

BUSINESS PROCESS DESCRIPTION USING BPMN AND BPEL4PEOPLE

Nguyen Hoang Trinh

Scientific advisor: Ponomarev A. A., candidate of science, associate professor

Tomsk polytechnic university, 634050, Russia, Tomsk, Lenin, 30

Email: trinhtomsk@gmail.com

Abstract – This thesis will introduce method using business process modeling notation and business process execution language for people which are contemporary popular notation and specification to describe business processes.

1. Introduction

It is vague understanding in an organization as to document circulation exists or not. If the organization can exist in conditions of informal management, obviously it does not need any document circulation. Presently, if organizations want to compete in the market, they have to change their administrative mechanisms. Organizations need to have ordered documentary basis using document circulation system. The earlier the firms use such system, the faster they can get their expected result.

Document circulation is understood as movement of documents in the organization, from the moment they are created or receipted to the moment they are acknowledged. The unified mechanism of working with the documents which are presented in electronic form is called as electronic document circulation. Electronic system allows organizations to reduce costs and to increase result effectively. Consequently, the operating efficiency of organization is raised. There are many software products which allow users to create and supervise document circulation system, for instance PayDox from Paybot LLC, Docflow. However, such systems have a big disadvantage: routes of documents are not visual. Therefore, it is very difficult to design business processes and the time taken to create them.

Document circulation system is a part of business process. Hence, the task of designing and modeling document circulation is special case of business process modeling. Business process is a collection of related, structured activities or tasks that produce specific service or product for a particular customer. In other words, business process is logically connected sequence of actions which are used in realization of assigned task. There are two approaches to describe business processes. The first one is based on direct transfer from one business func-

tion to another without the intermediary which is called choreography. The executor sends results in performance of function to following executor directly or web service. The second one is based on orchestration. It is possible to tell that, the coordinator is added further to the basic participants of business process and this coordinator is a business process. This coordinator sends messages, inquiries to executors, including web services, receives from them reciprocal messages, analyzes them and on these bases, makes the decision on further course of business processes. In this approach, executors and web services do not cooperate with each other. They communicate only with the coordinator in reference to the name of business process. An example of such approach is business process execution language (BPEL). All BPEL-processes are described in terms of communication with web service and the blocks in it are strictly defined, e.g. receive, invoke, reply.

2. BPMN and BPEL, BPEL4People association

The BPEL specification focuses on business process activities which are assumed to be interactions with web services. BPEL4People [1] is the WS-BPEL extension for people, it inherits all features from BPEL, and furthermore, BPEL4People consists of people activities and human tasks which are described in WS-HumanTask [2] specification. This possibility allows users to describe human roles in business processes which does not allow in BPEL4WS. For example, process of delivering bank loans. This process is accessible on their respective bank sites, using the network interface. Clients can use this interface to enter data for their review and to initiate the approval process. This process involves some checks, and finally informs the client that his or her personal inquiry is approved or rejected. Processing is often automatic and does not demand any human resources. However, there are cases which require bank personnel to be involved in this process. An example of such process is online creditable check which returns ambiguous results. In this case, instead of rejecting the request automatically, the bank employee can

check up inquiry and decide, approve it or reduce it. Other examples would be the same if the inquiry exceeds the sum of money which can be approved automatically. In this case, it is possible only with involvement of the bank personnel.

Association between BPMN [3] and BPEL4People brings users abilities to model business process via graphics notations and text description. Especially, BPEL4People fully supports BPMN [Table 1].

Table 1. BPMN, BPEL4WS [4], BPEL4People features

	BPMN	BPEL4WS	BPEL4People
Task I/O	+	+	+
Task Address	+	+	+
Quality Attributes	-	-	-
Protocol	+	+	+
Control Flow	+	+	+
Data Handling	+	+	+
Instance Identity	-	+	+
Roles	+	+	+
Events	+	+	+
Exceptions	+	+	+
Transactions	+	+	+
Graphics Position	+	-	-
Statistical Data	-	-	-
Human Task	-	-	+

BPMN (Business process modeling notation) is well-known as a standard of OMG organization. It provides four basis categories of elements: flow objects, connection objects, swimlanes and artifacts.

3. BPMN-BPEL Mapping

There are two examples, figures [Fig. 1], [Fig. 2] which present the mapping from BPMN to BPEL [5].

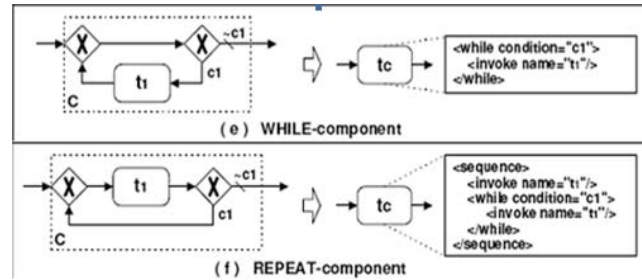


Fig. 1. While, repeat

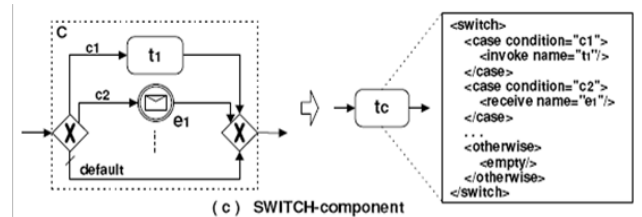


Fig. 2. Switch

4. Example of using BPMN and BPEL4People

In the figure [Fig. 3], we can see that there are no solutions when sum of loan is larger than that allowed. In this case business process will immediately stop. Client cannot approve any money.

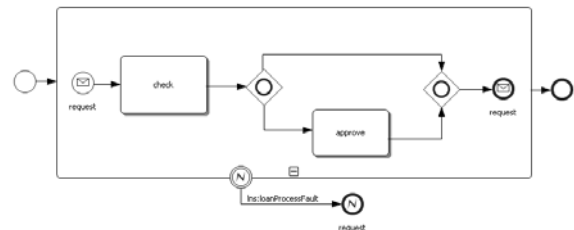


Fig. 3. Loan approval without people activities

This problem can be solved via integration of people's roles in business process [Fig. 4]. If problem occurs, system administrator or the responsible person will take part in business process. They will decide whether process will continue, or they can send some request with some conditions to user for continuing process or stopping this process without any information. But there is one problem that BPEL4WS does not support schema in [Fig. 4], so we must use BPEL4People instead of BPEL4WS.

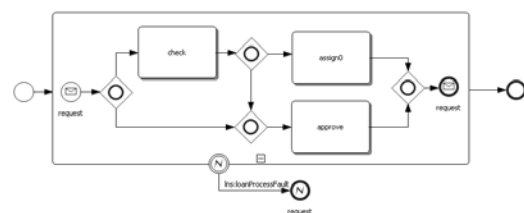


Fig. 4. Loan approval

5. Program BP Expert

As a result of research, the program “BP Expert” [Fig. 5] has been developed. The purpose of this program is visualization of business processes and granting the possibility of supervision to enhance their performance.

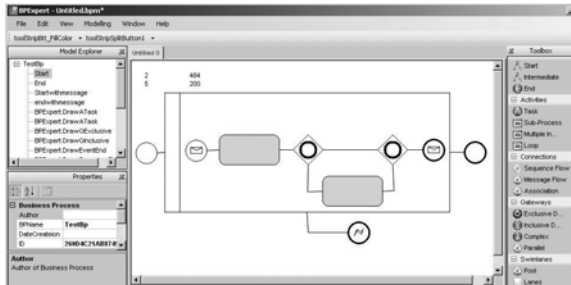


Fig. 5. Program BP Expert

This program was written in C# language, using Visual Studio 2008, DBMS - MS SQL Server 2005, with technology LINQ, XML, serialization.

6. Further work

Following developments are offered to improve the current project:

- Using BPMN and BPEL4People to describe business processes. Include human task in business process.
- Load and read file of other softwares, such as ActiveVOS Designer, eClarus Business Process Modeler.

- Create Web-services for working with this program.

- Allow user to visually model and control business process via Windows application and web application.

-

7. Conclusion

1. Using graphical approach allows users to save time and increase operating efficiency.

2. Association between BPMN and BPEL4People gives users more possibilities to model and control business processes.

References:

1. BPEL4People specification version 1.0 - 2007.

<http://www.oracle.com/technology/tech/standard/s/bpel4people/index.html>

2. WS-HumanTask specification v.1.0 2007

<http://www.oracle.com/technology/tech/standard/s/bpel4people/index.html>

3. Business Process Modeling Notation v.1.1 – 2008

<http://www.bpmn.org>

4. Jan Mendling, Gustaf Neumann, Markus Nuttgens, “A comparison of XML Interchange Formats for Business Process Modeling”

5. Logical/Executable BPMN-BPEL mapping and roundtrip

<http://activeVOS.com>