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WebSphere® Process Server V6
WebSphere Integration Developer V6

Business process choreographer overview

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This presentation will provide an overview of the business process choreographer feature of WebSphere Process Server and WebSphere Integration Developer version 6.

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.
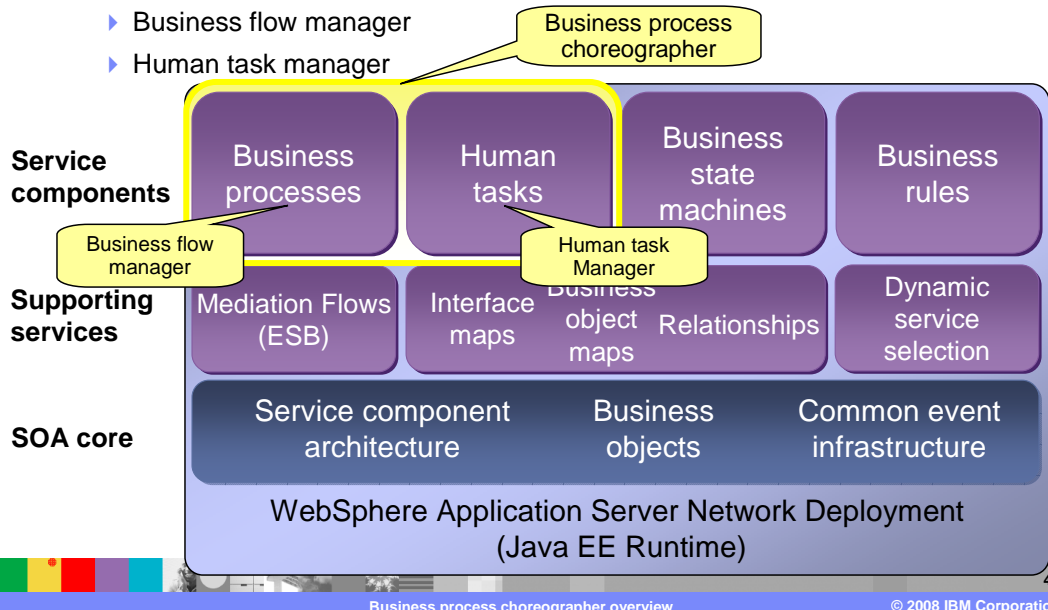
Agenda

- 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.
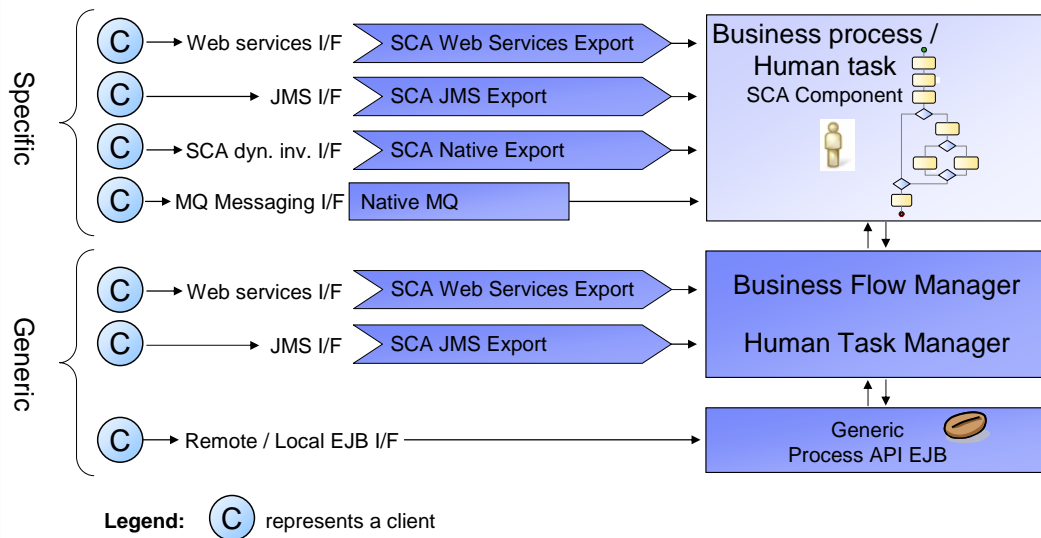
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Business process choreography components

- Business process choreographer included with WebSphere Process Server V6
    - ▸ Business flow manager
    - ▸ Human task manager

Business process choreographer

Service components

| Business processes | Human tasks | Business state machines | Business rules |

Business flow manager

Human task Manager

Supporting services

| Mediation Flows (ESB) | Interface maps | Business object maps | Relationships | Dynamic service selection |

SOA core

| Service component architecture | Business objects | Common event infrastructure |

WebSphere Application Server Network Deployment
(Java EE Runtime)

4

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The Business Process Choreographer feature of WebSphere Process Server version 6 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.

This is a graphical view of the various interaction patterns available for business processes and human tasks, which are packaged as SCA components and called over SOAP/HTTP or SOAP/JMS, JMS, or dynamically as an SCA component. All of these patterns fit well into a Service Oriented Architecture. These are referred to as specific interfaces since they are unique to each business process and human task. There are also generic interfaces for interacting with business processes and human tasks through the Business Flow Manager and Human Task Manager. The generic interfaces can be accessed using Web services, JMS or an EJB.

Main themes for business process choreographer

- Compliance with converged WebSphere business integration programming model
  - ▶ WSBPEL 2.0
  - ▶ Service component architecture (SCA) and business objects (service data object - SDO)

- Componentization – provision of two components
  - ▶ Business flow manager and human task manager

- Extended people support through *human task manager*

- BPC explorer based on reusable Java™ server faces (JSF) components for working with processes and tasks

- BPC observer based on common event infrastructure (CEI) supports operational monitoring of BPC components

There are a variety of new capabilities and themes for Business Process Choreographer in WebSphere Process Server version 6.   For business processes, many of the capabilities outlined in WSBPEL 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 are 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 version 6, 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 uses the Common Event Infrastructure (CEI) to monitor the entire business process life cycle.
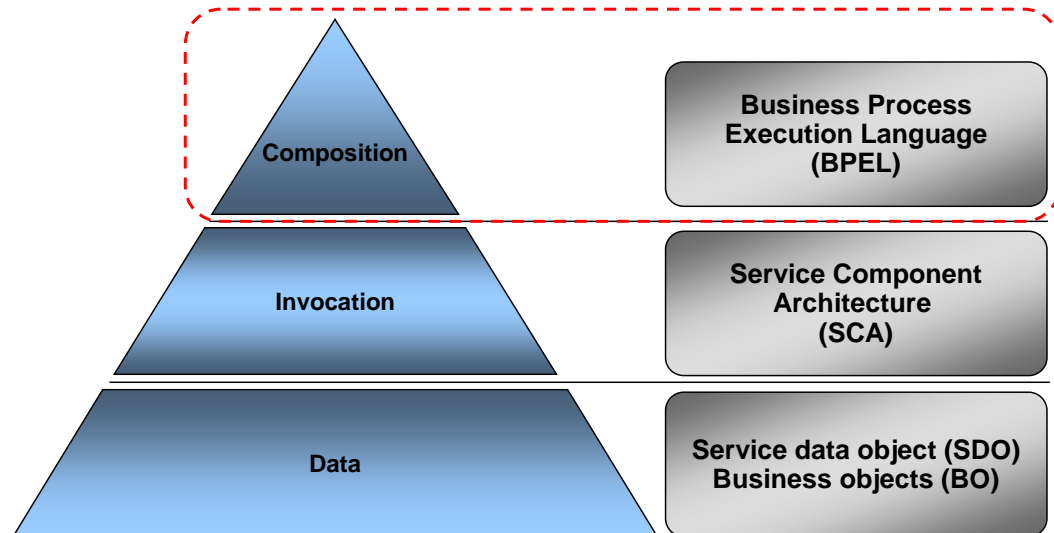
Section

Business flow manager overview

7

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

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Service oriented architecture: Triangle of truth

Triangle	Description
Composition	Business Process Execution Language (BPEL)
Invocation	Service Component Architecture (SCA)
Data	Service data object (SDO) Business objects (BO)

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 business process. These business processes are defined using WS-BPEL 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 service components
  - ▸ Order of execution
  - ▸ Sharing of data between components

- Business flow manager maintains the state between different service calls (synchronous and asynchronous)

9

WS-BPEL provides a variety of benefits in the composition of 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 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 version 6. In order to support business processes defined by WS-BPEL, WebSphere Process Server version 6 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
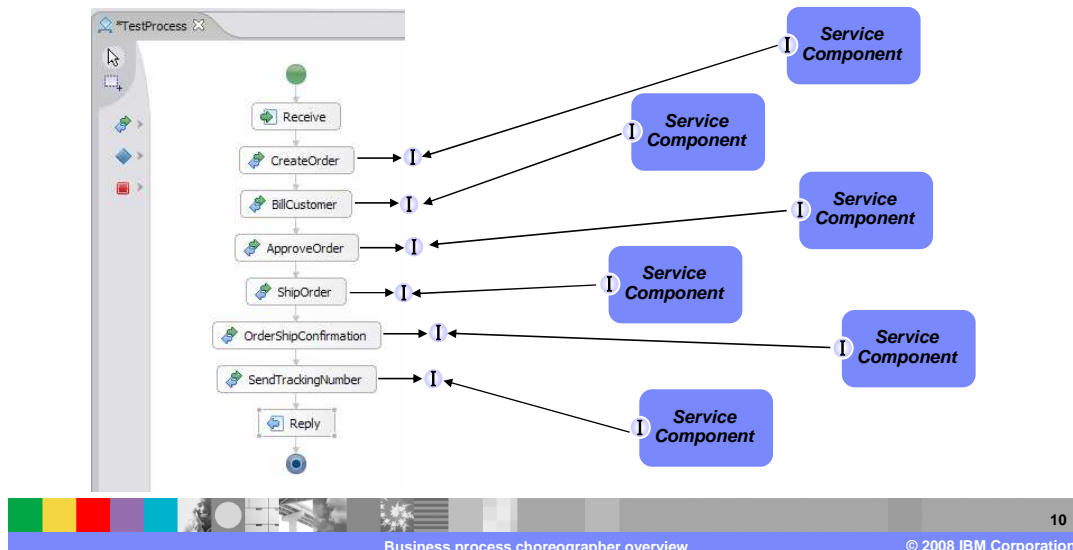
The role of WS-BPEL in the SOA programming model provided by WebSphere Process Server version 6 is further emphasized in this slide. WS-BPEL defines how individual service components are brought together. The interfaces of the service components are used to define a business process, and the definition 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 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.

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Business flow manager features

- Provides runtime container for running interruptible and non-interruptible BPEL processes

- Persists state of interruptible processes and supports resuming waiting processes

- Allows processes to be created, suspended, resumed

- Allows messages to be sent to existing process instances

- Provides APIs for interacting with business processes

- Supports business processes called as SCA components

11

WebSphere Process Server version 6 provides a variety of features in support of BPEL processes, including the Business Flow Manager, which can run interruptible or non-interruptible BPEL processes. For interruptible processes, the state of a process is persisted. Thus, if a process depends on an external entity before it can proceed, the state of the process can be saved and the process can be suspended. Then, when the external entity sends in a message to the waiting process, the state can be re-established and the process continues. The Business Flow Manager provides a set of public APIs that Web services, JMS or Java EE clients can use for interacting with business process instances, along with support for interacting with business processes as SCA components.

Business process development environment

For the development of business processes, WebSphere Integration Developer version 6 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, allows you to specify partners, variables, and correlation sets, which are 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. You can select the different activities and have the editor focus on the activity and the Properties view shows the appropriate details for the activity.
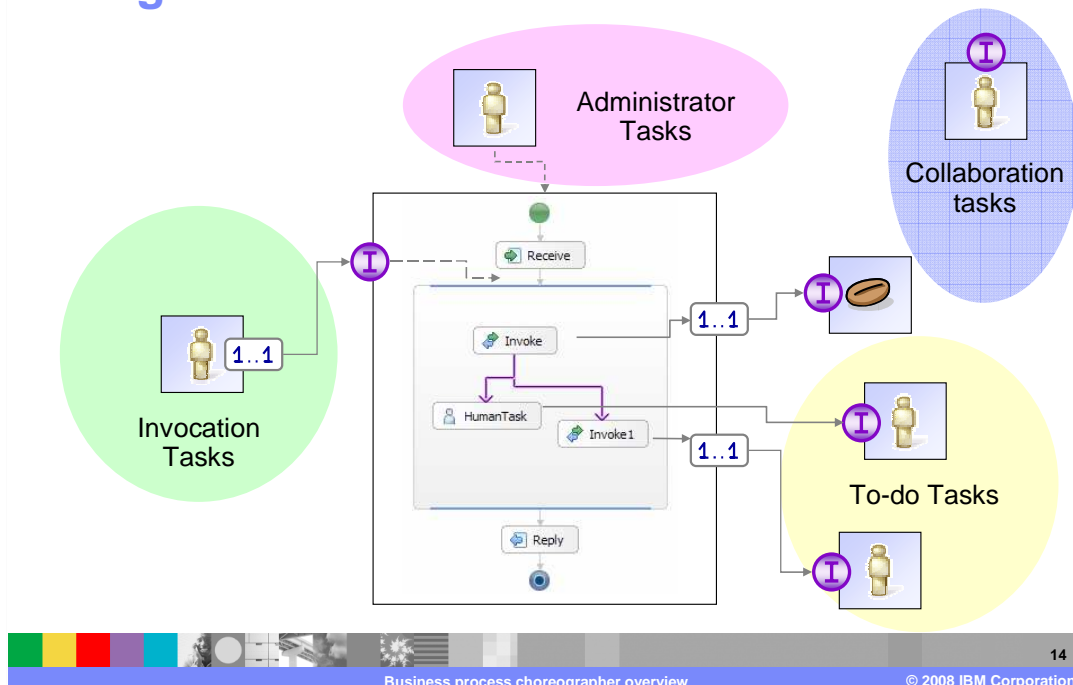
Section

Human task manager overview

13
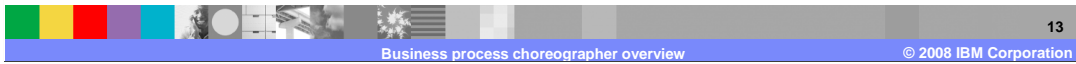
This section will provide an overview of the Human Task Manager.

Using different tasks

The Human Task Manager in WebSphere Process Server version 6 supports different types of human tasks and this slide illustrates how the different types of tasks can be used. When the system schedules work to be done by a person, that is referred to as a "to-do task". There are two implementations of to-do tasks. One is an inline task, which is directly wired within the business process. 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. An "invocation task" is used to refer to the scenario where a person starts a business process, by calling it as a service. When the process completes, a response is returned to the invocation task. "Collaboration tasks" refer to tasks that are created by a person and assigned to another person. You can see these are separate and not used in any way with other service components, although they do have an interface. Note that these terms changed in WebSphere Process Server version 6.1. Previously, to-do tasks were referred to as "participating tasks", invocation tasks were referred to as "originating tasks", and collaboration tasks were referred to as "purely human tasks". 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

- Allows work items to be assigned to a substitute when a person is absent

- Provides for e-mail notification of escalations

- Provides APIs for interacting with human tasks

- Supports human tasks called as SCA components

The Human Task 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. When a person is absent, the Human Task Manager can assign that person's work items to a specified set of substitutes. Escalations occur when a work item has not been claimed or completed within a specified amount of time, at which point e-mail notification can optionally be sent out. The Human Task Manager provides a set of public APIs that Web services, JMS or Java EE clients can use for interacting with human tasks, along with support for interacting with business processes as SCA components.

Human task editor

- Permission settings
  - ▸ Specify People Assignment and Parameters for Roles
- Client Interface
- Escalations and Notifications
- General Properties
  - ▸ Specify people directory
  - ▸ Restrict transfer abilities
  - ▸ Substitution policy
  - ▸ Calendar settings

When you create a task, whether it is a to-do, invocation, collaboration, or inline task in your BPEL process, you use the Human Task Editor in WebSphere Integration Developer version 6. Clicking the button at the top of the editor displays general settings in the Properties view. Details such as the duration of the task, starting priority, and JNDI™ name of the people directory 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 role, people assignment criteria and parameters are specified to indicate the individuals to be assigned the appropriate role. 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. You can also configure a portal client or an IBM Lotus Forms client in this section. The escalations settings section allows for different escalation chains to be specified based on the state of the task.

Section

Business process choreographer administration and monitoring
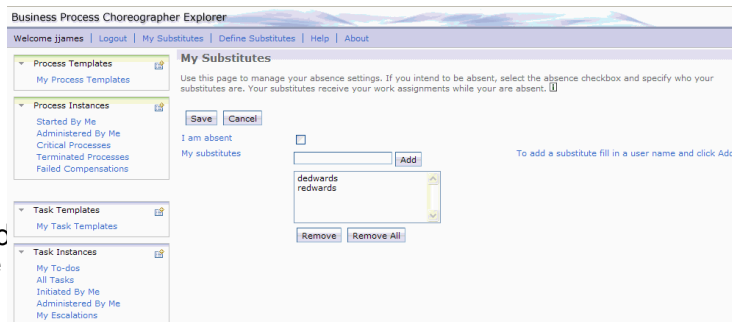
17

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

Administering 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 https://localhost:9443/bpc

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

Business Process Choreographer Explorer

Welcome jjames | Logout | My Substitutes | Define Substitutes | Help | About

Process Templates
My Process Templates

Process Instances
Started By Me
Administered By Me
Critical Processes
Terminated Processes
Failed Compensations

Task Templates
My Task Templates

Task Instances
My To-dos
All Tasks
Initiated By Me
Administered By Me
My Escalations

My Substitutes

Use this page to manage your absence settings. If you intend to be absent, select the absence checkbox and specify who your substitutes are. Your substitutes receive your work assignments while your are absent.

Save   Cancel

I am absent
My substitutes   Add

To add a substitute fill in a user name and click Add.

dedwards
redwards

Remove   Remove All

18

Business process choreographer overview

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The BPC Explorer is an administrative client application provided with WebSphere Process Server for managing business processes and human tasks. It 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 operations such as viewing, claiming, completing, transferring, and deleting tasks. You can also manage people's absence and substitutes settings. 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 business process instances
  - Processes
  - Process activities
  - Work items
- The BPC observer is shipped with WebSphere Process Server
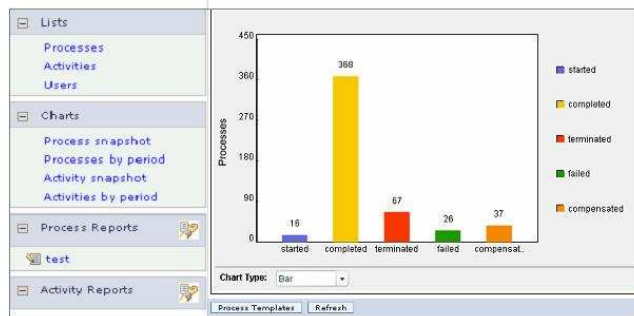
Business processes can be monitored in a variety of ways. One way is to use WebSphere Business Monitor, which can display business process performance through a variety of means and provides the ability to send alerts when certain key performance indicators are not met or are exceeded. While WebSphere 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 version 6 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.

Section

Summary

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 version 6 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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