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Introduction

Business process model and notation (BPMN) defines a meta-model (i.e. abstract syntax) and a notation (i.e. visual process elements and rules about how to use them) for creating business process diagrams and executable process models.

However the approach (i.e. “how to use BPMN elements in business process diagrams”) and “how to create unambiguous diagrams” are out of the scope of BPMN specification.

This is the second part of the slides, which address the modeling ‘style’ by presenting four best practices that should be followed when creating BPMN diagrams. These best practices can be obtained from the book 'BPMN Modeling and Reference Guide. Future Strategies Inc., Lighthouse Pt, FL, 2008.'
BP#7: Use ‘OR’ gateways in pairs (1/2)

When using an inclusive gateway-based branch (i.e. OR split), the number of active outgoing paths can range from ‘zero’ to ‘all’. A way to avoid unexpected behavior when process paths converge is to use these type of gateways in pairs (divergence – convergence).

When process paths converge in an uncontrolled way, a task may be performed a different number of times!
BP#7: Use gateways in pairs (2/2)

In this diagram Task 5 will be performed only once, because the conditional flows converge in a controlled way.

**WARNING** - unexpected behavior. In this diagram Task 5 will be performed as many times as the true conditions that exist in an inclusive branch.

Note that an OR gateway join is like an AND gateway join (synchronization) except that it ignores incoming sequence flows that are not enabled.

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BP#8: Modeling complex gateways (1/2)

The complex gateway is primarily used to model complex synchronization behavior. Since the gateway looks the same for each of these patterns, it is best practice to use a text annotation to inform the reader about the complex synchronization behavior that is occurring.

There are many patterns that can be performed with a complex gateway, for example:

- typical inclusive gateway behavior (i.e. accepting all active incoming flows)
- batching of multiple tokens
- accepting tokens from some paths but ignoring the tokens from others

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BP#8: Modeling complex gateways (2/2)

If you use this text annotation, the process will continue, since there are two tokens ready at the input of the complex gateway.

When using this text annotation, the process will wait for the third token because there are only two tokens ready at the input of the complex gateway.

Without using any text annotation, the process behavior will be unclear.

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Boundary Timer Events

Data objects can be connected to 'item aware elements' (e.g. activities and events) in two ways:

- by using directed associations between item aware elements and data objects
- by associating data objects with sequence flows

Whilst the second approach is less complex, it should be avoided because the resulting sequence flow object could be a gateway.

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BP#9: Associating data objects with sequence flows (2/2)

A best practice in this scenario is to use directed associations to target activity.

It is unclear if a data object is required for Task 2, Task 3 or both.

In this diagram it is clear that the target of data object is task 2.

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BP#10: Modeling input and output sets

An input (output) set is a collection of data (documents) that is required to start an activity. A best practice here, if there is more than one input set, is to pick a point on the boundary of an activity and ensure that all the inputs that belong to a single input set connect to that point. The same pattern applies when modeling output sets.

The activity will be ready to perform as soon one input set is complete.

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Summary

These slides presented four best practices that should help decrease the ambiguity and increase the usefulness of your BPMN diagrams.

These best practices can be summarized in the following way:

- Inclusive branches can cause unpredictable behaviors—so use OR gateways in pairs.
- Complex gateway behavior can be configured—so use comments to define their behavior in specific situations.
- Make sure you adjust your diagram to present information flows and data sets (collections) in an unambiguous way.

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