A Proposal for Ownership Representation in the Context of Business Process Models

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Abstract. The literature on Business Process Management (BPM) confirms the importance of establishing process ownership but conventional approaches as BPMN or EPC do not offer a way to represent the process owner. The aspect-oriented business process (AO-BPM) approach makes this issue more prominent because of the separation between crosscutting concerns and the core elements of a process. In this paper we present a way to represent the ownership based on the Strategic Actor model from i* and incorporate this approach to the EPC meta-model. We also provide a proof of concept by means of an example that illustrates our solution.

Keywords: Business Process Management, Process Owner, Aspect Owner, Business Process Models, Crosscutting Concerns, Strategic Actor.

1 Introduction

In this paper we argue that process ownership information should be considered in the context of business processes models. We understand that the available representations schemes, aka meta-models, for Business Process Management (BPM) have left out capabilities for representing information regarding process ownership. This came to our attention in the context of improving business process models with the aspect-oriented view (AO-BPM) [1], where we understand that in bringing up crosscutting processes we would need to be more careful about process ownership. In particular, it is important to stress that, in general, representation schemes for BPM just have the possibility of naming an actor for a given lane. However, in most cases, this actor represents either the organization sector or the person who carries out the workflow. Ownership is a more complex concept and should not be left out from the BPM model as it brings out several benefits.

Given this context, we started to work in proposing a representation scheme to fill this gap. The general requirements for this representation can be generalized as follows: a) to be able to describe ownership, b) to be able to differentiate among design time and operation time, c) to be able to provide integration with existing BPM models, d) to consider that processes can be of crosscutting nature to other processes.

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Our proposal is framed on the actor model presented in i* [2] [3]. In the i* framework, the concept of strategic actor is central for representing the strategic view. According to [2], the strategic view helps achieving a deeper understanding of an organization. The Strategic Actor Diagram (SAD) [3] is a model that explicitly represents the actors in the context of intentional modeling. Thus, the SAD was chosen since process ownership should be anchored on owner's intentions (goal, objective). However i* is not a compatible BPM model, since it does not represent process or processes flows. We adapted the ideas of the SAD in order to propose a representation schema that would tackle the above enumerated requirements.

To achieve this goal, we provide a review of the literature regarding process ownership in Section 2. In Section 3 we present some related works about representation of the process ownership and social modeling. Section 4 summarizes the ideas of AO-BPM. Section 5 presents our proposal and the argumentation of the reasons why it covers the general requirements stated above with a proof of concept, by means of an example. We conclude the paper in Section 6 stressing our results and laying out the possibilities of research in order to improve our approach.

2 Process Ownership

The process owner is an important element of any business process management initiative. Hammer [4] has identified two groups of characteristics that indicate how well the business processes can perform and keep the performance. The first group is applied to individual processes and the other one to the whole enterprise.

The first group is named *process enablers*. They determine how well the process can function over the time. The following elements are part of this group: comprehensiveness of a process design, ability of people who perform the process, appointment of a top-level process owner to supervise the process implementation and performance, match between process needs and organization's information and management systems, and quality of the metrics used to evaluate the performance of the process. The second group named *enterprise wide capabilities* focuses on the enterprise capabilities, they are: leadership, culture, expertise, and governance.

The enterprise able to put the elements of the first group in place will have the capabilities of the second group. These groups are highly dependent on each other. They are part of a framework, named PEMM (Process and Enterprise Maturity Model) [4] that help companies to plan and to evaluate their process-based transformations before executing them. According to this framework, each enabler is at some level of development. The enterprise can be considered at a given level only if all enablers belong to the same level, as such the dependence between the enablers is mutual. The relationship between the groups and process performance is such that, if organizational capabilities are stronger, there will be stronger enablers and, as consequence, better process performance.

We highlight the importance of the process owner as an enabler to evaluate process transformation success as proposed in PEMM [4]. According to Hammer [4], the process owner is a senior executive who has responsibility for the process and its results. At level 1 of strength, the activities of this enabler are to identify and to document the process, to communicate it to all the performers and to sponsor

small-scale change in projects. At level 2, the process owner articulates the goals of the process' performance and a vision for its future, sponsor redesign and improvement efforts, plan their implementation, and ensure that they are in compliance with the design. At level 3, the process owner works with other process owners to integrate processes to achieve organizational goals. At the very top level 4, the process owner develops a strategic plan for the process, participates in organizational strategic planning and collaborates with his partners for customers and suppliers to sponsor inter-enterprise process redesign.

Jeston and Nelis [5] mention the existence of 3 pillars in Business Process Management: Processes, People, and Technology. The processes refer to the activities performed by the organization and they are associated with objectives and goals. People are considered the key to processes implementation. Technology is the supporting tool to processes and people. People are the core in change management phases during business process adoption. Hengst et al. [6] list 3 types of stakeholders usually involved in change management initiatives: the problem owner, the decision makers, and the analysts or consultants. Each one belongs to one organizational level.

According to [5] there are two categories of management in Business Process Management. One is the management of the business processes integrated with the organizational management and the other regards the management of the processes improvement. In the first category, the managers, owners or administrators of business processes have some responsibilities such as to specify goals and metrics associated to the objectives established, to communicate the objectives, goals, and initiatives to the executors, to monitor and manage the progress of objectives, to motivate the group to overpass the objectives and to solve process disturbances, and to encourage the group in identifying process improvements. One possibility to put this kind of management in practice is the division between senior and middle managers. The former is responsible for the end-to-end process and the latter is responsible for sub-processes or individual processes that are part of the end-to-end process.

Kohlbacher [7] states that a business process must have associated a manager with end-to-end responsibilities. The author presents a research with 44 Austrian metal and machinery industry organizations where 20.45% confirm that an organization process centric causes clear responsibilities because of the process owner role. It reduces uncertainties caused by departmental fragmentation of responsibilities.

In sub-processes or individual processes management, [5] proposes to classify line managers according to the scope of their activities. Operational managers work with clearly defined processes and their goals, adjusting human resources and solving operational issues. Tactic managers focus on possible process improvement and strategic managers concern the business model and their associated processes.

The other category treats process improvement. They are responsible for the identification, development, and benefits from the process management. The responsibilities of these managers are related to the support given to organizational and business managers in improving their processes, with focus on modifications support to reach long term objectives. In this group, we can distinguish the manager of business process management project, the manager of business process management program, the chief of business process excellence, and the chief of process office.

In the first category the managers concern short term goals and the second category cares about improving processes with long term goals in mind. It causes some tension

between both groups because any process modification can harm the ability of managers to reach their goals [5].

The main activities of the process owner, according to [5], are: to document the process and to warranty that it is according to the patterns and requirements established; to improve the process. The process owner is the responsible for the decisions, change management, and implementation of improvements; to manage the interface and limits and boundaries of the process; to automate the process; to manage the process performance; to promote the process.

Jeston and Nelis [5] consider the clear and adequate attribution of responsibility and accountability of a process as a challenge in Business Process Management. According to them, an organization can choose to make functional managers responsible for their part of the process, to make functional managers responsible for the end-to-end process and to make non-functional managers responsible for the end-to-end process. Each approach presents some risks as in the functional property of sub-process, the owner may care just about his process and make difficult to implement end-to-end improvements that can damage his part. Another important aspect is the respect of the process owner in the organization.

Larsen and Klischewski [8] confirm that most of the business process approaches consider the responsibility and design of a process as centralized in only one person – the process owner who may have sufficient power to organize and direct the way other actors participate and accept the process reengineering and IT support. The process owner must be responsible for the end-to-end process and must the pointed by the organization leader as he needs authority and personal influence to ensure that the involved make the necessary modification. In order to keep the process owner motivated, his performance must be directly related to the performance of the process.

Table 1 presents a summary of the above mentioned approaches regarding the process owner. As each one has a different objective, it is difficult to compare them; but we can clearly understand the activities and characteristics of the process owner. In [4], [6], and [8] there is no distinction regarding design and execution level. We included this information based on software development processes where the design, implementation and maintenance phases are distinguished. For the best of our knowledge this contribution is not found in literature.

In summary, the process owner's attributions include the design of the process and its operation, which is to ensure that it is followed. In order to make a process operational, a process owner has to obtain resources, to establish and to implement tools to facilitate the process execution, to ensure high performance and to interfere to improve the process always when needed. Another conclusion is the importance of a process owner establishment for the end-to-end processes with the needed authority.

3 Related Work

List and Korherr [9] present a framework to evaluate business process modeling languages. According to them, these languages represent some aspects of a business process and areas of application but there is not a comprehensive evaluation of them. To solve this issue they proposed a meta-model with a wide range of process concepts so it is possible to know the core concepts of business process modeling languages and to perform an evaluation of them.

Table 1. Summary of process owner activities classified into design and execution level

Author	Division	Process Owner Activities	Level
Hammer [4]	level 1	identify and document the process	design
		communicate the process to all the performers	execution
		sponsor small-scale change projects	execution
	level 2	articulate the goals performance of the process and a vision for its future	design
		sponsor redesign and improvement efforts, plan their implementation and ensures compliance with the design	execution
	level 3	work with other process owners to integrate the processes to achieve organizational goals	execution
	level 4	develop a strategic plan for the process	design
		participate in organizational strategic planning	design
		collaborate with his partner for customers and suppliers to sponsor inter-enterprise process redesign	design
Jeston & Nelis [6]	business process management integrated with the organizational management - short term	specify goals and metrics associated to the objectives	design
		communicate the objectives, goals, and initiatives to the executors	execution
		monitor and manage the progress of objectives	execution
		motivate the group to overpass the objectives	execution
		solve process disturbances	execution
		encourage the group in identifying process improvements	execution
	management of the processes improvement - long term	identification, development and introduction of benefits from the process management	design / execution
	main activities	document the process and to warranty that it is according to the patterns and requirements established	design
		improve the process, being responsible the decisions, change management, and improvements implementation	execution
		manage interface, limits and boundaries of the process	execution
		automate the process	execution
		manage the process performance	execution
		promote the process	execution
Larsen and Klischewski [8]		responsibility and design of process	design
		have power to organize and direct the way other actors participate and accept the reengineering and IT support	execution
		responsible for the end-to-end process	execution
		must be pointed leader by the organization as he needs authority and personal influence	execution
		keep the process owner motivated, his performance must be directly related to the process performance	execution

The languages evaluated were UML 2 Activity Diagram, Business Process Definition Metamodel, Business Process Modeling Notation, Event Driven Process Chain, IDEF3, Petri Net, and Role Activity Diagram[1].

[1] This classification was made by the authors; they included languages that were not designed for business processes, like Petri-Nets and IDEF3.

The meta-model is composed of 5 perspectives: organizational, functional, behavioral, informational, and business process context. The organizational perspective is about where and who performs the process elements. The functional perspective represents the process elements that are performed. The behavioral perspective represents when and how the process elements are performed. The informational perspective considers the informational entities consumed, produced or manipulated by the process. The business process context perspective describes characteristics such as goals, measures, deliverables, the process owner, the process type and the customer.

The conclusion of [9] is that behavioral and functional perspectives are well represented in all analyzed languages; organizational and informational perspectives are partly supported; and the business process context perspective is not supported. This is highly important regarding the requirements of our approach abovementioned in Section 1. The organizational perspective is present in almost all of the BPMLs (Business Process Management Languages) except in IDEF 3 and Petri Nets as they have their origin in software development and they do not present the concept of role. All others languages include this concept. None of the languages represent the software with an explicit concept. Just AD represents the boundary of the role as internal or external. The languages AD, RAD, and BPMN use the same concept to represent all types of process participants (internal, external, software, application, service, human, role, and organizational unit). According to List and Korherr [9] this absence of specification prejudices the process enactment. The process owner, part of the business process context perspective, is not represented in none of the 7 analyzed languages. This conclusion reinforces the existence of some gaps on business process modeling, especially this one regarding the process ownership.

Lamb [12] presents a model based on the concept of *social actor*. According to the author, this model should help researchers developing Information and Communication Technology (ICT) studies. This model provides a multi-dimensional view of the organization member and his use of information and communication technologies. It contextualizes the organization members, their informational environments, and ICT. According to the model, social actors are organizational entities, which have their interactions enabled and constrained by the socio-technical affiliations and organizational environment, their members and industry. The social actors have conflicting and ambiguous requirements regarding their activities and the ways they perform their work. This view considers that the world is constantly changing and that the globalization influences the organizational relationships. In this model, the unit of analysis is people and ICT, although the goals are represented in a simple way [12]. In [11] there is no representation of intentionality. As such, these proposals are not able to satisfy our requirements presented in Section 1.

The i* framework is perceived as a social modeling framework where the central concept is the actor. The actor modeling, as a modeling concept, was first used by Hewit [10] as a way to model the work done in organizations named office work. An Actor Architecture and method proposed in Artificial Intelligence [11] is conceptually based in the actor object. In this context, an actor is an active agent that plays a role according to a script. The actor metaphor was used to emphasize the absence of separation between control and data flow in the model of [11]. Considering the Strategic Actor Diagram, in [11] there is no intentionality representation.

Another approach to represent the way organizations operate is DEMO (Design and Engineering Methodology for Organizations) [23]. In this approach, an organization is based on the operational principle of enter into and comply with commitments through communication. The communication occurs between human beings who play actor roles. According to this methodology, it is possible to identify the essence of organizations represented in ontological transactions. The diagrams used to represent the conceptual models of this methodology have the actor role concept but the ownership of, in this case, the ontological transactions is not discussed or addressed. The author shows how data ownership is neglected as one can choose to set the data owner as the initiator or the executor of the transactions but this work does not mention any way to represent this ownership.

4 AO-BPM

AO-BPM (Aspect-Oriented Business Process Modeling) [1] was proposed to address the modularization of crosscutting concerns in business process models. This approach is based on the Aspect-Oriented paradigm [13] that proposes the modularization of crosscutting concerns at software code.

AOSD (Aspect-Oriented Software Development) proposes the following abstractions [13]. *Aspects* encapsulate crosscutting concerns and take them out of the core elements in a given specification or implementation. To specify the composition of an aspect and the core process flow, an aspect contains *pointcuts* and *advices*. *Pointcuts* are sets of *join points*. *Join Points* are the core description elements which an aspect intercepts. Thus join points allow aspect composition, they are core process flow elements where the aspect is applied. A *pointcut* defines an expression with quantification mechanisms to select the join points to be advised by the aspect. A *pointcut* language defines patterns to write *pointcut* expressions. Advices define the action to be taken when a join point is reached. They act on a *pointcut* and can be configured to do so before (before advice), after (after advice), or around (around advice) the joint point.

AO-BPM proposes the separation of the business process model into: (i) *core process* – where is represented the essence of the process and (ii) *aspect process* – where is captured the crosscutting concerns cut across the core process.

The crosscutting concerns [14] [13] appear in conventional models interlaced with other concepts of a process and scattered in many parts of the process. These characteristics lead to several business process elements representing the same concern as they are scattered and tangled all over the process model. The resultant model has reduced understandability and reuse capability and increased maintenance overhead. The conventional modularization of business process models and its abstractions are not able to effectively modularize the crosscutting concerns.

The identification of the aspectual elements in a process model is not a trivial task. To support this discovery, in [1] was suggested some heuristics for aspect identification, they are based in previous work on requirements engineering [15] and are presented as follows: "*(i) if the concept is repeated several times in different places, (ii) if the concept is used by different other concepts, (iii) if the concept*

reflects an integration of semantically distinct situations, (iv) if the concepts represents a decision situation from which different options may be taken, (v) if the concept's absence does not interfere with the global goals of the whole, (vi) if the concept can be reused in other domains and (vii) if the concept is very much independent of other concepts ".

A process model is composed of processes, sub-processes, activities, rules, events, data, actors, and connectors (sequence flow, message flow, and association). It was argued in [1] that all those elements may be identified and represented as a crosscutting concern. The crosscutting concerns can be identified in the context of the same process (intra-process) or among different processes (inter-process).

To support the separation between core and aspectual processes, AO-BPM proposes to represent the crosscutting concern in a specific swimlane to highlight that a crosscutting concern is orthogonal to the core process as well as to make the representation of the proposed crosscutting relationships comprehensible. In order to detail the crosscutting relationship, a quantification mechanism is used. It helps to make the several references to each join point explicit in a single statement. Fig. 1 illustrates the representation applied in the Change Management Process.

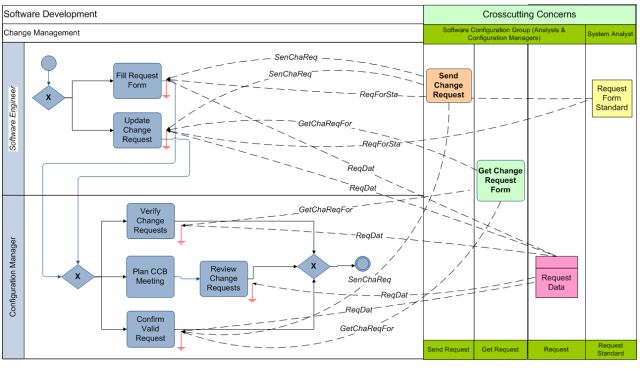

Fig. 1. Aspect-Oriented Change Management Process [1]

AO-BPM applies a symmetric strategy to represent aspects using the same concepts as the base description language. The graphical representation of the join points is a *ground element* near the core process element, allowing the source of the crosscutting relationships to be the crosscutting element and the target to be the ground element that represents the join point.

A *pointcut* language was also specified [1]. It allows stating the different types of join points which appear in a process model, the points where the aspect acts, and the moment this is being applied (before, after, during) at the core description, in a textual format. Basically, it expresses the inclusion of crosscutting concerns in a process. To do so, the *include* primitive is the main clause of the *pointcut* language, used in the advice part to specify the insertion of a crosscutting concern in a core process.

Cappelli et al. [1] argue that AO-BPM modifies the way that a business process is elaborated. In this new approach the process ownership, as well as the aspect ownership, must be established. We may have the following possibilities [16].

(i) To consider just one owner to the whole process (core and aspectual);
(ii) To divide the responsibilities between the process owner and the aspect owner, each one acting in his part with two possibilities:
    a. Each core process has an aspect owner associated
    b. Assign one aspect owner to each type of aspect process

The advantage in *a* is that the aspect owner is directly related with the core process and knows its details, as such he will have basement to request modifications necessary as he understands the aspectual needs of the process. The disadvantage in this case is the difficult to know the impact of modifications as the aspects may act in other processes. In this case, there might be different owners for the same kind of aspect. It requires constant alignment between both aspectual owners and between the aspect owner and the process owner.

The advantage in b is the case when a crosscutting concern, such as the transparency [17] may be incorporated to a process, if required. The set of aspectual elements that compose one concern should belong to the same owner since this concern is only complete when all related elements are considered. The disadvantage is related to the absence of a complete aspectual view and the ignorance of the details of the aspectual process where must act. When the aspectual process is composed of more than one type, there must be an agreement between the owners as it is imperative to have the clear management of the aspectual process.

Considering just one owner for both, core and aspectual processes, the advantage is the existence of only one owner who cares about the improvements of both processes. The disadvantage is the lack of aspectual end-to-end view as aspects are essentially different from process core because they act in different process.

5 An Approach to Represent Process and Aspect Owner

Our research confirms the results of [9], as we did not find any approach to represent the business process ownership and we understand the large benefits of process ownership representation as presented in Section 2. Thus, we propose to represent the process owner using the Strategic Actor [2] proposal because this model explicitly represents actors in the context of intentional modeling. We also include the aspect owner concept in this representation as it refers to a manager responsible for the crosscutting part of the processes. The aspect process has a different characteristic as it crosscuts other processes.

In a business process model, it is possible to represent the role or organizational unit responsible for the execution of the tasks at design level, however there is no way to represent the owner. Considering the ARIS Framework [18] in an EPC, for example, Aris tool provide an attribute to indicate the person responsible for the process as depicted in Fig. 2. There are also attributes to allow customizations to be done and attributes to register the management of changes in the processes. If we consider sub-processes, they also have an attribute for setting the owner but they do not provide a representation of the relationship between the owners involved in business process composition and a representation to clarify the scope of the owner's responsibility. This issue becomes especially important when using the AO-BPM [1] approach. As stated in Section 2, in the models generated with core process separated

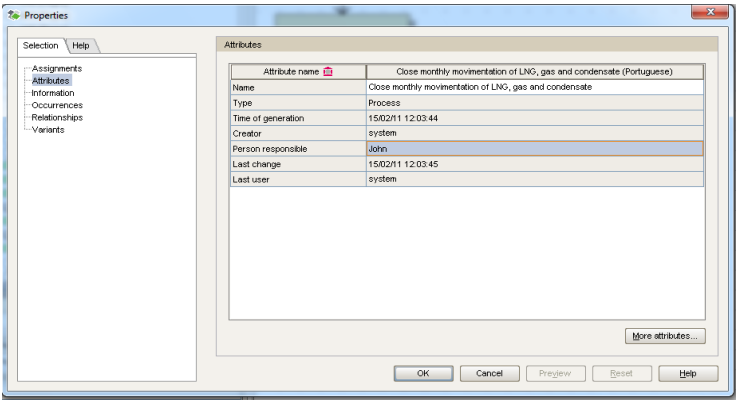

Fig. 2. Process attributes in Aris – process level

from the aspect process, we may have two kinds of ownerships: the aspect owner and the process owner.

Another important distinction regards the business process levels as design and execution. During design, when the process is thought either before it exist (to be) or through reverse engineering (as is), there is no way to represent the process owner. The same holds for the execution level, when the processes are performed on the day-to-day, even if they are not automated. As such, it is important to be able to represent the process and aspect owner and to distinguish between design and execution level.

With the goal to better understand the concept of actor in i* framework, [3] propose the model depicted in Fig. 3. Regarding the entities, the following clarifications apply: *real agent* is an instance of agent, it represents the concept of a specific person or software or hardware; *agent* is an actor with concrete, physical manifestation such as human individual; *role* is an abstract characterization of the behavior of a social actor within some specific context, its characteristics are easily transferable to other social actors; *position* is an intermediation between role and agent, it refers to the position an agent occupy in an organization, also a position covers a role; *actor* is an active entity that carries out actions to achieve goals by exercising his know-how, it is a super class of agent, position, and role.

To facilitate the understanding consider an agent with interviewer role and information engineer position. This distinction can help the mapping of organizational sectors with the modeling of the positions. In a well-structured organization we may find a equivalence between these two categories, so the position is exactly the role to be played. This differentiation provides flexibility to the modeler to distinguish between these two situations if it was the case in the organization.

To attend requirements a and d presented in Section 1, we propose an instantiation of the Strategic Actor Diagram as presented in Fig. 4. An ACTOR is a parent class that can be instantiated in PERSON (agent), OWNER (role) and MANAGER (position). OWNER can be further specified as PROCESSOWNER or ASPECTOWNER. We considered a PERSON as an agent because it indicates the physical manifestation of the ACTOR. OWNER is a specific role that can be covered by a position and characterize the actor's behavior within the context of ownership, also it can be transferred to other social actors. The POSITION as MANAGER indicates the intermediary characteristic of this class between agent and role.

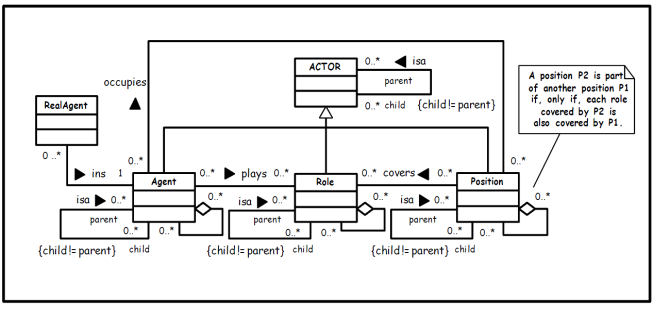

Fig. 3. Strategic Actor Diagram [3]

Regarding requirement a, the OWNER can be defined as an active entity that carries out actions to achieve the goals by exercising its know-how, and besides, it characterizes the behavior of a social actor within some context. In the case of the PROCESSOWNER, his goal is to make the process to be performed as expected and his context is the process he is responsible for. Regarding the d requirement, the crosscutting nature of the ownership responsible for the aspect process is represented by the ASPECTOWNER. His goal is to make the aspectual process act as expected in the core process and his context is the aspect he is responsible for.

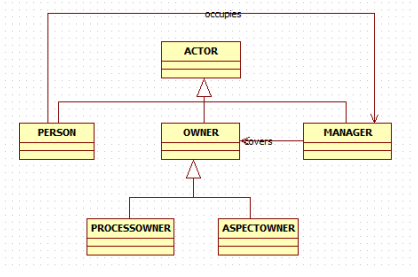

Fig. 4. Strategic Actor instantiation for the Ownership case

To attend requirements b and c we choose to incorporate our elements from Fig. 4 to the EPC meta-model [20]. It is possible to do the same using the BPMN meta-model [19] exploring the lane element but it was not included in this paper due to space reasons. Fig. 5 presents the ARIS EPC [18] meta-model using MOF (Meta-Object Facility) and OMG's meta-metamodel adapted from [20]. In grey are the elements we propose to extend ARIS EPC meta-model with process and aspect owner. The Execution Level and Design Level entities are specializations of the entity EPC. Owner and consequently Process Owner and Aspect Owner are specializations of the Organization Role and the Owner is responsible for an EPC, this relation was incorporated from [6]. The Organizational Unit can be refined by Organizational Role [7] and also refined by a Position as Manager. Person, Manager and Organizational Role are all specializations of Actor.

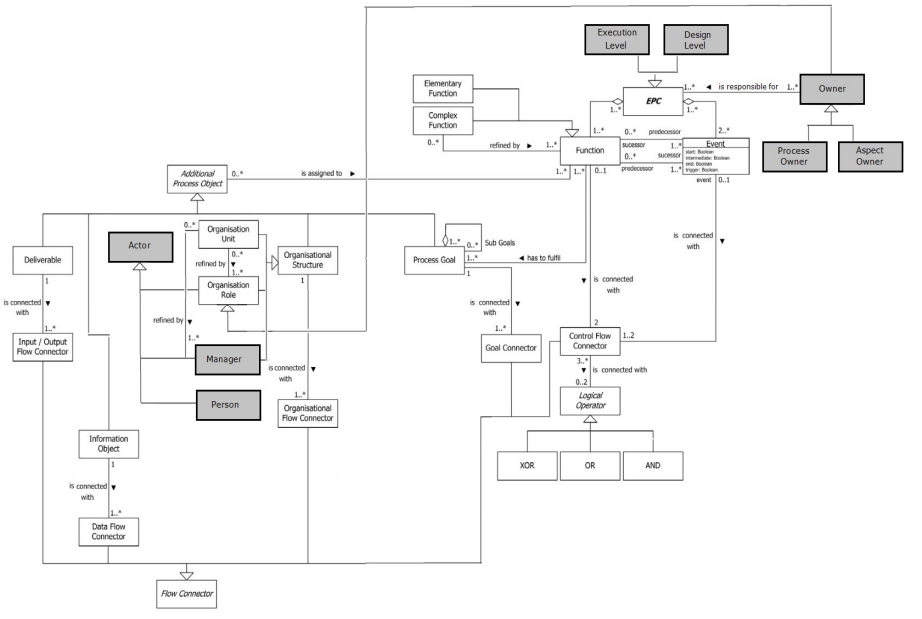

Fig. 5. EPC meta-model extended with process and aspect owner from [20]

5.1 Example

Consider one organization has an organizational structure like the one represented in Fig. 6. A view as depicted in Fig. 7 should be created to generate a representation for the process and aspect owner in the context of the business process Close Monthly Production Aspect-Oriented depicted in Fig. 8.

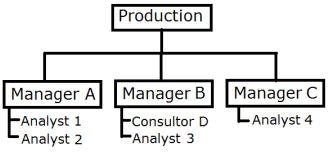

Fig. 6. Organizational Structure of Production in an hypothetical organization

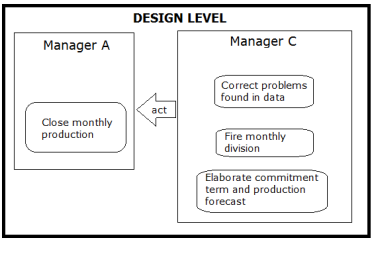

Fig. 7. Responsibility representation for core and aspectual elements of Close Monthly Production (Aspect-Oriented)

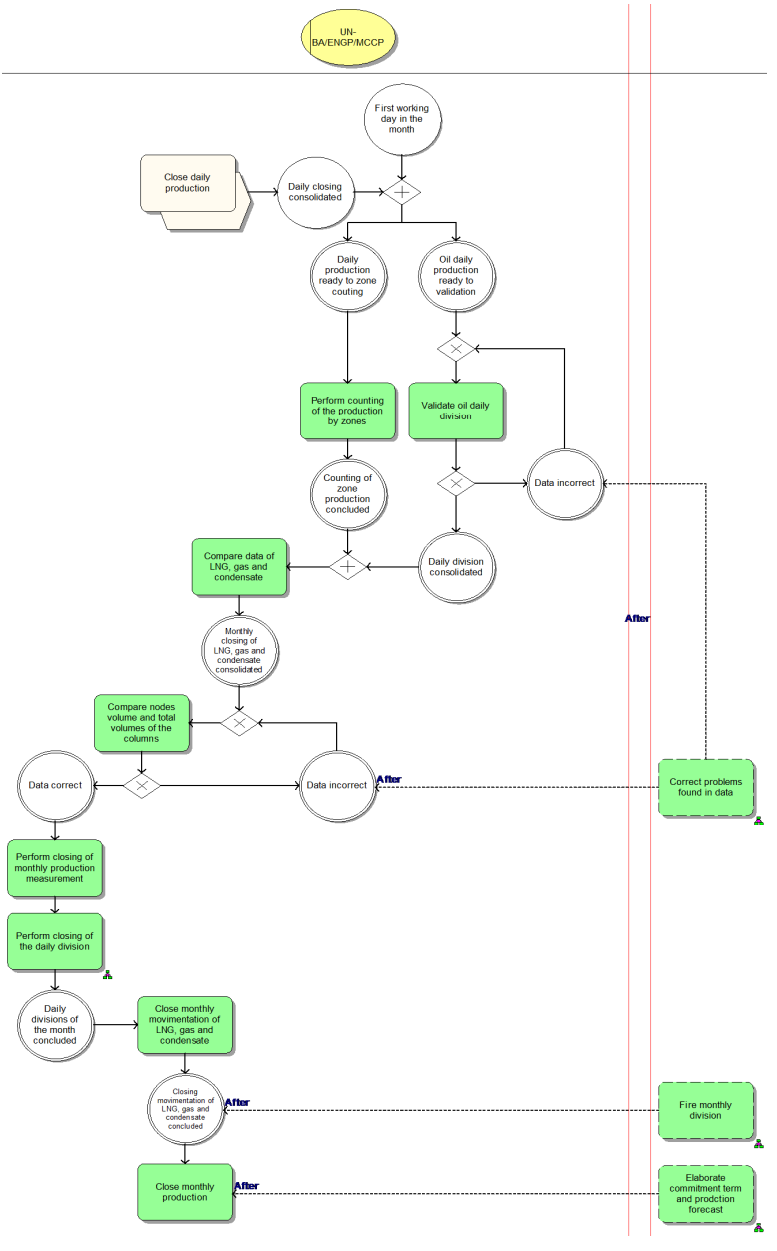

Fig. 8. Close monthly production (aspect-oriented) [22]

The Aspect-Oriented business process *Close Monthly Production* was adapted from an oil and gas organizational where the production of the month must be consolidated with the correct data. In this business process we identified 3 crosscutting concerns: (i) Fire monthly division, (ii) Elaborate commitment term and production forecast and (iii) Correct problems found in data.

The management approach of this organization may consider the options:

1) Assign a process owner and aspect owner being the same position or role (design level) or the same real agent Mary (execution level);
2) Assign a process owner being a real agent Mark or a role or a position and one aspect owner responsible for the 3 crosscutting concerns being another real agent or a role or a position;
3) Assign a process owner being a real agent Josh or a role or a position and three aspect owners, one for each crosscutting concerns, being the real agents or roles or positions.

Regarding the second case, a view of the Aspect-Oriented process *Close Monthly Production* as depicted in Fig. 7 should be created for the organizational structure in Fig. 6.

6 Conclusion and Future Work

In this paper we advocate the importance of clear establishment of the process owner. As we developed our work on AO-BPM, we concluded that it is also important to clear establish the aspect owner. There are some options to establish the aspect owner each one with vantages and disadvantages.

In order to attend the requirements a, b, c, and d, we presented an approach to represent the actor involved in the ownership of process and aspects as an instantiation of Strategic Actor from i*.Thus, it was possible to define the process owner in terms of actor instead of through the activities he performs. It also allowed to define the aspect owner and to include the aspectual process concept in the business process model. To be able to differentiate and represent the design and execution time of a process and integrate our proposal to conventional BPM models, we adapted and incorporated our model to the EPC meta-model.

By means of a hypothetical example we illustrated how to use our proposed approach and presented a model to represent the ownership view regarding a business process. Specifically, business processes composed of core and aspectual elements.

As future work we aim to include our model to the business process generic meta-model presented by [9]. By doing so, we complete the framework with detailed ownership information and enrich business process context perspective.

Regarding the hypothetical example presented in Sub-section 5.1, we should improve it by means of multi-processes as it is the reality in organizations and multiple departments. Another possibility is to use a concrete structural organization.

To facilitate the use of our approach in real organizations, we should develop a tool that allow the representation proposed in this paper - the view composed of aspect and process owner, as well as the elements they are responsible for and the view of the business process as it is modeled and the aspect and process owner. We also have to explore the representation of this second case at execution level.

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