

The Workflow Management Coalition Specification

Workflow Management Coalition Terminology & Glossary

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1. INTRODUCTION

1.1 Background

The Workflow Management Coalition is a non profit organisation with the objectives of advancing the opportunities for the exploitation of workflow technology through the development of common terminology and standards. It has been recognised that all work flow management products have some common characteristics, enabling them potentially to achieve a level of interoperability through the use of common standards for various functions.

The WFM Coalition has been established to identify these functional areas and develop appropriate specifications for implementation in workflow products. Such specifications will enable interoperability between heterogeneous workflow products and improved integration of workflow applications with other IT services such as electronic mail and document management, thereby improving the opportunities for the effective use of workflow technology within the IT market, to the benefit of both vendors and users of such technology.

1.2. Purpose

This document contains technical definitions for terms used in the workflow management coalition specifications and discussions. The definitions themselves will help in establishing a consistency in the use of terminology across the industry.

1.3. Scope

This document identifies the terminology used to describe the concepts and general structure of a workflow management system, its major functional components and their interfaces. It also provides a list of synonyms variously used within the industry as alternative terms to the preferred WfMC terminology. It may be read in conjunction with the Workflow Reference Model, which describes the architecture used by the WfMC within its standardisation programme.

1.4. Cross References

WfMC-TC-1003	Workflow Reference Model
WfMC-TC-1009	Workflow Client Application APIs (WAPI)
WfMC-TC-1012	Workflow Interoperability Specifications
WfMC-TC-1013	WAPI - Naming Conventions
WfMC-TC-1015	Workflow Audit Data Specifications
WfMC-TC-1016	Workflow Process Definition Interchange
WfMC-TC-1020	Workflow Security Considerations - White Paper
WfMC-TC-1022	A Common Object Model - Discussion Paper

1.5. Revision History

Issue 1 was the first issue (1994) providing an initial definition of industry standard terminology relating to workflow systems

Issue 2, June 1996, was a significant update of version 1, incorporating:

- standard background material describing the WfMC
- the standard WfMC document structure
- revised terminology in some areas to improve clarity
- new terminology in various areas
- an index of terms and cross references

This issue, 3.0, February 1999, is a further update introducing new material covering:

- Events and related terminology
- Organisation Model and related terminology
- Additional Workflow interoperability material plus minor revisions to existing material in certain areas.

2 - BASIC CONCEPTS

This section identifies basic concepts and terminology associated with workflow as a general topic.

Workflow Glossary - Relationships between basic terminology

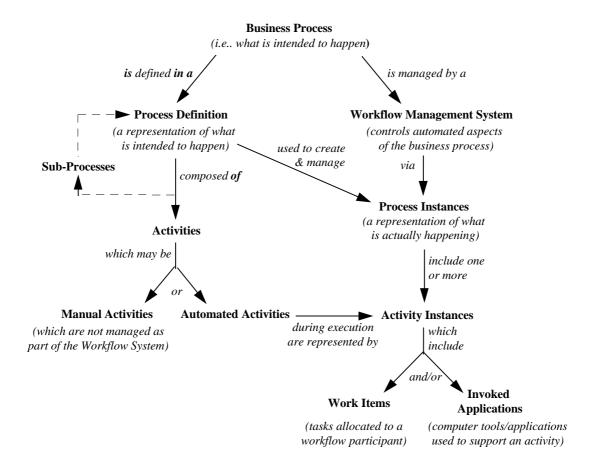


Figure 1 - Relationships between basic terminology

Workflow

Definition

The automation of a business process, in whole or part, during which documents, information or tasks are passed from one participant to another for action, according to a set of procedural rules.

Usage

- The automation of a business process is defined within a Process Definition, which identifies the various process activities, procedural rules and associated control data used to manage the workflow during process enactment
- Many individual process instances may be operational during process enactment, each associated with a specific set of data relevant to that individual process instance (or workflow "Case")
- A loose distinction is sometimes drawn between production workflow, in which most of the procedural rules are defined in advance, and ad-hoc workflow, in which the procedural rules may be modified or created during the operation of the process.

- Workflow Management
- Workflow Computing
- Case Management

Workflow Management System

Definition

A system that defines, creates and manages the execution of workflows through the use of software, running on one or more workflow engines, which is able to interpret the process definition, interact with workflow participants and, where required, invoke the use of IT tools and applications.

Usage

- A Workflow Management System consists of software components to store and interpret process definitions, create and manage workflow instances as they are executed, and control their interaction with workflow participants and applications.
- Such systems also typically provide administrative and supervisory functions, for example to allow work reassignment or escalation, plus audit and management information on the system overall or relating to individual process instances.
- The WfMC have published an architectural Reference Model, describing the structure and interfaces of a Workflow Management System..

- Workflow Automation
- Workflow Manager
- Workflow Computing System
- Case Management

Business Process

Definition

A set of one or more linked procedures or activities which collectively realise a business objective or policy goal, normally within the context of an organisational structure defining functional roles and relationships.

Usage

- A business process is typically associated with operational objectives and business relationships, for example an Insurance Claims Process, or Engineering Development Process. A process may be wholly contained within a single organisational unit or may span several different organisations, such as in a customer-supplier relationship.
- A business process has defined conditions triggering its initiation in each new instance (e.g. the arrival of a claim) and defined outputs at its completion.
- A business process may involve formal or relatively informal interactions between participants; its duration may also vary widely.
- A business process may consist of automated activities, capable of workflow management, and/or manual activities, which lie outside the scope of workflow management.

See also: Process, Process Definition

Synonyms

Process (colloquial)

Process Definition

Definition

The representation of a business process in a form which supports automated manipulation, such as modelling, or enactment by a workflow management system. The process definition consists of a network of activities and their relationships, criteria to indicate the start and termination of the process, and information about the individual activities, such as participants, associated IT applications and data, etc.

Usage

- The process definition results from work during the process definition mode. and may include both manual and workflow (automated) activities.
- The process definition may contain references to sub-processes, separately defined, which make up part of the overall process definition
- The process definition may make reference to a separate Organisation or Resource Model to enable participants to be indirectly defined, for example by reference to attributes such as role or organisational position.
- The WfMC Reference Model includes an interface for the import and export of Process Definitions; this incorporates the Process Definition Meta-Model, which identifies the top level entities within the Process Definition

- Model Definition
- Routing Definition
- Flow Diagram
- State Transition Diagram
- Flow Schematic
- Workflow Script
- Instruction Sheet Definition
- Case Type

WfMC Process Definition Meta-Model

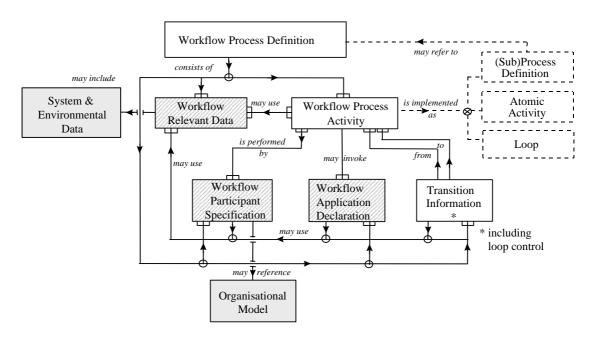


Figure 2 - WfMC Process Definition Meta-Model

Activity

Definition

A description of a piece of work that forms one logical step within a process. An activity may be a manual activity, which does not support computer automation, or a workflow (automated) activity. A workflow activity requires human and/or machine resources(s) to support process execution; where human resource is required an activity is allocated to a workflow participant.

Usage

- A process definition generally consists of many process activities which are logically related in terms of their contribution to the overall realisation of the business process.
- An activity is typically the smallest unit of work which is scheduled by a workflow engine during process enactment (e.g. using transition and pre/post-conditions), although one activity may result in several work items being assigned (to a workflow participant)
- Wholly manual activities may form part of a business process and be included within its associated process definition, but do not form part of the automated workflow resulting from the computer supported execution of the process.
- An activity may therefore be categorised as "manual", or "automated". Within this document, which is written principally in the context of workflow management, the term is normally used to refer to an automated activity.

Synonyms

- Step
- Node
- Task
- Work Element
- Process Element
- Operation
- Instruction

(Each may be further described as a manual, or as an automated or workflow)

Automated Activity

Definition

An activity which is capable of computer automation using a workflow management system to manage the activity during execution of the business process of which it forms a part.

Usage

During process execution, an automated (or workflow) activity is managed by the Workflow Management System (WMS). This may result in:

- an invoked application being activated directly by the workflow management system (with no workflow participant being involved)
- one or more work items being assigned to a workflow participant, with supporting tools or applications being invoked and managed by the workflow management system
- one or more work items being assigned for a workflow participant to process independently of the workflow management system, with the completion of the workitems being notified to the workflow management system by the workflow participant (within a workflow system these may sometimes be described as manually executed work items)

For other aspects of usage see Activity

- Workflow Activity
- Activity (colloquial)

Manual Activity

Definition

An activity within a business process which is not capable of automation and hence lies outside the scope of a workflow management system. Such activities may be included within a process definition, for example to support modelling of the process, but do not form part of a resulting workflow.

Usage

See Activity

Synonyms

- Non-automated Activity
- Manual Step
- Human Task
- Manual Work

Instance (as in Process or Activity Instance)

Definition

The representation of a single enactment of a process, or activity within a process, including its associated data. Each instance represents a separate thread of execution of the process or activity, which may be controlled independently and will have its own internal state and externally visible identity, which may be used as a handle, for example, to record or retrieve audit data relating to the individual enactment.

Usage(Common)

• A process or activity instance is created and managed by a workflow management system for each separate invocation of the process or activity.

¹Where a process includes parallel activities, a process instance may include multiple concurrent threads of execution. See Parallel Routing, And-Split, And-Join

Process Instance

Definition

The representation of a single enactment of a process. (See also general entry on Instance).

Usage

- A process instance is created, managed and (eventually) terminated by a workflow management system, in accordance with the process definition.
- Each process instance represents one individual enactment of the process, using its
 own process instance data, and which is (normally) capable of independent control
 and audit as it progresses towards completion or termination. It represents the unit
 of work with respect to a business process which passes through a workflow
 management system (for example, the processing of one insurance claim, or the
 production of one engineering design).
- Each process instance exhibits internal state, which represents its progress towards completion and its status with respect to its constituent activities. (See Process State)

(Some business processes may never "complete" within a defined timescale in the accepted sense of the word, but achieve a protracted, persistent dormant state, which may require the process instance to be placed in an archive state, for example to support legal requirements on the maintenance of process data.)

- Process Definition Instance
- Case
- Workflow Definition Instance
- Instruction Sheet Instance

Activity Instance

Definition

The representation of an activity within a (single) enactment of a process, i.e. within a process instance. (See also general entry on Instance)

Usage

- An activity instance is created and managed by a workflow management system when required within the enactment of process, in accordance with the process definition.
- Each activity instance represents a single invocation of an activity, relates to
 exactly one process instance and uses the process instance data associated with the
 process instance. Several activity instances may be associated with one process
 instance, where parallel activities exist within the process, but one activity instance
 cannot be associated with more than one process instance.
- Each activity instance is normally capable of independent control and audit and exhibits internal state. (See Activity State)

- Step Instance
- Node Instance
- Task Instance
- Work Element Instance

Workflow Participant

Definition

A resource which performs the work represented by a workflow activity instance. This work is normally manifested as one or more work items assigned to the workflow participant via the worklist.

Usage

- The term Workflow Participant is normally applied to a human resource but it could conceptually include machine based resources such as an intelligent agent.
- A workflow participant may be identified directly within the business process
 definition, or (more normally) is identified by reference within the process
 definition to a role or organisational entity, which can then be filled by one or more
 of the resources available to the workflow system to operate in that role during
 process enactment.
- Within the WfMC Process Definition Meta-Model, the workflow participant declaration may identify a participant as one of four types human, (machine) resource, role, or organisational_unit. Alternatively reference may be may to an external Organisation Model which provides details of participants fitting the selected criteria. (See also *Organisation Model*)

- Actor
- Agent
- Player
- User
- Role Player
- Work Performer

Work Item

Definition

The representation of the work to be processed (by a workflow participant) in the context of an activity within a process instance.

Usage

- An activity typically generates one or more work items which together constitute
 the task to be undertaken by the user (a workflow participant) within this activity
 (In certain cases an activity may be completely handled by an invoked application
 which can operate without a workflow participant, in which case there may be no
 work item assignment.)
- The work item(s) are normally presented to the user via a work list, which maintains details of the work items allocated to a user, and a worklist handler, which interacts with the worklist on the behalf of the user
- The control and progression of work items rests with the worklist handler and the user, rather than the workflow engine, which is notified of workitem status (e.g. completion) via the worklist handler interface. (The WfMC WAPI interface includes standard API calls for this purpose.)
- Tools or applications may be invoked to support the processing of a work item, or
 it may be processed independently by a workflow participant, with the workflow
 management system merely notified of the completion of particular work items

- Work (e.g. document review, fill-in form)
- Work Object
- Work Queue Item
- Element
- Work Pool Item
- Task

Worklist

Definition

A list of work items associated with a given workflow participant (or in some cases with a group of workflow participants who may share a common worklist). The worklist forms part of the interface between a workflow engine and the worklist handler

Usage

- Generally, a worklist handler will request work items from a workflow engine in order to create such a list. This is sometimes done via a query mechanism.
- In some workflow management systems workitems may be placed in the worklist by a workflow engine for subsequently access and actioning by the worklist handler.

- Work Queue
- In-Tray
- To-Do List

Worklist Handler

Definition

A software component that manages the interaction between the user (or group of users) and the worklist maintained by a workflow engine. It enables work items to be passed from the workflow management system to users and notifications of completion or other work status conditions to be passed between the user and the workflow management system.

Usage

- A worklist handler may be vendor supplied as a component of the workflow
 management software, or may be developed as a standalone custom application. A
 worklist handler may communicate with several workflow systems, consolidating
 user work items into a single list of tasks for presentation to the user. This principle
 may be extended to include other external information sources such as mail in-tray
 items.
- Possible functions that may be performed by the worklist handler include:
 - Selecting a work item
 - Reassigning a work item
 - Notifying completion of a work item.
 - Invocation of a tool or client application as part of the work item processing
- The WfMC WAPI interface includes standard API calls for worklist handler communication with a workflow engine.

- WFM Front End
- WFM Application
- Workflow To-Do List Application
- Task Manager
- Active Work Performer

Processes and Worklist Structures - Overview

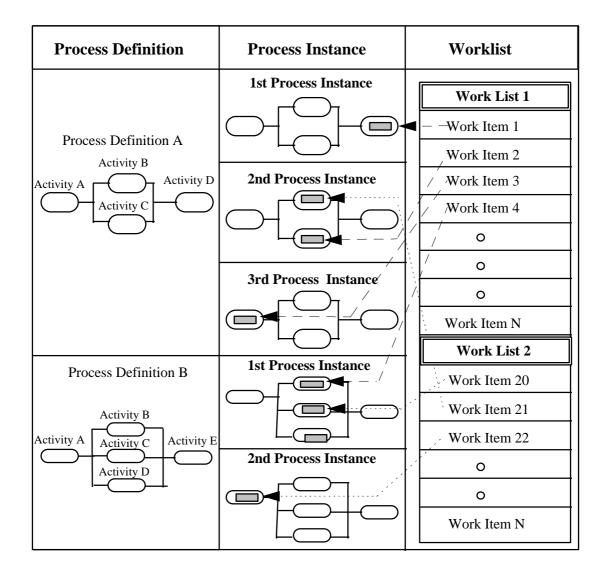


Figure 3 - Showing relationships between key terminology

Workflow Reference Model

Definition

An architectural representation of a workflow management system, identifying the most important system interfaces, developed by the Workflow Management Coalition.

Usage

The Reference Model provides the general architectural framework for the work of the WfMC. It identifies "interfaces" covering, broadly, five areas of functionality between a workflow management system and its environment.

- The import and export of process definitions
- Interaction with client applications and worklist handler software
- The invocation of software tools or applications
- Interoperability between different workflow management systems
- Administration and monitoring functions

Synonyms

None

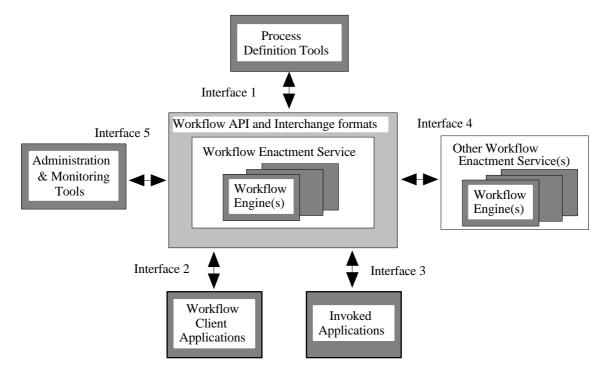


Figure 4 - The Workflow Reference Model

WAPI

Definition

WAPI is an abbreviation for Workflow APIs and Interchange Formats, published by the Workflow Management Coalition, and incorporating specifications to enable interoperability between different components of workflow management systems and applications

Usage

WAPI includes

- A range of API calls to support functions between a workflow engine and applications or other system components
- Interchange formats and protocols to support interoperability between different workflow engines
- Formats for the exchange of information such as process definitions and audit data between a workflow engine and other external repositories.

- Workflow API's
- Workflow Management System API's

3- PROCESS CONCEPTS & STRUCTURE

This section includes terminology used within the process definition and during process execution to describe the nature of the process flow and its interactions.

Process Definition Mode

Definition

The time period when manual and/or automated (workflow) descriptions of a process are defined and/or modified electronically.

Usage

- Process definitions are initially defined prior to workflow enactment, and may be
 - modified at a later date, or
 - modified during run time (usually under conditions of privilege or according to a particular user role).

- Process Modelling
- Business Process Modelling
- Build Time

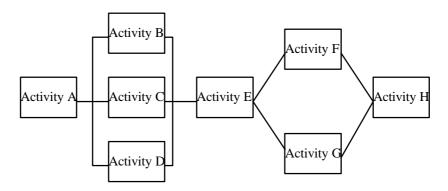
Process

Definition

A formalised view of a business process, represented as a co-ordinated (parallel and/or serial) set of process activities that are connected in order to achieve a common goal.

Usage

• Example: An eight activity process



- Activity Network
- Directed Graph
- Petri Net
- Model
- Instruction Sheet

Sub Process

Definition

A process that is enacted or called from another (initiating) process (or sub process), and which forms part of the overall (initiating) process. Multiple levels of sub process may be supported.

Usage

- A sub process is useful for defining reusable components within other processes
- A sub-process will have its own process definition, and may include parameters passed on its initiation and completion
- The WfMC Interoperability scenarios identify various ways in which sub-processes may interact during workflow execution (e.g. nested sub-process, chained)

Synonyms

- Subflow
- Sub Workflow

Activity Block

Definition

A set of activities within a process definition which share one or more common properties which cause the workflow management software to take certain actions with respect to the block in total.. For example a group of activities may be classified as a block if they require a common resource allocation policy.

Usage

• A workflow system may support the concept of an activity block, which then initiates particular action by the workflow management system

Synonyms

Activity Set

Deadline

Definition

A time based scheduling constraint which requires that a certain activity (or work item) be completed by a certain time (the "deadline").

Usage

- Activity scheduling by a workflow management system will attempt to meet deadline constraints set against particular activities.
- The deadline may be expressed as an attribute of the process definition or within workflow relevant data.
- Escalation procedures may be invoked if deadlines are not meant.

Synonyms

Completion Time

Parallel Routing

Definition

A segment of a process instance under enactment by a workflow management system, where two or more activity instances are executing in parallel within the workflow, giving rise to multiple threads of control.

Usage

- Parallel routing normally commences with an AND-Split and concludes with an AND-Join
- Example:

Once the form filling activity is complete the three sections of form X, sections A, B and C, are processed in parallel by the corresponding activities, Process Section A activity, Process Section B activity and Process Section C activity.

Synonyms

- Parallel workflow processing
- Concurrent Processing

Sequential Routing

Definition

A segment of a process instance under enactment by a workflow management system, in which several activities are executed in sequence under a single thread of execution. (No AND-Split or AND-Join conditions occur during sequential routing.)

Usage

• Example:

A purchase order is processed in three consecutive activities.

Synonyms

Serial Routing

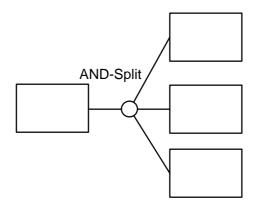
AND-Split

Definition

A point within the workflow where a single thread of control splits into two or more threads which are executed in parallel within the workflow, allowing multiple activities to be executed simultaneously (*see Parallel Routing*).

Usage

- At an And-Split separate threads of control within the process instance are created; these threads will proceed autonomously and independently until reaching an And-Join condition.
- Example



• In certain workflow systems all the threads created at an And-Split must converge at a common And-Join point (Block Structure); in other systems convergence of a subset of the threads can occur at different And-Join points, potentially including other incoming threads created from other And-split points. (Free Graph Structure)

Synonyms

Split

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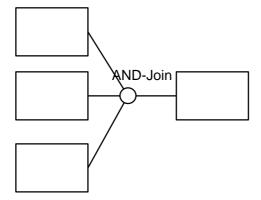
AND-Join

Definition

A point in the workflow where two or more parallel executing activities converge into a single common thread of control (*see Parallel Routing*).

Usage

- Each parallel executing thread is held until the set of all thread transitions to the next activity is completed (*Synchronisation*), at which point the threads converge and the next activity is initiated.
- Example



- In certain workflow systems all the threads created at an And-Split must converge at a common And-Join point (Block Structure); in other systems convergence of a subset of the threads can occur at different And-Join points, potentially including other incoming threads created from other And-split points. (Free Graph Structure)
- The AND-Join may be modelled as a *Pre-condition* of the joining activity.

- Join
- Rendezvous
- Synchronisation join

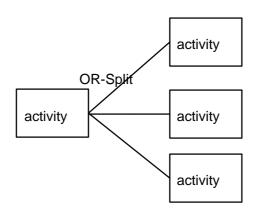
OR-Split

Definition

A point within the workflow where a single thread of control makes a decision upon which branch to take when encountered with multiple alternative workflow branches

Usage

- An OR-Split is conditional and the (single) specific transition to next activity is selected according to the outcome of the Transition Condition(s).
- Example



- Conditional Branching
- Conditional Routing
- Switch
- Branch

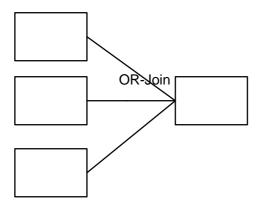
OR-Join

Definition

A point within the workflow where two or more alternative activity(s) workflow branches re-converge to a single common activity as the next step within the workflow. (As no parallel activity execution has occurred at the join point, no synchronisation is required.)

Usage

- A thread of control may arrive at the specific activity via any of several alternative preceding activities.
- Example



Synonyms

- Join
- Asynchronous join

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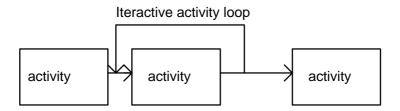
Iteration

Definition

A workflow activity cycle involving the repetitive execution of one (or more) workflow activity(s) until a condition is met.

Usage

• Example



- Workflow Loop
- While Loop
- Activity Block

Pre-Condition

Definition

A logical expression which may be evaluated by a workflow engine to decide whether a process instance or activity within a process instance may be started.

Usage

- One or more pre-conditions may be defined as entry criteria to a particular activity or process instance.
- The pre-condition may refer to workflow relevant data within the expression and
 may also test system variables such as date or time. It may also refer to an
 external event of some kind.
- The pre-conditions are defined within the process definition
- An *AND-Join* may be specified in the form of a pre-condition, where the condition requires that each of the independent converging threads has achieved a specific status

- Entry criteria
- Activity start rules

Post-Condition

Definition

A logical expression which may be evaluated by a workflow engine to decide whether a process instance or activity within a process instance is completed..

Usage

- One or more post-conditions may be defined as completion criteria for a particular activity or process instance. Such conditions may form part of an iteration, in which one or more activities are repetitively executed until the defined post-condition(s) is/are met.
- The post-condition may refer to workflow relevant data within the expression and
 may also test system variables such as date or time. It may also refer to an external
 event of some kind.
- The post-conditions are defined within the process definition

- Exit criteria
- Activity completion rules

Transition

Definition

A point during the execution of a process instance where one activity completes and the thread of control passes to another, which starts. See also *State Transition* and *Transition Condition*

Usage

- A transition may be unconditional, such that completion of one activity always leads to the start of another, or conditional, where the sequence of operation depends upon one or more *Transition Conditions*.
- Transitions, including any conditions, are defined within the process definition

Synonyms

Navigation

Transition Condition

Definition

A logical expression which may be evaluated by a workflow engine to decide the sequence of activity execution within a process.

Usage

- One or more transition conditions may be defined for evaluation at run time after an activity has started or completed, or following an external event of some kind
- The transition condition may refer to workflow relevant data within the expression and may also test system variables such as date or time.
- Transition conditions are defined within the process definition
- Transition conditions identify the flow relationship between activities and are used
 to effect the desired sequence of activity execution, which may include parallel or
 sequential execution conditions.

(Note - Some workflow management systems may not define explicit transition conditions but use a combination of pre- and post-conditions to achieve an equivalent effect.)

- Navigation Rule
- Routing condition
- Process Rule
- Transition Rule
- Business Process Rule
- Conditional Routing

4 - WIDER WORKFLOW CONCEPTS & TERMINOLOGY

This section includes terminology used within the wider context of workflow management systems.

Generic Workflow Product Structure

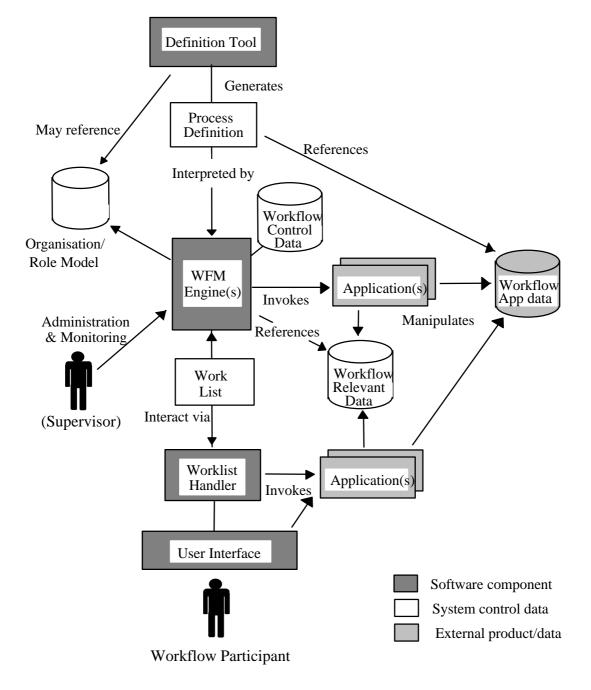


Figure 5 – Generic Workflow Product Structure

Workflow Product Components & Interfaces

The diagram following shows the key workflow product components, their relationships and the 5 functional interfaces identified within the WfMC Workflow Reference Model.

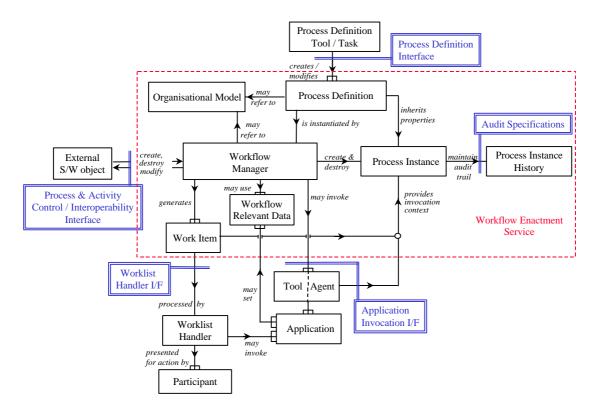


Figure 6 -WFMS Components & Interfaces

Workflow Application

Definition

A general term for a software program that interacts with a workflow enactment service, handling part of the processing required to support a particular activity (or activities).

Usage

The Workflow Reference Model recognises two broad types of workflow application:

- Client Applications, which request facilities and services from a workflow engine
- Invoked Applications, which support the processing of particular activities, or work items, and are initiated by the workflow management system

- Client Application
- Invoked Application
- Tool

Client Application

Definition

A client application is an application which interacts with a workflow engine, requesting facilities and services from the engine.

Usage

- Client applications may interact with a workflow engine for a variety of reasons. Common functions which client application may perform are:
 - worklist handling
 - process instance initiation and other control functions (e.g. suspend/resume)
 - retrieval and manipulation of process definition data
 - various system administration functions (for example suspending the use of certain process definitions)
- The Workflow Reference Model includes an interface for client application interaction which supports APIs for a variety of the above functions.

- Front-End Application
- Client Program

Invoked Application

Definition

An invoked application is a workflow application that is invoked by the workflow management system to automate an activity, fully or in part, or to support a workflow participant in processing a workitem.

Usage

- Application invocation may be a function of the workflow engine, and/or of the worklist handler.
- The application may be invoked directly by the workflow management system or may be invoked indirectly via an application agent (or "tool agent"). The application agent provides a general mechanism for application invocation independently from any native workflow management system facilities
- The Workflow Reference Model includes an interface for application invocation functions.

- Tool
- Work Performer
- Application (colloquial)

Workflow Data Structures - Overview

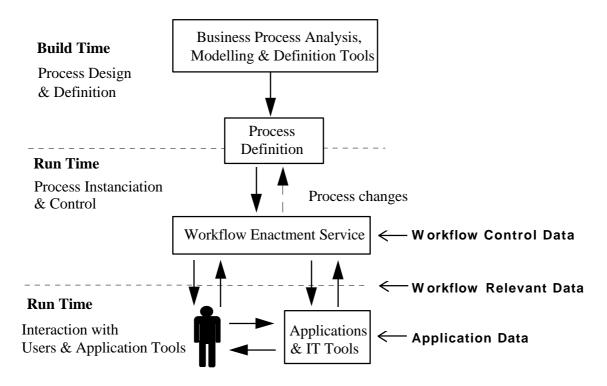


Figure 7 - Types of Data in Workflow Management Systems:

Application Data

Definition

Data that is application specific and not accessible by the workflow management system.

Usage

This is data that the workflow management system generally will never see. It is
data that is strictly managed by the applications supporting the process instance.
(Such data may become process relevant data if it is used by the Workflow
Management System to determine a state change.)

Synonyms

Application Case Data

Workflow Relevant Data

Definition

Data that is used by a Workflow Management System to determine the state transitions of a workflow instance, for example within pre- and post-conditions, transition conditions or workflow participant assignment.

Usage

- Workflow relevant data may be manipulated by workflow applications as well as by the workflow engine
- Workflow relevant data may be made available to a subsequent activity or another
 process instance and thus may affect the choice of the next activity to be chosen
 (for example decision data and/or reference values to be passed between activities)
- Data may be of two broad types
 - Typed the structure of the data is implied by its type (typically a workflow management system will understand the structure of such data and may be able to process it)
 - Untyped the workflow management system will not understand the data structure, but may pass the data (or a reference to the data) to workflow applications

- Process flow data
- Case data

Workflow Control Data

Definition

Data that is managed by the Workflow Management System and/or a Workflow Engine. Such data is internal to the workflow management system and is not normally accessible to applications

Usage

- Workflow control data represents the dynamic state of the workflow system and its process instances.
- Workflow control data examples include:
 - state information about each workflow instance
 - state information about each activity instance (active or inactive)
 - information on recovery and restart points within each process
 - etc..

•

• The workflow control data may be written to persistent storage periodically to facilitate restart and recovery of the system after failure. It may also be used to derive audit data.

- Workflow system data
- Workflow engine state data
- Workflow enactment service state data

Process State

Definition

A representation of the internal conditions defining the status of a process instance at a particular point in time. Most workflow management systems maintain such status information as part of their workflow control data.

Usage

- The state of each process instance under enactment is maintained by the workflow management system. Different vendor systems have different ways of representing process state and may have their own set of state definitions
- As the execution of a process instance proceeds it follows a series of transitions between the various states which it may take. The complete set of process states for a process definition fully defines the internal behavior which its process instances may follow.
- The WfMC Reference Model identifies a number of common states which a process instance may take:
 - Initiated the process instance has been created, but may not yet be running
 - Running the process instance has started execution and one or more of its activities may be started
 - Active one or more activities are started and activity instances exist (Further sub-states may be supported by particular implementations to record more detailed information about active activities.)
 - Suspended the process instance is quiescent; no further activities are started until it is resumed
 - Complete the process instance has achieved its completion conditions and any post-completion system activities such as audit logging are in progress.
 - Terminated the execution of the process has been stopped (abnormally) due to error or user request.
 - Archived the process instance has been placed in an indefinite archive state (but may be retrieved for process resumption - typically supported only for long-lived processes).
- The WAPI interface defines a number of calls to manipulate process state information, for example to interrogate process state or force a transition to a new state

- Workflow state
- Model state

Activity State

Definition

A representation of the internal conditions defining the status of an activity instance at a particular point in time. Most workflow management systems maintain such status information as part of their workflow control data.

Usage

- The state of each process instance under enactment is maintained by the workflow management system. Some systems extend this to maintain state information about each activity instance which has been created. Different vendor systems have different ways of representing activity state and may have their own set of state definitions
- The WfMC Reference Model identifies a number of common states which an activity instance may take:
 - Inactive the activity instance has been created, but may not yet been activated; no work item exists for that activity
 - Active one or more work items have been created and assigned for processing
 - Suspended the activity instance is quiescent; no further work items are started until it is resumed. (Note that some activities may not be suspendable.)
 - Completed the process instance has achieved its completion conditions and any post-completion system activities such as audit logging are in progress.

Synonyms

• Step state

State Transition

Definition

A movement from one internal state (of a Process or Activity Instance) to another within a workflow, reflecting a change in the status of the workflow, for example initiating a particular activity. The state transition may be in response to an external event, a user API call, a routing decision taken by the workflow engine, etc.

Usage

• A series of state transitions occurs as the workflow progresses its execution. Such transitions can be recorded by the workflow engine and presented as audit data.

Synonyms

None

Dummy Activity

Definition

An Activity which has no inherent processing related to the business process, but which is used to represent and evaluate complex routing or process control conditions which may be too complicated to define efficiently using conventional process definition notation.

Usage

 A Dummy Activity is represented as a node within the process routing network, with incoming and outgoing transitions, but has no associated work, resource or application definition

Synonyms

None

Event

Definition

An occurrence of a particular condition (which may be internal or external to the workflow management system) which causes the workflow management software to take one or more actions. For example the arrival of a particular type of email message may cause the workflow system to start an instance of a specific process definition.

An event has two elements:

- 1. A **Trigger**, or cause, which is the recognition of some predefined set of circumstances associated with the operation of the system, which causes a particular action to be taken
- 2. The **Action** (or response) which is the pre-defined system response following a trigger condition

Usage

- A workflow system may react directly to particular events or the event may be monitored and processed by a (client) application, which then initiates action by the workflow system by API call or setting workflow relevant data, etc.
- A Workflow Event is one in which the which the linkage between the trigger condition and the resultant system action involves the workflow management software.
- Other types of event may be used internally within applications which participate within a workflow but do not involve the workflow management software
- A particular type of event is that used for signalling between different workflow process instances ot workflow threads within a parallel synchronised workflow

- Trigger
- Action
- Signal
- Notification

Audit Data

Definition

A historical record of the progress of a process instance from start to completion or termination. Such data normally incorporates information on the state transitions of the process instance

Usage

- Example information that may be collected as part of the historical record is date, time and type of work performed per state transition.
- The WfMC Audit Data specification identifies a range of standard audit data records for logging, associated with specific events and transitions during the workflow.

- Workflow History
- Case History
- History Repository

Workflow Definition

Definition

That part of the process definition which comprises the automatable activities.

Usage

• Where a distinction is drawn between a process definition and those activities within it which are capable of automation, the term workflow definition is used for the latter.

Synonyms

see Process Definition

Process Execution

Definition

The time period during which the process is operational, with process instances being created and managed.

Usage

• The process execution phase may sometimes be differentiated from the process definition phase, during which the process structure and activities are defined. (In some systems, for example where much of the process definition is created dynamically during its execution, this distinction may be irrelevant.)

- Process Enactment
- Run Time Operation
- Workflow Execution (strictly this refers only to the automated parts of process execution)

Organizational Role

Definition

A group of participants exhibiting a specific set of attributes, qualifications and/or skills.

Usage

- Typically any of the participants within a particular organisational role group can undertake an activity or work-item requiring a resource with that set of attributes.
- Examples of an organisational role are:
 - Supervisor role
 - Insurance Underwriter role
 - Etc
- A workflow participant assumes a role given that he or she has the appropriate skill set.

Synonyms

- Role
- User Groups
- Organisational Groups

Organizational Model

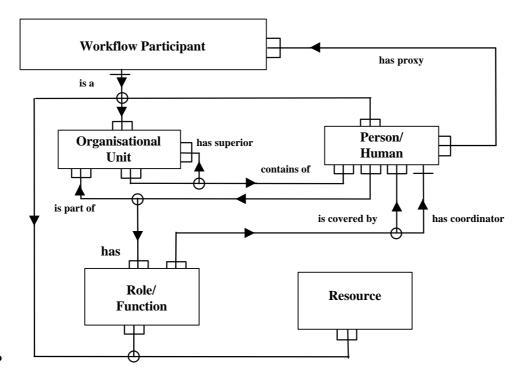
Definition

A model which represents organisational entities and their relationships; it may also incorporate a variety of attributes associated with the entities, such as skills or role. Such a model may be realised in a directory or other form of database.

Usage

 The model normally incorporates concepts such as hierarchy, authority, responsibilities and attributes associated with an organisational role. It may be referenced by a workflow management system as part of the mechanism by which process role is established.

- The Process Definition may make reference to an Organizational Model, allowing Workflow Participants to be specified in terms of attributes contained within the Organizational Model. During process execution the Workflow Management System can obtain details of participants matching the attributes from the Organizational Model.
- Example model, showing typical attributes:



• The WfMC Process Definition Meta-Model includes a simplistic in-built organisation model and can also make reference to an external model.

Synonyms

- Role Model
- Organisational Directory

Process Role

Definition

A mechanism that associates participants to a collection of workflow activity(s).

Usage

- A workflow participant assumes a role to access and process work from a workflow management system.
- The role defines the context in which the user participates in a particular process or activity. The role often embraces organisational concepts such as structure and relationships, responsibility or authority, but may also refer to other attributes such as skill, location, value data, time or date, etc.

Synonyms

- Role
- Activity Group
- Workflow Performer Definition

Escalation

Definition

A procedure (automated or manual) which is invoked if a particular constraint or condition is not met.

Usage

• Escalation procedures typically involve a higher level of authority (see Organisation Role).

Synonyms

None

Constraint

Definition

A condition (typically pertaining to activity/work selection and/or completion) which must be met during work processing; failure to meet a constraint may causes an exception condition or other defined procedure.

Usage

- Constraints may be:
 - time based (see deadline)
 - resource based (e.g. consumes less than ...)
 - cost based (e.g. costs more than ...)

Synonyms

Controls

Workflow Monitoring

Definition

The ability to track and report on workflow events during workflow execution.

Usage

• Workflow monitoring may be used, for example, by process owners to monitor the performance of a process instance during its execution.

Synonyms

Workflow Tracking

Workflow Engine

Definition

A software service or "engine" that provides the run time execution environment for a process instance.

Usage

 The workflow engine provides operational functions to support the execution of (instances of) business processes, based on the process definitions.. These functions include:

•

- Interpretation of the process definition.
- Creation of process instances and management of their execution, including start / stop / suspend /resume, etc.
- Navigation between activities and the creation of appropriate work items for their processing
- Supervisory and management functions
- etc
- The workflow engine normally excludes functions such as worklist handling, which
 are user centred, although these may share a common platform with the engine
 software.
- One or more workflow engines make up a workflow domain; which provides an
 homogeneous process execution environment. A workflow enactment service
 provides support for the execution of specific workflows over one or more
 workflow engines, which may be in one or more separate domains.
- Two or more workflow engines may co-operate to share the execution of workflows. *See workflow interoperability*

- Workflow Management Engine
- Case Processor

Workflow Interoperability

Definition

The ability for two or more Workflow Engines to communicate and work together to co-ordinate work.

Usage

Workflow interoperability embraces several important concepts:

- The ability to make two or more workflow engines appear to provide a single workflow enactment service, with process execution shared between engines.
- Several different interoperability scenarios exist, describing alternative ways in which the execution of a process instance is shared between workflow engines.
 - Hierarchic (Nested Subprocess)
 - Connected Discrete (Chained)
 - Connected Indiscrete (Peer-to-Peer)
 - Parallel Synchronised

Further details can be found in the WfMC Workflow Reference Model and Interoperability specifications.

- The ability to interoperate between both homogeneous and heterogeneous workflow engines; possibly with different levels of functional capability.
- The Workflow Reference Model includes a functional interface (Interface 4) to support interoperability between (heterogeneous) workflow engines.

Synonyms

Interoperability

Workflow Interoperability Contract

Definition

A pre-established contract between organisations which defines the scope, business and technical framework of workflow interoperability.

Usage

- Typically this will include agreements on the cooperative business processes, process naming and addressing, security and audit requirements, etc.
- The Contract will normally include legal, commercial and technical elements necessary to support co-operative process automation in a E-Commerce environment.

nonyms
/nonyms

None.

Workflow Enactment Service

Definition

A software service that may consist of one or more workflow engines in order to create, manage and execute particular workflow instances. Applications may interface to this service via the workflow application programming interface (part of WAPI).

Usage

- A Workflow Enactment service consists of one or more workflow engines.
- A workflow enactment service may operate within a single (homogeneous) workflow domain, or using the facilities provided within the WfMC interoperability interface enactment may occur across engines within several (heterogeneous) domains.

Synonyms

• Process Execution Environment

Workflow Domain

Definition

A workflow management service that consists of one or more workflow engines which are managed as an homogeneous unit, operating to a common administrative model.

Usage

- A single workflow domain will normally exhibit common administrative functions, including:
 - common workflow naming (processes/activities)
 - common user naming
 - common interpretation of process definitions and state transitions
 - a common organisational model and roles
 - a common supervisory interface
 - common audit data
 - etc
- Typically a workflow domain is built from a common, homogeneous product set.
- The Workflow Reference Model identifies an interface (4) to enable workflow interoperability between workflow engines, such that an enactment service for particular processes can span more than one domain, and incorporate heterogeneous products.

Synonyms

Workflow Service

Work Item Pool

Definition

The representation of all work items accessible from a particular workflow engine

Usage

• A Worklist Handler may (exceptionally) undertake operations requiring a global view of all available work items. The work item pool can meet this need.

Synonyms

• Total Work Queue

Administrator

Definition

A workflow system user who has special privileges allowing various system set-up, control and management functions to be performed. In some systems these tasks may be shared between several administrators, each taking responsibility for separate areas of administration.

Usage

- Administrative functions may include:
 - Set up and management of user names, passwords and roles
 - Assignment or re-assignment of work items
 - Processing exception conditions
 - Control of process definitions or versions thereof
 - Monitoring of work or process instance progress
 - System audit functions
 - etc
- Administrators may make use of specialised administrative tools.

Synonyms

Supervisor

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