Infor PLM Accelerate 11

Content Modeling Framework Guide

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About this guide

This document provides information about how to use the Content Modeling Framework (CMF) to create hierarchical data models.

Intended audience

This guide is intended for system administrators. This document assumes that you have at least some knowledge in:

- System architecture and function for your Infor system

- SQL Server database

For the most up-to-date list of software and hardware requirements for Infor products, see the documentation for your system.

Related documents

You can find the documents in the product documentation section of the Infor Xtreme Support portal, as described in the "Contacting Infor" section below.

Contacting Infor

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If we update this document after the product release, we will post the new version on this Web site. We recommend that you check this Web site periodically for updated documentation.

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Chapter 1. Content Modeling Framework

About CMF

The Content Modeling Framework (CMF) is a modeling capability that is used to create a hierarchical data model of independent elements that, when instantiated, are collectively treated as a single entity (CMF Document). CMF also provides a tabular editor for the content of CMF documents, similar to an Excel spreadsheet.

For an example of CMF in an Infor PLM Accelerate solution, refer to the Documents and Views used for FMEA content in the Quality Management System Solution (QMS 11.0R1). Both Design Quality Documents (DQD) and Process Quality Documents (PQD) use CMF.

Chapter 2. Administration Configurable Options

The steps below walk through the configuration of CMF for a custom Business Object ItemType. For additional detail on configuring properties, please refer to the property definition tables in each section.

Business Object ItemType

The Business Object ItemType is an ItemType that will be linked to the Content Modeling Framework ItemType. The Business Object ItemType for the following example is called "MyProcessPlan". This ItemType does not require special configuration for use with CMF.

1. Navigate to Administration → ItemTypes in the TOC.
2. Create a new ItemType.
3. Enter a name and labels.
   a. Name: MyProcessPlan
   b. Singular Label: My Process Plan
   c. Plural Label: My Process Plans
4. In the Properties tab, add a new Property
   a. Name: name
   b. Label: Name
   c. Data Type: String
   d. Length: 32
5. Set access and permissions in the TOC Access tab, the Can Add tab, and the Permissions tab
6. Save and Unlock the MyProcessPlan ItemType. It should look like Figure 1 below:
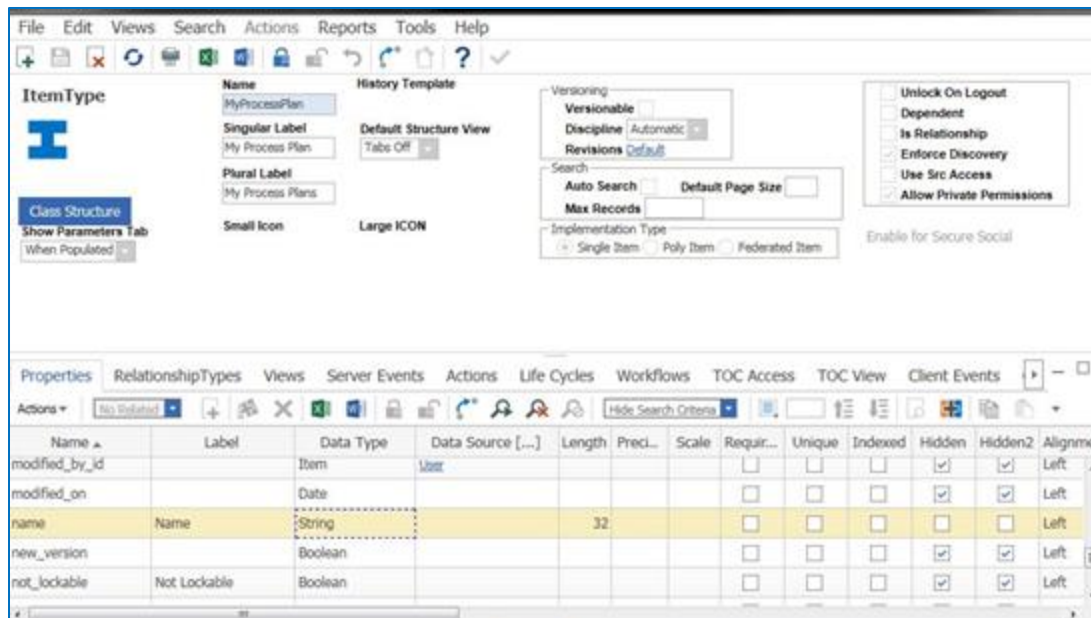
Figure 1.

CMF ItemType

The CMF ItemType creates a link between the Business Object ItemType and the Content Type, allowing administrators to configure custom views.

Note:	All CMF ItemType forms must have an OnFormPopulated event with the core method cmf_ShowContentType.

1. Navigate to Administration → ItemType in the TOC.

2. Create a new ItemType.

3. Enter a name and labels.

    a. Name: MyPQD
    b. Singular Label: My PQD
    c. Plural Label: My PQDs

4. In the Properties tab, add a new Property

    a. Name: name
    b. Label: Name
    c. Data Type: String
    d. Length: 32

5. Set access and permissions in the TOC Access tab, the Can Add tab, and the Permissions tab

6. Save the MyPQD ItemType. It should look like Figure 2 below.
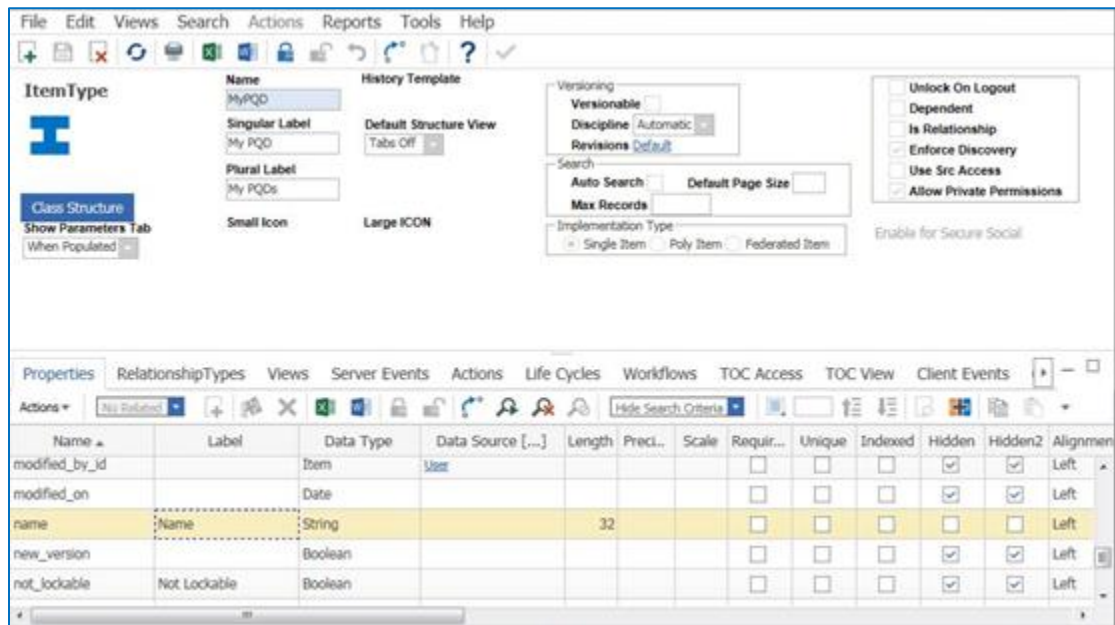
Figure 2.

7. In the Views tab, right-click the MyPQD form and select "View Form"

8. Unlock the form, go to the Form Event tab, select Pick Related, and add a Form Event

   a. Name: cmf_ShowContentType
   b. Event: onFormPopulated
   c. Save and Unlock the MyPQD form.

It should look like Figure 3 below.
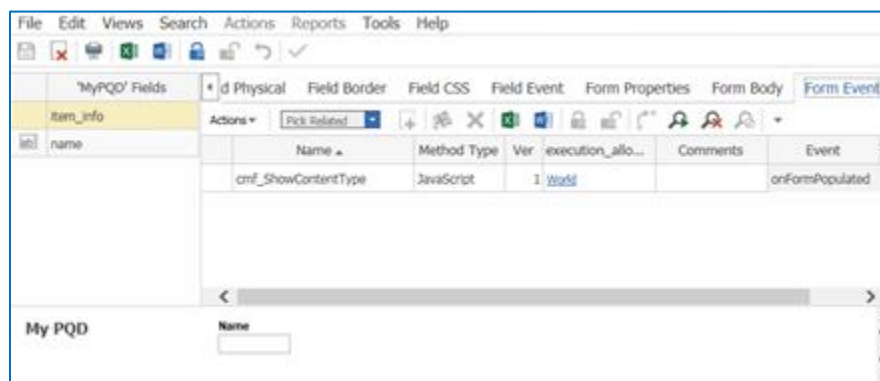
Figure 3.

CMF RelationshipType

1. Navigate to Administration → RelationshipTypes in the TOC.
2. Create a new RelationshipType.
3. Enter a name and label.
   a. Name: MyPQDRel
   b. Label: MyPQDRel
4. Set the Source ItemType to the CMF ItemType: MyPQD.

   It should look like Figure 4 below:
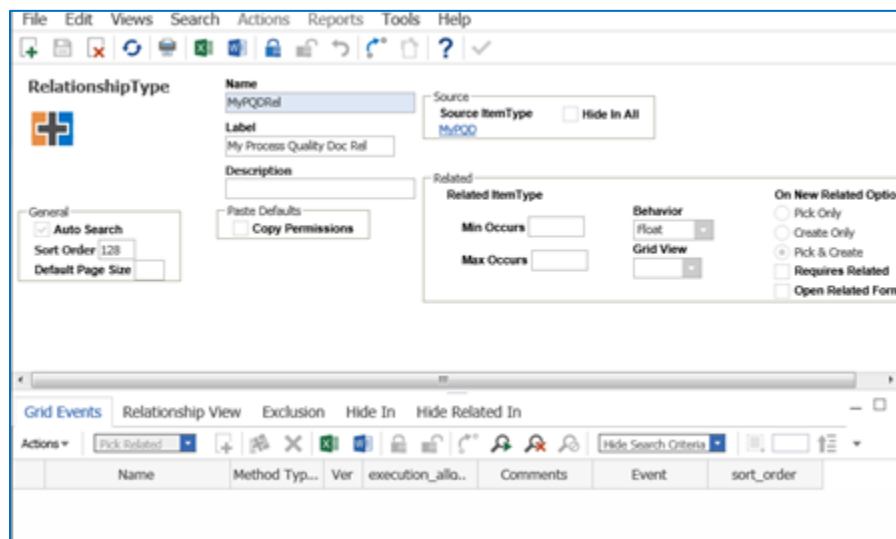
Figure 4.

Content Type

The Content Type item links the Business Object ItemType to the CMF ItemType and is used to configure the custom grid and tree on the CMF items.

1. Navigate to Administration → Content Modeling → Content Types in the TOC.
2. Create a new Content Type.
3. Enter a name.
   a. Name: My PQD
4. Set the Linked ItemType to the CMF ItemType. In this instance, that is MyPQD.

   It should now look like Figure 5 below.
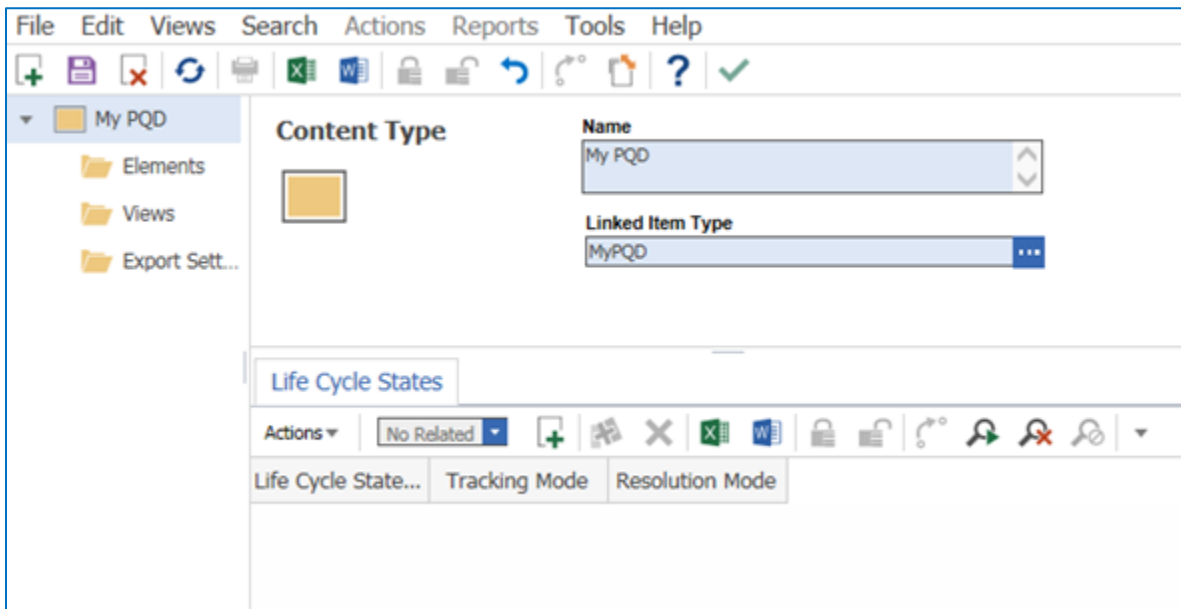
Figure 5.

5. Right-click the **Elements** tab on the Content Type tree and select **Add Element Type**.

6. Enter a name for the Element Type.

    a. Name: MyElement1

It should now look like Figure 6 below.
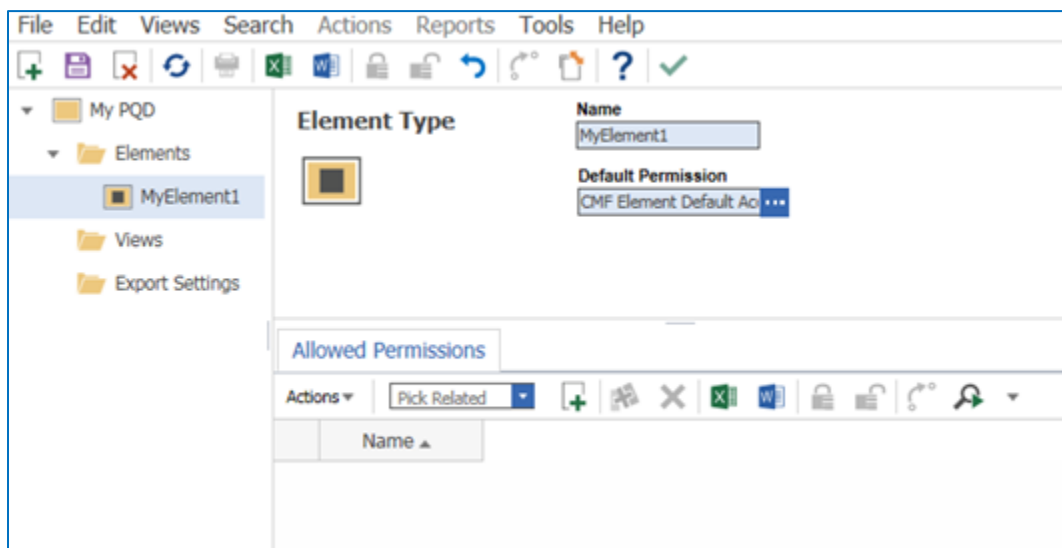
Figure 6.

Content Type Elements

1. Right-click the Element (MyElement1) in the tree and select **Add Property Type**

2. For this example, create the following Property:

   a. Data Type: Text
   b. Name: MyTextProp

3. Create another Property:

   a. Data Type: String
   b. Name: MyStringProp
   c. Data Length: 32

Refer to the table below for a complete list of the properties of the Element Properties.

Property	Description
DataType	DataType of the Element's property
Name	(string: 30) Element's name
Data Length	[only used for Strings] the maximum character length
Default Permission	Optional. Default Permission item set for new Elements of this type.

4. Save Content Type.

   It should look like Figure 7 below.
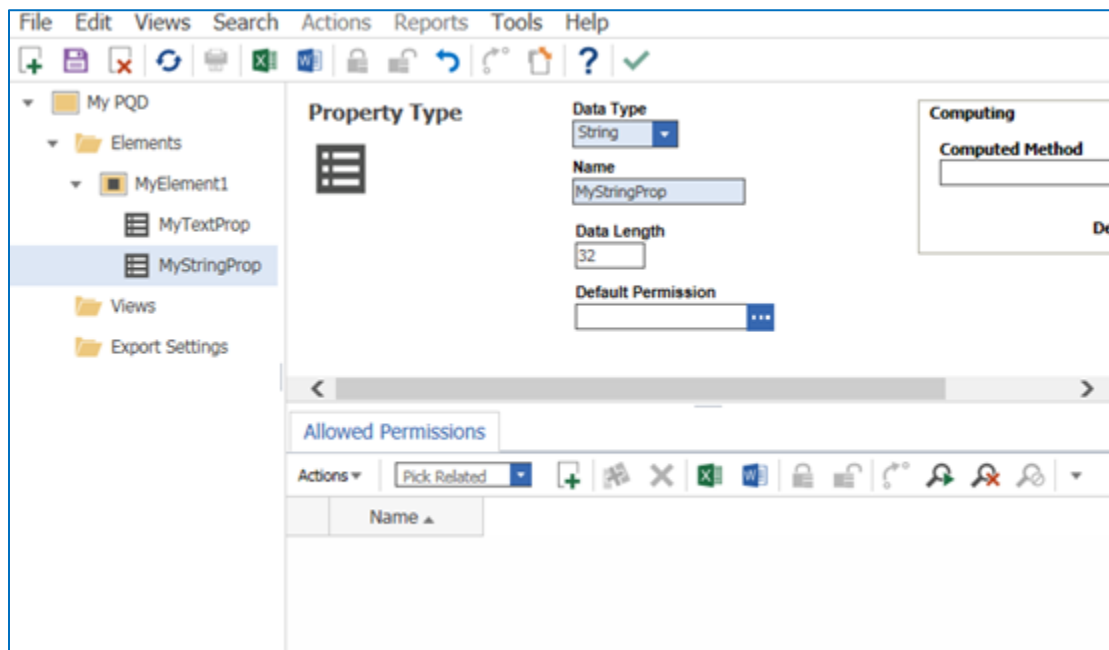
Figure 7.

> **Note:** If there is a need to create several elements without parent (parallel structures of elements), each of those parallel structures should be organized into different views in order to be displayed in CMF editor. Otherwise the CMF editor will show nothing.

5. Right-click the MyElement1 item again and select **Add Element Binding**.

6. For this example, set the following properties:

    a. Referenced Type: MyProcessPlan (Business Object ItemType)
    b. Tracking Mode: Show Differences
    c. Resolution Mode: Current
    d. New Element Mode: Pick or Create

Refer to the table below for a complete list of the Element Binding items.

| Property	Description
Referenced Type	The Business Object ItemType that will be bound to the Element Type
Tracking Mode	- Show Differences: Show differences between Elements of this type and the referenced Business Object - Ignore Differences: Ignore differences between Elements of this type and the referenced Business Object - Hard Show Differences: Overrides Content Type Life Cycle-specific tracking mode - Hard Ignore Differences: Overrides Content Type Life Cycle-specific tracking mode
Resolution Mode	Identifies which generation of bound item to access in order to perform value comparison. - Current: use the current version of the item - As Saved: use bound_item_id as is, do not use the current version of the item - Hard Current: Overrides the LifeCycle resolution mode - Hard As Saved: Overrides the LifeCycle resolution mode
New Element Mode	Define how new elements may be added. - Pick or Create - Pick Only - Create Only
Reference Is Required	User cannot create an unbounded Element. All Elements of this type must have a reference to a Business Object.

Property	Description
Structure Mapping Method (SMM)	The SMM returns the table data, allowing users to see conflicts between structures. The SMM is executed based on the Element Type. If a structure contains two different Element Types with SMM, both methods will run. This method is called when: - An Element is added (New, Pick, Create) - An Element is deleted - A Reference is released - On Pick/Replace of an Element
On Create Reference	Optional. This method is called when a user attempts to create a reference on a Business Object. If no method is set, the default implementation will execute.
On After Pick	A method called after a user picks some business object from the context menu.
On Apply Binding	Optional. The method will be called when the Element is picked. The method should link the selected Business Object to hierarchy of the main Business Object. This method also will be called when an Element exists but is not in the hierarchy of Business Object and the user wants to include the Element into the hierarchy of the Business Object.

7. Add a new item to the Property Bindings tab.

8. Configure the following properties:

   a. Referenced Property: name
   b. Document Element: MyStringProp

9. Save the Content Type.

   It should look like Figure 8 below.
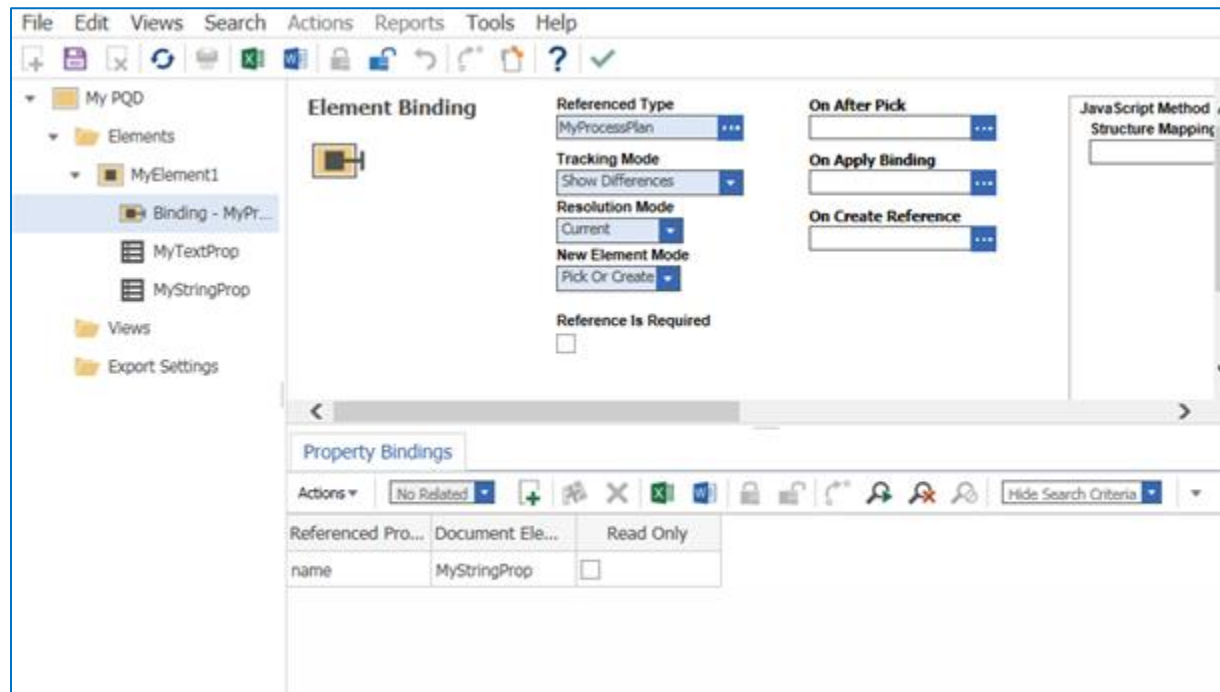
Figure 8.

Currently, the Binding Types intersection is supported for the following Data Types:

- String
- Text
- Integer
- Date
- Boolean
- Image

Content Type Element Identity Inheritance

Content Type Elements inherit the managed_by_id, owned_by_id, and team_id properties from the parent Content Type instance item. The Element's created_by_id and modified_by_id properties are not inherited.

For this sample case, this means that any MyElement1 items will be created with the managed_by_id, owned_by_id, and team_id values from the parent MyPQD item.

Warning	It is important to consider identity inheritance when defining custom permissions on Content Type Elements. Permissions including the Creator system identity on Content Type Elements will use the creator of each Element item, not the creator of the parent Content Type instance item, when validating user permissions.

Content Type View

1. Right-click the **Views** node in the Content Type tree and select **Add View**.
2. Click **OK** to confirm a tabular view.
3. Enter a name for the Tabular View.

   It should look like Figure 9 below.

Figure 9.

4. Expand the Tabular View sub-tree
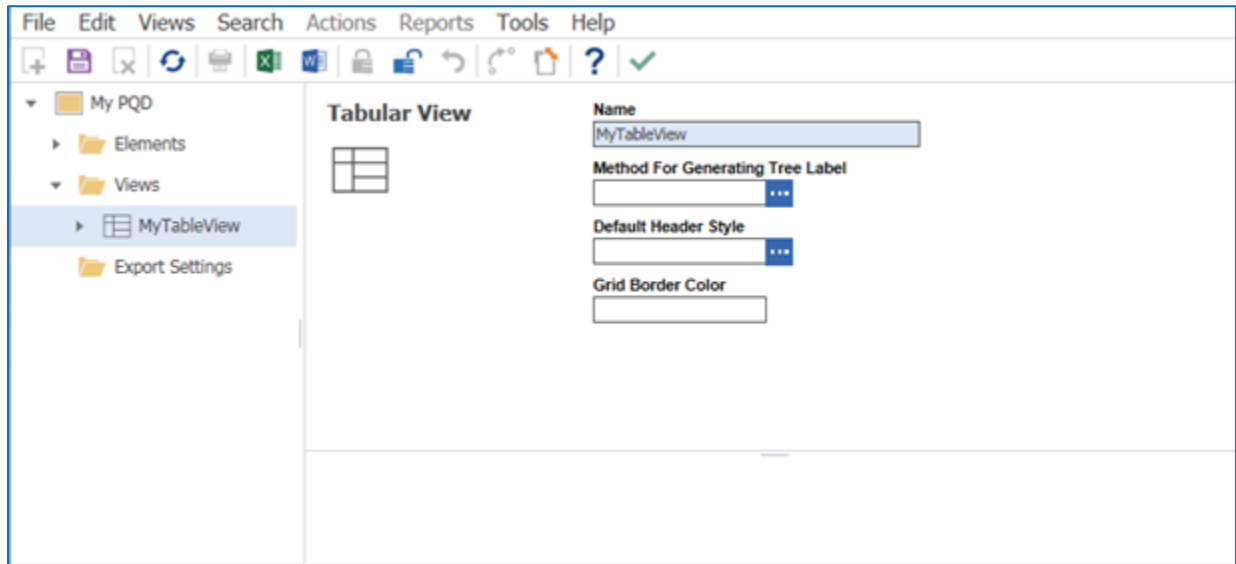5. Right-click the **Columns** node and select **Add Column**.
6. Enter the following values in the new Tabular View Column

   a. Mapped Property: MyStringProp
   b. Header Title: My String
   c. Initial Width: 100

7. Add another Column to the Columns node.

   a. Property: MyTextProp
   b. Header Title: My Text
   c. Initial Width: 200

   It should look like Figure 10 below.

Figure 10.

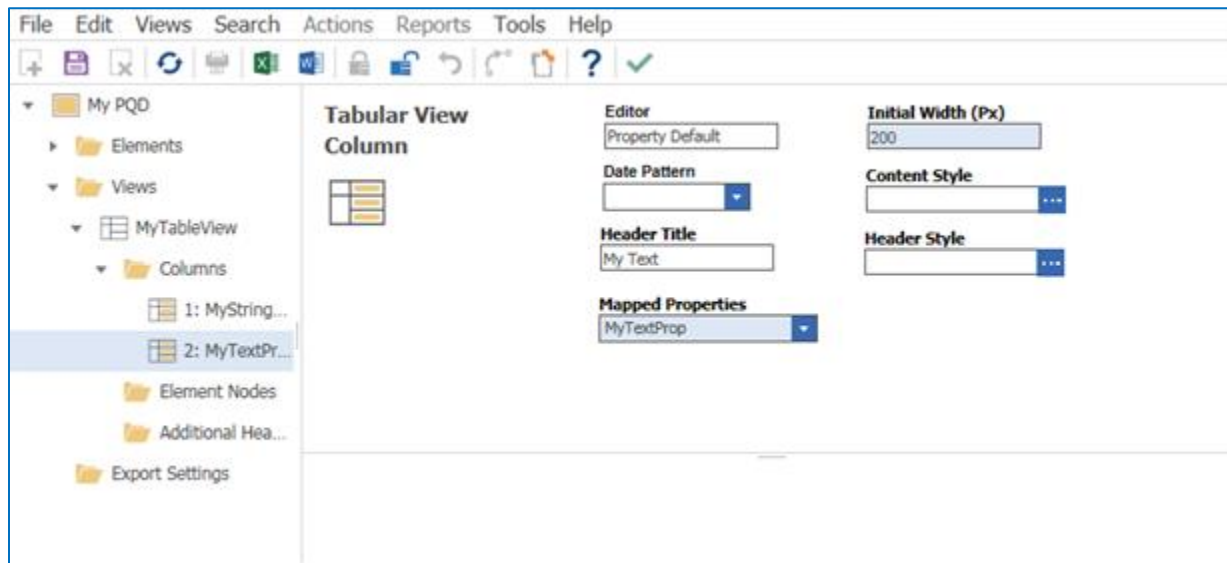8. Right-click the **Element Nodes** node on the Tabular View sub-tree and select **Add Element Type Configuration**.

   Enter the following properties for the Element Node:

   a. Label: MyElement1 Label
   b. Element Type: MyElement1
   c. Icon: Choose an image

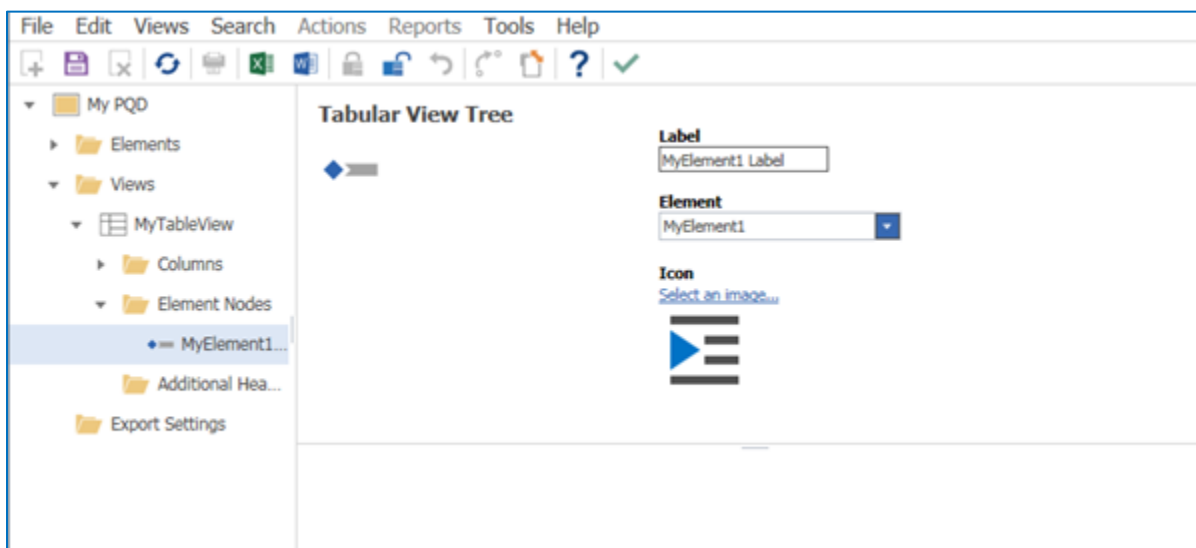   It should look like Figure 11 below.

Figure 11.

9. Right-click the Additional Header Rows node and select Add Additional Header Row

10. Add a new Group relationship with the following properties:

    a. Label: My Group Label
    b. Start: 1
    c. End: 2

    It should look like Figure 12 below.
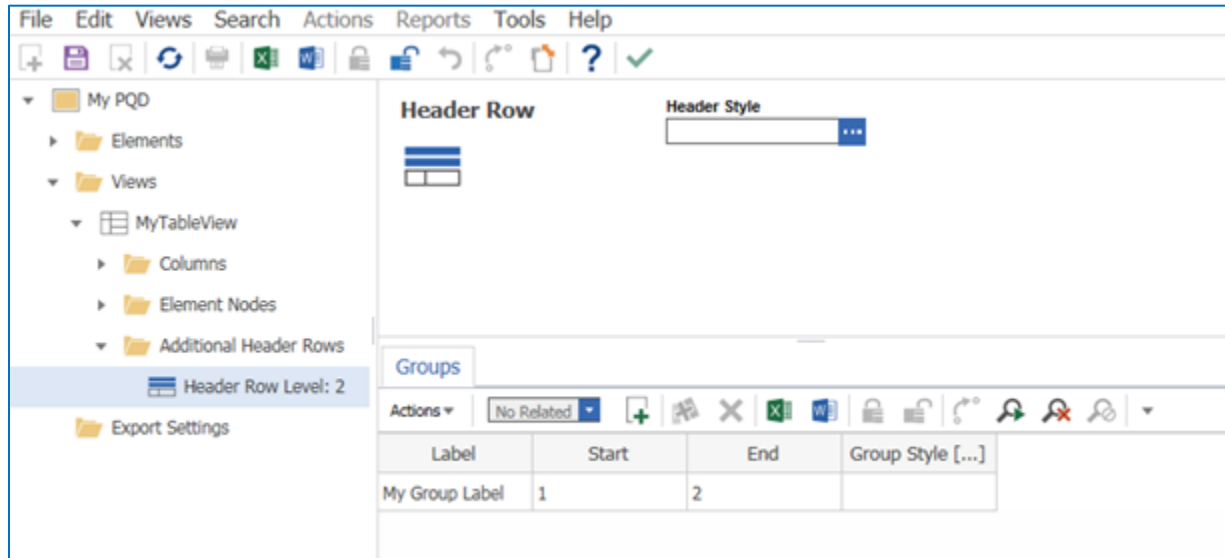
Figure 12.

11. Save, Unlock, & Close the Content Type.

Viewing the Linked ItemType

Follow the steps below to confirm the configuration of the Business Object ItemType and the linked Content Type.

1. Create an instance of the Business Object.

    a. Navigate to My Process Plans in the TOC.
    b. Create a new My Process Plan item with the name "Plan 1".
    c. Save, Unlock & Close.

2. Create an instance of the CMF Object.

    a. Navigate to My PQDs in the TOC.
    b. Create a new My PQD item.
    c. Set name as "PQD 1"
    d. Save PQD 1.

3. In the CMF Item, click the **Show Editor** icon in the sidebar.

4. Add an unbounded element to the Content ItemType

    a.   Right-click the root element tab in the tree and select Insert MyElement1 Label → New

    b.   Enter values for My String and My Text

5.   Add a bound element from reference

    a.   Right-click the root element tab in the tree and select Insert MyElement1 Label → From Reference → Select

    b.   Run a search in the Search Dialog, select "Plan 1", and return the selected object (click the green checkmark)

    The tree and grid should appear configured as in Figure 13 below:
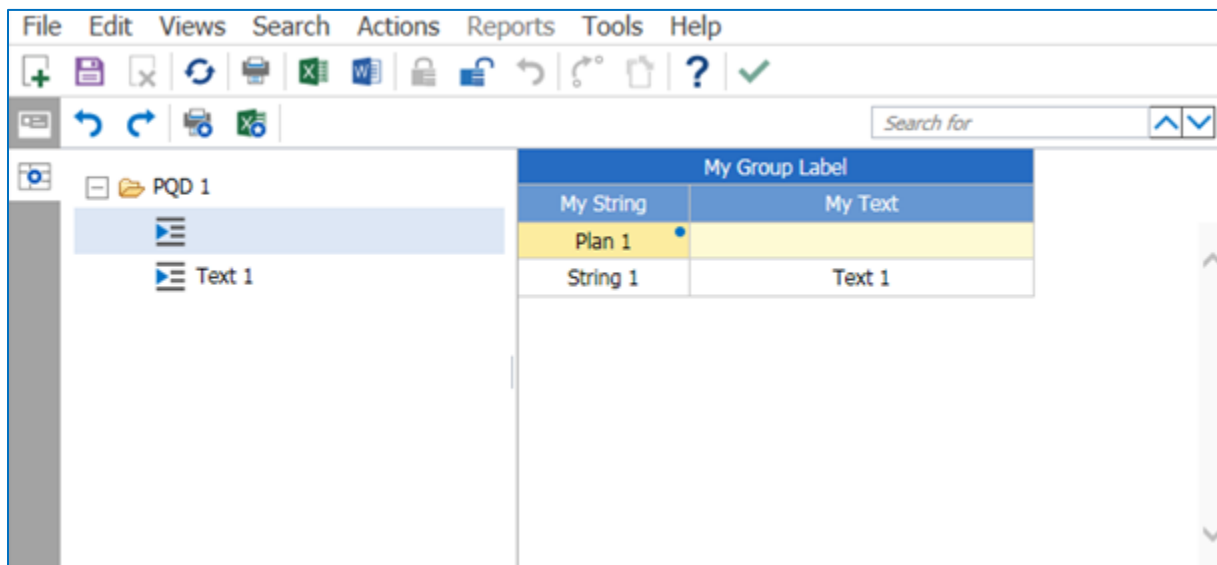
Figure 13.

Exporting CMF Packages

Warning	When creating and exporting packages that include CMF Content Types, it is important to keep in mind that there may be RelationshipTypes that are automatically created during the CMF process. These RelationshipTypes should not be added or exported. Doing so will cause import errors.

To see an example of these RelationshipTypes, create the following:

1.   Create a new ItemType called "Desk."

2.   Create a new Content Type item:

    a.   Name = "Desk_CMF"

    b.   Linked Item Type = "Desk"

3.   Add an Element to Desk_CMF called Desk_Element1.

4.   Add a Property to the Desk_Element1 called Desk_Prop1.

5.   Save and close the Desk_CMF Content Type.

6. Open the Desk ItemType and go to the RelationshipType tab.

There should be 2 items that were automatically created in the CMF process.
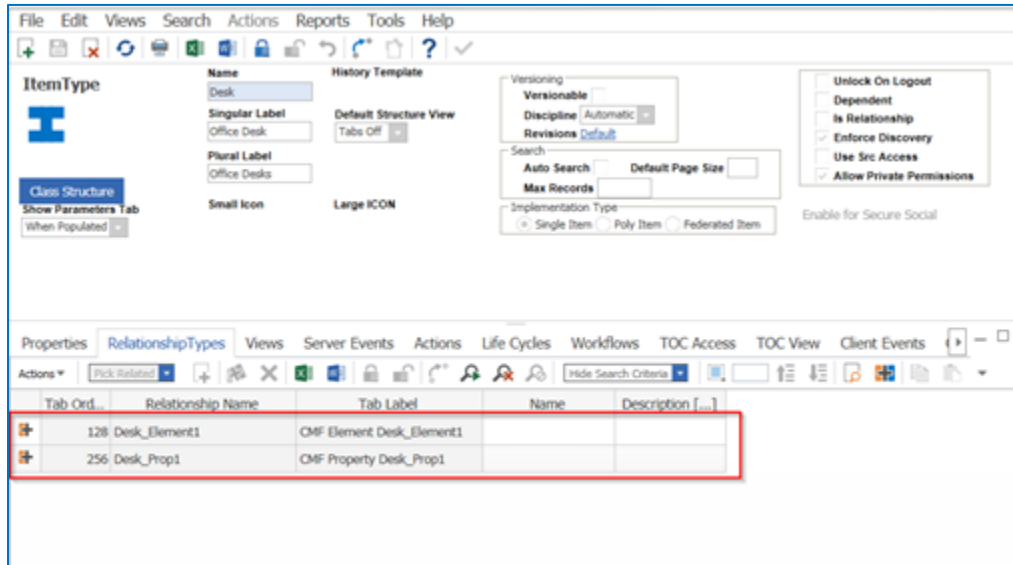

Figure 14.

Note: These RelationshipType items *should not* be added to Package Definitions for exporting.

When importing the Content Type item, these RelationshipType items will be created automatically by default.

Chapter 3. Printing and Exporting CMF Items

The Content Modeling Framework includes options to Print content and/or export the content to an Excel spreadsheet. This part of the solution is available to Support subscribers.

Required Installations

In order to publish Technical Documents, the following needs to be installed:

- Infor PLM Conversion Accelerate Server (See *Infor PLM Accelerate 11.0 - Conversion Server Setup Guide*)
- Infor PLM Accelerate Agent Service (See the *Infor PLM Accelerate 11.0 – Installation Guide*)

Feature License Key

The CMF license comes as part of most license bundles for subscribers, such as Aras.PremierSubscription. It does not require a separate activation. To check whether a valid **Feature License** exists in Infor PLM Accelerate:

1. Log into Infor PLM Accelerate as an administrator.
2. Go to **Administration --> Feature Licenses**.
3. If a subscription license is found, check the expiration date to confirm that the license is still active.

Requesting a Feature License

In order to request a feature license activation key, customer with an active subscription can send an email to licenses@aras.com or to your account representative in the following format:

- Subject: CMF Activation Key Required
- Body: Version of Innovator

You will receive a reply containing the Feature License activation key.

Installing the License

Once you have the activation key, install the feature license as follows:

1. Log into Infor PLM Accelerate as an administrator.
2. From the main menu toolbar, select **Tools --> Admin --> Licenses --> Activate Feature**.
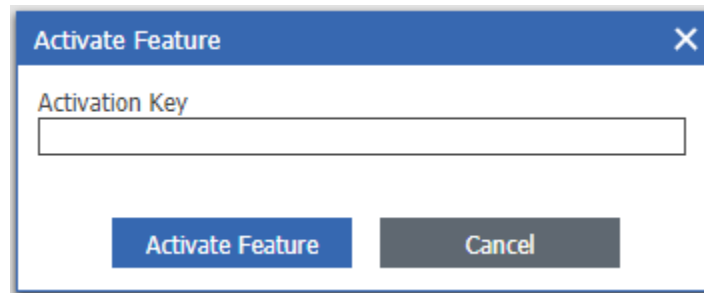
Figure 15.

3. Paste the acquired activation key and click **Activate Feature**.

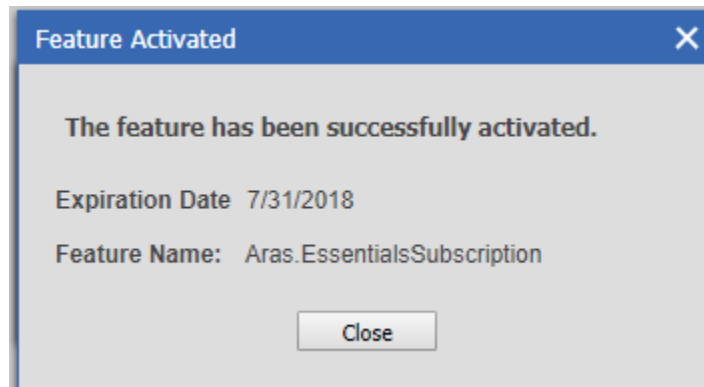   A success message should pop up similar to the one shown below.

Figure 16.

Enabling Printing and Exporting Options

The Infor PLM Accelerate Publishing Service feature requires that the Conversion Server be configured to enable it.

To enable the service

1. Open ConversionServerConfig.xml file for editing.

    Typically, this file is located at the root of Infor PLM Accelerate code tree (Sample:
    `C:\Program Files (x86)\Aras\Innovator\ConversionServerConfig.xml`)

2. Into the section `<Converters/>` add:

```
<Converter name="cmf_ExcelPublishingConverter"
type="Aras.Cmf.Publishing.Excel.ExcelExportConverter,
Aras.Cmf.Publishing" />
```

```
<Converter name="cmf_XpsPrintingConverter"
type="Aras.Cmf.Publishing.Xps.XpsPrintingConverter,
Aras.Cmf.Publishing" />
```

The following is a sample of a ConversionServerConfig.xml file with the required setup:

```xml
<?xml version="1.0" encoding="utf-8"?>
<configuration>
      <configSections>
            <!-- Common converter service configuration -->
            <section name="ConversionServer"
type="Aras.ConversionFramework.ConversionServer.Configuration.ConversionServerConfiguration
Section"/>
            <sectionGroup name="ConverterSettings">
                  <!-- Place here class configuration section definitions for converters
-->
            </sectionGroup>
      </configSections>
      <ConversionServer>
            <InnovatorServer
url="http://localhost/InnovatorServer/Server/InnovatorServer.aspx"/>
            <Converters>
                  <Converter name="cmf_ExcelPublishingConverter"
type="Aras.Cmf.Publishing.Excel.ExcelExportConverter, Aras.Cmf.Publishing" />
                  <Converter name="cmf XpsPrintingConverter"
type="Aras.Cmf.Publishing.Xps.XpsPrintingConverter, Aras.Cmf.Publishing" />
      </Converters>
      </ConversionServer>
      <ConverterSettings>
            <!-- Place here configuration sections for converters -->
      </ConverterSettings>
</configuration>
```

3. Save and close the ConversionServerConfig.xml file.

Managing Conversion Rules

By default, the conversion rules required for CMFare added to the **Default** Conversion Server. If your Infor PLM Accelerate setup requires the use of a different Conversion Server, the following Conversion Rules should be added to the **Converters** tab on the appropriate **Conversion Server** item in the database:

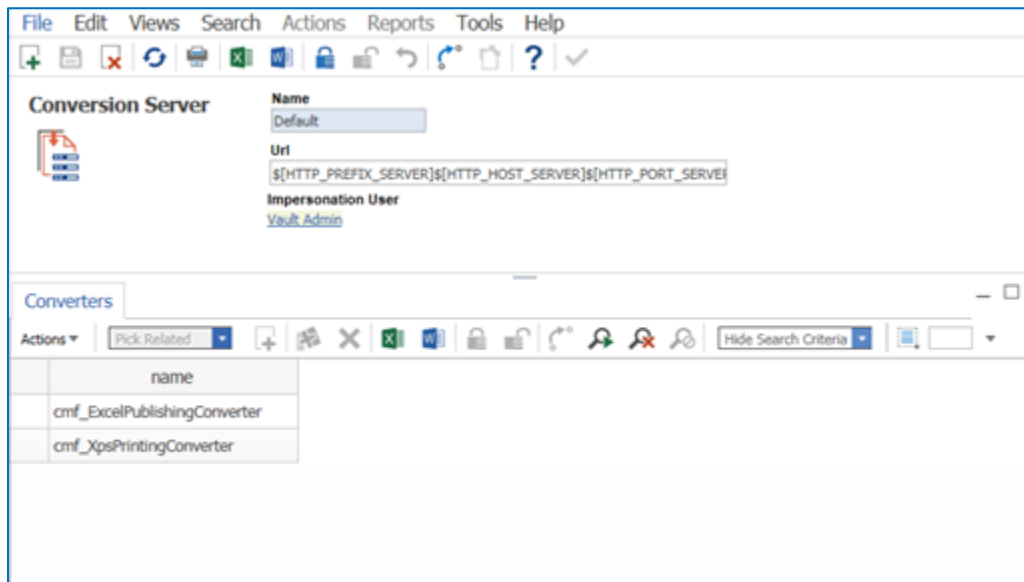- cmf_ExcelPublishingConverter
- cmf_XpsPrintingConverter

Figure 17.