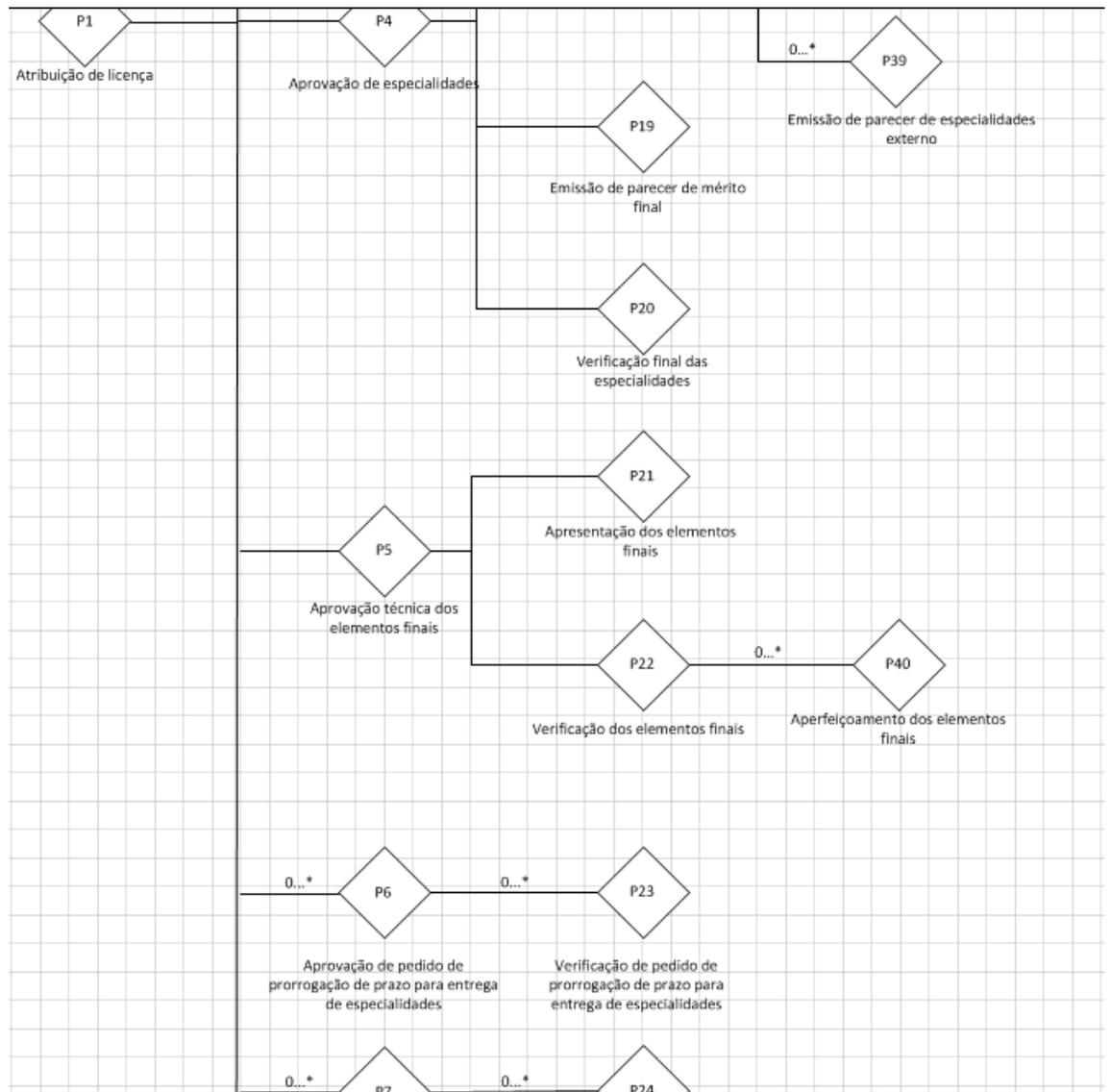


Figure 24: screenshot 3 component structure of a license process in a city hall

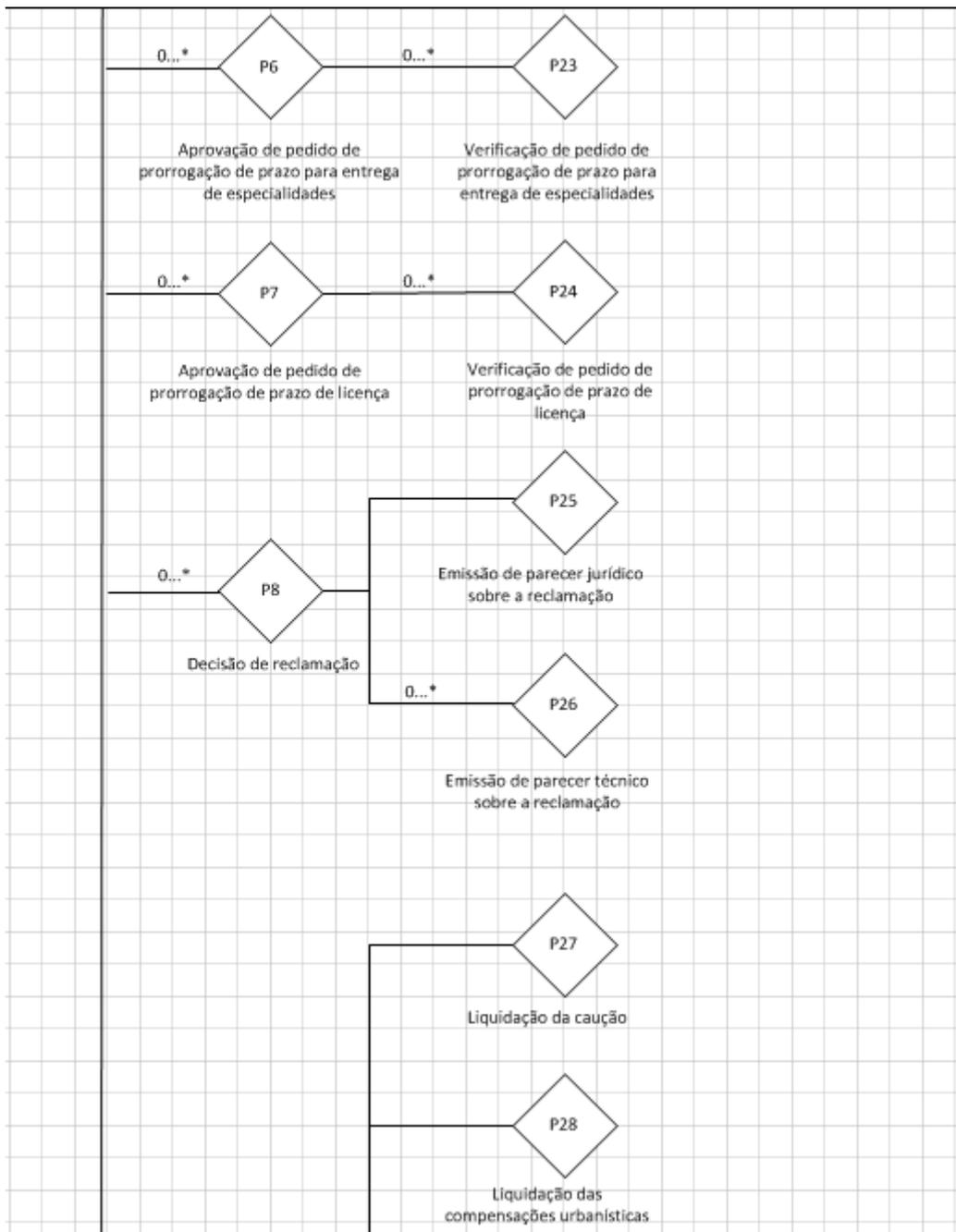


Figure 25: screenshot 4 component structure of a license process in a city hall

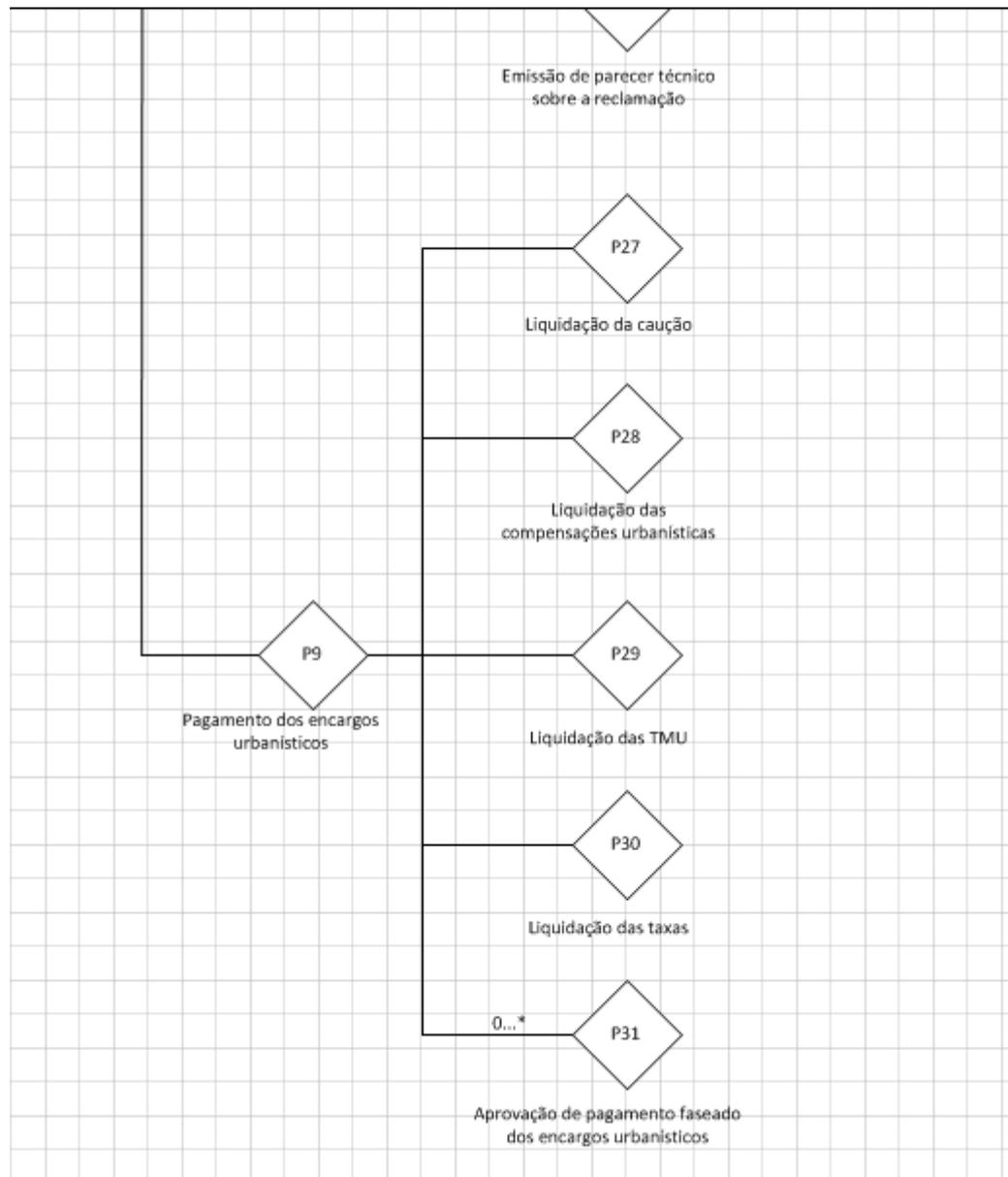


Figure 26: screenshot 5 component structure of a license process in a city hall

## IV.7. SOLUTION – THE WORKFLOW SYSTEM

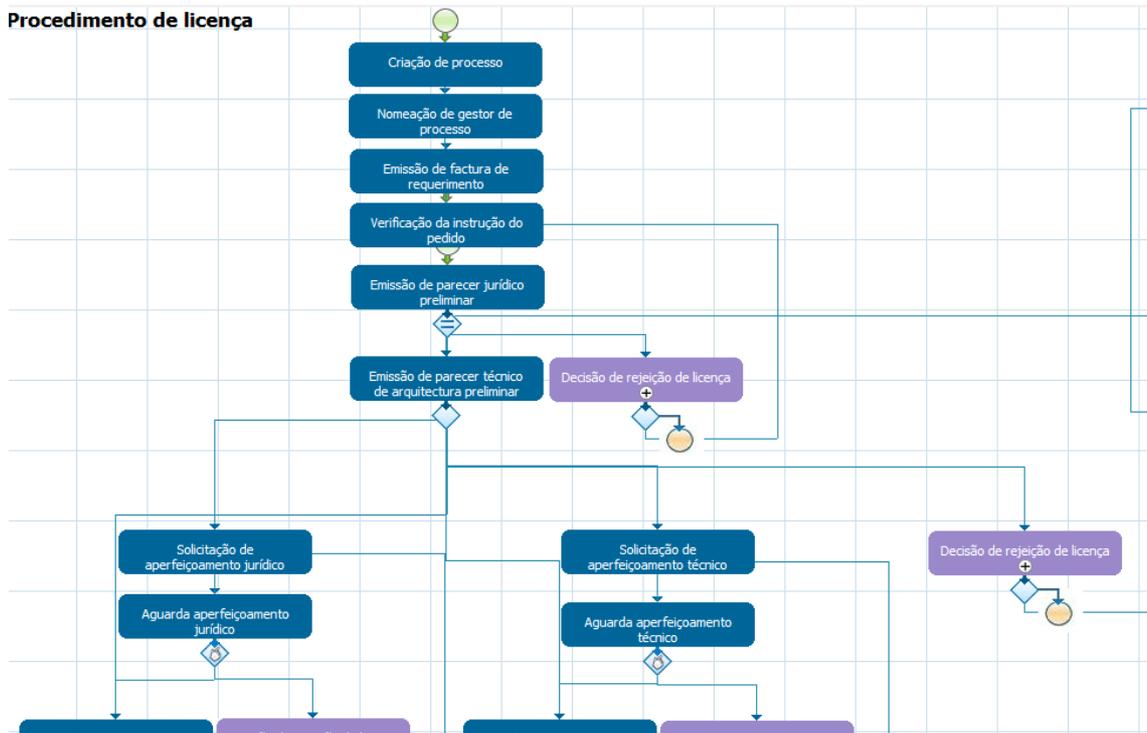


Figure 27: screenshot 1 ProcessMaker of a license procedure

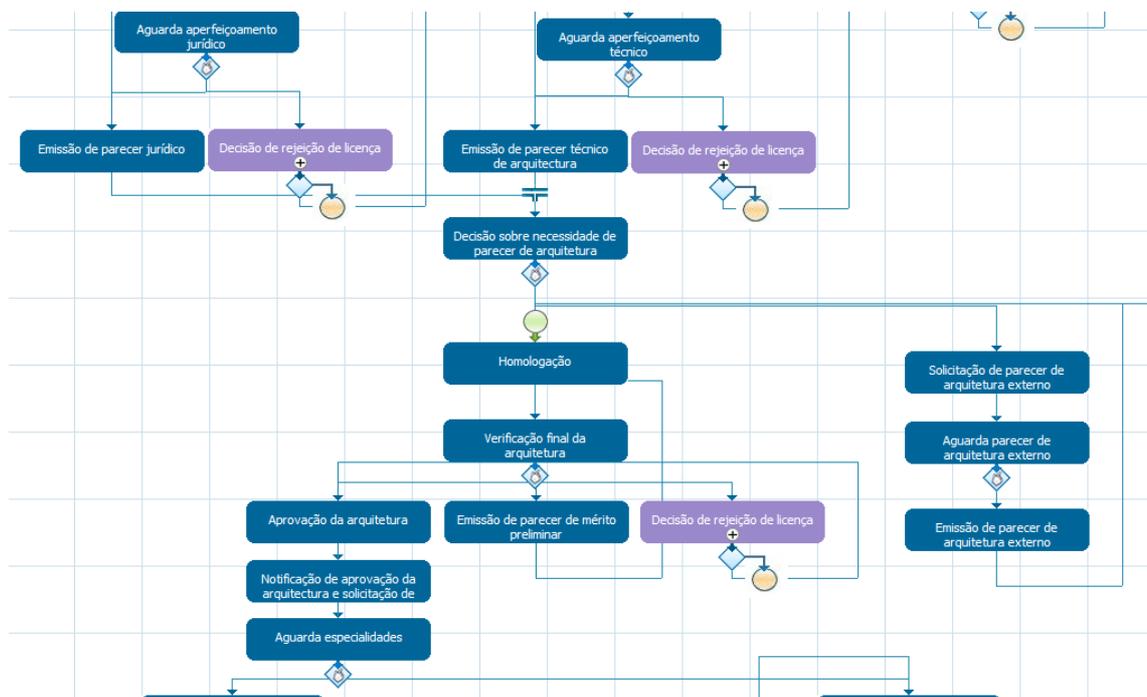


Figure 28: screenshot 2 ProcessMaker of a license procedure

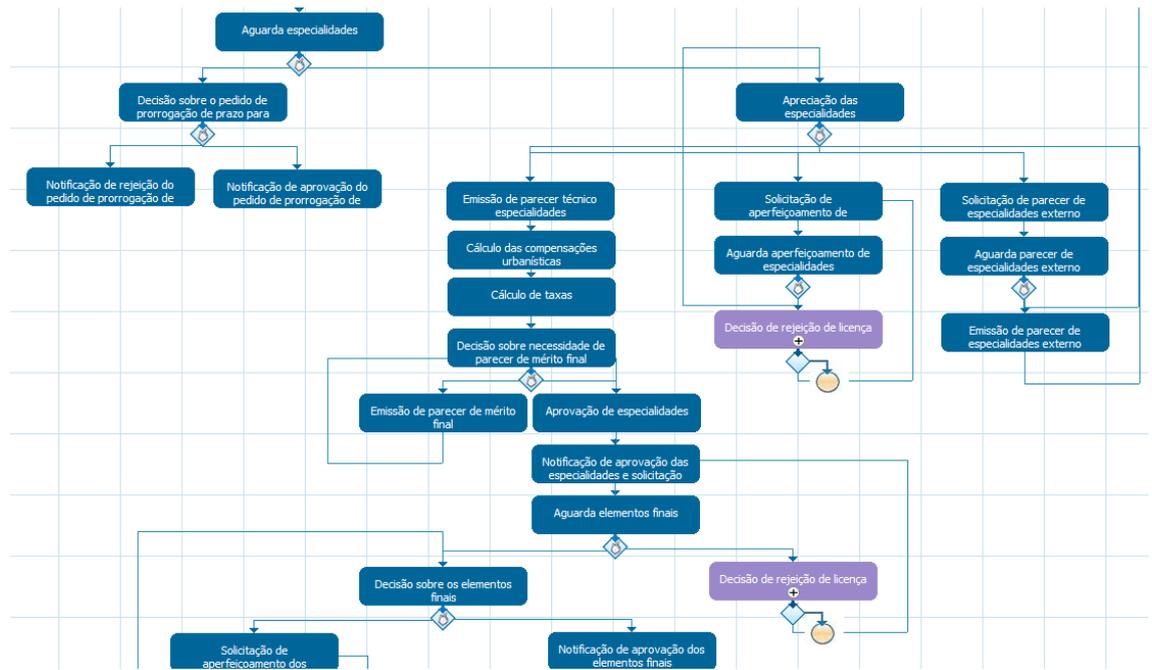


Figure 29: screenshot 3 ProcessMaker of a license procedure

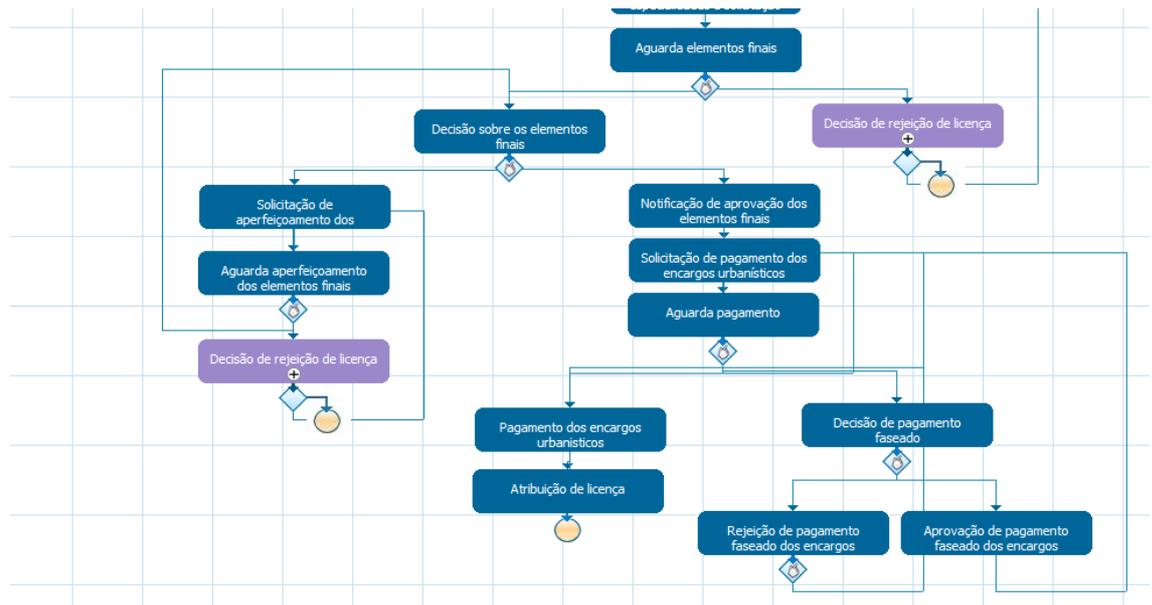


Figure 30: screenshot 4 ProcessMaker of a license procedure

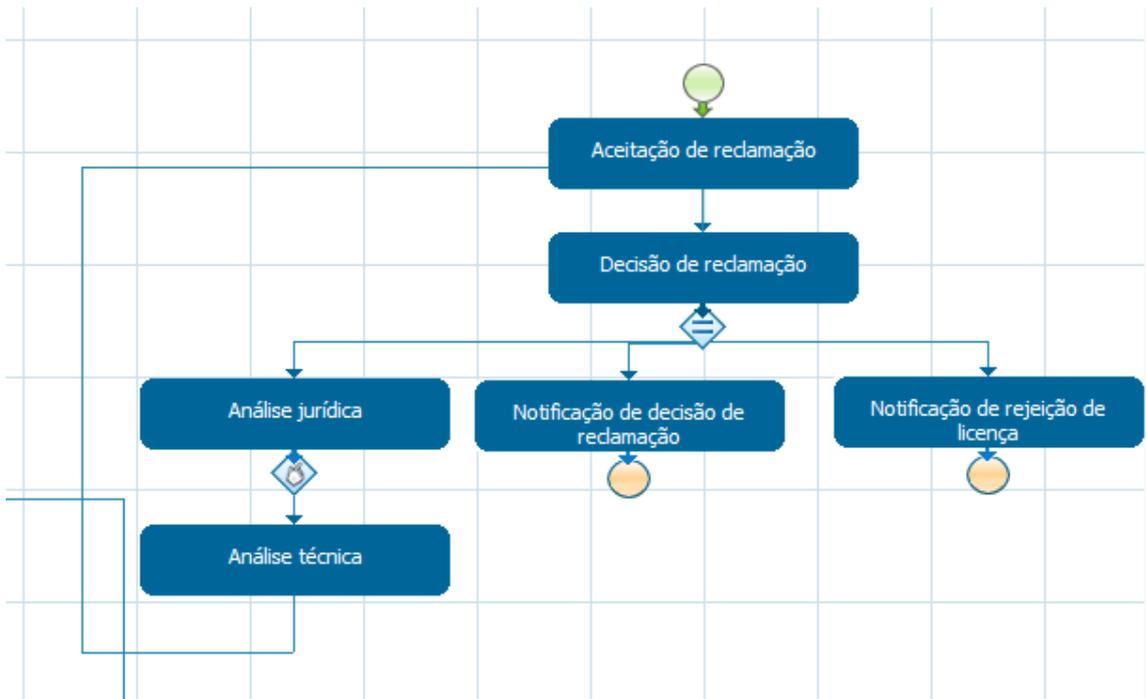


Figure 31: screenshot 5 ProcessMaker of a license procedure

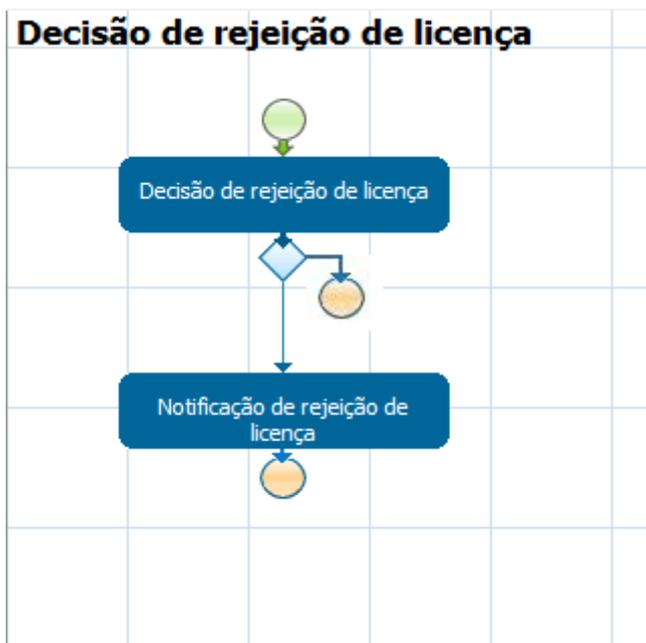


Figure35: screenshot 6 ProcessMaker Subprocess Licence rejection decision

#### IV.7.1.ProcessMaker implementation detailed

ProcessMaker (PMr) is an Open Source business process management (BPM) and workflow system designed to optimize the business operations and workflow management for small to medium sized businesses and organizations.

Processmaker was the software elected to support the case study because it provides a complete tool to design the complex workflow system of tasks within the license procedure of the city hall.

The text below will explain all the steps taken to make the “license procedure” march.

##### 1.Creating a Process

Before explaining all the steps to create a process in the software elected, we considerer useful building a table with all the tasks of our process and the original name with the corresponding translation in English.

The next table illustrates the translation of the tasks of DEMO in Portuguese to English language, with the corresponding number.

Task Number	Task Name (Original)	Task Name (English)
T01	Atribuição de licença	License grant
T02	Criação de processo	Process creation
T03	Nomeação do gestor de processo	Process manager nomination
T04	Pagamento da taxa de requerimento	Application fee payment
T05	Verificação da instrução do pedido	Documents verification
T06	Emissão de parecer jurídico preliminar	Preliminary legal opinion emission
T07	Emissão de parecer técnico de arquitetura preliminar	Preliminary technical architecture opinion emission
T08	Emissão de parecer jurídico	Legal opinion emission
T09	Emissão de parecer técnico de arquitetura	Technical architecture opinion emission
T10	Homologação	Formal approval
T11	Verificação final da arquitetura	Architecture final verification
T12	Aprovação da arquitetura	Architecture approval
T13	Aprovação das especialidades	Specialties approval
T14	Emissão de parecer técnico de especialidades	Specialties technical opinion emission
T15	Cálculo da caução	Caution calculation
T16	Cálculo das compensações urbanísticas	Urban compensation fee calculation
T17	Cálculo das taxas	Fees calculation
T18	Aprovação das especialidades	Specialties approval
T19	Aprovação dos elementos finais	Final elements approval
T20	Aguarda pagamento	Payment awaiting
T21	Gestão de processo	Process management
T22	Aperfeiçoamento jurídico	Legal improvement
T23	Decisão de rejeição	Rejection decision
T24	Aperfeiçoamento técnico de arquitetura	Technical architecture improvement
T25	Emissão de parecer de arquitetura externo	External architecture opinion emission
T26	Emissão de parecer de mérito preliminar	Preliminary opinion on the merits emission
T27	Aprovação de prorrogação de prazo para entrega das especialidades	Specialties delivery deadline approval

T28	Aperfeiçoamento das especialidades	Specialties improvement
T29	Emissão de parecer externo de especialidades	External specialties opinion emission
T30	Emissão de parecer de mérito final	Final merit opinion emission
T31	Aperfeiçoamento dos elementos finais	Final elements improvement
T32	Aprovação do pagamento faseado dos encargos urbanísticos	Approval of phased payment
T33	Prorrogação de prazo de licença	License term extension
T34	Aceitação de reclamação	Complaint acceptance
T35	Decisão de reclamação	Complaint decision
T36	Análise jurídica	Legal analysis
T37	Análise técnica	Technical analysis

First we access the software with an administrator user and password. Inside the admin session we have three areas: "home", "designer" and "admin". After login the first area presented to the user is the designer area. Here we have to click on the "New" button to create a new process in the system.

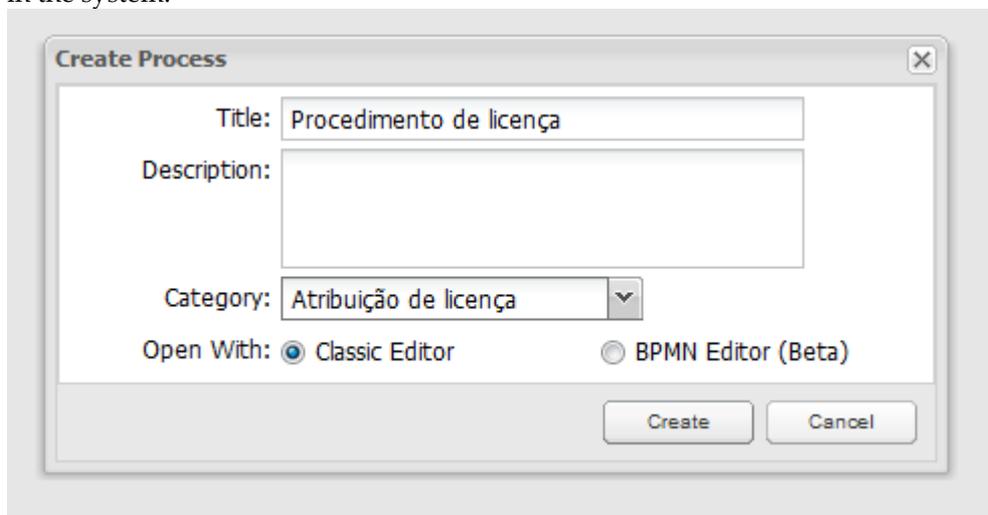


Ilustração 1: ProcessMaker - Creating a process

We need to fill the title of the process, add a description optionally, select the category of the process and finally leave as default the "open with: classic editor" radio button and press the "create" button. We created two process, a master process named "Procedimento de licença" and a sub process named "Decisão de rejeição de licença".

## 2. Creating dynaforms

**DynaForms**, or "Dynamic Forms", are the custom forms which can be designed in ProcessMaker to interface with the user while running a case. DynaForms allow users to view and enter data into cases in a graphical interface which should be intuitive for even non-technical users.

The DynaForm Editor is designed to be user-friendly for process designers who don't have any programming experience, yet also provide the full XML code and the HTML code for process designers who want to customize their forms to their hearts content. DynaForms allow process designers to use SQL queries to pull data from external databases or the ProcessMaker databases. With case variables, data can also be pulled from ProcessMaker triggers and used in the fields in DynaForms. Finally, audacious process designers can add their own custom

JavaScript code to dynamically control their DynaForms, error check the data and provide feedback to the user.

To create a new DynaForm, first open the process where the DynaForm will be used. (Go to the **DESIGNER** menu, find a process in the list and click its **Edit** link.) Then select the  **DYNAFORMS** tab to display the list of existing DynaForms. Click the **New** link at the top left of the list. First, select the type of DynaForm:



To create a DynaForm from scratch, select the first option **Blank Dynaform**. To create a DynaForm whose fields are based upon the fields in an existing PM Table, select the second option **PM Table DynaForm**. In this case, when the user enters data into the fields in the DynaForm, a new record with that data will automatically be inserted in that PM Table. See PM Table DynaForm below.

### **Blank DynaForm**

Define the properties of the new Dynaform:

Enter a **Title** for the DynaForm. Production users who run cases can see the DynaForm title when they go to the INFORMATION tab and click the **DynaForms** button, so create a title which will make sense to users running cases.

Select the **Type** of DynaForm. **Normal** or **master** forms are designed to display only a single record and their fields are laid out vertically by default. They are stand-alone forms and can not be embedded into other forms.

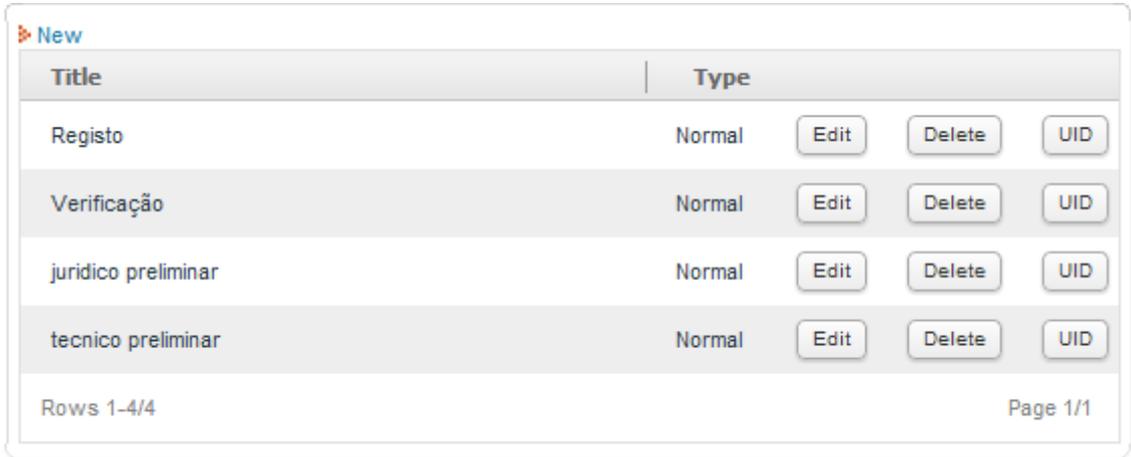
In contrast, **grid** forms are designed to contain multiple records. Their fields are laid out horizontally in a single row, so they can be repeated to form a table consisting of columns and rows. Grid forms are also capable of using special aggregate functions, such as sum, to perform operations on all the fields in a column. Grid forms can only contain fields which are types of textboxes and dropdown boxes, because they occupy little space and are easily displayed in the format of rows. From version 1.2-2740 on, grids can also contain textareas and hidden fields.

Grid forms are created separately from master forms, but they can not be used alone and must be embedded in a master form when used in a process. Embedding the grid form in a master form provides it with additional controls to add and delete records.

Enter a **Description** for the DynaForm. The description will not be seen by ordinary production users who run cases, so geer the description for process designers who may need to edit the DynaForm later. Since the description doesn't automatically line wrap, use hard returns.

Click **Save** to create the new DynaForms and return to the list of available DynaForms for the process. Click **Save and Edit** to create the new DynaForm and immediate begin editing it in the DynaForm Editor.

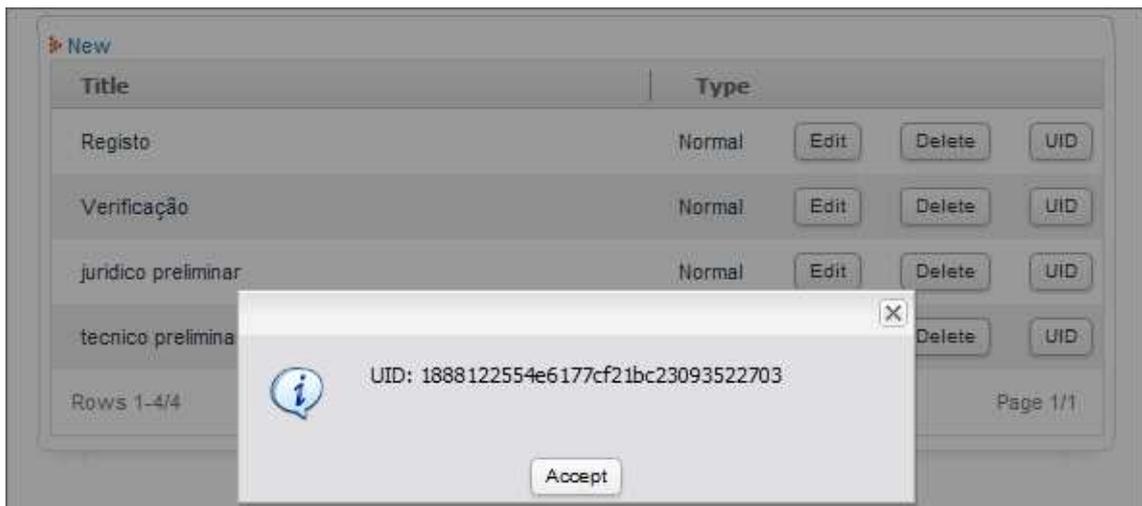
All the DynaForms available for the current process can be found by selecting the  **DYNAFORMS** tab (under the **PROCESSES** menu).



Title	Type	Edit	Delete	UID
Registo	Normal	Edit	Delete	UID
Verificação	Normal	Edit	Delete	UID
juridico preliminar	Normal	Edit	Delete	UID
tecnico preliminar	Normal	Edit	Delete	UID

Rows 1-4/4 Page 1/1

Ilustração 2: Dynaforms list



- **UID:** The unique identification, which is a string of 32 hexadecimal characters used to identify DynaForms.
- **Title:** The title of DynaForms.
- **Type:** The type of DynaForm, which can be either "Normal" or "Grid".
- **Edit link:** Click to edit the DynaForm.
- **Delete link:** Click to delete the DynaForm.

To hide a column in the DynaForm list, right click on the column headers and unselect the checkbox next to the column to hide it.

▶ New

Title	Type	
Registo	Normal	Ed
Verificação	Normal	Ed
juridico preliminar	Normal	Ed
tecnico preliminar	Normal	Ed

- Title
- Type
- EDIT
- DELETE
- GET\_UID

Rows 1-4/4

Page 1/1

## IV.9. THE DYNAFORM EDITOR

The DynaForm Editor provides a graphical designer for DynaForms, with a toolbar to add new elements to DynaForms and tabs to switch easily between the graphical preview of the form, the code, and the definition of the fields in the form.

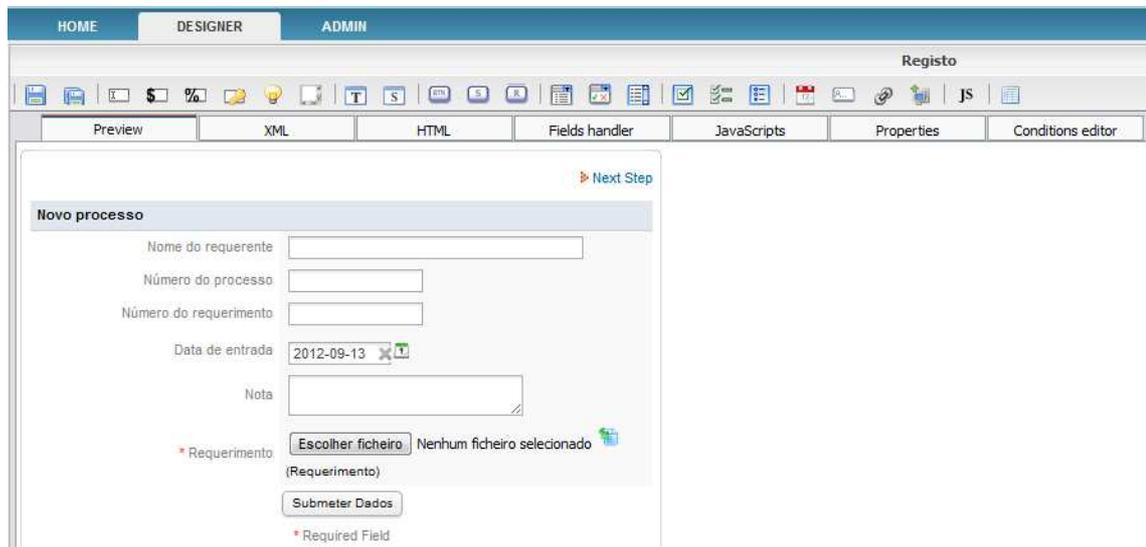


Ilustração 3: Dynaform 1 "Registo" Preview on editor's interface

Visible	Type	Name	Label
<input checked="" type="checkbox"/>	T (title)	novo_processo	
<input checked="" type="checkbox"/>	Text	nome_requerente	
<input checked="" type="checkbox"/>	Text	nr_processo	
<input checked="" type="checkbox"/>	Text	nr_requerimento	Número do requerimento
<input checked="" type="checkbox"/>	Date	data_entrada	
<input checked="" type="checkbox"/>	Textarea	nota	
<input checked="" type="checkbox"/>	File	requerimento	Requerimento
<input checked="" type="checkbox"/>	Submit	_ok	

Ilustração 4: Dynaform 1 "Registo" fields handler editor's interface

The field name of a dynaform is internally treated by the system and the label name is shown next the text box.

To create dynaform 1 "Registo" we started adding a title field with the label "Novo processo" selecting the  dynaform editor tab. Then we added three text fields selecting the  dynaform editor tab, the first field is the applicant name with the field name "nome\_requerente" and the label name "Nome do requerente", followed by process number with the field name "nr\_processo" and the label "Número do processo", finally the applicant number with the field name "nr\_requerimento" and the label "Número do requerimento". A new field comes to dynaform, a date field is added selecting the  dynaform editor tab and configuring the behavior to automatically display the "today" date from the appearance mode of view. The format of the date is defined as %Y-%m-%d ( %Y=Year, %m=Month, %d=Day ), by default and works fine for our process. Next we need to have a text area where the user can add some information useful to the further users assigned in the case, this is possible by selecting the  dynaform editor tab and labeling it as note "Nota". To conclude the register of the requirement the file as to be attached to the system, we selected the  dynaform editor tab to

allow the upload of a file in the system and to be shared by the users along the process. The last step is the submit button, we selected the  dynaform editor tab to allow the user to validate the information in the form and to conclude the filling of the form.

Unlike the drag-and-drop interface of the Process Map, the DynaForm Editor is a click-and-define interface. Click on the toolbar to add a new object to the DynaForm, then define the characteristics of that object. The DynaForm Editor allows for the properties of objects to be specified to a great degree, and access to the XML code allows for a great deal of flexibility in object definition. The **Preview** tab allows process designers to check how fields in the form will appear and be populated with values before running a case.

Objects are added to DynaForms in a specific order to DynaForms and can not be moved around freely with the mouse. Instead, objects can only be moved around by changing their order inside the **Field List** tab or by modifying the HTML code for the form. The WYSIWYG HTML editor allows designers to customize the appearance of DynaForms. For process designers who want maximum control over their forms, full access to the HTML code is provided.

Verificação da instrução do pedido	
	<input type="checkbox"/> Requerimento <input type="checkbox"/> Comprovativo qualidade de Titular <input type="checkbox"/> Certidão da conservatória do Registo Predial <input type="checkbox"/> Estimativa de custo e calendarização <input type="checkbox"/> Termos de responsabilidade <input type="checkbox"/> Ficha dos elementos estatísticos <input type="checkbox"/> Plano de acessibilidades <input type="checkbox"/> Memória descritiva e justificativa <input type="checkbox"/> Fotos (em caso de reconstrução)
Termos de Responsabilidade	<input type="checkbox"/> a) autor do projeto de arquitetura <input type="checkbox"/> b) coordenador de projeto <input type="checkbox"/> c) diretor de fiscalização
Elementos de localização	<input type="checkbox"/> a) planta de localização <input type="checkbox"/> b) extrato da matriz cadastral <input type="checkbox"/> c) ortofotomapa <input type="checkbox"/> d) extrato da planta de ordenamento do PDM
Projeto de Arquitetura	<input type="checkbox"/> a) levantamento topográfico <input type="checkbox"/> b) planta de implantação <input type="checkbox"/> c) plantas dos pisos <input type="checkbox"/> d) alçados <input type="checkbox"/> e) cortes <input type="checkbox"/> f) pormenores de construção
Observações	<input type="text"/>
<input type="button" value="Submeter Dados"/>	

Ilustração 5: dynaform 2 "Verificação"

Visible	Type	Name	Label
<input checked="" type="checkbox"/>	<b>T</b> (title)	verificacao	
<input checked="" type="checkbox"/>	 (checkgroup)	lista	
<input checked="" type="checkbox"/>	 (checkgroup)	fotos_rec	
<input checked="" type="checkbox"/>	<b>S</b> (subtitle)	—	
<input checked="" type="checkbox"/>	 (checkgroup)	termos	
<input checked="" type="checkbox"/>	<b>S</b> (subtitle)	-	
<input checked="" type="checkbox"/>	 (checkgroup)	elementos_loc	
<input checked="" type="checkbox"/>	<b>S</b> (subtitle)	_P	
<input checked="" type="checkbox"/>	 (checkgroup)	projecto_arq	Projecto de Arquitectura
<input checked="" type="checkbox"/>	 (textarea)	obs	
<input checked="" type="checkbox"/>	 (submit)	_ok	

Ilustração 6: Dynaform 2 "Verificação" fields handler editor's interface

To create dynaform 2 "Verificação" we selected a title ("Verificação da instrução do pedido") selecting the **T** dynaform editor tab. After the title we added to the dynaform several checkgroups by selecting the dynaform editor tab. First we have the basic information checkgroup, second the responsibility terms, third the localization elements and for last the architecture project checkgroup. Between checkgroups a subtitle (horizontal line) was added selecting the **S** dynaform editor tab to divide the different groups and make it easier for the user to visualize and interact with the system. At the bottom a text area was added selecting the dynaform editor tab allowing the user to enter notes when necessary. To end our dynaform must close with the submit button selecting the dynaform editor tab.

[Next Step](#)

**Emissão de parecer jurídico preliminar**

\* Decisão

Prosseguir para emissão de parecer técnico de arq. preliminar ▼
 

- Prosseguir para emissão de parecer técnico de arq. preliminar
- Solicitar aperfeiçoamento jurídico
- Solicitar rejeição da licença

Ilustração 7: Dynaform 3 "juridico preliminar"

Visible	Type	Name	Label
<input checked="" type="checkbox"/>	<b>T</b> (title)	juridico_preliminar	Emissão de parecer jurídico ...
<input checked="" type="checkbox"/>	 (dropdown)	decisao_juridica	Decisão
<input checked="" type="checkbox"/>	 (submit)	submit	OK

Ilustração 8: Dynaform 3 "juridico preliminar" fields handler editor's interface

To create dynaform 3 "juridico preliminar" we added a title ("Emissão de parecer jurídico preliminar") selecting the **T** dynaform editor tab. Then we added a dropdown box selecting the dynaform editor tab with three distinct options. Dropdown boxes allow a user to select option(s) from a list of predefined options. Dropdown boxes do not allow multiple selections and the user is forced to use the mouse to display the list of available options. The options available for our process are: 1- Prosseguir para emissão de parecer técnico de arq. Preliminar, 2- Solicitar aperfeiçoamento jurídico and 3- Solicitar rejeição da licença. Each option in dropdown boxes have both a value, which is what is stored when a user selects an option and the label, which is the text displayed to the user. A dropdown box has have its list of options defined in its XML definition. In the bottom of the dynaform as usual we added a submit button selecting the dynaform editor tab.

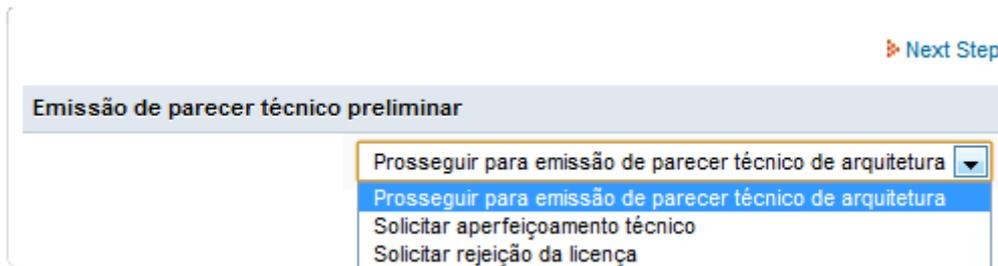


Ilustração 9: dynaform 4 "tecnico preliminar"

Visible	Type	Name	Label
<input checked="" type="checkbox"/>	T (title)	tecnico_preliminar	Emissão de parecer técnico ...
<input checked="" type="checkbox"/>	(dropdown)	decisao_tecnica	
<input checked="" type="checkbox"/>	(submit)	submit	OK

Ilustração 10: Dynaform 4 "tecnico preliminar" fields handler editor's interface

To create dynaform 4 "tecnico preliminar" we added a title ("Emissão de parecer técnico preliminar") selecting the dynaform editor tab. Then we added a dropdown box selecting the dynaform editor tab with three distinct options to the user: 1- Prosseguir para emissão de parecer técnico de arquitetura, 2- Solicitar aperfeiçoamento técnico and 3- Solicitar rejeição da licença. Each option has a value associated which will be stored in the system and used further to program the routing rules.

## 2. Managing users

Only people who are registered users have rights to access ProcessMaker. Those users can be organized into groups and departments. The type of activities which users can perform and the interface which users see is determined by their roles.

To administer users, groups and departments, login as the "admin" or another user who has the PM\_USERS permission in his/her role. Then, go to the **Users** tab in the sidebar under the **ADMIN** menu:

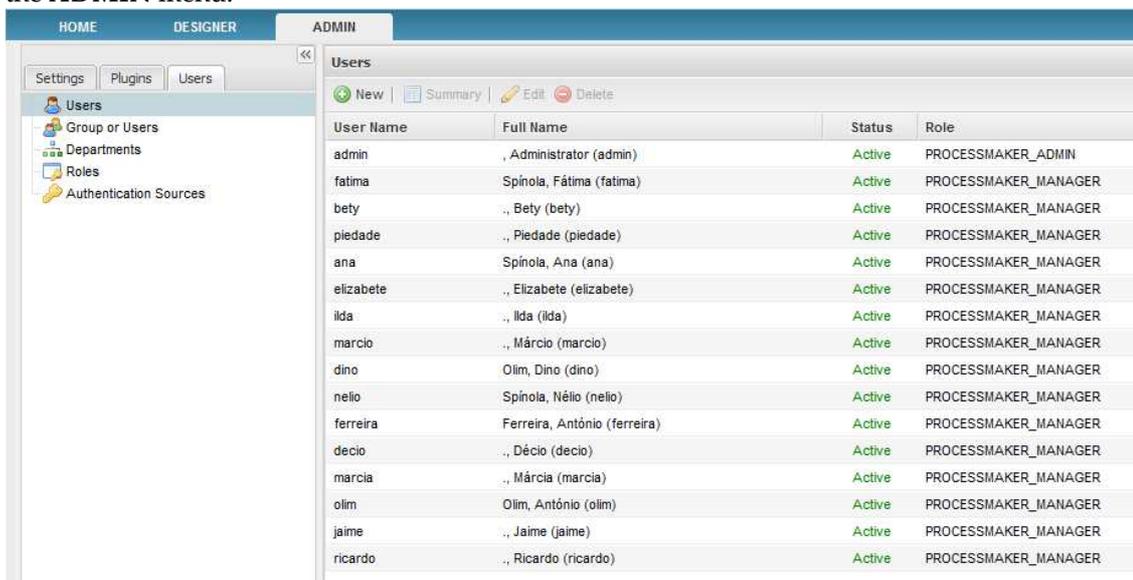
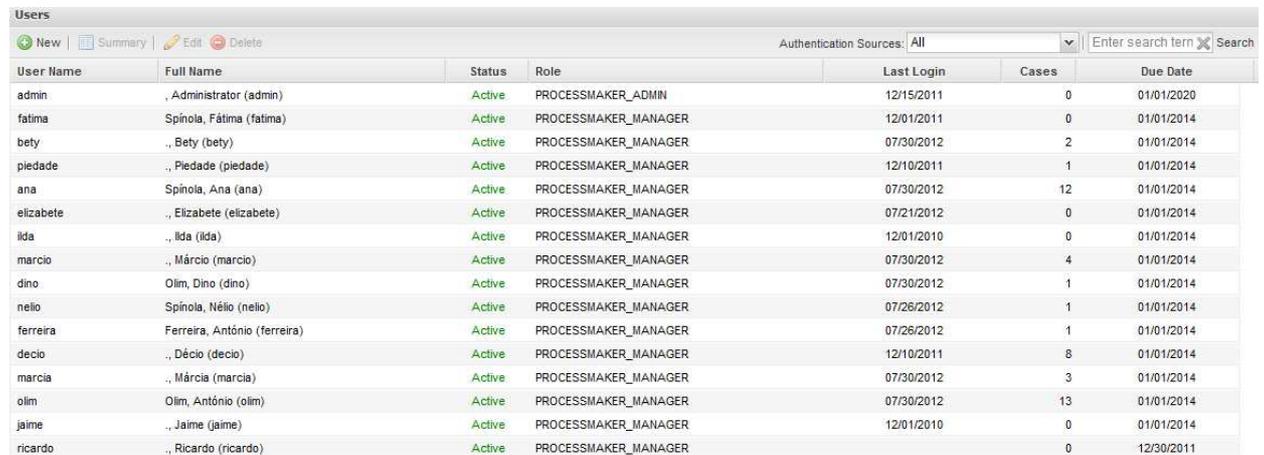


Ilustração 11: User's administration tab

- **User:** A user account in ProcessMaker, which usually represents a person in your organization, but can also represent an account with special privileges such as the "admin" account.
- **Groups:** Users can be assigned to zero, one, or more groups. A group of users simplifies the assignment of users to tasks.
- **Departments:** Arranges users under a hierarchical organizational structure. A user can only belong to one department.
- **Roles:** Make it possible to define customized roles with different levels of permissions, so that the functions and privileges of different users can be easily controlled and managed.
- **Authentication Sources:** Defines external user authentication sources such as LDAP or Active Directory to be used by ProcessMaker. External authentication allows users to use the same username and password across multiple applications.

## IV.10. USERS

To see the list of users registered in the current workspace, go to **ADMIN > Users > Users**.



User Name	Full Name	Status	Role	Last Login	Cases	Due Date
admin	., Administrator (admin)	Active	PROCESSMAKER_ADMIN	12/15/2011	0	01/01/2020
fatima	., Spinola, Fátima (fatima)	Active	PROCESSMAKER_MANAGER	12/01/2011	0	01/01/2014
bety	., Bety (bety)	Active	PROCESSMAKER_MANAGER	07/30/2012	2	01/01/2014
pedrade	., Piedade (pedrade)	Active	PROCESSMAKER_MANAGER	12/10/2011	1	01/01/2014
ana	., Spinola, Ana (ana)	Active	PROCESSMAKER_MANAGER	07/30/2012	12	01/01/2014
elizabethete	., Elizabethete (elizabethete)	Active	PROCESSMAKER_MANAGER	07/21/2012	0	01/01/2014
ilda	., Ilda (ilda)	Active	PROCESSMAKER_MANAGER	12/01/2010	0	01/01/2014
marcio	., Márcio (marcio)	Active	PROCESSMAKER_MANAGER	07/30/2012	4	01/01/2014
dino	., Olim, Dino (dino)	Active	PROCESSMAKER_MANAGER	07/30/2012	1	01/01/2014
nelio	., Spinola, Nélio (nelio)	Active	PROCESSMAKER_MANAGER	07/28/2012	1	01/01/2014
ferreira	., Ferreira, António (ferreira)	Active	PROCESSMAKER_MANAGER	07/28/2012	1	01/01/2014
decio	., Décio (decio)	Active	PROCESSMAKER_MANAGER	12/10/2011	8	01/01/2014
marcia	., Márcia (marcia)	Active	PROCESSMAKER_MANAGER	07/30/2012	3	01/01/2014
olim	., Olim, António (olim)	Active	PROCESSMAKER_MANAGER	07/30/2012	13	01/01/2014
jaimete	., Jaime (jaimete)	Active	PROCESSMAKER_MANAGER	12/01/2010	0	01/01/2014
ricardo	., Ricardo (ricardo)	Active	PROCESSMAKER_MANAGER		0	12/30/2011

Ilustração 12: User's administration tab detailed

The following columns provide information about the user accounts:

- **User Name:** Displays the username, which is used to login to ProcessMaker and identify the user.
- **Full Name:** Displays the last and first name of each user.
- **Status:** Displays the status of the user: **Active**, **Inactive** or **Vacation**
- **Role:** Displays the current role of each user account. There are three default roles: PROCESSMAKER\_OPERATOR, PROCESSMAKER\_MANAGER and PROCESSMAKER\_ADMIN. User accounts assigned the PROCESSMAKER\_ADMIN role are enabled to create, modify or delete existing processes. User accounts assigned the PROCESSMAKER\_OPERATOR role are meant for production mode, with access limited to the HOME interface. Additional roles can be defined to give users a different set of permissions.
- **Department:** Displays the department which the user belongs to.
- **Last Login:** Displays the last time the user logged in.
- **# Cases:** Displays the number of case that the user has participated in (i.e., been designated to work on).
- **Due Date:** Displays when the user's account is scheduled to be deactivated.

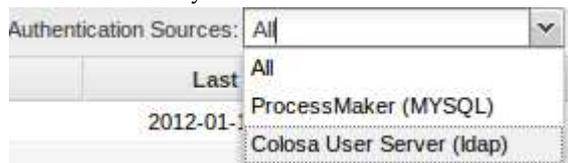
To search for users, use the two fields in the upper right of the users list:

- **Authentication Sources:** Filter the list of users according to their authentication source, which can be:

**ALL:** Display users from all authentication sources.

**ProcessMaker (MYSQL):** Users which were created in ProcessMaker and are stored in ProcessMaker's `rb_<WORKFLOW>` database in MySQL.

**Additional authentication sources:** Any authentication sources from LDAP or Active Directory which have been added.



- **Search:** To find users, enter text found in the full name or emails of users. After entering text in the **Search** box, press Enter to filter the list of users. To remove the filter, delete the text and press Enter again. To do a wildcard search, use "\_" (an underscore) to represent any single character and "%" (a percent sign) to represent any number of characters including spaces and zero characters. For instance, "am%" would find "Bamos Andrew", "Amy@colosa.com" and "Ram Powell". To search for the literal characters "\_" and "%", use "\\_" and "\%". Note that the search is case insensitive.

### Altering the User's List

By default users are listed according to the order they are found in the wf\_<WORKSPACE>.USERS table in the database, but the table can be resorted by a particular column by clicking on the column's header. To change whether the column is sorted in ascending or descending order, click on the down arrow to the right of the header label and select **Sort Ascending** or **Sort Descending** from the dropdown menu.

Users			
<span>+</span> New   <span>Summary</span>   <span>Edit</span>   <span>Delete</span>			
User Name	Full Name	Status	Role
admin	, Administrator (admin)		MAKER_ADMIN
fatima	Spínola, Fátima (fatima)		MAKER_MANAGER
bety	., Bety (bety)		MAKER_MANAGER
pedade	., Piedade (pedade)		MAKER_MANAGER
ana	Spínola, Ana (ana)		MAKER_MANAGER
elizabeth	., Elizabeth (elizabeth)		MAKER_MANAGER
ilda	., Ilda (ilda)	Active	PROCESSMAKER_MANAGER
marcio	., Márcio (marcio)	Active	PROCESSMAKER_MANAGER
dino	Olim, Dino (dino)	Active	PROCESSMAKER_MANAGER

To change which columns are displayed in the user's list, click on the down arrow in a column's header and select **Columns** from the dropdown menu. Then, mark or unmark the checkboxes for the columns to be displayed in the list.

Full Name	Status	Role
, Administrator (admin)		MAKER_ADMIN
Spínola, Fátima (fatima)		MAKER_MANAGER
.. Bety (bety)		MAKER_MANAGER
.. Piedade (piidade)		
Spínola, Ana (ana)		
.. Elizabete (elizabete)		
.. lida (ilda)	Active	PROCESS
.. Márcio (marcio)	Active	PROCESS
Olim, Dino (dino)	Active	PROCESS
Spínola, Nélio (nelio)	Active	PROCESS
Ferreira, António (ferreira)	Active	PROCESS
.. Décio (decio)	Active	PROCESS
.. Márcia (marcia)	Active	PROCESS
Olim, António (olim)	Active	PROCESS
.. Jaime (jaime)	Active	PROCESSMAKER_MANAGER
.. Ricardo (ricardo)	Active	PROCESSMAKER_MANAGER

Sort Ascending

Sort Descending

Columns

Group By This Field

Show in Groups

- User Name
- Full Name
- Email
- Status
- Role
- Department
- Last Login
- Authentication Source
- Cases
- Due Date

#### IV.10.1.

#### IV.10.2. Creating New Users

New users can be created inside the ProcessMaker interface or by importing them from an [external authentication source](#) such as LDAP or Active Directory.

To create a new user inside the ProcessMaker interface, go to **ADMIN > Users > Users** and click on the "New" button in the toolbar.



[Back to list](#)

**Profile**



Photo  Nenhum ficheiro selecionado

Résumé  Nenhum ficheiro selecionado

---

**Personal Information**

\* First Name

\* Last Name

\* User ID (\*)

\* Email

Address

Zip Code

Country

State or Region

Location

Phone

Position

Replaced by

\* Expiration Date

\* Calendar

Status

Role

---

**Change Password**

\* New Password

\* Confirm Password

\* Required Field

Fill out the following form. All required fields are identified by an asterisk (\*).

- **User ID:** The account name that should be provided when the user logs into the system. User ID's can contain letters, numbers and underscores. User IDs can contain uppercase characters, but they are not case sensitive when logging in.  
**Note:** From version 2.0.10 on, it's not possible to create user IDs that starts with a number like "01Patricia". The name must start with either a letter or underscore. For example: "U1\_Patricia"
- **E-mail:** The email address of the user, which can be used to deliver e-mail notifications concerning open cases.
- **Country:** If a country is selected which has a known set of locations, then two extra dropdown boxes will appear for **State or Region** and **Location**. For other countries, enter the location information in the **Address** field.
- **Expiration date:** The date when the user will no longer be allowed access to ProcessMaker. The expiration date helps protect an organization's date by preventing old users from accessing ProcessMaker.

- **Calendar:** Select the user's calendar, which determines the working hours for the user and calculates the due date for tasks.
- **Status:** If set to Active, the user is permitted access to the platform. If set to Inactive or On Vacation, the user is denied login access.
- **Role:** Select the user's role, which determines what functionality and interfaces the user can access in ProcessMaker. ProcessMaker provides the default roles PROCESSMAKER\_OPERATOR, PROCESSMAKER\_MANAGER and PROCESSMAKER\_ADMIN, but other roles can be created for more customized permissions.
- **Password:** A string of at least 5 characters, which can include spaces and symbols.

After filling in the fields, click on **Save** to create the new user account in ProcessMaker.

**Personal information:** From ProcessMaker 2.0.42 some validations were added for the User's personal information as Username and Password, as it is explained below:

**User ID:** ProcessMaker will verify if there is an existing username, so the User ID field must be validated for not entering a username that already exists

Personal Information

\* First Name

\* Last Name

\* User ID (\*)  ✔ Available Username

\* Email

On the contrary a red dialog will appear as below:

First Name:

Last Name:

User ID (\*):

X Username 'admin' already exists

On the contrary if both of them match the correct validation will appear as below:

## Deleting Users

In order to delete a user's account, two conditions must be met:

- The user's account can't be a member of any group.
- The user's account can't have any assigned or completed activities.
- It is generally not recommended to delete user's accounts, since the user's record should be maintained for historical purposes. Instead, it is recommended to deactivate the user's account by switching its status from Active to Inactive.

## IV.11. GROUPS

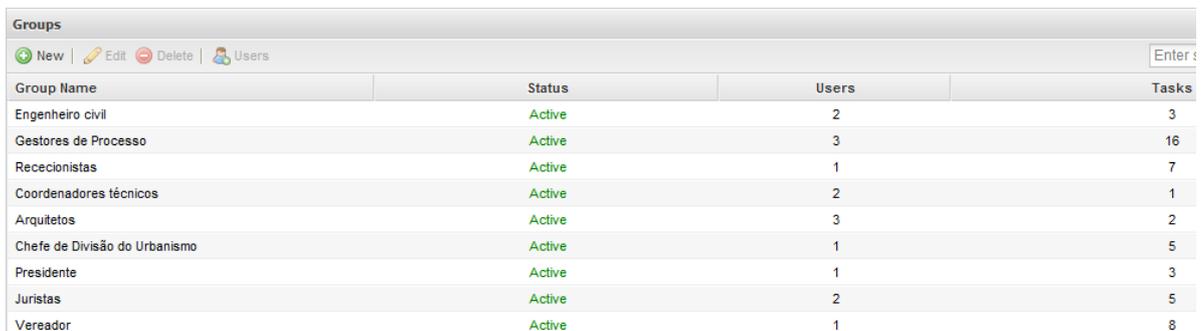
Groups are a way to organize users and to simplify the assignment of tasks to multiple users. In the task "Process Creation" ("T02-Criação de Processo") of the license procedure process, the task could be assigned to the "Rececionistas" group, which would include everyone in the organization in that category. In that way, anyone in that category in the organization would be able to start a License Procedure case. The organization has 3 architects and both are assigned to the "T08-Emissão de parecer jurídico" task than an architect group has to be created and assigned to the task rather than assigning each architect individually. Assigning groups, rather than individual users will eliminate a lot of hassle for the designer of processes, since it can be difficult to remember to include every individual user when assigning tasks.

Assigning tasks to groups rather than to individual users is much more flexible, since each process doesn't have to be modify when user accounts are deactivated or modified. Groups can be very convenient when there are frequent changes in personnel in an organization. If tasks assigned to a particular manager in dozens of processes, when that manager is transferred, each task will have to be reassigned to the new manager. In contrast, if the tasks are assigned to the group "Manager", then the only change will be to switch the one user in the group.



Group Name	Status	Users	Tasks
Engenheiro civil	Active	2	3
Gestores de Processo	Active	3	16
Rececionistas	Active	1	7
Coordenadores técnicos	Active	2	1
Arquitetos	Active	3	2
Chefe de Divisão do Urbanismo	Active	1	5
Presidente	Active	1	3
Juristas	Active	2	5
Vereador	Active	1	8

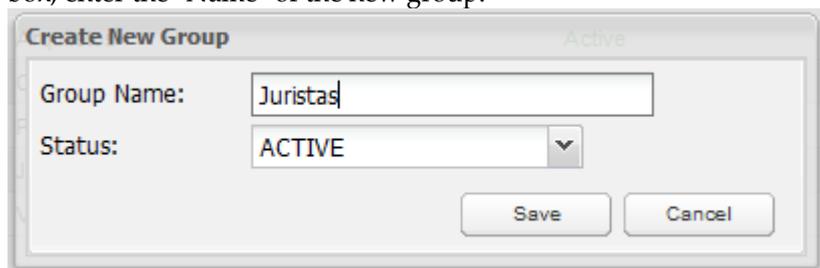
Ilustração 13: User groups 1



Group Name	Status	Users	Tasks
Engenheiro civil	Active	2	3
Gestores de Processo	Active	3	16
Rececionistas	Active	1	7
Coordenadores técnicos	Active	2	1
Arquitetos	Active	3	2
Chefe de Divisão do Urbanismo	Active	1	5
Presidente	Active	1	3
Juristas	Active	2	5
Vereador	Active	1	8

Ilustração 14: User groups view 2

To create a new group, click on the New link at the top left of the list of groups. In the dialog box, enter the "Name" of the new group.



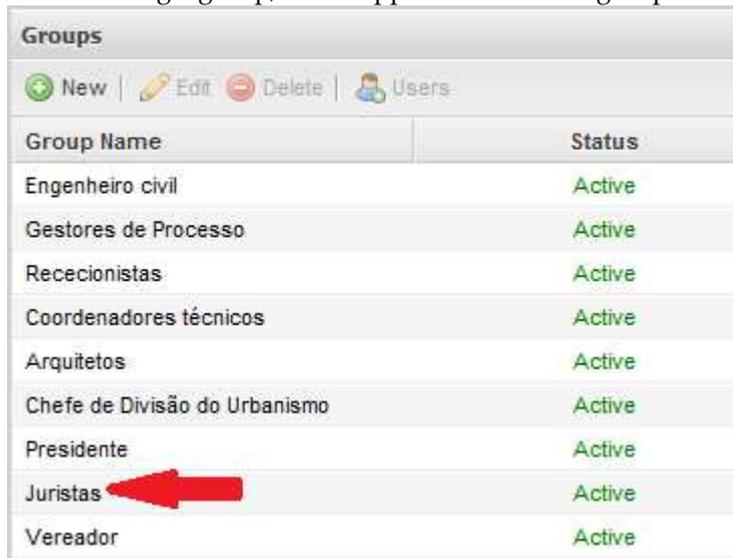
**Create New Group** Active

Group Name:

Status:

Ilustração 15: Creating a new group

After creating a group, it will appear in the list of groups.



Group Name	Status
Engenheiro civil	Active
Gestores de Processo	Active
Rececionistas	Active
Coordenadores técnicos	Active
Arquitetos	Active
Chefe de Divisão do Urbanismo	Active
Presidente	Active
Juristas	Active
Vereador	Active

Ilustração 16: List of existing groups

#### IV.11.1.1. Activate and Inactivate Groups

To edit a group's name and status, first select the group in the list, then click on the **Edit** button in the toolbar. Likewise, a group can be removed, by first selecting it, then clicking on **Delete** in the toolbar.

Set the **Status** to Active if the group is currently in use, otherwise set to Inactive. If Inactive no tasks which have been assigned to the group can be executed. Note that when a user's status is set to Inactive, he or she can't login or use ProcessMaker. When a group's status is set to Inactive, however, users assigned to that group can still login and use processmaker. They just can't execute any tasks which are assigned to the group.

Until version **2.0.42** when a group was set as **Inactivate** it disappeared from the list, with the possibility to activate it by going to the wf\_<WORKSPACE> GROUPWFtable and change it manually.

localhost wf\_Liliana GROUPWF

Browse Structure SQL Search Insert Export Import Operations

Showing rows 0 - 3 ( 4 total, Query took 0.0003 sec)

```
SELECT *
FROM 'GROUPWF'
LIMIT 0, 30
```

Show 30 row(s) starting from row # 0 in horizontal mode and repeat headers after

Sort by key: None

+ Options

	GRP_UID	GRP_STATUS	GRP_LDAP_DN	GRP_UX
<input type="checkbox"/> Edit Inline Edit Copy Delete	147CEC4968EE55	ACTIVE		NORMAL
<input type="checkbox"/> Edit Inline Edit Copy Delete	5174860414d545b1321daa0048780634	INACTIVE		NORMAL
<input type="checkbox"/> Edit Inline Edit Copy Delete	9422420654d75b2ae2fbc4074222421	INACTIVE		NORMAL
<input type="checkbox"/> Edit Inline Edit Copy Delete	74295438748d260871433a2037103429	ACTIVE		NORMAL

From version 2.0.43 when a group is set as **Inactivate**, the status will change on the list as **Inactivate** not disappearing from the list:

Groups	
New   Edit   Delete   Users	
Group Name	Status
Engenheiro civil	Inactive
Gestores de Processo	Active
Rececionistas	Active
Coordenadores técnicos	Active

Ilustração 17: Active/Inactive status

#### IV.11.2. Assigning Users to Groups

A user account can belong to zero, one, or many groups; and groups can have many users. In other words, there is a many-groups-to-many-users relationship. On the column **Users** it is possible to see how many users are assigned to a group, and on the column **Tasks** how many tasks have that group assigned.

To add a user to group, select it and then click on the **Users** link at the top left of the list. A new window will appear:

User Name	Full Name	Status	Role	Last Login	Cases	Due Date
admin	, Administrator (admin)	Active	PROCESSMAKER_ADMIN	12/15/2011	0	01/01/2020
fatima	Spinola, Fátima (fatima)	Active	PROCESSMAKER_MANAGER	12/01/2011	0	01/01/2014
bety	., Bety (bety)	Active	PROCESSMAKER_MANAGER	07/30/2012	2	01/01/2014
pedade	., Piedade (pedade)	Active	PROCESSMAKER_MANAGER	12/10/2011	1	01/01/2014
ana	Spinola, Ana (ana)	Active	PROCESSMAKER_MANAGER	07/30/2012	12	01/01/2014
elizabeth	., Elizabeth (elizabeth)	Active	PROCESSMAKER_MANAGER	07/21/2012	0	01/01/2014
ida	., Ida (ida)	Active	PROCESSMAKER_MANAGER	12/01/2010	0	01/01/2014
marcio	., Márcio (marcio)	Active	PROCESSMAKER_MANAGER	07/30/2012	4	01/01/2014
dino	Olim, Dino (dino)	Active	PROCESSMAKER_MANAGER	07/30/2012	1	01/01/2014
nello	Spinola, Nélio (nello)	Active	PROCESSMAKER_MANAGER	07/26/2012	1	01/01/2014
ferreira	Ferreira, António (ferreira)	Active	PROCESSMAKER_MANAGER	07/26/2012	1	01/01/2014
decio	., Décio (decio)	Active	PROCESSMAKER_MANAGER	12/10/2011	8	01/01/2014
marcia	., Márcia (marcia)	Active	PROCESSMAKER_MANAGER	07/30/2012	3	01/01/2014
olim	Olim, António (olim)	Active	PROCESSMAKER_MANAGER	07/30/2012	13	01/01/2014
jaim	., Jaime (jaim)	Active	PROCESSMAKER_MANAGER	12/01/2010	0	01/01/2014
ricardo	., Ricardo (ricardo)	Active	PROCESSMAKER_MANAGER	07/30/2012	0	12/30/2011
emmanuel	Gomes, Emanuel (emmanuel)	Active	PROCESSMAKER_MANAGER	07/30/2012	0	12/16/2012

Ilustração 18: Users list view 1

User Name	Full Name
admin	, Administrator (admin)
fatima	Spinola, Fátima (fatima)
bety	., Bety (bety)
pedade	., Piedade (pedade)
ana	Spinola, Ana (ana)
elizabeth	., Elizabeth (elizabeth)

Ilustração 19: Users list view 2

Click on  icon to add users into the selected group.

On the left side, the list of available users will display,

AVAILABLE USERS			
User Name	First Name	Last Name	Status
admin	Administrator		Active
fatima	Fátima	Spinola	Active
elizabeth	Elizabeth	.	Active
ida	Ida	.	Active
marcio	Márcio	.	Active
dino	Dino	Olim	Active
nello	Nélio	Spinola	Active
ferreira	António	Ferreira	Active
decio	Décio	.	Active
marcia	Márcia	.	Active
olim	António	Olim	Active
jaim	Jaime	.	Active
ricardo	Ricardo	.	Active
emmanuel	Emanuel	Gomes	Active

ASSIGNED USERS			
User Name	First Name	Last Name	Status
ana	Ana	Spinola	Active
bety	Bety	.	Active
pedade	Piedade	.	Active

Ilustração 20: Adding users into a group

To assign an user, double click on it and it will be automatically send to the right panel. Another option, select the user and click on the arrow ">" to sent it. To unassigned a user click on the user and double click on it or click on the arrow "<".

To do a case-insensitive search for a particular user, enter part of the first or last name of the user in the "Search" textbox and press Enter. To see all the available users again after doing a search, clear the "Search" textbox and press Enter.

To remove a user from an existing group, click on the Remove link of the selected group on the left side of the panel and confirm in the popup question box to remove the user.

### 3. Designing a process

First we need to create the tasks of the process structure diagram (PSD) of DEMO. Inside the designer environment we have to right click with the mouse to have access to a menu of options, we select the “Add task” option to create the first task of the process .

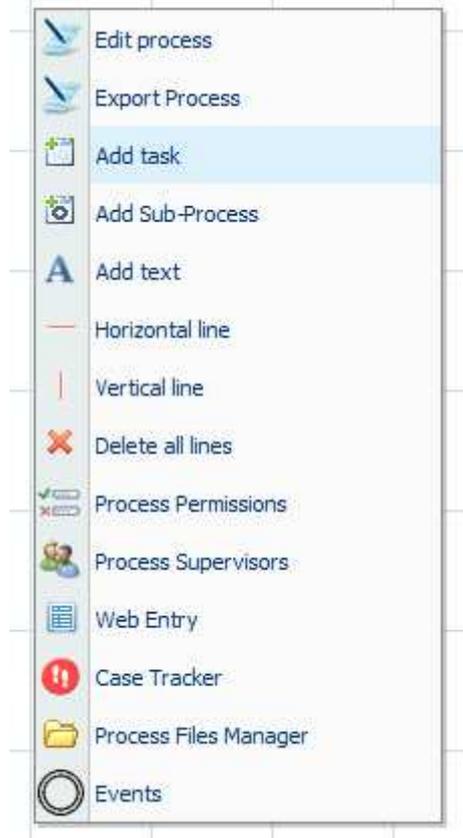


Ilustração 21: ProceMaker - first menu

After adding the task we need to name it according to the tasks of DEMO, we just have to right click with the mouse on the task space, go to properties on the definition tab and change the title, we also have to select the check box “starting task” in the first task of the workflow. The others tasks are created similarly. The first five tasks of the process are linked with a “Sequential” routing rule. This routing rule enables the software to move to the subsequent task once the current task is complete.

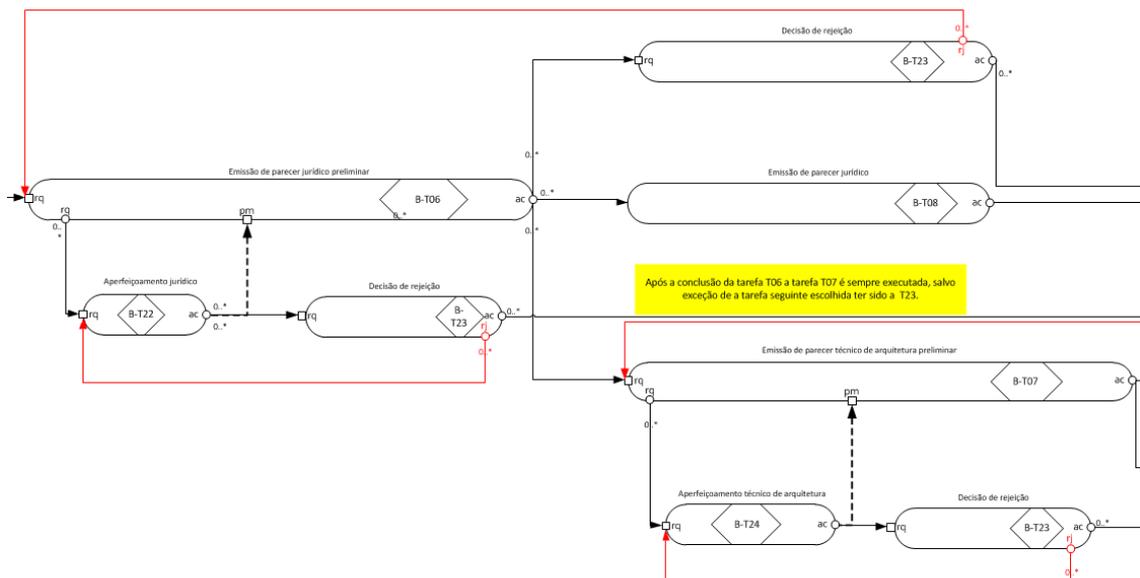


Ilustração 22: T06 fork

When we look to the PSD diagram we see when the T06 task is complete, the user has to choose the next step on a list of three according to his evaluation of the process. Or he can ask for an improvement of the document by choosing the complementary task T22. If the complementary task T22 is activated, the workflow cannot move forward till the task is complete (the dashed arrow of DEMO). In PSD the principal task stays in hold for the complementary to be executed. In our workflow software, to solve this situation we create a dynaform to the principal task T06. Previously we introduce the dynaforms created along the implementation of the workflow, we have attributed a number and a name to make it easier to identify them. For the task “T06 – Emissão de parecer jurídico preliminar” we attributed the dynaform number 3, because is third to get in action on the workflow. The dynaform 3 is mainly composed by a dropdown box with three fields:

- 1- Prosseguir para emissão de parecer técnico de arq. Preliminar
- 2- Solicitar aperfeiçoamento jurídico
- 3- Solicitar rejeição da licença

When the task is initiated the dynaform is presented to the user assigned and he has to choose one of the listed options.

Option 1 – Positive feedback, workflow continue moving forward successfully to the subsequent tasks, they are requested in one step, and executed in parallel by the assigned users.

Option 2 – conditionally positive feedback, which means the workflow, may have a chance to continue moving forward towards the goal (T01 – Atribuição de licença), if a certain demand is satisfied. A request for a change in the document is claimed in order to have a “green light” to the next principal task after T06. The next task aimed by the customer in order to see his license procedure doing well is the principal task T08. Also T07 will be request, because is a requisite of the procedure for the internal work of this organization.

Option 3 – Negative feedback, happens when the license procedure cannot happen because the building plan violates a direction for construction in that specific area, or because of legitimacy issues of the person who applies for the license or others problems established by law. When option 3 is selected, the task “T23- Decisão de rejeição” is requested, then the future of the procedure relays only on the next user of the system, the user of the task T23. If the actor who plays the role in the task T23 agrees (“accept”) with the actor of the previously task, the process ends. No license is attributed to the customer. The third option on ProcessMaker is in a

subprocess to make a cleaner designer and intuitive and simple interface to the user. We also, discover that using the task T23 of DEMO as a subprocess in ProcessMaker with all the processes needed would reduce redundancy during the process.

Ilustração 23: Dynaform 1view 1

Ilustração 24: Dynaform 1view 2

After creating the dynaform 3 and all 5 first tasks it is time to create the fork appearing in the PSD. To create all the alternative paths we need to drag the routing rule “parallel by evaluation” and drop it in the task T06 and link this task to the other tasks in the diagram. In resume we drag and drop as many routing rules as the number of following tasks we have to have. Using the routing rule “parallel by evaluation” we start to link the task T06 to the task T22, T06 to the task T08, T06 to the task T07 and for last the T06 to the task T23. The task of DEMO T23, in processmaker is transformed in a subprocess for the reasons written above in the text, which means everytime i refer to the task T23 of PSD, I am talking about the subprocess of ProcessMaker that allows the users of the system to cancel the entire process which means the subsequent tasks wont be executed. The task T23 is a combination of tasks that shows the cancelation pattern of a promise on DEMO design.

After linking the tasks in our design with the parallel by evaluation (fork) routing rule, a condition must be created in each path to control the workflow between tasks in a process. Workflow can continue along a single path or can be divided into multiple threads depending on the choices of the user in dynaform 3. The data collected by the PMr will be processed and automatically the software will determine which the subsequent task in the process are.

The first next task to be executed after T06 will depend on the option selected in the dynaform 3. If option 1(Prosseguir para emissão de parecer técnico de arquitetura) is select, the condition required to execute the task T07 and T08 will be @@decisao\_juridica!=3.

If option 2(Solicitar aperfeiçoamento jurídico) is selected in dynaform 3 , the condition required to execute the task T22 will be @@decisao\_juridica==2. Note that also task T07 will be executed because the condition @@decisao\_juridica!=3 of the previous line will be evaluated as true(fig. 12 and 13).

If option 3(Solicitar rejeição da licença) is selected in dynaform 3, the condition required to execute the task T23(subprocess in PMr) will be @@decisao\_juridica==3.

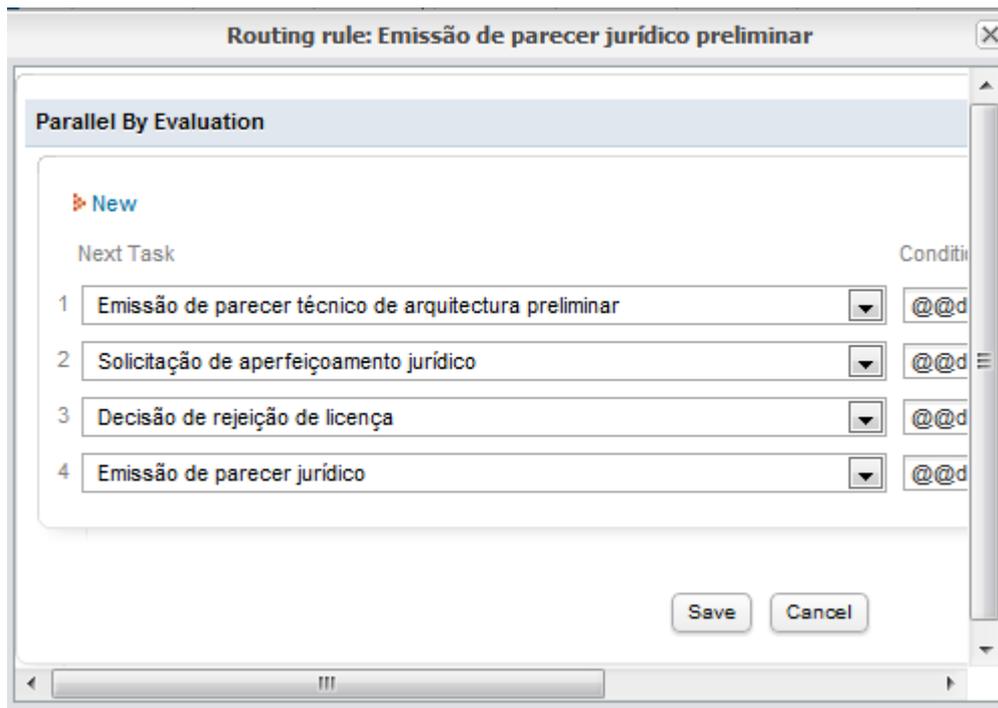


Ilustração 25: routing rule parallel by evaluation applied to task T06 part 1



Ilustração 26: routing rule parallel by evaluation applied to task T06 part 2

The image shows a software window titled "Task: Task 1" with a close button in the top right corner. Below the title bar is a tabbed interface with six tabs: "Definition", "Designation rules", "Timing control", "Permissions", "Case Labels", and "Notifications". The "Definition" tab is selected and highlighted. The main content area of the "Definition" tab contains the following elements:

- A "Title" field with a red asterisk indicating it is required, containing the text "Criação de processo".
- A "Description" text area, currently empty.
- A "Variable for Case priority" field containing the text "@@SYS\_CASE\_PRIORITY" and a small "@@@" icon to its right.
- A checkbox labeled "Starting task" which is checked.
- A red asterisk and the text "\* Required Field" below the checkbox.

At the bottom of the window, there are two buttons: "Save" and "Cancel".

Ilustração 27: ProcessMaker - Task definition

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# V. EVALUATION

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Survey were made in order to evaluate the work done. The structure of the survey was the following:

1. Como é a situação actual no procedimento de licença na câmara?
  - 1.1.1. Incumprimento de prazos: Sim\_\_ Não\_\_
  - 1.1.2. É fácil localizar o processo dentro da organização: Sim\_\_ Não\_\_
  - 1.1.3. Os munícipes estão satisfeitos com o serviço prestado: Sim\_\_ Não\_\_
  - 1.1.4. Todos os intervenientes no procedimento sabem claramente o que fazer quando o processo chega às mãos e o que falta fazer até ser aprovada a licença? Sim\_\_ Não\_\_
2. Esta fase do projecto veio ajudar a compreender melhor todo o processo e os papéis dos intervenientes em cada momento?
3. Quais eram as suas expectativas para a fase de levantamento dos processos e papéis dos intervenientes?

## V.1.1. the lawyer

1. O procedimento de licença administrativa corrente integralmente em papel, apesar de a Lei n.º 60/2007, de 4 de Setembro ter, pela primeira vez, desde a entrada em vigor do Decreto-Lei n.º 555/99, de 16 de Dezembro (RJUE), previsto a utilização de um sistema informático destinado a: *entrega de requerimentos e comunicações; consulta pelos interessados do estado dos procedimentos; submissão dos procedimentos a consulta por entidades externas ao município; e a disponibilização de informação relativa aos procedimentos de comunicação prévia admitida para efeitos de registo predial e matricial.*

- 1.1. Os prazos procedimentais previstos no RJUE são, na maioria, cumpridos depois de elaborado um fluxograma. Porém, há sempre casos em que os mesmos não são cumpridos.
- 1.2. Sim. Porém, há situações em que o processo possa estar em parte incerta.
- 1.3. Em termos de tramitação julgo que os munícipes não têm razões para estarem descontentes. Convém dizer aqui que, muitas vezes os atrasos procedimentais deve-se à falta de correcta instrução da responsabilidade do munícipe.
- 1.4. Em geral sim. Porém, o procedimento tem vicissitudes que podem tornar difícil aos vários responsáveis saber que caminho seguir.
2. Este projecto vem essencialmente responder a uma necessidade de desmaterialização do procedimento, poupando-se papel e facilitando-se o acesso ao processo.

Além disso, veio tornar mais clara a responsabilidade de cada interveniente e o fluxograma previamente estabelecido.

3.
  - Ganhar eficiência no procedimento cumprindo-se os prazos legais;
  - Desmaterializar o processo poupando-se os gastos em papel;
  - Facilitar o acesso ao processo;
  - Detectar aonde falha e responsabilizar os intervenientes que cometem erros;
  - Controlar os prazos.

### **V.1.2. The city councilman**

1. O processo de licença tramita-se em papel havendo necessidade de melhor controlar o circuito que deve percorrer.
  - 1.1. Os prazos são cumpridos à partida, mas há casos aonde nos quais não se cumpre.
  - 1.2. Sim, embora por vezes pode acontecer o processo estar em parte incerta.
  - 1.3. Em geral creio que sim.
  - 1.4. Há algumas dificuldades.
2. Sim. Um dos seus objectivos deve ser este.
3.
  - Desmaterializar o procedimento;
  - Facilitar o acesso ao processo;
  - Cumprir os prazos legais;
  - Detectar onde são cometidos erros;
  - Ganhar eficiência.

### V.1.3. The chief of division of urban planing

1.

1.1. Não

1.2. Sim

1.3. Sim

1.4. Não

2. Ajuda a clarificar algumas hipóteses menos comuns.

3. Que fossem abrangidas todas as situações possíveis de acordo com a estrutura legal decorrente do RJUE e de modo adequado à estrutura do serviço da DGU. O desenvolvimento, posto em prática e a extensão do presente projecto piloto (relativo ao licenciamento) a todos os procedimentos já identificados no serviço, terão certamente impactos, nomeadamente:

- Melhorar tempos de resposta, independentemente dos prazos;
- Articular o programa informático que resultar do projecto com o futuro portal municipal da região e com o SIG municipal;
- Permitir o acompanhamento sistemático do processo por qualquer interveniente no mesmo e, futuramente, pelo próprio munícipe, via portal;
- Controlar os prazos de forma eficaz, permitindo fiscalizar as obras em tempo útil e evitar incumprimentos.

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## VI. CONCLUSION AND FUTURE WORK

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This final chapter is to summarize and remind the important conclusions of the project. We review the project context, problems found, applications used, related work, solutions found and draw the correspondent conclusions.

DEMO methodology was very helpful in development/configuration of the workflow system, without it we would be lost. Every employee within an organization has a different view about the individual work they performed and the global work performed by the enterprise as result of a collaboratively work. Not all roles are completely defined and attributed in the current enterprises reality. People are used to blame others within the organization when a problem occurs, because they don't have their role well defined in each step of the process.

Two major problems were identified in the case study organization: lost track of the process documentation and deadlines exceeded. With the tool used to support the theory, all intervenients in the procedure have access to where the process is, and what steps were taken before with the corresponding user. And they can have an overview of what steps have to be taken next to complete the procedure.

The future work is related with installing the software in the city hall server, and organize all the digital content and associated it with the processes. Other procedures, besides the license procedure, will also be development and added to the workflow system, to allow a more efficient and professional work in the urban division.

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