Process Patterns for Business Process Design

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Abstract

It is recognized that business models provides ways to explore new business ideas and hence design and redesign operational business processes. Business model describes who are involved in the business and what resources are exchange between them. Process model on the other hand, shows ordering of exchange of resources, communication among agents to coordinate these resource exchanges. Process model is use to trace and coordinate value exchanges.

The business model used in this work is *e3-value* model. The *e3-value* model was originally designed to support the explorations of new business networks. The paper contributes by addressing the research questions of identifying: *e3-value* model elements that needs to be mapped into the process model, essential sub processes that should be in a process model with respect to the *e3-value* model and nature of the process patterns. The paper provides answers to these research questions. The paper also discuss a method to transforms a business model to a process model in a systematic way. Such a method would provide support for traceability, evaluation of design alternatives.

When two agents are exchanging resources in a value transaction, the order of exchange of resources would be vary from one business case to another business case. It depends on the contractual agreement setup between the involved business partners. The derivation of a process model from a business model is considered to be a nondeterministic design process. There would be different ways of achieving same goal. As such there would be different process models that achieve the same goal. Process patterns are ready made solutions to a certain problem in a specific problem domain. Process patterns are using as a candidate to build the process model. It is up to the designer to choose the appropriate patterns to construct process model. The selection is depends upon costs and benefits. He could compare the

alternatives and choose the suitable one that achieves the goal. In this work we use elementary process patterns discussed in the Open-EDI, in particular negotiation, actualization and post-actualization, as the starting point.

In *e3-value* model the *in* and *out* value ports are visible to the out side environment. The actor uses his interfaces which contains the value ports to interact with the environment. The value activity is internal to the actor and not seen by the outsiders. The function of a value activity that belongs to an actor in *e3-value* model is to produce resources, that needs to be used in value transfers. To create a new resource the value activity some times needs to accumulate all necessary input resources. Before the production these resources some times needs to be further pre-process. After the production the new resources some times needs to be post-process before being delivered to the other agent involved in the value transfer. In this work we identify *in* and *out* value ports, value interface and value activity are the essential elements in *e3-value* model that are important during constructing business model from the process model.

The process model is to depict order of exchange of resource and communication among parties involved. Hence it is important to discuss the receiving and provisioning of resources in the process model. Therefore, based on the analysis of components of *e3-value* model we identify essential sub processes that should be in a process model. These sub processes can be choreograph in different ways to construct the process model. Based on the sub processes, we discover a basic set of process patterns. They are the most common process patterns that could be find in a process model. This process pattern library could be further expand by adding additional sub processes to deal with more business cases. Using these process patterns, the paper suggests a set of guide lines to construct the process model. The results are applied to a running case for illustration.