The Workflow Management Coalition

Conformance White Paper

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This draft document builds on the August 1996 draft by:

1. updating the requirements for conformance in line with the changes that have taken place since the document was originally written
2. outlining approaches to establishing conformance.

As such, the document is being re-issued as a strawman that might initiate discussions on how feasible it is, from where we are today, to establish mechanisms that can be used for proving conformance. The document is issued for comment within WfMC.

Contents

Changes History

The text has been updated in the light of developments in the past two years (since the first draft was issued). This draft has been issued as a preliminary step to putting verification mechanisms in place through co-operation of the Coalition Membership. Requirements for verification mechanisms are included where the specifications published by the WfMC are sufficiently mature.

Changes Forecast

It is expected that this document will evolve rapidly as the individual work groups comment on it and provide further material.

References

[WMC000]		Workflow Management Coalition Glossary
[WMC009]	WFMC TC-1009	Workflow Management Coalition Application Programmer's Interface (WAPI) Specification
[WMC020]	WFMC TC-0020	Workflow Management Coalition Process Definition Interchange
[WMC013]	WFMC TC-1013	Workflow Application Programmer's Interface (WAPI) Naming Conventions
[WMC015]	WFMC TC-1015	Workflow Management Coalition Audit Data Specification
[WMC012]	WFMC TC-1012	Workflow Management Coalition Interoperability Abstract Specification
[WMC012a]	WFMC TC-1012a	Workflow Management Coalition Interoperability Internet e-mail MIME Binding

Introduction

Purpose

This document is intended as the foundation stone for measuring conformance of implementations brought to the market by workflow product vendors against the intended semantics laid out in the standards and interface/binding specifications published by the Workflow Management Coalition.

Open Standards are only relevant to the market if products exhibit the appropriate behaviors in those areas in which they claim conformance. In order that companies making purchasing decisions can use conformance statements as a buying criteria, those statements need to be both credible and meaningful. This document is intended to provide a basis for:

- vendors to understand what is required of their products if they are to claim conformance and why

- purchasers to understand what conformance claims made by vendors mean.

The document is divided into two sections:

- the first part of the document catalogues reasons why conformance is important to the different groupings that co-exist and trade within the market for workflow products and technology

- the second part of the document looks at what "conformance" means for each of the areas in which the coalition is developing standards. Our expectation is that the respective working groups will consider the material presented here and respond to it by contributing additional material. The intention is that the final draft of this document will define conformance statements for all of the published standards and specifications.

Intended Audience

Initially this document is intended for the membership of the Workflow Management Coalition **who are required to comment on it and contribute material** as appropriate to ensure that we construct a meaningful framework for measuring conformance.

It is expected that this document will evolve rapidly so that it can be used as a springboard for establishing mechanisms that will build user confidence and foster demand for WfMC conformant products in the marketplace.

Scope

This document addresses all of those aspects of workflow technology for which the Workflow Management Coalition is developing standards.

Who Thinks Conformance Is Important and Why?

The following communities participate in the work of the Workflow Management Coalition. By doing so they demonstrate, through the investment in time, effort and money that they make, that they perceive the outcome to be important to their businesses.

Vendors

- The WfMC membership includes a significant population of vendor organizations
- there is a significant population of vendors outside the coalition trying to claim conformance

Conformance says good things about vendors to users

Users

- there are a number of end user organizations worrying about conformance and standards in this area (Black Forest Group, AIIM, ODMA, LOMA, ...)
- some users think it's so important they actually join the Coalition (NTT, Dresdner Bank, Wurttembergishe Versicherungen GmbH, National Life of Vermont, Coca Cola, Burlington Northern Santa Fe Railway, Royal Bank of Canada, Deutsche Telekom...)

The user view point is articulated in the following quotes:

“Conformance shows support for open systems”

Vendors who adapt their products to comply with any published standard are, by their actions, abandoning the proprietary world for the world of open systems. It is clear from the Coalition’s work so far that the participating vendors all subscribe to some degree or another to the need to move from non-proprietary to open systems. We appreciate and encourage that openness. *National Life of Vermont -- May, 1995*

“Conformance with WfMC standards exhibits a commitment by a vendor to their product and the market”

If conformance can be made to really mean something, then...

- vendors who ignore it can be expected to lose market share and may eventually withdraw from the market.
- vendors who are conformant demonstrate that they have made the necessary investment to stay in the game.

"We perceive a conformant Vendor to be supportive"

Our company is committing a significant (for us) amount of resource into understanding and, where we can, shaping the standards under development by WfMC. Having made this commitment, it is doubtful we will choose to partner with a workflow vendor who has not made a commitment to these standards. We hope to measure that commitment by way of conformance. Vendor's who invest the time and effort to achieve some level of measurable conformance with the WfMC standards is a Vendor with whom we will consider doing business. Among our many criteria for vendor evaluation, we rank partnership near the top of the list. *National Life of Vermont -- May, 1995*

"Conformance helps users sort through the maze of products"

Conformance with WfMC standards will become another workflow product feature. Vendors will prominently display, advertise, and promote their product's conformance with these important standards. Users need a clear definition of conformance so they can evaluate the true meaning of each Vendor's claim. *National Life of Vermont -- May, 1995*

"Conformance lets users choose the best tool for a specific job"

No workflow product is universally suited to all possible application domains. In order to build enterprise solutions users must therefore invest in multiple workflow products. Products will be selected (in part) by what their conformance statements say about how they can be made to fit with other workflow products. *National Life of Vermont -- May, 1995*

"Conformance allows Users to substitute one Vendor's product for another with minimal impact on their environment"

Users need to be able to mix and match products to cope with changes in the commercial environment. Vendor independence lowers the risk of product ownership for users. Conformant implementations reduce the risk of making choices in strategy setting and remove a barrier to making investment decisions.

Passive standards are meaningless to buyers. There is no point in having standards that are not used. Such things are expensive academic exercises which have no commercial value. The vendor community within the WfMC has made a substantial investment in recent years to achieve the standards that we have today. These standards are now very close to what is required for creating commercial product. What is also required is a belief system for users that the standards will work in practice and that they can gain real commercial advantage from insisting that their suppliers implement them.

Standards must preserve the diversity of available solutions. By allowing products from different vendors to interwork and supporting integration and interchangeability of products from different vendors in the solution space, the WfMC standards will remove risk from purchasing decisions for buyers.

Conformance means users can buy with confidence

Systems Integrators And Market Analysts

Both groups are represented in the membership of the Coalition (ICL, EDS, Workflow Solutions Inc., Praxis, Enix, Delphi, Ovum, GIGA, Gartner).

"Conformance reduces the risk for an integration company selecting products on behalf of their client."

Confidence in conformance statements means a systems integrator can measure and manage commercial risk when selecting products on behalf of a client. Conformance statements themselves give a basis for product selection. Knowledge and experience of conformant products is added value that has a premium.

Conformance allows systems integrators and analysts to position products in and select products from the market place

Conformance Helps Management Of Development Lifecycles

- Workflow based application code can be re-used (reducing costs & risk).
- Solutions built for one client may be ported to other workflow engines for another client.
- Conformant products make common source trees possible (reducing maintenance costs).
- Integration projects have fewer variables to deal with (reducing risk).

Users Benefit Through

- Independence from vendors
- Reduced risk of product ownership
- Flexibility in strategy setting
- Reduced risk in workflow application development
- Greater confidence in their suppliers
- Greater body of knowledge about workflow through access to the Coalition Glossary and Reference Model
- Increased flexibility of tools, such as using a single modeling tool with multiple workflow engines, or a Web browser to access multiple workflow engines
- Ability to pick "best for purpose" products instead of being locked-in to a generic tool that may not suit the purpose
- Ability to join business processes across departments and between companies
- Ability to use generic tools for security, simulation, inquiry and status tracking

Vendors Benefit Through

- Opportunities to sell into organizations which already have established workflow products in place
- Removal of barriers to purchase decisions
- Customer's trust and confidence
- Openings for partnership agreements

- A bigger market to sell into
- Wider acceptance of workflow as a product category because customers can pick and choose and then integrate best of purpose products
- Creation of barriers to entry for new vendors; the minimum product must meet the standards, making it difficult for "fly-by-night" vendors to compete with serious vendors

Integrators Benefit Through

- Generic code for interaction with multiple products
- Generic Tools

The Central Proposition

It is conformance to standards, not standards themselves that will make for a better market for workflow products. For this to be true, conformance needs to be meaningful and to add value to users without whom there is no market.

Conformance Models for WAPI

The following conformance tests are presented in a format that is intended to illustrate the benefits (reasons to buy) that a user might get from the resultant conformance statement. They are intended to be used by vendors as a standard way of testing that they have correctly implemented the functionality intended in the WfMC specifications. They may also form the basis for future demonstrations of implementations of WfMC interfaces so that the audience can have some level of confidence that what they are seeing is working through WfMC interfaces.

Process Definition

What problem are we trying to solve?

- Portable definitions
  the ability to move workflow definitions from one product to another. "Product" in this sense may be between
    - a workflow definition tool and a workflow engine
    - two workflow definition tools
    - two workflow engines.

- Works on workflow engines a, b & c
  that it is possible to enact the same workflow definition on different workflow engines. In a heterogeneous environment this would mean that it would be possible to move work around within an organization irrespective of which vendor's product was being used by individual work groups.

- Sent by workflow engine a to be enacted on workflow engine b

that it is possible to select or construct a workflow definition on one workflow engine and pass the definition to another workflow engine for enactment.

- Reusable definitions
  that it is possible to take a workflow definition built for one purpose on one workflow engine and reuse it for some other (probably similar) purpose on another workflow engine.

- Sharable definitions
  that workflow definitions can be defined once in a heterogeneous environment and that it will not matter which vendor product be used for enactment.

Nature of the standard

- Language for describing workflow

Tools that might be assessed

- Workflow Engines
- Workflow Definition Tools
- Workflow Management Tools
- Workflow Definition Repositories

Status

- Early experimentation

Interoperability

- Mapping WPDL into native concepts and constructs (import)
- Mapping native concepts into WPDL (export)
- Storage and retrieval of WPDL definitions (db schema)
- Transport of WPDL definitions (semantic integrity)

Current Issues

- Completeness of WPDL meta-model
- Parts of definitions that are important to Engine A but Engine B can't handle (but may also be relevant to Engine C)
- Universal type definitions

Conformance Test

Using a set of sample process definitions described in WPDL, then take them on a round trip into the native definition tool and back to WPDL. The conformance assessment would take account of:

- Which of the example WPDL definitions does this workflow product import successfully?

what parts does it not handle completely?
what further work is required to enact a workflow?

- Which of the example WPDL definitions does this workflow product export successfully
  what is missing?
  is there anything added?
  would I be able to re-import this definition to the same tool?
  what about to other tools?

Workflow Enabled Applications

What problem are we trying to solve?

- To create a class of applications that are able to interoperate with enacted workflows on Workflow Engines from multiple vendors.
- That these applications only need be written once.

Nature of the standard

- C language API, OLE, CORBA (jFlow), HTTP 1.1 (SWAP)

Tools that might be assessed

- Workflow Engines
- Workflow enabled application programs
- Work List Handlers
- Workflow Definition Repositories

Status

- Demonstrated subsets of the 'C' Language binding of the WAPI by several vendors
- Emerging products

Interoperability

- Work list handling - Implementation of this conformance profile provides external work list handler functionality to a client application.

- Process Definition - Implementation of this conformance profile enables a client application to display a list of available process definitions and their respective states.

- Process control status - Implementation of this conformance profile allows a client application to select and manage process instances.

- Process administration - Implementation of this conformance profile allows a client application to support global manipulation of process instances by an administrator. Contrast this set with the Process Control Status functions which work only on individual process instances.

- Activity Control Status - Implementation of this conformance profile allows a client application to select and manage activity instances.

- Activity administration profile - Implementation of this conformance profile allows a client application to support global manipulation of activity instances

by an administrator. Contrast this set with the Activity Control Status functions which work only on individual activity instances.

Current Issues

- No common application has yet been shown to work with more than one workflow engine

Resolutions

- Need a common set of test applications organized against the conformance profiles set out in [WMC009].
- Need a common test workflow definition (in WPDL?)

Conformance Tests

The following conformance tests correspond to the conformance profiles outlined in [WMC009].

Work list handling profile

Using a WfMC coded worklist handler and a predefined workflow definition, use the worklist handler to demonstrate that the behavior of the workflow engine is as described in a test script that demonstrates correct operation of the following WAPI functions:

WMConnect
WMDisconnect
WMOpenWorkList
WMFetchWorkItem
WMCloseWorkList
WMGetWorkItem
WMCompleteWorkItem
WMReassignWorkItem
WMOpenWorkItemAttributesList
WMFetchWorkItemAttribute
WMCloseWorkItemAttributesList
WMGetWorkItemAttributeValue
WMAssignWorkItemAttribute

The conformance test script will have the following structure:

Connect to the workflow engine
Display a work list for a given user in a given role
Select a work item from the work list
Close the work list
Re-display the work list
Re-select the work item
Complete the work item

Select another work item
Re-assign that work item to another user
Select another work item
View the work item attribute list
Change the value of a work item attribute
Complete the work item
Close the work list
Disconnect from the workflow engine

The resulting assessment seeks to establish whether the vendor has properly supported the WAPI interface functions necessary to conform to the requirements of the work list handling conformance profile in their workflow product. The following Audit events are related to the operations included in this profile and would be audited by an implementation that is compliant with the Audit Data Profile:

- All Audit Events related to state and attribute changes of Work Items, described by the Audit Data Types 'Change WorkItem State' and 'Assign WorkItem Attributes'

The assessment should indicate whether consequent audit data was properly recorded by the workflow engine.

Process definition profile

Using a WfMC coded tool and a predefined set of workflow definitions, use the tool to demonstrate that the behavior of the workflow engine is as described in a test script that demonstrates correct operation of the following WAPI functions:

WMConnect
WMDisconnect
WMOpenProcessDefinitionStatesList
WMFetchProcessDefinitionState
WMCloseProcessDefinitionStatesList
WMChangeProcessDefinitionState
WMOpenProcessDefinitionsList
WMFetchProcessDefinition
WMCloseProcessDefinitionsList

The conformance test will have the following structure:

Connect to the workflow engine
Display a list of process definitions which a given user is allowed to start
Select a particular process definition
View the set of possible states and the current state of that definition, e.g. whether it is *enabled* or not
Change the state of the process definition
Select another process definition
View the set of possible states and the current state of that definition
Display a list of process definitions which a different user is allowed to start

Select the process definition that had its state changed
View the set of possible states and the current state of that definition
Disconnect from the workflow engine

The resulting assessment seeks to establish whether the vendor has properly supported the WAPI interface functions necessary to support an implementation of the workflow definition handling conformance profile in their workflow product. The following Audit events are related to the operations included in this profile and would be audited by an implementation that is compliant with the Audit Data Profile:

- All Audit Events related to state changes of Process Definitions, described by the Audit Data Types 'Change Process Definition State'

The assessment should indicate whether consequent audit data was properly recorded by the workflow engine.

Process control status profile

Using a WfMC coded tool and a predefined set of workflow definitions, use the tool to demonstrate that the behavior of the workflow engine is as described in a test script demonstrating correct operation of the following WAPI functions:

WMConnect
WMDisconnect
WMOpenProcessDefinitionsList
WMFetchProcessDefinition
WMCloseProcessDefinitionsList
WMCreateProcessInstance
WMStartProcess
WMTerminateProcessInstance
WMOpenProcessInstanceStatesList
WMFetchProcessInstanceState
WMCloseProcessInstanceStatesList
WMChangeProcessInstanceState
WMOpenProcessInstancesList
WMFetchProcessInstance
WMCloseProcessInstancesList
WMGetProcessInstance
WMOpenProcessInstanceAttributesList
WMFetchProcessInstanceAttribute
WMCloseProcessInstanceAttributesList
WMGetProcessInstanceAttributeValue
WMAssignProcessInstanceAttribute

The conformance test will have the following structure:

Connect to the workflow engine
Display a list of process definitions which a given user is allowed to start

Select a particular process definition
Start a new process instance using that definition
Show the list of possible states that the new process instance can have and its current state
Change the process instance state
Select another process definition
Start a new process instance using that definition
Display a list of current process instances with their states
Terminate the first process instance
Select the second process instance
Display the list of process instance attributes
Select a process instance attribute and display its current value
Change the value of the process instance attribute
Disconnect from the workflow engine

The resulting assessment seeks to establish whether the vendor has properly supported the WAPI interface functions necessary to support an implementation of the process control status conformance profile in their workflow product. The following Audit events are related to the operations included in this profile and would be audited by an implementation that is compliant with the Audit Data Profile:

- All Audit Events related to state and attribute changes of Process Instances, described by the Audit Data Types
    - Change Process/Subprocess Instance State
    - Assign Process/Subprocess Attributes

The assessment should indicate whether consequent audit data was properly recorded by the workflow engine.

Process administration profile

Using a WfMC coded tool and a predefined set of workflow definitions, use the tool to demonstrate that the behavior of the workflow engine is as described in a test script demonstrating correct operation of the following WAPI functions:

WMConnect
WMDisconnect
WMChangeProcessInstancesState
WMTerminateProcessInstances
WMAbortProcessInstances
WMAbortProcessInstance
WMAssignProcessInstancesAttribute
WMOpenProcessInstanceStatesList
WMFetchProcessInstanceState
WMCloseProcessInstanceStatesList
WMOpenProcessDefinitionsList
WMFetchProcessDefinition

WMCloseProcessDefinitionsList
WMOpenProcessInstancesList
WMFetchProcessInstance
WMCloseProcessInstancesList
WMOpenProcessInstanceAttributesList
WMFetchProcessInstanceAttribute
WMCloseProcessInstanceAttributesList

The conformance test will have the following structure:

Connect to the workflow engine
Display the list of process definitions that can be started by a given user
Display the list of process instances currently being enacted
Select a process instance
Show the list of possible states the process instance can have and which is its current state
Abort enactment of the process instance
Select another process instance
Show the list of process instance attributes
Assign a process instance attribute
Select another process instance
Terminate enactment of the process instance
Disconnect from the workflow engine

The resulting assessment seeks to establish whether the vendor has properly supported the WAPI interface functions necessary to support an implementation of the process administration conformance profile in their workflow product.
The following Audit events are related to the operations included in this profile and would be audited by an implementation that is compliant with the Audit Data Profile:

- All Audit Events related to state changes of Process Instances, described by the Audit Data Type Change Process / Subprocess Instance State

The assessment should indicate whether consequent audit data was properly recorded by the workflow engine.

Activity control status profile

Using a WfMC coded tool and a predefined set of workflow definitions, use the tool to demonstrate that the behavior of the workflow engine is as described in a test script demonstrating correct operation of the following WAPI functions:

WMConnect
WMDisconnect
WMOpenActivityInstanceStatesList
WMFetchActivityInstanceState
WMCloseActivityInstanceStatesList
WMChangeActivityInstanceState

WMOpenActivityInstancesList
WMFetchActivityInstance
WMCloseActivityInstancesList
WMGetActivityInstance
WMOpenActivityInstanceAttributesList
WMFetchActivityInstanceAttribute
WMCloseActivityInstanceAttributesList
WMGetActivityInstanceAttributeValue
WMAssignActivityInstanceAttribute

The conformance test will have the following structure:

Connect to the workflow engine
Display the list of activities currently assigned to a particular user
Select an activity
Show the list of possible states for that activity and indicate the current state
Change the state of the activity
Show the list of activity instance attributes for the selected activity and the values of those attributes
Change the value of an attribute
Show the list of activities currently assigned to a second user
Disconnect from the workflow engine

The resulting assessment seeks to establish whether the vendor has properly supported the WAPI interface functions necessary to support an implementation of the activity control status conformance profile in their workflow product. The following Audit events are related to the operations included in this profile and would be audited by an implementation that is compliant with the Audit Data Profile:

- All Audit Events related to state and attribute changes of Activity Instances, described by the Audit Data Types
    - ♦ Change Activity Instance State
    - ♦ Assign Activity Instance Attributes

The assessment should indicate whether consequent audit data was properly recorded by the workflow engine.

Activity administration profile

Using a WfMC coded tool and a predefined set of workflow definitions, use the tool to demonstrate that the behavior of the workflow engine is as described in a test script demonstrating correct operation of the following WAPI functions:

WMConnect
WMDisconnect
WMChangeActivityInstancesState
WMAssignActivityInstancesAttribute
WMOpenProcessDefinitionsList

WMFetchProcessDefinition
WMCloseProcessDefinitionsList
WMOpenActivityInstanceStatesList
WMFetchActivityInstanceState
WMCloseActivityInstanceStatesList
WMOpenActivityInstanceAttributesList
WMFetchActivityInstanceAttribute
WMCloseActivityInstanceAttributesList

The conformance test will have the following structure:

Connect to the workflow engine

Disconnect from the workflow engine

The resulting assessment seeks to establish whether the vendor has properly supported the WAPI interface functions necessary to support an implementation of the activity administration conformance profile in their workflow product. The following Audit events are related to the operations included in this profile and would be audited by an implementation that is compliant with the Audit Data Profile:

- All Audit Events related to state and attribute changes of Activity Instances, described by the Audit Data Types
    - ♦ Change Activity Instance State
    - ♦ Assign Activity Instance Attributes

The assessment should indicate whether consequent audit data was properly recorded by the workflow engine.

Application Invocation

What problem are we trying to solve?

- To create a class of applications that can be invoked by enacted workflows on Workflow Engines from multiple vendors
- That these applications only need be written once

Nature

- C language API (initially - others to follow)

Tools

- Workflow Engines
- Tool Agents

Status

- Still being specified

Interoperability

- Starting and terminating applications from within an enacted workflow via a tool agent
- Providing and retrieving application data via a tool agent
- Requesting application status

Issues

- Still being specified
- Each workflow engine needs a tool agent
- Need a common (set of) test applications
- Need a common test workflow definition (in WPDL?)

Resolutions

- Further work by WfMC
- Further work by vendors

Conformance

- Does the vendor provide a tool agent?

  ⇒ if so can I demonstrate the test workflow definition via this tool agent?
  ⇒ if not can I demonstrate the test workflow definition with this workflow engine?

Workflow Engine Interoperability

What problem are we trying to solve?

- To enable organizations to build workflow applications that run "seamlessly" across multiple enactment engines sourced from different workflow product vendors
- To enable organizations to manage workflow applications that run across multiple enactment engines sourced from different product vendors

Nature

- Transport dependent message specification bindings

Tools

- Workflow Engines

Status

- Subsets of MIME and MAPI-WF bindings demonstrated

Interoperability

- Creating new (sub) process instances on other workflow engines as a consequence of a process that is being enacted on this workflow engine
- Managing process instances enacted on other workflow engines
- Providing / retrieving process relevant data to / from process instances enacted on other workflow engines

Issues

- Multiple transports
- Multiple bindings
- Capabilities of engines
- Further work required for parallel synchronized interoperability

Resolutions

- Multiple bindings
- Verification / approval of bindings
- Defined models of interoperability
- Defined dialogue structures
- Define a conformance framework
- Define test scenario(s) within the conformance framework
- Further work by WG4

Conformance Statements

Workflow product vendors must declare:

- Which transport bindings does this engine use?

- Do those bindings have “approved correspondence” to the Abstract Specification?
- What models of interoperability does this engine support (see separate note on I4 conformance profiles)?
- Which messages does this engine send?
- Which messages can this engine respond to?
- Which dialogue structures can this engine support?
- Are these the same for all bindings?

Conformance Tests

The following conformance tests correspond to the conformance profiles outlined in the note distributed to WG4 (23/6/98).

Simple chains profile

Using a WfMC defined process description/script construct a workflow definition that when enacted on the engine in question requests a target workflow engine:

1. to create a process instance on another according to a known process definition;
2. to instantiate the process instance
3. to cause enactment of the instantiated process instance

demonstrating the correct implementation of the

- CreateProcessInstance
- SetProcessInstanceAttributes
- StartProcessInstance

operations. To complete the assessment, the test should be mirrored demonstrating the ability of the workflow engine in question to act as a respondent capable of enacting simple chained sub-processes on request. The assessment should indicate whether consequent audit data was properly recorded by the workflow engine and whether the engine can act as:

- invoking engine
- enacting engine
- both

Nested sub-process (polling) profile

Using a WfMC defined process description/script construct a workflow definition that when enacted on the engine in question requests a target workflow engine:

1. to create a process instance on another according to a known process definition;
2. to instantiate the process instance
3. to cause enactment of the instantiated process instance
4. to repeatedly poll the enacting workflow engine to determine when the sub-process instance has completed

5. to return elements of workflow relevant data from the sub-process instance upon its completion
6. to release the sub-process instance and its resources once it is finished with.

This test demonstrates the correct implementation of the

- CreateProcessInstance
- SetProcessInstanceAttributes
- StartProcessInstance
- AbortProcessInstance
- TerminateProcessInstance
- GetProcessInstanceState
- GetProcessInstanceAttributes
- RelinquishProcessInstance

operations. To complete the assessment, the test should be mirrored demonstrating the ability of the workflow engine in question to act as a respondent capable of enacting nested sub-processes that conform to the polling profile. The assessment should indicate whether abnormal termination of the sub-process instance and error conditions were properly handled, whether consequent audit data was properly recorded by the workflow engine and whether the engine can act as:

- invoking engine
- enacting engine
- both

Nested sub-process (suspended animation) profile

Using a WfMC defined process description / script construct a workflow definition that when enacted on the engine in question requests a target workflow engine:

1. to create a process instance on another according to a known process definition;
2. to instantiate the process instance
3. to cause enactment of the instantiated process instance
4. to notify it of changes in process instance status (started, aborted, terminated, completed)
5. to return elements of workflow relevant data from the sub-process instance upon its completion
6. to release the sub-process instance and its resources once it is finished with.

Once the sub-process has started, the parent process waits until notified that some form of termination has been achieved before continuing with its own enactment.
This test demonstrates the correct implementation of the

- CreateProcessInstance
- SetProcessInstanceAttributes
- StartProcessInstance

- AbortProcessInstance
- TerminateProcessInstance
- ProcessInstanceStarted
- ProcessInstanceAborted
- ProcessInstanceTerminated
- ProcessInstanceCompleted
- GetProcessInstanceAttributes
- RelinquishProcessInstance

operations. To complete the assessment, the test should be mirrored demonstrating the ability of the workflow engine in question to act as a respondent capable of enacting nested sub-processes that conform to the polling profile. The assessment should indicate whether abnormal termination of the sub-process instance and error conditions were properly handled, whether consequent audit data was properly recorded by the workflow engine and whether the engine can act as:

- invoking engine
- enacting engine
- both

Nested sub-process (deferred-synchronous) profile

Using a WfMC defined process description / script construct a workflow definition that when enacted on the engine in question requests a target workflow engine:

1. to create a process instance on another according to a known process definition;
2. to instantiate the process instance
3. to cause enactment of the instantiated process instance
4. to notify it of changes in process instance status (started, aborted, terminated, completed)
5. to return elements of workflow relevant data from the sub-process instance upon its completion
6. to release the sub-process instance and its resources once it is finished with.

This test demonstrates the correct implementation of the

- CreateProcessInstance
- SetProcessInstanceAttributes
- StartProcessInstance
- AbortProcessInstance
- TerminateProcessInstance
- ProcessInstanceStarted
- ProcessInstanceAborted
- ProcessInstanceTerminated
- ProcessInstanceCompleted
- GetProcessInstanceAttributes

- RelinquishProcessInstance

operations. To complete the assessment, the test should be mirrored demonstrating the ability of the workflow engine in question to act as a respondent capable of enacting nested sub-processes that conform to the polling profile. The assessment should indicate whether abnormal termination of the sub-process instance and error conditions were properly handled, whether consequent audit data was properly recorded by the workflow engine and whether the engine can act as:

- invoking engine
- enacting engine
- both

Nested sub-process (synchronized enactment) profile

Using a WfMC defined process description / script construct a workflow definition that when enacted on the engine in question requests a target workflow engine:

1. to create a process instance on another according to a known process definition;
2. to instantiate the process instance
3. to cause enactment of the instantiated process instance
4. to notify it of changes in process instance status (started, aborted, terminated, completed)
5. to effect rendezvous with the parent process at various points and exchange values of process relevant data
6. to release the sub-process instance and its resources once it is finished with.

This test demonstrates the correct implementation of the

- CreateProcessInstance
- SetProcessInstanceAttributes
- StartProcessInstance
- AbortProcessInstance
- TerminateProcessInstance
- ProcessInstanceStarted
- ProcessInstanceAborted
- ProcessInstanceTerminated
- ProcessInstanceCompleted
- ProcessAttributeChanged
- GetProcessInstanceAttributes
- RelinquishProcessInstance

operations. To complete the assessment, the test should be mirrored demonstrating the ability of the workflow engine in question to act as a respondent capable of enacting nested sub-processes that conform to the polling profile. The assessment should indicate whether abnormal termination of the sub-process instance and error conditions were properly

handled, whether consequent audit data was properly recorded by the workflow engine and whether the engine can act as:

- invoking engine
- enacting engine
- both

Process administration profile

Using a WfMC defined process description / script construct a workflow definition that when enacted on the engine in question requests a target workflow engine:

1. to list process instances currently being enacted on behalf of the querying workflow engine
2. to ascertain the current state of a given process instance being enacted on behalf of the querying workflow engine
3. to start and stop enactment of sub-process instances
4. to report on the progress of enacted sub-processes
5. to get and set values of elements of process relevant data

This test demonstrates the correct implementation of the

- `ListProcessInstances`
- `GetProcessInstanceState`
- `ChangeProcessInstanceState`
- `StartProcessInstance`
- `AbortProcessInstance`
- `TerminateProcessInstance`
- `GetProcessInstanceAttributes`
- `SetProcessInstanceAttributes`
- `ProcessInstanceStarted`
- `ProcessInstanceAborted`
- `ProcessInstanceTerminated`
- `ProcessInstanceCompleted`
- `ProcessStateChanged`

operations. To complete the assessment, the test should be mirrored demonstrating the ability of the workflow engine in question to act as a respondent capable of enacting nested sub-processes that conform to the polling profile. The assessment should indicate whether abnormal termination of the sub-process instance and error conditions were properly handled, whether consequent audit data was properly recorded by the workflow engine and whether the engine can act as:

- invoking engine
- enacting engine
- both

Administration and Management

What problem are we trying to solve?

- To enable organizations to manage workflow applications that are enacted in a heterogeneous environment containing multiple enactment engines sourced from different product vendors.
- Allow the use of multiple "best of breed" tools with many workflow engines
- Provide administration, management and measurement across multiple interoperating workflow engines

Nature

- Audit data formats
- Workflow Management API

Tools

- Workflow Engines
- Workflow Definition Tools
- Workflow Management Tools

Status

- Audit Data Defined
- Work on definition of functionality has started but is not yet complete.

Interoperability

- Exchange/integrate audit data from many sources
- Manage enacted workflows

Issues

- Mandatory audit data
- Functionality defined in other specifications

Resolution

- Pending
- Reference existing functionality (by example?)

Conformance

- Pending