

BPMN® Poster Series #8



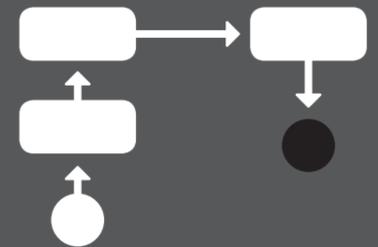
BPMN Patterns: Basic Control Flow Patterns

by Gregor Jošt

Workflow Patterns provide a conceptual basis for process technology; they can be used for examining the suitability of a workflow system for a particular project based on its strengths and weaknesses. Several advanced patterns, i.e. Cancellation and Force Completion Patterns and An Interactive Guide are already published on the Good e-Learning's website. In this poster, we present the most fundamental, elementary aspects of process control – Basic Control Flow Patterns.

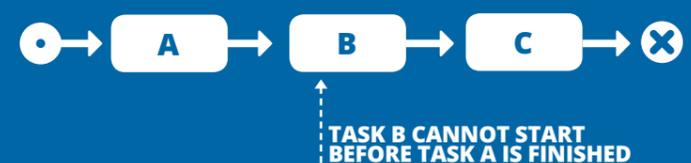
INTRODUCTION

Basic Control Flow Patterns present the fundamental aspect of process control. Almost every diagram is constructed by using at least one of these patterns. They are absolutely necessary to be understood by the beginners and can provide useful insight for advanced users as well. Basic Control Flow patterns are as follows: Sequence, Parallel Split, Synchronization, Exclusive Choice and Simple Merge. This poster focuses on BPMN 2.0, which entirely supports the Basic Control Flow Patterns.



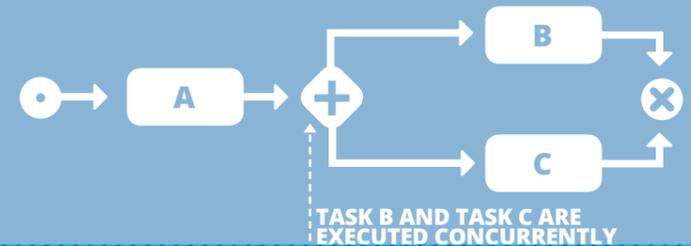
SEQUENCE (WCP1)

Sequence pattern is a fundamental block in all of the diagrams. It is used to define a series of consecutive tasks, which are executed one after another. Two tasks are part of the Sequence if they are connected with a Sequence flow from one of them to the next and there are no conditions associated with it. In this manner, we model dependencies between tasks so that one cannot start before another is finished. In order to implement this pattern, we need to connect activities by using Sequence Flows.



PARALLEL SPLIT (WCP2)

Parallel Split pattern splits a single thread into two or more branches. The tasks are then executed all at once and may or may not be re-synchronized at a later time. This pattern is also known as AND-split, parallel split or fork. Parallel Split pattern is implemented using Parallel Gateway, which creates all the alternative paths without checking for any conditions.



SYNCHRONIZATION (WCP3)

In order to join two or more parallel branches, we need to use the Synchronization pattern. The parallel branches are created by using the aforementioned Parallel Split pattern. It is called synchronization because it expects all branches to be completed before we can continue with the next activity. To implement this pattern we need to use Parallel Gateway, but in a converging manner, which indicates the synchronization of the previous parallel paths.



EXCLUSIVE CHOICE (WCP4)

Exclusive Choice pattern represents one of two or more available paths. Programmatically, it is implemented using an Exclusive Gateway, which is a mechanism that can select one of the outgoing paths, depending on the:

1. Outcome of an expression or
2. Values of specific data in the process
3. Results of an expression or
4. Programmatic selection mechanism. We can implement this pattern by using Exclusive Gateway, with at least two outgoing Sequence Flows.



SIMPLE MERGE (WCP5)

When we want to join two or more parallel branches, we can use Simple Merge under the assumption that none of the branches is executed in parallel. This simplifies the process and remove the need to explicitly replicate a sequence of tasks, common to two or more branches. We can implement this pattern by using the converging Exclusive Gateway.



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