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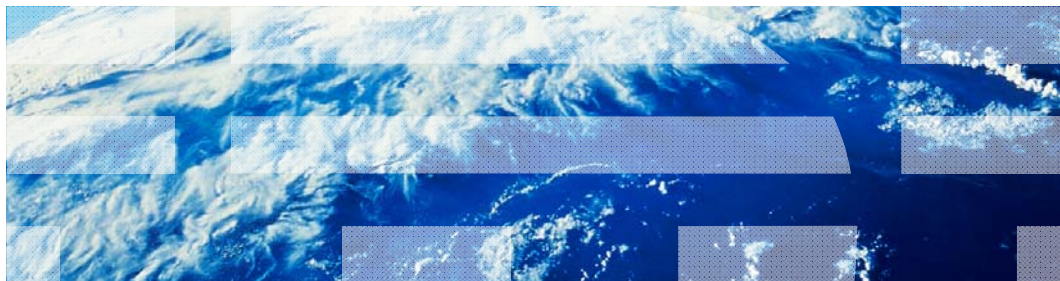# Business Process Management
IBM Business Process Manager V8.0.1

Enterprise Content Management integration – inbound content events

This presentation provides the details of new Enterprise Content Management (ECM) support added in Business Process Manager V8.0.1. Support has been added for handling inbound events to BPM from an ECM repository. Additionally, new ECM operations have been added.

Agenda

- ECM inbound event support
  – Overview
  – Modeling tasks for ECM inbound events
  – Administrative tasks
  – New ECM business objects
- New ECM operations

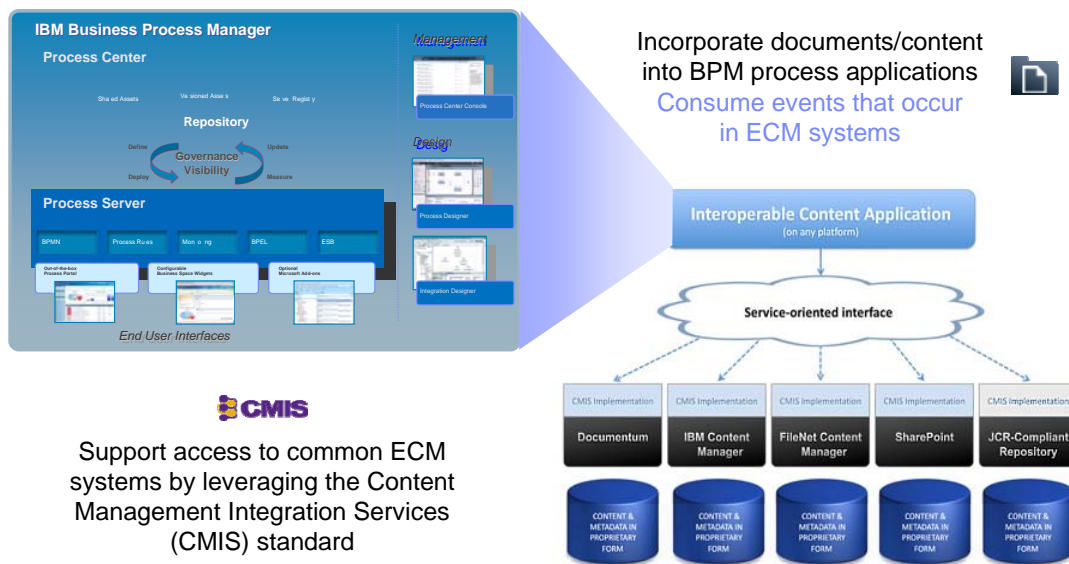Enterprise Content Management integration

The major enhancement in BPM V8.0.1 for ECM integration is the addition of support for inbound events. The presentation provides an overview of the ECM inbound event support and describes how to model tasks in BPM to handle them. The administrative tasks needed to be performed at the ECM repository are explained and the new business objects introduced to support the ECM inbound events are described.

Additionally, a couple of new outbound operations from BPM to an ECM repository are added in this release.

Section

ECM inbound events overview

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This section provides an overview of ECM inbound content events in BPM V8.0.1.

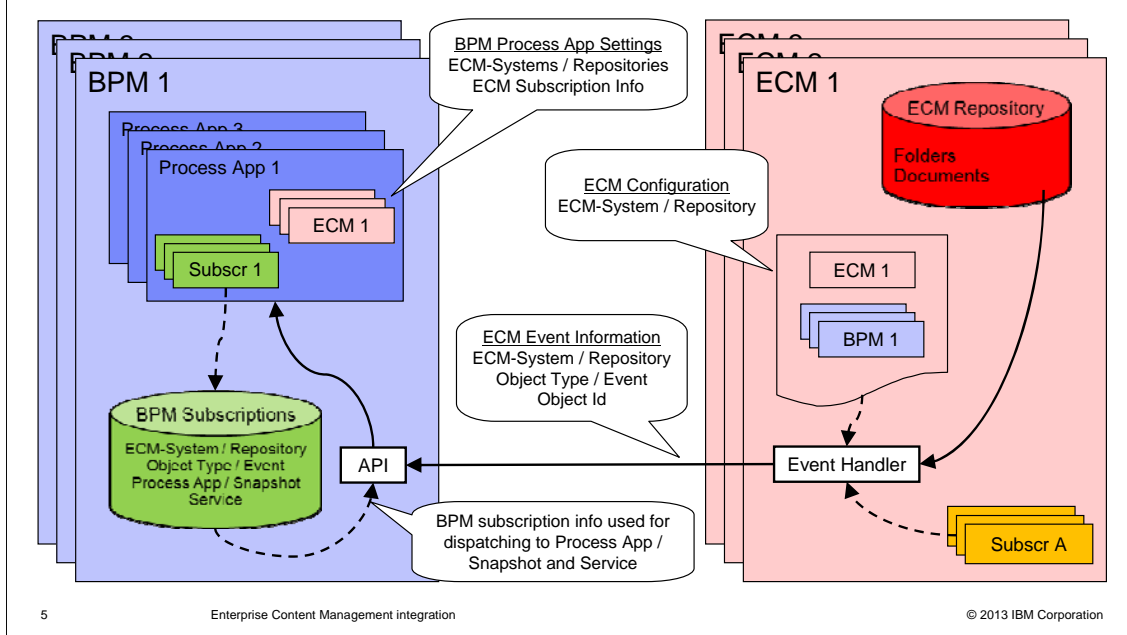Overview of integration with Enterprise Content Management

This picture provides an architectural overview of the integration of Enterprise Content Management with Business Process Manager. In BPM V8.0, the focus was on the use of the CMIS APIs to incorporate content documents contained in an ECM repository with BPM process applications. The use of CMIS potentially allows multiple different ECM repositories to be supported, such as FileNet® P8 Content Manager, IBM Content Manager, Microsoft SharePoint and EMC Documentum.

With BPM V8.0.1, support is now provided enabling the consumption of events that occur in a repository.

ECM content events overview

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This diagram provides an overview of how ECM content events interact with IBM BPM. In your Process Designer, there are BPM process app settings which define the ECM repositories used by the process app. For each repository defined for a process app there can be multiple subscriptions for each event. By creating and configuring a subscription, you can obtain information about document and folder events that occur on an ECM server. In an ECM repository, you configure event handlers to notify the IBM BPM system of the events by calling the appropriate IBM BPM APIs. The BPM subscription information is then used for dispatching to the process app snapshot and service.

ECM content events and event types

ECM Event (abstract name)	ECM Object	IBM FileNet Content Manager	Microsoft SharePoint	IBM Content Manager
Check Out Cancelled	Document	CancelCheckoutEvent	ItemUncheckedOut	(not supported)
Checked In	Document	CheckinEvent	ItemCheckedIn	Checkin
Checked Out	Document	CheckoutEvent	ItemCheckedOut	Checkout
Class Changed	Folder, Document	ChangeClassEvent	(not supported)	(not supported)
Classify Completed	Document	ClassifyCompleteEvent	(not supported)	(not supported)
Created	Folder, Document	CreationEvent	ItemAdded	Create item
Deleted	Folder, Document	DeletionEvent	ItemDeleted	Delete item
Filed	Folder	FileEvent	(not supported)	Add item to folder
Frozen	Document	FreezeEvent	(not supported)	(not supported)
Locked	Folder, Document	LockEvent	(not supported)	(not supported)
Publish Completed	Document	PublishCompleteEvent	(not supported)	(not supported)
Publish Requested	Document	PublishRequestEvent	(not supported)	(not supported)
Security Updated	Folder, Document	UpdateSecurityEvent	(not supported)	(not supported)
State Changed	Document	ChangeStateEvent	(not supported)	(not supported)
Unfiled	Folder	UnfileEvent	(not supported)	Remove item from folder
Unlocked	Folder, Document	UnlockEvent	(not supported)	(not supported)
Updated	Folder, Document	UpdateEvent	ItemUpdated	Update item
Version Demoted	Document	DemoteVersionEvent	(not supported)	(not supported)
Version Promoted	Document	PromoteVersionEvent	(not supported)	(not supported)

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Here is the table showing ECM event types supported by IBM BPM, and the corresponding events on each of the different ECM systems. You can use the table to identify the corresponding events that you need to subscribe to, and the names that are used in Process Designer to identify the same events in IBM BPM.

ECM content events and BPMN event types
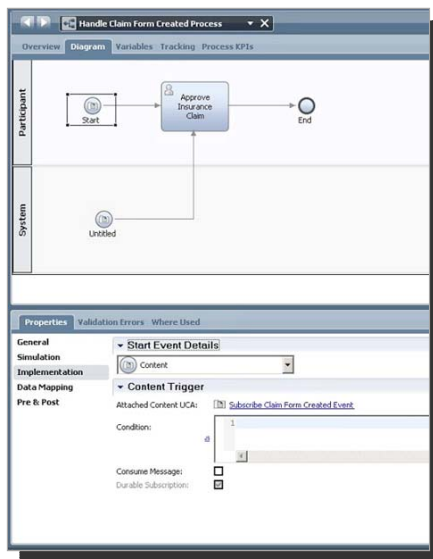
- Enables processes modeled in IBM BPM that instantiate, continue or end based on a content event
  – For example - New loan application document received, updated information (metadata) for an insurance claim, deletion of a mortgage document
- New BPMN event definition "Content Event"
- All BPMN event types are supported
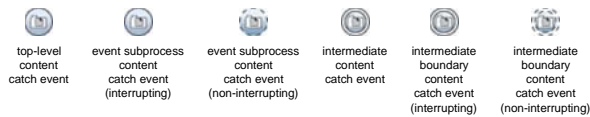
The content events are used to catch and throw interactions with an ECM system. Business processes can instantiate, continue, or end based on the type of content event, such as the creation, modification, or deletion of a document. A new BPMN event definition "Content Event" has been added and is separate from message type events.

All of BPMN event types are supported. You can add one of several types of content events, such as a Start event, Intermediate event, Boundary event, or Event Subprocess Start event.

Section

Modeling tasks for ECM inbound events

Enterprise Content Management integration

This section provides details on how to perform modeling tasks for ECM inbound events. You use Process Designer to model the tasks of creating and configuring components that can detect and respond to content events.

Modeling tasks for ECM content events

- Perform modeling tasks of creating and configuring components
  - Receive information about inbound content events from ECM systems
  - Detect and responds to the content events
  - Components are created as a result
    1. An event subscription
    2. An attached service for the event subscription
    3. A content UCA to trigger a content event
    4. A content event for BPD

- Most of these required components are more automated

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You need to create several components in Process Designer in order to detect and respond to document and folder events that are produced when content changes occur on an ECM server. You need an event subscription for the process application, an attached service for the event subscription, a Content Undercover Agent (UCA) and a content event for the business process definition (BPD). When a subscribed event occurs, the attached service invokes the UCA which triggers a content event in the BPD.

The next few slides describe an end-to-end approach in creating these required components. It is generally recommended to create all of the components in the order in which they are listed in the slide. This is a simpler approach than creating each component separately on a stand-alone basis because it automatically creates some resources that you otherwise need to create manually.

Defining ECM event subscriptions in Process Designer

1 Select subscription target (object type)

2 Select event type (ECM system dependent)

3 Select or create new service

The first step in the end-to-end approach is to create an event subscription implementation. In the event subscription, select the subscription target, including ECM server, event class (document or folder), and object type. The object type defines the object identity of the folder type or document type. The drop down list for the event type reflects the ECM system and event class that are selected. The last step is to attach a service for the event subscription. More details about the attached service are discussed on the next slide.

Add attached service and content UCA for event subscription (1 of 2)

The next step is to create a general system service or an integration system service.

The first option, a general system service, directly invokes the Content UCA without first querying the ECM server for additional information. However, you can create an integration service that will first query the ECM server for additional information before determining whether a UCA should be invoked. In this case, select the second option "Create a service that queries the ECM server before invoking a Content UCA."

If you choose to create a general system service, it is already fully implemented and consists of a Start event, an End event, and an Invoke UCA step that will invoke the new Content UCA. However, if you chose to create an integration service, it is partially implemented and it consists of several components, such as an Integration step, a decision gateway step, and an Invoke UCA step to invoke the Content UCA. For an integration service, select the decision gateway in the canvas and open the Properties tab and the Implementation pane, then define the decision conditions for the decision gateway. Other than perhaps renaming the labels of the components, this is all that is required to complete the implementation of the integration service.

For both a general system service and an integration service, the signature of both the service and the Content UCA includes an input named contentEvent with a business object type of ECMContentEvent. More detail about this business object type is discussed in the next section.

Add attached service and content UCA for event subscription (2 of 2)

As mentioned, you must create and configure a Content UCA that works with your event subscription to obtain information about document or folder events on an ECM server. If you have created an attached service for the event subscription, a content UCA was also automatically created. It has the same name as the service. A content UCA is used to initiate a BPM Start or Intermediate event when specific content changes occur on an ECM server. It is conceptually similar to a message UCA, but it has a specialized Content marker to differentiate it from a message UCA.

In the content UCA editor, beside the Implementation area, you can select either Variable or Service. A variable implementation is used to pass events directly from the UCA to the BPD. By comparison, use a service implementation to process information about events by adding business logic or decisions.

Last but not least, you can add one of several types of content events to your BPD, such as a Start event, Intermediate event, Boundary event, or Event Subprocess Start event.

Section

Administrative tasks for ECM inbound events

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This section provides details on how to perform administrative tasks for ECM inbound events. You need to perform the administrative tasks of developing and installing an event handler on your ECM system.

ECM event handler (ECM product-specific)

- ECM subscriptions set up by ECM administrator

- ECM Event Handler logic
  - Read static endpoint/authentication info
    - BPM callback endpoint addresses
    - BPM callback authentication information
  - Call BPM send event API

- IBM FileNet Content Manager
  - Event handler is provided with IBM BPM product
  - Configure the event handler to work in FileNet Content Manager

- Other than IBM FileNet Content Manager
  - Must write custom event handler
  - Required to be familiarize with the ECM system and its framework for implementation and the configuration of an event handler

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In order to obtain information about content events that occur on an ECM server, you must install an event handler on the ECM system. This task is typically done by an ECM administrator. The event handler notifies the IBM BPM system of the events by calling the appropriate IBM BPM APIs. These events can be received by processes on your IBM BPM systems.

For most ECM systems, you need to develop and install an event handler. If you are using IBM FileNet Content Manager, an event handler is already provided and you only need to install it. If you do not use FileNet Content Manager, you must write your own event handler for your ECM system. This requires you to be familiar with the ECM system and its framework for implementing and configuring an event handler.

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Configure event handler in IBM FileNet Content Manager

- Event Handler is for IBM FileNet Content Manager V5.1

- Copy the event handler to any suitable location on FileNet server
  - Located in IBM BPM server
    - *Install_root/BPM/EventHandlers/ECM/FileNet/filenet-bpm-event-handler-51.jar*

- Create the connection information document
  - Create a properties file on FileNet server
    - *bpm.server.username=bpm_user*
      bpm.server.password=bpm_user_password bpm.server.uri=http\://bpm_server_name\:9080
  - Store the properties file by creating new document
  - Make a note of the document ID (need it at later time)

- Create a subscription and bind it to the event handler
  - Add subscription to the document class or folder class to receive event notification
    - Select event actions from the Available Events list
    - Create event action for the bpm event handler
      - Java Class Name – *com.ibm.bpm.integration.filenet.BPMEventHandler*
    - Locate and select the event handler JAR file
  - Set the *User Strings* property of the subscription to the document ID of the property file

- Define a process to consume the ECM event (optional)

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This slide describes steps in configuring an event handler in IBM FileNet Content Manager. This event handler is specifically for IBM FileNet Content Manager V5.1. It is shipped with the IBM BPM product and is located in the BPM server at the location specified in the slide. First, you need to copy the event handler jar to any suitable location in your FileNet system. In your FileNet server, create a properties file providing the BPM server URL and username/password. You can then store the properties file in the FileNet server by creating a new document and attaching the properties. Make a note of the document ID as you will need it at a later time.

The next step is to create a subscription and bind it to the event handler. Add the subscription to the document or folder class that you want to receive the event notification. Select event actions from the Available Events list and create an event action for the BpmEventHandler by pointing to the location of the event handler jar. Finally, set the User Strings property of the subscription to the document ID of the property file.

Section

New ECM business objects

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This section provides details about new content business objects provided to support context event integration.

ECM business objects

- Content business objects
  - Are provided as part of the Content Management Toolkit
  - Represent entities in an ECM repository
  - Used as parameter types and return types in ECM operations
  - Complex type
  - Simple Type
    - ECMID
- In V8.0.1, new business objects for ECM events
  - ECM Content Event
  - ECM Event Class
  - ECM Event Type
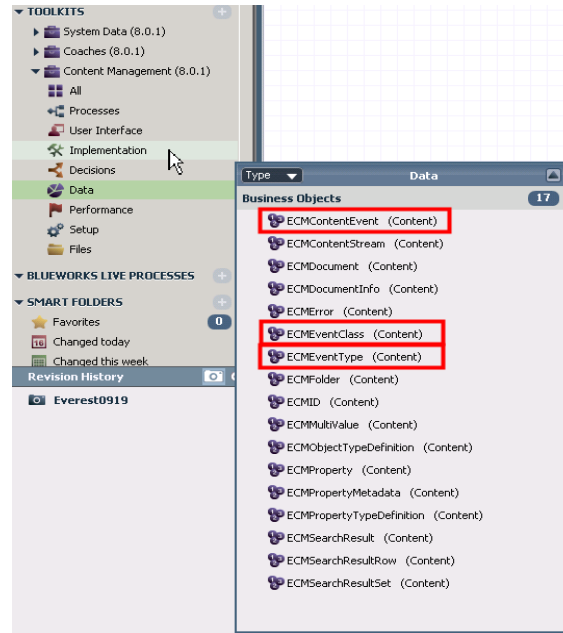
Content business objects are located in the Content Management Toolkit which is separate from the System Toolkit. They represent entities in an ECM repository, such as folders and documents. They can be used as parameter and return types in ECM operations. See the V8.0 presentation for a more complete description of content business objects and their usage.

In V8.0.1, three new business objects are added to support ECM events. They are ECMContentEvent, ECMEventClass, and ECMEventType.

ECM content event (folder events and document events)

ECMContentEvent	
String serverName	Name of the ECM server
ECMID repositoryId	Object identity of the repository
ECMEventClass eventClass	"Document" or "Folder"
ECMID objectTypeId	Object identity of the folder type or document type
ECMEventType eventType	Type of event that occurred on the folder or document
ECMID objectId	Object identity of the folder or document on which the event occurred

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The ECMContentEvent business object is used to pass generic ECM event data to an event subscription service and Content UCA. When an event subscription is triggered, an ECMContentEvent business object is passed to the service that is attached to the event subscription. In addition to the data included in the ECMContentEvent business object, you can use a content integration step in the service to retrieve more information about the object in the ECM server, such as additional properties for the specified document or folder.

ECMEventClass business object

- Simple type derived from the String base type
  - Enumeration values
    - "Document"
    - "Folder"

The ECMEventClass business object is a simple type derived from the String base type. It is an enumeration with values of either "Document" or "Folder".

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- Simple type derived from the String base type
  - Enumeration values
    - "Check Out Cancelled"
    - "Checked In"
    - "Checked Out"
    - "Class Changed"
    - "Classify Completed"
    - "Created"
    - "Deleted"
    - "Filed"
    - "Frozen"
    - "Locked"
    - "Publish Completed"
    - "Publish Requested"
    - "Security Updated"
    - "State Changed"
    - "Unfiled"
    - "Unlocked"
    - "Updated"
    - "Version Demoted"
    - "Version Promoted"

Event Class:	Document
Object Type:	CarInsuranceClaim
Include Subtypes:	☑

Event Type:	Created
Attached Service:	Checked In
	Checked Out
Test Subscription...	Check Out Canceled
	Class Changed
	Classify Completed
▼ Exposing	Created
	Deleted
Expose Event Subscrip	Frozen
	Locked
	Publish Completed
	Publish Requested
	Security Updated
	State Changed
	Unlocked
	Updated
	Version Demoted
	Version Promoted

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The ECMEventType business object defines the type of event that occurred on the folder or document.

It is a simple type derived from the String base type and is an enumeration with values shown on the slide. These are the IBM BPM supported event types for both document and folder classes.

New ECM operations

Enterprise Content Management integration

This section provides details about two additional content operations available in the V8.0.1 release.

## Introduction to content operations

- Content operations review:
  – Interact with folders, documents and associated properties in an ECM server
  – Are implemented using CMIS web services
  – Are step types within Human Services, Integration Services and Ajax Services

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This slide provides a review of content operations used in IBM BPM. Content operations are used to interact with folders, documents, and associated properties in an ECM server. Each operation requires that variables be mapped to the input and output fields, which can be done manually or by using the auto-map function. The underlying implementation of the context operations uses CMIS web services. The operations can be used within human services, integration services, and Ajax services.

ECM operations

New in 8.0.1

Server/Repository operations
- Get Type Descendants
- Get Type Definition

Search operation
- Search

Folder operations
- Create Folder
- Get Folder
- Get Folder Tree
- Get Documents In Folder
- Get Folder By Path
- Delete Folder
- **Move Folder**

Document operations
- Create Document
- Get Document
- Update Document Properties
- Get Document Content
- Set Document Content
- Add Document To Folder
- Remove Document From Folder
- Move Document
- Delete Document
- **Copy Document**

Document version handling operations
- Get All Document Versions
- Check Out Document
- Cancel Check Out Document
- Check In Document

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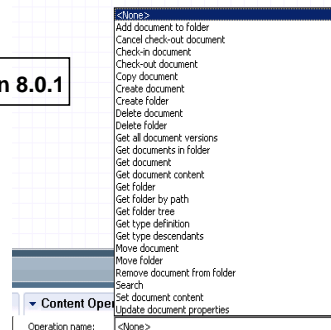
This slide shows the complete list of ECM operations available in IBM BPM V8.0.1. The two new operations are Move Folder and Copy Document, which are highlighted in blue. You can view these operations from the Implementation tab in the Properties view. The Move Folder operation allows you to move a folder to a new target location. The Copy Document operation copies a document to a new location with its default properties.

Folder/Document operations

Operation	Input	Output	Implementation Notes
Move Folder	String serverName ECMID folderId ECMID targetFolderId ECMID sourceFolderId	(none)	CMIS moveObject
Copy Document	String serverName ECMID documentId ECMID parentFolderId [String name] [String versioningState] [ECMProperty[] properties]	ECMID documentId	CMIS createDocumentFrom Source

This table describes the input and output mappings for the Move Folder and Copy Document operations.

Section

Summary

Enterprise Content Management integration

This section provides a summary of the ECM integration support added in BPM V8.0.1.

Summary

- Introduced the ECM support added in BPM V8.0.1
  - ECM inbound event support
    - Overview
    - Modeling tasks for ECM inbound events
    - Administrative tasks
    - New ECM business objects
  - New ECM operations

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This presentation provided you with a look at the enhancements in BPM V8.0.1 for ECM integration. The major addition is the support for inbound events. You were given an overview of the ECM inbound event support and learned how to model tasks in BPM to handle the inbound events. The administrative tasks that need to be performed at the ECM repository were explained. And the new business objects introduced to support the ECM inbound events were described.

Additionally, descriptions of a couple of new outbound operations from BPM to an ECM repository were provided.

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