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Flexibility in ABPMN

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Abstract

Objective: The business model which is developed is used by the organizations in different ways. For this, the model should be flexible enough to satisfy the set of requirements and there should be no ambiguity. Main objective is to provide flexibility in ABPMN. **Methodology:** Consider a case study of admission process. On this case study we applied the concepts of ABPMN and designed the model for admission process and after this decomposed the model. On this decomposition model applied the concepts of graphical notations of ABPMN. **Findings:** The model which is developed flexible enough and there is no ambiguity. Also developed the Process Development Life Cycle which was motivated. In PDLC, there are three stages Requirement Stage, Design Stage, Construction Stage. We have discussed all the stages and will apply the process development life cycle in the model prepared for the admission process with no ambiguity. **Application:** Flexibility in modeling the business processes reduces the complexity, interdependency, helps in easy maintenance and also easy to update the system without affecting the process model.

Keywords: Business Process Modeling (BPM), Business Process Modeling Notation (BPMN), Deferred Can (DC), Deferred Must (DM), Immediate Can (IC), Immediate Must (IM), Process Development Life Cycle Model (PDLC)

1. Introduction

The business processes[1] are defined as a set of tasks and activities which add value to the input to produce the specific output. In[2] extended the business process definition by adding the concept of role, which states that business process are set of linked activities which will be the business objective in order to achieve the roles and relationships specified by the organization. Modeling the business processes gives the abstract representation of the business processes. Due to the globalization and to meet the competition, the organization wants to reduce the time spent to produce the goods, cost, increase the speed and maximize the profit. In order to achieve all they need to model the business processes. BPM[3] is the graphical representation of the current and future processes of an enterprise in order to improve the efficiency and quality, to provide better understanding to all stake holders, simplify the complexity and to apply reengineering by modifying the existing model irrespective if creating it from the scratch. Different Business Process Modeling techniques[4] are Object Oriented Model (OOM), Unified Modeling Language (UML), Data Flow Diagram (DFD), Petrinets, Role Activity Diagram (RAD), Flow Chart and Integration Definition for Function Modeling (IDEF) and BPMN. Comparative Difference is provided by[4] and the BPMN provides all the process perspectives – functional, informational, behavioral and organizational which are defined by Curtlis in[5]. BPM can be represented in BPMN and they contain the guidelines for transforming BPMN into BPEL.

The paper is structured as follows. In next section, we will discuss about related work. Thereafter, in Section 3 will discuss the concept of flexibility and in Section 4 proposing the PDLC. Section 5 discusses about the conclusion and future work.

Process variant is widely used in different research projects. Several researches have been one for managing the variation of business processes. The objective of all the approaches is to reduce the redundancy, manage

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the business processes, composition of new model. With the help of this able to upgrade the flexibility and reusability. Configurable event process chains (C-Epcs)[6], helps to generate the single process model for the entire family. This model is called the reference model. In this nodes and EPC functions, are used to indicate that they are mandatory or optional. It is difficult to understand from the non technical persons, decomposition of the processes hierarchically is not possible and variation in the roles and objects are associated with the tasks at the meta model. In[7] presented the approach in which the multiple processes are aggregated into single model using aggregated EPC (aEPC). In this, the labels are used for the annotations which help to identify the relevant process models. The main objective[8] of Provop is to apply the adjustment points (modify, delete, insert) which helps to make the variability explicit. In[9] proposed the approach which supports the dynamic changes and also support the flexibility in order to improve the variation in the business processes. It helps to search and retrieve the processes. In[10] identified and compares the notations of the business processes. However, they identified that there are lot of languages which support the configurable feature for the business processes but have less tools to analyze them.

2. Flexibility in ABPMN

In our earlier paper[11], we proposed the guidelines for bridging the gap between the business models and business process models by introducing the third layer in between these two and named as abstract layer. For this we developed the abstract business model by providing the meta- model. Meta model in Figure 1 provides the functionality and the dependencies between them. Then, these notations are translated into BPMN. By doing this we have reduced the gap and applied the same concept by referring the case study for SAP Module.

In[12], we provided the security in ABPMN. Once, the ABPMN is created for the business process model. Now, main concern was to provide the security and for this we have discussed the measures and models for providing the security in ABPMN is shown in Table 1.

When the business process model was developed using the proposed representation system ABPMN, there is a need to design the Flexible Process Models. Every day the customer changes the requirement depending on the needs so the business processes changed rapidly. To provide the flexibility is the major concern. Flexibility means which can adopt changes easily. When the model is reconfigured, then it should adopt the changes and reduce the redundancy by applying the Modification Management. We will apply the concept of modification process models on the ABPMN, by upgrading the requirements with the help of addition, deletion, merging of requirements and activities required for building the business model. Each company has various modifications of the existing model which produces the same result.

Consider the Case Study of Admission Process of a University. In this student follow the following admission process a) College_Enquiry, b) Form_fill, c) Counselling and e) Fee_Submission. Figure 2 shows the model for the admission process.

Now, we will apply modifications on the basic admission process model by applying the AND operation. In this figure, Student initially fulfills the preadmission queries, then check status –if doesn't like the college, switch to other college. If satisfied, then fill the form and come for counseling on the particular day. This process is modified by elaboration and student will report at the document verification desk and seat availability options discussed with the student. Once the decision for a seat is taken, the seat allotment letter is given to student and he will submit this letter at the fee submission desk and registration number is generated for a particular student as mentioned in Figure 3.

After then this modified model is decomposed and each process is labeled properly. Figure 4 Modified Model Decomposition

The process composition involves the following steps:-

- The Users will choose the modified reconfigurable model. In above figure, the modified process shown with blue color.
- These blue highlighted color processes can be decomposed further.
- User will select the modified configurable model.
- To pair the modification with the previous and new model.

Now, final business process has the one starting and finishing point and has no redundancy. This business model is further elaborated and we will identify that process is of Abstract Application Chunk (AAC), Primitive Application Chunk (PAC) or Complex Application Chunk

(CAC). After this dependency is applied and there are two types of dependencies i.e. Urgency and Necessity. They have the notions of Immediate Must (IM), Immediate Can (IC), Deferred Must (DM), Deferred Can (DC). A graphical notation for this representation is shown in Figure 5.

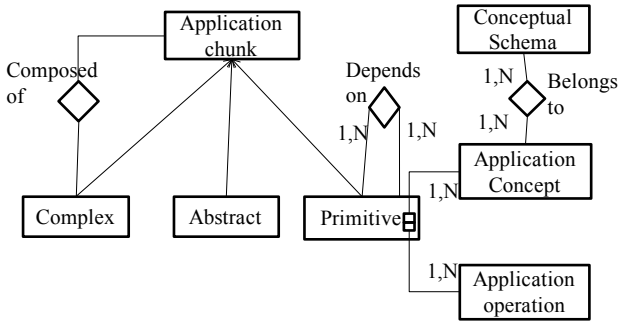

Figure 1. Meta model dependencies.

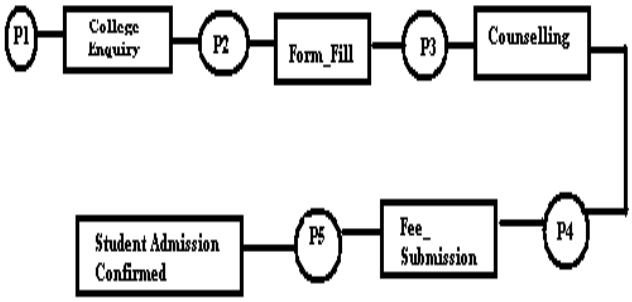

Figure 2. Admission process model.

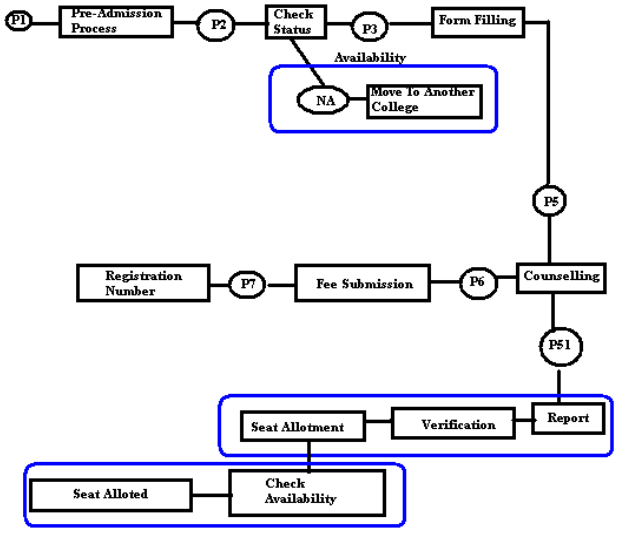

Figure 3. Modified admission process model.

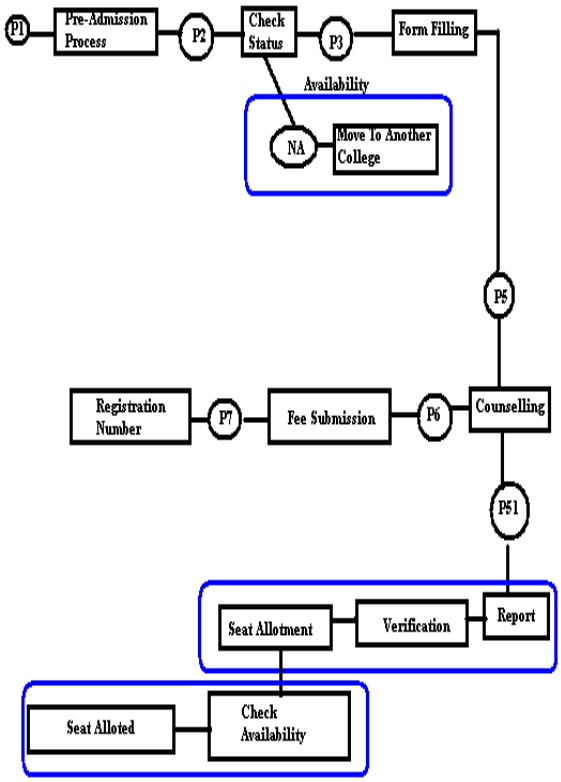

Figure 4. Modified decomposition model.

Table 1. The four dependency properties

Abbreviation	Urgency	Necessity
IM	Immediate	Must
IC	Immediate	Can
DM	Deferred	Must
DC	Deferred	Can

Table 2. Process development life cycle

Stage	Process	Input	Output
Requirement Engineering	Process is to match the Intention.	It is obtained from inner views wtc.	Similar Process.
Design Engineering	It deals with the architecture mapping.	Design of the similar processes.	Based on the requirement , the process is architectural to be.
Construction	It deals with the matching of organizations.	Architec -turally Similar Process	Processes are situated.

Table 3. Functional process engineering

Stages and Process	Input	Output
Requirement Engineering/ Intention Matching	We can take the input with the help of interview.	Similar methods for the methods to be.
Design Engg/Architecture Matching.	Architectures of intentionally similar methods.	Architecturally similar methods.
Construction Engineering/ Organization Matching	Organizations of architecturally similar methods	Method to-be

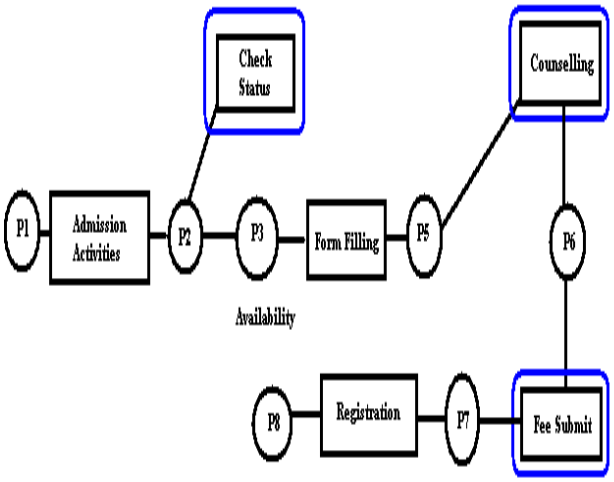

Figure 5. Graphical notation for admission.

3. Process Development Life Cycle

In this we will be developing the life cycle for the process. This life cycle is motivated by[13]. Table 2 consists of following stages. The Requirement Engineering stage consists of intention matching. In this stage, the intention of the process is determined through the requirement elicitation process, which states what the process aims at achieving. Next stage is the Design Engineering Stage. The process developed in Requirement Engineering Stage will become the candidate for process development life cycle, MDLC. It considers the processes one by one. The architecture is developed and it reveals the main components and their inter-relationships comprised. The third stage is the Construction stage and it deals with the organization matching and its input is the architecture we developed and output is the situated process.

We relate the Functional Process Engineering, developed by[14] to the Process Engineering life cycle proposed. In this life cycle, requirement engineering consists of the discovery and representations of the processes, the design phase is the architecture and the development phase is the construction. Therefore, FMS start with the architecture and located in the designs and construction engineering stages as in Table 3.

We concentrate in the design and construction of the life cycle. The graphical notation representation of the modification model of admission process with no ambiguity is prepared.

4. Conclusion

We treated the Process Development activity with PDLC. In this, we have concentrated to remove the ambiguity in the process models by applying the Modification Management. We will apply the process development life-cycle on this model subsequently and simultaneously will implement on tool.

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