



## Using ERPConnect Services with Nintex Workflow

March 2013



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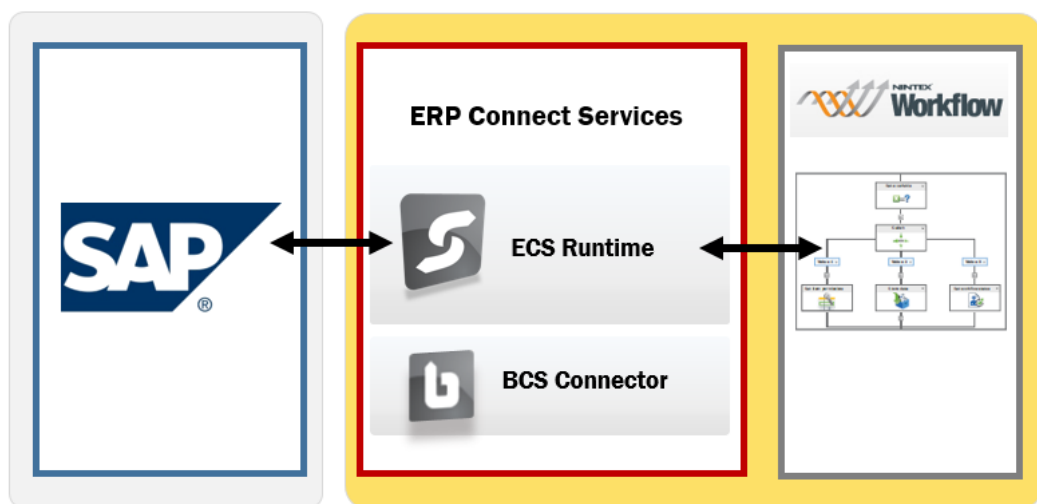
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# 1

## Introduction

ERPConnect Services simplifies the integration of SAP data into your SharePoint environment. Customers that use Nintex Workflow in their SharePoint environment can utilize ERPConnect Services to access SAP data in their workflow scenarios. This document provides you with an overview and specific examples of how Nintex Workflow can work together with ERP Connect Services in scenarios that require SAP data access.



## 2

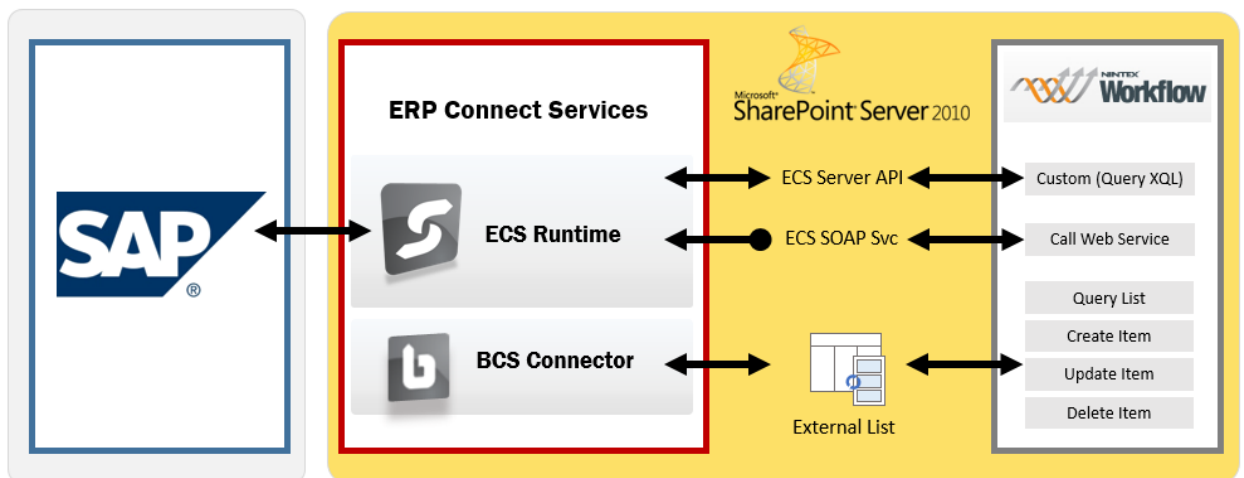
## Integration Options

With ERP Connect Services, access to SAP data in a SharePoint environment is provided in three ways:

### 2.1 Using Business Connectivity Services (BCS) and External Lists

With the BCS Connector Designer which is part of ERPConnect Services you can easily create an external content type for SAP data without the need to write any code. You can publish the content type directly to the SharePoint BCS metadata store and create an external list with SAP data in SharePoint. The connectivity between the external list and the SAP system is enabled through ERPConnect Services and can support create, read, update and delete (CRUD) operations on SAP data.

Nintex Workflow offers the standard workflow actions *Query List*, *Create Item*, *Update Item* and *Delete Item* that can be used on SharePoint external lists.



### 2.2 Using the SOAP service provided by ERPConnect Services

The ECS runtime provides SOAP (and REST) service endpoints which can be used by an application to access SAP data.

Nintex Workflow offers the standard workflow actions *Call Web Service* (for SOAP calls) and *Web Request* (for SOAP and REST service requests).

An example for how the Call Web Service action can be used with ECS is outlined below. The formatting of the data in the service request XML (or JSON) can be somewhat difficult and may require an HTTP monitoring tool such as Fiddler. Nintex Workflow includes another standard action Query XML which can be used to parse the results of a web service call.

## **2.3 Using the Server API provided by ERPConnect**

This option eliminates the task of constructing the service request in the workflow. Using the Nintex Workflow SDK, a custom action can be developed which can work directly with the ERPConnect Services Server API and hide the service request details from the user. By specifying an XQL (Extract Query Language) statement which is built into ERPConnect Services, SAP objects including tables, function modules, or cubes can be queried using an SQL-like syntax.

# 3

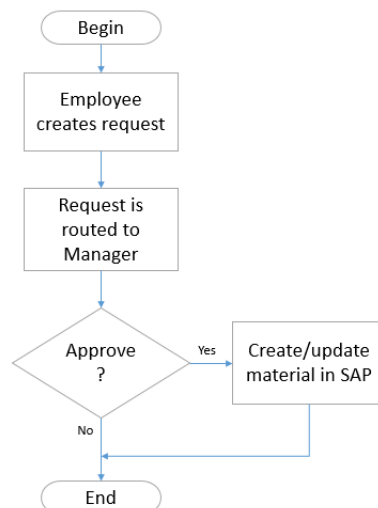
## A Simple Workflow Scenario

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The following steps describe how you can configure a simple workflow scenario that enables material master data maintenance in SAP. In this scenario, the workflow functionality is supported by Nintex Workflow and the data access to SAP is enabled by ERPConnect Services.

In the scenario, an Employee navigates to a SharePoint site and fills out a request form to create or update a material master record in SAP. The request is then routed to a Manager for approval.

If the Manager approves, the material master record is created/updated in SAP.



### 3.1 Step 1: Create the external content type for SAP material data

In the *BCS Connector Designer* which is part of *ERPConnect Services*, you first define the connections to your SharePoint and SAP systems.

You will then create a new Entity. Select the SAP table or function module that you want your entity to be based on, in this example we use custom function modules (Z modules) that simplify the access to material data in SAP.

The screenshot shows the BCS Connector Designer window with the following configuration:

- SAP Connection:**
  - Model: SAP Material Model
  - LOB System: SAP Material System
  - LOB System Instance: SAP Material System Instance
- Entity:** Material
- Namespace:** BCSConnector.SAP
- Version:** 1.0.0.0
- Est. Instances:** 1000
- Object Type:** Function
- Object:** Z\_ECS\_MATERIAL\_GET\_DETAIL
- Crawlable:** ☐
- Custom Function:**
- Entity Properties:**

ID	Field	Type	Property	Display Name
<input checked="" type="checkbox"/>	BASE_UOM	System.String	BASE_UOM	UnitofMeasure
<input checked="" type="checkbox"/>	OLD_MAT_NO	System.String	OLD_MAT_NO	OldMaterialNumber
<input checked="" type="checkbox"/>	IND_SECTOR	System.String	IND_SECTOR	IndustrySector
<input checked="" type="checkbox"/>	MATL_TYPE	System.String	MATL_TYPE	MaterialType
<input checked="" type="checkbox"/>	MATDESC1	System.String	MATDESC1	MaterialDescription
- Entity Operations:**
  - Name
  - Read Data Record
  - Read Data
  - Create Data Record

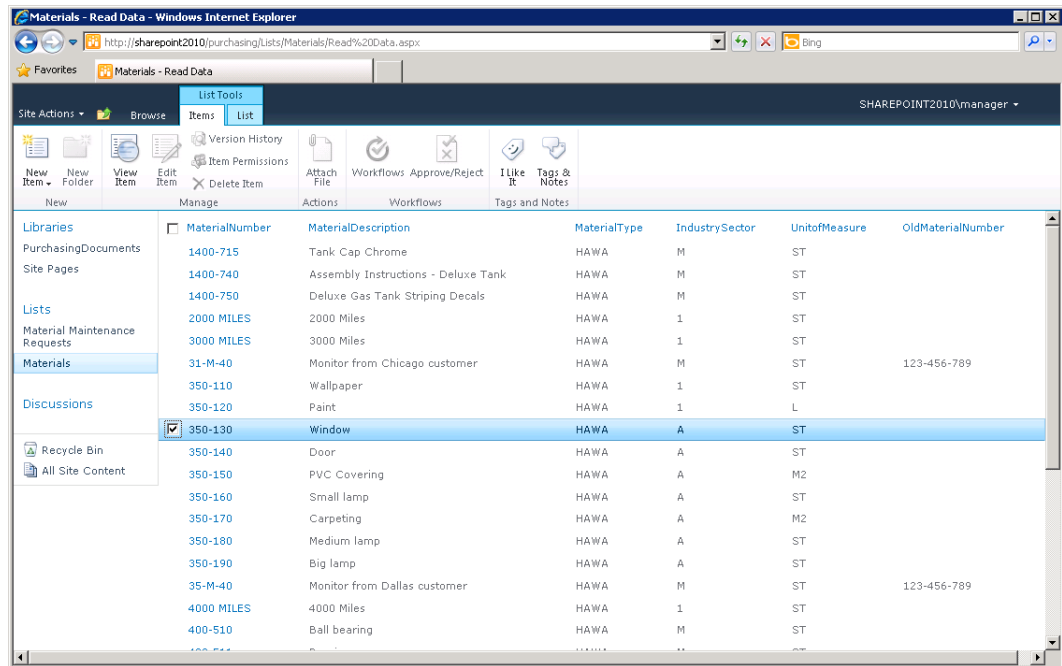
At the bottom, the status bar shows: SharePoint-Site: http://SHAREPOINT2010/Purchasing | SAP-System: ecc.theobald-software.com (UNICODE) Modified

Add the desired operations for the entity, in this example we will add the *Read Data Record*, *Read Data* and *Create Data Record* operations.

Save the model to SharePoint.

## 3.2 Step 2: Create and verify the external list in SharePoint

Using the *BCS Connector Designer*, create a new external list on your SharePoint site, based on the SAP material entity. Navigate to the SharePoint list and make sure data is displayed and that the *View Item* and *New Item* buttons are active on the ribbon.



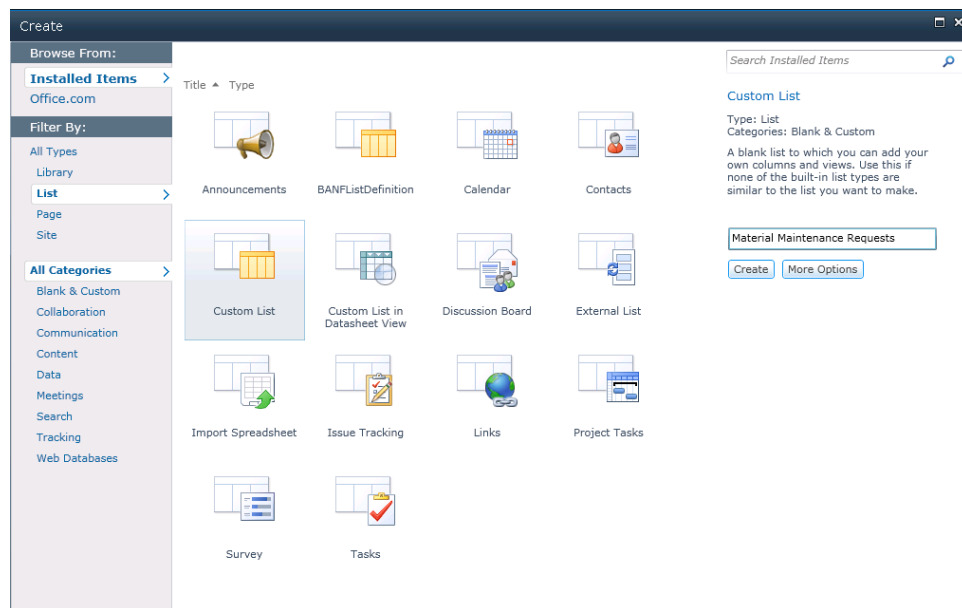


### 3.3 Step 3: Create a SharePoint list for Material Maintenance Requests

In our scenario, the *Material Maintenance Request* list will be used to capture a request to create a new material record in SAP.

Create the list with the following properties:

- *Type* = Custom List
- *Name* = Material Maintenance Requests



Add the following columns to the list:

Column	Type
<b>Priority</b>	Choice: High (1), Normal (2), Low (2)
<b>Material Number</b>	Single line of text
<b>Material Name</b>	Single line of text
<b>Material Type</b>	Single line of text
<b>Industry</b>	Single line of text
<b>Unit</b>	Single line of text
<b>Old Material Number</b>	Single line of text
<b>Due Date</b>	Date only
<b>Notes</b>	Multiple lines (3) of text

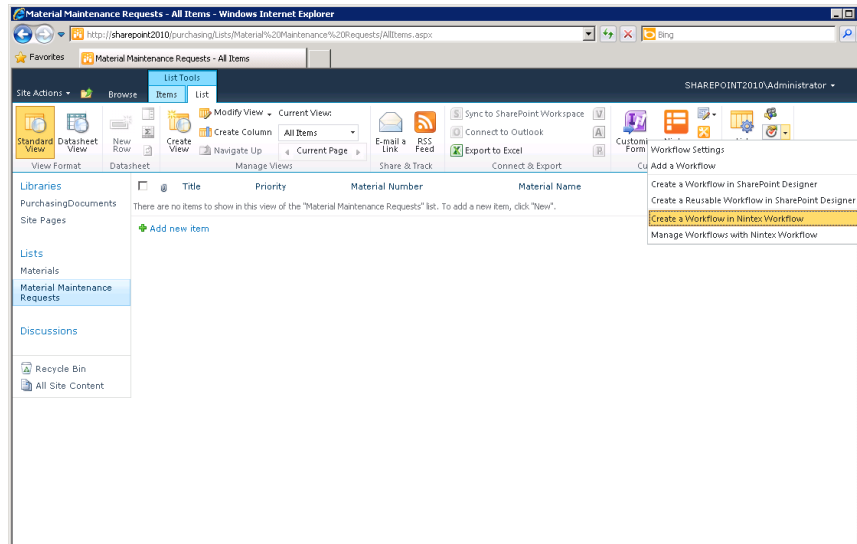
#### Columns

A column stores information about each item in the list. The following columns are currently available in this list:

Column (click to edit)	Type	Required
<a href="#">Title</a>	Single line of text	✓
<a href="#">Priority</a>	Choice	
<a href="#">Material Number</a>	Single line of text	✓
<a href="#">Material Name</a>	Single line of text	✓
<a href="#">Material Type</a>	Single line of text	
<a href="#">Industry</a>	Single line of text	
<a href="#">Unit</a>	Single line of text	
<a href="#">Old Material Number</a>	Single line of text	
<a href="#">Due Date</a>	Date and Time	
<a href="#">Notes</a>	Multiple lines of text	
<a href="#">Created By</a>	Person or Group	
<a href="#">Modified By</a>	Person or Group	

### 3.4 Step 4: Create a Nintex Workflow

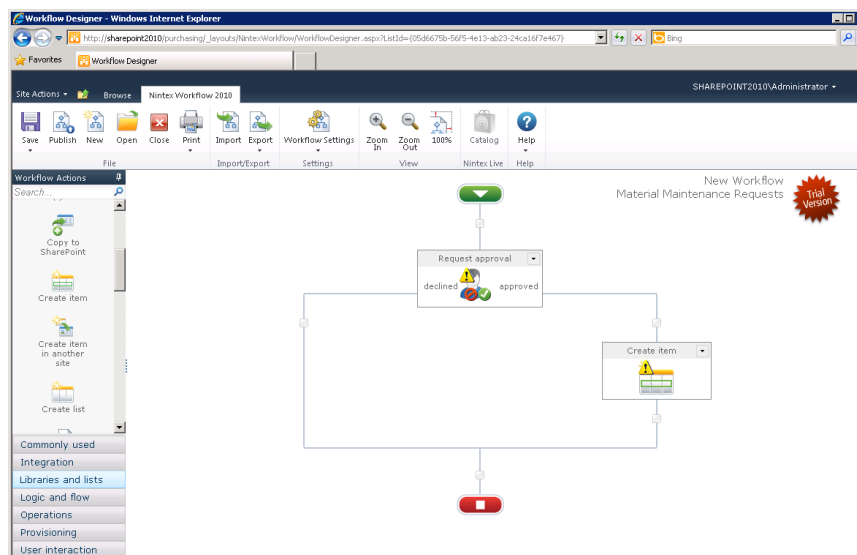
Navigate to the *Material Maintenance Requests* list and under *List -> Settings* select *Create a Workflow in Nintex Workflow*



Select *Blank* as the workflow template.

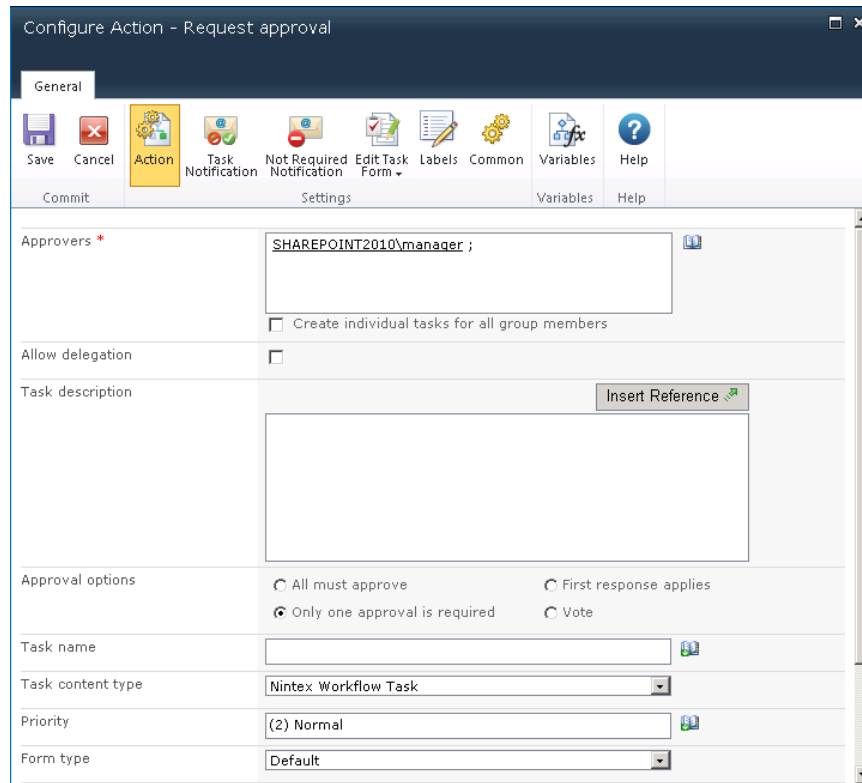
Add two actions to the workflow as shown below:

- *Request approval*
- *Create item*



Configure the *Request approval* action with the following properties:

- *Approvers* = SHAREPOINT2010\manager
- *Approval options* = Only one approval is required



Configure Action - Request approval

General

Save Cancel Action Task Notification Not Required Notification Edit Task Form Labels Common Variables Help

Commit Settings Variables Help

Approvers \*

☐ Create individual tasks for all group members

Allow delegation ☐

Task description

Approval options

☐ All must approve ☐ First response applies

☒ Only one approval is required ☐ Vote

Task name

Task content type

Priority

Form type

*Save* the workflow action.

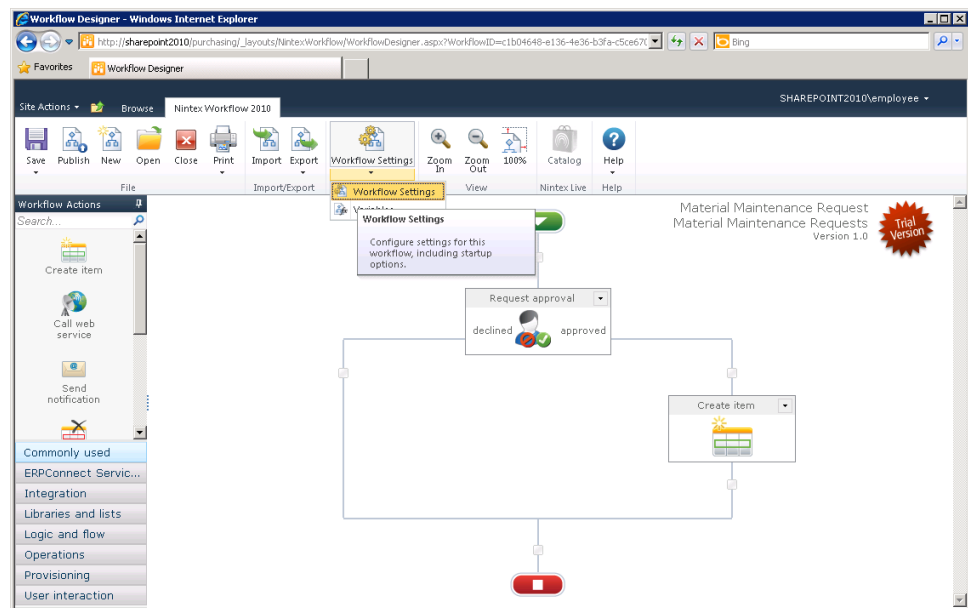
Configure the *Create Item* action:

Add the fields that are required to create a new item to the action. Using the *Insert Reference* button next to each field, you can select the *Item Properties* of the *Material Maintenance Request* list as shown below.

Field	Value	Reference	Insert Reference	Close
MaterialNumber	Value	Material Number		X
MaterialDescription	Value	Material Name		X
MaterialType	Value	Material Type		X
IndustrySector	Value	Industry		X
UnitofMeasure	Value	Unit		X
OldMaterialNumber	Value	Old Material Number		X

Save the workflow action.

From the workflow ribbon, select *Workflow Settings* -> *Workflow Settings*



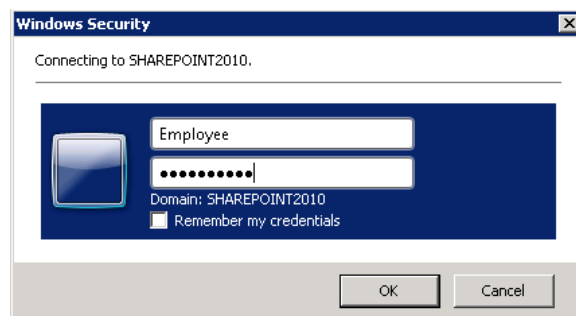
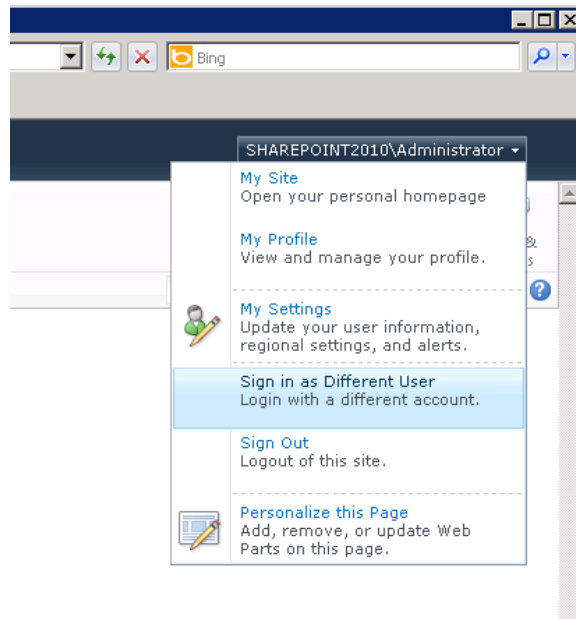
Change the option *Start when items are created* to *Yes*.

Workflow Settings	
<b>Title and description</b>	
Title *	Material Maintenance Request
Description	
<b>Workflow options</b>	
Start manually	<input checked="" type="checkbox"/>
Require manage list rights	<input type="checkbox"/>
Start when items are created	Yes
Start when items are modified	No
Enable verbose logging	<input type="checkbox"/>
Publish without validation	<input type="checkbox"/>
Enable workflow to start from the item menu	<input type="checkbox"/>
Menu item label	

*Save* and then *Publish* the workflow.

### 3.5 Step 5: Create a new Material Request

On your SharePoint site, sign in as the *Employee* user:



Create a new *Material Maintenance Request* item:

Material Maintenance Requests - New Item

Edit

Save Cancel Paste Cut Copy Attach File Spelling

Commit Clipboard Actions Spelling

Title \* New Cover Plate

Priority Normal (2)

Material Number \* C100S

Material Name \* Cover Plate (Silver)

Material Type HAWA

Industry M

Unit EA

Old Material Number

Due Date 3/25/2013

Notes

Save Cancel

Save the item.

Select the new item in the list, then select the *Workflow* button from the ribbon.

Material Maintenance Requests - All Items - Windows Internet Explorer

http://sharepoint2010/purchasing/Lists/Material%20Maintenance%20Requests/AllItems.aspx

Material Maintenance Requests - All Items

Site Actions Browse List Tools

New Item New Folder View Item Edit Item Item Permissions Attach File Workflows Approve/Reject I Like It Tags & Notes

New Manage Actions Workflows Tags and Notes

Item	Title	Priority	Material Number	Material Name	Material Maintenance Request	Material Type	Industry	Unit	Old Material Number
<input checked="" type="checkbox"/>	New Cover Plate	Normal (2)	C100S	Cover Plate (Silver)	In Progress	HAWA	M	EA	

Libraries: Purchasing Documents, Site Pages

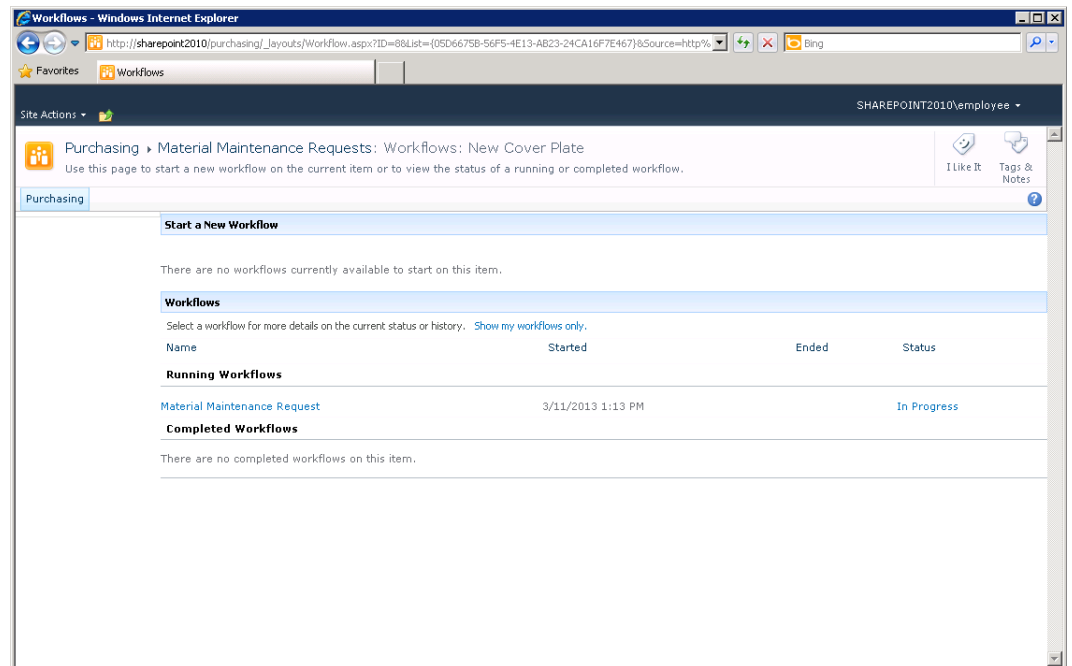
Lists: Material Maintenance Requests, Materials

Discussions

Recycle Bin, All Site Content

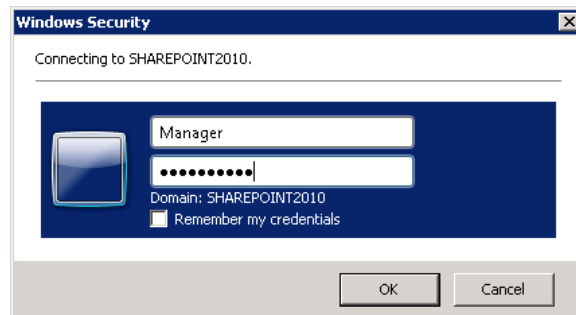
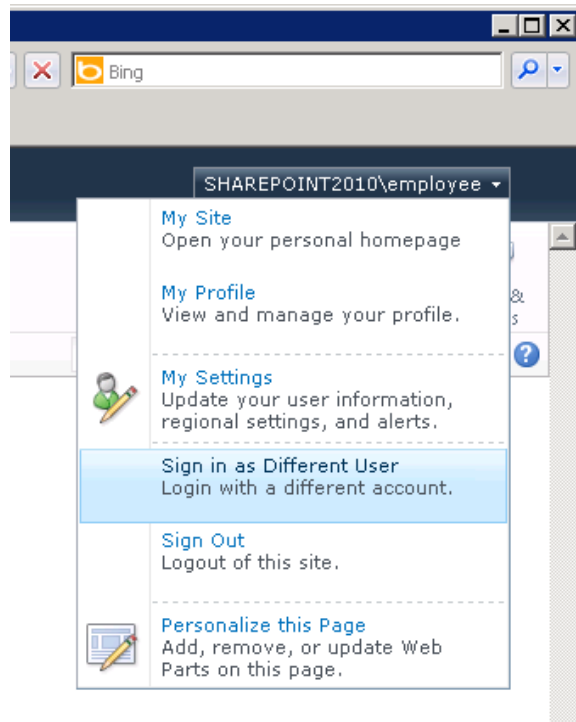


A running workflow should be displayed with a status of *In Progress*.

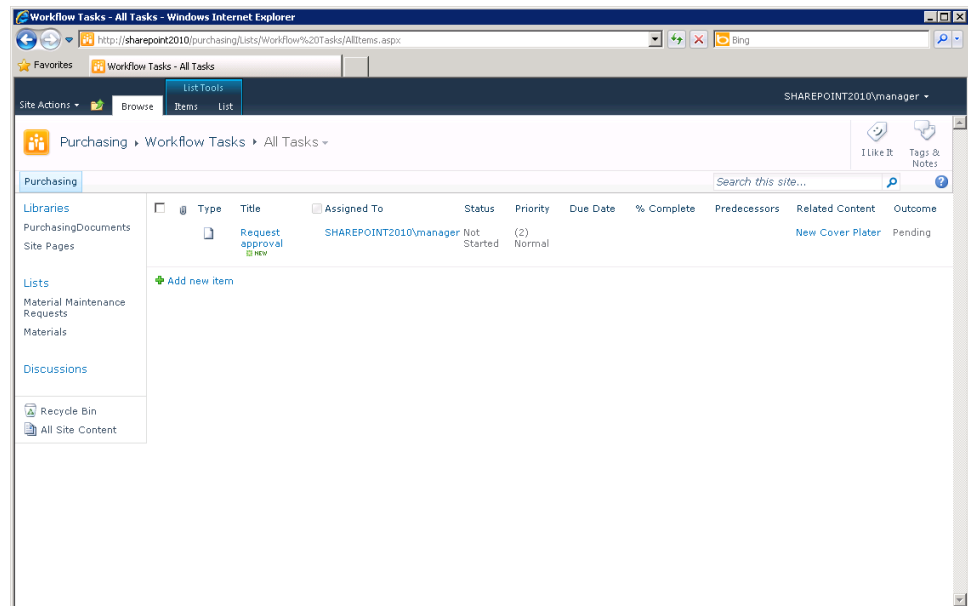


## 3.6 Step 6: Manager Approval

On your SharePoint site, sign in as the *Manager* user:



Navigate to *All Site Content* -> *Lists* -> *Workflow Tasks*



Open the task item, set the *Status* to *Approved* and select *OK*.

Approve Reject

Use this page to approve or reject submissions. Note that rejecting an item does not delete it. [Learn about requiring approval.](#)

**Status**

Approve / reject the item.

☒ Approved  
☐ Rejected

Or you can [delegate](#) this task to another person.

**Comment**

Use this field to enter any comments about why the item was approved or rejected.

**Item Properties**

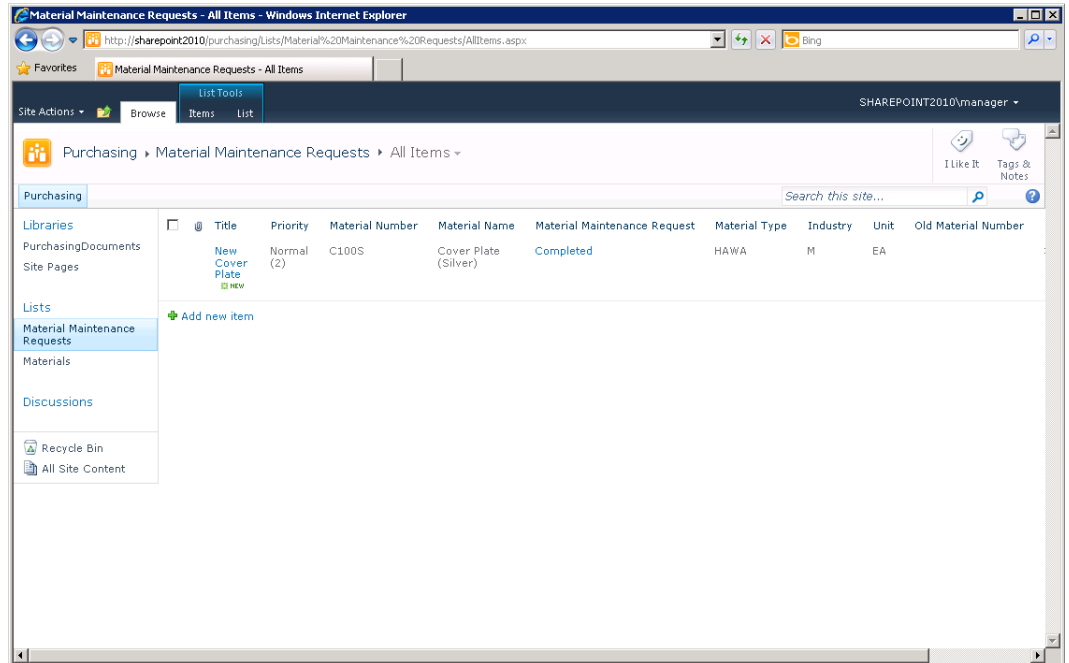
The following properties have been set for this item.

<b>Workflow status:</b>	<a href="#">View</a>
<b>Item:</b>	<a href="#">New Cover Plater</a>
<b>Title:</b>	New Cover Plater
<b>Priority:</b>	Normal (2)
<b>Material Number:</b>	C100S

OK Cancel

## 3.7 Step 7: Workflow / Task Status Validation

Navigate back to the *Material Maintenance Request* list and verify that the workflow status column shows *Completed*.



### 3.8 Step 8: SAP Validation

Using transaction *MM03* (Display Material) in SAP, verify that the material record has been created.

The screenshot shows the SAP Display Material (MM03) transaction for material C100S. The title bar indicates the material is a Trading goods. The main window displays the 'Basic data 1' tab, which includes the material number C100S and the description 'Cover Plate (Silver)'. Below this, the 'General data' section contains fields for Base Unit of Measure (EA), Each, Material Group, Old material number, Ext. Matd Group, Division, Lab/Office, Product allocation, Prod.hierarchy, X-plant matd status, Valid from, and GenItemCatGroup. The 'Material authorization group' section shows the Authorization Group. The 'Dimensions/EANs' section includes Gross Weight, Net Weight, Volume, Weight unit, and Volume unit. The status bar at the bottom shows the SAP logo and the text 'ECC (1) 800 | bravo462 | OVR |'.

General data	
Base Unit of Measure	EA Each
Material Group	
Old material number	
Ext. Matd Group	
Division	
Lab/Office	
Product allocation	
Prod.hierarchy	
X-plant matd status	
Valid from	
GenItemCatGroup	

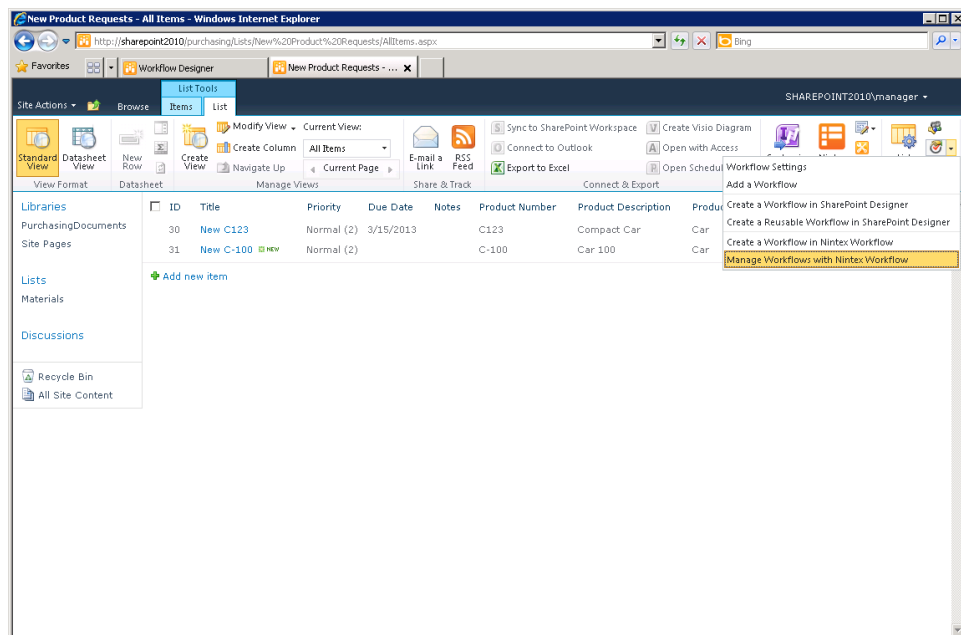
Material authorization group	
Authorization Group	

Dimensions/EANs	
Gross Weight	0,000
Net Weight	0,000
Volume	0,000
Weight unit	
Volume unit	
Size/dimensions	

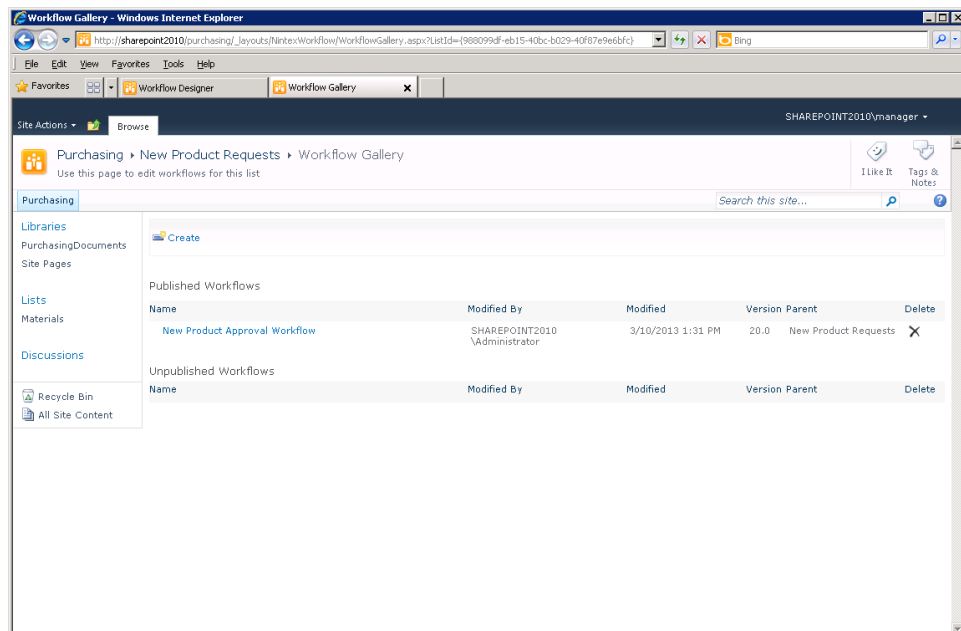
### 3.9 Step 9: Workflow Variation 1 – Call Web Service

In the following steps, you will modify the workflow to use the *Call Web Service* action instead of the *Create item* action to create the material record in SAP.

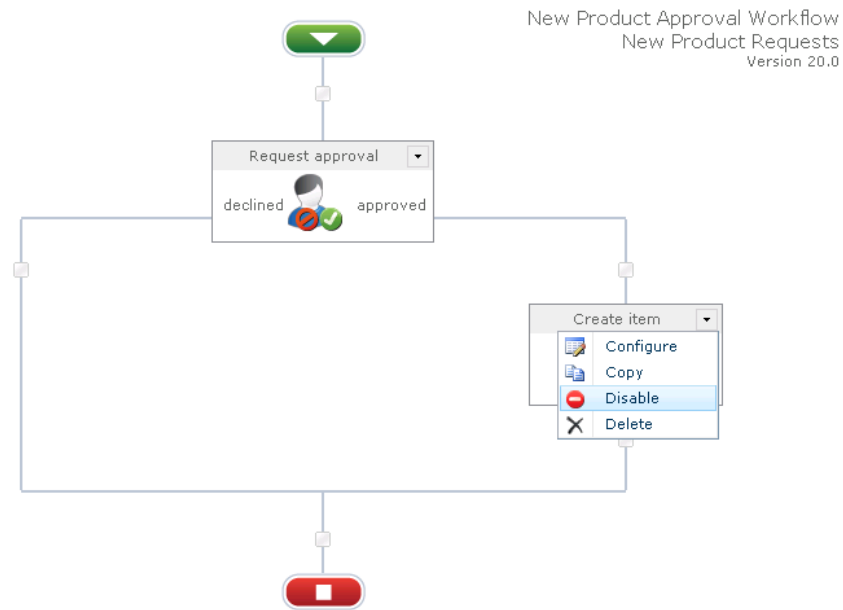
Navigate to the *Material Maintenance Requests* list and from the workflow *Settings* select *Manage Workflows with Nintex Workflow*



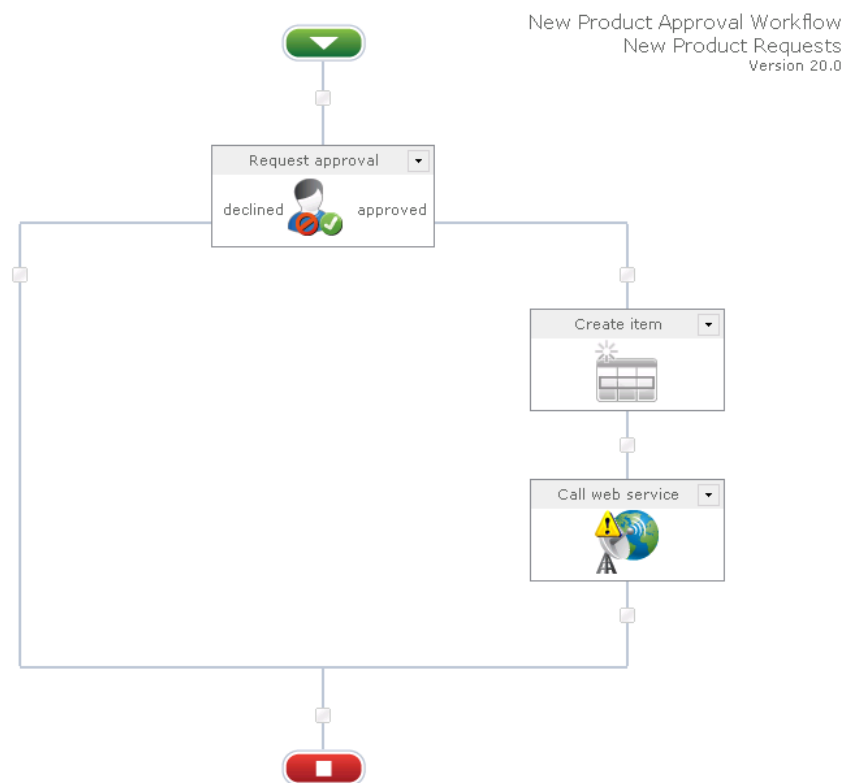
Select the *Product Approval Workflow* for editing.



*Disable (or Delete) the Create item activity*



Add a *Call web service* activity as shown below.



Configure the *Call web service* activity:

*URL* = http://sharepoint2010/\_vti\_bin/ERPConnectService.svc/mex

*Username / Password* = (specify credentials of user with sufficient privileges to invoke the service)

*Web method* = ExecuteFunction

*Web service input* = (paste the contents of the attached file *SOAP request XML.txt*)



SOAP Request XML.txt

The SOAP message will contain the references to the *Item Properties* of the *Material Maintenance Request* list.

*Save* and then *Publish* the workflow.

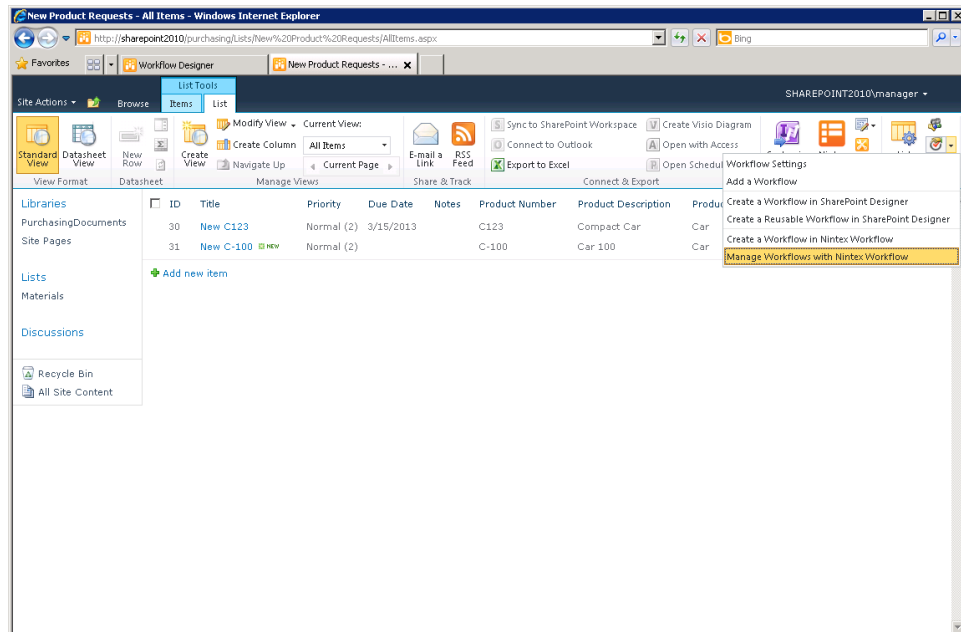
Repeat **steps 5-8** from above to verify the functionality of the updated workflow.



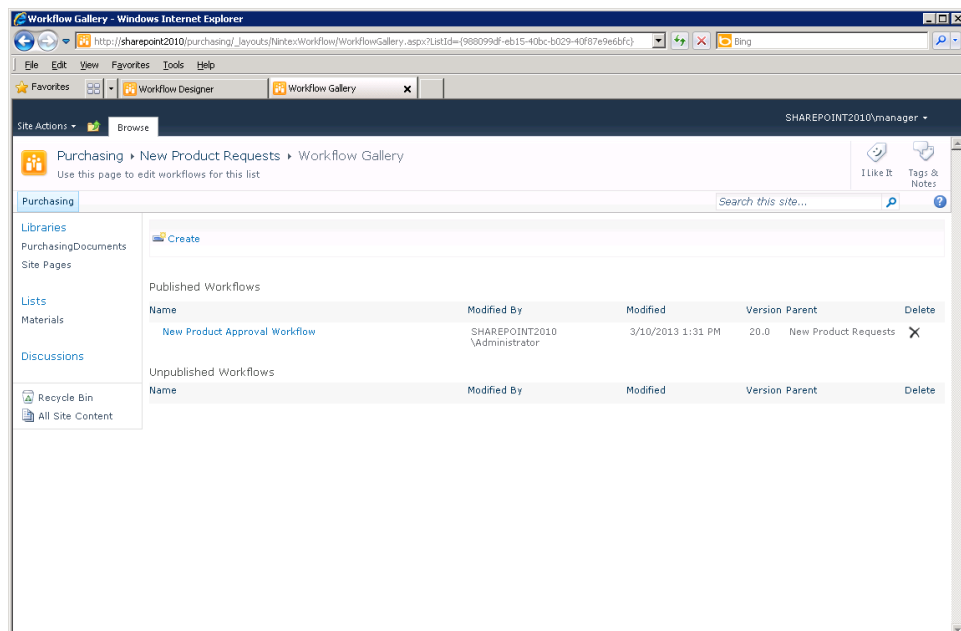
### 3.10 Step 10: Workflow Variation 2 – Query XQL (Custom Action)

In the following steps, you will modify the workflow to use the custom action *Query XQL* instead of the *Call web service* action to create the material record in SAP.

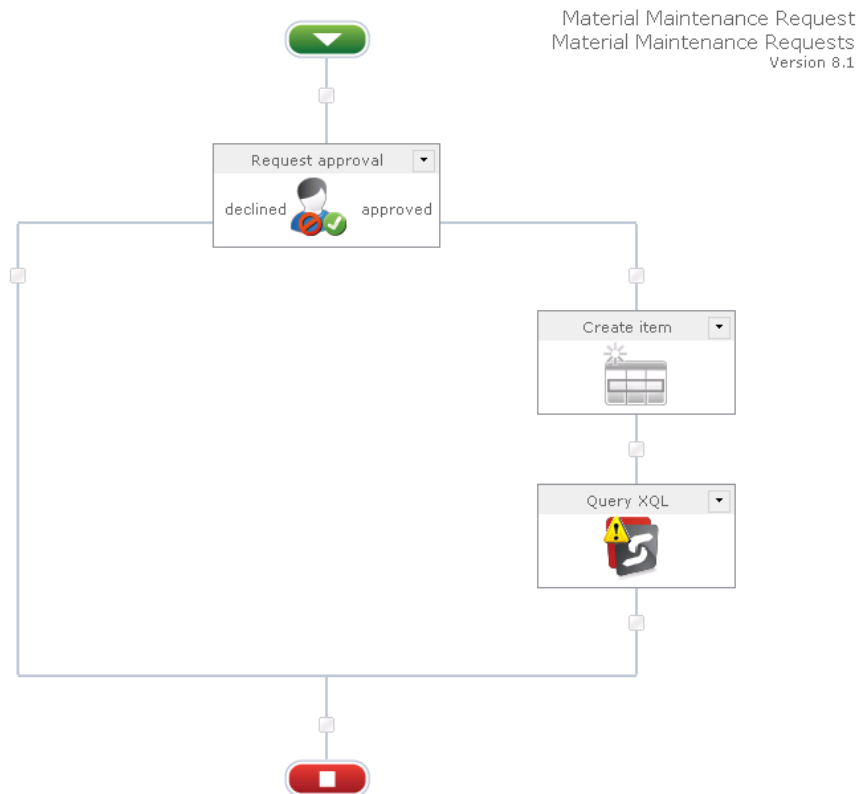
Navigate to the *Material Maintenance Requests* list and from the workflow *Settings* select *Manage Workflows with Nintex Workflow*



Select the *Product Approval Workflow* for editing.



Delete (or Disable) the *Call web service* activity  
Add a *Query XQL* action as shown below.



Configure the *Query XQL* activity:

*Application Name* = (ERPConnect Services Application that is configured in your SharePoint system)

*XQLQuery* = (XQL Query to create the material record in SAP)  
In this example: EXECUTE FUNCTION 'Z\_ECS\_MATERIAL\_MAINTAIN'  
EXPORTING MATERIALBASE-  
MATNR='{ItemProperty:Material\_x0020\_Number}', MATERIALBASE-  
MATDESC1='{ItemProperty:Material\_x0020\_Name}', MATERIALBASE-  
MATL\_TYPE='{ItemProperty:MaterialType}', MATERIALBASE-  
IND\_SECTOR='{ItemProperty:Industry}', MATERIALBASE-  
BASE\_UOM='{ItemProperty:UnitofMeasure}', MATERIALBASE-  
OLD\_MAT\_NO='{ItemProperty:Old\_x0020\_Material\_x0020\_Number}'

Configure Action - Query XQL

General

Save Cancel Action Labels Common Variables Run Now Help

Commit Settings Variables Run Now Help

Application Name \* ECS

XQL Query \* Insert Reference

```
EXECUTE FUNCTION 'Z_ECS_MATERIAL_MAINTAIN'  
EXPORTING MATERIALBASE-MATNR={ItemProperty:Material_x0020_Number},  
MATERIALBASE-MATDESC1={ItemProperty:Material_x0020_Name},  
MATERIALBASE-MATL_TYPE={ItemProperty:MaterialType}, MATERIALBASE-  
IND_SECTOR={ItemProperty:Industry}, MATERIALBASE-BASE_UOM=  
{ItemProperty:UnitofMeasure}, MATERIALBASE-OLD_MAT_NO=
```

Result Output

☐ Error handling

*Save* and then *Publish* the workflow.

Repeat **steps 5-8** from above to verify the functionality of the updated workflow.

# 3

## Conclusion

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This document outlined three different options for using ERPConnect Services with Nintex Workflow.

For SharePoint solutions that utilize the Business Connectivity Services and external lists for access to SAP data, the list actions (*Query List*, *Create Item*, *Update Item*, *Delete Item*) that are provided with Nintex Workflow can be used to integrate SAP data into your workflow scenario. The advantage of this integration option is that the list actions in Nintex Workflow are easy to configure and utilizing external lists in SharePoint can be useful for additional scenarios and to verify SAP data access. Using the BCS Connector which is part of ERPConnect Services, you can create an external content type for an SAP table or function module with just a few steps and save it directly to SharePoint.

With ERPConnect Services, your SharePoint solution can also access SAP data directly, without the use of the Business Connectivity Services layer or external lists. Within a Nintex Workflow, you can use the custom *Query XQL* action to directly access SAP data, for example to read from a table or to invoke an SAP function module. The *Query XQL* action is easy to configure and the *XQL Explorer* tool is provided as part of ERPConnect Services to construct and verify an XQL statement. Further, the result of the *Query XQL* action is formatted as XML data and can be parsed using the standard *Query XML* action in Nintex Workflow.

Using the standard Nintex Workflow actions *Call Web Service* or *Web Request* also enables direct access to SAP data with the SOAP and REST services provided by the ERPConnect Services runtime. The disadvantage of this option is that the service requests have to be properly formatted which can be somewhat difficult to accomplish in the workflow. The custom action *Query XQL* eliminates this task and hides the complexities of the service request from the end user.