Comparison of the modeling notations for Business Process and EAI modeling
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1 Purpose and Scope

This document is intended as a general guide to various modeling notations in the area of business process modeling. It is hoped that the material collected herein will help users of commercial products, system integrators and enterprise modelers to:

- better understand the benefits, limitations and correspondence of the notation they use,
- building more interoperable solutions
- produce documentation and product descriptions understandable for wider audience

The material presented below represents a snapshot of notations used at particular time. The author welcomes any contributions, comments or corrections that will help this document to better serve its purpose.

2 Notation elements for the Business Process modeling.

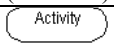
The following table presents the catalogue of notation symbols commonly used to represent the business processes. The symbols and their corresponding concepts have been organized according to their common base semantics. However, additional details still need to be provided to make clear how their additional semantic differs.

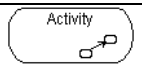
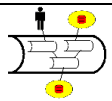
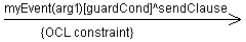
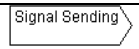
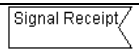
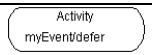
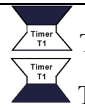
The notation symbols have been collected from the following standards or products:

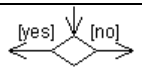
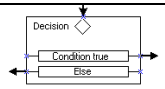
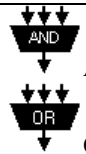
- UML 1.4: the Jan 2001 RTF version of the OMG standard
- Microsoft BizTalk, Feb 2001 version
- Hewlett-Packard Process Manager v. 3.0
- BEA WebLogic Process Integrator
- Viewlocity Business Modeling Language

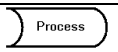
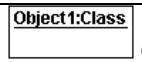
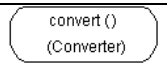
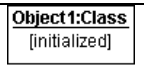
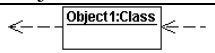
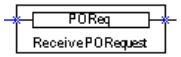
The rows in bold represent the fundamental concepts, the other rows (bulleted) present useful shortcuts for the specialized concepts.

The question marks indicate the areas that require further research. The “N/A” marks indicate that this concept is not (directly) available.

Name	Base Semantics	UML 1.4	MS BizTalk Server	HP Process Manager	WebLogic Process Integrator	BML
Start	Beginning of the process	Start	 Begin	 Start Node	 Start	 Start
End	End of the process	End	 End	 Complete Node	 Done	 End
• Abort	Unsuccessful end, critical stop, often requires rollbacks	N/A	 Abort	 Abort Node	N/A	N/A
Actors	Represents an acting agent (human or machine), participating in the activities in various roles	 Actor  control (SDProf)  worker (BMProf)  case worker (BMProf)	?	?	?	 Human actor  Application
Action	A state with an entry action and at least one outgoing transition involving the implicit event of completing the entry action.	 Activity	 Activity	 Work Node	 Task	 Automated business activity
• Wait for event	An action that waits (either indefinitely or for a specified amount of time) for a specific event to occur.	N/A	 Wait	?	 Event (wait)	?
Action specification	Description of the action.	Textual description (note)	 COM  Script (VB ..)	Service spec: • A ??? • B ???	• Java method call • ???	Textual description (???)

Nested Actions	A group of related actions represented by a super-state symbol. Their execution and transitions are represented by the outgoing transitions from the super-state. The nested actions may have a transactional properties.	 Sub-activity	 Transaction boundary + additional process specification for transaction failure.	?	?	 Sub-processes
Event	An instantaneous occurrence that may trigger a transition	 Event	?	?	?	?
• Send signal	Instantaneous action which results in passing a data object from the current process to the recipient(s).	 Send signal  the signal object	 Message queue  BizTalk messaging	?	?	 Send message
• Receive signal	Instantaneous action which results in receiving data object from sender to the current process scope.	 Receive signal  the signal object	 Message queue  BizTalk messaging	?	?	 Receive message
• Auto-event	An event generated automatically as a result of executing certain action	 onEntry, onExit	?	?	?	?
• Deferred event	An event whose delivery is postponed – and which may be picked up later by another action	 Deferred event	 Message queue	?	?	?
• Timed event	Timed events are such that occur in relation to passing of predetermined amount of time.	Keywords: “after”, “when” …	?	?	?	 Timer start Timer expire

Event specification	Description of an event	Pre-defined (entry, exit). Syntax: **name(arg:type...)[guard]/action**	?	?	?	?
Alternate execution						
• Decision	Selects different possible transitions (alternate paths of execution)	 Decision (guarded junction)	 Decision	 Route Node + rule(s)	 Decision (?)	 Automated business decision
• Junction	Joins alternative paths of execution into one.	 Merge	?	 Merge Node	?	Connection of transitions (no special symbol)
Parallel execution						
• Fork	Indicates that several actions from now on are taking place in parallel paths of execution	 SyncState / Fork	 Fork	 Route Node + rule(s) + property	 Decision (?)	N/A
• Join	Joins the parallel paths of execution – the further execution is postponed until one or all of parallel tasks complete.	 SyncState / Join	 AND OR (XOR?)	 Merge Node + property	 AND OR	N/A
Concurrent execution	Represents the action's ability to be executed concurrently by multiple threads of control	 Concurrent invocation	?	?	?	?
Transition		 Transition	 Transition	 Transition	 Connector	 Transition
• Conditional transition		 Guard (guarded transition)	Rule language (VBScript ???)	Simple rule language (proprietary)	?	?
Transaction	A group of actions having transactional properties (ACID), usually combined with rollback specification.	?	 Transaction boundary	?	?	?

Partition	Partition divides the model into related but logically distinct parts	 Swim lane	Separate diagrams: • Control Flow • Implementation • Data transform.	?	?	 Process boundary
Object	Represents an instance of data related to one or more activities	 Object  Entity (BMProf)	 + property (message specification)	Case Packet (collection of data objects in process scope)	?	**[msg]** Message instance
• Object responsible for action		 Object responsible for an action	?	?	?	?
• Object in state		 Object in state	?	?	?	?
• Object flow		 Object flow	 Message flow	?	?	?

3 Data transformation methodologies

This section is still incomplete.

BizTalk: the mapping tool, and the Data Transformation pages; functoids