

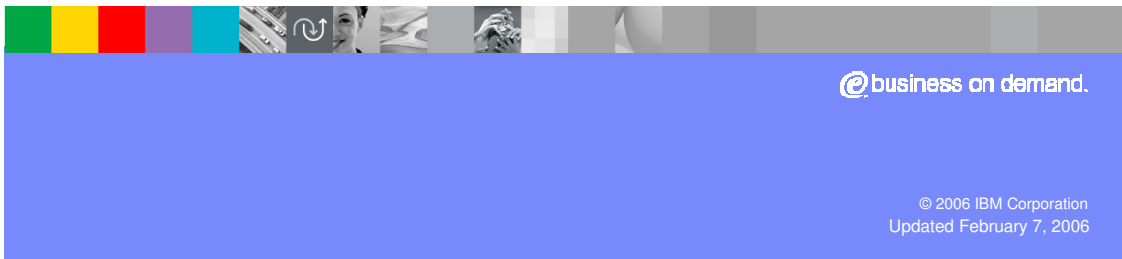


IBM Software Group

# **WebSphere® Process Server V6.0**

## **WebSphere® Integration Developer V6.0**

### ***Business Process Choreographer Overview***



This presentation will provide an overview of the Business Process Choreographer feature of WebSphere Process Server and WebSphere Integration Developer V6.0.

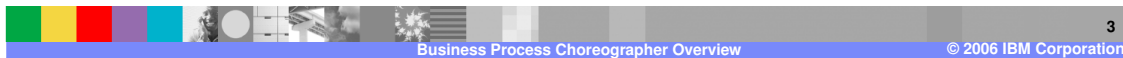
## Goals

- Explain the components of Business Process Choreographer
- List the features of the Business Flow Manager
- List the features of the Human Task Manager

The goals are to explain the components that make up Business Process Choreographer and list the primary features of the Business Flow Manager and Human Task Manager.

## Agenda

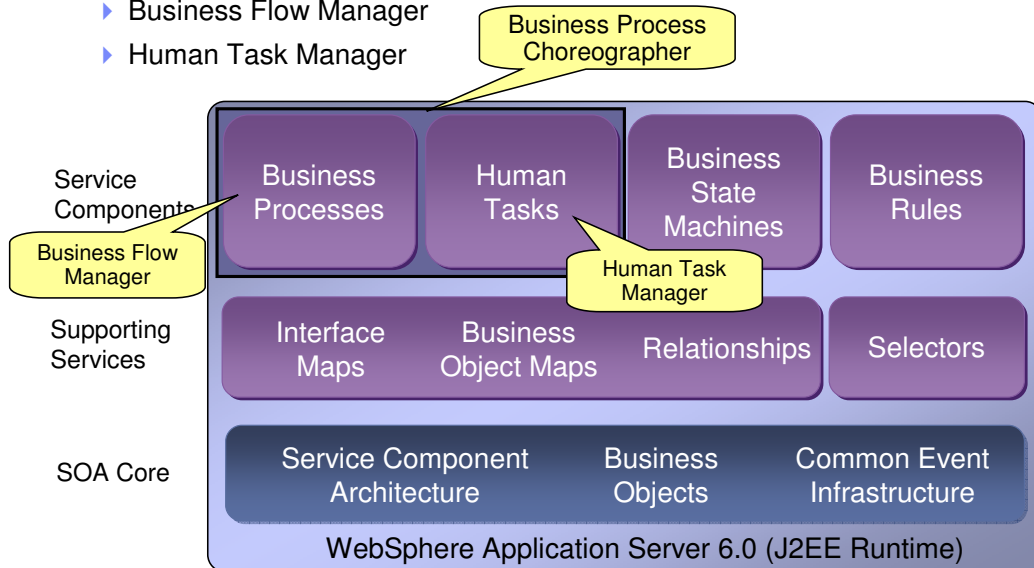
- Business Process Choreographer Overview
- Business Flow Manager Overview
- Human Task Manager Overview
- Business Process Choreographer Administration and Monitoring
- Summary



The first section will describe the architecture of the Business Process Choreographer.

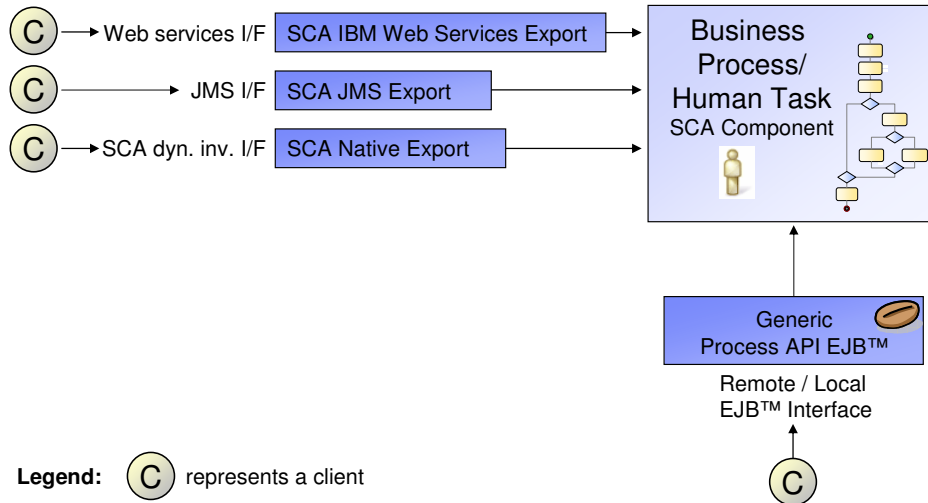
## Business Process Choreography Components

- Business Process Choreographer included with WebSphere Process Server V6
  - ▶ Business Flow Manager
  - ▶ Human Task Manager



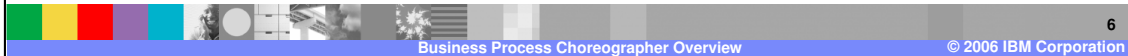
The Business Process Choreographer feature of WebSphere Process Server V6.0 is made up of two components. The Business Flow Manager is responsible for running business processes, while human tasks run within the Human Task Manager. While the Human Task support can be used independently of the business process support, the business process support requires the Human Task Manager in a production environment. Both the Business Flow Manager and Human Task Manager are built on the SOA core capabilities provided by WebSphere Process Server. Business Processes and Human tasks can be defined as service components with SCA and Business Object definitions can be used to define the data for the tasks. The common event infrastructure can be used to monitor business processes and human tasks.

## Interacting with Business Processes and Human Tasks



Shown here is a graphical view of the various interaction patterns available for business processes and human tasks, both of which can be packaged as SCA components and called over SOAP/HTTP or SOAP/JMS, JMS, or dynamically as an SCA component, all of which fit well into a Service Oriented Architecture. As in previous versions of WebSphere Business Integration Server Foundation, J2EE™ APIs are also available for working with the Business Flow Manager and Human Task Manager for interacting with business processes and human tasks respectively.

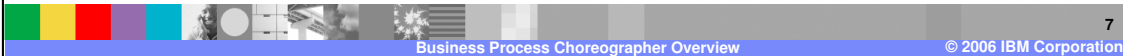
## Main Themes for Business Process Choreographer in V6.0



There are a variety of new capabilities and themes for Business Process Choreographer in WebSphere Process Server V6.0. For business processes, many of the capabilities outlined in WS-BPEL V2.0 are now supported, including event handlers, compensation handlers, and variable scope support. As previously mentioned, business processes and human tasks are built on the SOA core components of Service Component Architecture and Business Objects, which are built on Service Data Objects. Support for business processes and human tasks is provided through separate components in the form of the Business Flow Manager and Human Task Manager. The Human Task Manager provides more than just work item management. In V6.0, it also provides escalation and notification support. For working with business process instances and human tasks, the previous Web client has been enhanced and is now composed of JavaServer Faces (JSF) components. There is also support for monitoring, which utilizes the Common Event Infrastructure (CEI) to monitor the entire business process lifecycle.

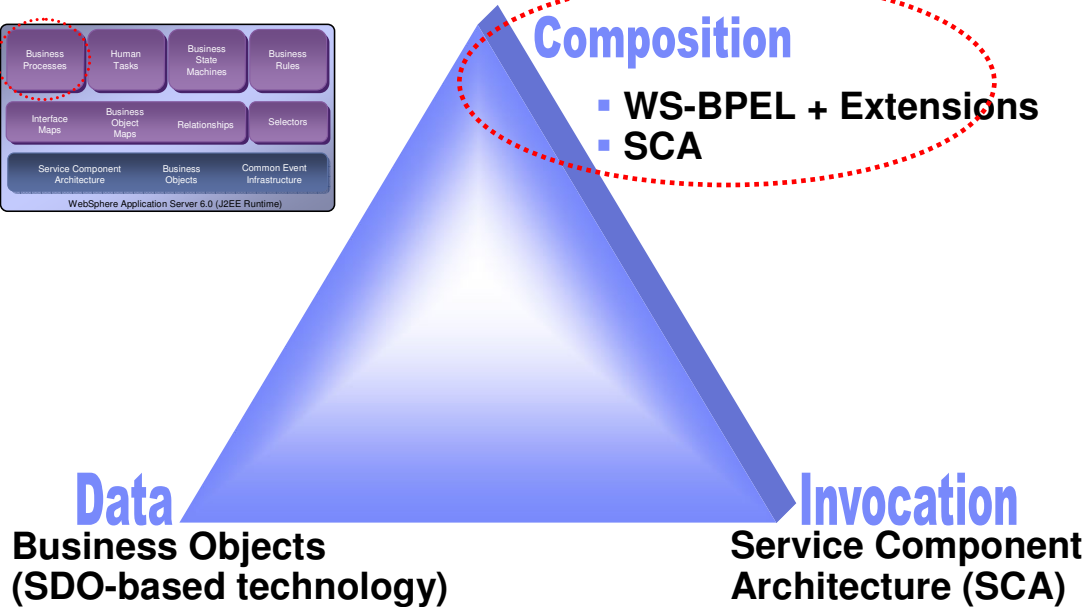
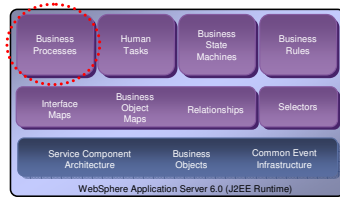
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This section will provide an overview of the Business Flow Manager.

## Service Oriented Architecture: Triangle of Truth

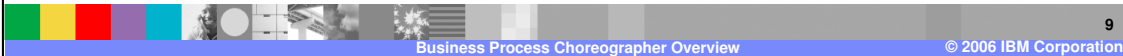


The triangle shown here is a simple way to look at the important architectural constructs that make up a service oriented architecture. When you think about what is needed to build a service oriented architecture, the triad that makes up the triangle quickly emerges. Specifically, there must be a way to represent the data exchanged between services, a mechanism for invoking services, and there should be a way to compose services into a larger integrated business application. The support in Business Process Choreographer provided by the Business Flow Manager allows for individual service components to be composed and combined into a WS-BPEL defined business process and run as a much larger business transaction or application rather than as independent services. The Composition support provided by the Business Flow Manager brings individual services together and manages and maintains the state and transition of data as the different services are called.



## WS-BPEL and Service Composition

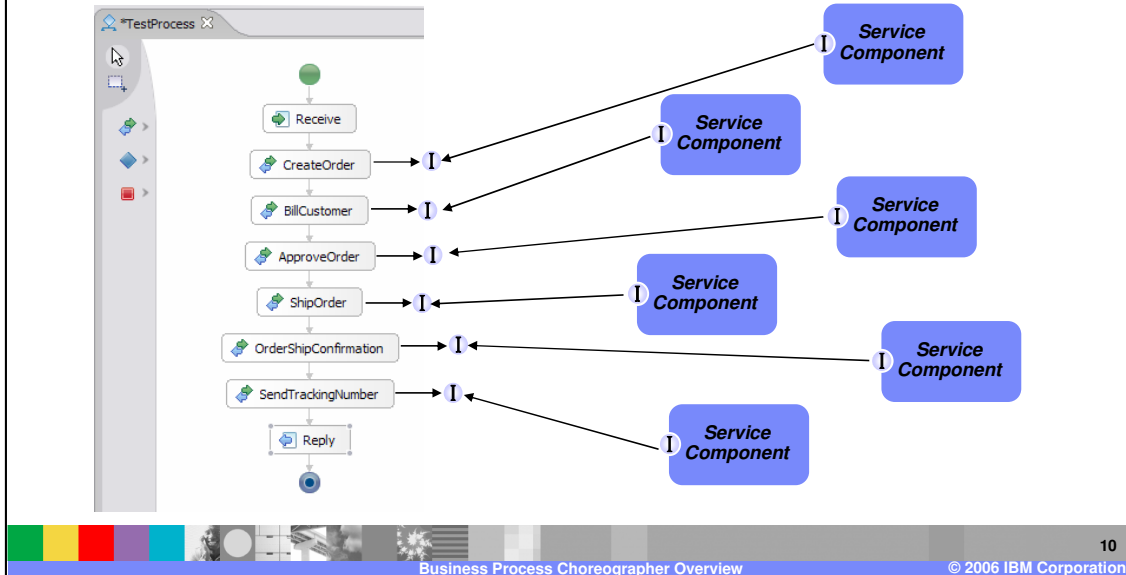
- Service composition with WS-BPEL is standards based
  - ▶ Business processes are defined by WS-BPEL V2.0 standard
- WS-BPEL brings independent service components together to define business transactions
  - ▶ Focuses on interfaces of services and data
- WS-BPEL handles the composition of different service components
  - ▶ Order of execution
  - ▶ Sharing of data between components
- Business Flow Manager provides a definition maintains the state between different service (synchronous and asynchronous) calls



WS-BPEL provides a variety of benefits in the composition of different, independent service components. As previously stated, WS-BPEL is a standards-based definition language for describing business processes. The WS-BPEL V2.0 standard focuses on the interaction of different, independent services, with an emphasis on the interfaces of the different services. This model fits directly into the SOA programming model provided by WebSphere Process Server V6.0. In order to support business processes defined by WS-BPEL, WebSphere Process Server V6.0 also includes a robust runtime environment, controlled by the Business Flow Manager, to support both short running and long running business processes. The Business Flow Manager keeps track of the progress of the business process and makes sure the right services are called in the correct order. The Business Flow Manager maintains the state of the overall process and allows information to be shared from one service invocation to another. These services can be invoked either synchronously or asynchronously.

## WS-BPEL and Service Components

- Composition of service components focuses on interfaces



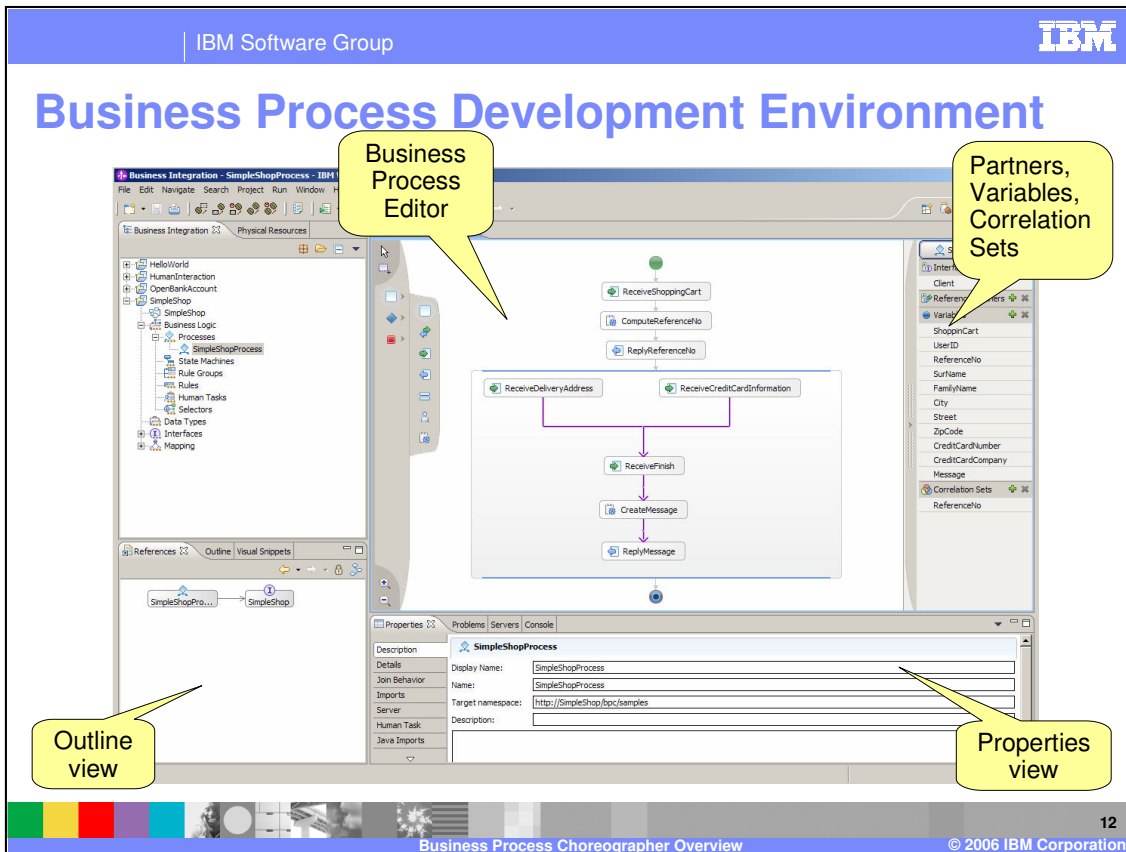
The role of WS-BPEL in the SOA programming model provided by WebSphere Process Server V6.0 is further emphasized in this slide. WS-BPEL defines how separate individual service components are brought together. The interfaces of the service components are used to define a business process, and the definition of the business process determines which data is shared between the various service components. By default, when each service component is invoked, it is in a stateless manner, without any context of other services that might have been invoked or previous invocations of the same service component. When using WS-BPEL to drive and coordinate the invocation of the different services, state can be built up as the different service components are called and the results of one service can be used in the invocation of another service. When all service components have been called, the overall business transaction is complete.

## Business Flow Manager Features

- Provides runtime container for running interruptible and non-interruptible BPEL processes
- Persists state of interruptible processes and supports resuming a waiting process
- Allows business processes to be created, suspended, resumed and additional messages sent into existing process instances
- Provides set of public APIs for interacting with business processes
- Supports business process called as SCA components or through APIs



The Business Flow Manager provides a variety of features in support of BPEL business processes, including the Business Flow Manager, which can run interruptible or non-interruptible BPEL processes. For the interruptible processes, the state of the process is persisted so that when a process depends on an external entity before it can proceed, the state that has been built up for the process can be persisted. Then, when the outside entity sends in a message to the waiting process, the state can be re-established and the process continues. The Business Flow Manager also provides its own set of APIs that J2EE clients can use for interacting with different business process instances, along with support for interacting with business processes as SCA components.



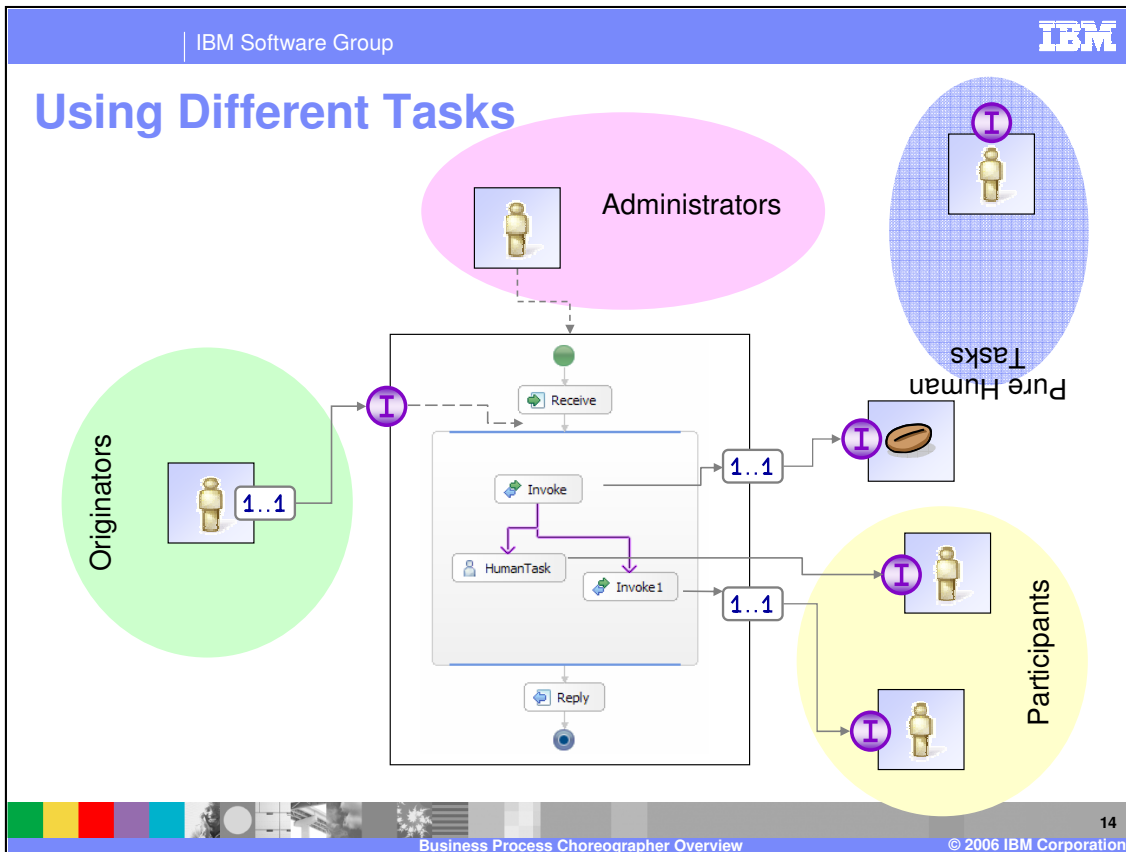
For the development of business processes, WebSphere Integration Developer V6.0 provides a full set of editors and wizards for building business processes visually. The Business Process Editor, the primary editor for laying out the business logic to be completed, allows you to specify partners, variables, and correlation sets, which are now organized on a palette in the editor. The Properties view is the main location for specifying details about the business process and the various activities. The Outline view is a convenient way to work with large business processes, as you can select the different activities and have the editor focus on the activity and the Properties view show the appropriate details for the activity.

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This section will provide an overview of the Human Task Manager.



The Human Task Manager in WebSphere Process Server V6.0 actually supports different types of Human Tasks and this slide illustrates how the different types of tasks can be used. There are two participating tasks; one is an inline task, which is directly wired within the business process and the other is a stand-alone task, which is packaged as a service component and wired to the business process through the partner link on an invoke activity and reference on the component. The Originator task is used to start the business process, by calling the business process as a service. When the process completes, a response from the business process is returned to the originator task. You can also see a Pure Human task which is separate and not used in any way with other service components, although it does have an interface. There are also administrator tasks, which are specific for a business process and can be specified on the definition of activities in the business process. However, these are not considered application related tasks.

## Human Task Manager Features

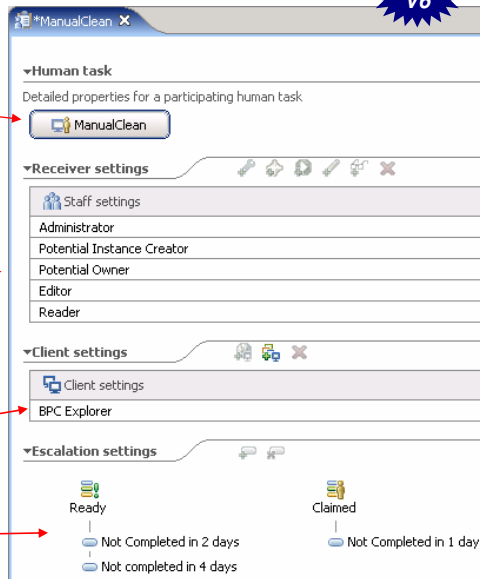
- Provides runtime container for creating human tasks and work items with different permissions
- Allows human tasks to be created, completed, claimed, transferred, escalated, suspended and resumed
- Provides set of public APIs for interacting with human tasks
- Supports human tasks called as SCA components or through APIs



The Human Tasks Manager provides robust support for creating human tasks and work items. It supports tasks that have different levels of permissions for different users or groups of users and includes roles such as potential owner, editor, reader, and administrator. Through the Human Task Manager, work items can be created, completed, claimed, transferred, escalated, suspended and resumed. The Human Task Manager provides its own set of APIs for J2EE clients to use for interacting with human tasks along with support for interacting with business processes as SCA components.

## Human Task Editor

- General Properties
  - ▶ Staff Plug-in Provider
  - ▶ Restrict transfer abilities
  - ▶ Calendar
- Permission settings
  - ▶ Specify Verb and Parameters for Roles
- Client Interface
- Escalations and Notifications



When you create a task, whether it is a participating, originating, human, or inline task in your BPEL process, you use the Human Task Editor in WebSphere Integration Developer V6.0. Clicking the button at the top of the editor displays general settings in the Properties view. Details such as the duration for the task, starting priority, and JNDI™ name of the staff plug-in provider can be specified here as well. There is also a calendar setting that can be specified, which is used to track the durations for Escalations. In the second section, you can specify permissions for individuals on the work items for the task. There is a variety of permissions to select from and they will vary depending on the task. Most tasks have administrator, potential owner, editor, and reader as available permissions. For each permission, a verb and group of parameters is specified to indicate the individuals to be assigned the appropriate permission. The client interface section allows you to specify custom JSP or JSF files that you have created for working with these items and displaying them in the BPC explorer. The Escalations settings section allows for different escalation chains to be specified based on the state of the task.



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This section will provide an overview of the administration and monitoring support for business processes and human tasks.

## Administrating Business Processes and Human Tasks

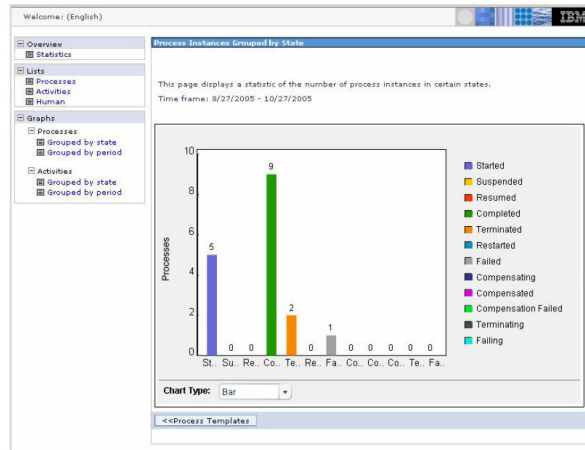
- BPC Explorer included for task and process administration
  - ▶ View installed process templates and View, Start, Terminate, Delete, Compensate, Retry process instances
  - ▶ View Tasks and Escalations and Claim, Complete, Transfer tasks
  - ▶ Located at <http://localhost:9080/bpc>

- Built with reusable JavaServer Faces (JSF) components
  - Starting point for customized administrative clients

The BPC Explorer is provided with WebSphere Process Server for managing business process instances and human tasks. The BPC explorer is an administrative client application that allows you to perform basic operations such as viewing installed process templates and process instances, start, terminate, and delete process instances, retry failed activities and force compensation on process instances. For human tasks, you can perform basic tasks such as viewing, claiming, completing, transferring, and deleting tasks. The BPC explorer is built using JSF components with a set of tag libraries that you can use to build your own custom clients.

## Monitoring Business Process Choreography

- The BPC Observer is an application for gathering information and monitoring what has been going on in the Business Process Container
  - ▶ Processes
  - ▶ Process activities
  - ▶ Work items
- The BPC Observer is a sample shipped with WebSphere Process Server



Business processes can be monitored in a variety of ways, including with WebSphere Business Monitor, which can display business process performance through a variety of means and provides the ability to send alerts when certain key performance indicators are not met or are exceeded. While WebSphere Business Monitor provides a large amount of information, the BPC Observer can be used for a quick view of the current status of business processes. The BPC Observer is a sample application that is included with WebSphere Process Server V6.0 and shows the grouping of the various process instances, activities, and work items in a chart format. The BPC Observer application, `bpcobserverweb.ear`, can be found at `${WPS Install Dir}/ProcessChoreographer/sample/observer`. The installation documentation and users guide (called `BPCObserverInstallAndUse.pdf`) is available in the same directory.

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This section will provide a summary of this presentation.

## Summary

- Business Process Choreographer is composed of the Business Flow Manager and Human Task Manager components
- The Business Flow Manager runs WS-BPEL business processes which have been defined to coordinate individual services into business applications
- The Human Task Manager can create human tasks and manage work items through different states



The Business Process Choreographer in WebSphere Process Server V6.0 is composed of the Business Flow Manager and the Human Task Manager. The Business Flow Manager runs WS-BPEL processes that have been defined to coordinate individual services into business applications and transactions. The Human Task Manager can create human tasks and manage work items through different states with support for things such as escalation and notification.

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