MAULE: A BUSINESS PROCESS MODELING METHODOLOGY

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ABSTRACT

Both researchers and professionals recognize the importance of business process modelling in understanding and designing accurate software systems. Therefore, it is essential that methodologies and modelling techniques provide guidelines in the discovery of data for a process to be modelled. This is very important for inexperienced people, university students and software engineers with little experience in process modelling. In this context, the original contributions of this article are related to our business process modelling methodology, called Maule , which provides: a) a process that guides the analyst in obtaining artifacts; b) A template for organizing data, diagrams and models; c) a set of concepts (value proposition, user segment, customer relationships, distribution channels, collaborators, influencers, cost structure, sources of income, process rules and data) to understand a process; and d) the integration of best practices of other methodologies of process modelling.

Keywords

Business process, process modelling, methodology, best practices

INTRODUCTION

In the area of information systems development, there are several efforts in the reduction of the gap between the professionals of the business and IT when both work together in the automation of business processes. The desalignment (misalignment si quiere decir desalineación) between the requirements of the business and the current functionality of the delivered software is considered a research problem in software development [1]. The business managers are not able to explain their business processes or requirements fully, due to the lack of IT knowledge, moreover, business process modelling frameworks do not help the business IT departments to derive the requirements of a system based on the ever-changing business goals and objectives [2]. As a way to help reduce the gap between these professionals in terms of process modelling [3], [4], [5], and [6], this paper proposes a business process modelling methodology that produces models as-is. The above is achieved with the integration of four contributions: a) a process that guides the users' tasks

of the methodology; b) a literature review of business models, such as Morris [7], Schafer [8], Zott [9], Johnson [10], Osterwalder [11] and Clark [12]; c) an adaptation of the concepts of Osterwalder's work [13] to the context of business process modelling and d) review of other methodologies and works, such as Freund [14], Dumas [15], De la Vara [1], Rodríguez [16], Sharp [17] and BPMN 2.0.2 [18].

OVERVIEW OF MAULE METHODOLOGY

Figure 1 identifies the main sub-processes of the Maule Methodology that guide users in obtaining validating of information, diagrams and models. There is also a bidirectional relationship between the adjacent sub-processes to facilitate feedback between them.
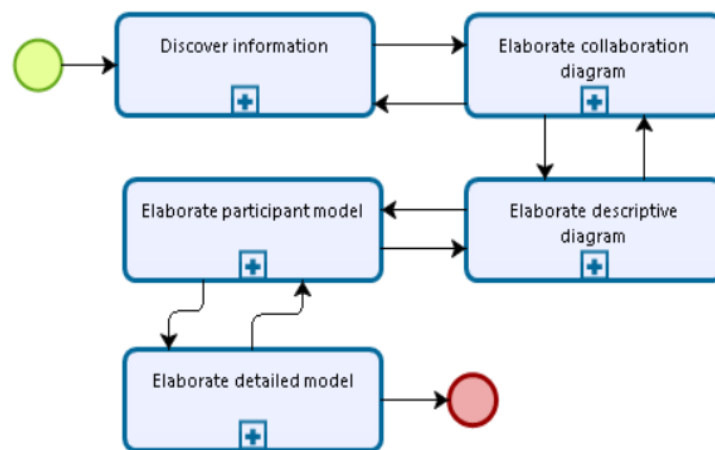

Figure 1. Sub-processes of the Maule Methodology

The sub-process "Discover information" has five activities: elicitation, analysis, validation, negotiation, and documentation of information (result of the application of the concepts, such mission, vision, strategic objectives, values and goals). These activities guide the analyst in identifying the information of the main process that will be modelled. The foregoing is complemented with the elaboration of the macro-process diagram. The following can be said about the macro-process diagram: a) this brings together classifies and the organizational processes in strategic, primary and support; b) the identification and classification of all organizational processes is beyond the scope and objective; c) the macro-process that contains the main process is identified; and d) the macro-processes that contain the processes that interact with the main process will be identified.

The "Elaborate collaboration diagram" sub-process generates a "collaborative diagram" that is a high-level diagram that models the dependencies of the main process with other organizational processes. The collaboration diagram is refined by the "Elaborate descriptive diagram" sub-process. A descriptive diagram identifies all the roles, sub-processes, and the sequence of execution of activities with the input / output data. The following five tasks must be performed for its preparation. The task "identify roles" identifies the relevant roles of the process while the task "identify activities" identifies the relevant activities of the process for each participant. In the "fix execution order" task, the order of execution of the sub-processes of the main process is established. The validation of the information and the modelling is carried out in the "validate elements" task. The adjustments (changes) on the information and diagrams are executed in the "perform adjustment" task.

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The "Elaborate participant model" sub-process consists of drawing up a diagram for each one of the participants (user) of the process, whose design is based on the information of a RACI matrix elaborated for each one of them. Some benefits of the development of the participant diagram are:

- The client / user focuses on identifying the activities under their responsibility.

- The diagram has all the activities and decisions of a participant.

- Diagram validation is simple because it does not include activities of other participants.

The "Elaborate detailed model" sub-process consists of merging all the participant diagrams into a diagram.

RESEARCH METHODOLOGY: DESIGN SCIENCE

Each research project has its particularities and justifications to select a research methodology that best fits its requirements and the final results of the research. In particular, we selected the design scientific research methodology [19] because it has been applied to several areas, such as computer science, information systems, education and administration [20]. The selection of design science is based and justified on a set of reference guidelines:

1 The object of study must be an artificial artefact. The result of our research is a modelling methodology applied in the construction of models.

2 The problem addressed by the artifact must be relevant to practitioners. There is a gap between business professionals and IT professionals when it comes to identifying the information of a business process that will be modelled.

3 The evaluation of the usefulness of the artifact must be rigorous. The result is a useful methodology for modelling the business process.

4 There must be an effective contribution to the knowledge area of the artifact. Maule is a contribution to modelling within BPM because it innovates in the selection and application of a set of business concepts to identify the elements of a process to be modelled.

5 Rigorous research. The artifact was refined and applied to different projects and specific situations of process modelling in order to identify pros and cons.

6 Communication of the results to the practitioners. The preliminary results of the Maule validation were published in Toranzo [21], [22].

RESULTS

The results and discussion of the present investigation can be summarized as followed:

1 Maule adapts the concepts of Alexander Osterwalder's work in concepts that allow understanding and identifying the information of a process.

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2   Maule gives analysts the opportunity to have another alternative mental model to know, understand and identify the information of a process.

3   Maule provides a template to document the information obtained.

4   The methodology has a process for process analysis and modelling. The process indicates the work path that users must follow to obtain the expected artifacts in each of the sub-processes of the methodology.

5   Limitations of Maule. At the moment, as-is models are produced. The next stage will produce to-be models. Another concern is the development of quality models.

CONCLUSIONS & RECOMMENDATIONS

The article presented the Maule Methodology for the identification and modelling of the information of a business process. Some of the conclusions of the work are:

1   Maule proposes a new way of dealing with the analysis of information of a process to be modelled. This gives the opportunity to its users to have another mental scheme to identify, know and understand the information a process to be modelled.

2   Maule proposes a template to document the results of the activities. The template helps in the documentation and relationship of the results of the application of Maule's concepts.

3   The elaboration of Maule's sub-processes was an iterative and incremental work. We have a process that guides the students through analysis and modelling. In 2015, methodology was created in Rodríguez's work [16] and subsequently applied to 11 projects carried out by students of Civil Computer Engineering from the Universidad Católica del Maule (UCM), who, through a focus group, identified the strengths and weaknesses, and provided opportunities for improvement. Which were evaluated and incorporated into Soto's thesis [23], who validated it in the "Cooperativa de Ahorro y Crédito de Chile", called Oriencoop, which serves more than 300 thousand people between clients and partners. During 2017, the Advanced Software Engineering Masters course in Computer Science at UCM was updated and validated by the information systems course of the Auditor Accountant Career.

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