UNIVERSITÉ LIBRE DE BRUXELLES

ÉCOLE POLYTECHNIQUE DE BRUXELLES

BPMN

Management of Data Science and Business Workflows

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Chapter 1

Introduction

Before stepping right into the questions for the assignment, let us reflect on Business Process Modelling and estate a brief recap if what we have studied so far, always referring to [Dum+18].

1.1 Business Process Model and Notation

Business Process Management (BPM) is a body of methods, techniques, and tools to identify, discover, analyze, redesign, execute, and monitor business processes in order to optimize their performance.

This means that BPM is interested in understanding how an organization performs their work, focusing in the abstraction of the chain of activities performed by different actors of the organization, and not that much in how the actual individuals carry out these activities. These chains of tasks carried out in an organization with a define objective that are subject to the BPM analysis are called ***business processes***.

More precisely, Dumas defines a business process as a *collection of inter-related events, activities, and decision points that involve a number of actors and objects, which collectively lead to an outcome that is of value to at least one customer.*

The relevant concepts in this definition are the following:

- Events: things that have no duration. For example, receiving an e-mail.
- Activities: things that take time to be fulfilled. For example, answering a received e-mail.
- Decision points: these points happen when the process changes depending on a decision or an outcome of a past activity. For example, we might answer to the e-mail only if it is relevant for us and let it be otherwise.
- Actors: people, organizations and systems that take part in a process. For example, me and a guy from the other side of the world claiming to be my cousin and willing to make me rich.
- Objects: the objects involved in the process, being physical or informational objects.

Finally, BPM Notation (BPMN) is a visual language developed to model business processes and facilitate their analysis, understanding and communication between different stakeholders. This is the notation that we will use along the following exercises and which is highly detailed by Dumas.

Chapter 2

Solutions

2.1 Question 1

2.1.1 Overview

In this part of the assignment we are modeling the business process of a Mail Processing Unit, more specifically the collection, sorting, checking quality and handling of the mails.

2.1.2 Assumptions

The solution was build based on the following assumptions:

1. The Party is a different company from the Registry (different pool).
2. Processes of receiving the rejection and receipt mails/notifications are black boxes activities on the Party pool, because we don't know what is done in those processes. Then, we assume these activities would trigger a different process in this same pool, of which we don't have information.
3. Quality check and following activities are done for each mail (inside the dashed box)
4. The first lane of the registry pool is done by a department other than the Cashier and Assistant registry manager roles.

2.1.3 Business Process Model and Notation

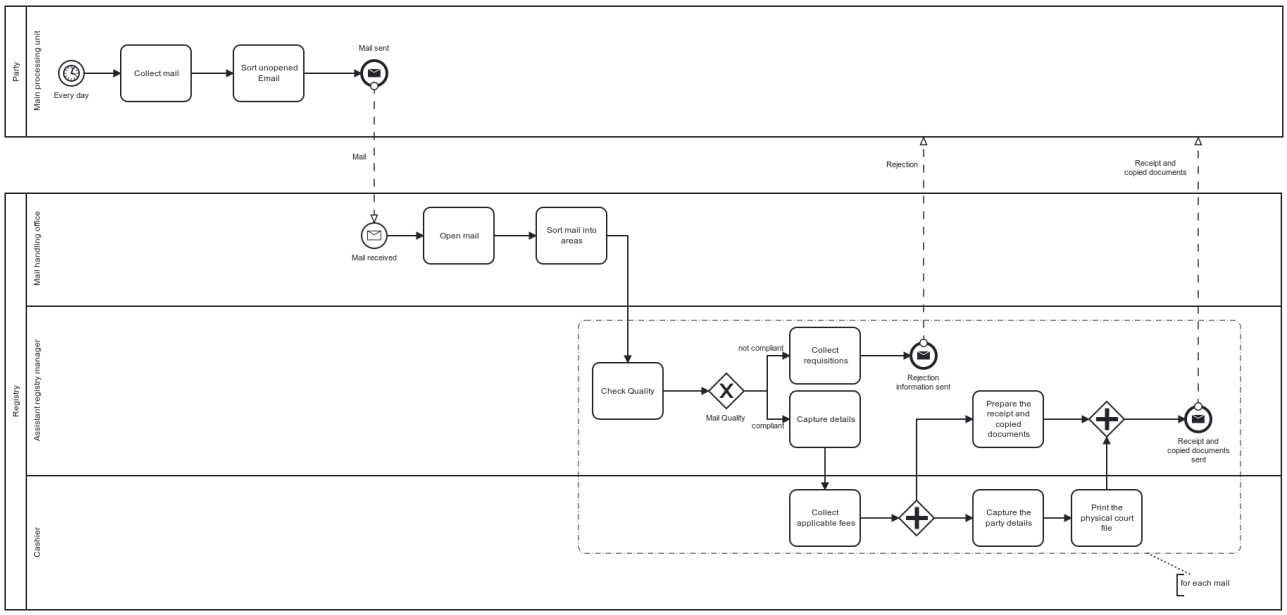

Figure 2.1: Question 1 BPMN diagram.

2.2 Question 2

2.2.1 Overview

In this question, we are asked to model the process of the election for the Nobel laureates in Chemistry, as well as the celebration of the ceremony.

2.2.2 Assumptions

The solution was built based on the following assumptions:

1. The selection of the nomination committee has to be made prior to sending the selection letters, i.e., before September.
2. There are selected professors who are not in Academia, and vice-versa, there are professors in Academia that are not selected to nominate the laureates. This translates as these being two different pools.
3. If a nomination form is not sent on time, it is simply disregarded by the Nobel committee.
4. The committee of experts is always able to finish the evaluation before the deadline.
5. The Nobel committee is also always able to finish the final report before the deadline.
6. The two meetings of the member of the Academia are held before the deadline.

2.2.3 Business Process Model and Notation

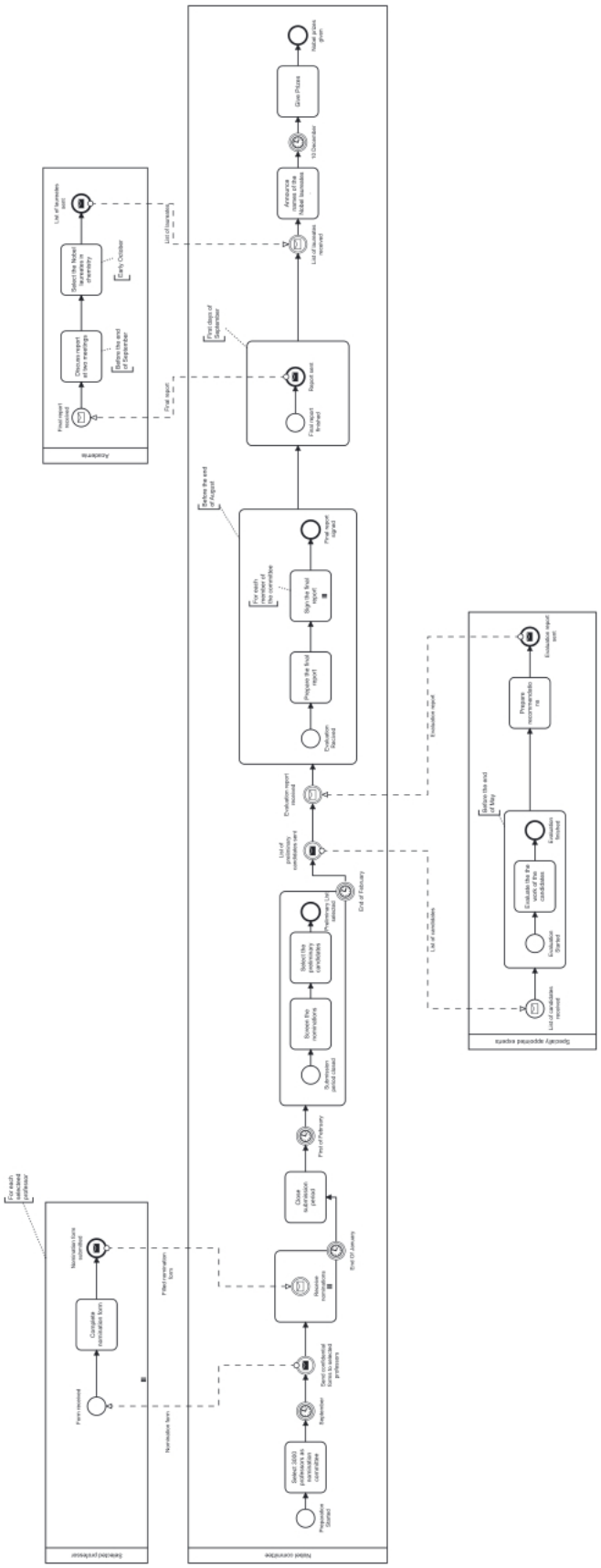

Figure 2.2: Question 2 BPMN model.

2.3 Question 3

2.3.1 Overview

In this third exercise, we have to analyze the errors in the BPMN diagram shown in Figure 2.4.

2.3.2 Syntactic issues

There are some problems in this diagram that are independent of the process to model. These are mistakes that do not follow the BPMN rules and guidelines.

Dividing the mistakes into pools, we end up with the following syntax-related issues:

- General:
  - The flow traverses through several pools. This is not correct, as each pool needs to contain a complete, full, followable process. This will imply other errors in each pool, as we will see.
- ”Party” pool (pool Party sounds too funny, we are serious people):
  - The start event does not have a label.
  - A message start event cannot send a message, it should receive it and then start the process with some activity.
  - There is no connection between the starting event an the end of the process.
  - The message that is sent should not state the action held, just what is sent.
  - A message cannot be received with an activity that does other tasks. So having the activity ’Archive claim’ receiving a message is wrong.
- ”Small claims tribunal” pool:
  - There is no start event.
  - There is no ending event.
  - The ’notification’ is sent between pools as a flow line between activities, it should be a message.
  - Using the deadline ’Await report’ to wait until the report is received to end an activity is wrong. We should create a message catch event after this activity. This is a syntax error because a deadline cannot be dependant of an activity done by other actor.
  - The document flow in the diagram is wrongly modeled. The documents are written on the flow lines, but this aspect should be modeled using documents.

2.3.3 Semantic issues

There are also semantic errors in the diagram, i.e., there are modeling decisions that change the meaning of what is being modeled.

All the mistakes of this kind have been found in the ”Small claims tribunal” pool:

- The 'Await report' deadline is also a semantic error, as it makes no sense to force the archival of the claim to be done before the report from the police is received. This should clearly be modeled as a message catch event.
- Disregarding the wrong use of documents, the report is sent from activity 'Store claim file' to 'Retrieve claim file', even though the tribunal does not have the report in its power at this point of the process.
- From 'Retrieve claim file' to 'Attach claim report' we should send both files, not just one.
- The activity 'Retrieve claim file' is repeated, and the second one should be, in any case, 'Retrieve report'.

2.3.4 Poor modeling

We also find in this diagram aspects that are not mistakes, but correspond to poor modeling decisions and could be improve to better represent the process modeled.

- At the time of sending and receiving messages, it is more accurate and clear to use message events than activities.
- The begin and end events are not labeled. Not labeling the begin event could be considered a syntax error as we highlighted before, but according to [**Dumas_2018**], *"we **should not** forget to give label to each event"*, so it is not a compulsory, but highly advisable, practice.

2.3.5 Proposed alternative diagram

We propose an alternative solution, assuming we want to model the following process:

When the party needs a warrant, they send a request to the small claims tribunal and once they receive the fulfillment notification, they archive the request. On the other hand, the small claims tribunal, when a warrant release request is received, have two tasks that can be done independently. These are storing the request and send the warrant possession to the police, who will elaborate an internal report which will be send back to the tribunal. Once these tasks are completed, the tribunal has to elaborate the final report, which is a combination of both the request and the report. Finally, they will notify the party that this activity has been fulfilled.

Thus, we obtain the BPMN diagram shown in Figure 2.3.

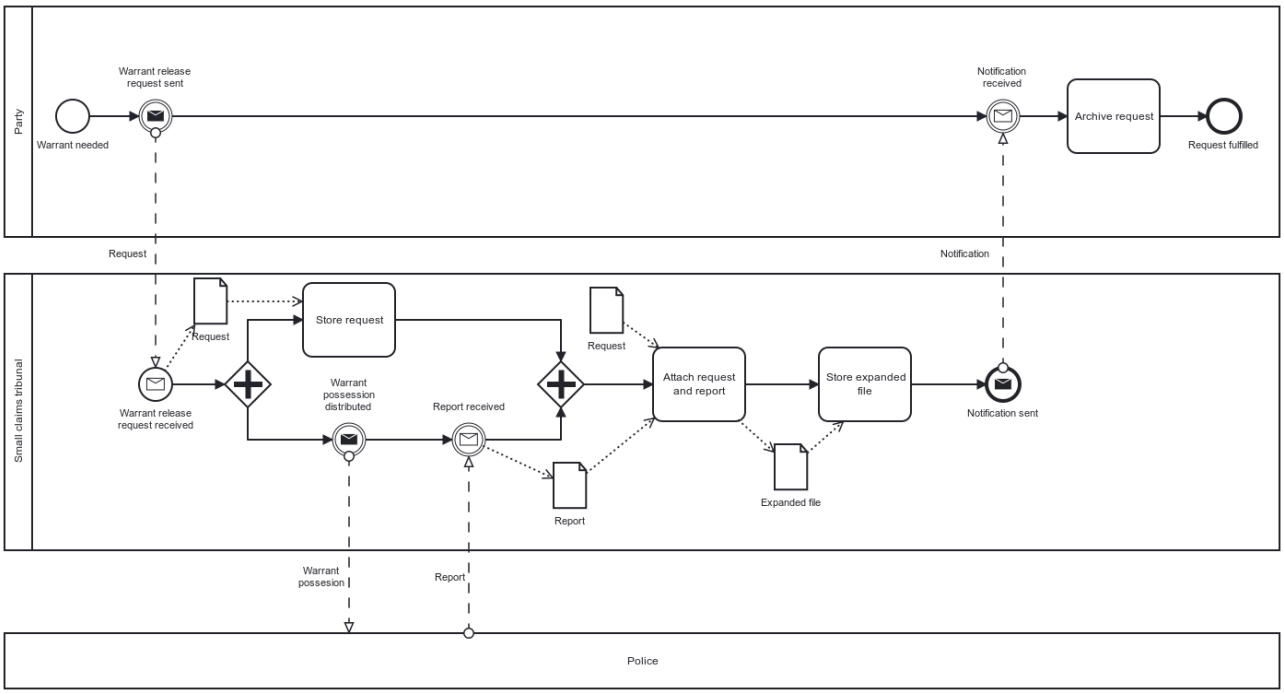

Figure 2.3: Question 3 BPMN Model.

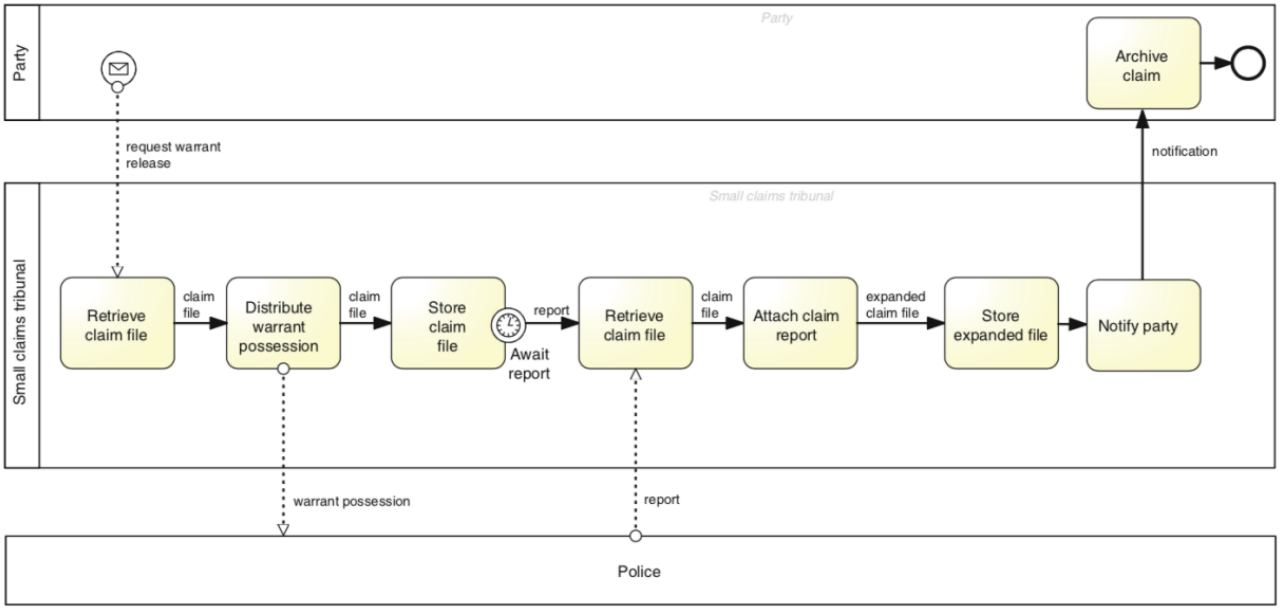

Figure 2.4: Question 3 BPMN Original.

2.4 Question 4

2.4.1 Overview

In this process, we are modeling a Technical Support process in a company, and how the request is handled by the Employees.

2.4.2 Assumptions

The solution was build based on the following assumptions:

1. We assume the clients can work for outside companies, so they comprise a different pool. Also, the client is a black box, as we don't know the detailed process this person follows.
2. The Start Process can be either by message or call.
3. The request complexity/solubility is the same in case the fix we submitted to the client isn't working.
4. We change the status to be 'closed' in parallel when we notify completion
5. If a client asked an information about the request he made before, we handle these requests in without interrupting the handling of the request process.
6. Client Pool is considered as block box.

2.4.3 Business Process Model and Notation

For simplicity we divided the sub-process of **Handle Request** into a different BPMN diagram since it's a complex sub-process and crosses multiple lanes in the pool[1].

[1]Keep in mind the messages flow in the sub-process is as generated/received in Figure 2.5.

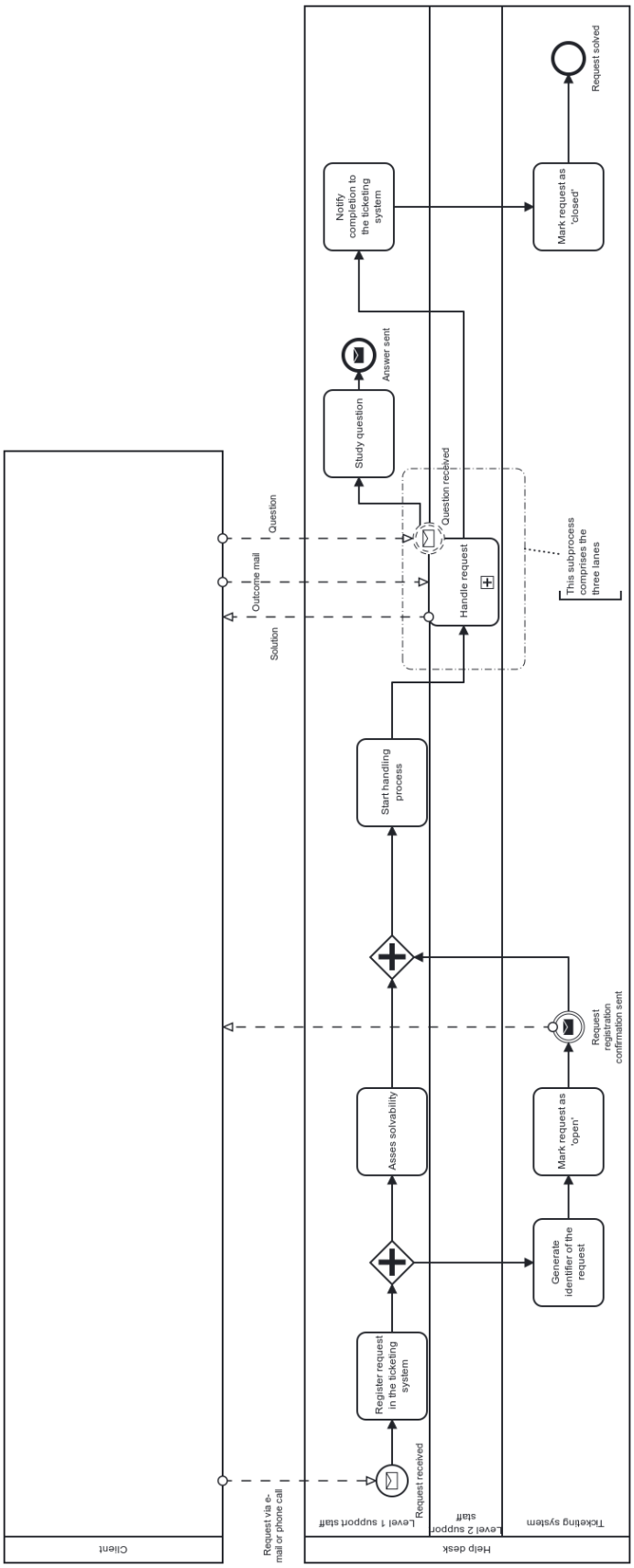

Figure 2.5: Question 4 BPMN model of the main process.

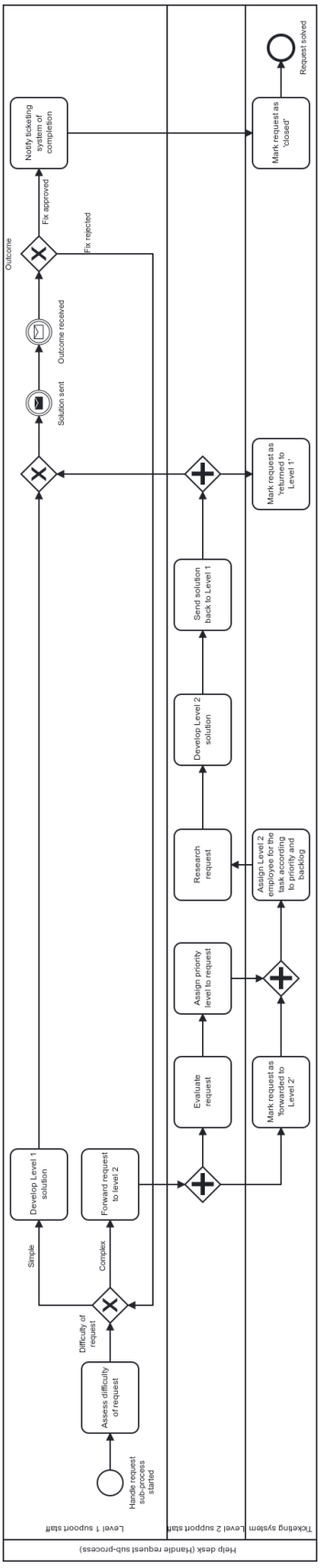

Figure 2.6: Question 4 BPMN model for the sub-process Handle request.

Bibliography

[Dum+18] Marlon Dumas et al. *Fundamentals of Business Process Management*. Springer Berlin Heidelberg, 2018. DOI: 10.1007/978-3-662-56509-4.